Florida Statewide and Regional Physician Workforce Analysis: 2019 to 2035

2021 Update to Projections of Supply and Demand

Prepared for the Safety Net Hospital Alliance of Florida and the Florida Hospital Association

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Executive Summary

To support workforce planning efforts and help ensure an adequate supply of healthcare providers in the future, The Safety Net Hospital Alliance of Florida and the Florida Hospital Association engaged IHS Markit to develop projections of future supply and demand for physicians, advanced practice registered nurses (APRNs), registered nurses (RNs), and licensed practical nurses (LPNs) in Florida. This report focuses on the physician workforce and projects supply and demand for physicians from 2019 through 2035. A companion report presents findings on the RN and LPN workforces. Less information is available on APRN supply and demand, but workforce projections for APRNs also are presented. This report updates a previous report (the "2015 Report") on the physician workforce prepared by IHS Markit. That study projected physician supply and demand starting in 2013, using the most current data available at that time. For this report, the baseline for data and modeling assumptions has been updated to 2019. The base year workforce adequacy can serve as a benchmark for Florida's progress towards addressing the workforce needs identified in the 2015 Report, while projected future adequacy provides insight into what resources may be needed in the future.

Using 2019 as a base year for modeling implies that the data sources used to derive physician workforce decisions and patient healthcare use patterns are pre-COVID-19. While the pandemic has had a large short-term impact on the population, demand for physician services, and the physician workforce, the ongoing nature of the pandemic and lags in data becoming available to researchers limits the degree to which long-term impacts on the physician workforce can be identified. This will likely be an area of ongoing research over the next several years. The pandemic has also increased awareness of the disparities that members of certain communities face in accessing high-quality care within the healthcare system. Given the heightened emphasis on this issue, a Reduced Barriers demand scenario was included in this report to provide an understanding of potential implications for the provider workforce demand assuming certain barriers to accessing healthcare services are removed for members of historically underserved populations.

Physician supply and demand are expressed as full-time equivalents (FTEs), with an FTE defined as the estimated average hours worked by physicians working at least 8 hours per week. Hours worked per week varies by specialty, thus FTE definitions are slightly different across the specialties modeled. The Status Quo supply scenario models the continuation of base year numbers of new physicians trained and labor force participation patterns accounting for changing demographics of the physician workforce. The Status Quo demand scenario extrapolates national patterns of care use and delivery to Florida's current and projected future population accounting for demographics and prevalence of disease prevalence, health risk factors such as obesity and smoking, medical insurance coverage, household income levels, and metropolitan/nonmetropolitan residence location. Physician specialties were categorized into three specialty groupings: 1) traditional primary care, which includes family practice, general internal medicine, geriatric medicine, and pediatric medicine; 2) total primary care, which includes the four traditional primary care specialties plus emergency medicine, general surgery, and obstetrics & gynecology; and 3) non-primary care specialties, which includes the remaining 29 specialties modeled.

Key findings from the study include:

- Physician supply in 2019 was 55,083 FTEs and is projected to grow 3% (1,776 FTEs) and reach 56,859 FTEs by 2035. Supply growth varies by specialty, with supply for total primary care and traditional primary care physicians projected to increase by 3% and 4%, respectively, while non-primary care physician supply is projected to grow by 6%.

- Physician demand in 2019 is estimated at 58,918 FTEs, with demand projected to increase by 27% (15,866 FTEs), reaching 74,784 FTE physicians by 2035. This rapid increase in demand is driven largely

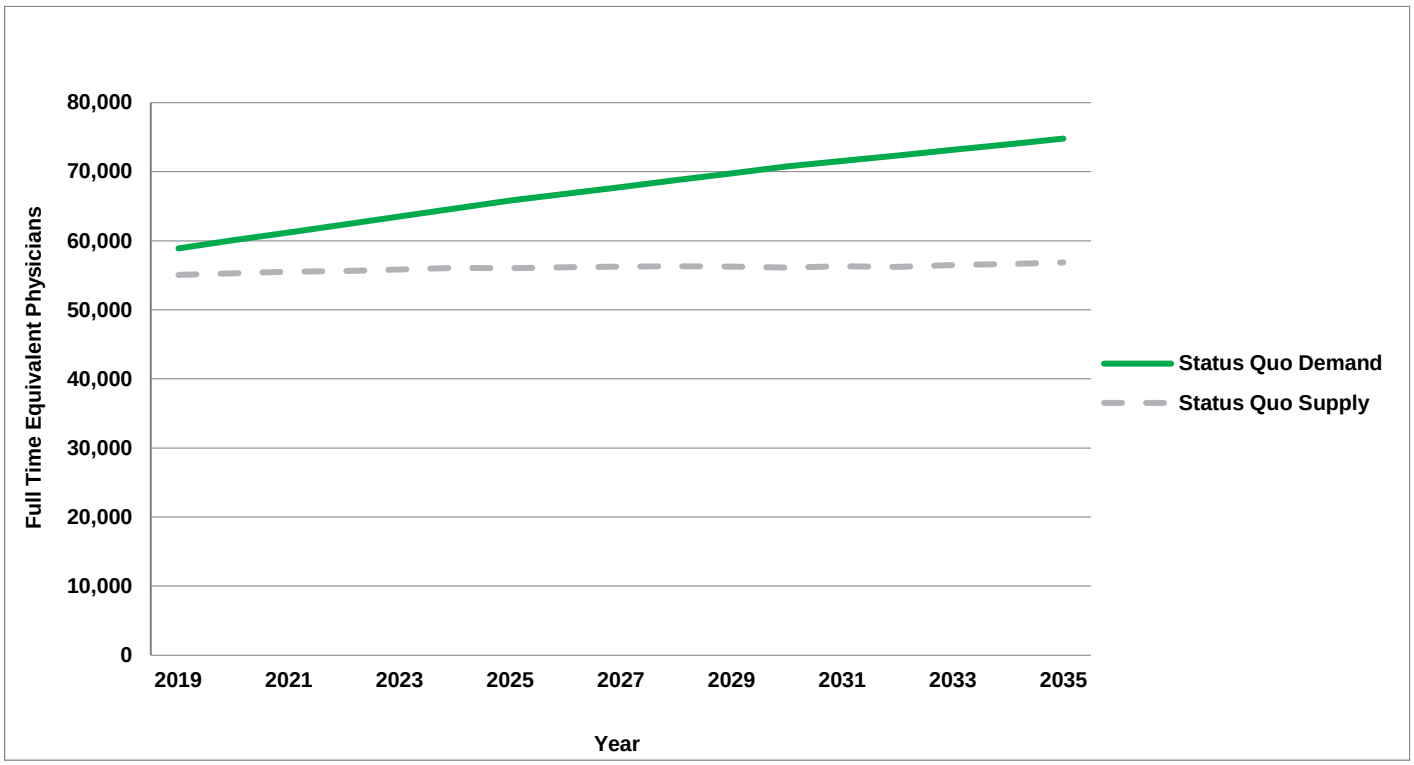
by population growth of 21%. The remaining 6% growth in demand is attributed to changing demographics, particularly population aging, under this modeled Status Quo scenario. The population age 65-74 is projected to increase by 32% and the population ages 75 and older is projected to increase by 74% over the projection period. This projected increase results in the population age 65 and above, which represents 20% of the state population in 2019, making up 26% of the state population by 2035. Consequently, demand growth is particularly high for specialties that predominately treat older patients.

- Estimated 2019 physician supply was approximately 3,835 FTEs lower than estimated demand, suggesting that supply in Florida was adequate to meet 93% of estimated demand relative to national averages. Supply adequacy varies by physician specialty. If current trends continue, projected 2035 supply and demand suggest a shortfall of about 17,924 FTE physicians (Exhibit ES-1) with supply sufficient to meet 77% of projected demand. Like with base year estimates, the projected shortfall varies by specialty and Florida Medicaid region.

    - **Primary Care Specialties:** Estimated demand for traditional primary care physicians in 2019 exceeded supply by 1,977 FTEs (an 88% estimated adequacy), driven by an estimated shortfall of 2,412 FTEs in family medicine with Florida having more general internists and pediatricians and fewer geriatricians relative to levels expected based on national averages. Total primary care had an estimate shortfall of 2,185 FTEs in 2019, a 91% estimated adequacy. Projected into the future, adequacy is expected to worsen across primary care specialties, with projected 2035 shortfalls totaling 7,872 FTEs (74% adequacy) for total primary care specialties, and 5,974 FTEs (72% adequacy) for traditional primary care specialties.

    - **Non-Primary Care Specialties:** Estimates for 2019 suggest that demand for non-primary care physicians exceeded supply by 1,650 FTEs, which translates to an adequacy of 95%. Supply appears more than adequate relative to the national average for radiology (134% adequacy; +869 FTEs), pathology (132% adequacy, +388 FTEs), and neurology (121% adequacy; +218 FTEs). Higher than national average supply of dermatologists (135% adequacy, +293 FTEs) could be due to higher levels of sun exposure in Florida which is not captured in the workforce model. Specialties where supply was substantially below levels based on estimated demand for services include: vascular surgery (69% adequacy, -113 FTEs, physical medicine and rehabilitation (70% adequacy; -316 FTEs), hematology and oncology (75% adequacy; -409 FTEs), and psychiatry (75% adequacy, -728 FTEs). Hospital medicine (69% adequacy; -794 FTEs) is also lower than expected, but this disparity might simply reflect data challenges with identifying hospitalists in licensure files. Projected to 2035, adequacy for the non-primary care specialty category is expected to decline to an overall 77% adequacy.

ES-1. Projected Total Supply and Demand for Physicians, 2019-2035



- Adequacy of Florida's physician supply varies across the state's 11 Medicaid Regions. Demand is calculated based on where the population resides. In Regions 10 and 11, for example, 2019 supply exceeds projected demand by 448 FTEs (109% adequacy) and 2,123 FTEs (137% adequacy) respectively. On a total FTE basis, Region 3 (-1,558 FTEs, 73% adequacy) and Region 8 (-1,412 FTEs, 76% adequacy) face the largest base year shortfall. Region 2 faces the largest shortage on a relative basis (-603 FTEs, 69% adequacy). Projected demand exceeds supply in 2035 in all but Region 11, suggesting that many people in Florida might need to travel substantial distances to receive care.

- Alternative supply scenarios were modeled to provide sensitivity analysis for estimates and assumptions regarding physician workforce participation (more or fewer hours worked per week, early or delayed retirement, increased and decreased numbers of annual new entrants). These modeled supply scenarios did not materially change the projected 2035 physician shortfall.

- A hypothetical demand scenario addressing healthcare utilization equity modeled the implications if barriers to accessing care were reduced for populations that traditionally have faced such barriers (i.e., people who are uninsured, residing in non-metropolitan areas, and racial and ethnic minority populations). If barriers to accessing healthcare services could be reduced, demand for physicians would rise and by 2035 there would be a shortfall of approximately 26,026 FTE physicians, which includes a shortfall of 10,594 FTEs in total primary care specialties and 15,432 FTEs in non-primary care specialties.

- Estimated 2019 supply of APRNs in Florida was 29,311 FTEs. This number is projected to nearly double over the projection period, reaching 57,780 FTEs (28,469 FTE or 97% growth) by 2035. While the 31% 2019-2035 projected APRN demand growth is well above the 21% rate of projected population growth, it

is significantly below the projected supply growth. In 2019 the supply of APRNs was an estimated 6,446 FTEs below the level that would be expected based on national average levels of care use and delivery. Due to the rapid growth in APRN supply, by 2035 there will be an estimated 10,765 FTEs beyond what is needed to maintain current national average physician-to-APRN staffing ratios.

This study updates key components of the workforce models compared to the 2015 Report. Key differences in model inputs and projections include the following:

- The 2015 Report projected that, starting from a 2013 supply of 42,610 FTEs, if the current (as of 2013) number of physicians entering Florida's workforce each year (2,230) remained unchanged, FTE physician supply would reach nearly 47,000 by 2019. This updated study found that the number of new entrants to Florida's workforce has been increasing over time, with about 2,324 now entering the workforce each year, and actual FTE supply in 2019 was 55,083. Thus, while 2013-2019 supply in the 2015 Report was projected to grow by about 4,400 FTEs absent policy intervention, actual supply growth over the time period was about 12,473 FTEs.

- Florida's population grew faster than the population projections used for the 2015 Report. Extrapolating a 2013 national average level of care (care use and delivery) to Florida's *projected* population in 2019 (20.9 million), the 2015 Report projected demand for 53,710 FTE physicians in 2019. Extrapolating a 2019 national average level of care to the *actual* population in 2019 (21.5 million), this updated study estimates demand for 58,918 FTEs. The higher population counts and updated national average level of care each contributed to the 5,208 FTE increase in estimated 2019 demand between the 2015 Report and this updated report. Another contributing factor is that the *actual* 2013-2019 projected growth in the population age 65-74 and 75 and older (31% and 27%, respectively) was larger than the *projected* 2013-2019 growth for the age cohorts (25% and 15%, respectively) used in the 2015 Report.

- Although the 2015 Report and this updated study use different benchmarks to estimate demand for physicians in Florida (i.e., 2013 national average versus 2019 national average level of care), the updated estimate of a shortfall of physicians in Florida (3,835 FTEs) is smaller than what was projected for 2019 in the 2015 Report (5,933 FTEs). The supply adequacy updates vary by Medicaid region.

Introduction

Early last decade, warnings were increasingly dire that the combination of low rates of medical residents per 100,000 population and a rapidly growing population aged 55 and over in Florida were converging to produce an impending crisis in availability of physician care in the state. In response, and in recognition that physicians are most likely to set up their medical practice in the areas in which they do their medical residency, the state created three new graduate medical education (GME) residency programs. These programs are designed to not only support the retention of GME residency slots but to incentivize the creation of new residency slots in medical specialties identified as inadequate to meet Florida's physician demand.

Specifically, in 2013 the state created and funded the Statewide Medicaid Residency Program (MRP) to help hospitals offset a portion of the financial losses incurred when providing services to Medicaid enrollees as well as the investment losses of operating physician residency programs. Implementation of this new program allowed the first glimpse in the number of GME residency FTEs in Florida.

In 2015, the Safety Net Hospital Alliance of Florida (Safety Net Alliance) published a report produced by IHS Markit (the "2015 Report") which assessed baseline and future projected supply and demand of full-time equivalent (FTE) physicians in Florida.[1] The 2015 Report concluded that the state-wide shortfall of primary care physicians was small and not projected to grow through 2025, but that adequacy of supply varied greatly at the local level. The state-wide shortfall of physician specialists was more substantial and forecast to persist through 2025. Adequacy by specialty type and geographic location were highly variable. This new information prompted state policy makers to create two additional GME programs. The GME Startup Bonus & Retention Programs dedicate public funding to incentivize the creation and retention of GME residencies in physician specialties identified in statewide shortfall as well as targeting funding to Medicaid regions and specialties with the most severe deficits. The current report, jointly supported by the Safety Net Alliance and the Florida Hospital Association, serves as an update to the 2015 Report, with the same mission—to provide base year (now 2019) and projected future supply and demand for physicians in Florida (through 2035)—using the latest available data inputs as well as updated modeling methods.

Signs indicate that a significant shortage is still looming, despite the enhanced GME funding having a positive impact. Between 2014-2015 and 2019-2020, the number of physicians licensed in Florida has grown by almost 10,000, or 22%, while the population of Florida grew 8% between 2014 and 2019. However, the Florida population tending to need the most medical care grew at much higher rates than the state average – almost 13% for 55- to 64-year-olds and almost 19% for those age 65 and older.[2] The Florida physician workforce is aging as well; almost 60% of Florida physicians are 50 years or older.[3] Based on responses to the latest Florida Physician Workforce Survey, almost 9% of Florida's physician workforce plans to retire in the next 5 years.[3] As of September 2020, more than 6.6 million Floridians live in 279 Health Professional Shortage Areas (HPSAs) for primary care in the state, with 1,793 additional physicians required in these areas to remove the HPSA designation.[4]

Using 2019 as a base year for modeling implies that the data sources used to derive physician workforce decisions and patient healthcare use patterns are pre-COVID-19. While the pandemic will likely have implications related to provider decisions, the way patients seek healthcare services, and the way services are delivered, the ongoing nature of the pandemic limits the degree to which short and long-term impacts can be identified. The effects of the pandemic will be an area of continuing research over the next several years. The pandemic has also increased awareness of the disparities that members of certain communities face in accessing high-quality care within the healthcare system. Given the heightened emphasis on this issue, a Reduced Barriers demand scenario was included in this report to provide an understanding of potential implications for the provider workforce demand

assuming certain barriers to accessing healthcare services are removed for members of historically underserved populations.

In the remaining sections of this report, we first summarize the projected 2019-2035 adequacy of physician supply by specialty within Florida. We then describe modeling methods, assumptions, data sources, and findings related to, respectively, the projections of physician demand and physician supply. Geographic variation in adequacy of physician supply by Florida's 11 Medicaid regions are presented. The discussion section summarizes the key study findings, discussed the potential implications of the COVID-19 pandemic on the future supply and demand for physicians, and discuss the similarities and differences between the updated report and findings presented in the 2015 Report. The report contains two appendices. The first describes the modeling methods and findings to assess adequacy of Florida's projected advanced practice registered nurse (APRN) supply. The second contains additional data tables.

Projected Adequacy of Physician Supply

Demand for physicians across the U.S. is projected to grow faster than supply leading to a potential nationwide shortfall of as many as 124,000 full time equivalent (FTE) physicians in 2034 under a range of scenarios modeled.[5] This includes a projected shortage of between 17,800 and 48,000 primary care physicians, between 15,800 and 30,200 surgeons, between 3,800 and 13,400 internal medicine and pediatric specialists, and between 10,300 and 35,600 physicians across the other specialties. The major contributors to rapidly growing demand for physicians are population growth and aging which are contributing to higher prevalence of disease. While physician supply is growing in many specialties, the physician workforce is aging with many physicians nearing traditional age of retirement. Other factors affecting future adequacy of physician supply include, healthcare reform and innovation, advances in medicine and technology, and increased use of advanced practice providers. Florida is experiencing many of these same national trends.

This section compares supply and demand projections for physicians in Florida starting in 2019 and projected to 2035. Later sections describe in more detail demand modeling and projections, supply modeling and projections, and geographic variation in physician supply and demand across Florida's 11 Medicaid regions. The scenarios summarized in this section are labeled as our "Status Quo" scenarios, which model what supply and demand are projected to be in 2035 in the absence of changes in physician training capacity, physician labor force participation patterns, and patterns of healthcare use and delivery. (Workforce projections under alternative supply and demand scenarios are described later). A comparison of the Status Quo supply and demand scenarios provides insights to the following questions:

1. How does Florida compare to the national average in having a sufficient number of physicians to meet demand for services taking into consideration those factors that are correlated with use of healthcare services in the state: demographics, disease prevalence, health risk behavior such as obesity and smoking prevalence, health insurance coverage, household income, and the large number of people visiting the state as tourists and part-time residents?

2. Will Florida have a sufficient number of physicians in the future to provide a level of care at least consistent with the current (2019) national average level of care?

Adequacy of physician supply is determined by subtracting physician demand from physician supply, where a negative result indicates a shortfall, and a positive result indicates a surplus. Adequacy can also be expressed in percentage terms by dividing projected supply by projected demand. For example, 100% adequacy indicates the projected supply of physicians is sufficient to provide a level of care equivalent to the 2019 national average. Estimates above (below) 100% indicate Florida has more than (less than) a sufficient number of physicians to provide the 2019 national average level of care.

Factors to consider when assessing physician supply adequacy include the following:

1. **Shortfall or surplus severity.** In modeling supply and demand for physicians, assumptions must be made about future provider workforce trends, population characteristics, care delivery, and the healthcare system more broadly, and these assumptions may result in some degree of forecast error. Thus, if projections show supply and demand sufficiently close to one another, perhaps within the ±5% range, one might still consider supply and demand to be roughly in equilibrium. Slight imbalances tend not to cause large disruptions in access to care, though greater imbalances can impede access to care or contributed to inefficiencies in care delivery. Likewise, demand is calculated based on a 2019 national average level of care. For some specialties, such as psychiatry, the current national average level of care might be considered insufficient.

2. **Specialty focus overlap across physician specialties.** Overlap exists in the focus of many physician specialties. For example, general internists often provide services that are also provided by internal medicine subspecialties. This can be especially true in rural or other areas where there are fewer specialist providers. In the presence of an increasing workforce shortage or surplus, physicians in particular specialties may shift the services they provide in order to optimize the care provided to their patients.

3. **Contributions from advanced practice providers and other members of the care team.** While the modeling in this report applies national patterns of healthcare delivery (and thus the national average usage of APRNs, physician assistants, and other members of the care team), Florida's usage of these types of providers may differ somewhat compared to national patterns. In addition, in light of recent Florida legislation allowing more practice autonomy for certified registered nurse anesthetists (CRNAs) and for nurse practitioners (NPs) in primary care, patterns of care delivery for these professions in the state are likely evolving.[6] To the extent that Florida uses, or will use in the future, more (fewer) non-physician providers relative to national patterns, the demand for physicians may be lower (higher) than the projections in this report.

4. **Market correction mechanisms.** This report projects physician supply and demand into the future in absence of any market correction mechanisms or supply-side constraints. In the absence of market constraints, shortages and surpluses tend to correct themselves. For example, a shortage in a particular specialty may be reduced when some medical students react to perks offered to physicians in the shortage specialty by self-selecting into that (relatively more attractive) specialty. Physicians in specialty areas with a current or projected abundance of supply may opt to move out of Florida to areas of lower competition, while those in specialties with current or future projected shortages may be more likely to come to Florida from out-of-state. These unmodeled corrections can help prevent shortages or surpluses in particular specialty areas from becoming too severe. However, capacity to train new physicians is relatively fixed in the short term unless resources are made available to expand capacity. Likewise, the length of time to train new physicians underscores the importance of understanding whether supply is expected to fall short of or exceed projected demand at least a decade into the future.

The 36 physician specialty categories modeled in this report are categorized into two broader groups – *primary care specialties* and *non-primary care specialties*. The primary care specialties are further divided into two sub-categories: (1) *Traditional primary care* comprises family medicine, general internal medicine, pediatric medicine, and geriatric medicine (2) *Expanded primary care* includes the specialties in traditional primary care, plus emergency medicine, general surgery, and obstetrics and gynecology. The non-primary care specialties contain all other physician specialties modeled.[a]

Estimates of supply and demand suggest that in 2019 there were approximately 3,835 FTE physicians fewer than required to provide a national average level of care (Exhibit 1). That is, physician supply in Florida was estimated to be sufficient to provide a level of care approximately equal to 93% of the national average. Of this estimated shortfall, 2,185 FTEs were in primary care specialties and 1,650 FTEs were in non-primary care specialties. Within the primary care specialties family medicine is estimated to have the largest 2019 shortfall (2,412 FTEs) relative to the national average, though higher adequacy of general internal medicine (+326 FTEs) and pediatric medicine (+274 FTEs) partially compensate for lower supply of family medicine. The obstetrics and gynecology specialty appears to be close to equilibrium. General surgeon supply appears to be 182 FTEs higher than levels

[a] The non-primary care specialties include: allergy & immunology, anesthesiology, cardiology, colorectal surgery, dermatology, endocrinology, gastroenterology, hematology & oncology, hospital medicine, infectious diseases, neonatology, nephrology, neurological surgery, neurology, ophthalmology, orthopedic surgery, otolaryngology, pathology, physical medicine & rehabilitation, plastic surgery, psychiatry, pulmonology & critical care, radiation oncology, radiology, rheumatology, thoracic surgery, urology, vascular surgery, and other specialties.

required to provide a national average level of care, helping to compensate for shortfalls in other surgical specialties.

