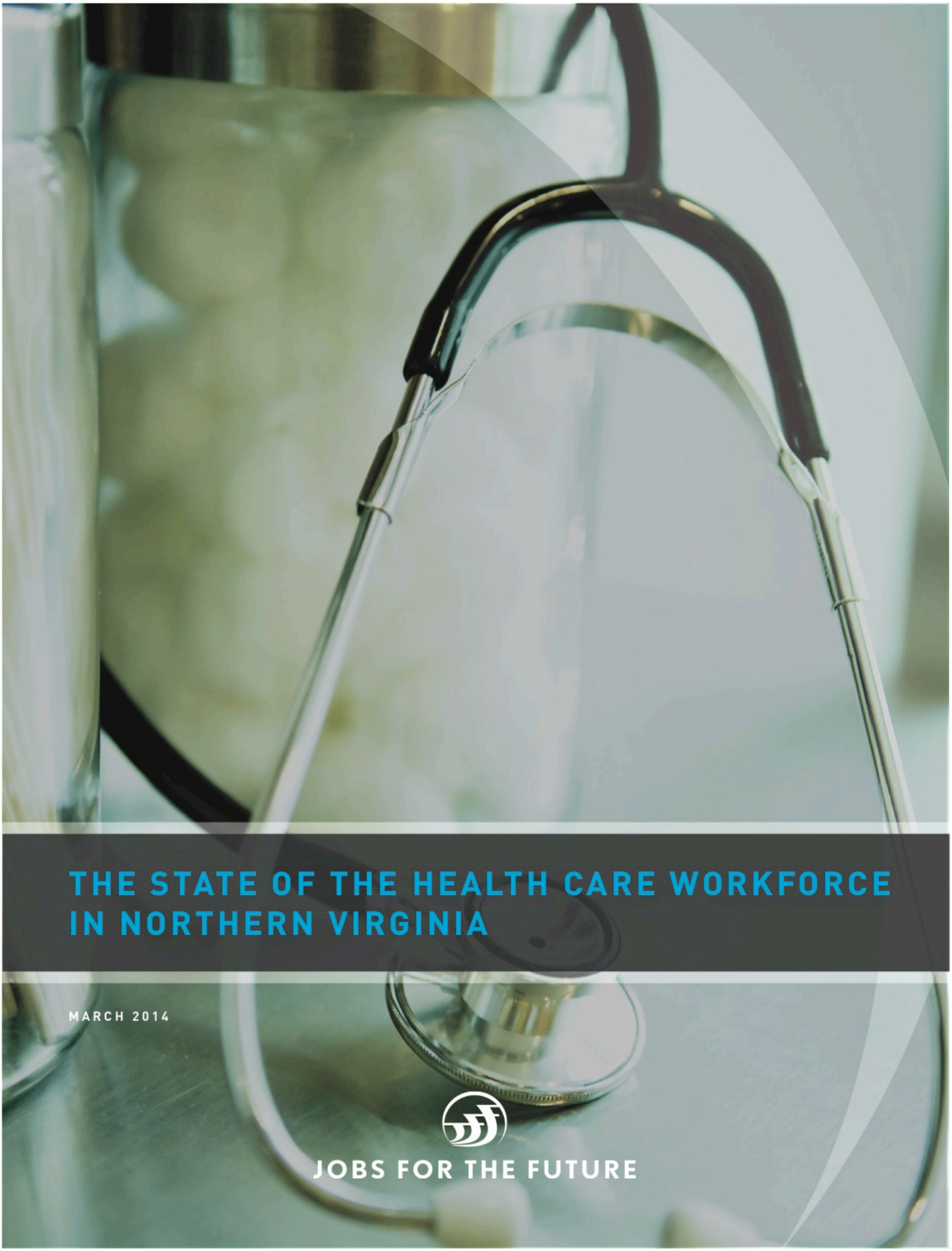

THE STATE OF THE HEALTH CARE WORKFORCE IN NORTHERN VIRGINIA

MARCH 2014

JOBS FOR THE FUTURE

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LIST OF ACRONYMS

ACA	Affordable Care Act
ACS	American Community Survey
BLS	Bureau of Labor Statistics
BLS OES	Bureau of Labor Statistics Occupational Employment Statistics
BSN	Baccalaureate of Science in Nursing
CAN	Certified Nurse Anesthetist
EMSI	Economic Modeling Specialist International
HCA	Hospital Corporation of America
HWOL	Help Wanted OnLine
IOM	Institute of Medicine
IPEDS	Integrated Postsecondary Education Data System
JFF	Jobs for the Future
LMI	Labor Market Information
NCLEX	National Council Licensure Examination
NoVA	Northern Virginia
NRCB	National Respiratory Care Board
NRH	National Rehabilitation Hospital
OES	Occupational Employment Statistics
O*NET	Occupational Information Network
VBN	Virginia Board of Nursing
VDHP	Virginia Department of Health Professions

EXECUTIVE SUMMARY

Since its inception in 2003, NoVAHealthFORCE has sought to identify and address health care workforce challenges in Northern Virginia. The coalition of business, academic, and community leaders has commissioned empirical studies of current and future workforce demand in nursing, allied health, and other health care professions. It has applied these research findings to design and implement a multistep action plan to strengthen the pipeline of qualified health care workers.

NoVAHealthFORCE hired Jobs for the Future (JFF) to update two previous studies, produced by Pricewaterhouse Coopers in 2005 and 2008.[1] These reports identified current and projected shortages in 24 critical health care occupations (*see Table 0.1, Critical Occupations, on page 25*), including a significant gap in the nursing workforce, with the potential to limit access to care and to lower the quality of care. Armed with this information, NoVAHealthFORCE worked with the Commonwealth's General Assembly, regional employers, and federal grant programs to expand the region's capacity to produce nurses and allied health professionals, including radiation therapists and diagnostic medical sonographers.

Northern Virginia, part of the metropolitan Washington, D.C. region, is home to more than 2.3 million people.[2] It encompasses Arlington, Fairfax, Prince William, and Loudoun counties and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park. Its outlying counties of Prince William and Loudoun are among the fastest growing and wealthiest in the United States.[3] Health care is Northern Virginia's fourth-largest industry, employing over 7 percent of the workforce.[4] The region's largest health care employer, Inova, is also one of its largest private employers, with more than 13,000 workers.[5]

Over the past decade, the regional health care landscape has shifted significantly and grown more complex. While some earlier trends have continued, new patterns are emerging. The population has continued to grow, become more diverse, and the average age is increasing. Meanwhile, new health care providers have entered the regional marketplace, new and upgraded facilities have opened, and access to care has improved in the high-growth areas of Prince William and Loudoun Counties. In addition, new partnerships have formed between hospitals and physician groups, as well as between care providers and insurance providers. Moreover, several major hospital systems are changing the way they deliver care, focusing greater resources on preventive care and community-based settings, altering the staffing mix between practitioners and support personnel, and assigning new job tasks to incumbent workers. Despite uncertainty over how the Affordable Care Act will affect patient demand and care delivery going forward, the system changes already in progress have substantial implications for the health care workforce, by spurring job creation, altering demand for occupations, and raising skill requirements.

SUMMARY OF RESEARCH METHODS

Analyzing this dynamic environment requires the best data and projections possible. JFF used multiple methods and data sources to bring the previous studies up to date, including real-time labor market information based on searches of thousands of job ads from online and traditional sources. Complemented by interviews, focus groups, and surveys, these sources provide a variety of lenses for examining occupational demand and supply in the region. They also offer specific feedback from employers on the skills and experience they seek in job candidates.

JFF applied these methods to analyze supply and demand in the 24 occupations identified in the two earlier studies, as well as in 16 additional occupations that NoVAHealthFORCE deemed critical today (*see Table 0.1, Critical Occupations, on page 25*). The jobs covered a broad spectrum of the health care industry, including: allied health, dental, diagnostic and laboratory, direct care, health information management and technology, nursing, rehabilitation and therapy, and social and human services.

KEY FINDINGS

Ten years ago, Northern Virginia's health care workforce could not keep up with demand. Today, the more pressing problem is ensuring that all workers deliver efficient, quality patient care.

In 2005, the Pricewaterhouse Coopers regional health workforce study identified a serious shortage of nurses, expected to last through 2020. Now, however, employers report a sufficient supply of registered nursing candidates for the time being. In fact, new graduates are waiting up to six months to find employment. In addition, the region's educational institutions appear to have enough registered nursing students to meet projected needs. But potential future workforce challenges across the health care industry demand careful monitoring and planning.

Northern Virginia's health care labor market is facing rapid change in some areas, while it experiences relative stability in others. The places, professions, and methods for delivering care, as well as models of paying providers and covering patient costs, are evolving. Today, the top priority is the delivery of quality patient care in a cost-effective manner. Whether nurses or nurse assistants, pharmacists or physical therapy assistants, every caregiver and support staff member must work at the top of their job description, providing better care, at lower cost, with improved health outcomes. Attaining these goals requires health care workers to develop higher-level skills and different skills, in some cases, than their training provided. To be effective, health care employees across the field must demonstrate communication, teamwork, critical thinking, and leadership skills, as well as the clinical skills they learned in school and new skills developed on the job.

DEMOGRAPHIC TRENDS

Northern Virginia's Population Continues to Grow and Diversify

The region's overall population grew by 22 percent in the past decade, to 2.3 million residents in 2011. Population growth is projected to slow over the next decade, increasing to 2.5 million residents by 2020. Most of the recent growth has been among racial and ethnic minorities, who now comprise 31 percent of the region's population, and are projected to increase to 41 percent of the population by 2020.[6] While most residents of Northern Virginia have health insurance (about 87 percent), the figures are much lower for racial and ethnic minorities and people with incomes near or below the federal poverty line. Just two-thirds of Hispanic residents, and less than two-thirds of people living in poverty or near the federal poverty line, have insurance coverage.[7]

Population and Employment in Prince William and Loudoun Counties are Expected to Increase Faster than in Other Areas

Continuing a trend of rapid growth, the populations of Prince William and Loudoun counties are projected to grow at 27 percent and 21 percent, respectively, over the next decade. By contrast, the region as a whole is expected to grow only 13 percent. Moreover, the population aged 65 and older in these two outlying counties is expected to increase by 42 percent, putting additional stresses on the health care system.[8] Providers are responding by opening or upgrading several facilities in Prince William and Loudoun counties, and significant job growth in health care is projected for the two counties—an estimated 5,600 positions. By 2020, these areas will employ over 25 percent of Northern Virginia's massage therapists, dental assistants, dental hygienists, pharmacy technicians, speech and language pathologists, and physical therapists.[9] This continues the trend of substantial outward expansion of jobs and population in the northwestern and southern sections of the region and more modest growth closer to Washington, DC.

A REGION IN TRANSITION

Northern Virginia's Health Care Workforce Landscape Has Changed Dramatically in a Decade

The 2005 study of the region's health care labor market uncovered a shortage of almost 2,800 health care workers in 24 job categories, and predicted much more serious gaps, particularly in nursing, unless the region increased its supply of nursing and allied health graduates.[10] In response, health care employers and educators worked in partnership, as NoVAHealthFORCE, forging an action plan and leveraging private and public investment to expand the health workforce. Annual investments and coordinated planning and information sharing increased capacity in nursing and allied health professions, including radiation therapists and diagnostic medical sonographers.

The Northern Virginia health care environment— and the work of its providers, patients, employees, and educators—has undergone considerable change since 2004. The health care industry has been rapidly reorganizing through acquisitions and mergers of large systems with smaller hospitals and physician groups. The location of care delivery is shifting from hospitals to outpatient and home-based settings. New players are entering the Northern Virginia marketplace in long-term and outpatient rehabilitation, walk-in and in-store health clinics, urgent care centers, assisted living communities, and in-home health care. The implementation of the Affordable Care Act promises further change in patient enrollment and policies to promote lower costs and better outcomes. Providers, in response, are changing care delivery, staffing, and job duties, to lower costs. As part of this strategy, providers are putting pressure on all staff to work at the top of their license, or job description, creating greater demand for higher performance from both licensed professionals and support staff.

TRENDS IN NURSING

Serious Shortages Eased During Recession, But Key Challenges Remain

After a decade of change, the Northern Virginia health care labor market is experiencing a better alignment of worker supply and demand. The Great Recession slowed demand across the spectrum of health care occupations. Nurses postponed retirement, and turnover in all occupational groups decreased. Online jobs advertisements for nurses are one indication, with postings for Registered Nurses and Licensed Practical Nurses falling from a peak of 2,000 in March 2007 to a low of 580 ads in May 2010.[11] As the recession eased in 2011-12, demand for nurses and other health care workers increased. But it has slackened again over the past year, as indicated by a drop in online job postings. Even with relative stability compared to the shortages of 2004 and the surplus of the recession years, many uncertainties and challenges lie ahead.

While the supply of nursing graduates appears to be aligned with demand now and for the next several years, several factors could pose challenges in meeting the region's need for nurses in the longer run. The rate of retirements—reportedly deferred during the recession—could increase more rapidly in the coming years, as the median age of registered nurses practicing in Northern Virginia is 49.[12] The regional cost of living could discourage new graduates from remaining in the area, as could employer preference for hiring more experienced nurses. Finally, the capacity of the region to supply new graduates could be compromised by faculty retirements as well as diminishing resources for higher education.

Northern Virginia Needs Higher-skilled and More Experienced Nurses

Northern Virginia's educational institutions are currently supplying a sufficient number of entry-level nursing candidates, and are projected to continue to do so. The most important workforce gap in nursing, from the viewpoint of providers, is finding candidates with sufficient experience, in general, and finding those with highly specialized skills, in particular. These include surgical assistance, intensive care, oncology, cardiovascular, and labor and delivery. Employers would also like schools of nursing to give greater emphasis to skills needed for new models of caregiving prompted by the Affordable Care Act, which emphasize teamwork, customer satisfaction, communication skills, and critical thinking. While the region's nursing schools do include these general skills in their curricula, employers' perception of preparation in such areas is of concern.

Clinical Placements in Nursing and Other Allied Health Occupations Are in Short Supply

College officials report that regional hospitals offer too few clinical slots to satisfy student demand. They also raised concerns about students having insufficient opportunity to carry out clinical tasks as well as to observe bedside care. The limited supply of clinical slots has forced some colleges to forego plans to increase student enrollment. Employers agree that new arrangements for clinical education are necessary. They cite cost constraints and other pressing priorities for staff time, including integration of electronic health records, to explain the drop-off in availability of clinical training positions.

Northern Virginia is on Track for Meeting the Institute of Medicine's Nurse Education Goal of 80% Bachelor's-prepared Nurses

The Institute of Medicine's 2010 Report *The Future of Nursing: Leading Change, Advancing Health* recommended that the proportion of nurses with Bachelor's degrees be increased from 50 to 80 percent by 2020. In 2011, 74 percent of nursing graduates from Northern Virginia's regional programs had earned a Bachelor degree or higher. Many colleges have expanded program options in support of accelerated completion of Bachelor of Science in Nursing for students with a Bachelor degree in another field, or for registered nurses with an Associate

degree. The region's major hospitals, while not universally requiring a Bachelor in nursing as a condition of employment, are primarily hiring candidates with a Bachelor of Science in Nursing to fill open positions. The majority of hospitals expect their demand for Bachelor-level nurses to increase over the coming year.

The drive for higher credentials raises potential concerns about equity and diversity in the nursing workforce. Incumbent Registered Nurses can take advantage of financial assistance to attain a Bachelor's credential. However, others seeking a nursing career face considerably higher costs to complete a four-year Bachelor's program than a two-year Associate degree in nursing, and do not achieve an initial advantage in earnings.

TRENDS IN ALLIED HEALTH AND OTHER OCCUPATIONS

Health Care Providers Are Shifting to a New Mix of Workers and Responsibilities

Federal government mandates—associated with the Affordable Care Act—to lower costs while improving the quality of care are changing the internal labor markets of Northern Virginia's hospitals and other care providers. To enable nurses and clinicians to work at the top of their license, while reducing costs, support staff and technicians are assuming greater responsibilities and performance expectations. One major system has reduced its nursing staff and delegated more functions to paraprofessionals, such as clinical technicians. Other workers required to work at higher skill levels include physical therapist assistants, pharmacy technicians, and surgical technologists.

Employers Report Shortages in Allied Health and Rehabilitation Occupations, Including Physical Therapists

While the supply of nurses appears sufficient for the present, surgical technologists and technicians, physical and occupational therapists, and pharmacists are in short supply, according to employers. While Northern Virginia has nationally respected training programs in physical therapy, the region has no programs for training surgical technologists. Representatives of the region's major hospitals also report difficulty in filling vacancies for clinical medical coders and ultrasonographers.

Additional Occupations Face Risk of Shortages

In the next five to ten years, other health care occupations face potential shortages in Northern Virginia. This finding reflects the small applicant pool for selected positions, relative to either projected openings or to online job advertisements, and/or high turnover rates. In some cases, the occupations at risk are low paying relative to other health care occupations and prone to high turnover, including home health aides, dental assistants, massage therapists, and social

and human service assistants. Other positions that may be difficult to fill include occupational therapists, medical and health services managers, and speech-language pathologists.

Cost of Living and Commuting Patterns Could Contribute to Labor Shortages in the Long Run

High housing and other living costs make it difficult to recruit health care professionals and attract faculty to the area. It is especially challenging for new graduates in nursing and other programs to afford the cost of living in Northern Virginia, and considerably harder for those working in support occupations, such as nursing assistants and home health aides. Traffic congestion and long commutes contribute to high living costs and detract from the quality of life—exacerbating workforce attraction and retention problems. The average commuter in Northern Virginia faces longer drive times than their counterparts in the rest of the Commonwealth and the nation. Almost 15 percent require commutes of 60 minutes or more, compared to 10 percent for all Virginians and 8 percent of commuters nationwide.[13]

RECOMMENDATIONS

The only certainty about the state of the Northern Virginia health care workforce over the next five to ten years is that more changes are in store. Between population growth, specific occupational shortages, educational program developments, and the impact of the Affordable Care Act, it will be imperative to closely monitor trends in the region's health care industry as they unfold. Using up-to-date labor market information is an essential tool in this dynamic environment. Certain factors will always be beyond control, but it is possible to react much more nimbly when accessing data that is available much more quickly.

Based on the findings from the workforce analysis, we present the following recommendations to assist the region in navigating the uncertain times ahead and ensuring a strong and well-qualified workforce capable of delivering excellent care to all.

Improve the Alignment of Nursing Education with Employer Needs

Convene leaders from the region's nursing education programs and major health care employers to determine areas in need of improvement. Appoint a working group of faculty, professional licensing officials, nurse managers, and educators to overhaul curricula and instructional methods. Include development of leadership, communication, and teamwork skills.

Address Gaps in Clinical Education and in Development of Specialized Nursing Candidates

The educator-employer working group should seek both to streamline the process of managing clinical placements and to identify alternative forms of experiential education that meet

professional requirements. Identify and replicate the most promising practices in work-based learning, including employer-provided fellowships and institutes to train nurses in specialized roles in high demand. Work with professional licensing authorities to analyze regulations governing clinical placements and other work-based learning experiences, in order to expand the supply, while improving the quality.

Address Workforce Supply Gaps

Collaborate with physical and occupational therapy educators to assess the need for expanded training programs, and with professional licensing authorities on the potential for relaxing doctorate-level requirements. Develop the future pipeline by educating youth and adults about career paths that begin with physical therapy and occupational therapy aide and assistant credentials. Convene hospital and education leaders to verify need for and feasibility of developing new training program capacity for surgical technologists. Convene dental and education leaders to expand capacity for educating dental assistants, including potential satellite programs in Prince William and Loudoun counties.

Build Regional Capacity for Using Real-time Labor Market Information for Planning

Develop effective ways of collecting regular, up-to-date workforce data from Northern Virginia health providers beyond the major hospitals participating in NoVAHealthFORCE, especially primary care, long-term care, home health, and dental care providers. Update findings from this study regularly with real-time labor market information drawn from online job advertising. Continue to monitor occupations noted as potential shortage areas, particularly in rehabilitation and paraprofessional support roles, such as home health aides and dental assistants. Closely monitor the size of the nursing applicant pool relative to demand trends. Study scope and significance of health care employment demand in non-industry settings, such as retail clinics, as well as in newly created urgent care facilities.

Work with Federal and State Agencies and Employers to Align Official Job Categories with Emerging Occupations

A limitation of this report is the inability to distinguish between two different kinds of health information functions—managing health information versus using information technology in health care—owing to outmoded categories used in public data sets. (The U.S. Bureau of Labor Statistics combines both activities under the title “Medical Records and Health Information Technicians.”) Patterns in job advertising reveal important trends, such as the growth of health information management positions requiring higher skills than traditional medical records and coding functions. However, the growing adoption of electronic health records and other applications of technology and data analytics in health care suggests the need for updated occupational categories allowing analysis of workforce trends with greater precision.

Address Cost of Living and Commuting Barriers to Workforce Recruitment and Retention

Convene employers and regional workforce, housing, and transportation officials to identify potential strategies to address cost of living and commuting barriers facing the health care workforce, including entry-level staff and new graduates. Adjust compensation and bonuses to improve recruitment in emerging shortage occupations. Adopt innovations such as transit-oriented development, mixed-use properties, and incentives for affordable housing, where practical, in new or expanding health care locations. Encourage new applications of telecommuting and telemedicine. Explore feasibility of additional satellite programs in verified shortage occupations in Prince William and Loudoun counties.

Reduce the Impact of Retiring Health Care Workers and Faculty

Provide alternative work options for older nurses, such as case management or care coordination, in order to extend their tenure and to "bridge" to younger and less experienced employees. Work with educational and professional accrediting bodies to expand use of part-time faculty. Encourage educational leaders from regional colleges to create new models of collaboration on faculty recruitment and hiring, including shared positions in areas with high rates of retirement or shortages.

Facilitate Transition to Bachelor-level Nursing While Maintaining Opportunities for a Diverse Workforce

Educators and employers should continue to promote and expand accelerated educational programs for nurses with Associate degrees to earn Bachelor degrees in nursing. Continue to educate and recruit Associate-level nurses in order to help maintain a diverse pipeline, representative of the region's population, for Bachelor-level candidates.

INTRODUCTION

BACKGROUND AND OBJECTIVES FOR RESEARCH STUDY

Since its inception in 2003, the Northern Virginia Healthcare Workforce Alliance (NoVaHealthFORCE) has sought to identify and address health care workforce challenges in Northern Virginia. As a coalition comprising several of the region's leading institutions in health care, education, workforce development, and economic development authorities, NoVaHealthFORCE has utilized private and public resources to commission empirical studies of the current and future workforce demand in nursing, allied health, and other professions. Two studies, authored by Pricewaterhouse Coopers in 2005[14] and 2008[15], identified current and projected shortages in 24 critical health care occupations—including a significant gap in the nursing workforce, with the potential to limit access to care and to lower the quality of care.

NoVaHealthFORCE applied these research findings to advance a multi-step action plan to increase educational capacity, strengthen the pipeline of qualified health care workers, and nurture innovation.[16] To build capacity, NoVaHealthFORCE has convened a "CEO Roundtable" of the region's health care executives and college and university presidents, as well as regional meetings of deans of nursing and nursing executives. Among the results are annual grants from Virginia's General Assembly to expand nursing education capacity, matched by contributions from health care providers. The grant, combined with the matching contributions, has resulted in over $5 million being granted to Northern Virginia's educational institutions in the health professions. According to NoVaHealthFORCE, the region has seen a 57 percent increase in the number of nurse graduates since the Action Plan was established in 2006.

NoVaHealthFORCE has also worked with Northern Virginia Community College on a project intended to increase the number of medical imaging professionals in Northern Virginia. The project was funded in part by a Department of Labor, Employment and Training Administration, Community Based Jobs Training Grant. Community partners, including regional hospitals, funded parts of this project by providing tuition assistance for incumbent employees who may wish to become Radiation Therapists or Diagnostic Medical Sonographers. NoVAHealthFORCE continues to manage the acute care providers' contributions to subsidize faculty salaries for these programs.

Through a competitive bid process in 2012, NoVaHealthFORCE hired Jobs for the Future (JFF) to update the 2005 and 2008 health care workforce studies. The four primary research objectives were to identify:

1. **Changes in health care demand and care delivery systems**. Assessment of the current and future demand for health care (i.e., changes in regional population, demographics, and insurance coverage) and the capacity and approaches of health care providers to serve the regional patient pool.

2. **Current and future gaps in the workforce**. Identification of existing gaps in workforce supply and skills for specified occupations; and, an estimation of future changes in employment for these specified occupations and potential shortages in workforce supply.
3. **Impact of the Institute of Medicine's BSN goal on nursing supply and demand**. Discussion of the Institute of Medicine's recommendations for increasing the proportion of Registered Nurses with a Baccalaureate of Science in Nursing; and, an examination of regional trends in hiring preferences and implications for future supply and demand of nurses.
4. **Emerging demands in outlying counties**. Exploration of the growing health care markets, workforce demands, and education and training needs for Prince William and Loudoun counties.

RESEARCH SCOPE

NoVaHealthFORCE defined the primary geographic and occupational areas of inquiry.

Geographic Area

The Northern Virginia region (*Map 1*), defined as Arlington, Fairfax, Prince William, and Loudoun counties and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park, provides the primary boundaries for patient population, employers, and education institutions that offer health care programs of study. On the latter, NoVaHealthFORCE requested that two education institutions located outside of the region be included in the study (Old Dominion University and Shenandoah University).

Map 1: Northern Virginia Regional Map

Source: Dalecare Home Health (inset of orange section of Virginia state map)

Study Occupations

The study examines workforce supply and demand in approximately 40 occupations that were either expressly specified in the RFP or were determined by the JFF research team to satisfy the intent of the RFP. JFF classified these occupations into eight groups (*Table 0.1 and Appendix A*). This list includes 24 critical occupations found to be in short supply in a 2005 report by Pricewaterhouse Coopers, *The Health Care Workforce Shortage: An Analysis of the Scope and Impact on Northern Virginia*. An additional 16 occupations deemed critical were included in this study, as requested by NoVaHealthFORCE on the basis of current or emerging patterns of supply and demand.

