

National and Regional Projections of Supply and Demand for Internal Medicine Subspecialty Practitioners: 2013-2025

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National and Regional Projections of Supply and Demand for Internal Medicine Practitioners: 2013-2025

Overview

This report presents the projected 2025 supply and demand for physicians and physician assistants (PA) specializing in internal medicine subspecialties, with 2013 serving as the base year. Projections were developed using the Health Resources and Services Administration's (HRSA) Health Workforce Simulation Model (HWSM), an integrated microsimulation model that estimates current and future supply and demand for health care workers in multiple professions and care settings. Consistent with standard projection methodologies, baseline demand for all internal medicine subspecialty providers is assumed to be equal to the baseline supply. The model also assumes that health care delivery will not change substantially from the base year (2013); and that current rates of workforce participation will remain stable into the future (2025).

The eleven internal medicine subspecialties presented in this report include: allergy and immunology, cardiology, dermatology, endocrinology, gastroenterology, hematology/oncology, infectious disease, nephrology, pulmonology, rheumatology, and neonatal/perinatal medicine.¹ In addition to national estimates, the report includes estimates for the U.S. Census Bureau regions (Appendix A, Exhibit A-1). Results for physicians and PAs are presented separately. All estimates are reported as full-time equivalents (FTEs) which are rounded to the nearest tenth. Nurse Practitioners are not included in this report because they typically do not practice in these specialties.

Important limitations for these workforce projections include: an underlying model assumption that health care delivery in the future (projected until 2025) will not change substantially from the way care was delivered in the base year (2013); and current rates of workforce participation and retirement will continue similarly into the future, as well as current patterns of health care

¹ Small sample precluded presenting projections for PAs in allergy/immunology at the regional level and neonatal/perinatal PAs at the national level and regional levels.

utilization. Changes in any of these factors may significantly impact both the supply and demand projections for the internal medicine practitioners included in this report.

Key Findings

Physicians

- In 2025, national physician shortages are projected in seven internal medicine subspecialties: allergy and immunology, cardiology, dermatology, gastroenterology, hematology/oncology, pulmonology, and rheumatology. Among these, the greatest shortages are projected for cardiologists (7,080 FTEs), gastroenterologists (1,630 FTEs), hematologists/oncologists (1,400 FTEs), and pulmonologists (1,400 FTEs).
- Regionally, the Northeast is projected to have a surplus of physicians in all internal medicine subspecialties. The other regions are projected to experience physician shortages in 8 to 10 subspecialties in 2025.

Physician Assistants

- National projections for PAs in internal medicine subspecialties demonstrate an overall surplus in 2025, with the greatest surpluses of PAs expected in dermatology (2,020 FTEs) and cardiology (2,000 FTEs). Only two subspecialties are projected to show national deficits for PAs in 2025 (infectious disease: 210 FTEs; allergy and immunology: 90 FTEs).
- Regional projections show that there will be a shortage of PAs in infectious disease in the Northeast (50 FTEs), the Midwest (50 FTEs) and the South (40 FTEs) in 2025. The West region is projected to have a surplus of PAs in all the subspecialties with the largest being in dermatology (770 FTEs).

Background

Demand for health care providers is expected to increase, primarily due to population aging and growth and, to a lesser extent, increased utilization of health care following the national

expansion of insurance coverage.^{2,3,4} Physicians and PAs will continue as essential members of the workforce that will be required to meet demand for services. This report presents an assessment of the supply of physicians and PAs to meet future demand for 11 internal medicine subspecialties (allergy and immunology, cardiology, dermatology, endocrinology, gastroenterology, hematology/oncology, infectious disease, nephrology, pulmonology, rheumatology, and neonatal/perinatal medicine).^{5,6}