Among surgical specialties, urology, plastic surgery, and orthopedic surgery supply appear relatively consistent with estimated demand based on a national average level of care use and delivery, while for vascular surgery (113 FTE shortfall), colorectal surgery (28 FTE shortfall), and neurological surgery (41 FTE shortfall) estimated demand exceeds supply. Thoracic surgery is estimated to have an abundance of approximately 50 FTEs. Higher supply of dermatologists (135% adequacy, +293 FTEs) might be attributed to higher levels of sun exposure compared to the national average. The AIM at Melanoma Foundation reports that Florida ranks second in the nation in highest rate of new melanoma cases, with nearly one in ten (9.2%) of Floridians having been diagnosed with skin cancer.[7] Other specialties with the most notable estimated abundance of physicians include radiology (134% adequacy), pathology (132% adequacy), and neurology (121% adequacy). Additional specialties showing notable shortfalls include hospital medicine (69% adequacy), vascular surgery (69% adequacy), physical medicine and rehabilitation (70% adequacy), hematology and oncology (75% adequacy), and psychiatry (75% adequacy). The estimated shortfall in hospital medicine could be a data artifact, as some primary-care trained hospitalists might inadvertently be classified as primary care physicians in the licensure files.

Exhibit 1. Estimated Full Time Equivalent Supply and Demand by Physician Specialty, 2019

Specialty	Supply	Demand [a]	Supply-Demand	% Adequacy [b]
Primary Care	**22,136**	**24,321**	**-2,185**	**91%**
Traditional Primary Care	**14,649**	**16,626**	**-1,977**	**88%**
Family Medicine	4,399	6,811	-2,412	65%
General Internal Medicine	6,182	5,856	326	106%
Pediatric Medicine	3,559	3,285	274	108%
Geriatric Medicine	509	674	-165	76%
Emergency Medicine	3,045	3,450	-405	88%
General Surgery	1,867	1,685	182	111%
Obstetrics & Gynecology	2,575	2,560	15	101%
Non-Primary Care	**32,947**	**34,597**	**-1,650**	**95%**
Allergy & Immunology	271	247	24	110%
Anesthesiology	3,391	3,070	321	110%
Cardiology	2,456	2,366	90	104%
Colorectal Surgery	146	174	-28	84%
Dermatology	1,120	827	293	135%
Endocrinology	511	659	-148	78%
Gastroenterology	1,284	1,184	100	108%
Hematology & Oncology	1,199	1,608	-409	75%
Hospital Medicine	1,789	2,591	-802	69%
Infectious Diseases	654	860	-206	76%
Neonatology	372	383	-11	97%
Nephrology	745	894	-149	83%
Neurological Surgery	396	437	-41	91%
Neurology	1,256	1,038	218	121%
Ophthalmology	1,500	1,280	220	117%
Orthopedic Surgery	1,756	1,630	126	108%
Other Specialties	1,131	2,539	-1,408	45%
Otolaryngology	720	620	100	116%
Pathology	1,602	1,214	388	132%
Physical Medicine & Rehabilitation	727	1,043	-316	70%
Plastic Surgery	722	707	15	102%
Psychiatry	2,157	2,885	-728	75%
Pulmonology & Critical Care	1,337	1,343	-6	100%
Radiation Oncology	527	550	-23	96%
Radiology	3,398	2,529	869	134%
Rheumatology	374	438	-64	85%
Thoracic Surgery	395	345	50	114%
Urology	762	772	-10	99%
Vascular Surgery	249	362	-113	69%
Florida Total	**55,083**	**58,918**	**-3,835**	**93%**

Source: IHS Markit

Note: [a] Demand is estimated based on national patterns of healthcare use and delivery applied to the population in Florida and controlling for differences in demographics, disease prevalence, health risk behavior, health insurance, and household income. [b] Adequacy is calculated as supply divided by demand, and indicates whether supply is sufficient to provide a level of care consistent with the national average in 2019.

Overall, demand for physicians is projected to grow at a faster rate than supply, with the shortfall projected to grow each subsequent year to approximately 17,924 FTEs by 2035 (Exhibit 2 through Exhibit 5). This projected

shortfall suggests that in 2035 the supply of physicians would be sufficient to meet 76% of projected demand. The 28% growth in physician demand under the Status Quo scenario is explained mainly by the projected 21% population growth between 2019 and 2035, with the remaining 7% growth attributed to population aging. In contrast, supply is projected to grow by 3% during this period reflecting that the number or new physicians entering the workforce are to some extent offset by physician retirements and declining average hours worked as physicians near retirement.

Findings are similar for the primary care specialties, with 2035 shortfall amounts reaching 5,974 FTEs and 7,872 FTEs for traditional and expanded primary care specialties, respectively (Exhibit 3 and Exhibit 5). Likewise, adequacy projections for non-primary physicians follow a similar trend, with the current shortfall projected to worsen each projection year, reaching 10,052 FTEs by 2035 (Exhibit 4 and Exhibit 5).

Exhibit 2. Projected Total Supply and Demand for Physicians, 2019-2035

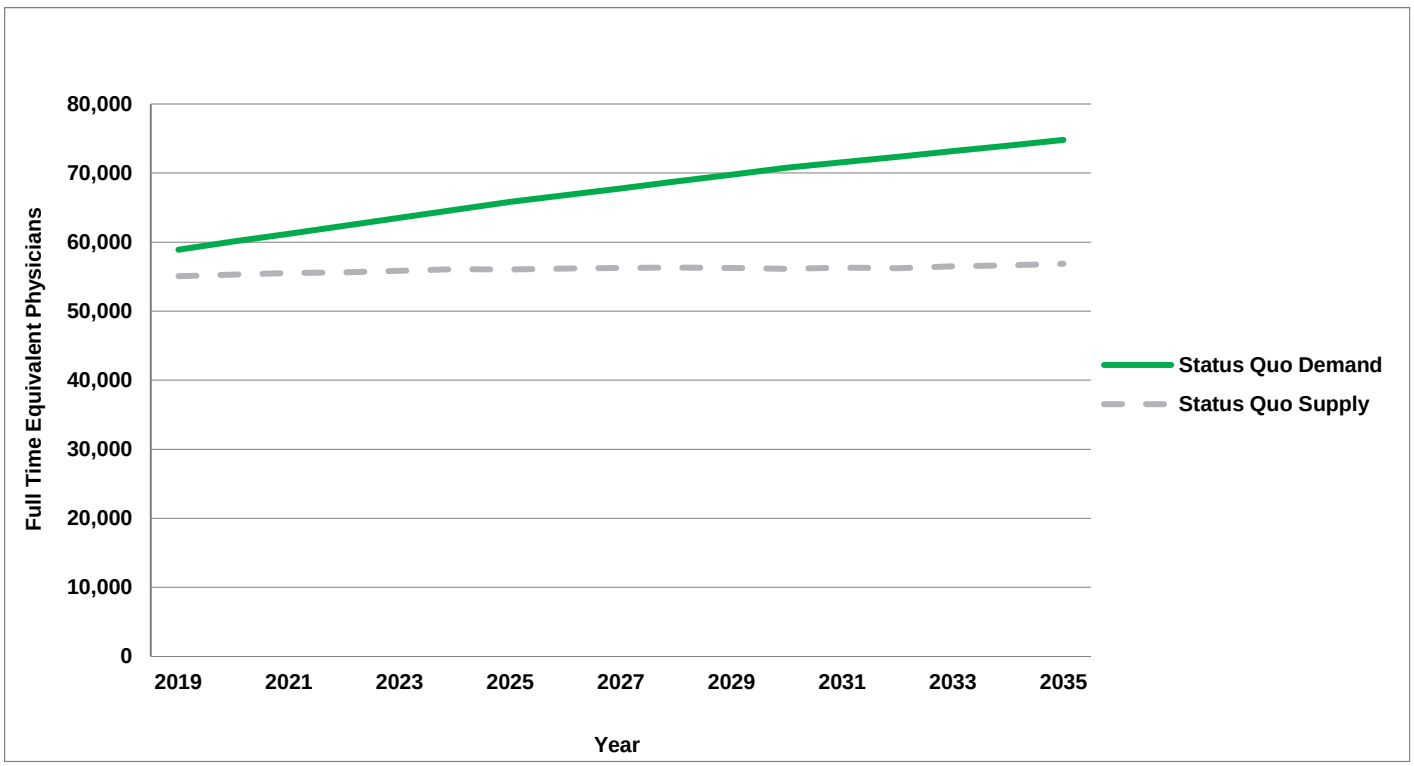


Exhibit 3. Projected Total Supply and Demand for Primary Care Physicians, 2019-2035

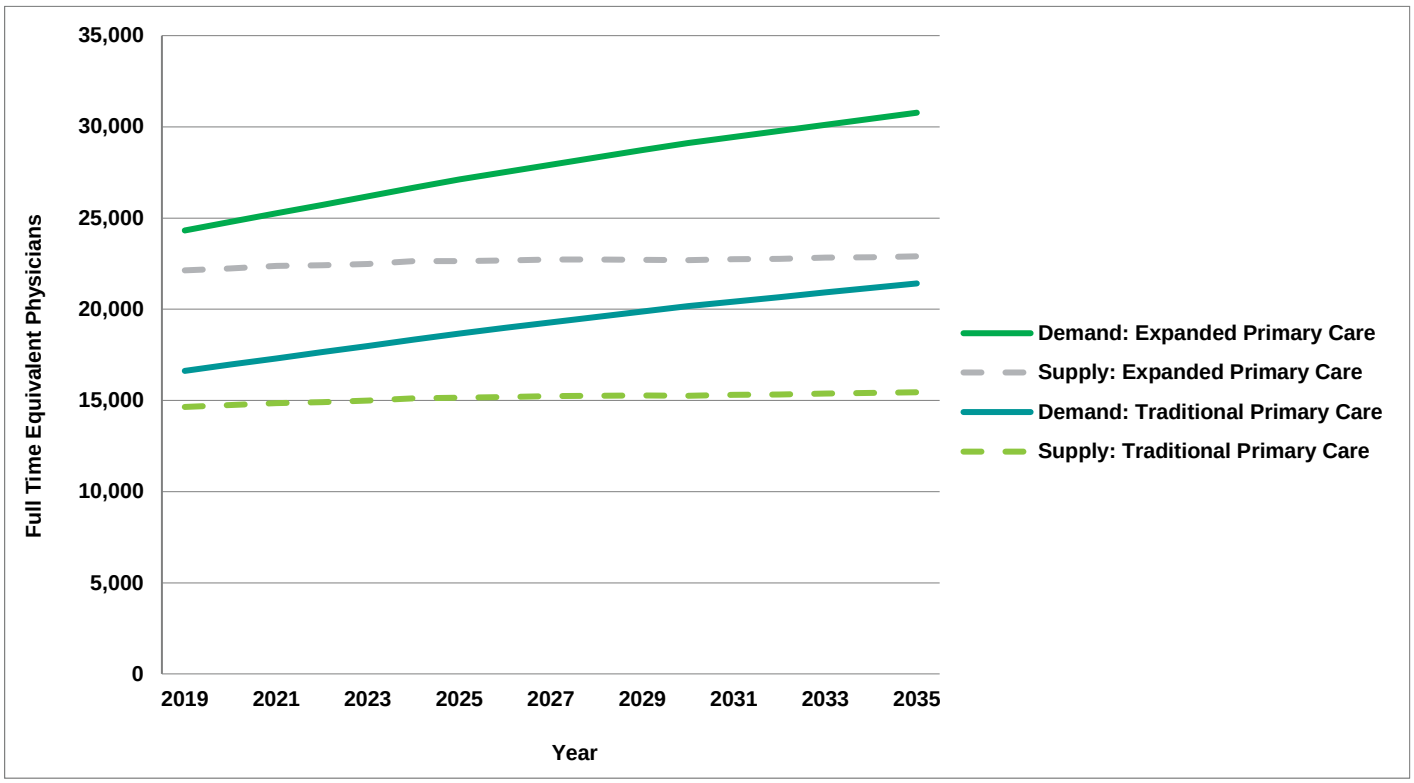
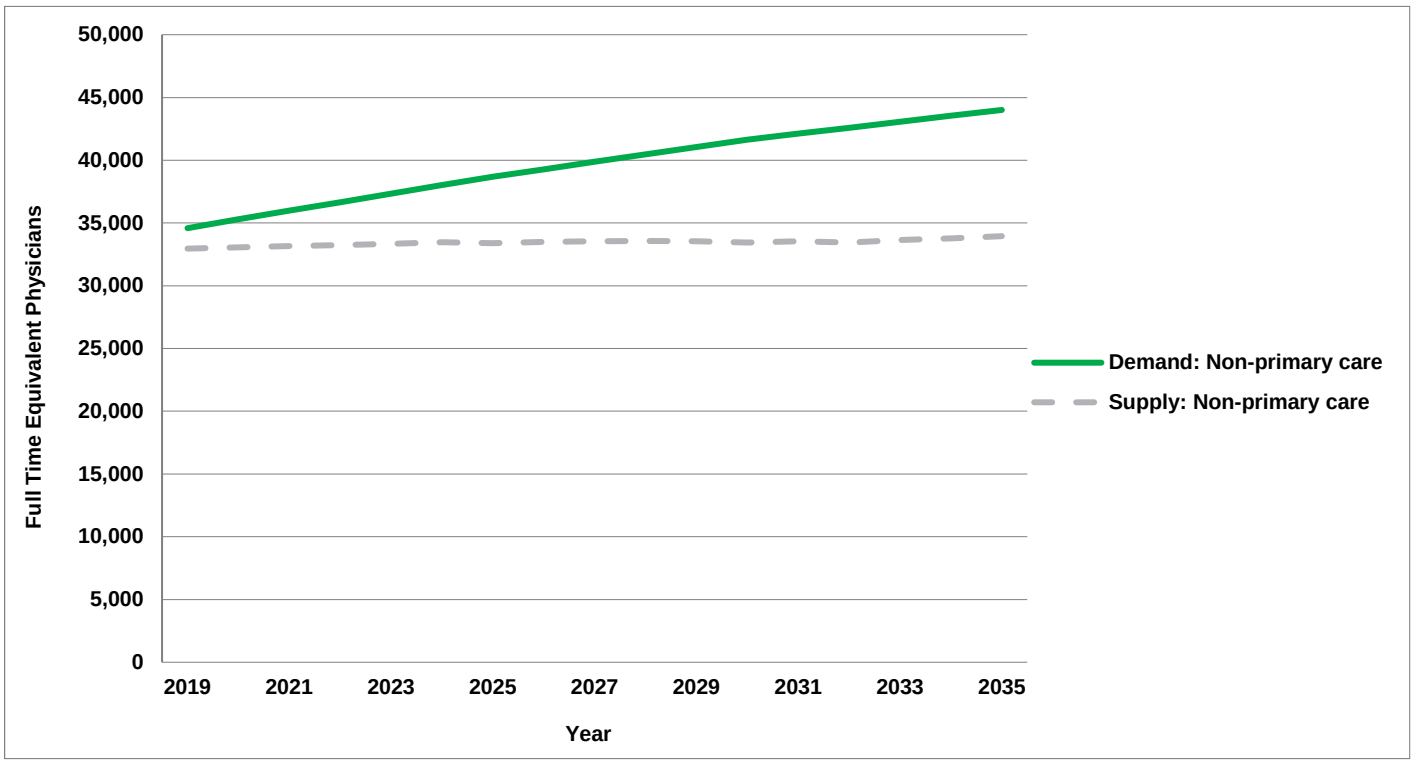


Exhibit 4. Projected Total Supply and Demand for Non-Primary Care Physicians, 2019-2035



The projected imbalances between supply and demand in 2035 vary by specialty (Exhibit 5). Overall, supply is projected to be sufficient to meet about 76% of the projected demand for services, including 74% of demand for primary care services under the expanded definition of primary care, and 77% of the non-primary care services. Some adequacy projections run counter to national projections. For example, at the national level the number of physicians in emergency medicine and hospital medicine should be more than sufficient to meet demand for services, while in Florida there will be insufficient numbers in these specialties if current trends continue.[5,8] Hence, Florida likely can attract physicians from out-of-state to help fill this gap. On the other hand, at the national level there is a projected growing shortfall of surgeons that will increase the difficulty of attracting new surgeons to Florida and retaining those practicing in the state.

Exhibit 5. Projected Full Time Equivalent Supply and Demand by Physician Specialty, 2035

Specialty	Supply	Demand [a]	Supply-Demand	% Adequacy [b]
Primary Care	**22,900**	**30,773**	**-7,872**	**74%**
Traditional Primary Care	**15,440**	**21,413**	**-5,974**	**72%**
Family Medicine	4,261	8,648	-4,387	49%
General Internal Medicine	6,917	7,797	-881	89%
Pediatric Medicine	3,824	3,870	-46	99%
Geriatric Medicine	437	1,097	-660	40%
Emergency Medicine	2,776	4,295	-1,519	65%
General Surgery	2,228	2,111	117	106%
Obstetrics & Gynecology	2,457	2,954	-497	83%
Non-Primary Care	**33,959**	**44,011**	**-10,052**	**77%**
Allergy & Immunology	276	284	-7	97%
Anesthesiology	3,164	3,818	-654	83%
Cardiology	2,644	3,276	-632	81%
Colorectal Surgery	164	234	-70	70%
Dermatology	1,111	1,044	67	106%
Endocrinology	587	834	-247	70%
Gastroenterology	1,284	1,486	-202	86%
Hematology & Oncology	1,654	2,091	-437	79%
Hospital Medicine	1,993	3,427	-1,434	58%
Infectious Diseases	429	1,167	-737	37%
Neonatology	367	454	-87	81%
Nephrology	758	1,272	-514	60%
Neurological Surgery	458	570	-112	80%
Neurology	1,485	1,314	170	113%
Ophthalmology	1,676	1,731	-55	97%
Orthopedic Surgery	1,751	1,961	-209	89%
Other Specialties	1,063	3,223	-2,160	33%
Otolaryngology	850	771	79	110%
Pathology	1,834	1,605	228	114%
Physical Medicine & Rehabilitation	832	1,313	-481	63%
Plastic Surgery	602	849	-247	71%
Psychiatry	2,037	3,267	-1,230	62%
Pulmonology & Critical Care	1,150	1,798	-648	64%
Radiation Oncology	511	715	-204	71%
Radiology	3,623	2,979	644	122%
Rheumatology	446	560	-114	80%
Thoracic Surgery	329	453	-124	73%
Urology	572	1,030	-459	55%
Vascular Surgery	308	485	-176	64%
Florida Total	**56,859**	**74,784**	**-17,924**	**76%**

Source: IHS Markit

Note: [a] Demand is estimated based on national patterns of healthcare use and delivery applied to the population in Florida and controlling for differences in demographics, disease prevalence, health risk behavior, health insurance, and household income. [b] Adequacy is calculated as supply divided by demand, and indicates whether supply is sufficient to provide a level of care consistent with the national average in 2019.

Projected Physician Demand

Overview and Methods

Projections of current and projected future demand for healthcare services and physicians were generated using an updated version of the microsimulation model used for the previous (2015) Florida physician workforce study. This model is also used by the federal government, state governments, associations, and health systems to forecast health workforce demand.[5,9,10] The starting point for modeling is understanding the characteristics of Florida's current population. The year 2019 was chosen as the starting point for modeling future demand primarily because the most recent detailed data available on the population characteristics and health risk factors for Floridians come from the 2019 American Community Survey (ACS) and the 2019 Behavioral Risk Factor Surveillance System (BRFSS). Population demographics, disease prevalence, health behavior such as prevalence of obesity and smoking, socioeconomic characteristics, and distribution across rural and urban areas are all characteristics which can influence physician demand. The second step is to link population characteristics to estimated use of healthcare services. Finally, demand for healthcare services must be converted to demand for physicians, and this demand is then projected into the future.

There is a subtle but important distinction between demand for healthcare services and need for healthcare services. *Demand* for healthcare services is defined as the level of services patients are willing to purchase at their current price. Current demand would thus represent the amount of healthcare services consumed in the base modeling year, plus any services not consumed due to any existing shortage of providers that would prevent a patient from accessing the care they would like to consume. *Need* for healthcare services is based strictly on a clinical/epidemiological assessment of whether a particular patient's situation warrants the use of particular healthcare services, combined with an assessment of the degree to which a particular amount of patient care is appropriate, whether or not the patient is able to pay for the services. Given the available data sources along with the uncertain nature of how need for healthcare services is defined, this study projects demand for healthcare services, and this demand for services is used for estimating the demand for physicians.

When estimating physician demand, demand for healthcare services is considered alongside care delivery patterns. The number of physicians in a particular specialty necessary to meet demand for services is based, in part, by adequacy of supply of physicians in other specialties whose scope of practice might overlap with this specialty. In addition, availability of other providers, such as APRNs, can affect demand for physicians to the extent that the two professions provide overlapping services. Similarly, technological advancements, changes in average patient acuity levels, or the mix of services patients seek can change the number of patients a physician can treat and thus affect the state's overall demand for physicians.

The Healthcare Demand Microsimulation Model used to create demand projections includes the following components:

1. **Population Database.** The starting point for estimating demand for healthcare providers in Florida is a population database, constructed with a de-identified sample of individuals living in each county in Florida, which is representative of actual Florida population characteristics. These population characteristics include demographics (age, sex, race and ethnicity), presence of diseases or health-related behaviors (arthritis, asthma, cardiovascular disease, diabetes, hypertension, history of heart attack, history of cancer, history of stroke, body weight status, and smoking status), socioeconomic factors and health insurance (household income, health insurance status and type, in a managed care plan), and county within Florida. Demographic distributions in the population file are benchmarked to the US Census Bureau's county-level estimates of 2019 population demographics by county, while health characteristics are benchmarked to county-level estimates of disease prevalence and risk factors published by the Florida

Department of Health.[11,12] Given that the population file was constructed at the county level, this allows for county-specific projections of demand for physicians, with county results aggregated to statewide and Medicaid region-level results for the purposes of this report.

