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Trends in Demand for New Physicians, 2013-2017 A Summary of Demand Indicators for 34 Physician Specialties



School of Public Health University at Albany, State University of New York

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PREFACE

This report presents profiles for 34 specialties. Each specialty profile summarizes trends in 5 key areas related to physician supply and demand: starting income, job offers, having to change plans due to limited practice opportunities, relative demand, and numbers of graduates. Data on starting income, job offers, having to change plans, and relative demand are based on responses to the Resident Exit Survey in New York (for the years 2013 to 2017).

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Established in 1996, CHWS is an academic research organization, based at the School of Public Health, University at Albany, State University of New York (SUNY). The mission of CHWS is to provide timely, accurate data and conduct policy relevant research about the health workforce. The research conducted by CHWS supports and promotes health workforce planning and policy making at local, regional, state, and national levels. Today, CHWS has established itself as a national leader in the field of health workforce studies.

The views expressed in this report are those of CHWS and do not necessarily represent positions or policies of the School of Public Health, University at Albany, SUNY, or the New York State Department of Health.

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BACKGROUND

The Center for Health Workforce Studies (CHWS) conducts an annual survey of all physicians in New York completing a residency or fellowship training program (the Exit Survey). The goal is to provide the medical education community with useful information about the outcomes of training and the demand for new physicians. The survey instrument (Appendix C) was developed by CHWS in consultation with the state's teaching hospitals and other key stakeholders.

Each year in the spring, CHWS distributes the Exit Survey to GME administrators at teaching hospitals in New York. The Survey is then forwarded to individual programs where graduating residents and fellows are asked to complete a 32-item questionnaire in the weeks prior to finishing their program. Completed questionnaires are returned to CHWS for data entry and analysis. In 2017, with the excellent participation of teaching hospitals, a total of 3,337 of the estimated 5,245 physicians finishing a residency or fellowship training program completed the Exit Survey (64% response rate). Over the 18 years the survey has been conducted (1998-2003, 2005, 2007-2017), 54,326 of 89,055 graduates have completed the survey (61% cumulative response rate).

This report presents profiles for 34 specialties. Each specialty profile summarizes trends in 5 key areas related to physician supply and demand: starting income, job offers, having to change plans due to limited practice opportunities, relative demand, and numbers of graduates. Data on starting income, job offers, having to change plans, and relative demand are based on responses to the Resident Exit Survey in New York (for the years 2013 to 2017). Data on GME graduates are from the annual medical education issues of the Journal of the American Medical Association (JAMA), and summarize the numbers of residents (or fellows) completing allopathic GME training programs in the specialty in the US from 2008 to 2017.

Definitions of the 5 areas are as follows:

• *Starting income:* The median starting income of survey respondents with confirmed plans to enter patient care/clinical practice in the US following completion of their training program. Starting incomes included respondents' base salaries plus their expected incentive/bonus income. Starting incomes in years 2013-2017 were adjusted for inflation to reflect 2017 dollars and are reported in \$1,000s.

- Job offers: The mean number of job offers for employment/practice positions of survey respondents who had actively searched for a practice position, excluding international medical graduates (IMGs) on temporary visas. Respondents with temporary citizenship status were excluded from this analysis because they were much more likely to experience difficulty in finding practice positions due to visa restrictions.
- *Having to change plans due to limited practice opportunities:* The percentage of respondents who had actively searched for a job (excluding IMGs on temporary visas) and who had to change their plans due to limited practice opportunities.
- Relative demand: Using several questions pertaining to the job market experiences and perceptions of survey respondents who had actively searched for a practice position (excluding IMGs on temporary visas), a composite score was computed to assign an overall rank (or relative demand score) for each specialty in each year that the survey was conducted. The percentages presented are the percentile rank of the specialty amongst all specialties in a given year. A percentile rank of 100% identifies the specialty highest in demand, and the lowest percentile rank would correspond to the specialty with the lowest relative demand score. Appendix A provides a detailed explanation of the methodology used to assess relative demand.
- *Numbers of graduates of allopathic GME training programs in the US:* The number of residents completing training was compiled to observe how the number of new entrants to the physician marketplace has changed over time.

Important Note:

For each specialty, the number of responses by year is listed at the bottom of the page in the report. Care should be taken when interpreting outcomes based on small samples because the measures may fluctuate greatly from year to year.

KEY FINDINGS

Demand for new physicians continues to be strong.

New physicians' experiences in the job market over the last several years point to strong demand. In 2017, more than 90% of physicians completing training and having searched for a job had received at least 1 job offer at the time they completed the Exit Survey. Only 15% reported that any difficulty they were having finding a satisfactory position was due to a lack of jobs. Median starting salaries for new physicians increased by 3%, from \$233,500 to \$240,600, between 2016 and 2017. Finally, new physicians' perceptions of both the regional and national job markets were positive and optimistic in recent years.

Demand for new primary care physicians* is stronger than the demand for non-primary care physicians.

In recent years, primary care physicians have received more job offers than specialists and have been less likely to have to change plans due to limited practice opportunities. This trend was first observed in 2008 when demand for primary care physicians was found to be greater than the demand for non-primary care physicians. Prior to 2008, data from the Exit Survey showed that demand for primary care physicians was lower compared to demand for non-primary care physicians.

There are important differences in the job market experiences and assessments for different specialties.