The national and regional projections of supply and demand for internal medicine physicians and PAs in this report use HRSA's HWSM with 2013 as the base year.⁷ For supply modeling, the major components include characteristics of the existing workforce in the occupation, new entrants to the workforce (e.g., newly trained workers); and workforce decisions (e.g., retirement and hours worked patterns); as well as common labor-market factors like unemployment and wage rates. For demand modeling, the HWSM assumes that demand equals supply in the base year at the national level, consistent with standard workforce research methodology for analyses like these where there are no consistent national or regional data sources available to estimate base year shortages/surpluses.⁸ The major influences on demand include population characteristics (age, sex, health status, and insurance coverage). Over the projection period, the model assumes that current national patterns of supply and demand remain unchanged within each demographic group (as defined by age, sex, etc.). At the regional level, supply estimates are obtained directly from provider databases and projected forward based on the propensity of

² Hofer AN, Abraham JM, and Moscovice I. Expansion of Coverage under the Patient Protection and Affordable Care Act and Primary Care Utilization. *Milbank Quarterly*, 2011; 89: 69–89.

³ Petterson SM, Liaw WR, Phillips RL, Rabin DL, Meyers DS, and Bazemore AW. Projecting US Primary Care Physician Workforce Needs: 2010-2025. *Annals of Family Medicine*, 2013; 10(6):503-509.

⁴ Dall TM, Gallo PD, Chakrabarti R, West T, Semilla AP, Storm, MV. An Aging Population and Growing Disease Burden Will Require A Large and Specialized Health Care Workforce By 2025. *Health Affairs*, 2013; 32:2013-2020. [An Aging Population And Growing Disease Burden Will Require A Large And Specialized Health Care Workforce By 2025](#)

⁵ A brief description of each medical subspecialty can be found at the end of this report in Appendix I.

⁶ Results for PAs in allergy and immunology and in neonatal/perinatal medicine are not presented at the regional level because data limitations did not allow for their estimation.

⁷ This model uses a micro-simulation approach where supply is projected based on the simulation of career choices of individual health workers. Demand for health care services is simulated for a representative sample of the current and future U.S. population based on each person's demographic and socioeconomic characteristics, health-related behavior, and health risk factors that affect their health care utilization patterns. For more information on data and methods as well as for technical documentation of the HWSM, please see [Technical Documentation for Health Resources Service Administration's Health Workforce Simulation Model](#).

⁸ Ono T, Lafortune G, Schoenstein M. "Health workforce planning in OECD countries: a review of 26 projection models from 18 countries." OECD Health Working Papers, No. 62. France: OECD Publishing; 2013: 8-11.

new entrants to practice in the region. Baseline regional demands were estimated from the state population demographics, health status, health care use, insurance status, and using state population characteristics to prorate baseline demand for health care providers.

Results

Physicians

The projected supply of physicians across 7 of the 11 internal medicine subspecialties is expected to be inadequate to meet 2025 demand. Specifically, projections show deficits for cardiologists (7,080 FTEs), gastroenterologists (1,630 FTEs), hematologists/oncologists (1,400 FTEs), and pulmonologists (1,400 FTEs) (Exhibit 1). Of the 11 internal medicine subspecialties, 4 (endocrinology, infectious disease, nephrology, and neonatal/perinatal medicine) are projected to have an adequate supply of physician providers in 2025.

Exhibit 1: National Estimates of Physician Supply and Demand of Internal Medicine Subspecialties (2013-2025)

Subspecialty ^a	Baseline Estimates (FTEs, 2013)	Projections (FTEs, 2025)		
	Supply = Demand ^b	Supply	Demand	Difference ^c
Allergy and Immunology	4,480	4,140	4,620	-480
Cardiology	27,940	28,560	35,640	-7,080
Dermatology	11,380	13,100	13,530	-430
Endocrinology	7,440	9,030	8,750	280
Gastroenterology	14,610	15,540	17,170	-1,630
Hematology/Oncology	15,890	18,100	19,500	-1,400
Infectious Disease	8,420	10,610	10,400	210
Nephrology	9,190	12,120	11,990	130
Pulmonology	12,380	14,110	15,510	-1,400
Rheumatology	5,480	6,330	6,610	-280
Neonatal/Perinatal Medicine	4,810	5,260	5,120	140

Notes: Numbers may not sum to totals due to rounding. All estimates are rounded to the nearest 10.

^a Subspecialties reflect physicians' primary reported discipline and include pediatric subspecialties.

^b Supply and demand for 2013 internal medicine subspecialty physicians and PAs were assumed to be in approximate equilibrium at the national level.