Table 0.1: Critical Occupations[A]

Occupation Groups	Occupations Specified in Study
Allied Health	**Biomedical Engineer** (in lieu of Biomedical Equipment Technician) Emergency Medical Technician **Medical Assistant** Medical and Health Services Manager Medical Equipment Repairer (in lieu of Biomedical Equipment Technician) Pharmacist Pharmacy Technician Radiation Therapist (in lieu of Radiation Oncology Therapist) Respiratory Therapist Respiratory Therapy Technician[B] Surgical Technologist
Dental	Dental Assistant (including Certified DA I and II) Dental Hygienist **Dental Laboratory Technician**
Diagnostic and Laboratory	**Diagnostic Medical Sonographer** (in lieu of Ultrasonographer) Medical and Clinical Lab Technologist Medical and Clinical Lab Technician **Nuclear Medicine Technologist** (in lieu of Radiation Technologist) Phlebotomist Radiologic Technologists and Technicians (in lieu of CT Scanning Technologist and MRI Technologist)
Direct Care	Certified Nursing Assistant Home Health Aide
Health Information Management and Technology[C]	Medical Records and Health Information Technicians[C] (in lieu of Clinical Data Coder, Registered Health Information Technician, Registered Health Information Administrator, Health Data Analyst)
Nursing	Licensed Practical Nurse Nurse Practitioner Registered Nurse
Rehabilitation & Therapy	**Audiologist** **Chiropractor** **Massage Therapist** Occupational Therapist **Occupational Therapist Assistant** **Occupational Therapist Aide**

	Orthotists and **Prosthetists** (in lieu of Orthotic Technicians or Prosthetic Technicians) Physical Therapist Physical Therapist Assistant Speech/Language Pathologist
Social and Human Services	**Child, Family, School Social Worker** **Social and Human Service Assistant** **Social Worker, Other** **Social and Community Service Manager**

Note: Occupational titles are based on Standard Occupational Classifications used by the U.S. Bureau of Labor Statistics. ***Bolded job titles*** *represent occupations added at the request of NoVaHealthFORCE, or those found to be the best approximation by JFF.*

[A] Definitions for all occupations can be found in Appendix A.

[B] While the "Respiratory Therapy Technician" title is listed in both federal occupational statistics and in NoVA online job advertising, it is no longer a distinct certification offered by the National Respiratory Care Board (NRCB) or the Northern Virginia Community College Medical Education Campus. The NRCB has replaced the classification "Certified Respiratory Therapist Technician" with "Certified Respiratory Therapist"; obtaining the latter credential is a prerequisite to sitting for the NRCB examination for "Registered Respiratory Therapist." A taskforce convened in 2010 representing respiratory therapy education, licensure, and practice recommended that a Bachelor degree be made the minimum for entering respiratory therapy practice. See Barnes et al (2011), http://rc.rcjournal.com/content/56/5/681.short

[C] The title "Medical Records and Health Information Technician" is employed in both federal Occupational Employment Statistics and in NoVA online job advertising, and was used here to obtain labor market information consistent with that used for the 39 additional occupations studied in this report. Its use is limited, however, as it does not fully reflect distinct work activities and skill requirements associated with health information management (HIM) functions, which have evolved with changes in technology and industry practices, and health information technology (HIT). HIM encompasses entry-level occupations associated with medical coding and maintenance of patient records, and higher-skilled occupations associated with management of health information, while HIT refers primarily to the application and use of information technology to health care. Examples of HIM job titles include Coders, Revenue Cycle Analysts, and Clinical Documentation Improvement Specialists. HIT job titles include Electronic Health Records Implementation Specialists and Technical Software Support Specialists.

RESEARCH METHODOLOGY

JFF employed several research methods to assess health care needs and current and future workforce gaps. *(See Appendix B for list of JFF research team members and key informants for this study.)* Recognizing that no single method or data point could identify the complex challenges and opportunities facing Northern Virginia's health care sector, JFF used multiple sources of information to arrive at its findings:

Data Sources

- **To quantify and predict the patient pool for health care services**, JFF analyzed data from the Weldon Cooper Center at the University of Virginia and from EMSI (Economic Modeling Specialists International) on population estimates and 2020 projections, as well as coverage and demographics of the health insured. In light of the pending implementation of the Affordable Care Act, JFF also collected information on Medicaid caseloads and reviewed information on the percentage of the Northern Virginia population that would qualify for expanded coverage. In addition, JFF conducted a literature review on health care trends, and sought the perspectives of several regional health care employers and education institutions via phone interviews and focus groups.
- **To assess the capacity of health care services**, JFF conducted a literature review to quantify the number of acute care beds available in the region and to track trends in expansions and changing delivery models of regional health care providers.
- **To quantify and predict future demand for workers and skill sets**, JFF examined current and historic occupational employment data from the U.S. Bureau of Labor Statistics' Occupational Employment Statistics (BLS OES) program and the U.S. Census Bureau's American Community Survey. In addition, JFF analyzed 2010-2020 employment projections from EMSI. The research team also drew upon job opening advertisements posted online to assess real-time labor market demand. Analytics tools came from Burning Glass and The Conference Board Help Wanted OnLine® (HWOL), which aggregate, de-duplicate, analyze, and assign occupational codes to job postings from a wide range of online sources. Using Burning Glass's artificial intelligence technology, JFF extracted job description information on employer preferences for education, skill, and work experience requirements. Using The Conference Board's Help Wanted OnLine, JFF reviewed longitudinal trends on job demand in Northern Virginia by occupation. JFF validated and contextualized these findings through a literature review, phone interviews, and focus group sessions.
- **To quantify and assess workforce supply**, JFF analyzed occupational employment and wage data from the BLS OES dataset, industry-level quarterly data on staffing turnover and new hiring, and workforce migration patterns from the U.S. Census Bureau's Local Employment Dynamics dataset. JFF also used postsecondary education graduation figures from the U.S. Department of Education's Integrated Postsecondary

Education Data System (IPEDS) and the Virginia Board of Nursing. In addition, JFF cited statewide estimates on workforce demographics and licensure information collected by the Virginia Department of Health Professions. JFF questioned informants and focus groups participants about the quality of applicant pools and education programming. Finally, JFF conducted an employer survey seeking information about occupational-specific turnover and workforce demographics, and reviewed literature on state and national demographics of health care workers.

- **To explore the potential effects of the Institute of Medicine's nursing education recommendations**, JFF sought the perspectives of employers and education institutions via phone interviews and focus groups.
- **To examine the role and capacity of education institutions**, JFF analyzed state data on employment outcomes for students in specified health care education programs, reviewed student demographic and tuition rate information from health professions schools in the region, and conducted interviews and focus groups.

Strengths and Limitations of the Data

Table 0.2 on page 30 summarizes the advantages and limitations of traditional and real-time labor market information (LMI). In combination, these sources are useful tools for assessing current and future labor market demand, especially if complemented by primary data collection (e.g., interviews, surveys, or focus groups) with employers, educators, and other informants. As any data source is only as strong as its underlying methods and assumptions, we recommend that findings derived solely from these sources be used with caution. Policy decisions should also reflect regular consultation of employers and others familiar with current conditions and dynamics in the labor market. In addition, the health care labor market is subject to rapid change, now and in the foreseeable future. Changes in patient demand, in the methods of delivering and financing care, and in the location, technology, and staffing of health care continue to occur, and further, unforeseen changes may occur over the period projected for this analysis. Since the categories and methods used in employment projections are rooted in past conditions, their accuracy for predicting the future is inherently limited.

Traditional labor market information refers to the systematic collection, analysis, reporting, and publishing of a broad range of data that describes current economic conditions within a given geographic area. The federal government and individual states are the primary data collectors, but private vendors also analyze and distribute traditional LMI. The chief traditional data sources for this report are surveys and projections conducted by the U.S. Bureau of Labor Statistics Occupational Employment Statistics program (OES), but also other sources, including the U.S. Census (Local Employment Dynamics and American Community Survey, among others).

Traditional LMI's key strengths are its reliability, comprehensiveness, and consistency. For this report, it was used to provide a high-level framework for describing the Northern Virginia health care workforce and establishing a quantitative baseline and projections for employment in

selected occupations. Its chief limitation is its static nature. As noted, traditional LMI sources, such as the OES, base future projections on past trends. There is also an inherent lag in traditional data reporting, so that statistics on employment levels and the categories describing them are out of sync with conditions on the ground by the time the data is available. As a result, we employ several traditional LMI sources to correct for OES limitations.

“Real-time” labor market information uses spidering technology to obtain job postings by occupation from Internet job boards, company websites, and newspapers. It is collected by private vendors and parsed to produce information on hiring requirements including education, experience, skills, and certifications. This report uses real-time LMI to provide one type of indicator of current trends, emerging occupations, and current and emerging skill requirements. Its chief strength lies in offering up-to-date insights on job demand in specific occupations and industry sectors, based on advertising by actual employers. Since it tracks broadly with traditional data sources, it can help identify mismatches between employment supply and demand, if used in combination with traditional sources and primary research tools, such as interviewing.

Real-time labor market information is limited by the nature of job postings as a data source. A job posting does not necessarily represent a job vacancy and not all job vacancies appear online. A single advertisement may reflect multiple vacancies (or none). Job titles and acronyms used by employers may be vague or inconsistent. Many jobs, particularly those in low-skilled fields such as home health aides, are not equally represented in online postings. Changes in posting behavior or collection procedures can produce changes in volume that are unrelated to actual demand for workers. As a result of these limitations, real-time LMI by itself is not a comprehensive indicator of trends in hiring.

Table 0.2: Strengths and Limitations of Labor Market Information

	Benefits	Limitations
Traditional LMI	Reliable and robust	Looks backward to forecast; lacks current labor market perspective (time lag)
	Consistent and documented methodologies	Static/not dynamic
	Regional comparisons	Lacks data on current demand/employers' requirements
	Public, no-cost distribution	Does not effectively capture emerging occupations/skills requirements/certifications
Real-time LMI	Reveals new and emerging trends in occupational definitions	Duplication errors (though this difficulty is quickly becoming obsolete with more sophisticated algorithms)
	Offers insights into the skills and certifications sought by regional employers	Certain trades (construction, retail) do not advertise as many job vacancies online as others.
	Identifies early indications of market shifts; data is collected regularly	Online job ads can be vague
	Tracks hiring demand	Not every job posting represents an actual vacancy
	—	Proprietary/Cost

Forecasting Future Workforce Needs

NoVAHealthFORCE requested information on potential workforce shortages through 2020. As a starting point, JFF questioned numerous informants to identify current gaps in workforce supply and to capture their best estimates for future demand. To augment these estimates with empirical evidence, JFF used traditional and real-time labor market information to quantify the size of the local labor force that would be available to apply for current and projected job openings. A smaller applicant pool increases the possibility that the data will indicate an undersupply of workers relative to demand.

Supply Analysis

JFF used the following formula to calculate the potential pool of applicants:

Available NoVA Workforce (current + future) = Applicant pool per job opening

NoVA Job Openings (current or projected)

For *current workforce supply*, JFF used federal Occupational Employment Statistics to report 2011 data on the number of full-time and part-time workers who were employed in the Northern Virginia region in one of the specified study occupations. OES does not take into account the growing trend in the health care sector of individuals working as independent contractors. OES counts neither self-employed individuals, like some home health aides, nor individuals who take job assignments through "employee leasing companies."[17]

For *future workforce supply*, JFF used the Integrated Postsecondary Education Data System to report 2011 data on the number of graduates of Northern Virginia postsecondary education institutions who completed a health education program of study corresponding to one of the specified study occupations. IPEDS uses a different classification system than the OES data system, so matching programs of study to occupations is not a perfect science. In several cases, JFF offered its best estimate of which program completers to count as the future workforce supply for a specific occupation.

Using IPEDS as the primary source for predicting future supply has a second limitation—IPEDS only reports graduates of colleges and universities eligible to receive federal financial aid. Therefore, this measure of new supply does not account for individuals who enrolled and completed some form of occupational training through high schools and community-based organizations. Through a scan of state government and licensure board websites, JFF discovered that non-postsecondary institutions in Northern Virginia purportedly offer vocational training in low- and middle-skilled study occupations, including home health aide, nursing assistant, medical assistant, pharmacy technician, dental assistant, phlebotomist, massage therapist, and licensed practical nurse, among other fields examined in the study. IPEDS picked up program completers in five of these fields. In most cases, JFF could not ascertain the number of program completers from these non-postsecondary institutions, despite efforts to reach out directly to providers, seek the assistance of licensure boards, and scan through several relevant websites.

This is potentially a significant issue in terms of estimating future supply and could have significant impacts on the market. On the other hand, JFF did find a workable solution for predicting supply and demand for licensed practical nurses and nurse assistants. The Virginia Board of Nursing (VBN) was able to supply data on completers of several regional licensed practical nurse programs—including non-college institutions—who passed the National Council

Licensure Examination test in 2011. The board also provided data on nursing assistant trainees from 2012 to 2013. No other licensure board that JFF contacted was able to supply missing completion data for low- and middle-skill fields under its jurisdiction.

All together, JFF was not able to report completion data for 11 occupations in the region. In these instances, JFF only employed OES data to calculate workforce availability.

Demand Analysis

It is highly difficult to ascertain future employer demand for workers with complete accuracy and precision. Projection methods such as those used by the U.S. Bureau of Labor Statistics cannot fully account for changes in technology, markets, work organization, regulatory changes, and other variables. Recognizing the limitations of any single data source, JFF offers two methods for forecasting job openings:

- In **option #1**, JFF used EMSI's 2010-2020 employment projections to derive the estimated yearly number of job openings in a specified occupation due to new job creation or staff turnover (also known as replacement).
- In **option #2**, JFF used Burning Glass technology to derive an unduplicated count of job advertisements posted online in 2012 for specified study occupations in the region. In reporting on the job ads, JFF makes the assumption that current trends in online hiring activity will persist into the future.

Option #1 **2011 OES Workforce Supply + 2011 Completers from IPEDS/VBN**
EMSI projected yearly job openings

Option #2 **2011 OES Workforce Supply + 2011 Completers from IPEDS/VBN**
2012 Burning Glass online job ads

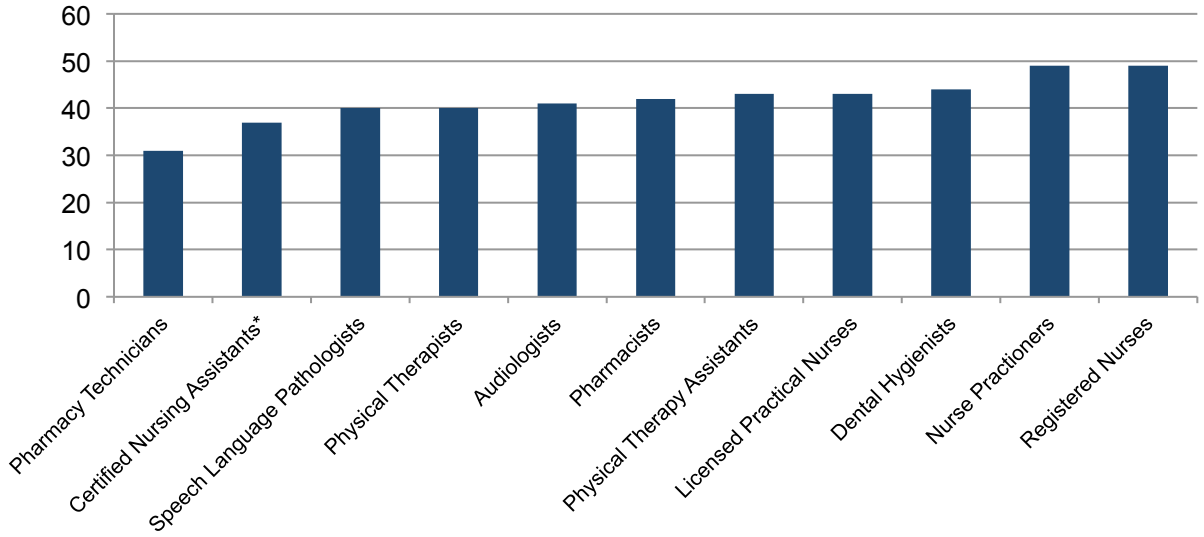
Across all study occupations, there are three times the number of online jobs than projected job openings. This suggests that employers may need more workers today than forecasters had predicted. For some occupations, like occupational therapy assistants, occupational therapists, and medical and health services managers, hiring activity appears to be more than predicted. However, in other occupations, forecasters predicted quite a few more job openings than have recently appeared online. For instance, EMSI projects a larger number of dental hygiene jobs than have been advertised online. Informant comments gave evidence of weaker than expected hiring activity. Administrators at Northern Virginia Community College said recent graduates of its dental hygiene program are searching for work for as long as a year before landing a position. In other occupations, like home health aides, job projections far outstrip recent ads because employers do not tend to advertise job openings online.

These discrepancies require careful interpretation in reporting occupations with potential workforce shortages. In more than half of the study occupations, the number of projected openings and recent online ads are very or somewhat similar—inspiring a higher level of confidence in accurately predicting employer demand. On the other hand, there are significant differences in job ad and opening totals for several other occupations. In these cases, JFF took into account informant perspectives in determining whether projected job openings or online job ads provide a more accurate depiction of employer demand.

In addition to accounting for the limitations of each data source, JFF makes several assumptions in its calculation of workforce shortages:

- First, it assumes that individuals who are currently employed in the region, along with students who have recently graduated from regional colleges and universities, will fill all job openings. It does not account for employer efforts to recruit outside of the Northern Virginia region, for residents employed outside the region to apply for a job closer to home, or for college students who may have no intention to apply for regional job openings. Generally, the study contains only a few highly skilled occupations that employers are likely to recruit for candidates across the United States or, even, internationally; this would likely include professional occupations requiring postgraduate degrees.
- In addition, the primary methodology does take into account how the retirement of the Baby Boomers will affect workforce supply. Wherever possible, JFF cites empirical and anecdotal information on workforce demographics to assess whether occupations are in relatively better or worse shape to endure retirements. According to state survey findings for 10 of the study occupations, the median age for workers in most occupations ranges from late 30s to early 40s, but several occupations—including registered nurse and nurse practitioner—have an older median age (see Figure 0.1). These estimates should be viewed with caution, however, as retirement age within or across occupations may vary with economic cycles—as seen in the recent recession, where health care turnover in Northern Virginia and elsewhere fell considerably. It can also vary significantly with income and earnings levels.
- Finally, this methodology does not assess the quality of the applicant pool. Instead, JFF draws on informant interviews to discuss whether or not employers are struggling to find candidates with required skillsets, degrees, and work experiences.

Figure 0.1: Median Age of Northern Virginia Workers in Selected Study Occupations



** Statewide median age of Certified Nursing Assistants (CNAs).*

Source: Virginia Department of Health Professions (VDHP), 2010-12 surveys of workers licensed to work in Virginia; VDHP supplied JFF a subset of data for workers residing in Northern Virginia.

FACTORING IN THE IMPACT OF THE AFFORDABLE CARE ACT

The study's quantitative findings on workforce shortages do not take into account the implementation of the Affordable Care Act, because the research was completed before the major portions of the law took effect in early 2014. Whether and how the ACA will affect workforce demand and supply in Northern Virginia remains unclear at the time of this report's publication. A key question is whether the state will expand Medicaid coverage under ACA guidelines to an estimated 400,000 individuals with incomes up to 138% of the poverty line. Newly elected Democratic Governor Terry McAuliffe favors the expansion, but the Republican-controlled House opposes it. In January, McAuliffe was searching for a way to enact the policy without legislative approval. In February, the state's House rejected the measure, while the Democratic-controlled Senate approved it.[18]

It may be reasonable to assume that health care employers would hire more workers to satisfy increased patient demand for services as more uninsured individuals enroll in coverage, but informants for this study did not reach consensus on ACA's impact on workforce demand. Some hospital executives told JFF that ACA's focus on quality outcomes would increase employer demand for registered nurses with Bachelor degrees because they reportedly commit fewer

errors than community college graduates. Conversely, other hospital executives told JFF that ACA's cost-containment measures for Medicare and Medicaid reimbursement rates had been driving employers to hire fewer licensed professionals and more support staff who earn lower wages. Still others told JFF that they do not expect any effect on staffing patterns or changes in the delivery of care.

More universally, informants predicted that ACA's call for increasing preventive care would contribute to reductions in hospital visits and lengths of stay. The immediate implications for the size of the acute care workforce do not suggest rising employment levels. Inova Health System, the largest health care employer in Northern Virginia, eliminated 147 jobs in June 2013 in direct response to a 3.5 percent drop in patient loads so far that year.[19] Inova President Mark Stauder told the *Washington Business Journal* he expected lower patient loads to be the "new normal" under health care reform.[20] Other large hospital systems in the United States also have cited ACA as the reason for reducing their workforces recently.[21]

These staff reductions are coming on the heels of a period of sustained expansion of the Northern Virginia health care sector. Inova, along with Novant Health, Fort Belvoir, Virginia Hospital Center, Reston Hospital Center, and Sentara, each have opened or upgraded its facilities in the past 10 years—with new construction ongoing—in response to the region's strong population growth, particularly in the outlying counties of Loudoun and Prince William counties, discussed in detail in Chapter 5.

In attempting to predict the region's response to the immediate pressures and uncertainties of the ACA, JFF could not determine a valid way to account for the Act's implications in quantifying employment projects and workforce supply-demand gaps. However, the report incorporates informant perspectives on the ACA's likely impact on workforce needs, care delivery models, and patient needs.

REPORT OUTLINE

This report is divided into six chapters:

1. **Northern Virginia Health Care Marketplace—Patient Pool and Service Capacity:** This section provides up-to-date information on Northern Virginia's population, estimates for growth, and changing demographics. It explores the proportion of the population with private and public health insurance coverage and demographics of the insured and uninsured. It also discusses the overall capacity of the region to deliver health care, including the number of acute care beds; upgrades and expansions of acute care, ambulatory, and long-term care facilities; and changing models of care delivery.
2. **Overall Workforce Demand in Study Occupations—Past, Present, Future:** This section describes the scale and scope of study occupations in the health care sector and subsectors, as well as overall trends in employment levels for the health care sector and several critical subsectors. It discusses broad trends in job openings, staff turnover prior

to and during the Great Recession, and projected job growth and workforce supply through 2020. In addition, the section incorporates general perspectives on workforce readiness, retention, and attraction.

3. **Workforce Demand for Non-nurse Study Occupations:** This section delves into the specific workforce needs of the study occupations. Organized into seven subsections corresponding with the seven non-nurse occupational groupings, it reports on a range of workforce supply and demand data and estimates workforce shortages. This section also includes employer perspectives on current and future workforce needs and education capacity.
4. **Nursing Workforce—Supply, Demand, and the Impact of the Institute of Medicine's BSN Recommendations:** This section presents nursing workforce demand information similar to data provided for the other study occupations, as a starting point for a broader examination of the future of nurses. In the context of the Institute of Medicine's recommendations for increasing the proportion of registered nurses with a Bachelor's of Science in Nursing degree, this section considers employer and education provider perspectives on current and future hiring preferences; education program capacity, outcomes, and strategies; and implications for future supply and demand of nurses.
5. **Workforce Demand in High-growth Outlying Counties:** This section looks closely at workforce and education needs of Loudoun and Prince William counties as health care providers continue to open or upgrade facilities to keep up with significant population growth.
6. **Conclusion and Recommendations:** This section presents a summary of the study's major workforce findings and a series of recommendations for NoVAHealthFORCE to consider as it continues its efforts to strengthen the region's pipeline of qualified health care workers.

CHAPTER 1: NORTHERN VIRGINIA HEALTH CARE MARKETPLACE—PATIENT POOL AND SERVICE CAPACITY

Northern Virginia's health care system is undergoing significant change, in efforts to keep pace with robust population growth and respond to rising pressure to cut costs, increase access, and improve the quality of care. In recent years, new providers have entered the regional marketplace and new and upgraded facilities have opened. Access to care has improved in the high-growth outlying areas of Prince William and Loudoun counties. Hospitals and physician groups are forming new partnerships, as are care providers and insurance providers. Moreover, several major hospital systems are changing the way they deliver care—shifting greater resources and more staff to preventive care and community-based settings, changing the staffing mix between practitioners and support personnel, and assigning new job responsibilities. Despite uncertainty about how the Affordable Care Act will affect patient demand and care delivery going forward, the system changes already in progress have substantial implications for the health care workforce, by spurring job creation, altering demand for occupations, and raising skill requirements.

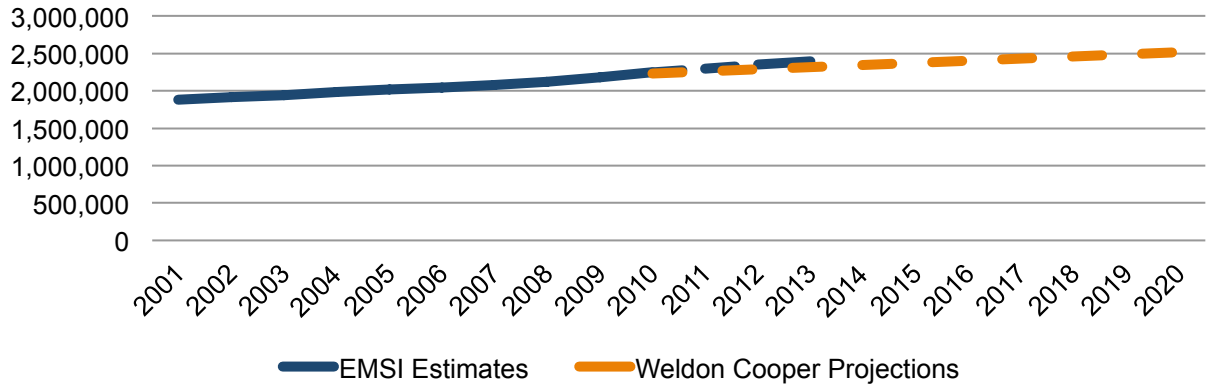
This chapter reviews Northern Virginia's demographic trends, such as population growth and insurance coverage, which affect health care demand. It also analyzes care capacity and care delivery models, in order to set the broader context for factors driving workforce demand in the region's health care marketplace.