Although the overall marketplace appears relatively strong for new graduates, there exist important differences in demand for individual specialties. In New York, specialties experiencing the strongest and weakest relative demand were as follows:

- *Strongest relative demand:* adult psychiatry, family medicine, dermatology, emergency medicine, general internal medicine, and neurology.
 - O *Greatest change in income over last 5 years:* cardio-thoracic surgery, pulmonary disease, dermatology, allergy and immunology, neurology.
 - O *Most job offers:* dermatology, general internal medicine, adult psychiatry, family medicine, and emergency medicine.
 - O *Lowest percentage of having to change plans:* otolaryngology, emergency medicine, adult psychiatry, family medicine, and neurology.

^{*} Primary care specialties include family medicine, general internal medicine, general pediatrics, and internal medicine and pediatrics (combined).

- *Weakest relative demand:* pathology, radiology, infectious disease, pediatric subspecialties, neurosurgery, and nephrology.
 - O *Lowest change in income over last 5 years:* internal medicine and pediatrics (combined), radiology, urology, general surgery, and neurosurgery.
 - O *Fewest job offers:* pathology, ophthalmology, radiology, pediatric subspecialties, and infectious disease.
 - O *Highest percentage of having to change plans:* nephrology, infectious disease, pathology, cardiology, and radiology.

Specialty Profiles

Specialty: Family Medicine



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*











Number of responses: 2013: n = 72, 2014: n = 70, 2015: n = 92, 2016: n = 92, 2017: n = 117. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.



Number of responses: 2013: n = 237, 2014: n = 292, 2015: n = 219, 2016: n = 259, 2017: n = 254. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: *JAMA Medical Education Issues*, 2008 - 2017.

Specialty: General Pediatrics



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



Trends in Relative Demand - Percentile Rank of General Pediatrics, 2013 - 2017*





2012

2013

2014

2015

Number of responses: 2013: n = 84, 2014: n = 95, 2015: n = 87, 2016: n = 96, 2017: n = 115. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

2010

2011

2009

2016

2017

2008







Number of responses: 2013: n = 5, 2014: n = 3, 2015: n = 16, 2016: n = 17, 2017: n = 8. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Obstetrics/Gynecology



Legend: 2013 2014 2015 2016 2017











Trends in Number of Graduates of Allopathic Obstetrics/Gynecology GME Programs in the US,** 2008 - 2017



Number of responses: 2013: n = 67, 2014: n = 79, 2015: n = 71, 2016: n = 85, 2017: n = 99. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Cardiology





Number of responses: 2013: n = 61, 2014: n = 44, 2015: n = 50, 2016: n = 48, 2017: n = 68. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: *JAMA Medical Education Issues*, 2008 - 2017.

Specialty: Critical Care Medicine



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



Trends in Relative Demand - Percentile Rank of Critical Care Medicine, 2013 - 2017*



*Trends in Number of Graduates of Allopathic Critical Care Medicine GME Programs in the US,** 2008 - 2017*



Number of responses: 2013: n = 12, 2014: n = 13, 2015: n = 9, 2016: n = 19, 2017: n = 11. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.





Number of responses: 2013: n = 17, 2014: n = 15, 2015: n = 20, 2016: n = 25, 2017: n = 25. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Gastroenterology



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



Trends in Relative Demand - Percentile Rank of Gastroenterology, 2013 - 2017*



*Trends in Number of Graduates of Allopathic Gastroenterology GME Programs in the US,** 2008 - 2017*



Number of responses: 2013: n = 33, 2014: n = 30, 2015: n = 31, 2016: n = 34, 2017: n = 29. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Geriatrics

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 17, 2014: n = 15, 2015: n = 20, 2016: n = 18, 2017: n = 15. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Hematology/Oncology



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



Trends in Relative Demand* - Percentile Rank of Hematology/Oncology, 2013 - 2017



*Trends in Number of Graduates of Allopathic Hematology/Oncology GME Programs in the US, ** 2008 - 2017*



Number of responses: 2013: n = 26, 2014: n = 24, 2015: n = 17, 2016: n = 38, 2017: n = 19. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Infectious Disease

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 17, 2014: n = 10, 2015: n = 12, 2016: n = 12, 2017: n = 17. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Nephrology









Legend: 2013 2014 2015 2016 2017 Trends in Mean Number of Job Offers

4.2 3.7 3.7 3.3 3.2 3.2 3.2 2.4 Nephrology **Medicine Subspecialties** Trends in Relative Demand* - Percentile Rank of Nephrology, 2013 - 2017



Number of responses: 2013: n = 10, 2014: n = 16, 2015: n = 19, 2016: n = 18, 2017: n = 24. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Pulmonary Disease

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 25, 2014: n = 23, 2015: n = 15, 2016: n = 26, 2017: n = 21. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Rheumatology



Legend: 2013 2014 2015 2016 2017

3.7

49%

47%

3.3

3.7

48%

44%

Trends in Number of Graduates of Allopathic Rheumatology GME Programs in the US, ** 2008 - 2017

Number of responses: 2013: n = 13, 2014: n = 7, 2015: n = 14, 2016: n = 15, 2017: n = 8. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: General Surgery

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 9, 2014: n = 18, 2015: n = 14, 2016: n = 15, 2017: n = 27. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Neurosurgery



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



Trends in Number of Graduates of Allopathic Neurosurgery GME Programs in the US, ** 2008 - 2017



Number of responses: 2013: n = 6, 2014: n = 5, 2015: n = 5, 2016: n = 6, 2017: n = 8. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Trends in Relative Demand* - Percentile

Rank of Neurosurgery, 2013 - 2017



Specialty: Ophthalmology

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 9, 2014: n = 14, 2015: n = 3, 2016: n = 8, 2017: n = 10. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Orthopedic Surgery



Legend: 2013 2014 2015 2016 2017



Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*







*Trends in Number of Graduates of Allopathic Orthopedic Surgery GME Programs in the US,** 2008 - 2017*



Number of responses: 2013: n = 24, 2014: n = 35, 2015: n = 35, 2016: n = 50, 2017: n = 40. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Otolaryngology

Legend: 2013 2014 2015 2016 2017



2014

2015

2016

0 2008 2009 2010 2011 2012 2013 Number of responses: 2013: n = 9, 2014: n = 10, 2015: n = 6, 2016: n = 4, 2017: n = 7.

*Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017.

100

50

2017

Specialty: Cardio-Thoracic Surgery



Legend: 2013 2014 2015 2016 2017











Trends in Number of Graduates of Allopathic Cardio-Thoracic Surgery GME Programs in the US,** 2008 - 2017



Number of responses: 2013: n = 5, 2014: n = 3, 2015: n = 3, 2016: n = 2, 2017: n = 6. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Urology

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 8, 2014: n = 11, 2015: n = 10, 2016: n = 13, 2017: n = 12. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Anesthesiology



Legend: 2013 2014 2015 2016 2017



Due toTrends in Relative Demand* - Percentile113 - 2017Rank of Anesthesiology, 2013 - 2017





Trends in Number of Graduates of Allopathic Anesthesiology GME Programs in the US,** 2008 - 2017



Number of responses: 2013: n = 41, 2014: n = 56, 2015: n = 28, 2016: n = 44, 2017: n = 73. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017. Surgical Subspecialties

Specialty: Pain Management

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 15, 2014: n = 22, 2015: n = 16, 2016: n = 22, 2017: n = 22. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Pathology



19%

17% 18% 18%

Non-Primary Care

Legend: 2013 2014 2015 2016 2017



50% 50% <u>48% 48%</u>

Non-Primary Care

50%

Trends in Relative Demand - Percentile Rank of Pathology, 2013 - 2017*

*Trends in Number of Graduates of Allopathic Pathology GME Programs in the US,** 2008 - 2017*

21%

Pathology



30%

20%

10%

0%

6%

3%

3% 3%

Pathology

3%

11%

Number of responses: 2013: n = 35, 2014: n = 33, 2015: n = 22, 2016: n = 18, 2017: n = 20. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

25%

20%

15%

10%

5%

0%

Specialty: Radiology

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 54, 2014: n = 39, 2015: n = 35, 2016: n = 51, 2017: n = 43. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Adult Psychiatry



Legend: 2013 2014 2015 2016 2017



Trends in Relative Demand* - Percentile

Trends in Having to Change Plans Due to Limited Practice Opportunities, 2013 - 2017*



*Trends in Number of Graduates of Allopathic Adult Psychiatry GME Programs in the US,** 2008 - 2017*



Number of responses: 2013: n = 44, 2014: n = 40, 2015: n = 38, 2016: n = 58, 2017: n = 49. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.



Number of responses: 2013: n = 11, 2014: n = 29, 2015: n = 20, 2016: n = 31, 2017: n = 28. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Allergy & Immunology



Legend: 2013 2014 2015 2016 2017



Trends in Relative Demand* - Percentile

Rank of Allergy & Immunology, 2013 - 2017





Trends in Number of Graduates of Allopathic Allergy & Immunology GME Programs in the US,** 2008 - 2017



Number of responses: 2013: n = 4, 2014: n = 6, 2015: n = 6, 2016: n = 9, 2017: n = 11. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Dermatology

Legend: 2013 2014 2015 2016 2017



Number of responses: 2013: n = 21, 2014: n = 19, 2015: n = 14, 2016: n = 18, 2017: n = 23. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: *JAMA Medical Education Issues*, 2008 - 2017.



Trends in Number of Graduates of Allopathic Emergency Medicine GME Programs in the US, ** 2008 - 2017



Number of responses: 2013: n = 99, 2014: n = 88, 2015: n = 138, 2016: n = 135, 2017: n = 126. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: *JAMA Medical Education Issues,* 2008 - 2017.

Specialty: Neurology

Legend: 2013 2014 2015 2016 2017



*Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017.
 *Source: JAMA Medical Education Issues, 2008 - 2017.

Specialty: Pediatric Subspecialties



Trends in Having to Change Plans Due to

Legend: 2013 2014 2015 2016 2017



Trends in Relative Demand* - Percentile

Rank of Pediatric Subspecialties, 2013 - 2017

12%

9%

50% 50%

50%

48% 48%

Non-Primary Care



Trends in Number of Graduates of Allopathic Pediatric Subspecialties GME Programs in the US, ** 2008 - 2017



Number of responses: 2013: n = 50, 2014: n = 54, 2015: n = 56, 2016: n = 58, 2017: n = 70. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: JAMA Medical Education Issues, 2008 - 2017.



Number of responses: 2013: n = 16, 2014: n = 19, 2015: n = 15, 2016: n = 21, 2017: n = 27. *Source: CHWS, Survey of Residents Completing Training in New York, 2013 - 2017. **Source: *JAMA Medical Education Issues*, 2008 - 2017. Appendix A

METHODOLOGY USED TO MEASURE RELATIVE DEMAND

The Resident Exit Survey cannot be used to determine *absolute* demand for new physicians in different specialties (ie, it cannot be used to determine the number of physicians necessary to serve a given population). However, by analyzing several questions pertaining to job market experiences and perceptions of new physicians and comparing responses over time, in different geographical locations, and between specialties, it is possible to assess whether respondents from certain specialties or in certain locations are finding more or fewer practice opportunities (ie, it measures *relative* demand).