^c Difference = (supply – demand); a negative difference reflects a shortage (i.e., supply is less than demand), while a positive difference indicates a surplus (i.e., supply is greater than demand).

Baseline supply and demand for regional projections are estimated independently and are not assumed to be in equilibrium. Regional supply was determined according to the state where physicians practiced. Regional demands were estimated by prorating the national demand for health care services based on regional population characteristics (e.g., age, sex, household income, insurance status, health status, etc.) and applying the national staffing ratios. Thus

regional demand projections account for variations in demographic, economic, and health risk factors between the regions; but because these do not account for regional differences in staffing and service delivery, they indicate the number of providers required by the regions to achieve a national level of care. At baseline, regional physician shortages are observed in most subspecialties, except in the Northeast, which had surpluses in all subspecialties. These general patterns are projected to persist in 2025 (Exhibit 2). In the Northeast, the subspecialties with the largest 2025 physician surpluses are hematologists/oncologists (930 FTEs), infectious disease physicians (810 FTEs), and endocrinologists (730 FTEs).

In the South, physician deficits are projected across 10 of the 11 internal medicine subspecialties in 2025, with cardiology (3,460 FTEs) and hematology/oncology (1,360 FTEs) experiencing the greatest shortages. Allergy and immunology is the only subspecialty where the physician supply is expected to be adequate in the South in 2025.

In the Midwest and the West, the largest 2025 deficits are projected for physicians in cardiology, with a shortage of 1,790 FTEs in the Midwest and 2,360 FTEs in the West. Additionally, the Midwest and the West are projected to have physician shortages of more than 500 FTEs in gastroenterology (810 FTEs in the Midwest; 680 FTEs in the West), as well as in pulmonology and dermatology in the Midwest (730 FTE pulmonologists; 660 FTE dermatologists) and in hematology/oncology in the West (510 FTE hematologists/oncologists).

Exhibit 2: Regional Estimates of Physician Supply and Demand of Internal Medicine Subspecialties (2013-2025)

Region ^a and Subspecialty ^b	Baseline Estimates (FTEs, 2013)			Projections (FTEs, 2025)		
	Supply	Demand	Difference ^c	Supply	Demand	Difference ^c
Northeast						
Allergy and Immunology	1,010	820	190	810	790	20
Cardiology	7,120	5,160	1,960	6,570	6,050	520
Dermatology	2,560	2,310	250	2,670	2,530	140
Endocrinology	2,080	1,420	660	2,260	1,530	730
Gastroenterology	3,760	2,840	920	3,600	3,060	540
Hematology/Oncology	4,100	2,880	1,220	4,170	3,240	930
Infectious Disease	2,360	1,510	850	2,520	1,710	810
Nephrology	2,150	1,650	500	2,500	1,940	560
Pulmonology	3,060	2,300	760	3,160	2,640	520
Rheumatology	1,380	1,090	290	1,460	1,190	270
Neonatal/Perinatal Medicine	1,050	770	280	1,140	750	390