2. **Healthcare use prediction equations.** Healthcare use prediction equations link the characteristics of individual patients to their expected use of healthcare services (i.e., physician office and outpatient visits, emergency visits, inpatient days, and home health visits). When these equations are applied to the population file, the result is the estimated base-year service demand in the state. These equations are derived from national data sources—the Medical Expenditure Panel Survey and the National Inpatient Sample. Thus, the healthcare use patterns used in this study represent national average patterns and are not Florida-specific. These national patterns, when applied to the Florida population, resulted in a modest underprediction of actual 2019 emergency department visits and inpatient bed days in the state, and thus were scaled to the actual 2019 levels to adjust for this differential. The underprediction likely reflects the large number of tourists and part-time residents who, while they spend time and use healthcare services in Florida, are not considered by the Census Bureau to be residents of the state.

3. **Care delivery patterns.** Like the healthcare use patterns, the care delivery patterns used for Florida in this study are assumed to be consistent with base year national patterns of care delivery, in terms of the number of physicians required to provide a set amount of services by medical specialty and care delivery setting. When projected into the future, these care delivery patterns are held at base year levels, given the uncertainties in how these patterns will change over time.

4. **Projections of population growth, aging, and demographic shifts.** Once base year county-level estimates of Florida healthcare use and physician demand are established, they are projected into the future using projections of population growth and demographic shifting. Population projections are produced by the University of Florida Bureau of Economic and Business Research and contain the projected future population size and demographic composition of each county in the state.[13]

Additional details on the microsimulation modeling methods are described elsewhere.[14,15]

Demand for physicians is modeled in this report under two scenarios: The Status Quo scenario and the Reduced Barriers scenario. The Status Quo scenario assumes that patterns of healthcare use and delivery in the base modeling year remain constant when projected into the future. Projected Status Quo scenario changes to physician demand over time discussed in this report account for the projected change in the population size and demographic (age, sex, and race/ethnicity) composition of each county in the state.

In light of the growing national and statewide emphasis on health equity[16,17], the Reduced Barriers scenario models the implications from a hypothetical reduction to the barriers that underserved populations face to receiving healthcare, and how this may affect demand for physicians. For the purposes of this scenario, underserved populations are defined as people who are uninsured, living in a non-metropolitan area, or a racial/ethnic minority. The population not considered underserved is defined as those who are insured, living in a metropolitan area, and non-Hispanic White. The underserved population is then assumed to use healthcare services at the same levels as individuals with similar characteristics (e.g. age, sex, presence of chronic diseases or other health behaviors) in the population not considered underserved. One important consideration, however, is that in reality, there are some individuals in the group assumed to face barriers who do not face barriers (and individuals in the group assumed not to face barriers who do face barriers). In addition, Non-Hispanic White, insured individuals living in metropolitan areas (the group considered not to be underserved) may in reality overuse or underuse certain services compared to what might be considered medically appropriate. Despite these potential limitations, this scenario gives some insights into the potential future demand for physicians if barriers

are reduced. From a modeling standpoint, this scenario builds on the Status Quo scenario in that projections into the future reflect projected changes to the size and demographic composition of the population.

Projected Service Demand by Specialty and Setting

Florida had approximately 21.4 million residents in 2019, and the size of the population is projected to increase by about 4.5 million residents during the 2019-2035 projection period, reaching about 26 million by 2035 (Exhibit 6). While the increasing population size alone is enough to suggest the sate population's demand for healthcare services should increase, the projected increase in the size of the population's eldest age cohorts is likely to further drive increases in demand for services. The statewide population is projected to grow 21% between 2019 and 2035, and the size of the 65 to 74 and 75 and over age groups is projected to grow at rates significantly above that average (32% and 74%, respectively). This projected increase results in the population age 65 and above, which represents 20% of the state population in 2019, making up 26% of the state population by 2035. The under 18, 18 to 44, and 45 to 64, age cohorts are projected to grow below the state average, with 2019 to 2035 projected growth of 18%, 17%, and 5%, respectively. These projections suggest that physician specialties which care disproportionately for older patients (e.g., geriatric medicine, nephrology, cardiology) are likely to experience higher projected growth, while specialties which cater to younger patients (e.g. pediatric medicine, neonatology) are likely to experience growth rates lower than the state average.

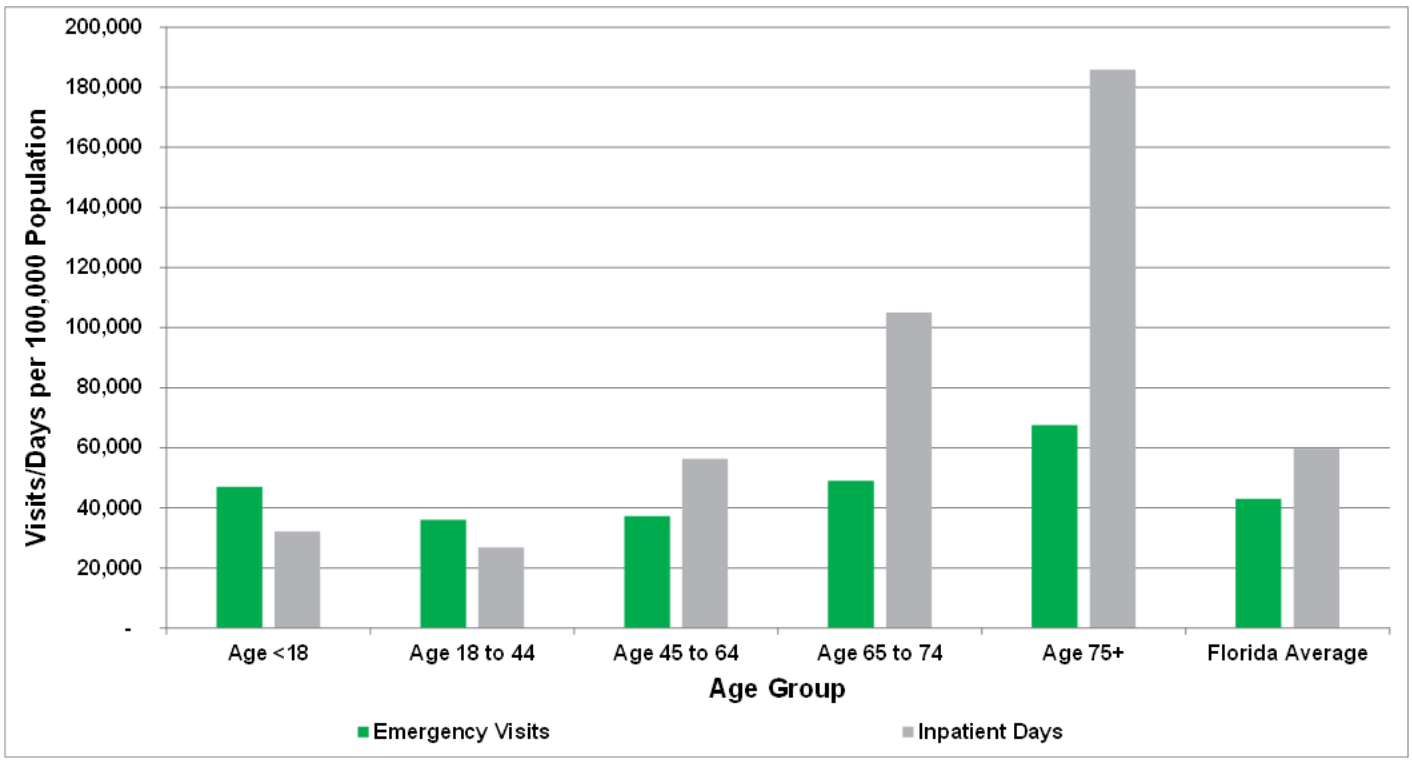
Exhibit 6. Projected Population Growth and Aging in Florida, 2019-2035

	2019 Population		2035 Population		2019-2035 Growth	
	Count	% of Population	Count	% of Population	Growth	% Growth
Age under 18	4,213,000	20%	4,982,000	19%	769,000	18%
Age 18 to 44	7,159,000	33%	8,383,000	32%	1,224,000	17%
Age 45 to 64	5,608,000	26%	5,867,000	23%	259,000	5%
Age 65 to 74	2,465,000	11%	3,248,000	12%	783,000	32%
Age 75+	2,032,000	9%	3,540,000	14%	1,508,000	74%
Total	**21,477,000**	**100%**	**26,020,000**	**100%**	**4,543,000**	**21%**

Source: Projected population growth rates from the University of Florida Bureau of Economic and Business Research were applied to 2019 population estimates from the American Community Survey to calculate the size of the future population.

The contribution of population aging and growth in demand for services is illustrated by the differences in modeled emergency visits and hospital bed days per 100,000 population in Florida (Exhibit 7). Individuals age 75 and older use both emergency department and inpatient services at rates higher than all other age groups. Compared with a Florida average utilization per 100,000 population of approximately 43,000 emergency visits and 60,000 bed days, utilization within the age 65-74 cohort is 14% and 76% higher than the Florida average emergency department and inpatient utilization, respectively, while utilization within the 75 and older cohort is 57% and 212% higher for the respective settings. Thus, as the aging effect of the projected changes to the Florida population takes hold, it is likely to result in significant increases in demand for healthcare services (and consequently for physicians), in particular in care settings used disproportionately by older age groups.

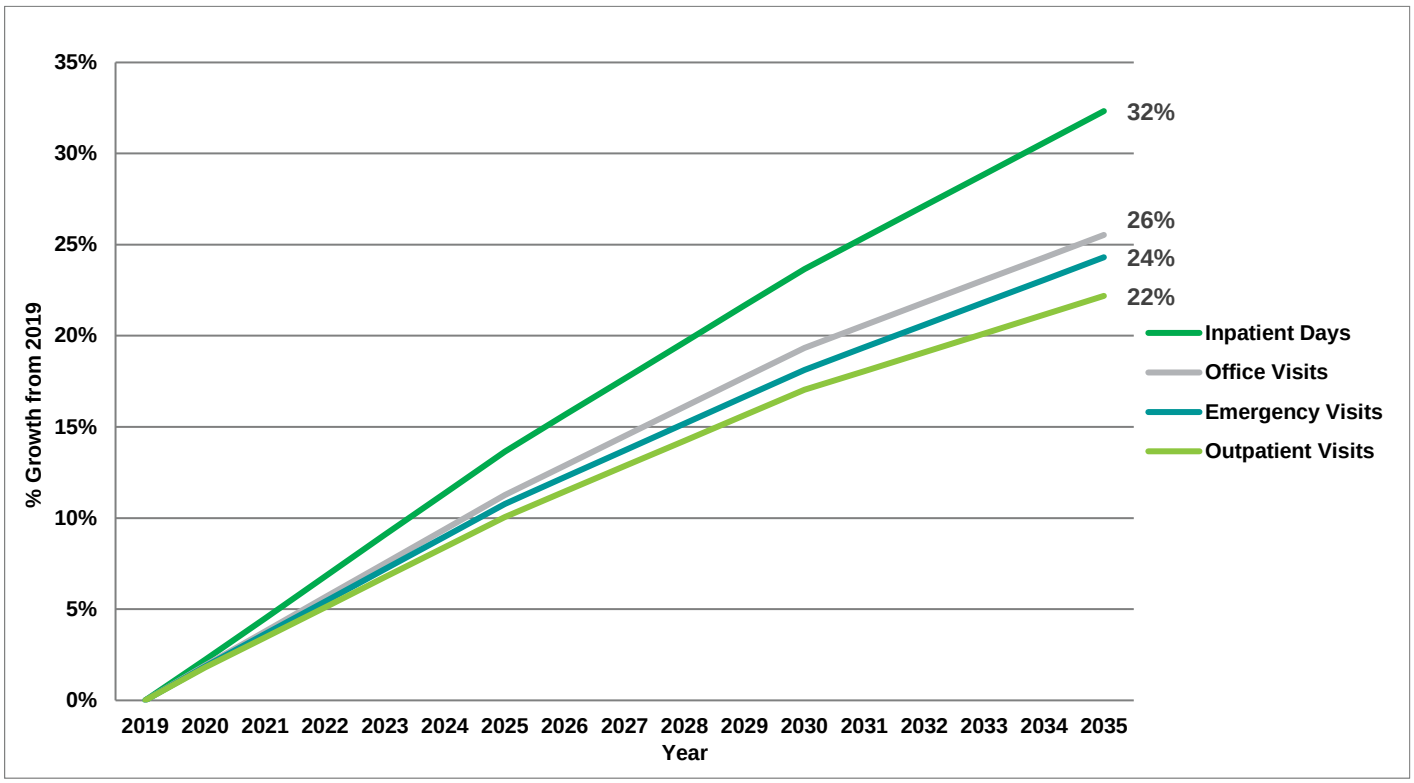
Exhibit 7. Emergency and Inpatient Utilization Rates by Population Age Group, 2019



Source: Inpatient and Emergency Department Data: 2019 Florida Agency For Health Care Administration emergency department and hospital discharge data; Population Data: University of Florida Bureau of Economic and Business Research.
Note: Cited 2019 bed days exclude hospitalizations in psychiatric hospitals, intermediate residential treatment facilities, long term care hospitals, and rehabilitation hospitals.

Driven by Florida's projected population growth and aging, 2019-2035 growth in demand for healthcare services is projected to range from 22% in the outpatient setting to 32% in the inpatient setting, with growth in the office and emergency department settings projected to be 26% and 24%, respectively (Exhibit 8). Projections into the future assume 2019 patterns of healthcare use continue. Patterns that have gradually changing over time (for example, services shifting from inpatient settings to outpatient settings) may not be reflected in these projections if the trends continue to change. Modeling of efforts to shift care from hospital to appropriate ambulatory settings, and to provide more preventive care and improve population health metrics often do not reduce overall demand for physicians.[5] Rather, such efforts tend to shift care among specialty groups (e.g., from emergency physicians and hospitalists to primary care and other office-based specialties) of shift care to the future. For example, efforts to improve health can reduce mortality, which leads to a larger and older population still living in the future thus increasing future demand for physicians.[5]

Exhibit 8. Projected Growth in Service Demand by Care Setting, 2019-2035



Projected Statewide Physician Demand by Specialty

Driven in large part by the projected increase in the state population size and population aging, demand for physicians across all specialties is projected to increase between 2019 and 2035 (Exhibit 9 and Exhibit 10). Under the Status Quo scenario, total demand for physicians is projected to increase by 15,866 FTEs (27%) over the projection period, which includes an additional 6,452 FTE primary care providers – 4,787 of which come from the traditional primary care specialties – and an additional 9,413 FTE non-primary care physicians. In percentage terms, projected growth in the primary care and non-primary care specialties are growing at similar rates – 27% for both categories – while the traditional primary care specialties are projected to grow at a slightly higher 29% across the projection period.

Projected demand for physicians differs considerably across specialties, and this variation can often be explained by the characteristics of the patients who disproportionately use services from particular specialties, and how these characteristics are projected into the future. For example, several of the specialties with the highest percentage demand growth are ones which disproportionately serve older populations (e.g., geriatric medicine, nephrology, and cardiology); demand for these specialties is projected to grow 63%, 42%, and 38%, respectively. These findings closely align with the population aging effect present in the population projections. Similarly, demand for several specialties which generally care for younger age groups are projected to experience growth rates lower than the state average of 28% (e.g., demand for neonatology and pediatric medicine are projected to both grow at 18% over the forecast period). Demand for psychiatry is projected to grow slowly based on current utilization patterns, though greater recognition of need for mental health services coupled with reimbursement or

policy changes could increase the demand for psychiatrists substantially beyond the increase accounting solely for changing demographics.

In absolute terms, the specialties with the largest projected 2019-2035 FTE demand growth include general internal medicine (1,941 FTEs) and family medicine (1,837 FTEs) within primary care, which together account for 24% of the projected increase in physician demand. Non-primary care specialties with the largest projected demand growth include cardiology (910 FTEs), hospital medicine (835 FTEs), and anesthesiology (748 FTEs). The specialties with the lowest projected growth include allergy and immunology (37 FTEs), colorectal surgery (60 FTEs) and neonatology (70 FTEs), however these are all smaller specialties. These demand growth numbers can be added to current (2019) shortfall numbers to calculate total number of physicians required to achieve a national average level of care.

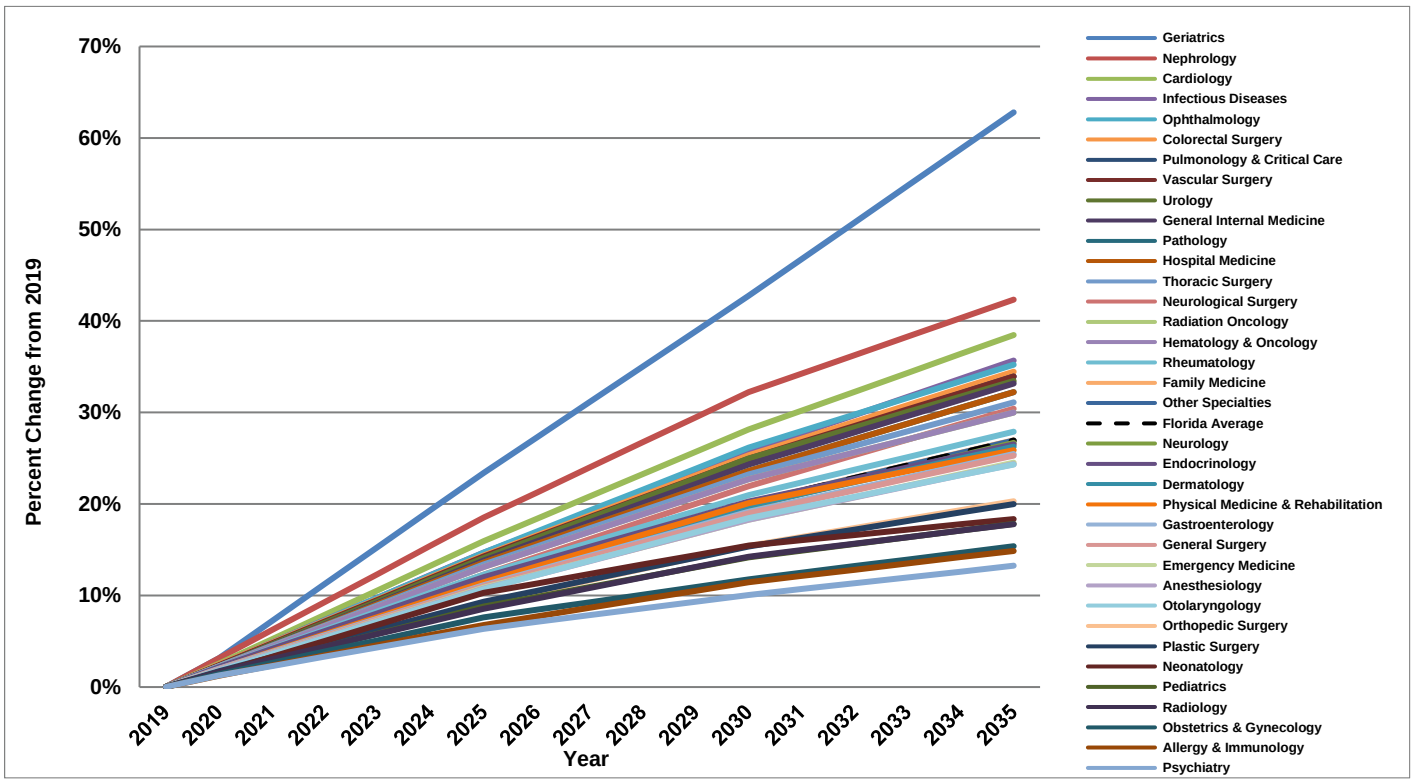
Under the Reduced Barriers scenario, if assumptions went into effect immediately in the base year, 2019 physician demand would have been 5,583 FTEs (10%) higher statewide relative to the Status Quo demand scenario. Under this scenario, 2019 demand for emergency medicine would have been lower by 211 FTEs (6%). However, for the majority of specialties demand would have increased with the largest increases projected for psychiatry (1,113 FTEs) and general internal medicine (659 FTEs). Projecting reduced access barriers into the future resulted in 2035 statewide physician demand that is 8,102 FTEs (11%) higher than 2035 Status Quo demand.

Exhibit 9. Projected Growth in Florida's FTE Physician Demand, 2019-2035

	Status Quo Scenario				Reduced Barriers Scenario			
							Increase Relative to Status Quo Scenario	
Specialty	2019	2035	Growth 2019-2035	% Growth 2019-2035	2019	2035	2019	2035
Primary Care	**24,321**	**30,773**	**6,452**	**27%**	**26,295**	**33,494**	**1,974**	**2,721**
Traditional Primary Care	**16,626**	**21,413**	**4,787**	**29%**	**18,341**	**23,741**	**1,715**	**2,328**
Family Medicine	6,811	8,648	1,837	27%	7,344	9,319	533	670
General Internal Medicine	5,856	7,797	1,941	33%	6,515	8,761	659	964
Pediatric Medicine	3,285	3,870	586	18%	3,742	4,430	457	559
Geriatric Medicine	674	1,097	423	63%	740	1,232	66	135
Emergency Medicine	3,450	4,295	845	25%	3,239	4,054	-211	-241
General Surgery	1,685	2,111	426	25%	1,890	2,415	205	304
Obstetrics & Gynecology	2,560	2,954	394	15%	2,824	3,284	264	331
Non-Primary Care	**34,597**	**44,011**	**9,413**	**27%**	**38,476**	**49,391**	**3,879**	**5,380**
Allergy & Immunology	247	284	37	15%	340	405	93	121
Anesthesiology	3,070	3,818	748	24%	3,498	4,421	428	603
Cardiology	2,366	3,276	910	38%	2,485	3,441	119	165
Colorectal Surgery	174	234	60	34%	158	213	-16	-22
Dermatology	827	1,044	217	26%	1,074	1,402	247	357
Endocrinology	659	834	175	27%	721	918	62	84
Gastroenterology	1,184	1,486	301	25%	1,289	1,626	105	140
Hematology & Oncology	1,608	2,091	482	30%	1,583	2,064	-25	-26
Hospital Medicine	2,591	3,427	835	32%	2,567	3,421	-24	-6
Infectious Diseases	860	1,167	307	36%	841	1,151	-19	-16
Neonatology	383	454	70	18%	353	418	-31	-36
Nephrology	894	1,272	378	42%	631	873	-263	-400
Neurological Surgery	437	570	133	30%	603	823	166	253
Neurology	1,038	1,314	277	27%	1,152	1,479	114	165
Ophthalmology	1,280	1,731	451	35%	1,407	1,914	127	183
Orthopedic Surgery	1,630	1,961	331	20%	1,975	2,434	345	473
Other Specialties	2,539	3,223	684	27%	2,791	3,572	252	349
Otolaryngology	620	771	151	24%	795	1,012	175	240
Pathology	1,214	1,605	391	32%	1,203	1,603	-11	-3
Physical Medicine & Rehabilitation	1,043	1,313	270	26%	1,164	1,467	120	154
Plastic Surgery	707	849	141	20%	839	1,032	132	183
Psychiatry	2,885	3,267	382	13%	3,998	4,687	1,113	1,420
Pulmonology & Critical Care	1,343	1,798	456	34%	1,357	1,833	15	35
Radiation Oncology	550	715	165	30%	542	706	-9	-9
Radiology	2,529	2,979	450	18%	3,138	3,852	609	873
Rheumatology	438	560	122	28%	416	527	-22	-33
Thoracic Surgery	345	453	107	31%	339	452	-6	0
Urology	772	1,030	258	33%	861	1,162	89	132
Vascular Surgery	362	485	123	34%	356	483	-6	-2
Florida Total	**58,918**	**74,784**	**15,866**	**27%**	**64,771**	**82,885**	**5,853**	**8,102**

Source: IHS Markit

Exhibit 10. Projected Growth in Florida Status Quo FTE Physician Demand by Specialty



Projected Physician Supply

Overview and Methods

The Health Workforce Supply Model used to create physician supply projections uses a microsimulation approach to project the size and composition of the current workforce into the future. The model uses prediction equations and probabilities to simulate career progression decisions for each physician working in the state. Each year of the simulation, newly graduated physicians enter the workforce, the current providers age one year, assumed changes are applied to the number of weekly hours providers work, provider retirement probabilities are updated to reflect the providers' new ages, and some providers are modeled to enter and leave the state due to cross-state migration. The methods and assumptions used throughout this process are described in this section and are similar to those used in the 2015 Report, with data sources updated where more recent data were available. Additional details on the microsimulation modeling methods are described elsewhere.[14,15]

The majority of the data used to identify workforce characteristics of the current population of physicians comes from de-identified licensure data provided by the Florida Department of Health. In addition to the licensure data, the Department of Health administers an anonymous survey that all Florida physicians complete during license renewal, which occurs every two years. This survey collects information on physician practice characteristics (e.g., specialty, hours worked, retirement and migration intentions, characteristics of patients treated). This survey data was used to model labor force decisions of physicians (e.g., estimated hours worked per week, annual probability of leaving the Florida workforce).