POPULATION ESTIMATES AND DEMOGRAPHICS

The overall region will continue to grow, but at a slower rate

The population of Northern Virginia has been growing steadily for a decade. It will continue to grow, though at a slower pace, over the next 10 years. According to U.S. Census data reported by EMSI, the overall region grew by 22.1 percent—from 1.9 million residents to 2.3 million residents between 2001 and 2011. This expansion compares to a national growth rate of 9 percent. Projecting forward, Weldon Cooper predicts population growth to slow over the next decade, but remain healthy, at a rate of 12.7 percent compared to a national growth rate of 6 percent. Under this growth model, the regional population would increase from 2.2 million in 2010 to 2.5 million by 2020 (*Figure 1.1*). The United States as a whole is expected to grow from 309.3 million in 2010 to 328 million by 2020.

Figure 1.1: Northern Virginia Population Estimates and Projected Growth (2000-2020)



Source: Weldon Cooper; EMSI

Population growth will be uneven in region

The outlying counties of Loudoun and Prince William, as well as Manassas Park City, are expected to grow at a faster rate than other areas in Northern Virginia, at 27.2 percent, 21.3 percent, and 16.2 percent, respectively. This continues the trend of substantial outward expansion in the northwestern and southern sections of the region and more modest growth closer to Washington, DC (*see Table 1.1*). Fairfax County, which is the area's largest population center, is projected to add more than 100,000 new residents by 2020—the most of any Northern Virginia locality. In contrast, Arlington County is expected to lose population, and Alexandria City will grow by less than 4 percent.

Table 1.1: Northern Virginia Population Change by Locality (2010-2020)

Locality	2010	2020	Change #	Change %
Arlington County	207,627	206,896	-731	-0.4%
Fairfax County	1,081,726	1,182,609	100,883	9.3%
Loudoun County	312,311	397,272	84,961	27.2%
Prince William County	402,002	487,768	85,766	21.3%
Alexandria City	139,966	145,116	5,150	3.7%
Fairfax City	22,565	23,751	1,186	5.3%
Falls Church City	12,332	13,673	1,341	10.9%

Manassas City	37,821	42,105	4,284	11.3%
Manassas Park City	14,273	16,591	2,318	16.2%
Northern Virginia	2,230,623	2,515,782	285,159	12.7%
Virginia, Statewide	8,001,024	8,811,512	810,488	10.1%

Source: Weldon Cooper

Northern Virginia's population is younger than the rest of Virginia, but aging more rapidly

Currently, less than 10 percent of Northern Virginia residents are over the age of 65. However, as the national Baby Boom generation reaches retirement age, Northern Virginia is also expected to grow older in the coming years. Although the region is expected to remain younger on average than the Commonwealth as a whole by 2020, the growth rate of its population age 65 and over is predicted to outpace the statewide average—30.7 percent to 27.9 percent. If this trend persists in the long term, Northern Virginia may experience increased demand for health care services and a shrinking workforce supply due to retirements.

Table 1.2: Projected Change in Northern Virginia Population Age 65+ (2012-2020)

Locality	2012 Estimates		2020 Projections			
	Number 65+	Percent 65+	Number 65+	Percent 65+	Number Growth 65+	Percent Growth 65+
Arlington County	19,683	8.90%	21,449	10.37%	1,766	9.0%
Fairfax County	119,300	10.67%	155,424	13.14%	36,124	30.3%
Loudoun County	24,700	7.33%	31,996	8.05%	7,296	29.5%
Prince William County	32,376	7.52%	49,273	10.10%	16,897	52.2%
Alexandria City	14,050	9.60%	17,175	11.84%	3,125	22.2%
Fairfax City	3,486	14.86%	3,863	16.26%	377	10.8%
Falls Church City	1,385	10.47%	1,807	13.22%	422	30.5%
Manassas City	2,996	7.38%	4,237	10.06%	1,241	41.4%
Manassas Park City	1,007	6.37%	1,082	6.52%	75	7.4%

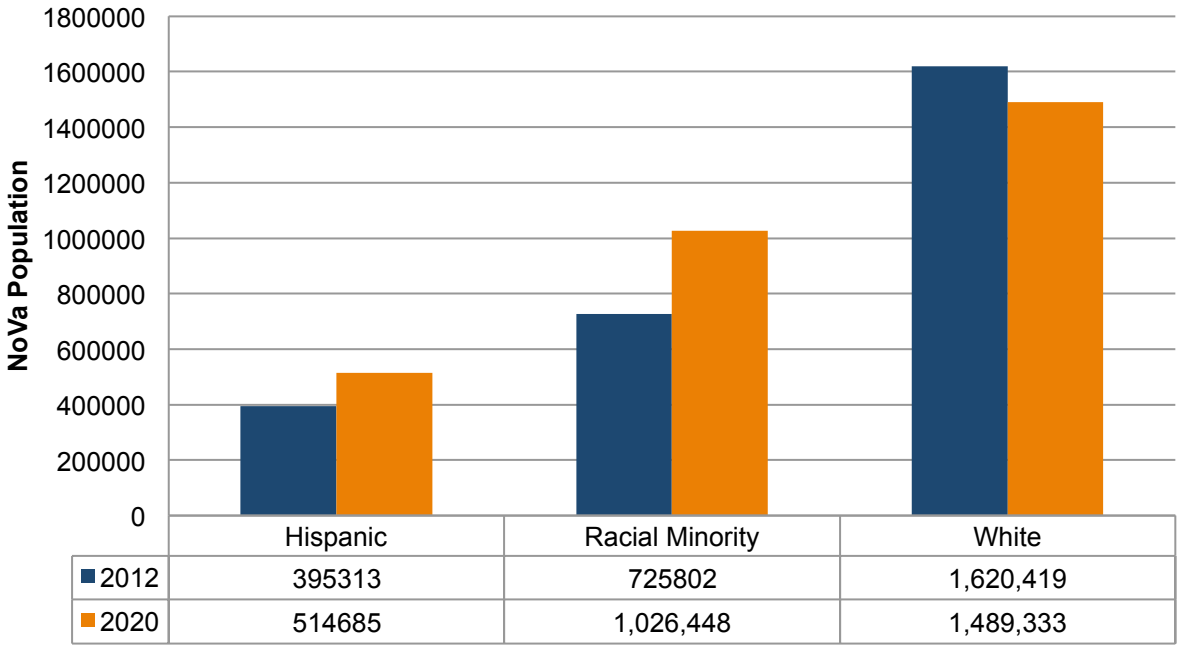
Northern Virginia	218,983	9.33%	286,306	11.38%	67,323	30.7%
Virginia, Statewide	1,062,505	12.98%	1,359,168	15.42%	296,663	27.9%

Source: Weldon Cooper

Northern Virginia is becoming more racially and ethnically diverse

Between 2000 and 2010, the number of Northern Virginia residents of racial and ethnic minority backgrounds grew significantly—a 68 percent increase—while the number of white residents held relatively stable. Numerous informants have told JFF that the increase in the overall minority population, through births and relocations, is the major driver of the region's overall substantial and sustained population growth. The data support these observations. Weldon Cooper predicts continued strong growth among residents from racial minority backgrounds and of Hispanic origin through 2020.

Figure 1.2: Northern Virginia Population Estimates and Projections for Racial and Ethnic Minorities (2012-2020)



	Hispanic	Racial Minority	White
2012	395313	725802	1,620,419
2020	514685	1,026,448	1,489,333

Source: Weldon Cooper Population Projections

Table 1.3: National Population Estimates and Projections by Race

Demographic	2010 Population	2020 Population	Change	% Change
White	242,256,519	252,006,426	9,749,907	4%
Black	40,353,468	43,737,560	3,384,092	8%
Asian	15,244,090	18,350,122	3,106,032	20%
Other	11,476,142	14,695,209	3,219,067	28.1%

Source: U.S. Census Bureau

With this growth, Northern Virginia is projected to outpace national and statewide trends in racial and ethnic diversity. While the racial minority population of the United States is expected to grow by 28 percent, in Northern Virginia it is projected to increase by 41 percent. Individuals from backgrounds other than black or Asian will comprise the bulk of this growth; Weldon Cooper analysts believe that this group consists primarily of people of Hispanic ethnicity or of two or more races. The largest concentration of the region's non-white population currently is in the southwest and will remain there by 2020. More than one-third (35 percent) of Prince William County was estimated to be of non-white races, and these groups (black, Asian, other) will constitute 46 percent of the county's population in 2020, according to projections. Again, the majority of this group is individuals of "other" races, not black or Asian. The proportion of Northern Virginia residents who are black or Asian will not change dramatically, with the region's black population remaining at about 12 percent and Asians increasing slightly to 16 percent.

Those of Hispanic ethnicity, who may be of any race, are projected to grow in large numbers over the decade. Currently 16 percent of Northern Virginia's population, they are projected to reach 21 percent in 2020. This represents nearly double the growth rate of Hispanics nationally (42 percent increase in Northern Virginia, compared to 22 percent for the United States as a whole). The largest concentrations of Hispanics, now and projected to 2020, will be in the outlying areas of Manassas Park and Manassas Park City, as well as Prince William County overall.

Table 1.4: Northern Virginia Population Estimates and Projections by Race and Locality (2012-2020)

Locality	2012 Estimates				2020 Projections			
	White	Black	Asian	Other	White	Black	Asian	Other
Arlington County	170,968	19,592	21,961	8,524	138,454	17,669	24,211	26,562
Fairfax County	757,375	109,029	206,351	45,847	692,519	108,030	236,814	145,246
Loudoun County	243,627	25,815	54,064	13,392	255,568	28,351	67,644	45,709
Prince William County	280,775	91,547	34,714	23,253	263,496	96,030	43,737	84,505
Alexandria City	98,118	32,633	9,688	5,855	80,464	32,273	11,091	21,288
Fairfax City	17,413	1,326	3,710	1,012	15,516	1,141	4,219	2,875
Falls Church City	10,746	629	1,293	561	10,346	600	1,576	1,151
Manassas City	30,185	6,223	2,216	1,981	24,250	5,600	2,461	9,794
Manassas Park City	11,212	2,333	1,451	802	8,720	2,035	1,662	4,173
Northern Virginia	**1,620,419**	**289,127**	**335,448**	**101,227**	**1,489,333**	**291,731**	**393,415**	**341,303**
Virginia, Statewide	**5,818,810**	**1,612,713**	**487,505**	**266,839**	**5,755,170**	**1,678,122**	**605,360**	**772,825**

Source: Weldon Cooper

Table 1.5: National Population Estimates and Projections by Hispanic Origin

Demographic	2010 Population	2020 Population	Change	% Change
Hispanic	50,790,485	61,712,812	10,922,327	22%
Non-Hispanic	258,539,734	267,076,505	8,536,771	3%

Source: U.S. Census Bureau

Table 1.6: Population Estimates and Projections by Hispanic Origin, Locality

Locality	2010 Population	2020 Population	% Change
Arlington County	31,382	40,898	30%
Fairfax County	168,482	231,023	37%
Loudoun County	38,576	66,297	72%
Prince William County	81,460	118,748	46%
Alexandria City	22,524	30,078	34%
Fairfax City	3,556	4,638	30%
Falls Church City	1,109	1,725	56%
Manassas City	11,876	15,160	28%
Manassas Park City	4,645	6,119	32%
Northern Virginia	**363,610**	**514,685**	**42%**
Virginia, Statewide	**631,825**	**982,367**	**55%**

Source: Weldon Cooper

HEALTH INSURANCE COVERAGE

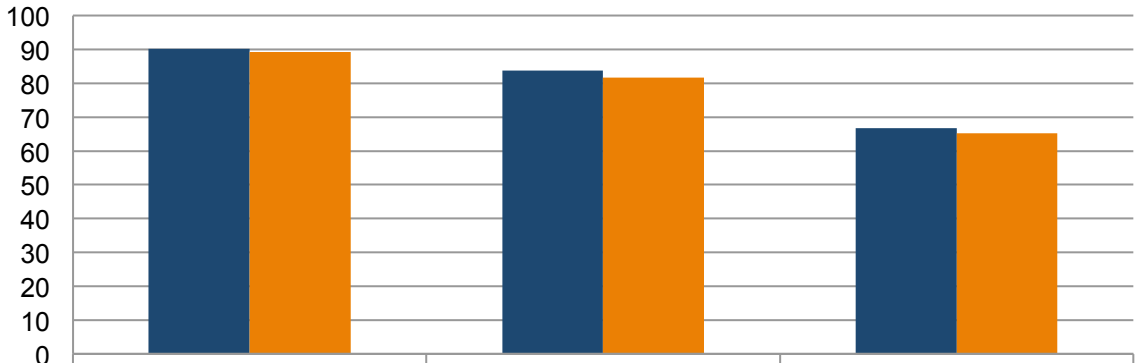
The vast majority of Northern Virginia residents have insurance, but the ranks of uninsured are higher in some areas

In 2010, nearly 87 percent of Northern Virginia residents had health insurance coverage, compared to 85.2 percent across the Commonwealth. Three Northern Virginia localities reported higher rates of individuals without insurance than the regional average of 13 percent and state average of 14.2 percent: Manassas Park City (23.6 percent), Manassas City (21.1 percent), and Prince William County (15.5 percent).

Health insurance coverage dropped in the near term and is particularly low for poor and minority residents

Across the Northern Virginia region and within specific demographic groups, health insurance coverage generally declined from 2008 to 2010—a likely result of the Great Recession. In examining statewide and Northern Virginia locality-specific figures, health insurance coverage was particularly low for low-income and minority residents. Especially concerning, the rapidly growing Hispanic population had one of the lowest rates of health insurance coverage of any demographic group. Moreover, less than 60 percent of Northern Virginia residents at or below 138 percent of the federal poverty level had health insurance in 2010. This region's coverage rate dropped since 2008 and stands well below the state average of about 70 percent. In Fairfax City, only half of poor or near-poor residents had insurance.

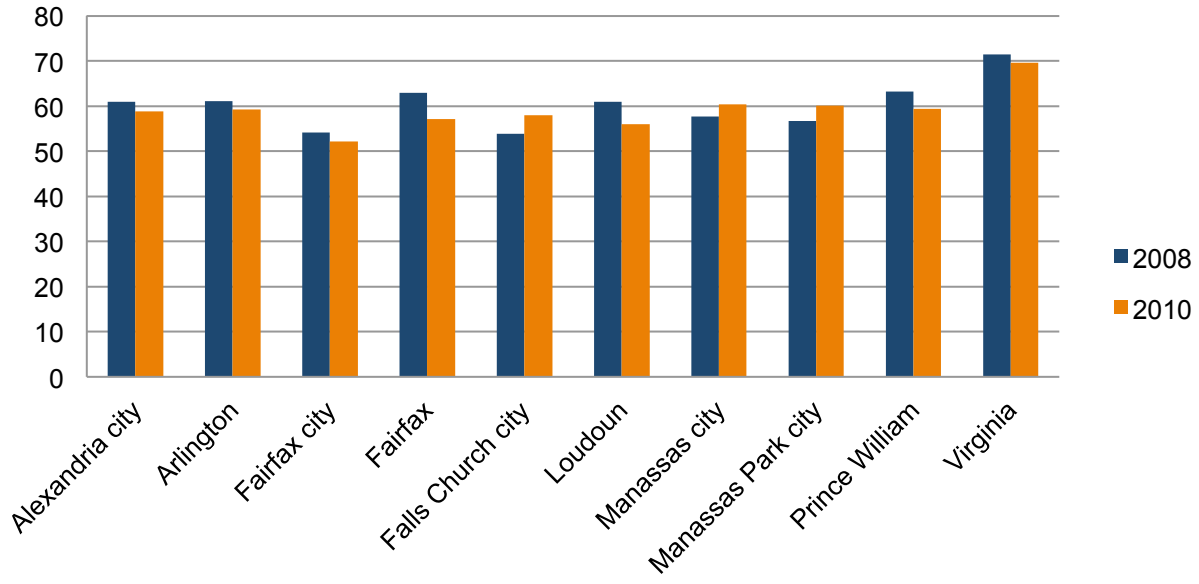
Figure 1.3: Percent Insured by Race, Statewide



	Whites	Blacks	Hispanics
2008	90.2	83.7	66.7
2010	89.2	81.7	65.2

Source: U.S. Census Bureau's Small Area Health Insurance Estimates (SAHIE)

Figure 1.4: Percent Insured, 138% Poverty Level



Source: U.S. Census Bureau's Small Area Health Insurance Estimates (SAHIE)

Medicaid expansion would expand health insurance coverage for low-income residents

One major reason for low insurance coverage among the poor is the Commonwealth's strict eligibility requirements for enrollment in Medicaid. Less than one million Virginians, about 60 percent of whom are children, were enrolled in Medicaid in fiscal year 2012. While Virginia's population is 11th largest in the United States and ranks 7th in per-capita personal income, Virginia is ranked 43rd in Medicaid enrollment as a proportion of the state's population and 47th in per capita Medicaid spending.[22]

The Affordable Care Act incentivizes states to expand Medicaid eligibility to 138 percent of the federal poverty level. Based on Urban Institute estimates, the expanded coverage would insure an additional 400,000 Virginians, an increase of roughly 40 percent.[23] It is estimated that as many as 25,000 to 30,000 individuals in Fairfax County alone would gain access to Medicaid through an expansion.[24] If approved, expanded Medicaid coverage may help curb racial and ethnic health care disparities that are exacerbated by lack of insurance, as 42 percent of adult Virginians newly eligible for Medicaid are people of color.[25] If Virginia does not participate in the expansion, individuals whose earnings match or exceed the federal poverty level may be eligible for subsidized insurance through the state's new health exchange.

HEALTH CARE DELIVERY SYSTEM

Hospitals have aggressively expanded facilities but are not keeping up with population growth

In recent years, major health care providers have opened new or upgraded facilities across Northern Virginia, significantly expanding the region's total number of acute care beds available currently or in the near future (*see Table 1.7*). According to local press accounts:

- **Kaiser Permanente** has opened new outpatient facilities in Largo,[26] Tysons Corner,[27] and McLean[28] in 2012 and 2013.
- The U.S. **Department of Defense** has replaced the DeWitt Army Community Hospital with a new joint service facility, Fort Belvoir Community Hospital, opened in 2011.[29]
- **Novant Health** entered the Northern Virginia marketplace in 2009 by taking over operation of Prince William Medical Center and expanding its scope of specialty services. Subsequently, Novant now operates physician offices, imaging services, and assisted living facilities across the region.[30] In 2014, Novant will open the 60-bed **Novant Health Heathcote Health Center** in Haymarket.[31]
- **Sentara** entered the Northern Virginia marketplace in 2009 by taking over operation of Potomac Hospital[32] (renamed Sentara Northern Virginia Medical Center) and expanding its scope of specialty services to include the Sentara Heart and Vascular Center. Sentara also has expanded outpatient, emergency, transport, and home health care services.[33]
- **Inova**, the largest health care system in the region, has added capacity and new services across several facilities. Among the highlights, Inova has recently added new wings and upgraded services at Fairfax, Alexandria, and Mount Vernon hospitals and has upgraded or opened ambulatory facilities in Ballston, Lorton, and Leesburg.[34] Since 2004, Inova has increased the number of acute care beds (excluding beds for pediatric care) from 1,424 to 1,753.
- **HCA,** which is affiliated with Reston Hospital Center, is constructing a new 124-bed hospital and medical offices in Loudoun County, due to open in December 2015.[35]

Table 1.7: Number of Acute Care Beds, by facility

Locality	Hospital	Bed count
Alexandria	Inova Alexandria Hospital	318
	Inova Mount Vernon Hospital	237
Arlington	Virginia Hospital Center	334
Fairfax	Inova Children's Hospital[A]	186
	Inova Fairfax Hospital	833
	Inova Fair Oaks Hospital	182
	Reston Hospital Center (HCA)	187
	Fort Belvoir Community Hospital	120
Loudoun	Inova Loudoun Hospital	182
	StoneSprings Hospital Center (HCA)[B]	124
Prince William	Sentara Northern Virginia Medical Center[C]	183
	Novant Health Prince William Medical Center	170
	Novant Health Heathcote Health Center at Haymarket[D]	60
	Current acute care capacity	**2,932 beds** **1 bed for every 761 residents**
	Future acute care capacity, 2020	**3,116 beds** **1 bed for every 800 residents**

[A] Beds for use by children

[B] Opening 2015

[C] Formerly Potomac Hospital

[D] Opening 2014

Sources: Websites of each hospital.

Note: Appendix D provides a full rundown of medical facilities operated by the large providers, including Kaiser Permanente, the U.S. Department of Defense, Novant Health, Sentara, Inova, HCA, and Virginia Hospital Center.

Despite these facility expansions, the proportion of beds per resident is expected to decrease. Northern Virginia currently has one acute care bed for every 761 residents, including beds at Inova Children's Hospital. By 2020, factoring in new hospitals under construction and projected population growth, the bed capacity would decrease moderately, with a single bed for every 800 residents.

The drive to capture new patients, especially in high-growth areas, has created fierce competition as well as new partnerships

Several of the major hospital systems have broken ground on new facilities within close proximity of competing providers.[36] In a couple of cases, competition has heated up to the point that legal action has been taken to block new construction and ties have been severed with insurance companies due to their arrangements with other providers.[37] Yet, in other cases, providers have forged new partnerships to deliver care and strengthen their competitive edge.[38]

Northern Virginia is attracting new providers in rehabilitation, ambulatory, and long-term care

Hospital systems are not the only health care service area growing rapidly. New players are entering the Northern Virginia marketplace in long-term and outpatient rehabilitation, walk-in and in-store health clinics, urgent care centers, assisted living communities, and in home health care. Among the highlights:

- **Rehabilitation:** HealthSouth plans to expand its Loudoun rehabilitation hospital with a 15-bed, 12,200- square-foot addition to its 40-bed, 58,000 square-foot facility. Officials hope the new beds will be ready by summer 2014.[39] The MedStar NRH Rehabilitation Network has opened an outpatient site in McLean.[40]
- **Ambulatory:** Patient First has opened a medical facility in Leesburg.[41] In 2013, Target added three in-store clinics in Northern Virginia, making a total of seven in the Washington region.[42] Nova Medical plans the first Prince William County urgent care center,[43] while Doctors Express opened a walk-in clinic in Mount Vernon.[44]
- **Long-term care:** Singh Development LLC is constructing a 260,000-square-foot continuing care facility for senior citizens in Ashburn, due to be completed in 2015.[45] In 2011, Spring Arbor opened a new assisted living center in Leesburg.[46] In 2012, Virginia lifted a two-year-old moratorium on new licenses for home-care providers. By September 2012, 85 companies applied to become licensed in Virginia.[47]

Major changes are underway in the delivery of health care

In several interviews in the summer of 2013, hospital executives explained to JFF how they have begun delivering care differently. Although not all hospital systems appear to be

implementing the same reforms, here is a brief rundown of the most common ways their focus is changing:

- **From hospitals to community settings:** Informants said that, whenever possible, providers are changing the venue for acute care and other services, such as diagnostic tests and lab work, away from hospitals to outpatient and primary care offices. In the future, hospitals will see only the sickest patients in need of specialty services.
- **From treatment to prevention:** Moreover, several executives explained that their hospital systems are trying to improve prevention of a wide range of conditions in order to reduce the incidence of illness. Several executives noted that their health system is giving greater attention to "how to keep people well," as opposed to the traditional paradigm of "how to care for sick people." Considering that the health care industry has traditionally increased profits by serving more (insured) people, these systems are taking bold actions to keep patients out of the hospital, focus on wellness and prevention, and manage chronic conditions, such as diabetes, to avoid escalation and need for readmissions. The executives said it is not only cheaper to deliver this preventive care, but is also more likely to result in healthier patients.
- **From unmanaged to managed care:** Several executives described ways their hospital systems are trying to better manage care. They are devoting staff resources to following up with patients, particularly the elderly, on proper use of medication and management of chronic conditions. In some cases, hospital systems have instituted "managed care" systems that provide health insurance to patients and require referrals for specialized care and services.
- **From resolving cases to serving customers:** Several executives emphasized the need for improving customer service. As one informant said, "higher patient satisfaction scores means more money." Another said it more bluntly, "you have to be nice now."
- **From conducting rounds to coordinating care:** Several informants described major changes in workflow, particularly for nurses. Some hospital systems are moving away from nurses handling a wide range of tasks for their assigned patients. Instead, these systems are forming care teams, in which nurses delegate ancillary tasks to support staff, work more closely with other practitioners by participating on multidisciplinary rounds, and spend more time at the bedside with the patient. The refrain echoed repeatedly during informant interviews was ensuring that nurses "work at the top of their license."

These major developments in care delivery bring to mind five overarching implications for the health care workforce:

1. **Rising pressures to contain costs may shrink workforces.** The health sector enjoyed strong job growth over the past decade. However, more recently, the uptick in the uninsured and changes to health plans that have encouraged more cost-conscious

consumers have both contributed to reduced patient visits. This has forced some employers to curtail hiring or staffing. In addition, the health sector is now contending with the uncertain impact and rollout of ACA provisions, as discussed earlier.