Region ^a and Subspecialty ^b	Baseline Estimates (FTEs, 2013)			Projections (FTEs, 2025)		
	Supply	Demand	Difference ^c	Supply	Demand	Difference ^c
Midwest						
Allergy and Immunology	930	910	20	740	870	-130
Cardiology	5,920	6,280	-360	5,570	7,360	-1,790
Dermatology	2,030	2,540	-510	2,140	2,800	-660
Endocrinology	1,480	1,630	-150	1,580	1,760	-180
Gastroenterology	2,780	3,230	-450	2,690	3,500	-810
Hematology/Oncology	3,210	3,320	-110	3,310	3,750	-440
Infectious Disease	1,610	1,960	-350	1,790	2,230	-440
Nephrology	1,800	1,790	10	2,180	2,110	70
Pulmonology	2,460	2,770	-310	2,480	3,210	-730
Rheumatology	1,110	1,160	-50	1,160	1,270	-110
Neonatal/Perinatal Medicine	1,030	1,010	20	1,120	980	140
South						
Allergy and Immunology	1,600	1,550	50	1,610	1,590	20
Cardiology	9,840	10,800	-960	10,500	13,960	-3,460
Dermatology	3,910	3,990	-80	4,700	4,830	-130
Endocrinology	2,460	2,870	-410	3,200	3,440	-240
Gastroenterology	5,090	5,310	-220	5,690	6,380	-690
Hematology/Oncology	5,410	6,210	-800	6,380	7,740	-1,360
Infectious Disease	2,930	3,240	-310	3,910	4,060	-150
Nephrology	3,440	1,830	1,610	4,660	5,330	-670
Pulmonology	4,290	4,610	-320	5,070	5,880	-810
Rheumatology	1,830	1,980	-150	2,170	2,440	-270
Neonatal/Perinatal Medicine	1,730	1,830	-100	1,890	2,020	-130
West						
Allergy and Immunology	940	1,190	-250	980	1,380	-400
Cardiology	5,060	5,720	-660	5,910	8,270	-2,360
Dermatology	2,870	2,550	320	3,590	3,380	210
Endocrinology	1,420	1,520	-100	2,000	2,010	-10
Gastroenterology	2,970	3,220	-250	3,560	4,240	-680
Hematology/Oncology	3,180	3,480	-300	4,250	4,760	-510
Infectious Disease	1,520	1,720	-200	2,400	2,390	10
Nephrology	1,810	1,760	50	2,790	2,610	180
Pulmonology	2,570	2,700	-130	3,400	3,780	-380
Rheumatology	1,160	1,250	-90	1,540	1,700	-160
Neonatal/Perinatal Medicine	1,000	1,210	-210	1,110	1,380	-270

Notes: Numbers may not sum to totals due to rounding. All estimates are rounded to the nearest 10.

^a Baseline supply and demand are not in equilibrium in the regions because regional demands were estimated by prorating the national demand for health care services based on regional population characteristics (e.g., age, sex, household income, insurance status, health status, etc.).

^b Subspecialties reflect physicians' primary reported discipline and include pediatric subspecialties.

^c Difference = (supply – demand); a negative difference reflects a shortage (i.e., supply is less than demand), while a positive difference indicates a surplus (i.e., supply is greater than demand).

Physician Assistants

In 8 out of 10 internal medicine subspecialties, PA supply is projected to exceed demand at the national level in 2025. The largest surpluses are in dermatology (2,020 FTEs), cardiology (2,000 FTEs), and hematology/oncology (1,090 FTEs). Infectious disease (210 FTEs) and

allergy and immunology (90 FTEs) are the only subspecialties where PA shortages are projected at the national level (Exhibit 3).

Exhibit 3: National Estimates of Physician Assistant (PA) Supply and Demand of Internal Medicine Subspecialties (2013-2025)

Subspecialty ^a	Baseline Estimates (FTEs, 2013)	Projections (FTEs, 2025)		
	Supply = Demand ^b	Supply	Demand	Difference ^c
Allergy and Immunology	250	170	260	-90
Cardiology	5,480	8,990	6,990	2,000
Dermatology	3,810	6,550	4,530	2,020
Endocrinology	420	750	490	260
Gastroenterology	1,560	2,820	1,840	980
Hematology/Oncology	1,940	3,470	2,380	1,090
Infectious Disease	480	380	590	-210
Nephrology	370	580	480	100
Pulmonology	440	740	550	190
Rheumatology	320	610	390	220
Neonatal/Perinatal Medicine	(d)	(d)	(d)	(d)

Notes: Numbers may not sum to totals due to rounding. All estimates are rounded to the nearest 10.

^a Subspecialties reflect PAs' primary reported discipline.

^b Supply and demand for 2013 internal medicine subspecialty physicians and PAs were assumed to be in approximate equilibrium at the national level.

^c Difference = (supply – demand); a negative difference reflects a shortage (i.e., supply is less than demand), while a positive difference indicates a surplus (i.e., supply is greater than demand).

^d Sample sizes were too small to make accurate projections for this subspecialty at the national level.

The regional estimates of PAs in internal medicine subspecialties show an uneven distribution in 2013. The West has PA shortages in all subspecialties, while the other regions have PA shortages only in certain disciplines. By 2025, all four regions are projected to experience PA surpluses in most subspecialties (Exhibit 4).