The first step in the supply modeling process is creation of a de-identified, representative sample of physicians in Florida which includes a separate record for each provider active in Florida. This base year starting supply file is constructed using information available in the licensure data. Data elements extracted from the licensure data for the purpose of modeling physician supply include primary and secondary specialty, age, sex, county of primary practice location, year first licensed in Florida, and year completed GME. Physicians are included in the starting supply if their license was active in 2019 (the base modeling year for both supply and demand in this study), they have a Florida work location, they are under age 75, and they first received their license to practice in Florida when they were younger than age 60. The age criteria reflect the workforce team's experience that many of the physicians over age 75 who hold an active license are not active in their profession or work very few hours per week. Physicians who began practice in Florida after age 60 were excluded because it is unclear whether these physicians were retiring to Florida or obtained a license to practice temporarily as locum tenens.

While the licensure data contains up to 10 listed specialties for each licensed physician, the first and second specialties listed were used to categorize physicians into one of the 36 specialties included in this study (only 2.8% of physicians listed more than two specialties).

Projected annual new entrants to the physician workforce were estimated by the percentage of annual new physician licenses issued from 2015-2019 in each specialty, multiplied by the 2,374 new physicians who entered Florida's workforce in 2019 (Exhibit 11). Characteristics of physicians who obtained a Florida license after 2010 were used to estimate the sex, age, race/ethnicity, and specialty distributions of projected new entrants to the workforce. The Status Quo supply scenario assumes that the quantity and characteristics of annual new entrants to the workforce remains constant throughout the modeling period. While information on the number of newly licensed physicians was available for 2020 (and part of 2021) in the licensure data, these years were excluded from analyses that determine the number of new physicians given the uncertainties surrounding the way the COVID-19 pandemic may have affected both short-term and long-term workforce trends.

Exhibit 11 contains, by specialty, the estimated count and demographic characteristics of new entrants to Florida's physician workforce resulting from this analysis. This includes physicians who recently completed GME, as well as physicians who migrated to Florida from another state. Non-primary care specialties account for 59% of new entrants, while 27% enter traditional primary care specialties and 14% enter the remaining primary care specialties. Over 50% of annual new entrants to the physician workforce are under 36 years old, and nearly three quarters are age 40 or under. Fifty-nine percent of new entrants are male, down from 65% estimated based on the 2006-2009 analysis of licensure data conducted during the 2015 Report. With careers of physicians typically spanning 30-40 years, the assumed quantity and demographic distributions of new entrant physicians can have profound implications for projected physician supply.

Exhibit 11. Estimated Number and Characteristics of Annual New Entrants

Specialty	New Entrants #	New Entrants %	% Male	Age Distribution <36	Age Distribution 36-40	Age Distribution 41-45	Age Distribution >45
Primary Care	**972**	**41%**	**55%**	**54%**	**20%**	**10%**	**16%**
Traditional Primary Care	**640**	**27%**	**53%**	**54%**	**20%**	**11%**	**15%**
Family Medicine	183	8%	55%	51%	19%	12%	18%
General Internal Medicine	287	12%	58%	56%	20%	10%	14%
Pediatric Medicine	154	6%	42%	57%	20%	9%	14%
Geriatric Medicine	16	1%	57%	39%	24%	16%	22%
Emergency Medicine	138	6%	62%	55%	18%	9%	18%
General Surgery	97	4%	64%	49%	21%	10%	19%
Obstetrics & Gynecology	97	4%	45%	52%	20%	10%	17%
Non-Primary Care	**1,402**	**59%**	**62%**	**51%**	**20%**	**11%**	**18%**
Allergy & Immunology	12	1%	49%	55%	19%	7%	19%
Anesthesiology	141	6%	65%	50%	20%	10%	20%
Cardiology	103	4%	70%	48%	23%	13%	16%
Colorectal Surgery	5	0%	74%	60%	19%	9%	11%
Dermatology	42	2%	50%	62%	17%	9%	13%
Endocrinology	22	1%	47%	52%	20%	13%	15%
Gastroenterology	44	2%	68%	51%	18%	13%	18%
Hematology & Oncology	56	2%	60%	51%	23%	12%	14%
Hospital Medicine	82	3%	57%	54%	21%	11%	14%
Infectious Diseases	26	1%	50%	52%	24%	11%	13%
Neonatology	14	1%	51%	41%	26%	10%	22%
Nephrology	28	1%	66%	53%	21%	13%	13%
Neurological Surgery	17	1%	74%	43%	19%	15%	23%
Neurology	68	3%	60%	45%	24%	13%	18%
Ophthalmology	54	2%	64%	59%	17%	8%	16%
Orthopedic Surgery	61	3%	70%	49%	20%	12%	19%
Other Specialties	49	2%	61%	50%	20%	11%	20%
Otolaryngology	29	1%	66%	55%	19%	6%	19%
Pathology	79	3%	54%	51%	17%	13%	18%
Physical Medicine & Rehabilitation	35	1%	61%	53%	21%	9%	18%
Plastic Surgery	24	1%	69%	44%	23%	14%	19%
Psychiatry	99	4%	53%	47%	19%	11%	23%
Pulmonology & Critical Care	66	3%	65%	44%	27%	11%	18%
Radiation Oncology	21	1%	59%	54%	20%	13%	13%
Radiology	155	7%	63%	53%	20%	11%	15%
Rheumatology	16	1%	50%	59%	20%	8%	13%
Thoracic Surgery	17	1%	76%	35%	18%	16%	31%
Urology	25	1%	64%	59%	14%	11%	17%
Vascular Surgery	12	1%	68%	45%	25%	16%	15%
Florida Total	**2,374**	**100%**	**59%**	**52%**	**20%**	**11%**	**17%**

Source: IHS Markit analysis of 2021 Physician Licensure Data from the Florida Department of Health

Physician weekly hours worked patterns are modeled using prediction equations that link specialty, age, sex, and age-sex interaction to their predicted number of average hours providing direct patient care each week. These equations were derived from the 2018-2019 Florida Physician Workforce Survey. Estimated patient care hours are used to convert provider headcount to FTE estimates, and this conversion is made by dividing an individual physician's estimated weekly patient care hours by the average weekly patient care hours worked for individuals in that physician's specialty in the base modeling year. For example, analysis of hours worked patterns suggests

that male physicians in the age 40-54 age group work, on average, 10% more than the average physician, and thus males in this age group would count, on average, as 1.10 FTE.

Physician retirement patterns also were derived from the 2018-2019 physician survey data. These prediction equations link physicians' age and specialty to the survey question about intent to retire within the next five years and intent to move out of Florida to calculate annual attrition probabilities by age and specialty. The projections assume that any physicians remaining in the workforce at age 84 will retire by age 85.

The assumptions described above outline the methods used to model physician supply under the Status Quo scenario. Six additional scenarios reflecting hypothetical future changes to provider workforce patterns were modeled. Two scenarios model, respectively, that the annual projected count of newly licensed physicians is 10% higher and 10% lower than they are currently. Two scenarios model, respectively, attrition from the workforce occurring two years earlier and two years later than current patterns. Two scenarios model, respectively, that average physician patient care hours worked patterns increase and decrease by four hours per week, respectively.

Projected Statewide Physician Supply

Analysis of the physician licensure data suggests that in 2019 there were 55,083 FTE physicians actively practicing in Florida. Of these physicians, the average age is 51 and approximately 26% are over 60 years old, approximately 66% are male, and 57% are non-Hispanic White. These supply estimates and demographics are largely consistent with Florida's 2019 Physician Workforce Report, though estimates may slightly differ due to differences in the methodology used to define the starting supply.[18]

Status Quo projections of Florida's physician supply suggest that the 55,083 FTE physicians practicing in the state in 2019 will grow to 56,859 FTEs by 2035, an increase of 3% over the projection period (Exhibit 12). These projections account for an estimated 36,368 physicians leaving the workforce due to retirement or outmigration, 38,512 new physicians entering the workforce, and a decrease of 368 FTE physicians due to projected decreases in average hours worked. The average age of physicians in the workforce is projected to remain at 51 years of age by 2035. Over the modeling period, women and racial/ethnic minorities are projected to gradually become an increasing share of the physician workforce. Between 2019 and 2035, the percentage of physicians who are women will increase from 34% to 41%, and the share of physicians who are racial/ethnic minorities will increase from 43% to 48%.

Projected growth in physician supply varies by specialty. The non-primary care specialties as a whole are projected to grow by 1,012 FTEs (3%) while primary care specialties are projected to grow 764 FTEs (3%), with 791 FTE (5%) growth for the traditional primary care specialties and declining supply projected for emergency medicine and obstetrics & gynecology. Individual specialties with the largest projected percentage supply growth are hematology & oncology (38%) and vascular surgery (24%). In absolute terms the specialties with the largest projected FTE growth are general internal medicine (735 FTEs), hematology & oncology (455 FTEs), and general surgery (361 FTEs). Specialties with the largest projected supply decrease are emergency medicine (-269 FTEs), anesthesiology (-227 FTEs), and infectious diseases (-225 FTEs).

Exhibit 12. Projected Growth in Florida's FTE Physician Supply, 2019-2035

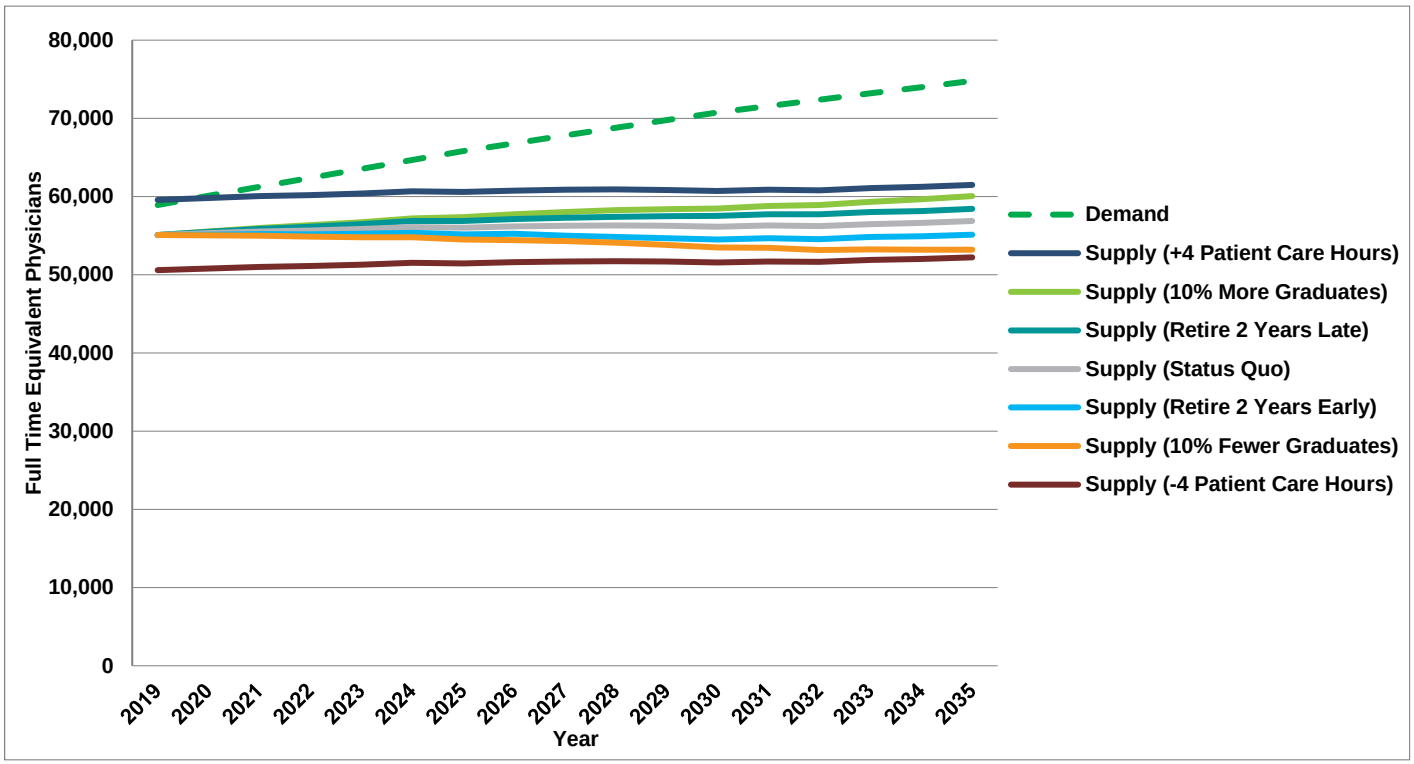
Specialty	2019	2020	2025	2030	2035	Growth 2019-2035 #	Growth 2019-2035 %
Primary Care	**22,136**	**22,239**	**22,635**	**22,684**	**22,900**	**764**	**3%**
Traditional Primary Care	**14,649**	**14,750**	**15,146**	**15,263**	**15,440**	**791**	**5%**
Family Medicine	4,399	4,411	4,370	4,288	4,261	-138	-3%
General Internal Medicine	6,182	6,252	6,576	6,741	6,917	735	12%
Pediatric Medicine	3,559	3,583	3,724	3,772	3,824	265	7%
Geriatric Medicine	509	503	476	461	437	-72	-14%
Emergency Medicine	3,045	3,029	2,952	2,849	2,776	-269	-9%
General Surgery	1,867	1,899	2,022	2,118	2,228	361	19%
Obstetrics & Gynecology	2,575	2,562	2,516	2,454	2,457	-118	-5%
Non-Primary Care	**32,947**	**33,059**	**33,383**	**33,446**	**33,959**	**1,012**	**3%**
Allergy & Immunology	271	273	286	292	276	5	2%
Anesthesiology	3,391	3,366	3,267	3,177	3,164	-227	-7%
Cardiology	2,456	2,472	2,511	2,562	2,644	188	8%
Colorectal Surgery	146	147	148	156	164	18	12%
Dermatology	1,120	1,115	1,104	1,105	1,111	-9	-1%
Endocrinology	511	518	561	578	587	76	15%
Gastroenterology	1,284	1,289	1,294	1,278	1,284	0	0%
Hematology & Oncology	1,199	1,236	1,389	1,530	1,654	455	38%
Hospital Medicine	1,789	1,808	1,887	1,924	1,993	204	11%
Infectious Diseases	654	646	575	496	429	-225	-34%
Neonatology	372	364	366	363	367	-5	-1%
Nephrology	745	748	760	762	758	13	2%
Neurological Surgery	396	398	421	443	458	62	16%
Neurology	1,256	1,272	1,346	1,402	1,485	229	18%
Ophthalmology	1,500	1,522	1,568	1,609	1,676	176	12%
Orthopedic Surgery	1,756	1,756	1,745	1,720	1,751	-5	0%
Other Specialties	1,131	1,128	1,100	1,084	1,063	-68	-6%
Otolaryngology	720	724	770	823	850	130	18%
Pathology	1,602	1,628	1,686	1,744	1,834	232	14%
Physical Medicine & Rehabilitation	727	736	784	807	832	105	14%
Plastic Surgery	722	714	667	626	602	-120	-17%
Psychiatry	2,157	2,156	2,106	2,049	2,037	-120	-6%
Pulmonology & Critical Care	1,337	1,323	1,275	1,180	1,150	-187	-14%
Radiation Oncology	527	530	530	519	511	-16	-3%
Radiology	3,398	3,425	3,512	3,526	3,623	225	7%
Rheumatology	374	373	397	425	446	72	19%
Thoracic Surgery	395	392	373	355	329	-66	-17%
Urology	762	745	679	616	572	-190	-25%
Vascular Surgery	249	251	274	294	308	59	24%
Florida Total	**55,083**	**55,298**	**56,018**	**56,130**	**56,859**	**1,776**	**3%**

Source: IHS Markit

Exhibit 13 summarizes projected 2019-2035 Florida physician supply under the Status Quo scenario and the alternative scenarios that were modeled. Relative to the Status Quo scenario, the scenario assuming a 10% increase in newly trained physicians entering the workforce annually resulted in an additional 3,191 FTE (6%) physicians in the workforce in 2035, while the scenario assuming the average physician delayed retirement by two years resulted in an additional 1,543 FTE (3%) physicians in the workforce in 2035. Supply is projected to be

lower under the scenario assuming 10% fewer annual new graduates (-3,652; -6%) and the scenario assuming physicians retire on average two years earlier than they do currently (-1,749; -3%). The scenarios assuming an average increase and decrease of four patient care hours worked per week would result in a respective increase or decrease of 4,627 (8%) FTE physicians in the workforce in 2035 compared to the Status Quo scenario, respectively. Throughout the modeling period, the Status Quo and alternative supply scenarios all remain below the Status Quo demand projections. Changes to the number of hours that physicians spend providing patient care has the quickest and largest impact on supply of the scenarios modeled. Efforts to reduce administrative burdens on physicians to allow them to focus on patient care is one strategy to increase the effective supply of physicians. All of the modeled supply scenarios individually fall short of demand, suggesting that multiple strategies might be needed to reduce the projected shortfall.

Exhibit 13. Status Quo and Alternative Physician Supply Projections with Comparison to Status Quo Demand, 2019-2035



Projected Adequacy of Physician Supply by Medicaid Region

While the statewide projections of physician supply and demand suggest that Florida is experiencing a growing shortfall of physicians, the current and future adequacy of supply disproportionately affect certain areas within the state. To this end, the county-level supply and demand projections created in this study were aggregated into the state's 11 Medicaid regions. The demand projections produced in this study assign people's healthcare demand to where they reside, which is not necessarily the location where they do or could seek healthcare services. Likewise, because the Medicaid regions do not necessarily match geographic markets for healthcare services, the analysis cannot fully capture geographic imbalances between supply and demand but does offer context for assessing the differences in adequacy of physicians around the state.

The region-level demand estimates are influenced by population size and characteristics. Regions 8 and 3 have populations that are significantly older than the state average, with 33% and 27% of their population over age 65, respectively. In eight of the eleven regions, this age cohort represents less than 20% of the region population. The population in Region 11, home to Miami, is younger and healthier than the rest of the state, on average. Region 1, Region 2, and Region 3 have, on average, a higher prevalence of modeled health conditions and risk factors than the rest of the state (Exhibit 14). Additionally, socioeconomic characteristics vary from region to region, with many of the state's lower-income counties located in or near the panhandle. While the county level data are aggregated to the region level for presentation, even within regions there can be substantial variation across counties in population characteristics and demand for physician services. For example, Region 3 contains Alachua County wherein reside a large population of college students and Sumter County which contains a large retirement enclave. Age and socioeconomic characteristics influence population health measures as well as how local populations use healthcare services; thus, the geographic heterogeneity of the population affects differences in population demand for healthcare from region to region.

On the supply side, socioeconomic conditions can influence providers' decisions to practice within a particular region. Nationwide, providers generally show a preference for practicing disproportionately in metropolitan areas which tend to have more jobs for other members of their households, educational opportunities for their families, and shopping, entertainment, and cultural options.