2. **Changing venues of services also will change where people work.** Relocating from a hospital to an outpatient clinic will be an adjustment for some practitioners and support staff.
3. **Being technically proficient at a task no longer will be enough.** Going forward, workers will need strong skills in teamwork and communication to deliver high-quality customer service in care teams. Moreover, many will need to have strong case management skills to follow up with patients with chronic conditions.
4. **"Working at the top of one's license" requires better-trained support staff and improved coordination of care.** As previously mentioned, the care team approach hinges on nurses having strong leadership and managerial skills. Moreover, it requires that support staff members be properly trained to handle higher-level tasks.
5. **Wearing multiple hats might become the norm.** Considering the heightened concerns over costs, employers will expect increased productivity from workers. One hospital executive told JFF that the days are over when workers could wait idly by for their next patient to arrive. Instead, the informant suggested workers should be cross-trained in other related job assignments, allowing them to move from one task in demand to the other with less down time. Further evidence for the need to improve the efficiency of staff comes from the Georgetown University Center for Education and the Workforce, which says the health sector has the fourth lowest productivity level among all U.S. industries.

Which specific occupations may be in higher or lower demand as a result of these new models of care will be discussed later in this paper.

CHAPTER 2: OVERALL WORKFORCE DEMAND IN STUDY OCCUPATIONS—PAST, PRESENT, FUTURE

This section describes the scale and scope of study occupations in the health sector and subsectors, overall trends in employment levels for the health sector, and several critical subsectors. It also discusses broad trends in job openings, staff turnover prior and during the Great Recession, and projected job growth and workforce supply through 2020. In addition, the section incorporates general perspectives on workforce readiness, retention, and attraction.

DEMAND BY GEOGRAPHY

Half of study workforce employed in Fairfax County, but job growth stronger in outlying counties

Among the 58,000 health care workers employed in the study occupations across Northern Virginia, more than half work in Fairfax County (*see Table 2.1*). Considering that Fairfax is home to nearly half of the region's current population and acute care hospital facilities, its sizeable share of the study workforce is not surprising. Moreover, Fairfax employers advertised the most number of job openings online in 2012—59 percent.

Looking forward to 2020, Fairfax's healthy rate of job growth (27 percent) will be nonetheless below the regional average and outpaced by four other NoVA jurisdictions—Loudoun, Prince William, Fairfax counties, and Manassas City. Leading the way are the two outlying counties of Prince William and Loudoun, which, when combined, currently employ less than 20 percent of the study workforce despite being home to one-third of the overall regional population. Health care employers across the two counties are expected to add more than 5,600 new jobs by 2020, representing a 50 percent growth in employment. Yet, the two-county workforce may rise even more swiftly, considering the opening of several outpatient and medical offices recently as well as two new acute care hospitals.

Despite their prominence in the health care labor market, Fairfax, Loudoun, and Prince William lag behind the regional average for workforce earnings of $26.83 an hour, the equivalent of an annual full-time salary of $55,806. Providing the second largest source of employment, health care providers in Arlington County pay workers in study occupations the best on average, at $30.57 an hour.

Chapter 5 will discuss in greater detail the workforce implications for fast-growing Prince William and Loudoun counties.

Table 2.1: NoVA Study Occupations: Current and Projected Employment and Job Openings

Locality	2010 Jobs	2020 Jobs	% Change	Annual Projected Openings			Median Hourly Earnings
				Due to Growth	Due to Replacement	Total Openings	
Fairfax	30,482	38,685	26.9%	820	1090	1,910	$26.75
Arlington	7,250	9,010	24.3%	176	233	409	$30.57
Loudoun	5,704	8,622	51.2%	292	286	578	$25.27
Prince William	5,475	8,181	49.4%	271	225	496	$23.81
Alexandria	4,822	5,610	16.3%	79	143	222	$28.75
Manassas City	1,900	2,586	36.1%	69	72	141	$25.78
Fairfax City	1,563	2,117	35.4%	55	59	114	$22.74
Falls Church City	1,077	1,207	12.1%	13	40	53	$27.30
Manassas Park	78	94	20.5%	2	3	5	$23.19
Northern Virginia	**58,351**	**76,111**	**30.4%**	**1776**	**2151**	**3,927**	**$26.83**

Source: EMSI, Virginia Employment Commission

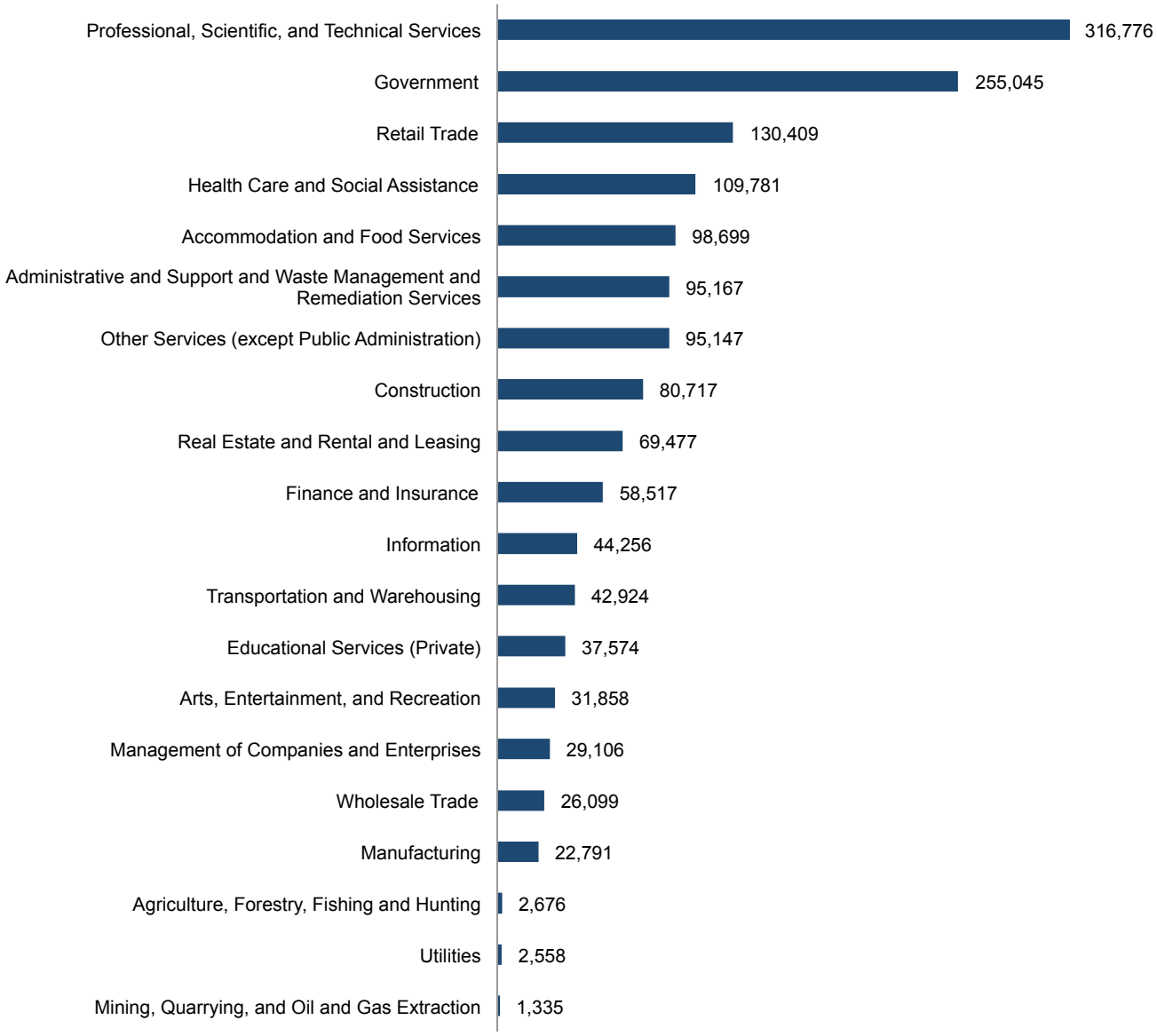
DEMAND BY SECTORS OF HEALTH CARE

Health care is one of the leading, fastest-growing industry sectors in Northern Virginia

Among all major industry sectors, the health care and social assistance sector employed the fourth largest number of workers in Northern Virginia in 2010 (*Figure 2.1*). The NoVA health sector had 109,781 workers in 2012—7 percent of the total regional workforce of 1,555,912. By 2020, the health sector is expected to employ 7.6 percent of the regional workforce (*see Table 2.2*). Over that ten-year period, only two other industries employing 10,000 or more are expected to outpace health care's robust rate of growth in jobs (30 percent) in Northern Virginia:

Professional, Scientific, and Technical Services, and Educational Services (private). Moreover, in 2012, only the latter sectors advertised more job openings online than health care. Finally, health care industry workers earn an average yearly wage or salary of nearly $51,000, better than 60 percent of all industries in the Northern Virginia economy.

Figure 2.1: Northern Virginia Workforce by Industry Sector (2012)



Source: EMSI

Table 2.2: Northern Virginia Workforce Demand by Industry Sector (2012)

NAICS Code[48]	Description	2012 Jobs	2022 Jobs	% Change	Change
21	Mining, Quarrying, and Oil and Gas Extraction	1,335	2,212	66%	877
61	Educational Services (Private)	37,574	54,245	44%	16,671
54	Professional, Scientific, and Technical Services	316,776	413,905	31%	97,129
62	Health Care and Social Assistance	109,781	143,232	30%	33,451
56	Administrative and Support and Waste Management and Remediation Services	95,167	118,868	25%	23,701
52	Finance and Insurance	58,517	72,308	24%	13,791
71	Arts, Entertainment, and Recreation	31,858	39,037	23%	7,179
23	Construction	80,717	98,355	22%	17,638
81	Other Services (except Public Administration)	95,147	114,907	21%	19,760
53	Real Estate and Rental and Leasing	69,477	83,530	20%	14,053
72	Accommodation and Food Services	98,699	114,853	16%	16,154
55	Management of Companies and Enterprises	29,106	32,987	13%	3,881
42	Wholesale Trade	26,099	29,177	12%	3,078
44	Retail Trade	130,409	146,127	12%	15,718
48	Transportation and Warehousing	42,924	48,092	12%	5,168
90	Government	255,045	280,762	10%	25,717
51	Information	44,256	45,647	3%	1,391
22	Utilities	2,558	2,524	(1%)	(34)
11	Agriculture, Forestry, Fishing and Hunting	2,676	2,555	(5%)	(121)
31	Manufacturing	22,791	21,763	(5%)	(1,028)

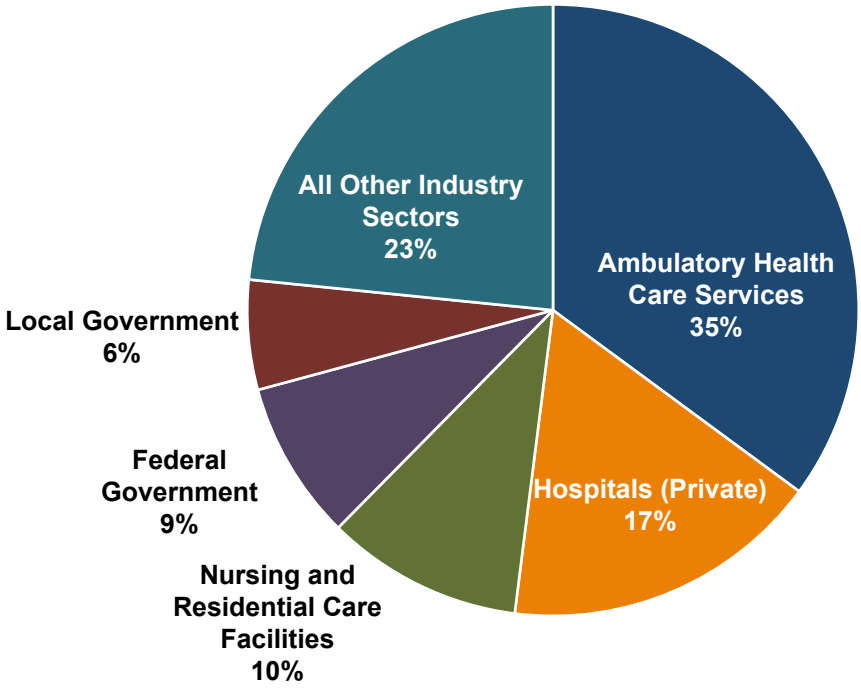
Source: EMSI

Most of the NoVA study workforce is employed in five industry sectors

In examining the 2013 industry employment patterns, more than 75 percent of the study workforce are employed in the following five broad sectors within health care: ambulatory health services, private hospitals, nursing and residential care facilities, federal government, and local government (*Figure 2.2*).

Ambulatory Health Services sector has the largest share of the health care workforce. This sector includes doctor's offices, dentist's offices, home health care, other outpatient centers, medical and diagnostic laboratories, ambulance services, and offices of physical, occupational, and speech therapists, among others.

Figure 2.2: Share of Study Workforce by Sector (2013)



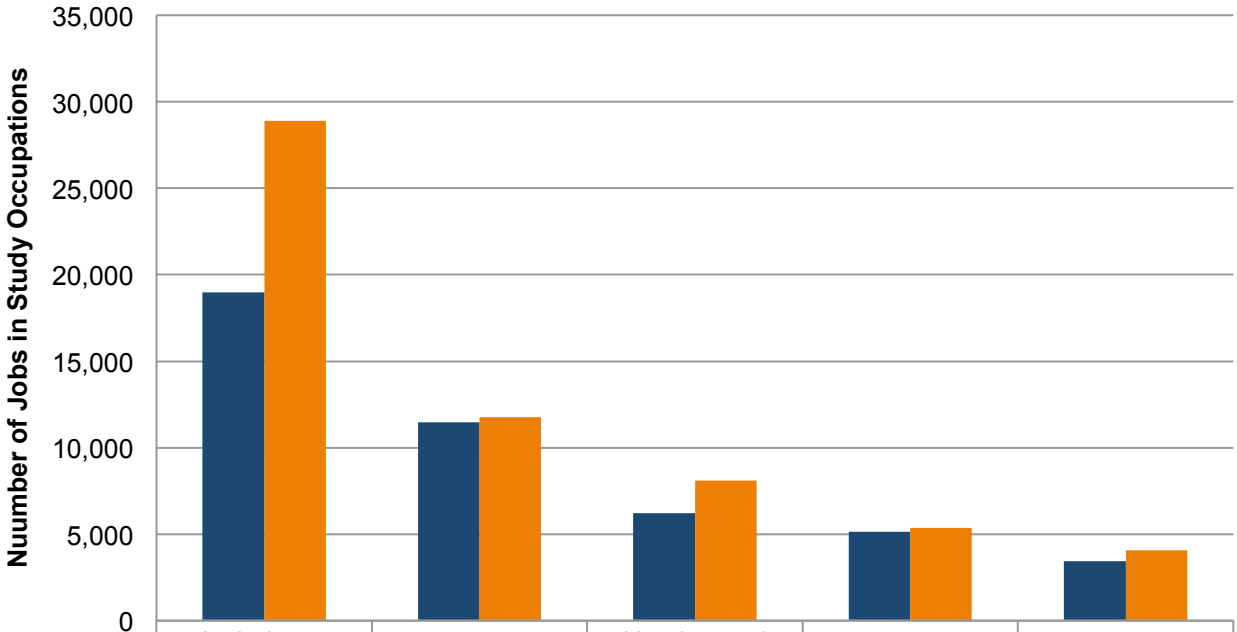
Source: EMSI

At a more detailed level, the leading source of employment for the NoVA study workforce is general medical and surgical hospitals (17 percent); rounding out the top five employers is the federal government (9 percent) and three of the ambulatory industries—doctor's offices (10 percent), home health (8 percent), and dentist's offices (7 percent).

The study workforce is projected to grow more rapidly in some major sectors than others

According to the 2020 projections, private hospitals and the federal government will add fewer than 600 total jobs in the study occupations in Northern Virginia, representing 3 and 4 percent growth rates, respectively. In contrast, robust growth is expected in ambulatory health care services (52 percent), nursing and residential care facilities (31 percent), and the local government (19 percent), which combined will produce nearly 12,500 new jobs (*Figure 2.3*). As a result, hospitals located in Northern Virginia are expected to employ a smaller share of the health care workforce employed in study occupations. Meanwhile, an increasing share of workers will be employed in ambulatory settings, driven by 50 percent or better growth rates in five ambulatory industries: home health; offices of physical, occupational and speech therapists, and audiologists; ambulance services; offices of optometrists; and offices of dentists (*Figure 2.4*).

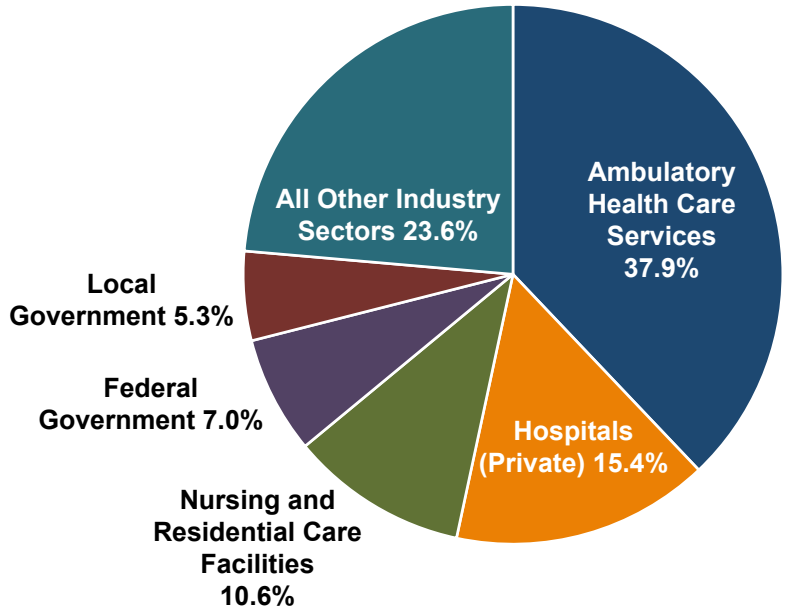
Figure 2.3: Projected Growth by Top 5 NoVA Sectors



	Ambulatory Health Care Services	Hospitals (Private)	Nursing and Residential Care Facilities	Federal Government	Local Government
2010	18,980	11,457	6,200	5,136	3,422
2020	28,903	11,778	8,117	5,361	4,073

Source: EMSI

Figure 2.4: Projected Share of NoVA Study Workforce by Detailed Health Sectors (2020)

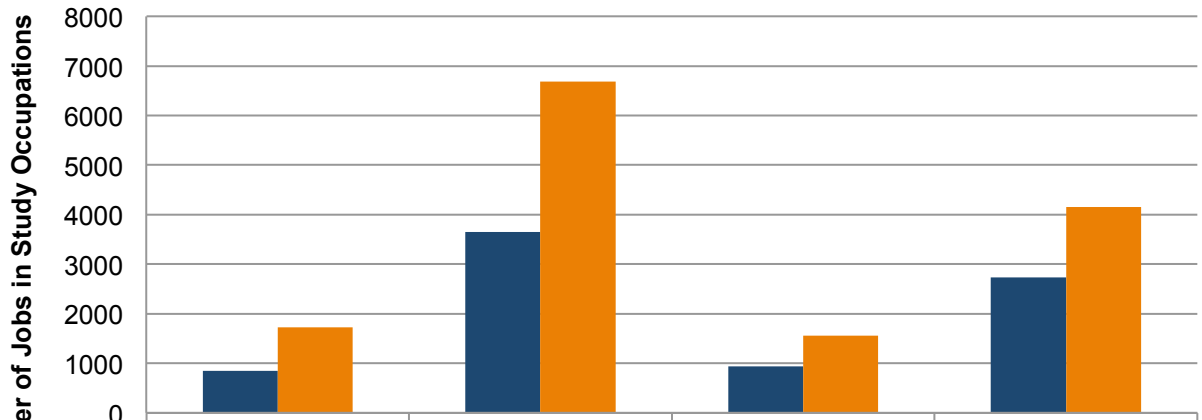


Source: EMSI

Most of the fastest-growing industries serve the elderly

Across all 5-digit NAICS industries, this 50 percent growth will be matched or surpassed by five industries that employ at least 800 workers (*Figure 2.5 and Table 2.3*). Considering the aging population, it is not surprising that three of the five fastest growing industries serve the elderly.

Figure 2.5: Top 5 Fastest Growing Industries in NoVA



	Services for the Elderly and Persons with Disabilities	Home Health Care Services	Offices of Physical, Occupational and Speech Therapists and Audiologists	Community Care Facilities for the elderly
2010	844	3646	934	2733
2020	1730	6681	1558	4153

Source: EMSI

Table 2.3: Job Growth for Detailed Health Sectors (2010-2020)

	2010-20 Job Growth
Services for the Elderly and Persons with Disabilities	105.0%
Home Health Care Services	83.2%
Offices of Physical, Occupational and Speech Therapists, and Audiologists	66.8%
Community Care Facilities for the Elderly	52.0%
Offices of Dentists	50.3%

Source: EMSI

EMPLOYEE TURNOVER

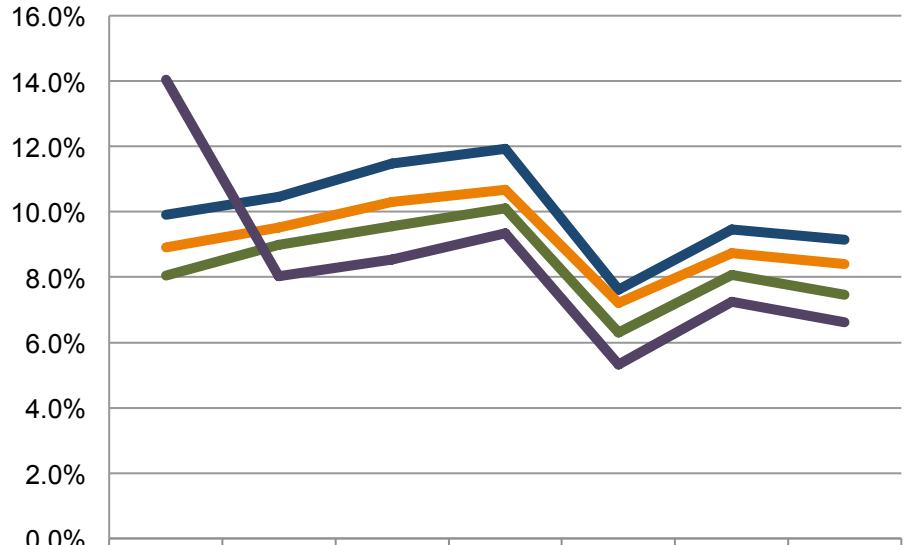
This section examines indicators of employee turnover or churn in NoVA health care occupations, an additional method for assessing employer demand for new workers. “Churn” in the labor market describes job vacancies that are the result of staff separations—through voluntary or involuntary termination of employment—and are not newly created job opportunities. Turnover can also represent reassignment of staff in the wake of a merger or change in ownership, a common phenomena in the region’s health care industry. For this reason, the rates and trends presented here should be used with caution and measured against other data and methods presented in the report.

To estimate turnover in critical study occupations, it was necessary to use data on specific industries within the NoVA health sector, such as doctor’s offices and hospitals, and analyze turnover by the educational level of those employed in each industry. Turnover data are not available for individual occupations, so this study uses educational levels associated with particular occupations typical in these industries as a proxy for turnover by occupation.

Staff turnover decreased around the time of the Great Recession and again in 2013

Across educational categories of the health care workforce, Northern Virginia employers experienced a substantial drop in staff turnover during and immediately after the Great Recession, as would be expected during a time of high unemployment (*Figure 2.6*). Health care executives told JFF that the Great Recession caused turnover to drop for two reasons: first, some Baby Boomer workers decided to delay retirement to make up losses in their investments; second, informants said that workers were more apt to stay in their current jobs than risk the unknown with other employers.

Figure 2.6: Staff Turnover in NoVA Health Sector



	2005	2006	2007	2008	2009	2010	2011
Less than HS	9.9%	10.5%	11.5%	11.9%	7.6%	9.5%	9.2%
High School	8.9%	9.5%	10.3%	10.7%	7.2%	8.7%	8.4%
Some College/Associate	8.0%	9.0%	9.6%	10.1%	6.3%	8.1%	7.5%
Bachelor and Above	14.0%	8.0%	8.5%	9.3%	5.3%	7.2%	6.6%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Ambulatory Health Care Services, Hospitals, and Nursing and Residential Care Facilities for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)[49].

After the recession, turnover spiked over the spring of 2010 and 2011 before dropping again at the beginning of 2012.

Ambulatory health care centers saw turnover rates drop since the Great Recession to seven-year lows and remain relatively stable (*see Appendix E, Figure E.1*). Meanwhile, in nursing and residential care facilities, staff turnover actually increased during most of the recession and has ping-ponged between 6 and 12 percent since (*see Appendix E, Figure E.2*). Finally, hospitals have reported dramatic shifts in turnover, affecting the trend line for the overall health sector. These dramatic swings in reported turnover may reflect hospitals absorbing independent physicians practices, carrying out mergers, or other organizational moves that had little impact on net employment overall but showed on the books as new hires and employee separations. Even so, in 19 of the past 30 quarters, hospitals posted turnover rates below 10 percent (*see Appendix E, Figure E.3*).