In the Northeast, the largest surpluses in 2025 are expected for PAs specializing in cardiology (1,070 FTEs), hematology/oncology (260 FTEs), and gastroenterology (210 FTEs). Deficits are projected in the Northeast for infectious disease PAs (50 FTEs) and endocrinology PAs (10 FTEs).

In 2025, the Midwest is expected to have PA surpluses in eight of the nine subspecialties. Infectious disease is the only subspecialty with a projected PA shortage (50 FTEs).

In the South, 2025 PA supply is projected to exceed demand in eight of the nine subspecialties. Dermatology (1,110 FTEs), gastroenterology (420 FTEs), and hematology/oncology (420 FTEs) show the largest surpluses.

In the West, all nine subspecialties have surpluses in 2025. The greatest PA surplus is expected to be in dermatology (770 FTEs).

Exhibit 4: Regional Estimates of Physician Assistant (PA) Supply versus Demand for Internal Medicine Subspecialties (2013-2025)

Region ^a and Subspecialty ^b	Baseline Estimates (FTEs, 2013)			Projections (FTEs, 2025)		
	Supply	Demand	Difference ^c	Supply	Demand	Difference ^a
Northeast						
Allergy and Immunology	(d)	(d)	(d)	(d)	(d)	(d)
Cardiology	1,780	1,010	770	2,260	1,190	1,070
Dermatology	720	770	-50	950	850	100
Endocrinology	60	80	-20	80	90	-10
Gastroenterology	370	400	-30	530	320	210
Hematology/Oncology	490	450	40	660	400	260
Infectious Disease	110	80	30	40	90	-50
Nephrology	70	70	0	110	80	30
Pulmonology	90	80	10	120	100	20
Rheumatology	90	60	30	120	70	50
Neonatal/Perinatal Medicine	(d)	(d)	(d)	(d)	(d)	(d)
Midwest						
Allergy and Immunology	(d)	(d)	(d)	(d)	(d)	(d)
Cardiology	1,170	1,230	-60	1,630	1,440	190
Dermatology	620	850	-230	970	940	30
Endocrinology	90	90	0	130	100	30
Gastroenterology	340	340	0	490	370	120
Hematology/Oncology	400	410	-10	580	460	120
Infectious Disease	90	100	-10	50	100	-50
Nephrology	90	70	20	130	80	50
Pulmonology	110	100	10	140	120	20
Rheumatology	50	70	-20	80	70	10
Neonatal/Perinatal Medicine	(d)	(d)	(d)	(d)	(d)	(d)
South						
Allergy and Immunology	(d)	(d)	(d)	(d)	(d)	(d)
Cardiology	1,770	2,120	-350	3,120	2,740	380
Dermatology	1,630	1,340	290	2,730	1,620	1,110
Endocrinology	200	160	40	330	190	140
Gastroenterology	610	570	40	1,110	690	420
Hematology/Oncology	710	760	-50	1,370	950	420
Infectious Disease	180	180	0	150	190	-40
Nephrology	150	160	-10	230	210	20
Pulmonology	170	170	0	280	210	70
Rheumatology	120	120	0	240	140	100
Neonatal/Perinatal Medicine	(d)	(d)	(d)	(d)	(d)	(d)
West						
Allergy and Immunology	(d)	(d)	(d)	(d)	(d)	(d)
Cardiology	760	1,120	-360	1,990	1,620	370
Dermatology	840	850	-10	1,900	1,130	770
Endocrinology	70	90	-20	210	110	100
Gastroenterology	230	340	-110	690	450	240
Hematology/Oncology	340	420	-80	860	580	280
Infectious Disease	100	120	-20	150	150	0

Region ^a and Subspecialty ^b	Baseline Estimates (FTEs, 2013)			Projections (FTEs, 2025)		
	Supply	Demand	Difference ^c	Supply	Demand	Difference ^a
Nephrology	60	70	-10	110	110	0
Pulmonology	80	100	-20	190	140	50
Rheumatology	60	70	-10	170	100	70
Neonatal/Perinatal Medicine	(d)	(d)	(d)	(d)	(d)	(d)

Notes: Numbers may not sum to totals due to rounding. All estimates are rounded to the nearest 10.