The implication is that while a specialty, such as pathology, may be in low demand relative to other specialties in an absolute sense, there may still be good opportunities for pathologists, but not as good or as many as another specialist that is seeing higher demand (such as child and adolescent psychiatry). In addition, it is not possible to measure the magnitude of the difference in demand between different specialties. So, if the percentile rank of family medicine in New York in 2017 was 97% (ie, family medicine had a relative rank equal to or better than 97% of the 34 specialties that were ranked), and the percentile rank of pain management was 47%, this does not imply that demand for family medicine was more than twice as strong as for pain management. The scale is at the ordinal level of measurement.

To measure demand for a given year, a composite score was computed by taking the median of the ranks (ie, where each specialty stood relative to all 34 specialties) scored by each specialty on each of the demand indicators for data from the previous 4 years of the survey. Data from more recent years of the survey received a greater weight than data from earlier years. For example, when calculating the demand score for 2017, data from 2017 were weighted .40, data from 2016 were weighted .30, data from 2015 were weighted .20, and data from 2014 were weighted .10. The following variables were used as indicators of demand:

- Percentage of respondents having difficulty finding a satisfactory practice position
- Percentage of respondents having to change plans due to limited practice opportunities
- Mean number of job offers received by respondents
- Respondents' mean Likert score summarizing their assessment of the regional job market
- Respondents' mean Likert score summarizing their assessment of the national job market
- Trend (ie, average annual change) in median starting income

None of these indicators used alone will provide a perfect picture of demand. However, considered together, they provide a good picture of relative demand by specialty. There was a high degree of correlation between the "percentage of respondents with difficulty finding a satisfactory practice position" variable and the "percentage of respondents having to change plans due to limited practice opportunities" variable (ie, a respondent reporting "difficulty..." was much more likely to also report "having to change plans..."). There was also a high degree of correlation between respondents' assessments of the "regional job market" and the "national job market." To compensate for these observed correlations, the "job offers" variable and the "trends in starting income" variable were each double weighted in computing a composite demand score.

Table 1 summarizes the rank of each specialty (ranked among 34 specialties) on each demand indicator. The variables are:

- Difficulty: Rank of each specialty based on the percentage of respondents reporting difficulty finding a satisfactory practice position → eg, the specialty with the lowest percentage of respondents reporting difficulty (internal medicine and pediatrics combined) ranked #1 and the specialty with the highest percentage of respondents reporting difficulty (pathology) ranked #34.
- Change Plans: Rank of each specialty based on the percentage of respondents that had to change plans due to practice opportunities → eg, the specialty with the lowest percentage of respondents having to change plans (otolaryngology) ranked #1 and the specialty with the highest percentage of respondents reporting difficulty (nephrology) ranked #34.
- Job Offers: Rank of each specialty in terms of the mean number of job offers received by respondents (this variable was double weighted in computing the overall demand score) → eg, the specialty with the most job offers (dermatology) ranked #1 and the specialty with the fewest job offers (pathology) ranked #34.
- Regional Market: Rank of each specialty in terms of the mean Likert score summarizing respondents' assessments of the regional job market for their specialty → eg, the specialty with the most positive assessment of the regional job market (adult psychiatry) ranked #1 and the specialty with the least positive assessment of the regional job market (cardio-thoracic surgery) ranked #34.
- National Market: Rank of each specialty in terms of the mean Likert score summarizing respondents' assessments of the national job market for their specialty → eg, the specialty with the most positive assessment of the national job market (emergency medicine) ranked #1 and the specialty with the least positive assessment of the national job market (pathology) ranked #34.

Income Trend: Rank of each specialty in terms the average annual change (or trend) in median starting income levels of respondents from each specialty → eg, the specialty with the strongest trend in median starting income (cardio-thoracic surgery) ranked #1 and the specialty with the weakest trend in median starting income (internal medicine and pediatrics combined) ranked #34.