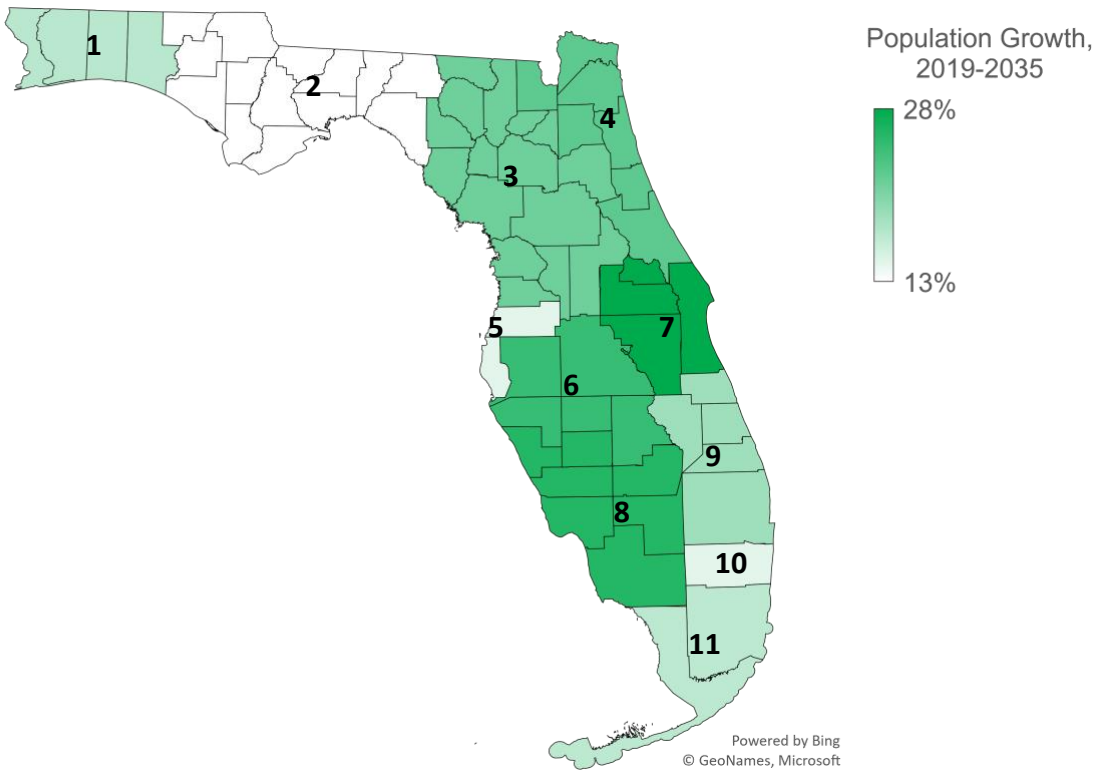
Exhibit 14. 2019 Disease Prevalence Among Florida Adults, by Medicaid Region

	Prevalence Rate for Condition					Prevalence of People with History of Condition			Prevalence for Risk Factor	
Medicaid Region	**Arthritis**	**Asthma**	**Hypertension**	**CHD/ Angina**	**Diabetes**	**Cancer**	**Heart Attack**	**Stroke**	**Smoker**	**Obese**
Region 1	28%	10%	36%	5%	15%	16%	5%	5%	18%	29%
Region 2	31%	10%	35%	5%	14%	15%	6%	5%	16%	33%
Region 3	34%	10%	40%	7%	15%	21%	8%	5%	18%	32%
Region 4	28%	11%	35%	6%	12%	16%	6%	4%	18%	29%
Region 5	31%	10%	38%	6%	11%	20%	5%	4%	21%	28%
Region 6	27%	11%	37%	4%	14%	16%	6%	5%	17%	30%
Region 7	22%	10%	32%	3%	12%	14%	4%	3%	14%	28%
Region 8	29%	8%	37%	5%	10%	23%	5%	3%	13%	25%
Region 9	26%	7%	34%	6%	11%	19%	6%	4%	16%	23%
Region 10	19%	9%	27%	3%	10%	13%	3%	3%	12%	25%
Region 11	15%	9%	33%	3%	9%	10%	3%	2%	12%	25%
Florida Total	**25%**	**10%**	**35%**	**5%**	**12%**	**16%**	**5%**	**4%**	**16%**	**27%**

Source: IHS Markit analysis of Florida county-level BRFSS disease prevalence estimates, aggregated to Florida Medicaid Regions

While Florida's total population is projected to grow by 21% across the modeling period, population growth varies considerably across Florida's counties. When counties are aggregated to Medicaid regions, projected growth ranges from 13% in Region 2 to 28% in Region 7 (Exhibit 15). The geographic distribution of population characteristics is also projected to shift over time, influencing the region-level projected health characteristics, such as prevalence of chronic diseases, and resulting healthcare demand.

Exhibit 15. Projected Florida 2019-2035 Population Growth, by Medicaid Region



Source: County-level projected population growth rates from the University of Florida Bureau of Economic and Business Research were applied to 2019 population estimates from the American Community Survey to calculate the size of the future population. County-level population growth was then aggregated to the eleven Florida Medicaid Regions.

Our analysis suggests that statewide Florida experienced a shortfall in 2019 of approximately 3,835 FTE physicians (supply estimates are approximately 7% less than demand estimates). However, this shortfall was not equally distributed across regions and specialty areas (Exhibit 16 and Exhibit 17). In Regions 10 and 11, for example, 2019 supply exceeded projected demand by 448 FTEs (8%) and 2,123 FTEs (27%) respectively. On a total FTE basis, Region 3 and Region 8 faced the largest base year shortfall, of 1,558 FTEs (37%) and 1,412 FTEs (31%), respectively. Region 2 faced the largest shortage on a relative basis, with estimated 2019 supply 45% (603 FTEs) less than estimated demand.

Estimated base year physician supply is lower than levels required to provide a national average level of care by at least 10% in seven of the eleven Medicaid regions; in three regions supply and demand are within 10% of one another; and Region 11 is the only region in which supply is estimated to exceed demand by over 10% (Exhibit 18). Exhibit 19, Exhibit 20, and Exhibit 21 contain maps of regional projected adequacy for traditional primary care specialties, expanded primary care specialties, and non-primary care specialties, respectively. For traditional primary care specialties, supply is lower than demand by over 20% in six regions, lower than demand by between 10%-19% in two regions, and exceeds demand by over 10% in Region 11, leaving two regions where estimated

supply and demand are within 9% of one another. For non-primary care specialties, estimated 2019 supply is within 9% of estimated demand, while supply is estimated to be over 10% less than estimated demand in five regions, and estimated to exceed demand in two regions (Region 10 and Region 11).

The 2019 statewide physician shortfall is projected to worsen to 17,924 FTEs by 2035, based on high (27%) 2019-2035 projected demand growth and a relatively lower (3%) projected supply growth. As with the estimates of base year supply adequacy, projected future adequacy varies considerably across the regions. Region 8 and Region 3 are still projected to have the largest shortfall on a total FTE basis, with projected shortfalls of 3,076 FTEs and 3,040, respectively. Region 2 is projected to continue to experience the largest shortfall on a relative basis with projected supply equal to meet 55% of demand (or supply would need to increase by 83% to approach a national average level of care) (Exhibit 22 and Exhibit 23). In 2035, Region 11 is the only region projected to have an abundance of physicians, with projected supply exceeding demand by 1,152 FTEs (gap equal to 14% of supply).

Exhibit 24 through Exhibit 27 contain maps of projected 2035 supply adequacy by Medicaid region for all physicians, traditional primary care physicians, expanded primary care physicians, and non-primary care physicians, respectively. Total physician supply is projected to be more than 20% less than projected demand in eight of the eleven Medicaid regions, between 10%-19% of demand for two regions, and over 10% of demand only in Region 11. This trend is also true for non-primary care physicians. For both traditional primary care specialties and expanded primary care specialties, the supply shortfall is projected to exceed 20% in all regions except for Region 11, where supply is projected to be close to demand.

Exhibit 16. Physician Supply Minus Demand by Specialty and Medicaid Region, 2019

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Primary Care	**-101**	**-232**	**-633**	**-200**	**-167**	**-396**	**-34**	**-570**	**-451**	**18**	**581**	**-2,185**
Traditional Primary Care	**-103**	**-109**	**-378**	**-237**	**-140**	**-392**	**-49**	**-514**	**-436**	**-57**	**438**	**-1,977**
Family Medicine	-68	-54	-304	-123	-144	-385	-196	-362	-366	-201	-209	-2,412
General Internal Medicine	-24	-27	-42	-61	-36	29	59	-90	-39	141	416	326
Pediatric Medicine	2	-23	10	-31	53	-10	66	-9	5	3	209	274
Geriatric Medicine	-13	-6	-41	-22	-13	-26	23	-53	-36	0	22	-165
Emergency Medicine	-16	-63	-149	13	-15	-59	-20	-42	-46	7	-15	-405
General Surgery	20	-22	-55	23	6	47	35	-33	8	21	131	182
Obstetrics & Gynecology	-1	-38	-52	1	-19	8	0	18	23	47	27	15
Non-Primary Care	**-176**	**-370**	**-925**	**-310**	**-403**	**-360**	**-14**	**-843**	**-222**	**430**	**1,542**	**-1,650**
Allergy & Immunology	2	-4	-8	-10	4	5	1	2	6	-5	30	24
Anesthesiology	28	-28	-48	66	-11	4	68	-75	19	118	180	321
Cardiology	-6	-11	-74	11	-3	-3	53	-52	-12	46	140	90
Colorectal Surgery	-3	-3	-8	-3	-6	-2	-4	-7	-2	8	3	-28
Dermatology	2	0	4	14	8	11	9	42	69	45	89	293
Endocrinology	-14	-13	-26	-20	-16	-35	-15	-24	-15	1	29	-148
Gastroenterology	-9	-11	-5	29	6	-15	17	-13	7	28	66	100
Hematology & Oncology	-18	-30	-68	-29	-42	-30	-39	-102	-71	-27	46	-409
Hospital Medicine	-32	-47	-130	-94	-44	-103	-69	-142	-109	-52	18	-802
Infectious Diseases	-16	-16	-43	-27	-24	0	1	-34	-52	-27	31	-206
Neonatology	-9	-4	-1	0	-2	-13	-4	-10	0	9	23	-11
Nephrology	-10	-20	-22	-10	-4	-34	-26	-23	-6	15	-9	-149
Neurological Surgery	6	2	-2	-1	-23	-21	3	1	-8	-4	6	-41
Neurology	-6	2	-8	43	5	8	19	18	16	24	97	218
Ophthalmology	-4	4	-13	8	23	27	9	0	55	40	72	220
Orthopedic Surgery	19	-14	-57	-9	-13	-14	24	2	39	59	90	126
Other Specialties	-44	-56	-160	-158	-108	-181	-164	-173	-158	-103	-104	-1,408
Otolaryngology	15	-4	-24	13	2	11	25	-5	11	4	52	100
Pathology	8	-4	24	44	12	111	27	-6	19	38	115	388
Physical Medicine & Rehabilitation	3	-12	-26	-41	-42	-35	-36	-18	-41	-34	-33	-316
Plastic Surgery	-14	-8	-36	-18	-8	-22	0	-23	20	35	90	15
Psychiatry	-47	-30	-66	-161	-101	-100	-129	-63	-21	-44	35	-728
Pulmonology & Critical Care	-13	-20	-45	1	9	-28	55	-42	-29	19	87	-6
Radiation Oncology	-10	-11	-18	2	-4	-2	18	-17	-15	3	29	-23
Radiology	10	-12	-17	66	-19	123	144	-23	74	232	291	869
Rheumatology	-4	-9	-16	-15	6	-18	-3	-18	5	-2	10	-64
Thoracic Surgery	-3	-2	-1	7	6	14	7	-3	5	3	16	50
Urology	1	-7	-14	-2	-3	1	-4	-23	-16	8	49	-10
Vascular Surgery	-8	-5	-18	-16	-10	-21	-2	-9	-12	-7	-5	-113
Florida Total	**-277**	**-603**	**-1,558**	**-510**	**-569**	**-756**	**-48**	**-1,412**	**-673**	**448**	**2,123**	**-3,835**

Source: IHS Markit

Exhibit 17. Physician Gap ÷ Supply by Specialty and Medicaid Region, 2019

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Primary Care	**-13%**	**-40%**	**-38%**	**-8%**	**-10%**	**-15%**	**-1%**	**-32%**	**-21%**	**1%**	**18%**	**-10%**
Traditional Primary Care	**-21%**	**-26%**	**-31%**	**-15%**	**-12%**	**-22%**	**-2%**	**-45%**	**-32%**	**-4%**	**20%**	**-13%**
Family Medicine	-36%	-28%	-80%	-21%	-38%	-79%	-32%	-103%	-103%	-62%	-38%	**-55%**
General Internal Medicine	-15%	-20%	-8%	-10%	-7%	4%	8%	-17%	-6%	23%	45%	**5%**
Pediatric Medicine	1%	-31%	4%	-9%	20%	-2%	12%	-4%	1%	1%	33%	**8%**
Geriatric Medicine	-112%	-43%	-94%	-53%	-28%	-46%	27%	-120%	-64%	-1%	33%	**-32%**
Emergency Medicine	-14%	-96%	-83%	3%	-6%	-16%	-5%	-15%	-14%	2%	-4%	**-13%**
General Surgery	24%	-51%	-41%	12%	4%	19%	15%	-22%	4%	13%	47%	**10%**
Obstetrics & Gynecology	-2%	-63%	-33%	0%	-12%	2%	0%	9%	8%	16%	8%	**1%**
Non-Primary Care	**-16%**	**-49%**	**-36%**	**-9%**	**-16%**	**-9%**	**0%**	**-31%**	**-6%**	**13%**	**32%**	**-5%**
Allergy & Immunology	13%	-70%	-49%	-50%	17%	15%	4%	8%	19%	-23%	64%	**9%**
Anesthesiology	20%	-35%	-18%	17%	-5%	1%	15%	-31%	5%	32%	38%	**9%**
Cardiology	-8%	-19%	-40%	4%	-2%	-1%	17%	-25%	-4%	20%	39%	**4%**
Colorectal Surgery	-88%	-96%	-97%	-21%	-88%	-9%	-28%	-60%	-14%	35%	12%	**-19%**
Dermatology	5%	-1%	5%	13%	9%	10%	9%	31%	41%	43%	58%	**26%**
Endocrinology	-124%	-157%	-64%	-39%	-45%	-65%	-21%	-76%	-26%	1%	32%	**-29%**
Gastroenterology	-25%	-39%	-4%	19%	7%	-11%	11%	-11%	5%	22%	36%	**8%**
Hematology & Oncology	-43%	-138%	-65%	-21%	-45%	-18%	-29%	-108%	-56%	-26%	26%	**-34%**
Hospital Medicine	-50%	-101%	-92%	-52%	-28%	-46%	-30%	-111%	-58%	-33%	7%	**-45%**
Infectious Diseases	-120%	-128%	-77%	-43%	-52%	0%	1%	-63%	-81%	-49%	31%	**-31%**
Neonatology	-128%	-50%	-6%	0%	-11%	-33%	-8%	-64%	0%	18%	30%	**-3%**
Nephrology	-52%	-131%	-35%	-12%	-7%	-40%	-31%	-40%	-7%	17%	-8%	**-20%**
Neurological Surgery	36%	21%	-5%	-1%	-81%	-56%	5%	3%	-18%	-12%	11%	**-10%**
Neurology	-17%	5%	-9%	27%	6%	6%	13%	15%	12%	22%	50%	**17%**
Ophthalmology	-11%	8%	-11%	6%	18%	14%	6%	0%	27%	30%	37%	**15%**
Orthopedic Surgery	23%	-31%	-48%	-5%	-10%	-7%	11%	1%	18%	31%	41%	**7%**
Other Specialties	-92%	-202%	-176%	-135%	-107%	-127%	-112%	-212%	-128%	-96%	-71%	**-124%**
Otolaryngology	36%	-20%	-55%	16%	4%	12%	26%	-8%	13%	8%	52%	**14%**
Pathology	15%	-10%	16%	25%	11%	42%	16%	-5%	12%	28%	50%	**24%**
Physical Medicine & Rehabilitation	10%	-124%	-46%	-52%	-72%	-38%	-37%	-30%	-53%	-47%	-35%	**-43%**
Plastic Surgery	-82%	-52%	-95%	-29%	-15%	-29%	0%	-36%	21%	46%	62%	**2%**
Psychiatry	-78%	-49%	-37%	-85%	-65%	-35%	-48%	-40%	-8%	-22%	10%	**-34%**
Pulmonology & Critical Care	-35%	-78%	-46%	1%	7%	-20%	26%	-39%	-23%	15%	42%	**0%**
Radiation Oncology	-96%	-157%	-44%	3%	-9%	-4%	23%	-33%	-27%	7%	40%	**-4%**
Radiology	10%	-17%	-7%	18%	-8%	28%	33%	-9%	21%	57%	62%	**26%**
Rheumatology	-37%	-146%	-55%	-48%	16%	-48%	-6%	-65%	9%	-6%	19%	**-17%**
Thoracic Surgery	-28%	-16%	-2%	16%	17%	25%	15%	-9%	12%	10%	35%	**13%**
Urology	2%	-41%	-20%	-2%	-6%	1%	-5%	-30%	-20%	13%	45%	**-1%**
Vascular Surgery	-169%	-41%	-76%	-76%	-54%	-86%	-5%	-26%	-44%	-41%	-17%	**-45%**
Florida Total	**-15%**	**-45%**	**-37%**	**-9%**	**-13%**	**-11%**	**-1%**	**-31%**	**-11%**	**8%**	**27%**	**-7%**

Source: IHS Markit

Exhibit 18. Adequacy of Physician Supply by Medicaid Region, 2019

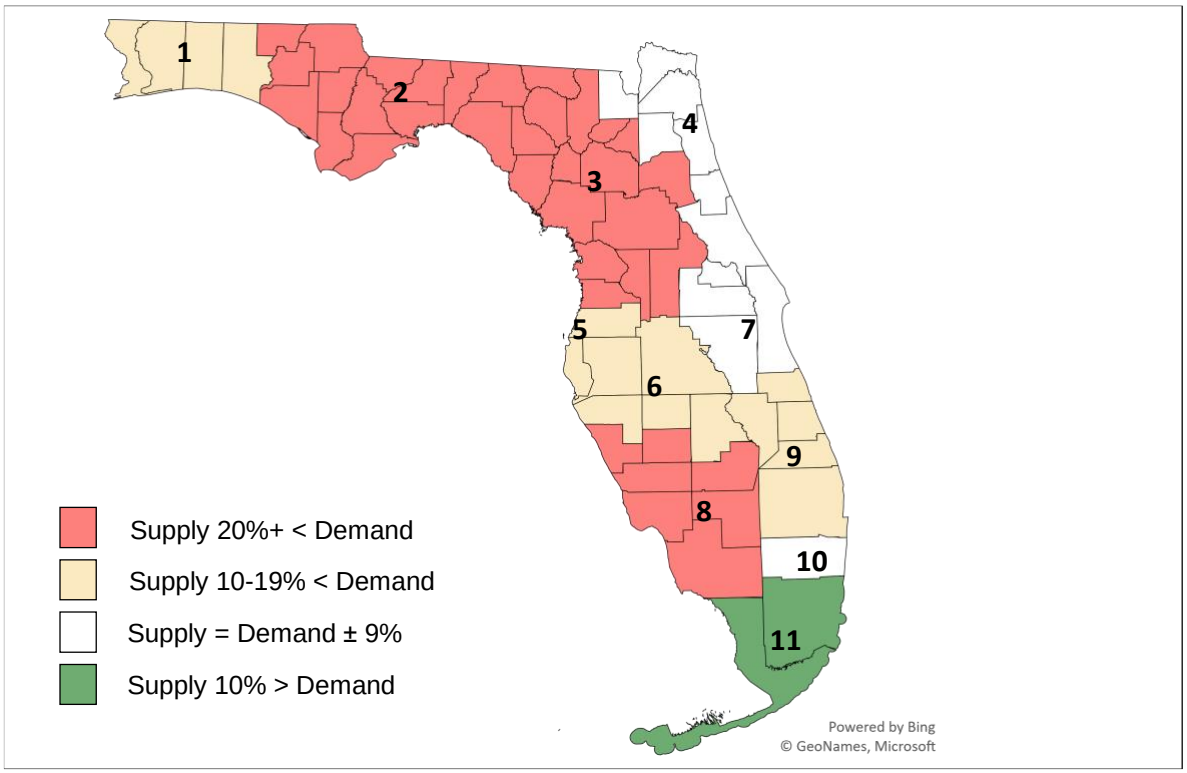


Exhibit 19. Adequacy of Traditional Primary Care Physician Supply by Medicaid Region, 2019

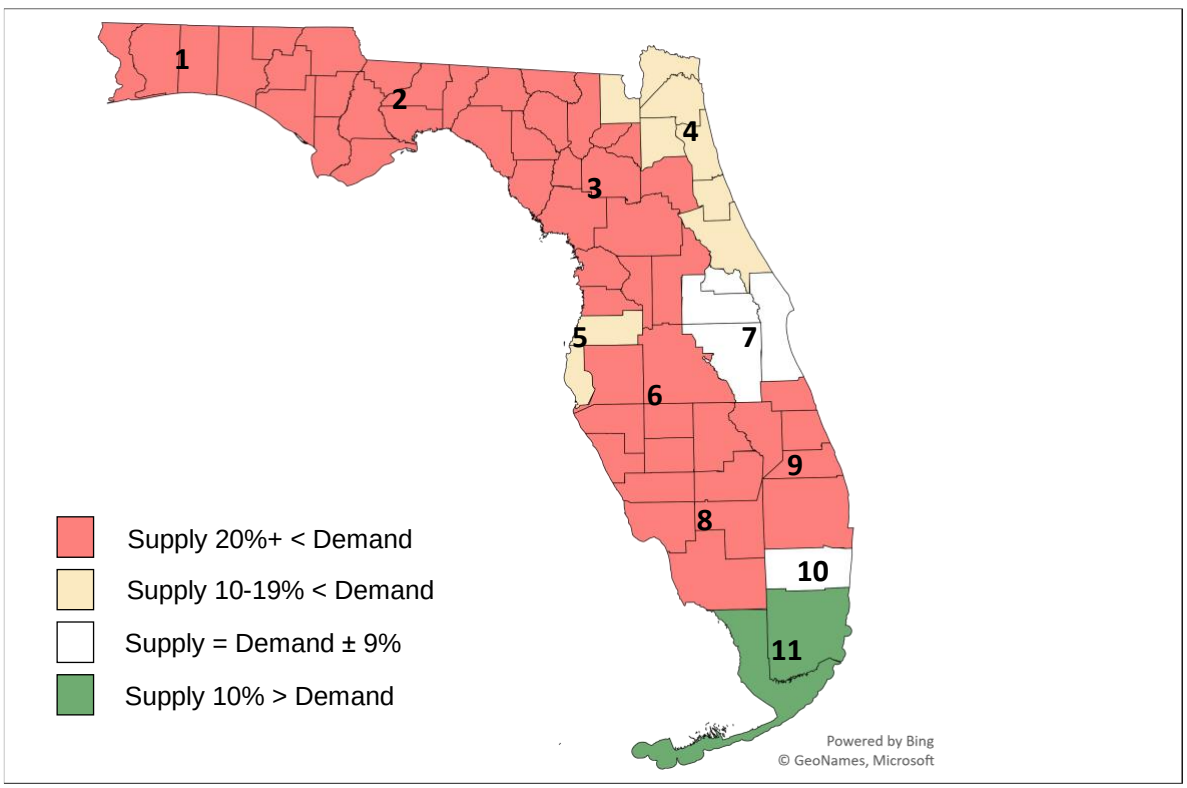


Exhibit 20. Adequacy of Expanded Primary Care Physician Supply by Medicaid Region, 2019