Current indicators suggest a slower demand in the labor market in Northern Virginia

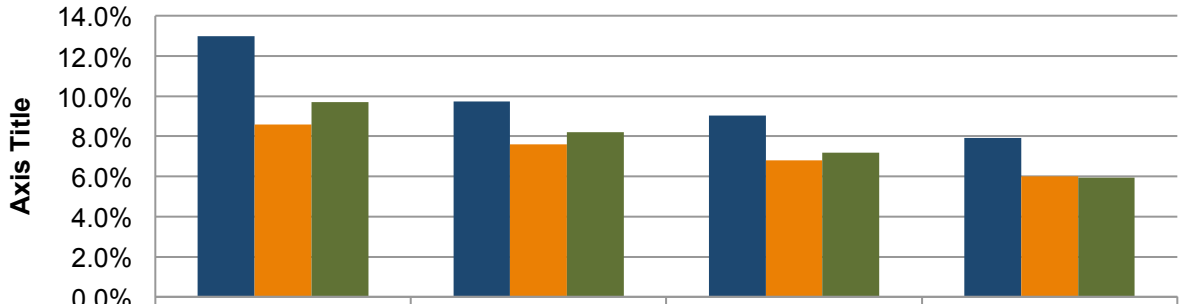
The region's recent decline in the number of health care job ads, and low staff turnover rates overall indicate that the health care labor market in Northern Virginia has slackened somewhat since the Great Recession. As in past periods following recessions, this may reflect employers' hesitance about the pace and strength of recovery. Health care executives reported few workforce shortages across the study occupations, going as far to say that the supply of nurses seeking employment outstrips demand—a stark change from the pre-recession days of hiring bonuses. Moreover, a few executives who are opening new health care facilities said they have been flooded with job applications and expect to have little difficulty filling most positions. Finally, executives noted that many Baby Boomers have postponed retirement. For their part, several college administrators told JFF that it is taking upwards of six months for new graduates to find employment, whereas in previous times many would receive job offers prior to commencement.

Staff turnover varies greatly between industries

Considering projected job growth across several of the health care industries, curbing staff attrition will be just as high a priority as bringing in new hires in order to reach and maintain requisite staffing levels. This will be harder to do in some health industries than others, according to quarterly turnover rates accessed through the Local Employment Dynamics dataset. These turnover rates by health industry sector are presented in Figures 2.7-2.14 in the following pages.

In Northern Virginia, outpatient centers posted the lowest staff turnover rates from July 2011 to June 2012, followed by medical and diagnostic laboratories, doctor's offices, nursing homes, dentist's offices, offices of other health professions (primarily rehabilitation and therapy offices), and general medical and surgical hospitals. Home health care agencies—the second fastest growing industry sector—faced the highest turnover in staff during that time period (*Figures 2.7-2.14*).

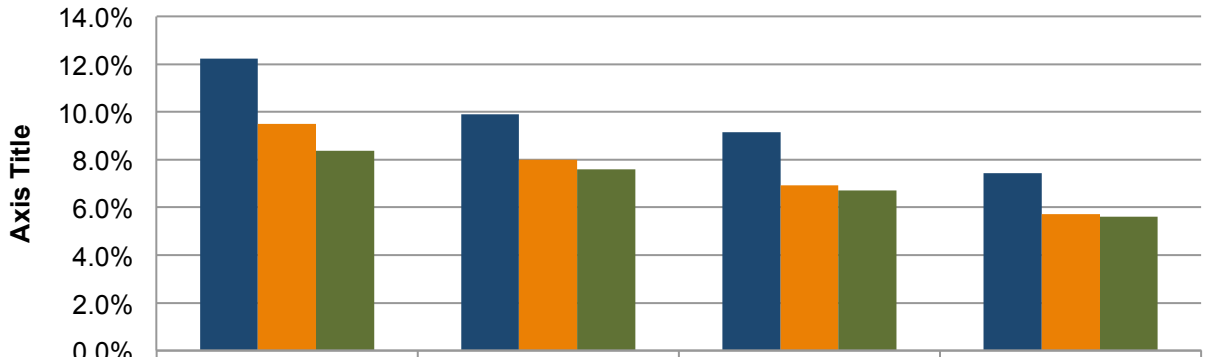
Figure 2.7: Turnover in Dentist's Offices, by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	13.0%	9.7%	9.0%	7.9%
2008-09	8.6%	7.6%	6.8%	6.0%
2011-12	9.7%	8.2%	7.2%	5.9%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Dentists in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII).[50]

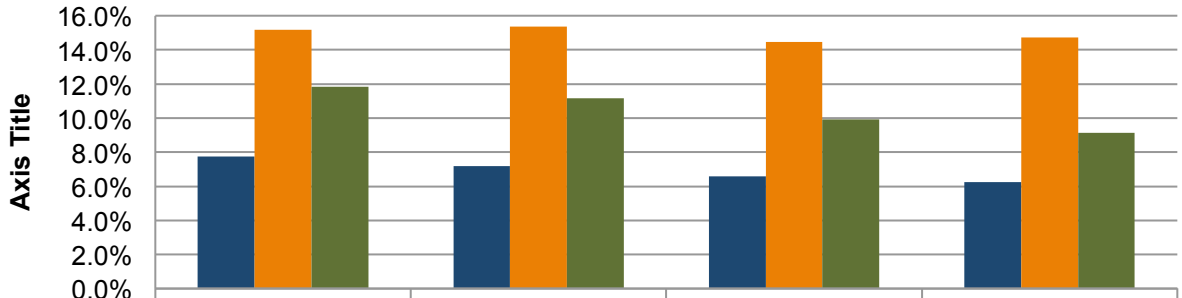
Figure 2.8: Turnover in Doctor's Offices by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	12.2%	9.9%	9.2%	7.4%
2008-09	9.5%	8.0%	6.9%	5.7%
2011-12	8.4%	7.6%	6.7%	5.6%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Physicians in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII).

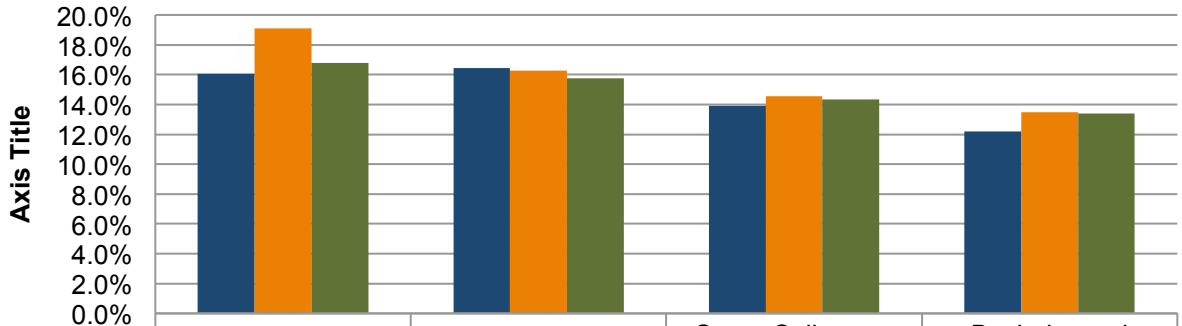
Figure 2.9: Turnover in General Hospitals, by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	7.8%	7.2%	6.6%	6.3%
2008-09	15.2%	15.4%	14.5%	14.7%
2011-12	11.8%	11.2%	9.9%	9.1%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for General Medical and Surgical Hospitals in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII) for Annual total for 2005Q3-2006Q2 (pre-recessionary period), 2008Q3-2009Q2 (recessionary period), and 2011Q3-2012Q2 (most recent year available).[51]

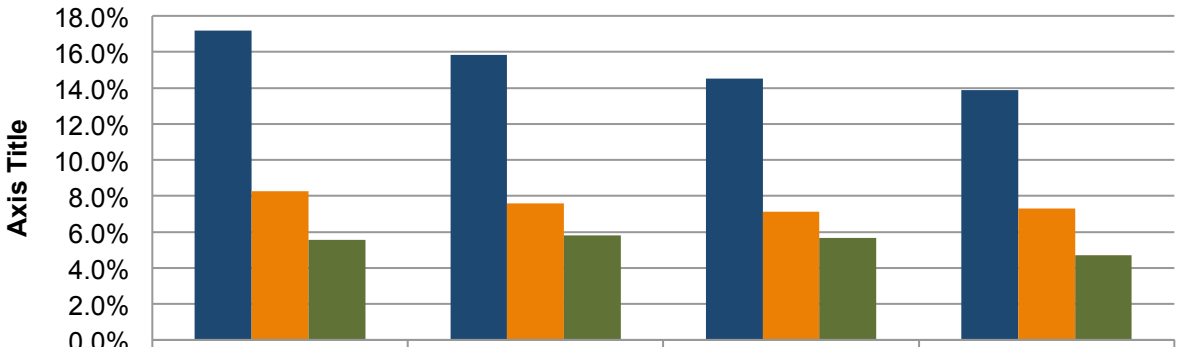
Figure 2.10: Turnover in Home Health Care Agencies by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	16.0%	16.4%	13.9%	12.2%
2008-09	19.1%	16.3%	14.6%	13.5%
2011-12	16.8%	15.8%	14.4%	13.4%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Home Health Care Agencies in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)[52].

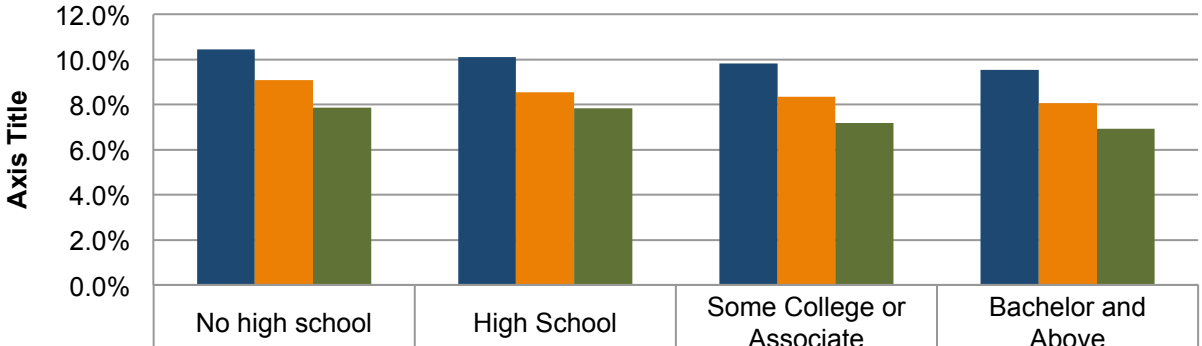
Figure 2.11: Turnover in Medical and Diagnostic Labs by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	17.2%	15.8%	14.5%	13.9%
2008-09	8.3%	7.6%	7.1%	7.3%
2011-12	5.6%	5.8%	5.7%	4.7%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Medical and Diagnostic Labs in the Workforce Investment Area of Northern Virginia (LWIA XI). Due to missing data, does not factor in turnover rates for WIA area of Alexandria/Arlington (LWIA XII).

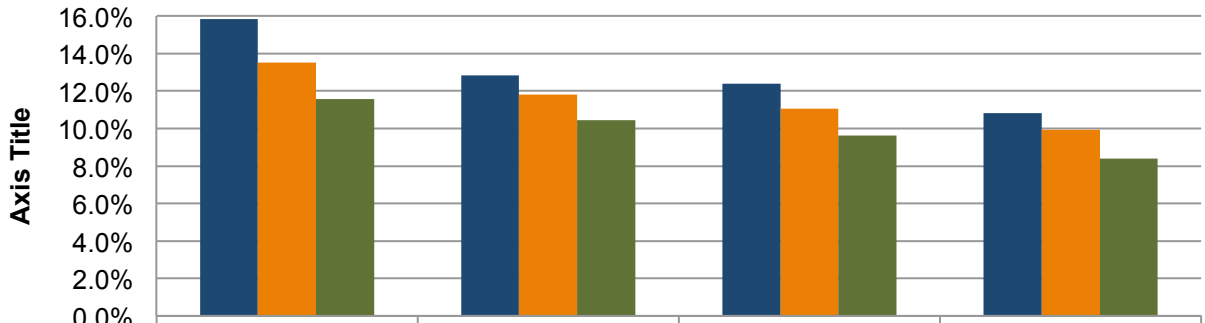
Figure 2.12: Turnover in Nursing Homes by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	10.5%	10.1%	9.8%	9.5%
2008-09	9.1%	8.6%	8.4%	8.1%
2011-12	7.9%	7.8%	7.2%	6.9%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Nursing Care Facilities in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII).

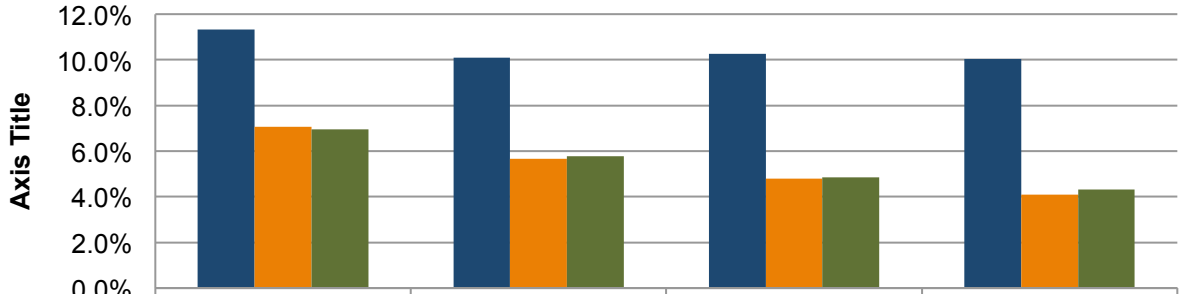
Figure 2.13: Turnover in Offices of Other Practitioners by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	15.8%	12.8%	12.4%	10.8%
2008-09	13.5%	11.8%	11.1%	9.9%
2011-12	11.6%	10.4%	9.6%	8.4%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Other Health Practitioners in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII) for Annual total for 2005Q3-2006Q2 (pre-recessionary period), 2008Q3-2009Q2 (recessionary period), and 2011Q3-2012Q2 (most recent year available).

Figure 2.14: Turnover in Outpatient Centers by Education Level of Workforce



	No high school	High School	Some College or Associate	Bachelor and Above
2005-06	11.3%	10.1%	10.3%	10.0%
2008-09	7.1%	5.7%	4.8%	4.1%
2011-12	7.0%	5.8%	4.9%	4.3%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Outpatient Care Centers in the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)[53].

In most industries and workforce classes, turnover is lower now than prior to the recession

In most cases, turnover has declined over time, providing further evidence of the slackening labor market. However, some industries have experienced greater fluctuations in staff attrition than others, when comparing annualized turnover rates before, during, and after the Great Recession. From 2005 to 2012, labs and outpatient facilities have posted the greatest overall improvement in staff retention. Meanwhile, at hospitals (the largest source of jobs among all health sectors), turnover rates spiked during the Great Recession and have remained above pre-recessionary levels (*see Appendix E, Figure E.3*), although this may reflect shifts in ownership and affiliation, as noted, in addition to employee departures.

Turnover rates decline with more education—a proxy for discerning differences between higher- and lower-skilled study occupations

Across all of the health care industries, retention improves as workers attain higher levels of education. Given that the LED dataset does not report turnover rates by occupation, degree attainment offers the best approximation when attempting to compare attrition among higher- and lower-skilled study occupations. These approximated turnover rates are reported in Chapters 3 and 4.

OVERVIEW OF STUDY OCCUPATIONS

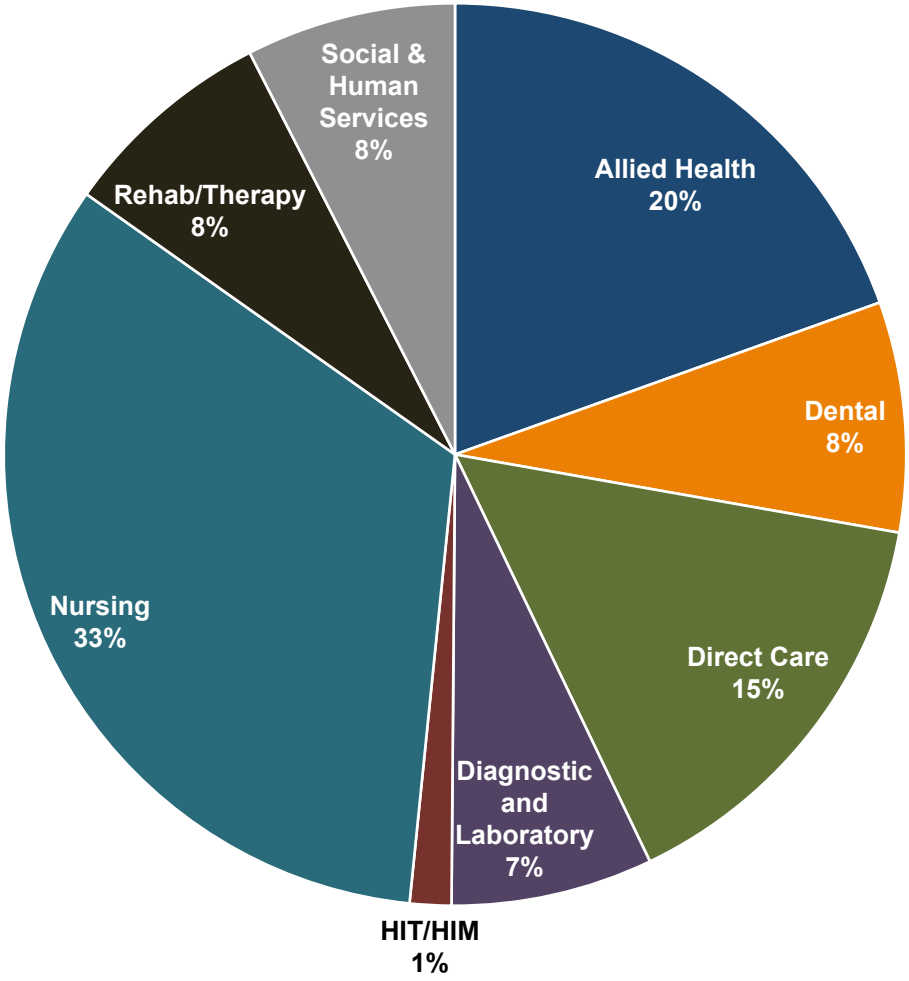
Most of the NoVA health care workforce is employed in a diverse array of study occupations

The 40 occupations examined in this study play a large and indispensable role in the delivery of health care. Among the estimated 70,330 people employed in health care practitioner and support occupations in Northern Virginia in 2010, 83 percent were working in the NoVA study occupations; by 2020, employment in study occupations is expected to account for nearly 85 percent of the health care workforce. Although excluding physicians, the study examines a diverse array of occupations in seven broad groupings.

Three occupational groupings comprise majority of study workforce

According to 2011 workforce estimates (*Figure 2.15*), nursing, allied health, and direct care occupations employ somewhere between 65 and 68 percent of the study workforce in Northern Virginia. Collectively, these three occupational groupings are expected to maintain the same share of the study workforce by 2020. The largest single health care occupation examined in the study is registered nursing, which represents 20 percent of NoVA's entire health care workforce.

Figure 2.15: Workforce Estimates by Study Occupational Groupings (2011)

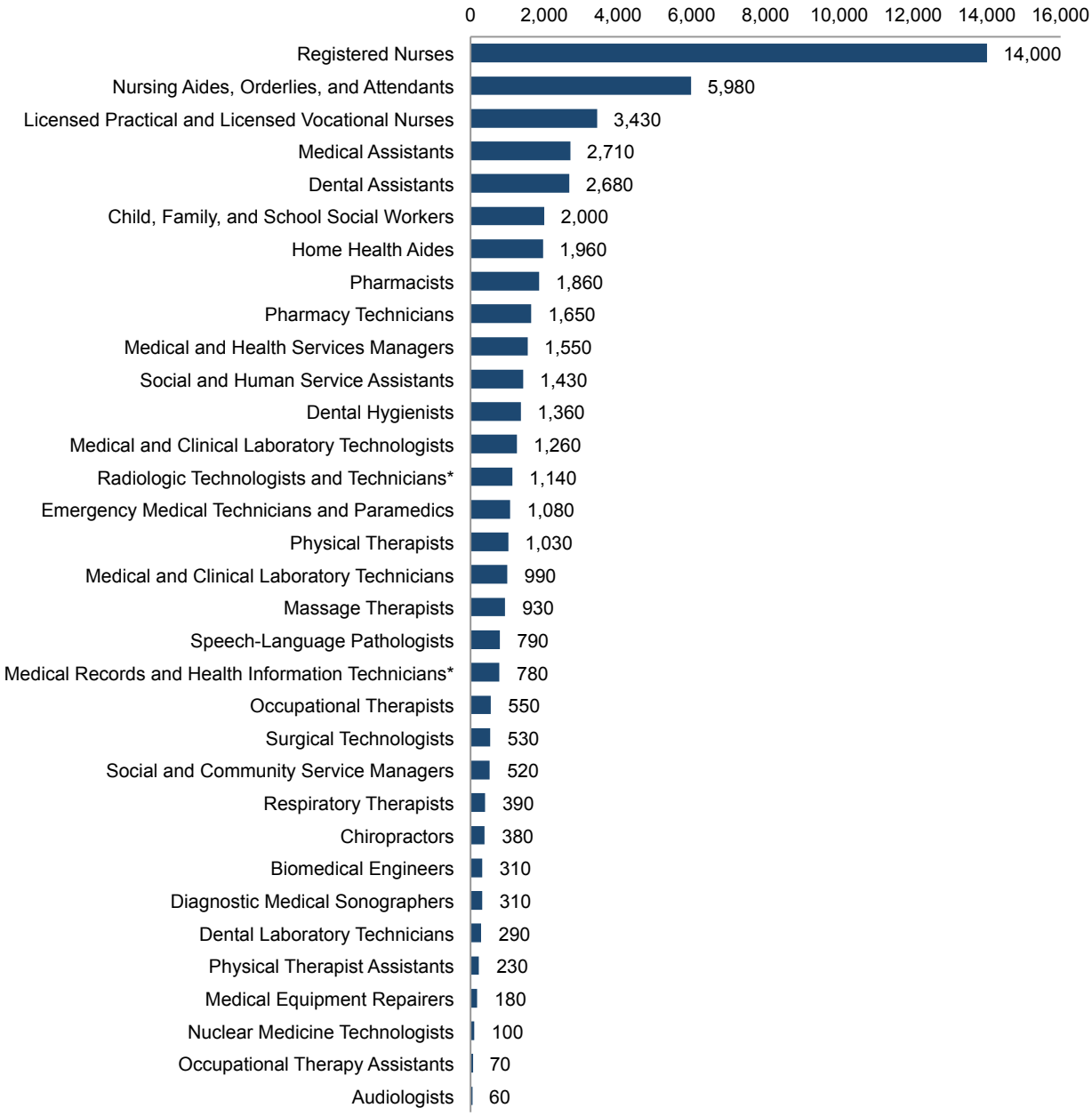


Source: 2011 OES

Note: Data includes additional occupational data on titles not found in OES but reported by EMSI for Other Social Workers, Radiation Therapists, Respiratory Therapy Technicians, Orthotists and Prosthetists, Occupational Therapy Aides.

The following section examines demand for specific health care occupations in Northern Virginia. The job titles in Figure 2.16 represent the occupations of concern in the NoVA study. As noted above, they include both occupations identified as facing shortages in the original (2005) workforce analysis, and additional titles of interest, owing to identified growth trends or potential areas of concern to Northern Virginia's health care sector.

Figure 2.16: Northern Virginia Workforce by Study Occupation (2011)



Source: OES 2011

Note: Other Social Workers, Radiation Therapists, Respiratory Therapy Technicians, Orthotists and Prosthetists, Occupational Therapy Aides data not included in OES.

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Occupations differ greatly in earnings and skill requirements

Considering the diversity of occupations, educational requirements and job quality range substantially, from a median hourly wage of $10.50 for home health aides (who only need short-term on-the-job training) to $55.18 for pharmacists (who require a professional degree). But overall, earnings are on par with health care workforce averages (*Table 2.4*). The education level reported is the minimum credential required by employers.

Table 2.4: NoVA Average Earnings and Educational Requirements for Study Occupations

Occupation	Median Hourly Earnings	Avg. Hourly Earnings	O*NET Education Level
Audiologists	$48.69	$50.98	First professional degree
Biomedical Engineers	$39.09	$40.30	Bachelor degree
Child, Family, and School Social Workers	$25.58	$26.59	Bachelor degree
Chiropractors	$28.14	$31.58	First professional degree
Dental Assistants	$17.80	$18.17	Postsecondary non-degree award
Dental Hygienists	$49.71	$49.86	Associate degree
Dental Laboratory Technicians	$15.20	$15.06	Moderate-term on-the-job training
Diagnostic Medical Sonographers	$44.48	$44.11	Associate degree
Emergency Medical Technicians and Paramedics	$22.80	$23.29	Postsecondary non-degree award
Home Health Aides	$10.50	$10.73	Short-term on-the-job training
Licensed Practical and Licensed Vocational Nurses	$22.43	$22.65	Postsecondary non-degree award
Massage Therapists	$16.51	$16.21	Postsecondary non-degree award
Medical and Clinical Laboratory Technicians	$22.22	$24.12	Associate degree
Medical and Clinical Laboratory Technologists	$33.49	$33.34	Bachelor degree

Medical and Health Services Managers	$44.72	$47.08	Bachelor degree
Medical Assistants	$15.14	$15.50	Moderate-term on-the-job training
Medical Equipment Repairers	$21.03	$21.76	Associate degree
Medical Records and Health Information Technicians**	$20.28	$21.89	Postsecondary non-degree award*
Nuclear Medicine Technologists	$48.57	$50.19	Associate degree
Nursing Aides, Orderlies, and Attendants	$11.57	$12.00	Postsecondary non-degree award
Occupational Therapists	$45.68	$45.61	Master's degree
Occupational Therapy Aides	$15.42	$15.82	Short-term on-the-job training
Occupational Therapy Assistants	$26.88	$27.71	Associate degree
Orthotists and Prosthetists	$45.16	$49.38	Master's degree
Pharmacists	$55.18	$54.26	First professional degree
Pharmacy Technicians	$16.03	$16.69	Moderate-term on-the-job training
Physical Therapist Assistants	$21.74	$22.16	Associate degree
Physical Therapists	$43.25	$44.06	First professional degree
Radiation Therapists	$50.11	$50.06	Associate degree
Radiologic Technologists and Technicians	$34.73	$35.37	Associate degree
Registered Nurses	$35.41	$36.39	Associate degree[54]
Respiratory Therapists	$38.38	$38.13	Associate degree
Respiratory Therapy Technicians**	$31.74	$32.44	Associate degree
Social and Community Service Managers	$39.08	$39.65	Bachelor degree
Social and Human Service Assistants	$14.32	$15.33	Short-term on-the-job training
Social Workers, All Other	$27.00	$26.61	Bachelor degree
Speech-Language Pathologists	$44.41	$44.75	Master's degree
Surgical Technologists	$23.56	$23.86	Postsecondary non-degree award
Total	**$30.68**	**$27.43**	

Source: 2011 OES

**Due to the evolution of health care jobs, the categories and education levels found in OES and O*NET may lag at times behind those used in the field. The data source is used in this study to allow consistent comparison using federal data sets and projections.*

***See footnotes B and C in Table 0.1 on page 26 for further explanation.*

CHANGE IN WORKFORCE DEMAND IN PRE- AND POST-RECESSIONARY TIME

To fully understand today's demand for NoVA study occupations, it is helpful to examine the changes occurring in the region's economy before, during, and after the Great Recession. This perspective reveals both continuity and change since the initial NoVA workforce analysis was conducted in 2005. This section also considers the changing health care labor market in the context of the metropolitan region.