Specialty	Difficulty	Change	Job Offers ^a	Regional Market	National Market	Income Trends ^a	Median Bank	Overall Bank	Percentile Pank ^b
	Difficulty	-	oners			nenus		Natik	
Family Medicine	9	3	4	2	3	22	4.0	2.0	97%
General Internal Medicine	8	/	2	6	6	23	6.5	5.0	88%
General Pediatrics	13	6	28	14	18	29	23.0	25.0	29%
Internal Medicine and Pediatrics (Combined)	1	14	18	9	21	34	18.0	16.0	56%
Ob/Gyn	18	18	16	13	12	25	17.0	15.0	59%
Cardiology	29	31	17	27	29	17	22.0	24.0	32%
Critical Care Med	23	24	14	22	16	11	15.0	13.0	65%
Endocrinology and Metabolism	25	12	8	15	20	12	12.0	10.0	74%
Gastroenterology	22	23	12	16	15	10	13.5	12.0	68%
Geriatrics	19	19	9	12	17	21	18.0	16.0	56%
Hematology/Oncology	24	17	21	28	13	18	19.5	19.0	47%
Infectious Disease	33	33	30	25	33	16	30.0	32.0	9%
Nephrology	32	34	20	30	31	24	27.0	29.0	18%
Pulmonary Disease	12	20	10	23	9	2	10.0	9.0	76%
Rheumatology	21	22	19	19	24	27	21.5	22.0	38%
General Surgery	17	21	22	20	7	31	21.5	22.0	38%
Neurosurgery	16	11	27	29	25	30	27.0	29.0	18%
Ophthalmology	4	16	33	18	14	7	15.0	13.0	65%
Orthopedic	20	13	29	21	23	26	24.5	27.0	24%
Otolaryngology	5	1	7	7	11	9	7.0	7.0	82%
Cardio-Thoracic Surg	15	27	24	34	27	1	24.0	26.0	26%
Urology	14	15	11	11	10	32	12.5	11.0	71%
Anesthesiology	6	9	26	10	22	19	19.0	18.0	50%
Pain Management	27	25	15	24	26	15	19.5	19.0	47%
Pathology	34	32	34	33	34	14	33.5	34.0	3%
Radiology	30	30	32	31	32	33	32.0	33.0	6%
Adult Psychiatry	3	3	3	1	2	8	3.0	1.0	100%
Child and Adolescent Psychiatry	11	10	6	3	4	20	8.0	8.0	79%
Allergy and Immunology	31	28	25	26	28	4	25.5	28.0	21%
Dermatology	7	8	1	5	8	3	4.0	2.0	97%
Emergency Medicine	2	2	5	4	1	13	4.5	4.0	91%
Neurology	10	5	13	8	5	5	6.5	5.0	88%
Pediatric Subspecialties	26	29	31	32	30	28	29.5	31.0	12%
Physical Medicine and Rehabilitation	28	26	23	17	19	6	21.0	21.0	41%

Table 1. Summary of Ranks and Demand Indicators

^a The job offers variable and the income trend variable were each double weighted in computing the median rank.

^b The percentile rank is the percentage of all 34 specialties with an overall demand rank equal to or lower than each specialty.

The following example illustrates how the demand score was calculated for Family Medicine in New York in 2017:

Median Rank_{FM} = median (difficulty, change plans, job offers, job offers, regional market, national market, income trends, income trends)

Median Rank_{FM} = median (9, 3, 4, 4, 2, 3, 22, 22)

Median Rank_{FM} = 4.0

With a median rank of 4.0, Family Medicine ranked 2nd overall out of 34 specialties.

The *percentile rank* is computed as:

%rank_{FM} = { 1 - (RankFM / #Specs) + (1 / #Specs) }

"#Specs" = the number of specialties being ranked

In New York in 2017, there were 34 specialties being ranked, so the percentile rank of Family Medicine is:

%rank_{FM} = { 1 - (2 / 34) + (1 / 34) } = **97%**.

Appendix B

SPECIALTY COMPARISON GROUPS

Specialty	Comparison Group ^a
Family Medicine	Primary Care
General Internal Medicine	Primary Care
General Pediatrics	Primary Care
Internal Medicine and Pediatrics (Combined)	Primary Care
Obstetrics/Gynecology	Non-Primary Care
Cardiology	Medicine Subspecialties
Critical Care Medicine	Medicine Subspecialties
Endocrinology and Metabolism	Medicine Subspecialties
Gastroenterology	Medicine Subspecialties
Geriatrics	Medicine Subspecialties
Hematology/Oncology	Medicine Subspecialties
Infectious Disease	Medicine Subspecialties
Nephrology	Medicine Subspecialties
Pulmonary Disease	Medicine Subspecialties
Rheumatology	Medicine Subspecialties
General Surgery	Non-Primary Care
Neurosurgery	Surgical Subspecialties
Ophthalmology	Surgical Subspecialties
Orthopedic Surgery	Surgical Subspecialties
Otolaryngology	Surgical Subspecialties
Cardio-Thoracic Surgery	Surgical Subspecialties
Urology	Surgical Subspecialties
Anesthesiology	Non-Primary Care
Pain Management	Non-Primary Care
Pathology	Non-Primary Care
Radiology	Non-Primary Care
Adult Psychiatry	Non-Primary Care
Child and Adolescent Psychiatry	Non-Primary Care
Allergy and Immunology	Non-Primary Care
Dermatology	Non-Primary Care
Emergency Medicine	Non-Primary Care
Neurology	Non-Primary Care
Pediatric Subspecialties	Non-Primary Care
Physical Medicine and Rehabilitation	Non-Primary Care

^a In each specialty profile, statistics for the specialty are presented next to the average of all specialties in the group to which the specialty belongs (ie, the comparison group). As an example, the starting median of family practice is compared to the median starting income of all primary care. Likewise, the relative demand (or percentile rank) of cardiology is compared against the average percentile rank of all medicine subspecialties. Appendix C