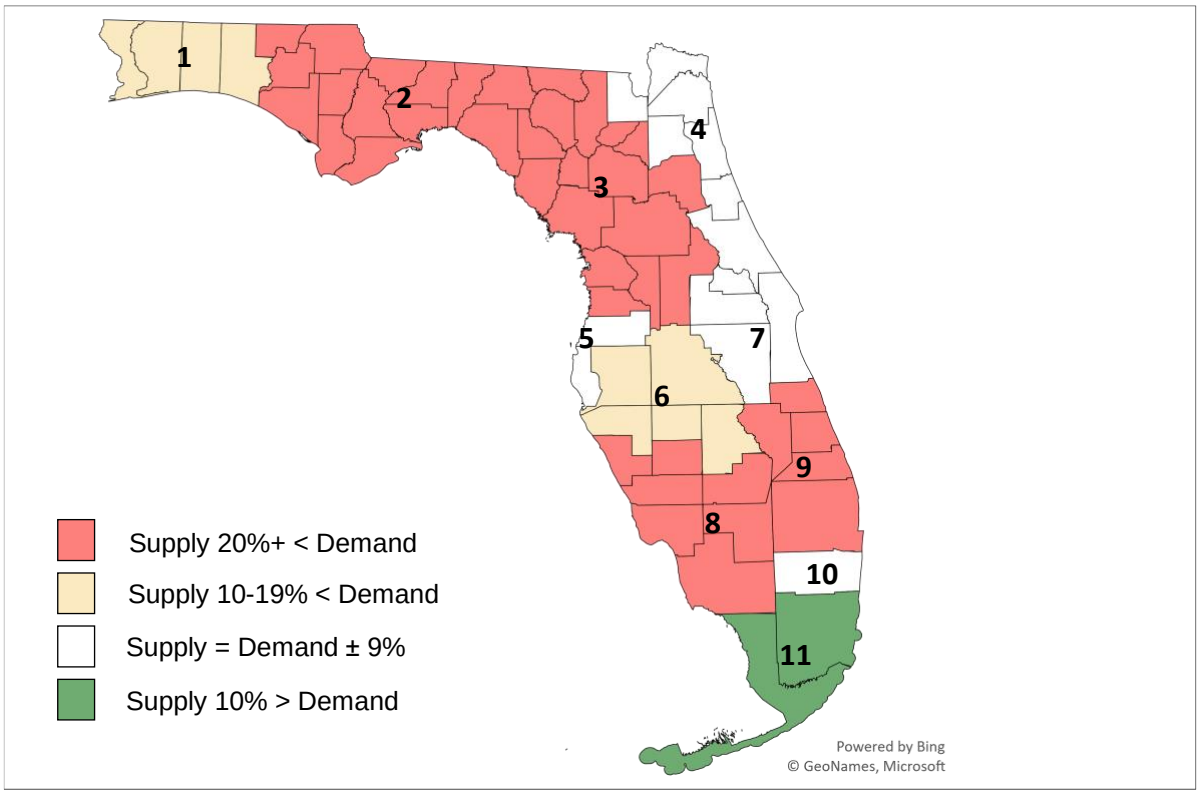


Exhibit 21. Adequacy of Non-Primary Care Physician Supply by Medicaid Region, 2019

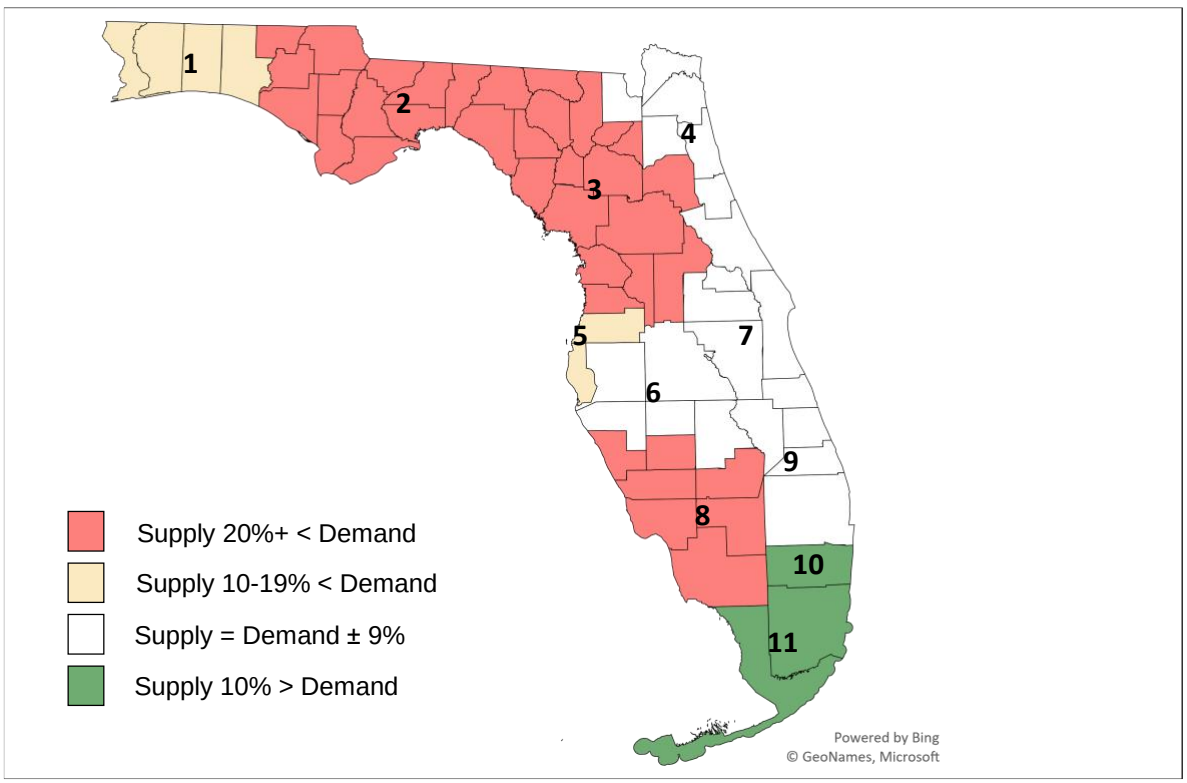


Exhibit 22. Physician Supply Minus Demand by Specialty and Medicaid Region, 2035

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Primary Care	**-207**	**-426**	**-1,198**	**-861**	**-566**	**-1,061**	**-752**	**-1,218**	**-1,259**	**-485**	**158**	**-7,872**
Traditional Primary Care	**-186**	**-229**	**-803**	**-672**	**-413**	**-892**	**-505**	**-1,014**	**-989**	**-364**	**92**	**-5,974**
Family Medicine	-146	-125	-533	-391	-280	-635	-465	-536	-561	-344	-372	-4,387
General Internal Medicine	-26	-68	-167	-154	-144	-110	-35	-262	-294	55	325	-881
Pediatric Medicine	10	-22	-11	-41	86	-68	25	-95	-39	-38	146	-46
Geriatric Medicine	-24	-14	-91	-86	-76	-79	-29	-121	-96	-38	-6	-660
Emergency Medicine	-51	-80	-250	-127	-104	-144	-208	-163	-181	-100	-109	-1,519
General Surgery	24	-45	-57	9	-11	40	36	-38	-15	3	170	117
Obstetrics & Gynecology	6	-72	-88	-70	-37	-65	-75	-2	-73	-23	4	-497
Non-Primary Care	**-200**	**-636**	**-1,842**	**-1,196**	**-1,048**	**-1,333**	**-1,190**	**-1,858**	**-1,430**	**-313**	**994**	**-10,052**
Allergy & Immunology	2	-10	-13	-17	10	9	-10	-2	1	-5	27	-7
Anesthesiology	7	-49	-162	-53	-55	-129	-37	-191	-131	42	105	-654
Cardiology	1	-32	-198	-51	-65	-80	-47	-120	-134	-21	114	-632
Colorectal Surgery	-1	-2	-15	-12	-1	-6	-9	-12	-3	-2	-8	-70
Dermatology	-1	-7	-3	4	15	-10	-14	-37	50	20	50	67
Endocrinology	-13	-20	-29	-38	-17	-49	-42	-43	-32	14	22	-247
Gastroenterology	-24	-15	-41	4	-28	-19	-24	-26	-56	-30	58	-202
Hematology & Oncology	-6	-24	-107	-22	-50	-31	-67	-118	-91	-17	96	-437
Hospital Medicine	-49	-83	-190	-160	-90	-167	-173	-227	-174	-90	-30	-1,434
Infectious Diseases	-23	-30	-98	-101	-61	-54	-65	-91	-106	-75	-33	-737
Neonatology	-5	-1	-12	1	-12	-21	1	-17	-24	-4	7	-87
Nephrology	-13	-34	-33	-54	-46	-79	-76	-57	-51	-18	-53	-514
Neurological Surgery	22	-1	-1	-5	-22	-31	-22	-11	-18	-12	-12	-112
Neurology	-1	-5	16	39	-14	-22	-10	45	-7	13	117	170
Ophthalmology	-24	18	-65	-20	-7	35	-38	-20	10	7	49	-55
Orthopedic Surgery	7	-17	-91	-66	-45	-60	-59	-14	-3	25	113	-209
Other Specialties	-65	-80	-224	-232	-173	-258	-293	-269	-224	-167	-175	-2,160
Otolaryngology	25	-7	-29	14	3	11	10	-22	10	1	63	79
Pathology	31	-22	17	43	-9	78	0	-11	-10	15	95	228
Physical Medicine & Rehabilitation	7	-14	-48	-65	-65	-47	-44	-41	-67	-58	-39	-481
Plastic Surgery	-21	-18	-58	-32	-29	-66	-32	-57	-32	18	81	-247
Psychiatry	-39	-60	-109	-218	-118	-177	-220	-101	-62	-100	-26	-1,230
Pulmonology & Critical Care	-18	-37	-109	-66	-59	-121	-12	-124	-104	-27	29	-648
Radiation Oncology	-10	-19	-44	-33	-23	-19	3	-36	-40	-6	22	-204
Radiology	15	-20	-55	54	-35	104	167	-114	-28	248	307	644
Rheumatology	1	-7	-31	-21	6	-35	4	-29	5	-16	9	-114
Thoracic Surgery	7	-12	-17	-10	-12	-19	-5	-29	-22	-18	12	-124
Urology	-4	-24	-60	-53	-17	-59	-71	-66	-65	-43	4	-459
Vascular Surgery	-10	-3	-32	-25	-31	-12	-6	-19	-23	-6	-8	-176
Florida Total	**-407**	**-1,062**	**-3,040**	**-2,056**	**-1,614**	**-2,394**	**-1,941**	**-3,076**	**-2,688**	**-798**	**1,152**	**-17,924**

Source: IHS Markit

Exhibit 23. Physician Gap ÷ Supply by Specialty and Medicaid Region, 2035

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Primary Care	**-23%**	**-77%**	**-68%**	**-34%**	**-32%**	**-36%**	**-23%**	**-66%**	**-63%**	**-25%**	**5%**	**-34%**
Traditional Primary Care	**-33%**	**-55%**	**-63%**	**-40%**	**-33%**	**-46%**	**-22%**	**-86%**	**-76%**	**-28%**	**4%**	**-39%**
Family Medicine	-87%	-77%	-158%	-76%	-82%	-126%	-73%	-136%	-168%	-117%	-65%	**-103%**
General Internal Medicine	-12%	-47%	-28%	-21%	-26%	-12%	-4%	-46%	-51%	9%	33%	**-13%**
Pediatric Medicine	6%	-25%	-4%	-10%	26%	-14%	4%	-51%	-11%	-12%	24%	**-1%**
Geriatric Medicine	-142%	-73%	-208%	-329%	-395%	-139%	-34%	-403%	-217%	-122%	-9%	**-151%**
Emergency Medicine	-48%	-116%	-153%	-38%	-53%	-34%	-57%	-68%	-67%	-38%	-32%	**-55%**
General Surgery	24%	-145%	-32%	4%	-7%	13%	12%	-19%	-7%	2%	48%	**5%**
Obstetrics & Gynecology	5%	-203%	-59%	-29%	-24%	-20%	-20%	-1%	-35%	-9%	1%	**-20%**
Non-Primary Care	**-15%**	**-86%**	**-69%**	**-32%**	**-42%**	**-31%**	**-27%**	**-66%**	**-42%**	**-10%**	**20%**	**-30%**
Allergy & Immunology	17%	NA	-86%	-87%	32%	22%	-35%	-10%	3%	-25%	59%	**-3%**
Anesthesiology	5%	-63%	-71%	-15%	-23%	-36%	-8%	-89%	-46%	12%	23%	**-21%**
Cardiology	1%	-51%	-121%	-17%	-31%	-24%	-14%	-49%	-52%	-10%	28%	**-24%**
Colorectal Surgery	-9%	-33%	-196%	-104%	-4%	-27%	-48%	-87%	-12%	-12%	-37%	**-43%**
Dermatology	-4%	-32%	-3%	3%	12%	-8%	-12%	-43%	29%	23%	38%	**6%**
Endocrinology	-71%	-394%	-53%	-69%	-38%	-73%	-56%	-144%	-56%	17%	22%	**-42%**
Gastroenterology	-81%	-51%	-38%	3%	-34%	-11%	-15%	-19%	-53%	-34%	29%	**-16%**
Hematology & Oncology	-8%	-62%	-89%	-11%	-43%	-14%	-38%	-83%	-58%	-12%	37%	**-26%**
Hospital Medicine	-68%	-250%	-112%	-76%	-54%	-60%	-69%	-160%	-82%	-51%	-11%	**-72%**
Infectious Diseases	-157%	-499%	-260%	-409%	-214%	-67%	-91%	-290%	-222%	-253%	-60%	**-172%**
Neonatology	-43%	-9%	-61%	1%	-78%	-48%	2%	-110%	-125%	-9%	11%	**-24%**
Nephrology	-48%	-280%	-38%	-72%	-136%	-83%	-83%	-98%	-64%	-21%	-47%	**-68%**
Neurological Surgery	64%	-14%	-3%	-7%	-52%	-67%	-40%	-33%	-38%	-35%	-25%	**-25%**
Neurology	-2%	-15%	11%	21%	-15%	-14%	-6%	26%	-5%	11%	49%	**11%**
Ophthalmology	-66%	26%	-56%	-12%	-5%	14%	-22%	-11%	5%	5%	23%	**-3%**
Orthopedic Surgery	8%	-33%	-74%	-40%	-38%	-31%	-32%	-7%	-1%	15%	43%	**-12%**
Other Specialties	-135%	-384%	-229%	-188%	-215%	-159%	-241%	-411%	-177%	-199%	-132%	**-203%**
Otolaryngology	44%	-33%	-51%	14%	4%	10%	10%	-32%	10%	2%	53%	**9%**
Pathology	35%	-66%	9%	20%	-8%	27%	0%	-7%	-6%	11%	39%	**12%**
Physical Medicine & Rehabilitation	18%	-120%	-82%	-74%	-129%	-41%	-33%	-67%	-84%	-77%	-31%	**-58%**
Plastic Surgery	-122%	-192%	-180%	-50%	-66%	-126%	-47%	-112%	-58%	29%	56%	**-41%**
Psychiatry	-48%	-164%	-62%	-117%	-74%	-63%	-88%	-64%	-25%	-63%	-8%	**-60%**
Pulmonology & Critical Care	-40%	-179%	-129%	-51%	-76%	-112%	-6%	-153%	-105%	-24%	15%	**-56%**
Radiation Oncology	-65%	-693%	-131%	-76%	-67%	-28%	4%	-67%	-88%	-11%	28%	**-40%**
Radiology	13%	-28%	-21%	13%	-14%	21%	32%	-48%	-9%	58%	59%	**18%**
Rheumatology	4%	-63%	-112%	-54%	13%	-94%	5%	-94%	8%	-54%	14%	**-26%**
Thoracic Surgery	31%	-340%	-52%	-25%	-53%	-51%	-10%	-124%	-73%	-94%	24%	**-38%**
Urology	-13%	-367%	-109%	-91%	-26%	-85%	-152%	-93%	-111%	-151%	5%	**-80%**
Vascular Surgery	-124%	-18%	-130%	-102%	-691%	-24%	-13%	-49%	-78%	-25%	-22%	**-57%**
Florida Total	**-18%**	**-83%**	**-69%**	**-33%**	**-38%**	**-33%**	**-25%**	**-66%**	**-49%**	**-16%**	**14%**	**-32%**

Source: IHS Markit

Exhibit 24. Adequacy of Physician Supply by Medicaid Region, 2035

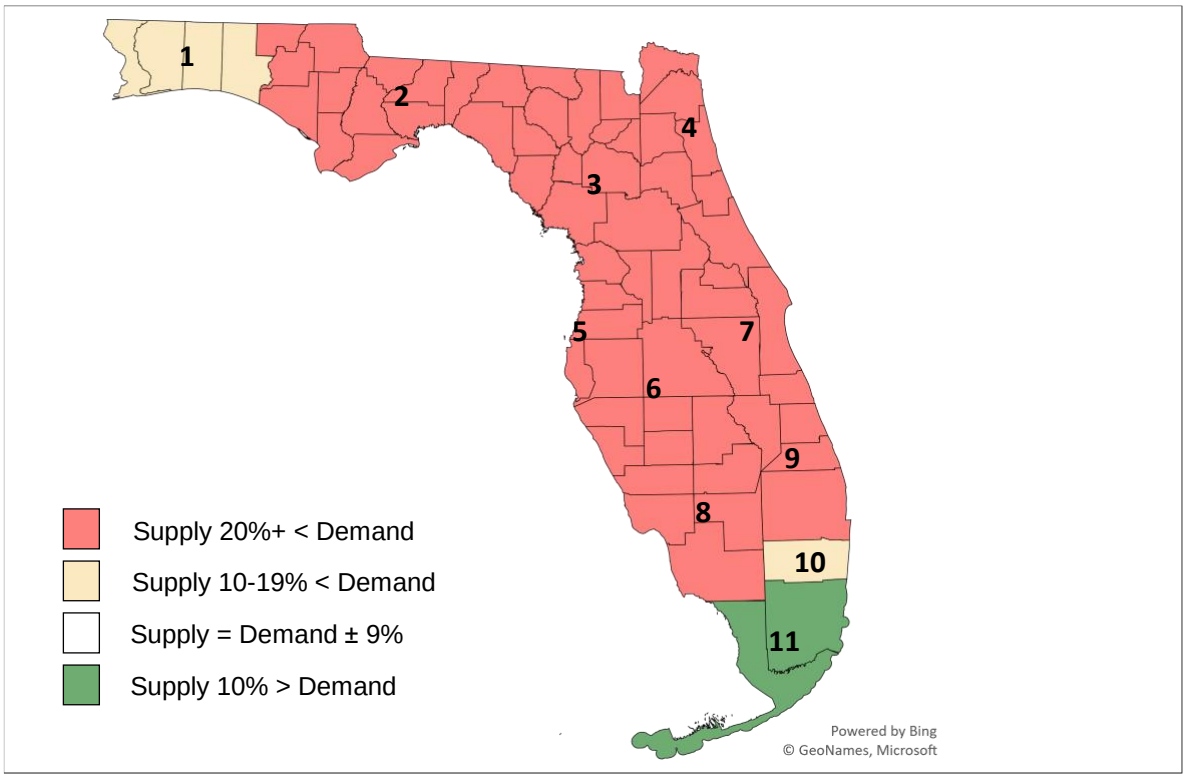


Exhibit 25. Adequacy of Traditional Primary Care Physician Supply by Medicaid Region, 2035

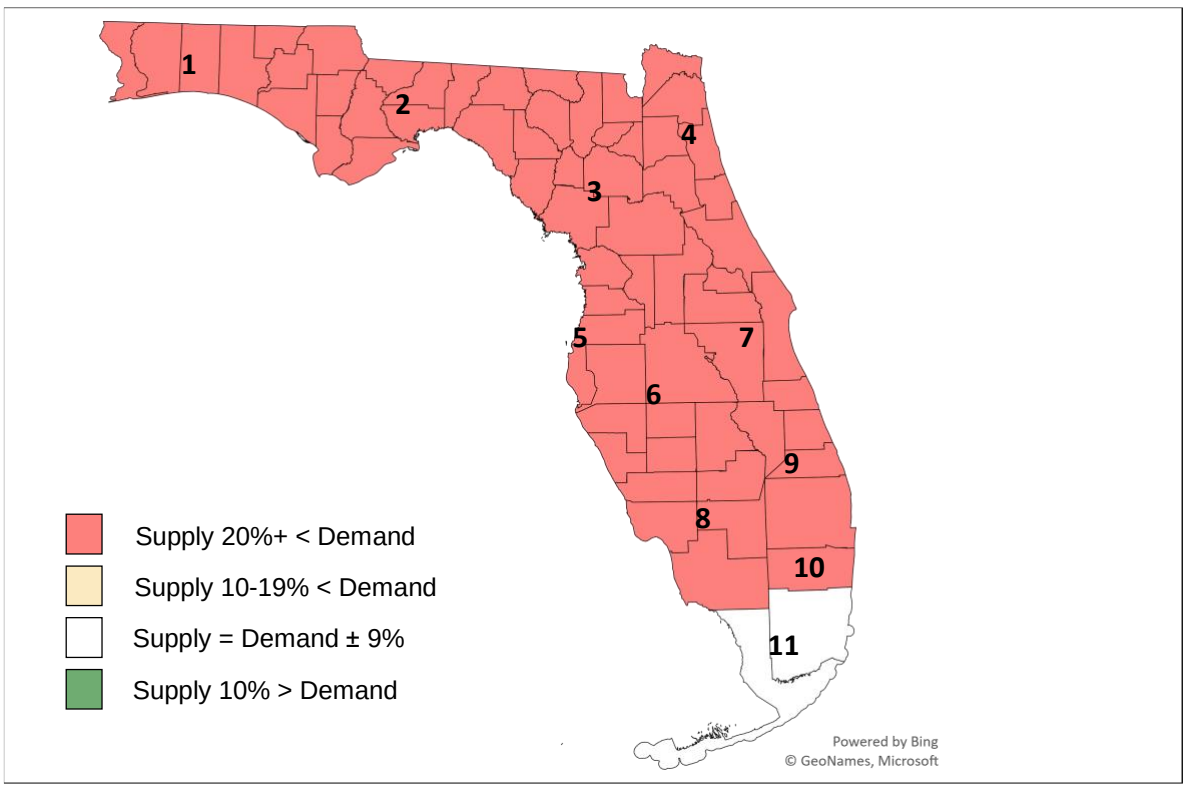


Exhibit 26. Adequacy of Expanded Primary Care Physician Supply by Medicaid Region, 2035