Northern Virginia has weathered the Great Recession generally better than state and nation

As an overall signal of the economic health and resiliency of Northern Virginia, most communities across the region have enjoyed lower unemployment than the Commonwealth, which in turn has performed better than the nation (*Table 2.5*). Prior to the Great Recession, six of the nine NoVA jurisdictions posted a jobless rate below 3 percent, compared to the state and national figures of 3.8 and 5.1, respectively. Moreover, only Manassas City recorded a higher unemployment rate than the state average. At the height of joblessness in March 2010, more than half of NoVA jurisdictions were 4 percentage points lower than the national unemployment rate of 9.9. On the other hand, the region has not rebounded quite as strongly and consistently compared to the state and its past performance. In March 2013, only two-thirds of NoVA communities had lower joblessness rates than Virginia. Unemployment was 6 percent or more in Fairfax City, Falls Church City, and Manassas. In the case of Fairfax City, its jobless rate in March 2013 was 4 percentage points higher than in the same month five years ago.

Table 2.5: Unemployment Rate

Area	March 2008	March 2009	March 2010	March 2011	March 2012	March 2013
United States	5.1	8.7	9.9	8.9	8.4	7.6
Virginia	3.8	6.6	7.4	6.4	6	5.2
Arlington County	2.2	4.5	5	4.1	3.8	3.2
Alexandria City	2.5	5	5.8	4.8	4.7	4
Fairfax County	2.5	4.8	5.5	4.6	4.3	3.7
Fairfax City	2.2	2.8	5.6	6.5	6.3	6.3
Falls Church City	3.8	7.6	7.5	7	7.1	6.2
Loudoun County	2.4	4.8	5.5	4.4	4.3	3.7
Manassas Park City	3.8	1.1	6.5	5.4	5.3	4.7
Manassas City	4	8.1	8.7	6.7	6.6	6
Prince William County	2.9	5.6	6.4	6.4	5	4.5

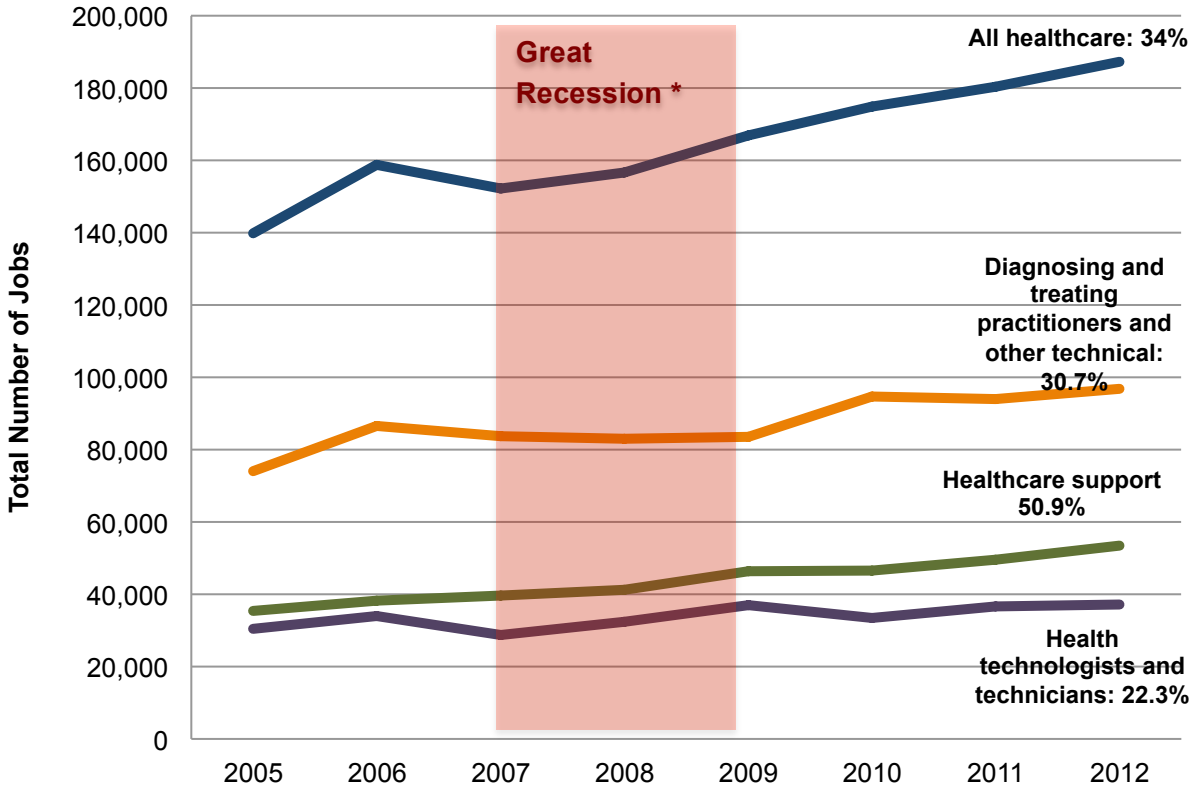
Source: Bureau of Labor Statistics

Washington Metro Area suffered some health care job losses during recession but has rebounded strongly

Washington Metropolitan statistics, collected through the American Community Survey, offers the most reliable approximation for deducing recent changes in employment for health care occupations in Northern Virginia.[55]

While the national economy has yet to recover the nearly two million jobs lost as a result of the Great Recession, health care employment across the Washington Metropolitan Area has increased by more than 47,500 jobs over a seven-year period, yielding a robust growth rate of 34 percent. The metro area, which encompasses Northern Virginia, the District of Columbia, and other counties in Maryland, Virginia, and West Virginia, employed nearly 140,000 people in health care practitioner, technical, and support occupations in 2005. The regional health care workforce increased to more than 187,000 people in 2012. However, in the months leading up to the official start of the Great Recession, the metro area suffered a loss of 6,580 health care jobs. The region fully recovered lost jobs by 2009 en route to further job gains (*Figure 2.17*).

Figure 2.17: 2005-2012 Employment in Health Care, Washington Metro Area



Source: American Community Survey

**Great Recession period: December 2007-June 2009*

About half of metro area health care workers are employed in high-skilled diagnostic and treatment occupations, but low-skilled support occupations are growing more rapidly

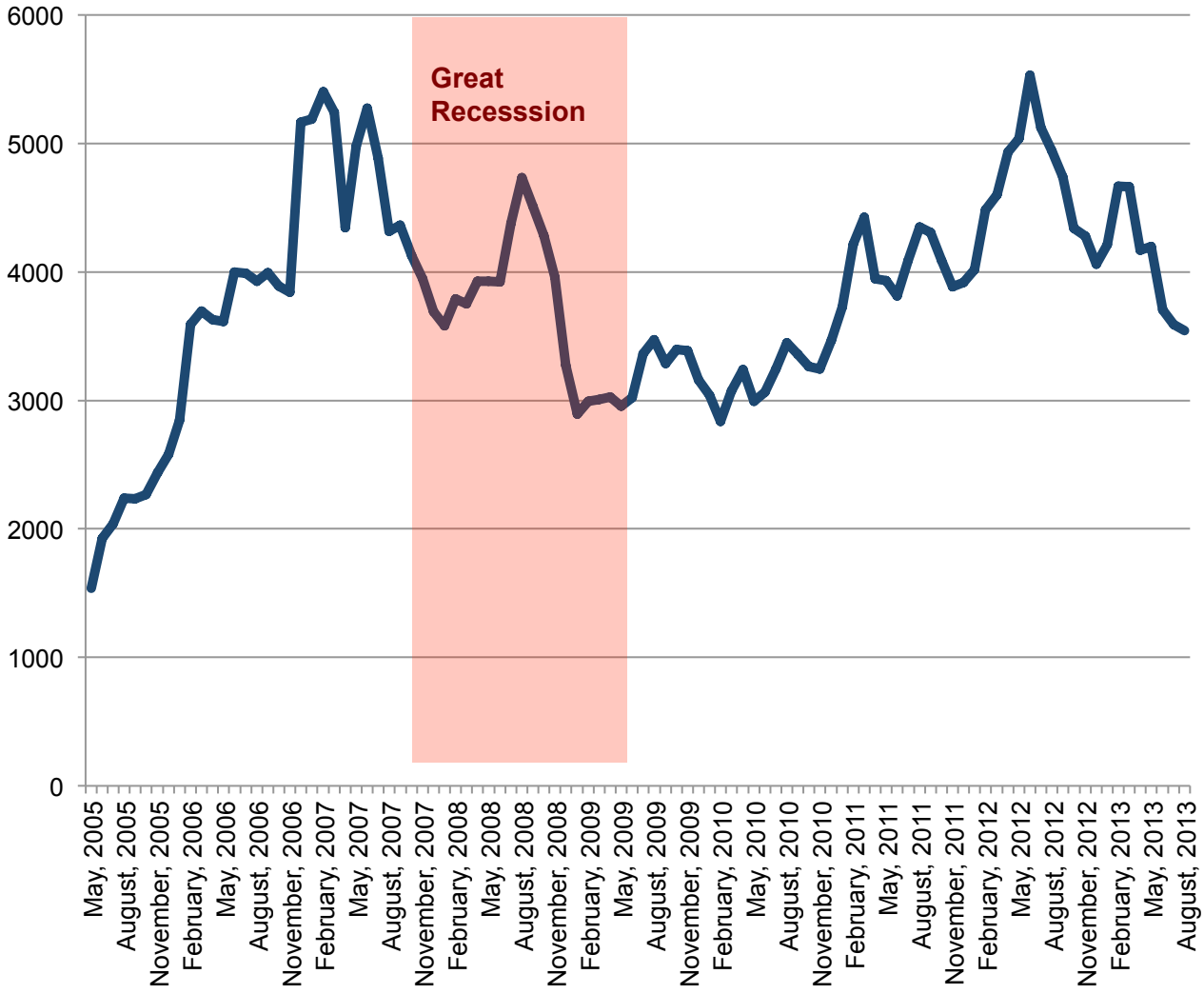
Although ACS cannot provide data on specific occupations, the dataset does provide longitudinal information for employment in three overarching occupational classifications, divided generally along skill lines. Just under a third of the metro area health care workforce is employed in health diagnosing and treatment occupations, which encompasses higher-skilled study occupations like registered nurses, pharmacists, and numerous rehabilitation and therapy fields, along with several types of doctors. This health treatment field has increased by more than 22,710 jobs since 2005—a 30 percent growth rate—but job gains have leveled off in the past three years. Meanwhile, employment has steadily increased in the health care support classification, encompassing several of the study's lower-skilled assistant and aide occupations in home health, nursing, medical, occupational and physical therapy, and dental, among other fields. The Washington Metro Area has added 18,000 health care support jobs since 2005, an

increase of more than 50 percent. Compared against the other two health care fields, the health technologists and technicians classification has posted the fewest job gains and lowest growth rate. Employment in tech positions, encompassing several “middle-skilled” study occupations in laboratory, dental hygiene, diagnostic/imaging, and health information technology and management, has increased by fewer than 7,000 jobs, for a growth rate of 22 percent.

Job ads for NoVA study occupations dropped during recession and again over past year

Job openings posted online provide yet another way to measure change in employer demand for new workers before, during, and after the Great Recession. Unlike ACS’s longitudinal statistics on health care employment, Help Wanted Online, an aggregator of online job ad data, is able to track recruiting activity *specifically* in Northern Virginia for nearly all the study occupations—providing a more precise look at regional labor market trends. In the two years leading up to the Great Recession, Northern Virginia health care employers increased their online job advertisements for study occupations by a combined 250 percent. Over a six-month period during the Great Recession, job ads dropped by 38 percent but picked back up again steadily over the next three and a half years. Since online postings reached a peak of 5,532 in June 2012, Northern Virginia employers have cut back their advertising of job openings, which suggests lighter demand for new workers across the study occupations (*Figure 2.18*). Note, however, that in some cases, the jobs could have been filled by clinical placements or promotions from within and thus were not advertised.

Figure 2.18: Online Job Ads for NoVA Study Occupations



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

**Great Recession period: December 2007-June 2009*

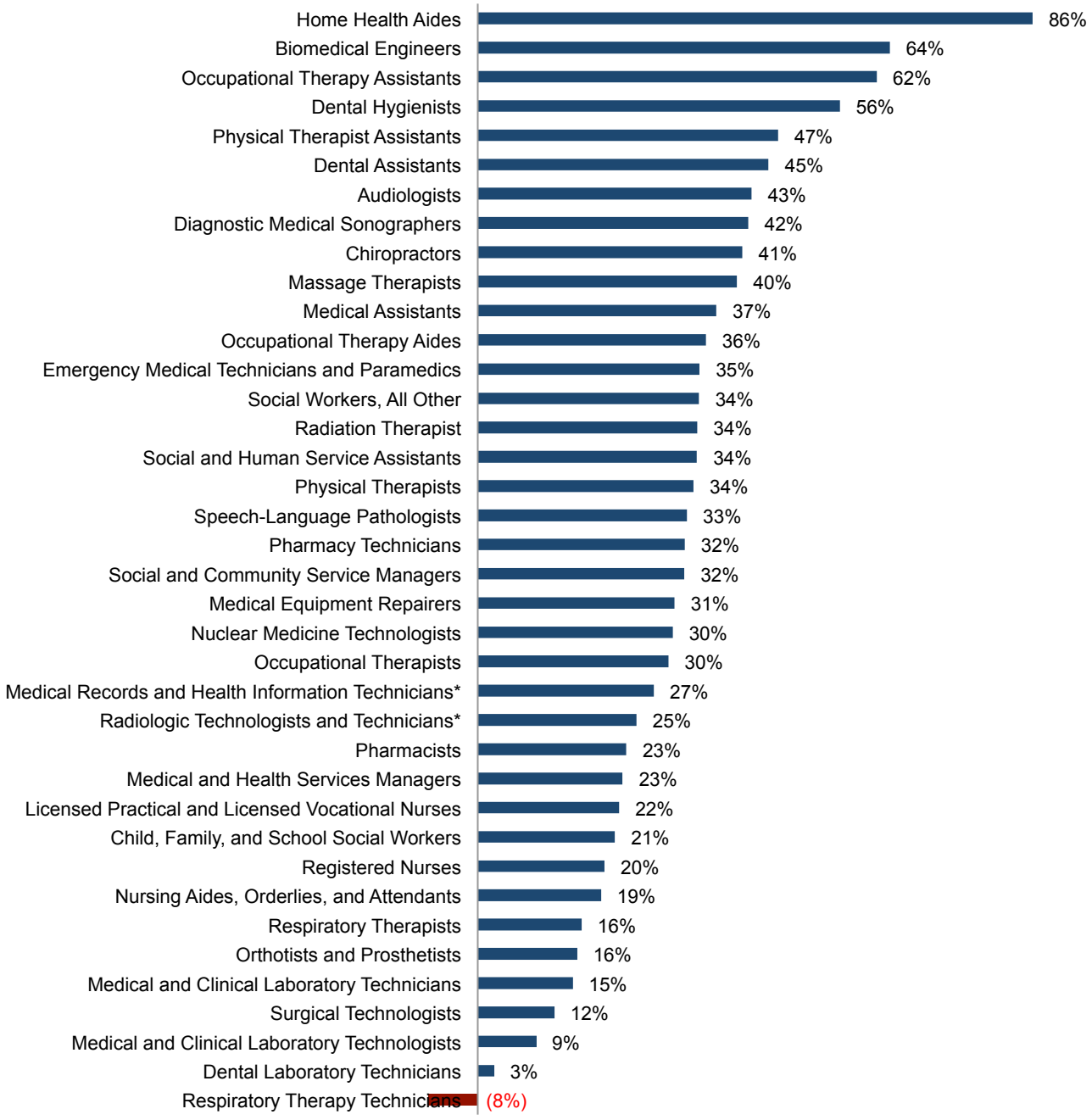
When sorting the Northern Virginia job ads into the eight occupational groups, hiring activity followed along a similar upward and downward trend. Employers primarily advertised job openings in nursing, allied health, and rehabilitation/therapy—each of which experienced declining demand during the Great Recession and some measure of recovery before slackening once again in recent months. The number of RN and LPN openings has swung dramatically up to 2,000 ads in March 2007 and down to a low of 580 ads in May 2010 and now sits at about 900 ads. Meanwhile, rehab and therapy positions hit a peak of 1,860 job ads in June 2012—better than all other occupational groups during that time period.

FORECASTING DEMAND FOR STUDY OCCUPATIONS

Job growth is expected to be stronger across study occupations than other health professions

Projecting forward to 2020, employment in the 40 study occupations is expected to grow by 30 percent for a total of 17,805 new jobs in Northern Virginia. The projected study growth rate outstrips the overall health care occupational average (28 percent), as well as the growth rate for “non-study” occupations (17.5 percent). Among the 37 study occupations with job projection data, 23 will have stronger job gains than the overall average for all health care professions in Northern Virginia (*Figure 2.19*). Again, these projections should be used with caution and cannot anticipate a variety of changes in markets, technology, care delivery, and patient demand, among other variables.

Figure 2.19: 2010-2020 Job Growth Rate (Percentage Change)



Source: EMSI

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Strongest growth expected in low- and middle-skill support occupations

Among study occupations that employ at least 500 workers in Northern Virginia, three ancillary occupations—home health aides, dental assistants, and medical assistants—as well as dental hygienists and massage therapists are projected to grow the fastest.

Table 2.6: Top 5 Job Growth Rates Among Study Occupations with at Least 500 Employees

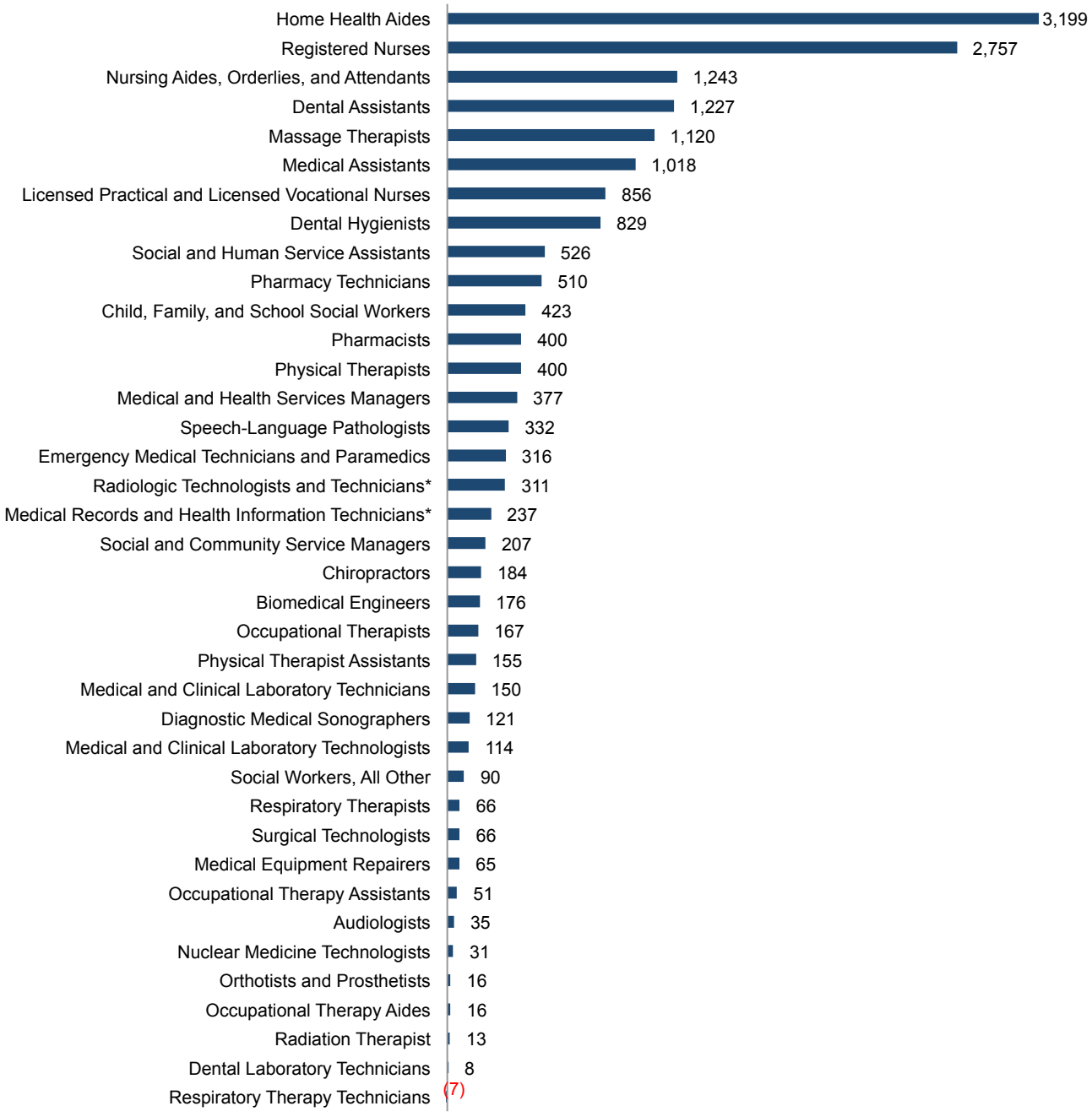
	2010	2020	# Change	% Change	Annual Projected Openings			Median Hourly Earnings
					Due to Growth	Due to Replacement	Total Openings	
Home Health Aides	3,699	6,898	3,199	86%	320	74	394	$10.50
Dental Hygienists	1,469	2,298	829	56%	83	40	123	$49.71
Dental Assistants	2,706	3,933	1,227	45%	123	71	194	$17.80
Massage Therapists	2,771	3,891	1,120	40%	112	58	170	$16.51
Medical Assistants	2,736	3,754	1,018	37%	102	66	167	$15.14

Source: EMSI

Support occupations and nursing to produce most job openings

According to EMSI employment projections, several fast-growing support occupations may be joined by registered nursing in producing the most number of job openings in NoVA region among study professions. The region is expected to create nearly 3,200 new jobs for home health aides by 2020, to lead all occupations (*Figure 2.20*). When also taking into account jobs that become available due to staff turnover, registered nursing will lead all occupations in total openings per year (*Figure 2.21*). Figure 2.22 illustrates the top 6 creators of new jobs—those projected to result in at least 1,000 openings by 2020. The majority are in health care support positions, such as home health aides, nursing aides, and medical and dental assistants.