NY RESIDENT EXIT SURVEY INSTRUMENT

Survey of Residents Completing Training in NY in 2017

	Center for Health Workforce Studies	University at Albany, School of Public Health											
Marking Instructions	1 University Place / Suite 220	Rensselaer, NY 12144-3445											
 Use a pencil or blue or black ink only. Do not use pens with 	ACGME Residency Program # (For Office Use)												
ink that soaks through	This questionnaire should be	completed by all physicians completing a reside	ncv/fellowship										
3. Make solid marks that	training program in N	ew York in 2017 (excluding preliminary training p	ositions).										
 Make no straymarks on this form. 	FIRST NAME												
5. Do not fold, tear, or mutilate this form.	LAST NAME -												
	Main Hospital at Which												
00000	You Did Your Training:												
INCORRECT	For each question <i>ma</i>	ark only one answer unless otherwise	e directed.										
A. BACKGROUND		B. MEDICAL EDUCATION AND TRAIN	VING										
1. Gender: O Male O Female 2. Age: 8. At the end of your current year of training, how many tot years of post-graduate training will you have completed the US2													
3. Citizenship Status:		$O_1 O_2 O_3 O_3$) 4 \bigcirc 5 \bigcirc 6 or more										
Native born US													
	dent	9. Type of Medical Education:											
		O Allopathic (M.D.)	Osteopathic (D.O.)										
\bigcirc I-1 I-2 Exchan		10. Medical School Attended:											
		O New York (if ves. complete	e below) O Canada										
4. A. Are you of Hispa	nic/Latino origin?												
O Yes O I	No												
	• O (mode all that south)	Specify if in NY:											
B. What is your rac	e? (mark all that apply)	Albert Finatein College	Medicine of Vechive University										
		Albert Einstein College of I Columbia College of Dhuai											
	morioan	Columbia College of Physicians and Surgeons											
	inencari												
O Other			at Mount Sinai										
O Other		O New York Medical College											
5. A. Which best desc	ribes your current relationship status?	O NYIT College of Osteopath	nic Medicine										
O Married		O NYU School of Medicine											
O In Long-term R	elationship	O Stony Brook University School of Medicine											
O Divorced/Separ	rated/Widowed (skip to Question 6)	O SUNY Downstate Medical	Center										
O Never Married/	Single (skip to Question 6)	O Univ at Buffalo School of M	ledicine and Biomed Sci, SUNY										
D If ourrently more	ind or in a long torm relationship, in	O Upstate Medical University	r, SUNY										
vour partner also	o a physician?	O Touro College of Osteopat	hic Medicine										
		O University of Rochester Sc	hool of Medicine and Dentistry										
		O Weill Cornell Medical Colle	ege										
6. Do you have any de	ependent children?	44 What is soon arrest is 1 - 1	advantion dated										
O Yes O N	10	11. What is your current level of	education debt?										
7 Whore did you live	when you aradusted from bigh school?												
		O \$150,000-\$199,999	O \$400,000 and over										
999999		co	ntinue Page 1										

⁹⁹⁹⁹⁹⁹

12. S	pecialty you are COMPLETING in 2017 (mark only one): Allergy and Immunology	13. W ເເ	hat do you Irrent trainii	expect ng prog	to be ram?	doing	after c	omple	tion of	your	
Õ	Anesthesiology (General)	0	Patient care	e/clinica	l pract	ice (in i	non-tra	ining p	osition)	
0	Anesthesiology-Pain Management	Ō	Additional s	subspecialty training or fellowship							
0	Other Anesthesiology Subspecialty- specify below		(specify specialty):								
0	Dermatology	O Chief resident									
0	Emergency Medicine	O Teaching/research (in non-training position)									
0	Family Medicine	ŏ	Temporarily		medic	ine		,			
0	Internal Medicine (General)		Other (spec	vifu).	mealo						
Ó	Cardiology			///y) 'Don't kr		. +					
0	Critical Care Medicine		Undecided	DOILL	iow ye	51					
0	Endocrinology and Metabolism	C. FUT	URE PLANS								
0	Gastroenterology	14. lf	you are goi	ng on f	or add	litional	traini	ng/fello	owship	o, pleas	se
0	Geriatrics	ar	swer the fo	llowing	:						
0	Hematology/Oncology	A	Why are ye	ou subs	specia	lizing/	contin	uing tr	aining	?	
Ō	Infectious Disease		(mark all t	hat app	ly)						
Õ	Nephroloay	0	To further y	our me	dical e	ducatio	n				
õ	Pulmonary Disease/CCM	0	Unable to fi	nd a job	you a	are hap	py with	n			
õ	Rheumatology	0	Unable to fi	nd <u>any</u>	job						
ŏ	Other Internal Medicine Subspecialty-specify below	0	To stay in t	he US (ie, due	e to visa	a status	s)			
ŏ	Internal Medicine and Pediatrics (Combined)	0	Other (spec	cify):							
ŏ	Neurology	0	Always inte	nded to	subsp	oecializ	е				
ŏ	Nuclear Medicine	Ō	Question do	oes not	vlaga						
ŏ	Obstetrics and Gynecology (General)				- 1- 1- 3						
ŏ	OB/GYN (Subspecialty)- specify below	В.	If you are I	eaving	NY to	contir	nue yo	ur traiı	ning, d	o you j	plan
ŏ	Pathology (General)		to return to	o NY to	pract	ice wh	en yoı	ır train	ing is	comple	ete?
ŏ	Pathology (Subspecialty)- specify below	0	Yes		() Dor	n't knov	v yet			
ŏ	Pediatrics (General)	0	No		C) Que	estion o	does no	ot apply	У	
ŏ	Pediatrice (Subspecialty) specify below	15 lf	vou are not	aoina	on foi	r additi	onal ti	raining	/follov	vshin o	r
ŏ	Physical Medicine and Rehabilitation	se	rving as a c	chief re	sident	, are y	ou joir	ning a	medica	al scho	ol
õ	Proventive Medicine (Public Health/Occupational Med	as	a faculty m	nember	?		-	•			
õ	Preventive Medicine/Fublic Health/Occupational Med	0	Yes	0	No	() Qu	estion	does n	ot apply	y
\sim	Child and Adalassant Davabiatry										
	Other Druchistry Subgradialty analify	16. In	your upcor	ning po	sition	how i	many l	hours	per we	ek do	
	Other Psychiatry Subspecially-specify below	ус		Nono	1 0		20.20	20.20	40 40	50 50	60+
Ö	Radiology (Diagnostic)			None	1-3	10-13	20-23	30-33	40-43		001
		Direct	patient care:	0	0	0	0	0	0	0	0
0	Surgery (General)	Resea	rch:	0	0	\bigcirc	0	\bigcirc	0	0	$\overline{\mathbf{O}}$
0	Cardio-Thoracic Surgery	1 COCU	ion.		<u> </u>			<u> </u>			
0		Teachi	ng:	0	0	0	0	0	0	0	0
0	Ophthalmology				~	~	~	~	~	~	~
0	Orthopedic Surgery	Admin	stration:	0	0	0	0	0	0	0	0
0	Otolaryngology							0	0		
O O	Plastic Surgery	Comm	unity service:		<u> </u>		<u> </u>	<u> </u>	<u> </u>		<u> </u>
O	Urology	17. W	here is the	locatio	n of yo	our prii	nary a	ctivity	after		
0	Other Surgical Subspecialty-specify below	cc	mpleting yo	our cur	rent tr	aining	positi	on?			
0	Other-specify below	0	Same city/c	ounty a	s curr	ent traii	ning				
4.5		0	Same regio	n within	NY, b	out diffe	rent ci	ty/coun	ity		
rit yo	u chose an "Other" specialty category, please		Other area	within N	IV						