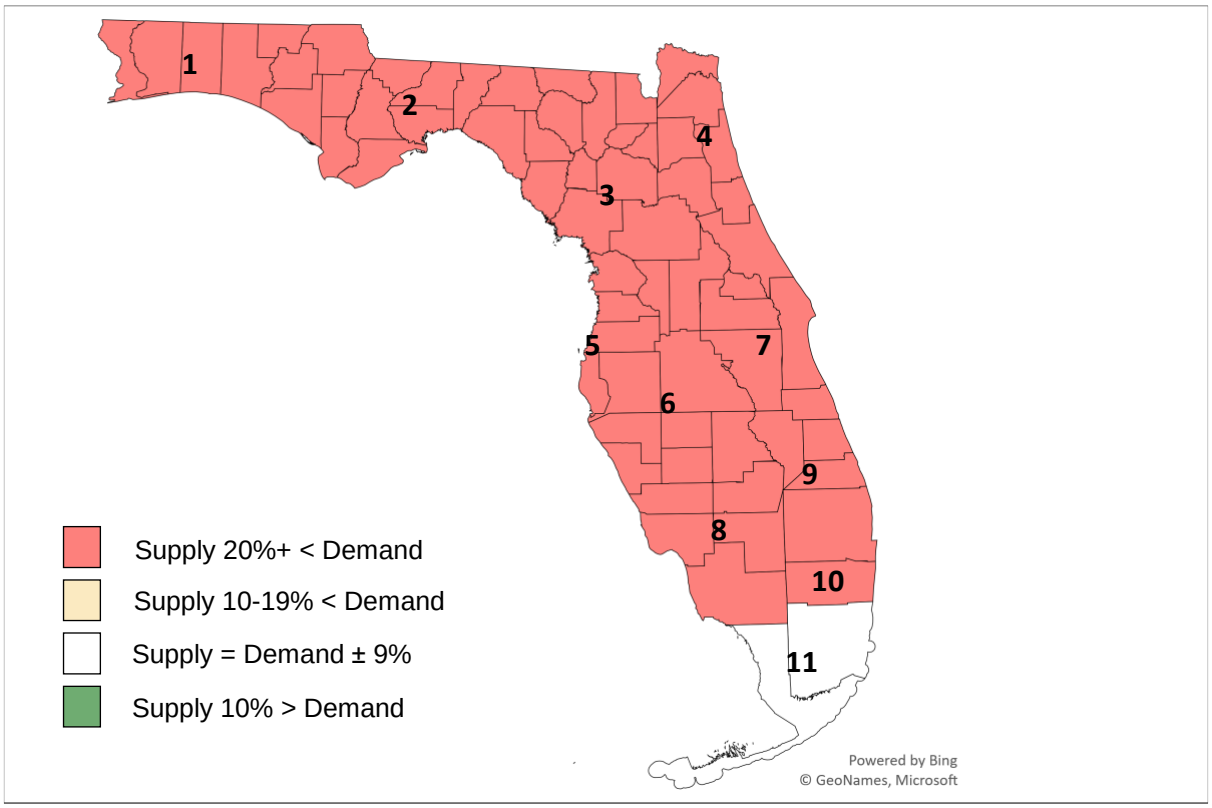
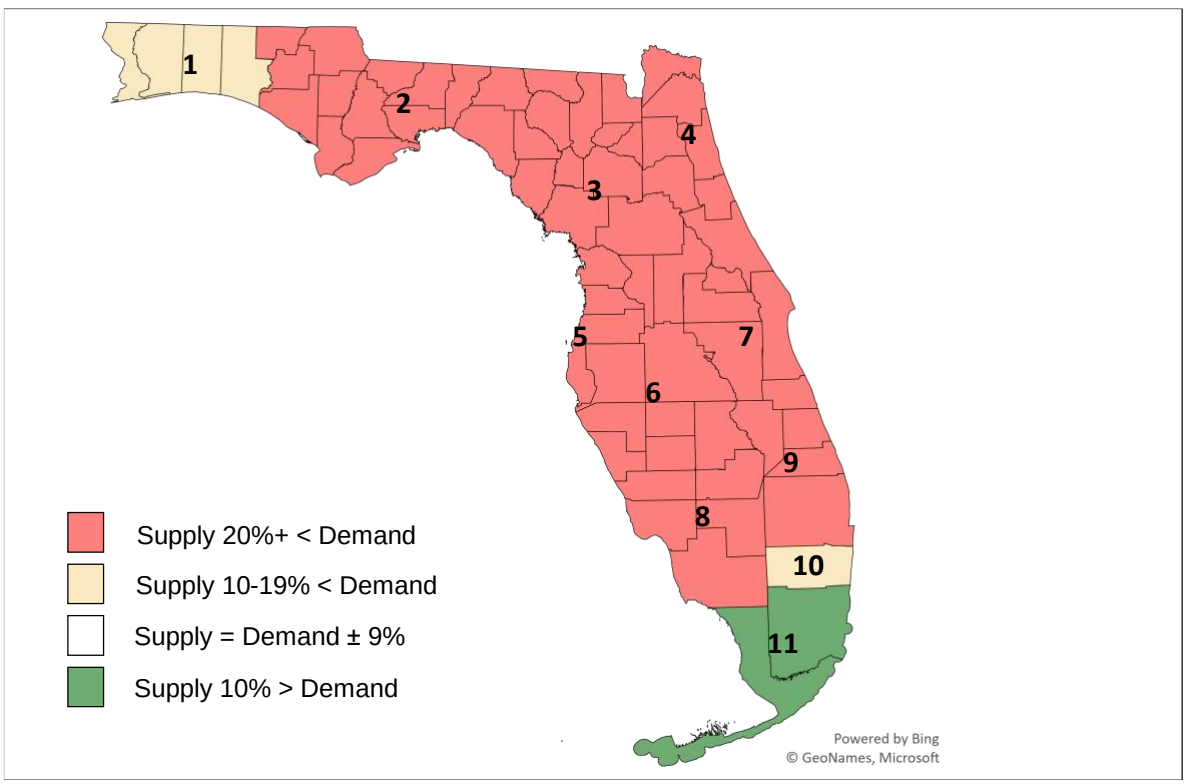


Exhibit 27. Adequacy of Non-Primary Care Physician Supply by Medicaid Region, 2035



Discussion

Study Implications, Strengths, and Weaknesses

Study findings suggest that the estimated 2019 shortage of physicians in Florida will continue to worsen in the future, with shortfalls by 2035 expected to reach 17,924 FTEs (or supply will meet only 76% of projected demand). Furthermore, estimated base year and projected future regional variation in physician adequacy findings suggest that the projected shortage will continue to be experienced unevenly across the state.

Modeling and projecting into the future both entail simplifying assumptions and data limitations that affect the veracity of the study results. The modeling approach, data used, and study approach employed in this analysis have many strengths. The microsimulation models used to produce the supply and demand projections have been developed and refined for over ten years and have been published in peer-reviewed journals and presented at national conferences. The results of these models have been trusted for health workforce and strategic planning insights by the federal government and state governments, hospitals and health systems, healthcare associations, and other stakeholders.

Where possible, Florida-specific data sources were used as modeling inputs. For supply modeling, physician licensure data was obtained from the Florida Department of Health, including information on the base year supply of physicians, the number and characteristics of new entrants to the workforce, weekly hours worked patterns, and intentions to leave Florida or retire. For demand modeling, Florida-specific data were used to provide population characteristics (e.g., demographics, disease and health behavior prevalence, and socioeconomic information) by county, as well as information regarding the expected size and demographics of the future population in the state.

The model creates supply and demand projections at the county level, which allows for sub-state analysis of the adequacy of projected physician supply by region. The model also allows the flexibility in adjusting modeling assumptions to assess both supply- and demand-side what-if scenarios and sensitivity analyses.

Even with careful optimization of models, data, and study approach employed, the results must be interpreted within the context of unavoidable limitations. For example, while results were presented for sub-state regions within Florida, data limitations necessitated that healthcare use and delivery patterns are constant for all areas within the state. Thus, the state-level workforce projections can be projected with a higher level of certainty compared with results presented at the sub-state level.

The projections presented in this report do not capture shifts in factors such as technological innovations, national or state-level health policies, patient preferences, or payer or provider policies, which change the way care is consumed or delivered. These patterns will continue to evolve over time; however, the effect these types of changes would have on the results of this study are unclear. Some trends and policy changes likely will increase demand for care provided by physicians, while other trends might decrease demand for physicians. For example, efforts to shift hospital-based care to appropriate ambulatory settings could decrease demand for emergency physicians and hospitalists while increasing demand for office-based physicians. Efforts to improve population health could reduce demand for physicians in the short term, but achieving population health goals would lower mortality thereby increasing the future size of the population requiring physician care.

The data used to calibrate the model and make projections pre-dates the COVID-19 pandemic. As the pandemic is ongoing and much of the data used in the supply and demand models employed in this study necessarily are collected with a lag, the impacts of the COVID-19 pandemic are not yet fully quantifiable. Given these data limitations, the projections presented in this report do not account for the effects of COVID-19. They do not capture the spikes in demand for COVID-related care, and thus for healthcare workers providing that care, in 2020

and 2021, nor the precipitous drop in demand for routine care and elective procedures, and the healthcare workers providing that care, during and following the lockdown in early 2020.

The physical, mental, emotional, and economic toll on the healthcare workforce from COVID-19 is great. Healthcare workers on the front lines of treating COVID patients faced extraordinary risks and some paid with their lives.[19] Burnout was higher than usual and national polls showed 30-40% of healthcare workers contemplating leaving their jobs.[20,21] Healthcare workers of color were disproportionately impacted.[19,22] While the human toll of COVID-19 was and continues to be devastating, the long-term impact on the overall supply of physicians is expected to be minimal.

Some longer-term effects of COVID-19 on demand for some physicians could be realized. For example, in the initial wave of the pandemic deaths were disproportionately concentrated in the very old, so demand for providers working specifically with such patients could be impacted. If COVID-19 variants cause substantial mortality among younger populations, this could decrease future demand for physicians. The COVID-19-precipitated baby bust[23] likely means somewhat less demand for OB-GYNs immediately and pediatricians for many years. A significant portion of COVID-19 patients are experiencing new and/or continued symptoms requiring additional medical care post-COVID-19;[24] and patients who missed routine diagnostic or preventive care during and after the lockdown are requiring treatment at later stages of illness and disease.[25] Both of these phenomena could affect the mix of healthcare demanded in the medium to long term. As unemployment remains above pre-pandemic levels, Americans' healthcare needs are increasingly paid for by publicly financed Medicaid and charity care programs,[26] which could impact the kinds and amount of care sought. And the migration of people away from city centers to suburbs that was accelerated by the pandemic[27] could have long-term impacts on where patients seek care.

As noted above, the COVID-19 pandemic is still evolving and thus it is impossible to know with certainty what workforce implications will arise as a result. The supply scenarios modeled reflecting early and delayed retirement and increased and decreased new graduates may be compared to post-pandemic data to glean insights into the potential effects of long-term pandemic-related changes to retirement and new graduates. Relatedly, the assumption that the number of physicians entering the workforce will remain constant over time does not allow for market forces that otherwise may have corrected for any surpluses or shortages that may be present in the workforce. Despite limitations, our physician workforce projections offer best estimates given the information available for SNHAF and FHA's physician workforce planning.

Impacts of Updated Data and Methods on Study Findings

This study updates key components of the workforce models compared to the 2015 Report. Key differences in model inputs and projections include the following:

- The 2015 Report projected that, starting from a 2013 supply of 42,610 FTEs, if the current (as of 2013) number of physicians entering Florida's workforce each year (2,230) remained unchanged, FTE physician supply would reach nearly 47,000 by 2019. This updated study found that the number of new entrants to Florida's workforce has been increasing over time, with about 2,324 now entering the workforce each year, and actual FTE supply in 2019 was 55,083. Thus, while 2013-2019 supply in the 2015 Report was projected to grow by about 4,400 FTEs absent policy intervention, actual supply growth over the time period was over 12,473 FTEs.

- Extrapolating a 2013 national average level of care (care use and delivery) to Florida's *projected* population in 2019 (20.9 million), the 2015 study projected demand for 53,710 FTE physicians in 2019. Extrapolating a 2019 national average level of care to the *actual* population in 2019 (21.5 million), this updated study projects demand for 58,918 FTEs (Exhibit 28). The higher population counts and updated

national average level of care each contributed to the 5,208 FTE increase in estimated 2019 demand between the 2015 Report and this updated report. Another contributing factor is that the *actual* 2013-2019 projected growth in the population age 65-74 and 75 and older (31% and 27%, respectively) was larger than the *projected* 2013-2019 growth for the age cohorts (25% and 15%, respectively) used in the 2015 Report. Differences in projected population growth and actual growth by age cohort and Medicaid region are presented in Exhibit 29.

- Although the 2015 study and this updated study use different benchmarks to estimate demand for physicians in Florida (i.e., 2013 national average versus 2019 national average level of care), the updated estimate of a shortfall of physicians in Florida (3,835 FTEs) is smaller than what was projected for 2019 in the 2015 study (5,933 FTEs).

Exhibit 28. Projections/Estimates of 2019 and 2025, 2015 Report vs. 2021 Report

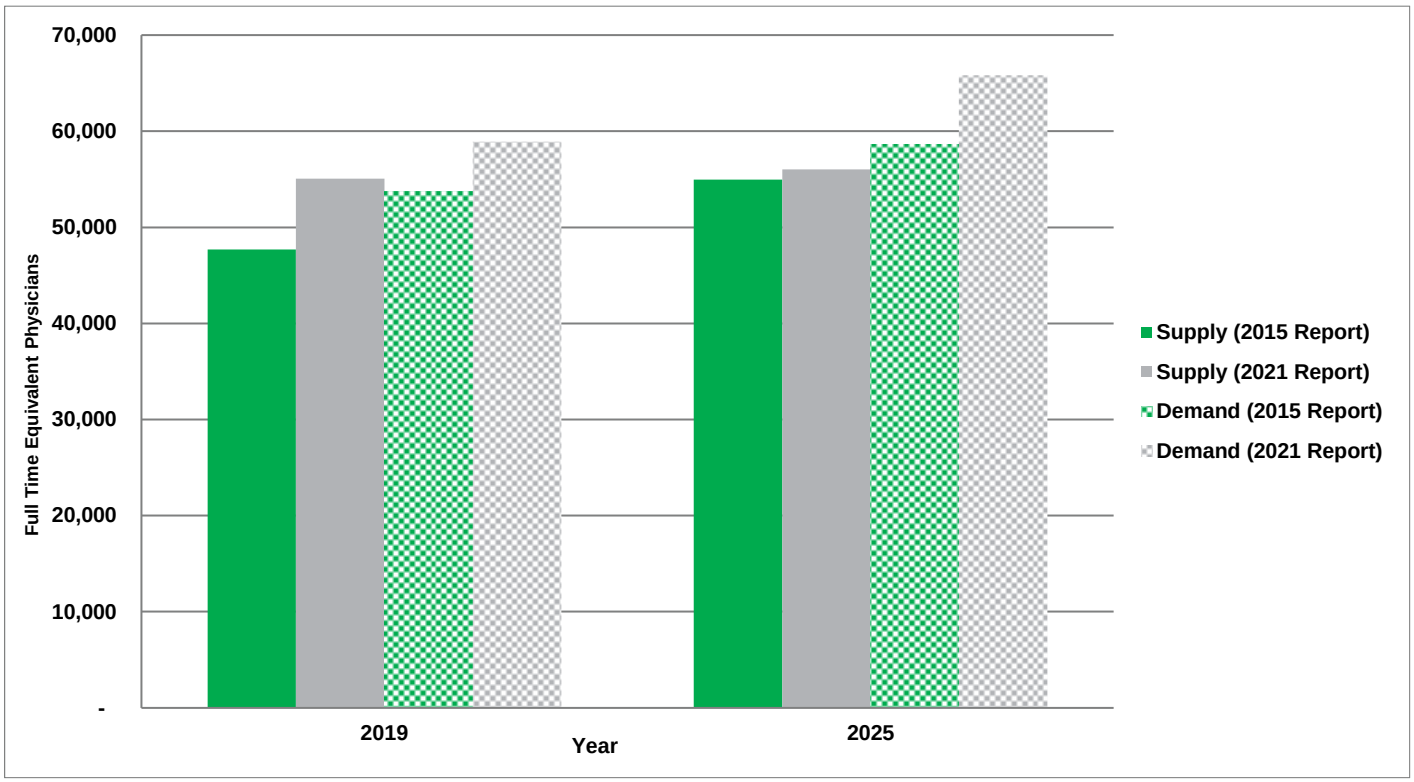


Exhibit 29. 2013-2019 Population Growth Rates, 2015 Report Projections vs. Actual Growth

	Medicaid Region											
Growth Rate 2013-2019	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Growth (2015 Report Projections)												
Age <18	3%	2%	6%	5%	3%	8%	8%	8%	6%	0%	3%	**5%**
Age 18 to 44	4%	3%	7%	6%	2%	9%	10%	11%	8%	1%	3%	**6%**
Age 45 to 64	1%	0%	6%	5%	0%	7%	8%	6%	5%	0%	7%	**5%**
Age 65 to 74	24%	27%	22%	31%	24%	26%	30%	21%	24%	26%	19%	**25%**
Age 75+	15%	17%	25%	18%	5%	15%	15%	18%	10%	10%	12%	**15%**
Florida Total	**6%**	**5%**	**11%**	**9%**	**4%**	**10%**	**11%**	**11%**	**9%**	**3%**	**6%**	**8%**
Growth (Actual)												
Age <18	9%	-1%	6%	6%	2%	7%	8%	2%	3%	3%	-1%	**4%**
Age 18 to 44	13%	-4%	8%	11%	10%	16%	15%	9%	9%	9%	1%	**9%**
Age 45 to 64	5%	-3%	0%	7%	4%	13%	12%	7%	8%	8%	10%	**8%**
Age 65 to 74	32%	29%	24%	40%	26%	34%	39%	32%	28%	32%	21%	**31%**
Age 75+	20%	23%	32%	26%	17%	30%	29%	45%	24%	16%	19%	**27%**
Florida Total	**12%**	**1%**	**10%**	**13%**	**9%**	**16%**	**15%**	**15%**	**11%**	**10%**	**5%**	**11%**

Note: County-level projected population growth rates from the University of Florida Bureau of Economic and Business Research were applied to 2013 population estimates from the American Community Survey to calculate the projected size of the future population. County-level population growth was then aggregated to the eleven Florida Medicaid Regions.

The physician projections developed in the 2015 Report used 2013 as the starting year and thus extrapolated 2013 national average patterns of care use and delivery to model demand, and extrapolated Florida-specific physician patterns of hours worked, retirement patterns, and annual new entrants to the future physician workforce. This updated study uses 2019 as the starting year, and the Status Quo supply and demand scenarios extrapolate more recent patterns of care use and delivery. Likewise, population projections and population characteristics have been updated. The 2015 Report results are reported over a 12-year period (2013 to 2025); this updated report presents results over a 16-year (rom 2019 to 2035).

In the 2021 report, 36 physician specialties are analyzed including primary care-trained hospitalists modeled separately whereas the 2015 Report included them as part of primary care providers. The new report also reports the projections for specialties such as colorectal cancer, neonatology, pathology, physical medicine & rehabilitation, and radiation oncology, which were not modeled by specialty in the previous report. Preventive medicine in the current report is not modeled as an individual specialty but is included in the "other specialties" specialty.

The 2015 Report modeled a separate scenario anticipating the full implications of expanded medical insurance coverage under the Affordable Care Act (ACA). However, in this update, the recent patterns of healthcare use and delivery largely incorporate the effects of ACA and therefore this scenario is no longer modeled separately in the new report. In addition, in the new study, projections of demand for healthcare services are adjusted based on analysis of AHCA data representing the true levels of use of hospital-based services in Florida. These adjustments take into account the additional effect on demand due to tourism and part-time residents that was not incorporated in the previous study.

The same supply modeling methods were used for this report as the 2015 Report, but were updated based on the most recent available data. The starting supply of physicians, characteristics of physicians in the starting supply, annual number of new physicians entering the Florida workforce, and characteristics of physicians entering the workforce now reflect 2021 physician licensure data provided to IHS Markit by the Florida Department of Health (though for many supply modeling inputs licensure entries from 2019 and prior were used to be consistent with the 2019 base modeling year). Similarly, hours worked and retirement patterns were derived from the 2021

Physician Survey obtained from the Florida department of health using similar methods to those used for the 2015 Report.

Compared to adequacy estimates in the 2015 Report, estimated base year statewide adequacy of physician supply in the updated projections is higher (90% in the 2015 Report vs. 93% after the update; Exhibit 30). Across Florida's 11 Medicaid regions, however, findings were split between five regions with an increased base year supply adequacy, and six regions with a decreased base year supply adequacy. Base year adequacy of expanded primary care physician specialties was higher in the 2015 report in all but three regions (Region 7, Region 10, and Region 11), while base year adequacy of non-primary care specialties is higher in the updated analysis in all but two regions (Region 3 and Region 9). These results suggest that while overall statewide estimated adequacy has increased, the increase is not uniform across regions and specialty areas.

Exhibit 30. Comparison of 2015 Report and Updated Base Year Estimated Adequacy of Physician Supply

	All Physicians		Expanded Primary Care		Non-Primary Care	
Medicaid Region	**2013 Adequacy**	**2019 Adequacy**	**2013 Adequacy**	**2019 Adequacy**	**2013 Adequacy**	**2019 Adequacy**
Region 1	85%	▲ 87%	92%	▼ 89%	77%	▲ 86%
Region 2	70%	▼ 69%	80%	▼ 72%	59%	▲ 67%
Region 3	81%	▼ 73%	85%	▼ 73%	77%	▼ 74%
Region 4	93%	▼ 92%	99%	▼ 92%	86%	▲ 92%
Region 5	93%	▼ 88%	103%	▼ 91%	83%	▲ 86%
Region 6	91%	▼ 90%	90%	▼ 87%	88%	▲ 92%
Region 7	81%	▲ 99%	86%	▲ 99%	72%	▲ 100%
Region 8	75%	▲ 76%	77%	▼ 76%	73%	▲ 76%
Region 9	93%	▼ 90%	91%	▼ 83%	95%	▼ 94%
Region 10	96%	▲ 109%	97%	▲ 101%	92%	▲ 115%
Region 11	113%	▲ 137%	120%	▲ 122%	105%	▲ 148%
Florida Total	**90%**	▲ **93%**	**94%**	▼ **91%**	**85%**	▲ **95%**

Note: Green arrows indicate an increase in percent adequacy between the 2015 Report and the updated report, and red arrows indicate a decrease in adequacy between the two reports.

Source: IHS Markit

Appendix 1: APRN Workforce Projections

Since July 1, 2020 advanced practice registered nurses (APRNs) in Florida with at least 3,000 hours of experience under the supervision of a physician and without disciplinary actions against their licenses in the previous 5 years can operate their own primary care practices without physician supervision.[28,29] Thus, APRNs can absorb some of the demand pressures on physicians. As such, analysis of demand and supply of the APRN workforce (2019 to 2035) in Florida is presented as well. This recent scope change has the potential to change the way APRNs deliver care in the future, and the possibility of APRNs practicing autonomously may help relieve some of the pressures placed on the physician workforce due to the shortage that is projected to increase in the future. Given this possibility, Florida's APRN supply and demand were modeled to determine the projected workforce adequacy in the state.

APRN Modeling Methods

The methods for modeling APRN supply and demand are similar to those used for physicians. Demand modeling relies on the same population file with information on the current and projected future characteristics of Florida's population and the same healthcare use patterns used to derive demand for healthcare services. Once the projections of physician demand were created, demand for APRNs working in Florida were derived using national APRN-to-physician ratios which were then applied to Florida's physician FTE projections; thus, the resulting APRN demand projections by APRN type reflect the level and mix of APRNs demanded based on national average patterns of care delivery.