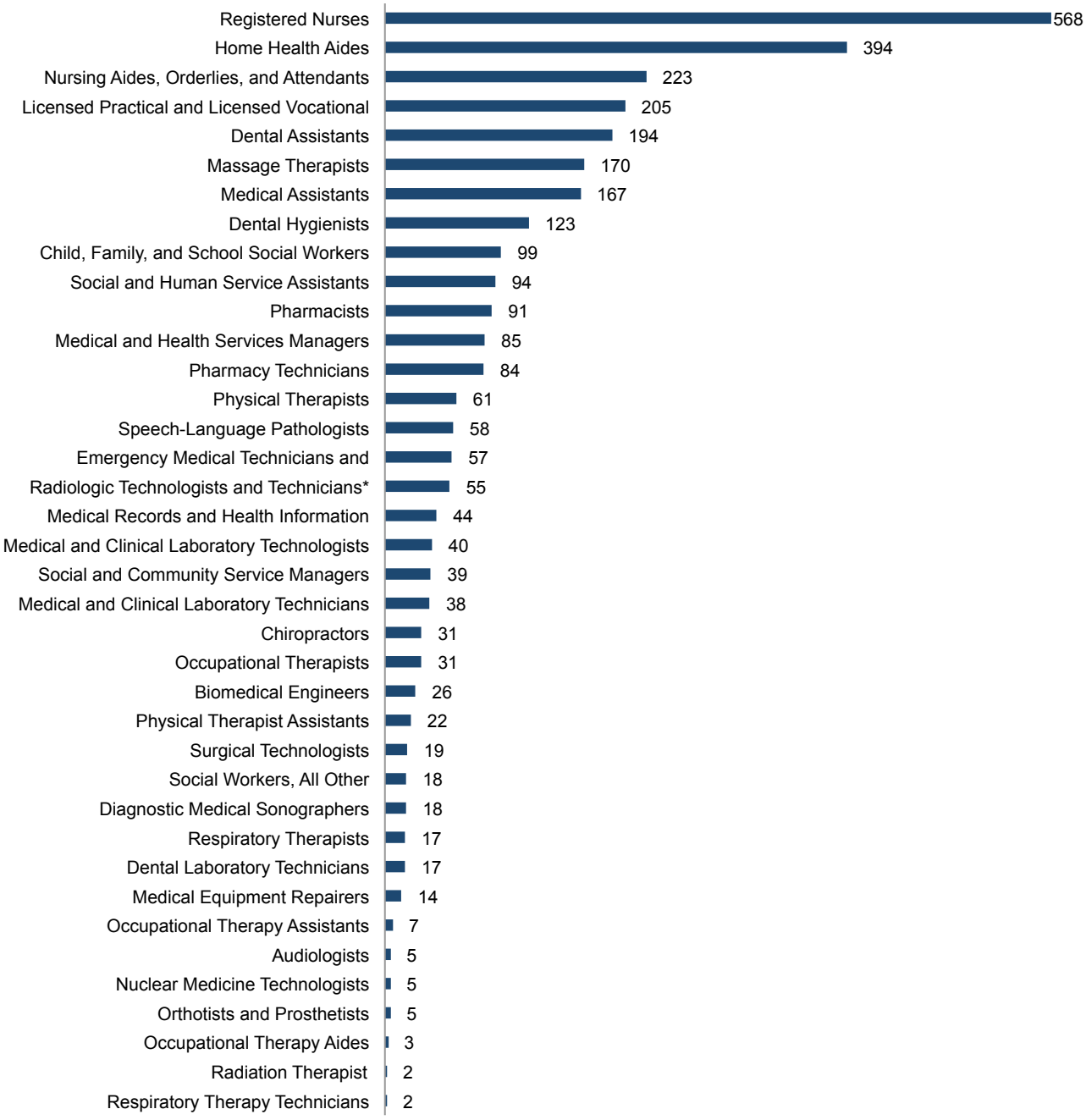
Figure 2.20: Projected Number of New Jobs Created by Study Occupation (2010-2020)



Source: EMSI

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

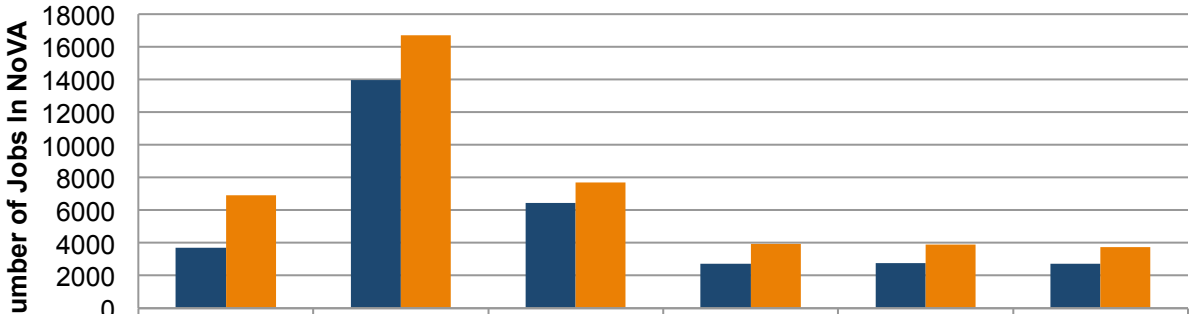
Figure 2.21: Annual Job Openings Due to Growth and Staff Turnover (2010-2020)



Source: EMSI

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Figure 2.22: Top 6 Creators of New Jobs



	Home Health Aides	Registered Nurses	Nursing Aides, Orderlies, and Attendants	Dental Assistants	Massage Therapists	Medical Assistants
2010	3699	13950	6448	2706	2771	2736
2020	6898	16707	7691	3933	3891	3754

Source: EMSI

Online job ads show that NoVA employers are recruiting for a wide range of skill levels

Despite BLS projections that the largest and fastest-growing source of new jobs will be primarily in lower-skilled health professions, job openings advertised online in 2012 show strong demand in several occupations traditionally requiring some form of higher education (*Table 2.7*). Nurses, medical managers, physical and occupational therapists, and health IT professionals posted the greatest number of job ads in 2012 (*Figure 2.23*).

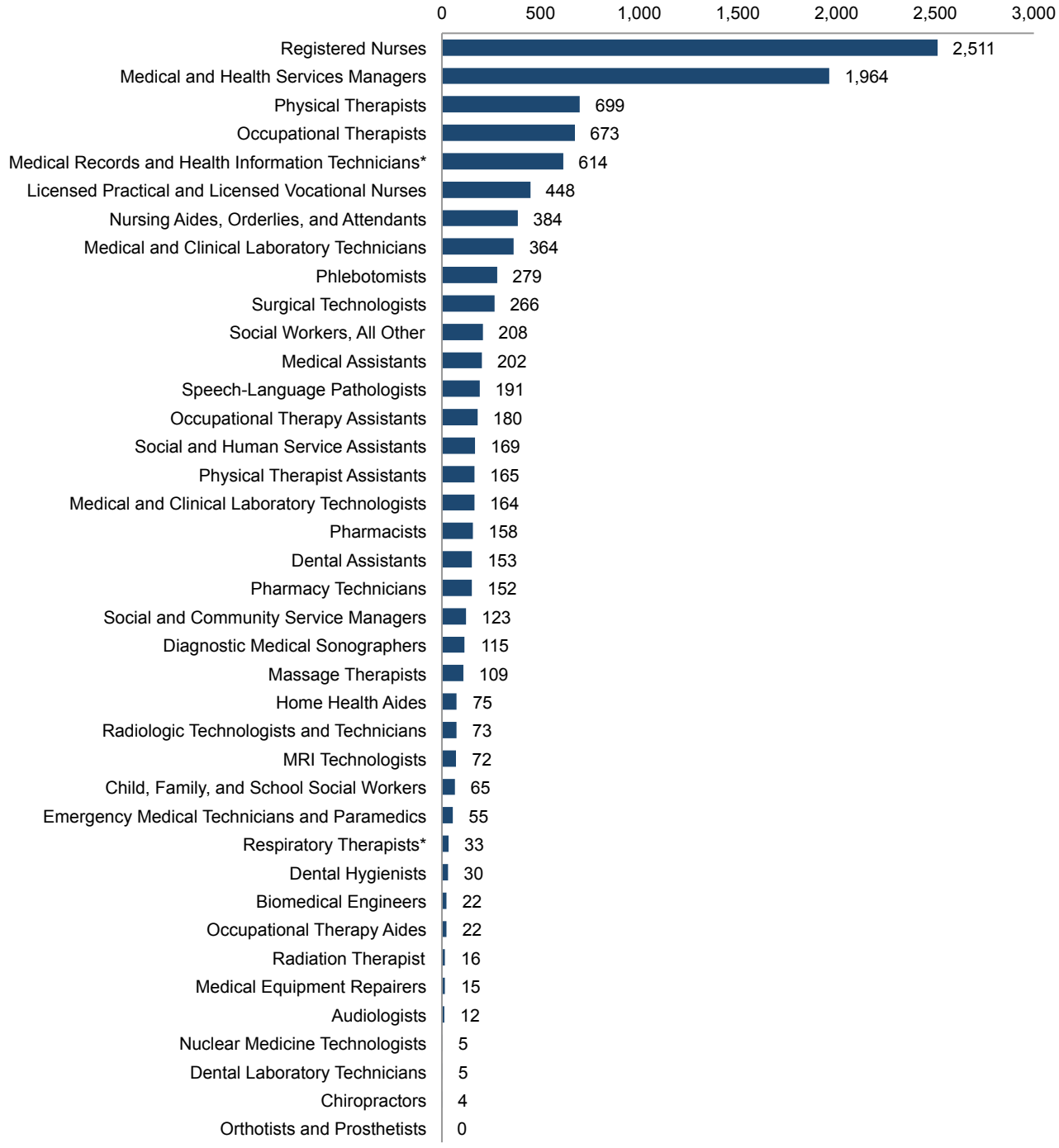
Table 2.7: 10 Study Occupations with Highest Number of NoVA Job Ads (2012)

Occupation	Job Ads	% of Job Postings	Education Level
Registered Nurses	2,511	21.1%	Associate degree
Medical and Health Services Managers	1,964	18.2%	Bachelor degree
Physical Therapists	699	6.5%	First professional degree
Occupational Therapists	660	6.1%	Master's degree
Medical Records and Health Information Technicians*	614	5.7%	Postsecondary non-degree award
Licensed Practical and Licensed Vocational Nurses	448	4.1%	Postsecondary non-degree award
Medical and Clinical Laboratory Technicians	364	3.4%	Associate degree
Nursing Assistants	320	3.0%	Postsecondary non-degree award
Phlebotomists	279	2.6%	Postsecondary non-degree award
Surgical Technologists	266	2.5%	Postsecondary non-degree award

Source: Burning Glass, Bureau of Labor Statistics

** See footnote C in Table 0.1 on page 26 for further explanation.*

Figure 2.23: 2012 Job Ads



Source: Burning Glass

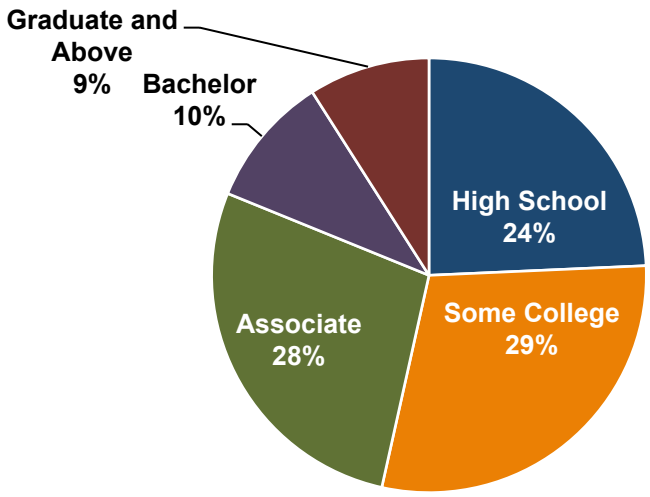
** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Projections may undercount demand for higher-skilled workers

Georgetown University's Center on Education and the Workforce (CEW) has published a series of national and state reports that have forecasted that a larger share of job openings between 2010 and 2020 will go to workers with higher levels of education than indicated in Bureau of Labor Statistics projections. Georgetown predicts that by 2020, 82% of all U.S. health care jobs will demand postsecondary education and training. See Appendix F for Georgetown's analysis on the proportion of projected job openings that will go to Virginia workers at different levels of education. Based on this analysis, approximately 84% of health care study occupations in the Commonwealth will require at least some college or higher education. For comparison, Table F.1 in Appendix F contains the education composition of the current Virginia workforce in seven licensed professions.

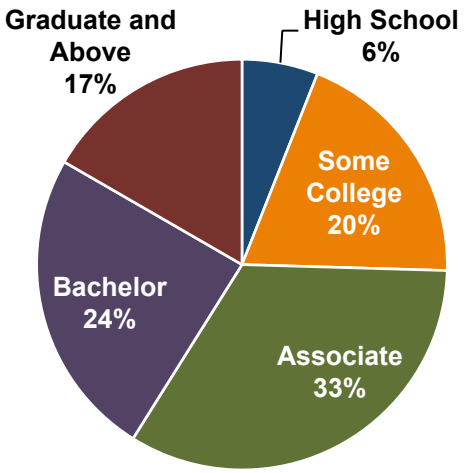
Differences in job projections and ads bear out greater demand for higher skilled professions. In aggregating workforce demand across all study occupations, BLS forecasts that more than half of all annual job openings will be in occupations that usually require a high school education or some college (*Figure 2.24*). In contrast, these occupations accounted for only about one-quarter of job openings advertised online in 2012 (*Figure 2.25*). Meanwhile, occupations requiring a Bachelor or graduate degree accounted for 40 percent of job ads compared to about 20 percent of projected job openings. Even more striking is how often employers expressed in job ads their preference for applicants with higher levels of education. In more than 40 percent of online ads containing education information, NoVA employers said they required or preferred a Bachelor degree. They mentioned graduate degrees in 34 percent of ads, Associate degrees or some college in 24 percent of ads, and high school diplomas in 22 percent of ads (*Figure 2.26*).

Figure 2.24: Projected Annual Job Openings by the Most Common Education Level of Study Occupations



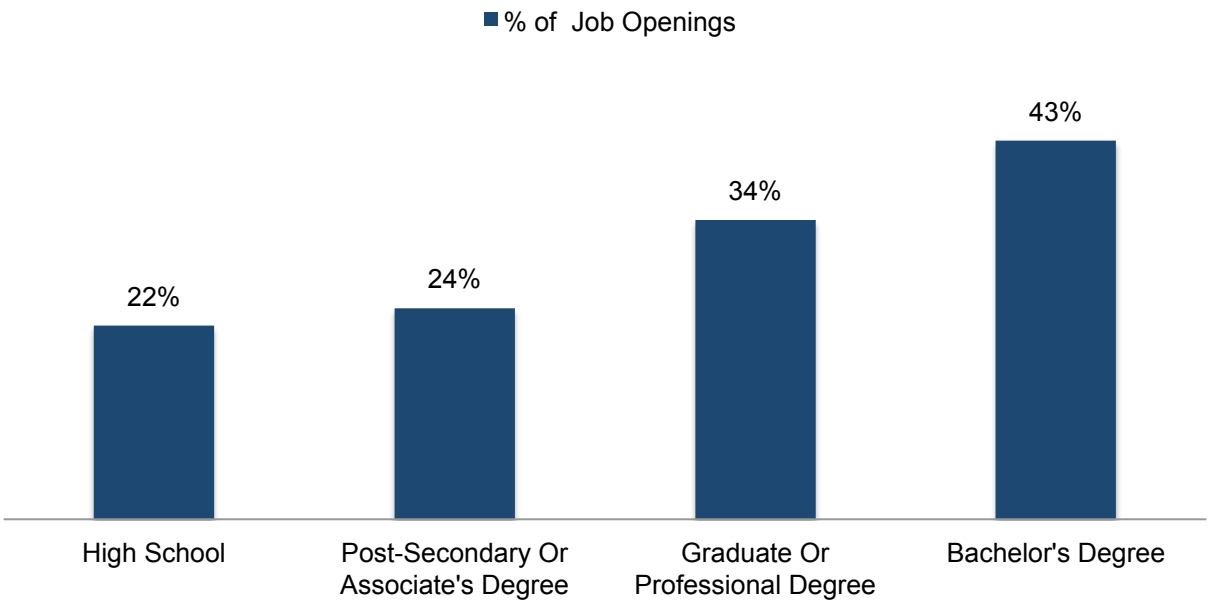
*Source: EMSI; N=3,124 job openings; Chart categorizes study occupations by the education level most commonly held by workers as reported by O*Net.*

Figure 2.25: 2012 Online Job Ads by the Most Common Education Level of Study Occupations



*Source: Burning Glass; N=10,423; Chart categorizes study occupations by the education level most commonly held by workers as reported by O*Net.*

Figure 2.26: Percentage of NoVA Job Ads in Study Occupations by the Level of Education Required/Preferred by Employers



Source: Burning Glass, 2012 Job Ads for study occupations in Northern Virginia

Note: This report provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown; 42% of records have been excluded because they do not include a degree level. As a result, this figure may not be representative of the full sample.

Demand high for bedside care, communication and coordination skills, and work experience

Job ads also provide a glimpse into employer preferences for hiring job applicants with certain specialized and baseline skills, as well as prior work experience. Topping the list of the most commonly cited specialized skills (*Table 2.8*) are patient care, treatment planning, and case management—three pillars of the care improvement model promoted in the Affordable Care Act. As discussed in the prior section, several regional health care providers are focusing more intently on customer service. As further evidence of this trend, some of the most common baseline skills described in job ads include communication, leadership, and problem solving (*Table 2.9*). Considering the transition to electronic medical records, it is not surprising that employers expressed need for computer skills. Finally, in most job ads, employers requested prior work experience—putting new graduates at a disadvantage for finding employment (*Figure 2.27*).

Table 2.8: 10 Most Common Specialized Skills Requested in Study Job Ads (2012)

Specialized Skill	% of Job Openings
Patient Care	20%
Treatment Planning	13%
Case Management	9%
Therapy	8%
Physical Therapy	8%
Occupational Therapy	8%
Patient Direction	7%
Patient/Family Education and Instruction	6%
Scheduling	6%
Clinical Experience	6%

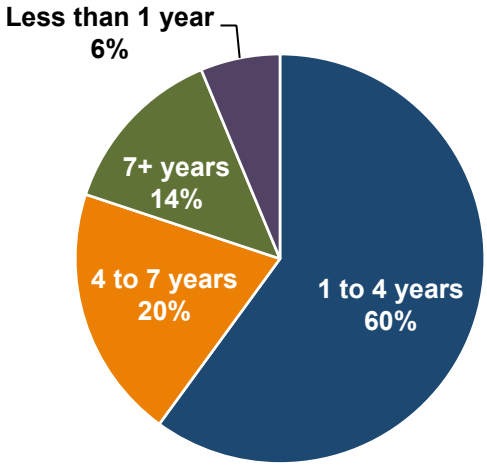
Source: Burning Glass; N:7,481

Table 2.9: 10 Most Common Skills Requested in Study Job Ads (2012)

Baseline Skills	% of Job Openings
Communication Skills	31.0%
Writing	24.4%
Organizational Skills	19.7%
Leadership	19.2%
Computer Skills	15.3%
English	14.9%
Planning	13.0%
Problem Solving	12.9%
Quality Assurance and Control	9.9%
Management	9.5%

Source: Burning Glass; N: 7,481

Figure 2.27: Requested Years of Experience for NoVA Study Job Ads



Source: Burning Glass; N: 4,234

OVERALL WORKFORCE SUPPLY

NoVA Hospital Systems cited critical workforce challenges and skill gaps

JFF surveyed the six major hospital systems in Northern Virginia to capture nursing demographic information (cited in Chapter 4) and to employ another method, besides interviews and focus groups, for identifying their critical workforce challenges. In the survey results, employers cited several occupations that they are having difficulty filling (*Table 2.10*). Among them are several allied health, diagnostics, therapy, and health information management positions, but interestingly, no employers cited difficulty finding registered nurses. Nonetheless, nursing was certainly on the minds of employers as they assessed their critical workforce challenges over the next three years (*Table 2.11*). Responses to that survey question suggest that the employers are concerned about having enough nurses with the skills for operating rooms, critical care, radiology, and gastroenterology—these concerns are echoed in Chapter 4. Among their other major challenges, hospital respondents noted a need to improve customer service and cultural sensitivity while managing change stemming from the Affordable Care Act, an aging workforce, and the implementation of team approaches to care delivery.

Table 2.10: 6 Study Occupations That NoVA Hospitals Are Having Difficulty Filling

- Surgical Technicians
- Surgical Technologists
- Clinical Data Coders
- Pharmacists
- Physical Therapists
- Ultra-sonographers

Source: JFF survey of six NoVA hospital systems; No occupations received a majority of responses citing a major challenge filling

Table 2.11: Key Workforce Challenges over the Next 3 Years

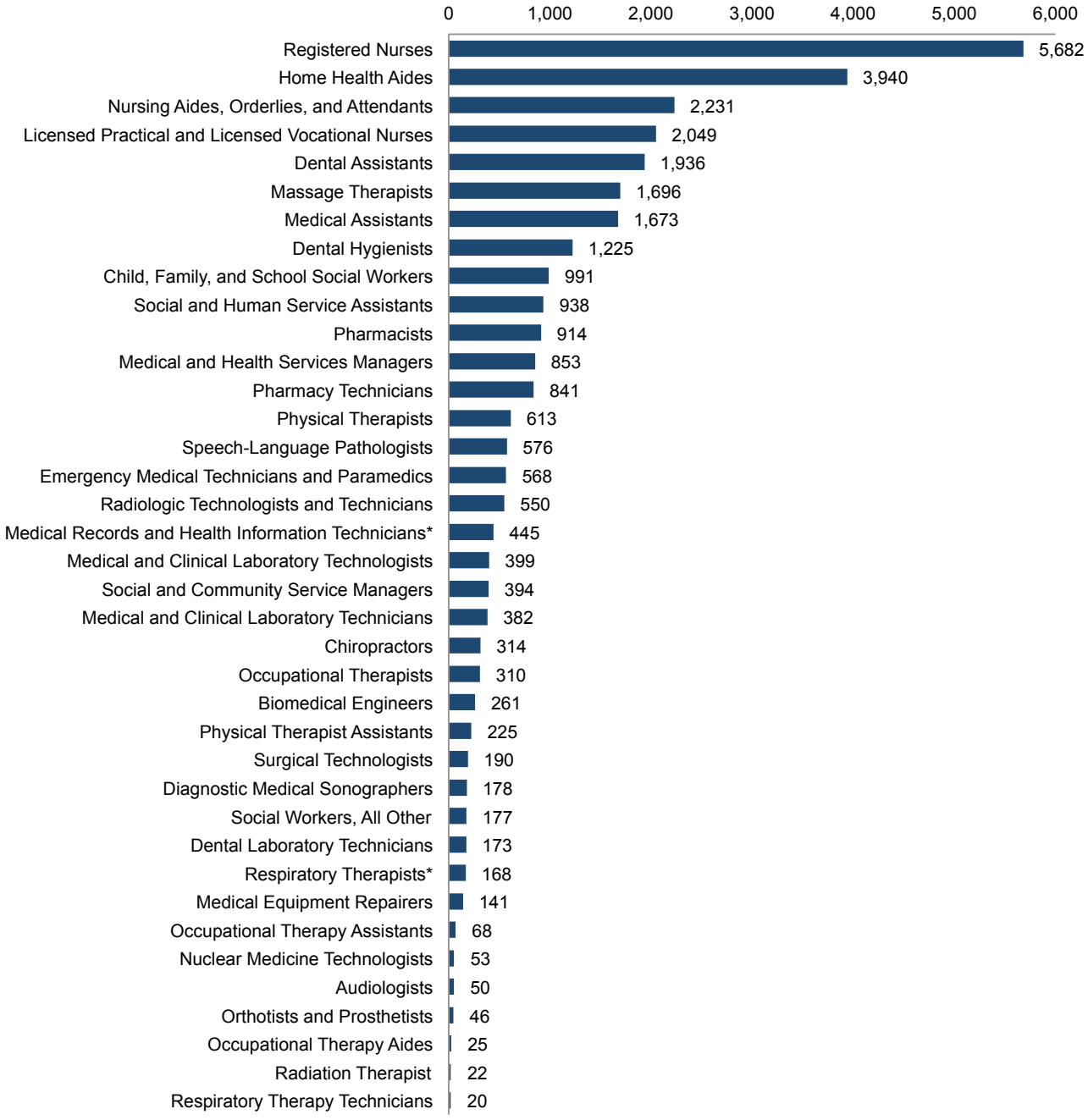
- Satisfying workforce need for Specialized Nurses
- Satisfying workforce need for Physical Therapists
- Satisfying workforce need for Sterile Processing Technicians
- Improving customer service
- Improving cultural diversity skills of workforce
- Replacing aging workforce supply
- Balancing patient care with affordable care
- Managing change toward team-based model of care

Source: JFF survey of six NoVA hospital systems

Northern Virginia employers may need to hire 31,000 workers to satisfy job growth, staff turnover

Labor market information provides another method for assessing potential gaps in workforce supply. In 2010, Northern Virginia had an estimated 58,490 jobs across the 40 health care occupations examined in this study. By that mark, employers will need to recruit and hire an additional 17,805 workers to keep up with projected job growth through 2020. When taking into account staff turnover as well as job creation, Northern Virginia employers could expect to recruit and hire over a 10-year period a total of 31,317 new employees. If employment projections hold true, then Northern Virginia employers should expect to hire more than 3,100 new employees each year. Again, note that these projections are rooted in assumptions that future trends will reflect past and current conditions, and should be used cautiously, and updated with multiple methods and sources (*Figure 2.28*).

Figure 2.28: 10-year Total of New Hires to Fill Projected Job Openings Due to Growth and Staff Replacement



Source: EMSI

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

NoVA has enough workers to fill nearly all jobs, but applicant pool is small in most fields

As described in the Introduction, JFF took a different approach to quantifying potential workforce shortages than previous studies commissioned by NoVAHealthFORCE. Our methodology assumes that individuals already employed in the region, as well as students graduating from regional institutions, will fill job openings. They comprise the applicant pool for each job opening in a given year, either forecasted through BLS projections or gleaned from recent job ads. This methodology has several constraints, as discussed in the Introduction.

According to our calculations, Northern Virginia has a large enough labor pool in nearly every study occupation to satisfy future job openings—if projections prove to be accurate. In that way, the data align with empirical data and employer observations about the relative weakness of the labor market. On the other hand, the data results suggest that employers will have to choose from relatively few applicants in making their hiring decisions for some occupations. And other factors, such as more rapid rates of retirement, changes in technology, or impacts of the Affordable Care Act on patient pools, could potentially lead to unexpected shortages.

Based on projected job openings, we find that 21 occupations will have 20 or fewer applicants per available job (*Figure 2.29*). The applicant pool is even smaller based on 2012 online job advertisements. We find that 19 occupations will have 10 or fewer potential applicants per available job, while an additional 11 occupations will have 20 or fewer applicants (*Figure 2.30 on page 93*).