O Other area within NY

- O Other US state
- O Outside the US

O Don't know yet

specify:

18. Do you have an obligation or visa requirement to work in a federally designated Health Professional Shortage Area?

O No

O Yes

19. How important is it for you to have control over the following job characteristics?

	Not at all important	Of little importance	Important	Very important
Predictable start and end time each workday	0	0	0	0
Length of each workday	0	0	0	0
Frequency of overnight calls	0	0	0	0
Frequency of	0	0	0	0

20. If you are planning to enter or have considered entering patient care/clinical practice:

A. Have you actively searched for a job?

O Yes O No, not yet

O No, I will be self-employed

B. Have you been offered a job?

- O Yes, and I have accepted an offer
- O Yes, but I declined the offer(s) and am still searching (Skip to Question 28)
- O No, but I have not actively searched yet (*Skip to Question 28*)
- O No, I have not yet been offered a practice position *(Skip to Question 28)*

D. PRACTICE PLANS

If you have accepted a position in patient care/clinical practice, please answer the following questions. If not, skip to Question 28.

21. Which best describes the type of patient care practice you will be entering?

Principal <u>Practice Setting</u> (mark only one)	Secondary Practice Setting(s (mark all that app	s) (y)
0	0	Solo practice
O	0	Partnership (2 people)
O	0	Group practice (owner/partner)
O	0	Group practice (employee)
O	0	Hospital-Inpatient
O	0	Hospital-Ambulatory care
0	0	Hospital-Emergency room
0	0	Freestanding health center/clinic
0	0	Nursing home
0	0	Other-specify below

*If you chose "Other," please specify:

22. A. What is the zip code of the principal practice address where you will be working? If zip code is unknown, please give city or town and state.

Principal Practice Zip Code:	State:	
City/Town:		

B. Is this principal practice address located in a federally designed Health Professional Shortage Area?

\sim		
()	Yes	() I don't know
\sim	100	

C. If you are <u>not</u> going to practice in NY, please indicate the reasons why. In the first column, indicate all of the reasons why (mark all that apply). In the second column, indicate the main reason why (mark only one).

	All Reasons (mark all	Main Reason (mark only
Practice Reasons	that apply)	one)
Overall lack of jobs/practice opportunities in NY	0	O
Better jobs/practice opportunities in desired locations outside NY	0	O
Better jobs/practice opportunities in desired practice setting (eg, hospital, group practice, etc.) outside NY	0	O
Better jobs/practice opportunities outside NY that meet visa status requirements	0	O
Financial Reasons		
Better salary/compensation offered outside NY	0	O
Cost of malpractice insurance in NY	0	O
Cost of establishing a medical practice in NY	0	O
Taxes in NY	0	O
Cost of living in NY	0	0
Personal Reasons		
Proximity to family	0	O
Better employment opportunities for spouse/ partner outside NY	0	O
Climate (eg, weather)	0	O
Other Reasons		
Never intended to practice in NY	— O —	O
Other reason -specify below	O	O

*If you chose "Other reason," please specify:

22 How m	any years do ye	u ovpost to be	at your principa		27 Wh	at is you	r lovo	l of catio	faction	with v	0.UF 0.2	lon/	
23. How In	e?	u expect to be	at your principa	•	Z7. WI	mpensati	on?	101 54115	laction	with y	our sa	iai y/	
O 1	O 2 (O 3 O	4 O 5 or 1	more	0	Very diss	atisfie	d	0	Some	ewhat	satisfied	
24. Which	best describes t	he demograph	nics of the area ir	ı	Ō	Somewha	at diss	atisfied	Õ	Very	satisfi	ed	
which y	ou will be pract	ticing?			E. EXPE		I JOB	MARKET					
O Inn	er city		O Rura	I	(If you a	re going int ease compl	to patie ete the	nt care or following	have <u>coi</u>)	nsiderec	<u>d</u> going	into patier	it
O Oth	ner area within m	ajor city			29 A I	Did you b	ave d	ifficulty	finding	2 pr20	tico na	ocition v	
🔿 Sul	burban				20. A. I	were satis	ave u sfied v	with?	innunng	a praci	lice p	Shion ye	Ju
O Sm	all city (population	on less than 50,	000)		0	Yes							
25 A Ploa	se identify all of	the incentive	s you received fo	r	Ō	No							
acce	epting this pract	ice position (m	ark all that apply	/). Also,	Ō	Haven't I	looked	l yet <i>(skip</i>	to Que	stion 3	1)		
plea	se indicate the r	nost influentia	l incentive in you	ur (_	
deci	sion to accept t	his practice po	sition (mark only	v one).	B. I	lf <u>Yes</u> , wh (mark onl	hat wo	ould you	say wa	s the m	nain re	eason?	
Incentives Received	Incentive						y one	iobs/prov	otico opr	oortunit	tion		
		11.4.2.	a a sa la fac					jous/prac	nortunit	ioe tha	t moot	vica	
0	0	- H-1 Visa spon	sorsnip			status re	ousipi	nent	portunit		tineet	v15a	
0		- J-1 VISA WAIVE	۲.		0	Lack of i	ob/pra	ictice opp	ortunitie	es in de	esired l	ocations	
0	0	- Sign-on bonus	o nto on		õ	Lack of i	obs/pro	actice on	portunit	ies in d	lesired	practice	
0	0		niees		Ŭ	setting (e	ea. ho	spital, ard	oup prac	ctice. e	tc.)	practice	
0		- Pelocation all	and an		0	Inadequa	ate sal	larv/comr	pensatio	n offer	ed		
		Spouse/partn	ar job transition			Lack of e			portuniti	ies for (enouee	/nartner	
0	O	assistance					pecify		porturnu		opouse	/partitier	
\bigcirc	\frown	Support for m	aintenance of				Jeeny						
U	0	certification/co	ontinuing medical	education	29. Did	l you have	e to cl	hange yo	our plan	is beca	ause o	f limited	
0	0	- Career develo	pment opportuniti	es	pra	ictice opp	ortun	ities?					
0	0	- Educational lo	an payment		0	Yes							
0	0	- Other -specify				No							
0	0	- None			0	Haven't I	looked	i yet (<i>skip</i>	to Que	stion 3	1)		
B. If yo	u received any i	incentives, how	w important were	e they	30. Ho	w many o	ffers	for pract	ice pos	itions (did yo	u receive	;
	t at all important	accept this pra		.+	trai	ining pos	itions)?	iei resit	iency,	anu o	uier	
				ortant	0	None	0	1	O 2		0	3	
0 01				ontant	Ō	4	Õ	5	O 6	-10	Õ	Over 10	
26. Expect	ed gross incom	e during first y	ear of practice:										
Base	Salary/Income	Anticipated	Additional Incentive	<u>e Incom</u> e	31. Wh in y	at is your	r over Sialtv	all asses	sment in 50 m	of prac	ctice o f the si	pportuni ito whore	ties
O Les	ss than \$75,000	0	None		you	u trained	?						-
O \$75	5,000-\$99,999	0	Less than \$5,000		0	No jobs			0 8	Some je	obs		
O \$10	00,000-\$124,999	0	\$5,000-\$9,999		0	Very few	jobs		0	Many jo	obs		
O \$12	25,000-\$149,999	0	\$10,000-\$14,999		0	Few jobs	5		Οι	Jnknov	vn		
O \$15	50,000-\$174,999	0	\$15,000-\$19,999		00 14/1								
O \$17	75,000-\$199,999	0	\$20,000-\$24,999		32. Wh in v	at is your	r over ialtv i	all asses	sment v?	of prac	ctice o	pportuni	ties
O \$20	00,000-\$224,999	0	\$25,000-\$29,999				iaity i	lational	,				
O \$22	25,000-\$249,999	0	\$30,000-\$34,999			NO JODS	laba			Some jo	ODS		
O \$25	50,000-\$274,999	0	\$35,000-\$39,999			Fow jobs	JODS			viany jo	Sac		
O \$27	75,000-\$299,999	0	\$40,000-\$44,999				0			JNKNOW	vn		
O \$30	00,000-\$324,999	0	\$45,000-\$49,999		-		D CCC						
O \$32	25,000-\$349,999	0	\$50,000-\$54,999		IHANK	YOU FO	K CO	MPLETIN	NG THIS	5 IMPO	RIAN	I SURVE	<u>Y</u> .
O \$35	50,000-\$374,999	0	\$55,000-\$59,999										
O \$37	75,000 and over	0	\$60,000 and over										
_											0	20000	
Pag	je 4			Í							9	99999	

About the Authors





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Mr. Liu specializes in data collection, analysis, and visualization, as well as relational database management, public policy research, and financial analysis. He holds an MPA with concentrations in Statistics and Information Strategy and Management from the University at Albany, SUNY.

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Dr. Armstrong oversees CHWS projects which monitor the supply and distribution of the health workforce in New York and other states. In collaboration with professional health organizations in the state, he also administers provider recruitment and retention surveys to monitorhealth workforce demand. Dr. Armstrong also is the director of the Health Workforce Technical Assistance Center, which provides technical assistance to individuals, hospitals, and various states and organizations.



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