On the supply side, like with physicians, each year of the simulation, newly graduated APRNs are assumed to enter the workforce, the current providers age one year, assumed changes are applied to the number of weekly hours providers work, provider retirement probabilities are updated to reflect the providers' new ages, and some providers are assumed to enter and leave the state due to cross-state migration.

The starting supply file for APRNs was constructed from the nurse licensure file maintained by the Florida Department of Health. Data elements retained and criteria for inclusion in the starting supply were similar to those for physicians; APRNs with an active license, Florida work location, who are between 20 and 74 years of age were included. Unlike physicians, however, specialty/APRN type (certified registered nurse anesthetist, certified nurse midwife, and primary care/non-primary care nurse practitioner) information was unavailable in the licensure data. Florida survey responses from the 2018 National Sample Survey of Registered Nurses (NSSRN) were used to create a distribution of Florida APRNs by type, with this distribution applied to the starting supply file.

Projected annual new entrants to the APRN workforce were estimated by averaging the number of annual APRN licenses issued from 2018-2019, resulting in 3,734 (28 nurse midwives, 226 nurse anesthetists, 874 primary care NPs, and 2,606 non-primary care NPs) APRNs entering the workforce annually. Characteristics of APRNs who recently obtained a license (after 2010) in Florida were used to estimate the sex, age, and race/ethnicity of projected new entrants to the workforce. Under the Status Quo supply scenario, the quantity and characteristics of annual new entrants to the workforce is projected to remain constant throughout the modeling period.

Hours worked and retirement patterns for APRNs were also derived in a similar fashion to those for physicians. However, given that nurses, unlike physicians, are not surveyed upon license renewal, no Florida-specific data source was available to create these workforce patterns. Instead, national APRN hours worked patterns and retirement patterns were created using 2018 NSSRN and extrapolated to APRNs working in Florida. These analyses capture how hours worked and retirement may differ based on APRN demographics and type of APRN. The APRN migration patterns are also derived from analyses Florida-specific responses from the 2010-2019

American Community Survey and suggest that approximately 30 APRNs leave Florida each year, and this number of out-migrating providers is assumed to remain constant throughout the projection period.

APRN Workforce Projections

Under the Status Quo demand scenario, where care use and delivery patterns remain unchanged, demand for the type of services provided by APRNs in Florida is projected to grow by 31% between 2019 and 2035, slightly outpacing the 27% demand growth projected for physicians (Exhibit 31). These differences in growth rates reflect that specialty and setting distribution of APRNs differs from the distribution for physicians, and that demand growth rates differ by specialty and setting. To the extent that physicians and APRNs overlap in some of the services they provide, demand for APRNs could exceed these levels if a larger proportion of care in the future is provided by APRNs.

Projected APRN growth rates vary by APRN type. Demand for services provided by nurse midwives is projected to grow by 16% (105 FTEs), a rate consistent with the 16% projected growth in demand for physicians working in obstetrics and gynecology. Similarly, the 26% projected demand growth rate for nurse anesthetists is consistent with the 26% projected demand for anesthesiologists and anesthesiology services. Demand for nurse practitioners working in primary care and non-primary care specialties are projected to grow at similar rates—32% and 33%, respectively, reflecting growth in demand for healthcare services across the specialty area and settings where they provide care. An estimated 77% (7,908 FTEs) of the total projected increase in demand for services that are provided by NPs is in non-primary care specialties, while the remaining 23% (2,372 FTEs) is in primary care specialties. Demand for providers could vary to the extent that provider organizations meet the projected demand for services by utilizing physicians, APRNs, or other providers such as physician assistants.

Exhibit 31. Projected Growth in Florida FTE APRN Demand, by APRN Type

APRN Type	Demand (2019)	Demand (2035)	Growth 2019-2035	% Growth 2019-2035
Nurse anesthetists	3,337	4,210	873	26%
Nurse midwives	680	785	105	16%
Nurse practitioners (primary care)	7,527	9,899	2,372	32%
Nurse practitioners (non-primary care)	24,214	32,121	7,908	33%
Florida APRN Total	**35,757**	**47,015**	**11,257**	**31%**

Source: IHS Markit

In contrast to the relatively slow 5% growth in Status Quo physician supply, APRN supply will nearly double by 2035 (Exhibit 32). While 2019 supply is 29,311 FTEs, 28,489 FTEs are projected to be added to the workforce during the projection period. Approximately 70% (19,789 FTEs) of this increase is expected to come from non-primary care NPs (in part reflecting that approximately 69% of new entrant nurse practitioners are in non-primary care specialties). Primary care NPs are projected to grow by 6,789 FTEs (98% growth) while nurse anesthetists and nurse midwives are projected to grow 1,762 FTEs (104%) and 195 FTEs (93%), respectively.

Exhibit 32. Projected Growth in Florida FTE APRN Supply, by APRN Type

APRN Type	Supply (2019)	Supply (2035)	Growth 2019-2035	% Growth 2019-2035
Nurse anesthetists	1,702	3,464	1,762	104%
Nurse midwives	210	405	195	93%
Nurse practitioners (primary care)	6,840	13,564	6,724	98%
Nurse practitioners (non-primary care)	20,559	40,348	19,789	96%
Florida APRN Total	**29,311**	**57,780**	**28,469**	**97%**

Source: IHS Markit

The APRN supply and demand estimates and projections described above suggest that in 2019 APRN supply was about 6,446 FTEs below the level required to provide a national average level of care. By 2035, the projected supply of APRNs will be about 10,765 FTEs higher than required to maintain current national staffing ratios between physicians and APRNs (Exhibit 33). This is not to say that Florida will have an excess of APRNs; rather, the additional supply of APRNs beyond that required to maintain current staffing ratios will help offset the growing shortfall of physicians.

Future supply of nurse midwives and nurse anesthetists in 2035 is projected to remain below the level that would be comparable to current national levels. Nurse practitioners, on the other hand, are driving the overall projected abundance of APRNs, with projected supply exceeding levels required to provide a national average level of care by 8,226 non-primary care NPs, and 3,666 primary care NPs. This projected abundance of nurse practitioners, along with the latest legislation in the state allowing some APRNs to practice autonomously, may help to reduce the burden placed on physicians implied by their projected shortfall.

Exhibit 33. Projected Adequacy of Florida FTE APRNs, by APRN Type, 2035

APRN Type	Supply (2035)	Demand (2035) [a]	Supply-Demand [b]
Nurse anesthetists	3,464	4,210	-746
Nurse midwives	405	785	-381
Nurse practitioners (primary care)	13,564	9,899	3,666
Nurse practitioners (non-primary care)	40,348	32,121	8,226
Florida APRN Total	**57,780**	**47,015**	**10,765**

Source: IHS Markit
Note: [a] Demand is based on 2019 national average care delivery patterns, and models the continuation of current APRN-to-physician ratios. [b] Negative numbers are added to the physician shortfall numbers to reflect that Florida has a supply deficit of both APRNs and physicians relative to national average levels. Positive numbers help offset the physician shortfall.

While APRN supply and demand modeling methods were carefully tailored to Florida to the extent possible, use of national data produces caveats to the projections. National data sources used in supply modeling of APRNs include the ACS and NSSRN datasets, which provide information on nurse workforce hours worked, retirement, and migration patterns. While Florida responses were used from these sources where possible, the small sample size of the Florida data subset may produce estimates with limited reliability. National data sources were used for demand modeling to provide information regarding population healthcare use patterns as well as information on APRN staffing. If the Florida population uses services at a different rate than the national average or Florida providers staff APRNs at levels different from the national average, these sources may produce estimates that differ from the true healthcare use and staffing in the state.

Appendix 2: Additional Tables

Exhibit 34. Estimated Demand for Physicians by Specialty and Medicaid Region, 2019

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total ***
Primary Care *	**891**	**816**	**2,310**	**2,601**	**1,906**	**3,116**	**3,062**	**2,331**	**2,630**	**2,068**	**2,590**	**24,321**
Traditional Primary Care *	**601**	**524**	**1,585**	**1,789**	**1,348**	**2,147**	**2,059**	**1,647**	**1,814**	**1,365**	**1,746**	**16,625**
Family Medicine	258	243	685	703	519	872	820	712	720	526	753	6,811
General Internal Medicine	190	164	575	655	551	749	702	612	676	464	518	5,856
Pediatric Medicine	129	98	240	368	218	442	475	226	326	332	430	3,284
Geriatric Medicine	24	19	85	63	60	84	62	97	92	43	45	674
Emergency Medicine	131	128	330	367	250	441	436	311	369	309	378	3,450
General Surgery	62	65	189	175	135	200	194	183	196	140	147	1,686
Obstetrics & Gynecology	97	99	206	270	173	328	373	190	251	254	319	2,560
Non-Primary Care *	**1,241**	**1,132**	**3,503**	**3,774**	**2,930**	**4,372**	**4,129**	**3,580**	**3,920**	**2,812**	**3,209**	**34,602**
Allergy & Immunology	10	9	24	30	20	29	32	23	28	26	17	248
Anesthesiology	115	108	308	328	247	385	377	315	340	254	293	3,070
Cardiology	76	72	260	248	208	292	261	258	291	183	217	2,366
Colorectal Surgery	6	5	17	17	14	21	20	20	20	15	21	176
Dermatology	27	23	82	92	85	104	97	94	98	61	65	828
Endocrinology	25	21	66	72	53	88	87	56	73	56	63	660
Gastroenterology	44	38	116	127	92	149	142	129	134	99	115	1,185
Hematology & Oncology	58	51	172	168	133	194	177	196	198	134	127	1,608
Hospital Medicine	95	93	271	273	201	329	302	271	297	211	248	2,591
Infectious Diseases	29	28	99	89	69	98	95	89	116	81	68	861
Neonatology	15	13	28	42	23	52	53	25	37	40	54	382
Nephrology	30	35	87	90	60	119	109	80	93	71	122	896
Neurological Surgery	10	7	35	51	52	58	55	33	52	37	47	437
Neurology	39	33	102	115	88	137	126	101	114	85	98	1,038
Ophthalmology	45	40	133	133	104	161	146	153	146	95	123	1,279
Orthopedic Surgery	65	58	175	186	142	205	195	166	181	130	128	1,631
Other Specialties	92	84	250	275	208	323	310	255	282	210	250	2,539
Otolaryngology	27	22	68	67	50	75	72	70	72	49	47	619
Pathology	44	43	127	128	94	154	142	127	139	99	116	1,213
Physical Medicine & Rehabilitation	24	22	84	120	100	126	133	80	119	108	128	1,044
Plastic Surgery	32	24	73	80	63	97	82	87	74	41	54	707
Psychiatry	108	90	245	352	258	389	395	221	282	246	299	2,885
Pulmonology & Critical Care	48	45	144	142	106	166	153	150	156	109	122	1,341
Radiation Oncology	20	18	59	57	46	66	60	67	68	46	43	550
Radiology	87	82	267	292	260	320	294	287	284	176	180	2,529
Rheumatology	16	15	45	47	35	55	52	45	49	37	41	437
Thoracic Surgery	13	13	37	36	27	42	39	39	41	30	31	348
Urology	28	24	86	80	64	93	84	101	95	58	59	772
Vascular Surgery	13	16	43	37	28	45	39	42	41	25	33	362
Total *	**2,134**	**1,948**	**5,811**	**6,373**	**4,838**	**7,486**	**7,189**	**5,907**	**6,552**	**4,880**	**5,799**	**58,918**

Source: HIS Markit

* Numbers might not sum to totals because of rounding

Exhibit 35. Estimated Demand for Physicians by Specialty and Medicaid Region, 2035

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total ***
Primary Care *	**1,098**	**977**	**2,956**	**3,363**	**2,321**	**4,044**	**4,081**	**3,068**	**3,266**	**2,458**	**3,139**	**30,771**
Traditional Primary Care *	**755**	**644**	**2,067**	**2,357**	**1,668**	**2,829**	**2,796**	**2,193**	**2,290**	**1,655**	**2,158**	**21,412**
Family Medicine	315	289	871	904	623	1,138	1,102	929	894	638	945	8,648
General Internal Medicine	247	212	776	900	700	1,017	985	830	875	584	671	7,797
Pediatric Medicine	153	110	285	441	250	537	595	283	381	364	471	3,870
Geriatric Medicine	40	33	135	112	95	137	114	151	140	69	71	1,097
Emergency Medicine	158	150	413	464	300	565	573	405	452	366	449	4,295
General Surgery	75	76	238	225	161	257	257	236	240	163	183	2,111
Obstetrics & Gynecology	110	107	238	317	192	393	455	234	284	274	349	2,953
Non-Primary Care *	**1,535**	**1,374**	**4,521**	**4,905**	**3,545**	**5,697**	**5,522**	**4,690**	**4,868**	**3,358**	**3,996**	**44,011**
Allergy & Immunology	12	10	29	35	22	34	38	27	31	27	18	283
Anesthesiology	140	127	389	418	295	491	492	407	413	293	354	3,819
Cardiology	103	95	361	356	277	413	386	362	390	241	292	3,276
Colorectal Surgery	7	7	23	24	17	28	28	27	26	19	28	234
Dermatology	34	28	107	121	103	133	127	123	120	68	80	1,044
Endocrinology	30	26	84	92	63	115	116	72	89	68	78	833
Gastroenterology	54	45	148	161	109	192	188	165	163	118	143	1,486
Hematology & Oncology	74	64	226	225	166	257	243	260	250	162	165	2,092
Hospital Medicine	121	117	361	371	256	446	422	369	385	266	315	3,429
Infectious Diseases	37	36	135	125	90	136	137	122	153	105	89	1,165
Neonatology	18	15	33	51	26	64	67	32	44	44	59	453
Nephrology	40	46	120	129	80	174	168	115	130	103	167	1,272
Neurological Surgery	13	9	47	69	65	77	76	44	65	44	60	569
Neurology	48	41	131	148	106	179	169	131	140	100	121	1,314
Ophthalmology	59	52	180	184	134	223	210	209	192	124	165	1,732
Orthopedic Surgery	76	66	215	228	162	253	245	206	213	144	152	1,960
Other Specialties	114	101	322	356	253	420	414	334	351	251	307	3,223
Otolaryngology	33	27	86	86	60	95	93	91	88	56	57	772
Pathology	57	55	169	174	120	209	198	173	180	125	148	1,608
Physical Medicine & Rehabilitation	29	25	107	152	116	161	177	102	147	134	162	1,312
Plastic Surgery	38	28	91	97	71	119	101	108	87	44	65	849
Psychiatry	120	97	283	406	276	457	470	260	309	257	331	3,266
Pulmonology & Critical Care	63	58	194	194	136	228	217	205	204	140	158	1,797
Radiation Oncology	25	22	77	77	57	88	83	89	85	56	56	715
Radiology	102	93	325	355	291	386	358	350	323	182	213	2,978
Rheumatology	19	18	58	61	42	73	71	59	61	46	53	561
Thoracic Surgery	16	16	48	48	34	56	54	53	52	37	39	453
Urology	36	30	115	111	82	127	118	137	124	72	78	1,030
Vascular Surgery	17	20	57	51	36	63	56	58	53	32	43	486
Total *	**2,636**	**2,348**	**7,476**	**8,269**	**5,868**	**9,739**	**9,601**	**7,757**	**8,137**	**5,816**	**7,136**	**74,784**

Source: HIS Markit

* Numbers might not sum to totals because of rounding

Exhibit 36. Estimated Supply of Physicians by Specialty and Medicaid Region, 2019

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total ***
Primary Care *	**791**	**583**	**1,676**	**2,401**	**1,741**	**2,719**	**3,027**	**1,761**	**2,179**	**2,087**	**3,171**	**22,136**
Traditional Primary Care *	**498**	**415**	**1,206**	**1,552**	**1,209**	**1,754**	**2,009**	**1,133**	**1,378**	**1,309**	**2,184**	**14,647**
Family Medicine	190	190	380	580	375	487	623	350	354	325	544	4,398
General Internal Medicine	166	137	533	594	515	778	760	522	637	605	934	6,181
Pediatric Medicine	131	75	249	337	272	432	541	217	331	336	639	3,560
Geriatric Medicine	11	13	44	41	47	57	85	44	56	43	67	508
Emergency Medicine	115	65	181	380	236	382	416	270	323	316	362	3,046
General Surgery	82	43	134	198	141	247	229	150	205	160	279	1,868
Obstetrics & Gynecology	96	60	155	271	155	336	373	208	273	302	346	2,575
Non-Primary Care *	**1,068**	**762**	**2,577**	**3,462**	**2,528**	**4,010**	**4,113**	**2,736**	**3,698**	**3,242**	**4,749**	**32,945**
Allergy & Immunology	12	5	16	20	24	34	33	25	35	21	47	272
Anesthesiology	144	80	260	394	236	389	445	239	359	372	473	3,391
Cardiology	70	60	186	259	205	289	314	207	280	229	356	2,455
Colorectal Surgery	3	3	9	14	7	19	15	12	18	23	23	146
Dermatology	29	22	86	107	93	115	106	136	167	106	155	1,122
Endocrinology	11	8	40	52	37	53	72	32	57	57	92	511
Gastroenterology	35	27	112	155	99	134	159	115	141	127	180	1,284
Hematology & Oncology	41	22	104	139	92	164	138	94	127	107	172	1,200
Hospital Medicine	63	46	141	179	158	226	233	128	188	159	266	1,787
Infectious Diseases	13	12	56	62	45	98	95	54	64	54	99	652
Neonatology	7	9	26	42	20	39	49	15	37	48	78	370
Nephrology	20	15	64	81	56	84	83	57	86	85	113	744
Neurological Surgery	16	9	33	50	29	37	58	34	44	33	53	396
Neurology	33	35	94	157	93	145	146	119	130	109	195	1,256
Ophthalmology	41	44	120	141	127	188	155	153	201	136	195	1,501
Orthopedic Surgery	84	44	118	177	129	191	219	167	221	188	217	1,755
Other Specialties	48	28	91	117	101	142	146	82	124	107	146	1,132
Otolaryngology	42	19	44	80	52	86	97	65	83	54	99	721
Pathology	52	40	151	172	106	265	169	121	158	137	231	1,602
Physical Medicine & Rehabilitation	27	10	58	79	58	91	96	61	78	74	95	727
Plastic Surgery	18	16	38	62	54	75	81	64	94	76	144	722
Psychiatry	61	60	180	190	157	289	266	158	261	201	334	2,157
Pulmonology & Critical Care	36	26	99	143	115	138	208	108	126	129	209	1,337
Radiation Oncology	10	7	41	59	42	64	79	51	53	49	72	527
Radiology	97	70	249	357	242	443	438	264	358	408	471	3,397
Rheumatology	12	6	29	32	41	37	49	28	54	35	51	374
Thoracic Surgery	10	11	36	42	32	56	46	36	46	33	47	395
Urology	28	17	72	79	60	94	80	78	80	67	108	763
Vascular Surgery	5	11	24	21	18	25	38	33	28	18	28	249
Total *	**1,857**	**1,346**	**4,252**	**5,864**	**4,268**	**6,730**	**7,142**	**4,495**	**5,879**	**5,328**	**7,922**	**55,083**

Source: HIS Markit

* Numbers might not sum to totals because of rounding

Exhibit 37. Estimated Supply of Physicians by Specialty and Medicaid Region, 2035

	Medicaid Region											
Specialty	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total ***
Primary Care *	**892**	**549**	**1,758**	**2,502**	**1,755**	**2,983**	**3,330**	**1,850**	**2,008**	**1,972**	**3,297**	**22,896**
Traditional Primary Care *	**569**	**414**	**1,264**	**1,685**	**1,254**	**1,937**	**2,292**	**1,179**	**1,301**	**1,289**	**2,251**	**15,435**
Family Medicine	168	163	338	513	343	504	637	393	334	294	573	4,260
General Internal Medicine	221	144	608	746	556	907	950	568	581	638	996	6,915
Pediatric Medicine	163	88	274	400	336	469	620	188	342	326	617	3,823
Geriatric Medicine	17	19	44	26	19	57	85	30	44	31	65	437
Emergency Medicine	107	69	163	337	196	421	365	241	271	266	340	2,776
General Surgery	100	31	181	234	150	297	293	198	225	167	353	2,229
Obstetrics & Gynecology	116	35	150	246	155	328	380	232	211	250	353	2,456
Non-Primary Care *	**1,340**	**736**	**2,679**	**3,710**	**2,501**	**4,361**	**4,331**	**2,831**	**3,438**	**3,046**	**4,990**	**33,963**
Allergy & Immunology	14	0	15	19	33	43	28	25	32	22	45	276
Anesthesiology	147	78	227	365	240	362	454	216	282	335	459	3,165
Cardiology	104	63	163	305	212	333	339	242	256	220	406	2,643
Colorectal Surgery	7	5	8	12	17	22	19	14	23	17	20	164
Dermatology	33	21	104	125	118	123	113	86	170	87	130	1,110
Endocrinology	18	5	55	55	46	66	75	30	57	81	100	588
Gastroenterology	30	30	107	165	81	173	163	139	107	88	200	1,283
Hematology & Oncology	69	39	120	203	116	226	175	142	158	145	261	1,654
Hospital Medicine	72	33	170	210	166	278	249	142	211	176	285	1,992
Infectious Diseases	15	6	38	25	29	82	72	31	47	30	56	431
Neonatology	13	14	20	51	15	43	69	15	20	41	66	367
Nephrology	27	12	87	75	34	95	92	58	80	85	114	759
Neurological Surgery	35	8	46	65	43	46	54	33	47	33	49	459
Neurology	47	35	147	187	92	157	159	176	133	113	238	1,484
Ophthalmology	36	70	115	164	127	258	172	188	202	131	213	1,676
Orthopedic Surgery	83	49	124	163	118	193	186	192	210	169	265	1,752
Other Specialties	48	21	98	124	80	162	121	65	127	84	132	1,062
Otolaryngology	58	20	57	99	63	106	103	69	98	57	120	850
Pathology	88	33	186	216	111	287	198	162	171	139	242	1,833
Physical Medicine & Rehabilitation	36	12	59	87	51	114	133	61	80	76	124	833
Plastic Surgery	17	9	32	65	43	53	69	51	55	62	145	601
Psychiatry	82	37	175	187	158	280	250	159	247	158	306	2,039
Pulmonology & Critical Care	45	21	85	128	78	107	205	81	99	113	187	1,149
Radiation Oncology	15	3	33	44	34	69	86	53	46	50	78	511
Radiology	118	73	269	410	256	489	526	237	296	430	520	3,624
Rheumatology	20	11	27	39	48	37	75	31	66	30	61	445
Thoracic Surgery	23	4	32	39	22	37	49	23	30	19	51	329
Urology	32	7	55	58	65	69	47	71	58	29	82	573
Vascular Surgery	8	17	25	25	5	51	50	39	30	26	35	311
Total *	**2,229**	**1,286**	**4,436**	**6,213**	**4,254**	**7,345**	**7,660**	**4,681**	**5,449**	**5,018**	**8,288**	**56,859**

Source: HIS Markit

* Numbers might not sum to totals because of rounding

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