^a Baseline supply and demand are not in equilibrium in the regions because regional supply and demand were estimated independently. Regional supplies were estimated and are obtained directly from provider databases and regional demands were estimated by prorating the national demand for health care services based on regional population characteristics (e.g., age, sex, household income, insurance status, health status, etc.).

^b Subspecialties reflect PAs' primary reported discipline.

^c Difference = (supply – demand); a negative difference reflects a shortage (i.e., supply is less than demand), while a positive difference indicates a surplus (i.e., supply is greater than demand).

^d Sample sizes were too small to make accurate projections for this subspecialty at the regional level.

Strengths and Limitations

The model that was used to develop the supply and demand projections presented in this report (HWSM) relies on a microsimulation approach. Microsimulation techniques provide greater flexibility and granularity than the traditional cohort based approaches.

HWSM is built to reflect the current patterns of health care utilization, service delivery and labor market activities in the United States and its regions. It must be recognized that future supply and demand may be shaped by changes in a number of factors that are not accounted for by HWSM. These include:

- Propensity to use health care services by demographic groups or insurance status,
- Specialty care affordability,
- Scope of practice regulations,
- Technological advances and innovations in specialty care, and
- Changes in propensity of providers to migrate across regions.

As these factors change, the relationship between provider supply and demand will also change. As such, results presented in this report are to be interpreted based on the assumptions underlying HWSM.⁹

Summary

This report is one in a series of HRSA reports on the nation's health care workforce. These reports are intended to help provide a general understanding of the current and future workforce supply and demand in the context of a growing and aging population, together with increased insurance coverage. This report presents estimates of current and future supply and demand for physicians and PAs in internal medicine subspecialties.

National increases in health workforce demand for internal medicine subspecialties are due primarily to the growth and aging of the population, and, to a lesser extent, to increased health care utilization following expanded health insurance coverage. Physician supply at the national level is expected to be inadequate to meet projected demands in 2025 for 7 of the 11 internal medicine subspecialties presented in this report. The greatest shortfall is projected for cardiologists (7,080 FTEs) followed by gastroenterologists (1,630 FTEs), hematologists/oncologists (1,400 FTEs), and pulmonologists (1,400 FTEs). Conversely, PA supply at the national level is expected to be adequate to meet projected 2025 demand among 8 of the 10 subspecialties. PA surpluses are projected to be the largest in dermatology (2,020 FTEs), followed by cardiology (2,000 FTEs), hematology/oncology (1,090 FTEs), and gastroenterology (980 FTEs).

In addition to general shortages, regional projections reveal distributional problems in the physician workforce. With the exception of the Northeast, which exhibits projected surpluses in all of the internal medicine subspecialties, the other three regions are projected to experience significant shortages in subspecialty physicians. Regional projections of the PA workforce in internal medicine subspecialties also show some maldistribution of the workforce. For example,

⁹ This model uses a micro-simulation approach where supply is projected based on the simulation of career choices of individual health workers. Demand for health care services is simulated for a representative sample of the current and future U.S. population based on each person's demographic and socioeconomic characteristics, health-related behavior, and health risk factors that affect their health care utilization patterns. For more information on data and methods, please see <http://bhwh.hrsa.gov/healthworkforce/supplydemand/simulationmodeldocumentation.pdf>.

the projected surplus of cardiology PAs concentrates in the Northeast (1,070 FTEs), while the projected surplus of dermatology PAs concentrates in the South (1,110 FTEs) and West (770 FTEs) regions. The geographic maldistribution by subspecialty groups may limit the extent to which PA surpluses can help increase productivity of physicians in internal medicine subspecialties.

It should be reiterated that these projections reflect the HWSM's underlying assumptions about baseline supply and demand,¹⁰ and the findings must be interpreted in the context of those assumptions. For example, HWSM assumes national level equilibrium of supply and demand for PAs in all specialties. However, if the baseline supply of these providers is less than baseline demand, then the projected surplus of specialists may be overestimated.

In the absence of specific data on baseline shortages or surpluses, it is not possible to derive exact estimates of future shortages or surpluses of internal medicine subspecialty providers. These projections instead provide a general pattern of workforce adequacy. As the internal medicine subspecialty workforce supply and demand data become more complete, it will be possible to improve HWSM model to more fully characterize shortages and surpluses of internal medicine subspecialty providers.

¹⁰ Under the baseline scenario, 2013 supply and demand for internal medicine physicians and physician assistants was assumed to be in approximate equilibrium at the national level. Baseline supply and demand are not in equilibrium in the regions because regional demands were estimated by prorating the national demand for health care services based on regional population characteristics (e.g., age, sex, household income, insurance status, health status, etc.).

Appendix A: U.S. Census Bureau Regions

Exhibit A-1 lists the states associated with each of the U.S. Census Bureau regions. This categorization was used in the regional projections of primary care practitioner supply and demand presented in this report.

Exhibit A-1: U.S. Census Bureau Regions and Associated States

NORTHEAST	MIDWEST	SOUTH	WEST
Connecticut	Illinois	Alabama	Alaska
Maine	Indiana	Arkansas	Arizona
Massachusetts	Iowa	Delaware	California
New Hampshire	Kansas	District of Columbia	Colorado
New Jersey	Michigan	Florida	Hawaii
New York	Minnesota	Georgia	Idaho
Pennsylvania	Missouri	Kentucky	Montana
Rhode Island	Nebraska	Louisiana	Nevada
Vermont	North Dakota	Maryland	New Mexico
	Ohio	Mississippi	Oregon
	South Dakota	Oklahoma	Utah
	Wisconsin	North Carolina	Washington
		South Carolina	Wyoming
		Tennessee	
		Texas	
		Virginia	
		West Virginia	

Source: U.S. Census Bureau. 2015. Geographic Terms and Concepts: Census Divisions and Census Regions. Accessed 10/1/2015: [Geographic Terms and Concepts - Census Divisions and Census Regions](#).

About the Model

The results included in this report come from HRSA's Health Workforce Simulation Model (HWSM), an integrated health professions projection model that estimates current and future supply and demand for health care providers.

The supply component of the HWSM simulates workforce decisions for each provider type based on each individual's demographics and profession, along with the characteristics of the local or national economy and the labor market. The starting supply plus new additions to the workforce minus attrition provide an end-of-year supply projection, which then becomes the starting supply estimate for the subsequent year. This cycle is repeated through 2025. Supply data come from multiple sources: the 2013 American Medical Association Physician Masterfile, the 2013 National Commission on Certification of Physician Assistants Masterfile, 2013 National Provider Identification data, and Florida's 2011-2013 physician survey.

Demand projections for health care services in different care settings are produced by applying regression equations for individuals' health care use to the projected population. The current staffing patterns by care setting are then applied to forecast the future demand for internal medicine physicians and physician assistants. The population database used to estimate demand consists of records of individual characteristics of a representative sample of the entire U.S. population derived from the 2013 American Community Survey, the 2011 and 2013 Behavioral Risk Factor Surveillance System, the Bureau of Labor Statistics' Occupational Employment Statistics, and other sources. Using the Census Bureau's projected population and the Urban Institute's state-level estimates of the impact of the Affordable Care Act on insurance coverage,^{11 12} the HWSM simulates expected demographic, socioeconomic, health status, health risk and insurance status for future populations.

The HWSM makes projections at the state level which are then aggregated to regional and national levels. A detailed description of the HWSM can be found in the accompanying technical documentation available at [HRSA: Health Workforce Analysis](#).

¹¹ Holahan, J. & Blumberg, L. 2010. How would states be affected by health reform? Timely analysis of immediate health policy issues. Accessed 10/1/2015: [How Would States Be Affected by Health Reform?](#).

¹² Holahan, J. 2014. The launch of the Affordable Care Act in selected states: Coverage expansion and uninsurance. Washington, DC: The Urban Institute. Accessed 10/1/2015: [The Launch of the Affordable Care Act in Selected States: Coverage Expansion and Uninsurance](#).