According to job ads, 12 occupations have fewer than three potential applicants per job

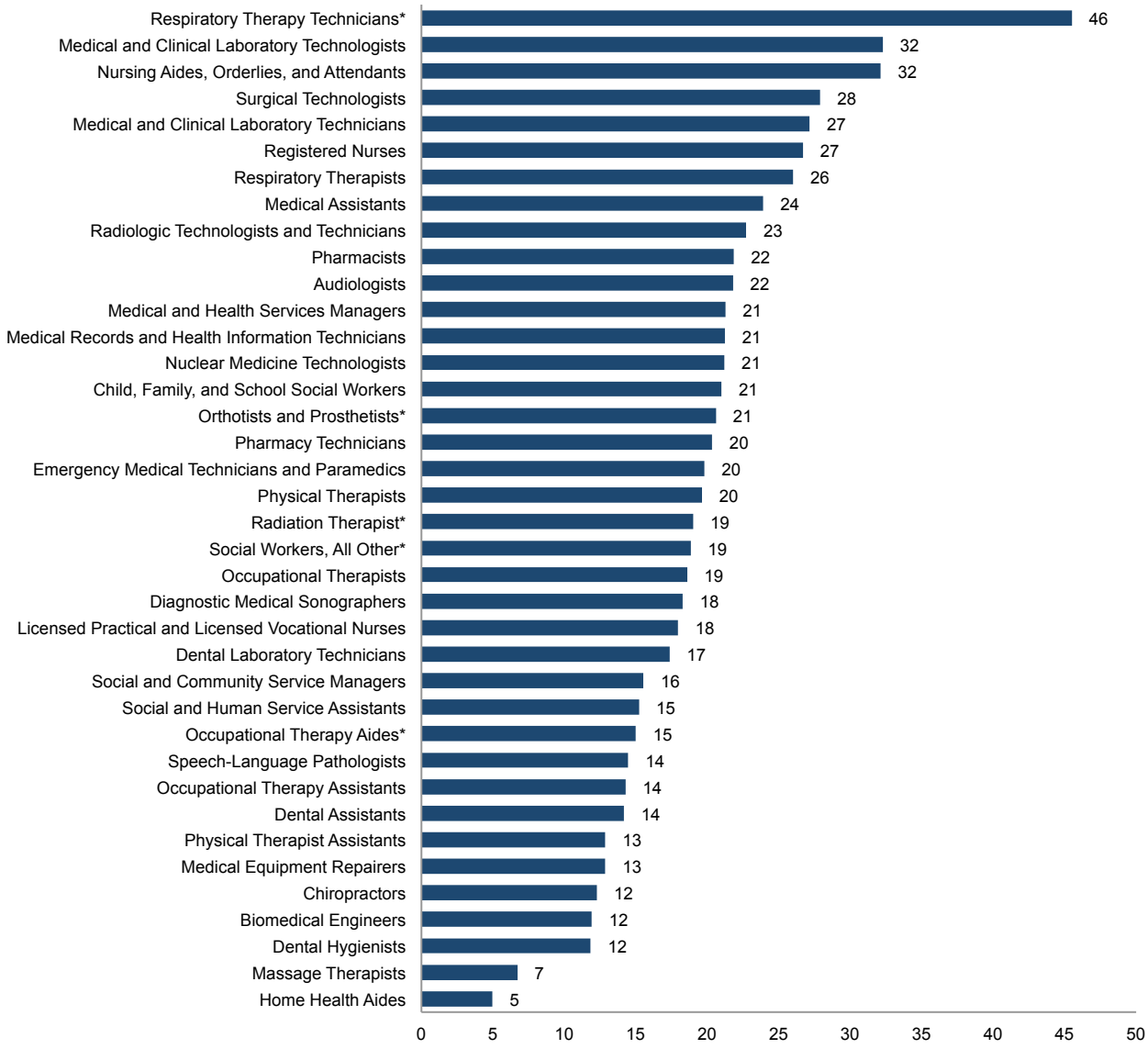
When basing employer demand on job advertisements, 12 occupations have fewer than three applicants available for each job opening. The fields of occupational therapy assisting, occupational therapy, and medical and health services management each have fewer than **one** applicant per job ad. Meanwhile, there are fewer than **two** applicants to fill jobs for medical records and health information technicians, physical therapist assistants, other social workers, physical therapists, and surgical technologists. Finally, fewer than **three** occupational therapy aides, radiation therapists, diagnostic medical sonographers, and medical and clinical laboratory technicians are available to apply for each job opening.

Meanwhile, a handful of occupations may have an overabundance of workforce supply

Depending on the source of job openings, five occupations standout as having a potentially glutted applicant pool. By the measure of BLS projections, the medical and clinical laboratory technicians each have 32 applicants per opening (*Figure 2.29*). According to job ads, four fields

have a far deeper applicant pool than other occupations: chiropractors (95), dental laboratory technicians (59), dental hygienists (49), and child, family, and school social workers (32) (*Figure 2.30*).

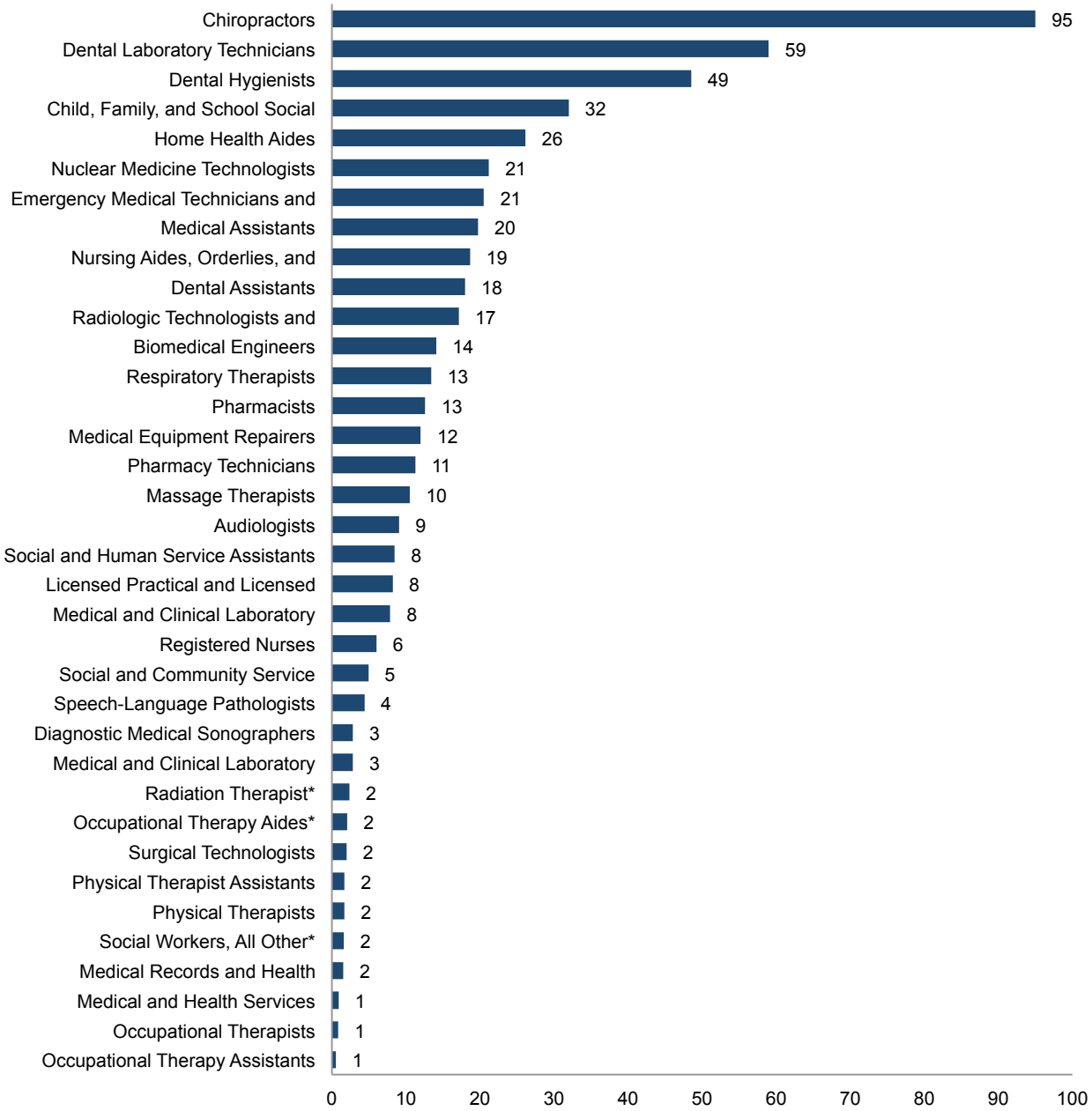
Figure 2.29: NoVA Applicant Pool per Projected Job



Source: OES, EMSI, IPEDS

**Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI.*

Figure 2.30: NoVA Applicant Pool per Job Ad



Source: OES, IPEDS, Burning Glass

**Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI.*

A small applicant pool carries greater risks of potential shortages, or gaps in supply vs. demand, for occupations with more job openings relative to total applicants

Having a small pool of applicants is less of a concern when employers only have a few jobs available than when they have several hundred. For that reason, JFF is highlighting occupations that employ at least 500 workers in NoVA region and that have small applicant pools, as measured by job ads and projections[56] (*Tables 2.12 and 2.13*).

In Tables 2.12 and 2.13, we have highlighted a subset of occupations meeting one or more of these additional criteria:

- Appearing in both lists (Speech-Language Pathologists, Social and Human Service Managers)
- Reported as in short supply in employer surveys and interviews (Surgical Technologists, Physical Therapists)
- Estimated to be high-turnover, based on Local Employment Dynamics data (Home Health Aides, Massage Therapists, Dental Assistants)

Table 2.12: Occupations with Higher Risk of Potential Shortage (By Job Ads)

1. Occupational Therapists
2. Medical and Health Services Managers
3. Medical Records and Health Information Technicians
4. Physical Therapists
5. Surgical Technologists
6. Medical and Clinical Laboratory Technicians
7. Speech-Language Pathologists
8. Social and Community Service Managers
9. Registered Nurses
10. Medical and Clinical Laboratory Technologists
11. Licensed Practical and Licensed Vocational Nurses
12. Social and Human Service Assistants

Source: OES, IPEDS, Virginia Board of Nursing, and Burning Glass
Note: Includes study occupations in which OES reported at least 500 employed in 2011 and that had applicant pool of fewer than 10 candidates per job ad.

Table 2.13: Occupations with Higher Risk of Potential Shortage (By Job Openings)

1. Home Health Aides
2. Massage Therapists
3. Dental Hygienists
4. Dental Assistants
5. Speech-Language Pathologists
6. Social and Human Service Assistants

Source: OES, IPEDS, Virginia Board of Nursing, and EMSI

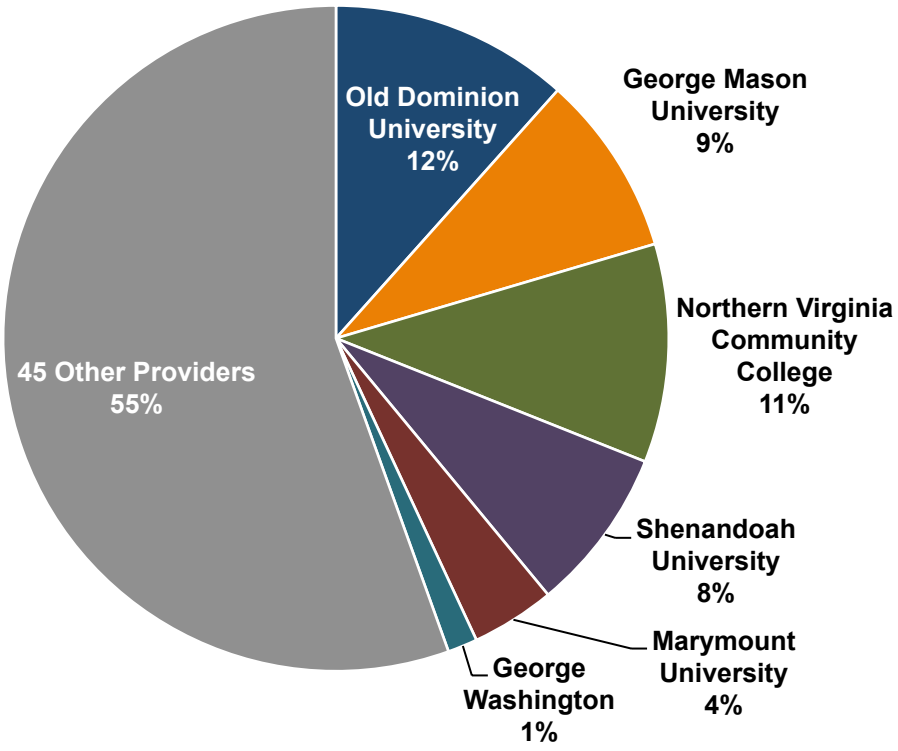
Note: Includes study occupations in which OES reported at least 500 employed in 2011 and that had applicant pool of 15 or fewer candidates per job ad.

As Tables 2.12 and 2.13 make clear, the two data sources—online job advertisements and job openings projected by federal government—can generate different results. As noted throughout this report, neither of these sources is a perfect tool for forecasting employment patterns, and used alone, may be misleading. For planning purposes, we advise carefully monitoring occupations where there are multiple sources that suggest possible mismatches of worker supply and employer demand.

An assortment of postsecondary institutions feed workforce supply for most occupations

Across Northern Virginia and some outlying areas, 21 postsecondary institutions, 4 public school districts, and an array of other organizations offer programs of study related to 27 of the 40 study occupations. Six colleges active in NoVAHealthFORCE produced about 45 percent of the program graduates (*Figure 2.31*). Three patient care occupational fields produced the vast majority of program completers: medical assistants, nurse assistants, and registered nurses (*Figure 2.32 on page 97*).

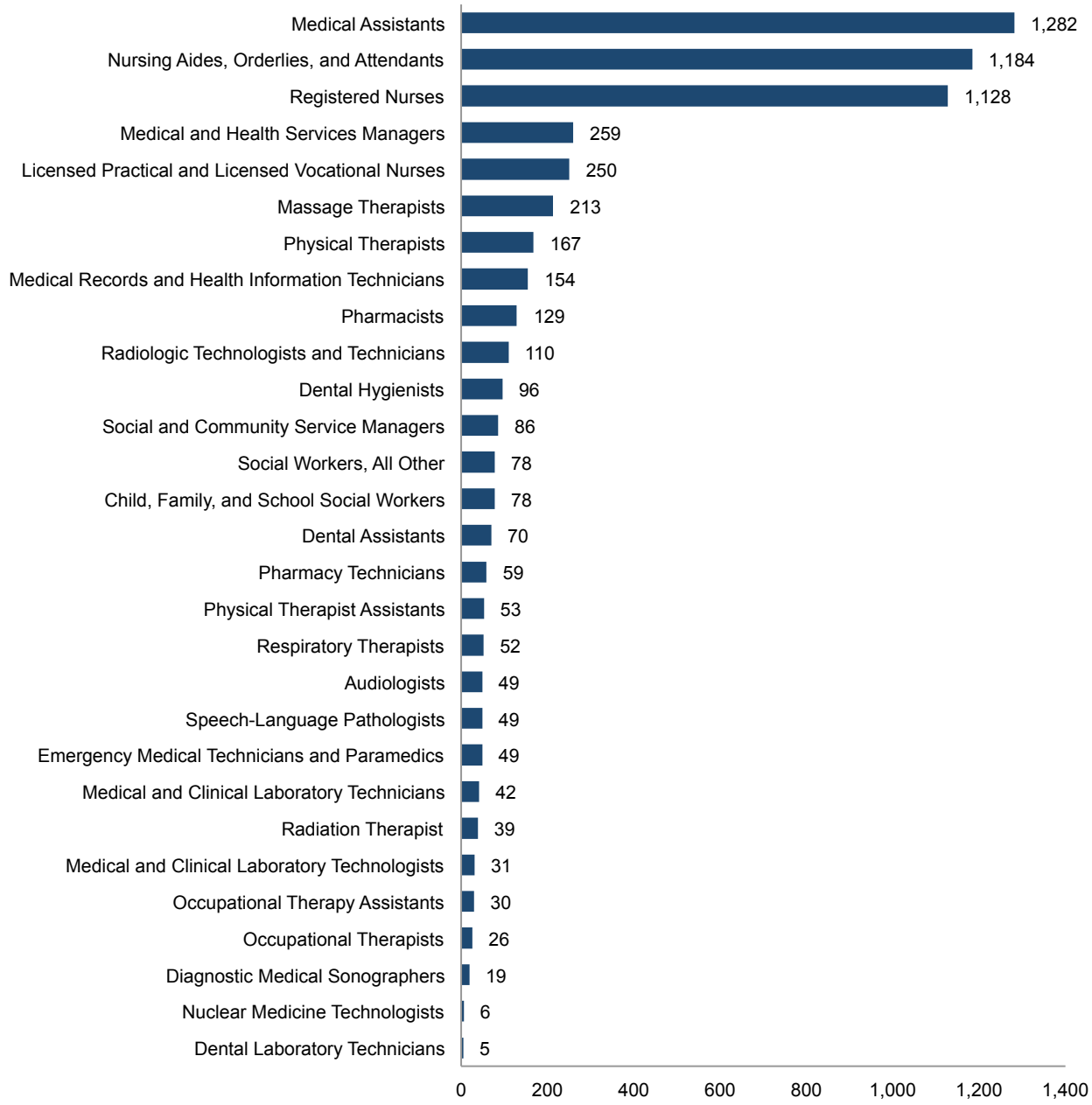
Figure 2.31: Reported Completers of NoVA Education Programs Related to Study Occupations, by Institution



N=5,538 total completers.

Source: 2011 IPEDS completion data; George Washington University 2011 figures accessed via website; Northern Virginia Community College accessed via website; Virginia Board of Nursing provided figures for 2011 graduates of LPN programs and 2012-13 graduates of CNA programs.

Figure 2.32: NoVA-area Education Completers



Source: IPEDS (2011 completers), Northern Virginia Community College, George Washington University, Virginia Board of Nursing (2012-13 completers for Nurse Assistants) (2011 LPN candidates sitting for NCLEX)

In nine occupations, only one regional college graduated any students. In contrast, six occupations offered the most number of school options. In 2011:

- About 40 schools, organizations, and employers provide training to become a certified nursing assistant.
- Nine public schools, propriety colleges, and other organizations graduated students from Licensed Practical Nursing programs; Northern Virginia Community College launched a LPN program in 2011 and graduated 12 students in 2012.
- Eight colleges offered an array of programs preparing students for careers as Medical and Health Services Managers.
- Seven colleges offered Massage Therapy programs.
- Seven colleges offered RN programs, including five schools with Bachelor of Science programs.
- Five colleges prepared students to become medical assistants.

Among the 10 occupations without reported completers (*Table 2.14*), six require some form of college degree. If there were regional institutions offering programs in these occupational areas, their graduates would be reported through IPEDS. Since none were found, the research team operated under the assumption that there are no regional education programs in those occupational fields. Subsequently, JFF learned that Northern Virginia Community College recently established a degree program to prepare students for a career as an occupational therapy assistant. NVCC expects to graduate its first class of 14 students in 2015.

Among the other four occupational fields without reported completers, NVCC recently discontinued its surgical technology program due to low student enrollment. The other three occupational areas—social and human services assistants, home health aides, and occupational therapy aides—only require short-term on-the-job training. Therefore, the research team could not determine a viable method for identifying whether any regional institutions offer formal training programs in these fields and “graduated” participants in recent years.

Table 2.14: Study Occupations Without Reported Education Completers (2011)

Bachelor Degree and Above

- Biomedical Engineers
- Chiropractors
- Orthotists and Prosthetists

Associate Degree

- Medical Equipment Repairers
- Occupational Therapy Assistants*

Postsecondary Non-degree Award

- Surgical Technologists

Short-term On-the-Job Training

- Social and Human Service Assistants
- Home Health Aides**
- Occupational Therapy Aides

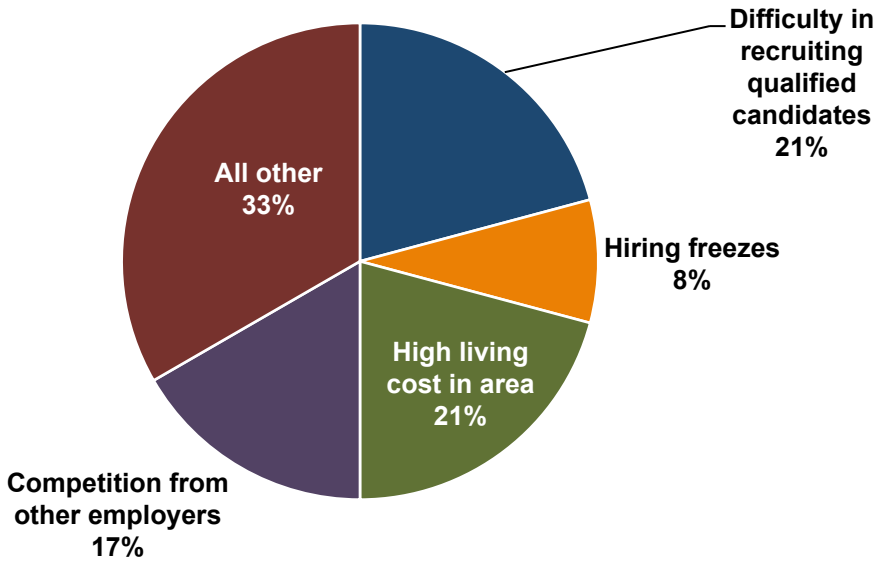
**Northern Virginia Community College recently established an Occupational Therapy Assistant program and expects to graduate the first 14 students in spring 2015.*
*** There are non-IPEDS programs, however, JFF was not able to collect completion figures.*

WORKFORCE RECRUITMENT AND RETENTION

High living costs hindering recruitment efforts

The Washington Metro Area, of which Northern Virginia is a part, attracts students and young professionals from across the nation (and worldwide) to complete their education and launch their careers. Some college administrators interviewed for the study noted that they draw students from far away to enroll in their premier health professional programs, but a fair share of them return to their hometowns after graduation. The administrators cited the high cost of living in Northern Virginia for why some graduates leave and why they struggle attracting top-notch faculty to relocate to the area. Hospital recruiters also cited living expenses, particularly for housing, when explaining why they struggle to attract skilled and experienced professionals. Hospital executives responding to the JFF survey cited cost of living as a top challenge in recruiting workers (*Figure 2.33*).

Figure 2.33: Major Workforce Recruitment Challenges in Survey of NoVA Hospital Systems



Source: Survey respondents; all six major hospitals

Region pays better wages but still too low for high living costs

Northern Virginia health care employers pay on average higher wages in nearly all study occupations than the state and national average (*Table 2.15*). Moreover, across the broader health care and education sector of Northern Virginia, wages actually increased around the time of the Great Recession unlike most sectors of the local economy.[57]

Despite these wage levels and gains, in only 18 of the 38 study occupations did Northern Virginia workers earn enough in annualized full-time wages to provide a minimal standard of living for a family of four. In a 2012 report, the Commonwealth Institute defined this minimum standard as a household income of $63,000, assuming one preschool-age and one school-age child.[58] In NoVA, Medical Assistants, Social and Human Service Assistants, Nursing Aides, and Home Health Aides earned on average less than half the minimum standard. By another standard that evaluated the region's high housing and transportation costs, Commonwealth Institute said this household would need to earn at least $75,000. By that measure, workers in only 14 of the study occupations earn enough.

Table 2.15: Study Occupation Median, State and National Hourly Earnings

Occupation	NoVA Median Hourly Earnings	NoVA Avg. Hourly Earnings	State Median Hourly Earnings	State Avg Hourly Earnings	National Median Hourly Earnings	National Avg Hourly Earnings	NoVA Annualized Median Income
Pharmacists	$55.18	$54.26	$55.01	$54.49	$54.31	$53.71	$114,774
Radiation Therapists	$50.11	$50.06	$34.30	$34.37	$36.84	$38.14	$104,229
Dental Hygienists	$49.71	$49.86	$39.63	$39.54	$34.02	$34.23	$103,397
Audiologists	$48.69	$50.98	$32.67	$37.91	$32.74	$33.73	$101,275
Nuclear Medicine Technologists	$50.19	$49.39	$33.04	$33.01	$33.89	$34.22	$101,026
Occupational Therapists	$45.68	$45.61	$38.87	$38.30	$35.77	$36.27	$95,014
Orthotists and Prosthetists	$45.16	$49.38	$34.25	$37.19	$33.77	$35.71	$93,933
Medical and Health Services Managers	$44.72	$47.08	$40.69	$44.18	$40.09	$44.37	$93,018
Diagnostic Medical Sonographers	$44.48	$44.11	$32.57	$32.16	$31.69	$31.97	$92,518
Speech-Language Pathologists	$44.41	$44.75	$34.99	$35.06	$32.74	$33.59	$92,373
Physical Therapists	$43.25	$44.06	$37.64	$37.82	$36.76	$37.40	$89,960
Biomedical Engineers	$39.09	$40.30	$44.39	$47.05	$40.71	$42.48	$81,307
Social and Community Service Managers	$39.08	$39.65	$31.25	$33.15	$27.41	$29.43	$81,286
Respiratory Therapists	$38.38	$38.13	$26.72	$26.66	$26.56	$27.05	$79,830
Registered Nurses	$35.41	$36.39	$30.53	$31.48	$31.64	$33.14	$73,653
Radiologic Technologists and Technicians	$34.73	$35.37	$27.51	$27.85	$26.83	$27.61	$72,238
Medical and Clinical Laboratory Technologists	$33.49	$33.34	$26.14	$26.25	$27.41	$27.94	$69,659

Occupation	NoVA Median Hourly Earnings	NoVA Avg. Hourly Earnings	State Median Hourly Earnings	State Avg Hourly Earnings	National Median Hourly Earnings	National Avg Hourly Earnings	NoVA Annualized Median Income
Respiratory Therapy Technicians*	$31.74	$32.44	$23.28	$22.89	$22.34	$22.82	$66,019
Chiropractors	$28.14	$31.58	$30.80	$34.90	$32.77	$35.02	$58,531
Social Workers, All Other	$27.00	$26.61	$28.60	$27.53	$25.89	$26.01	$56,160
Occupational Therapy Assistants	$26.88	$27.71	$27.76	$28.06	$25.02	$25.07	$55,910
Child, Family, and School Social Workers	$25.58	$26.59	$20.80	$22.44	$19.62	$21.31	$53,206
Surgical Technologists	$23.56	$23.86	$19.94	$20.28	$19.78	$20.49	$49,005
Emergency Medical Technicians and Paramedics	$22.80	$23.29	$14.73	$16.13	$14.77	$16.36	$47,424
Licensed Practical and Licensed Vocational Nurses	$22.43	$22.65	$18.60	$18.94	$19.87	$20.29	$46,654
Medical and Clinical Laboratory Technicians	$22.22	$24.12	$17.47	$18.28	$17.76	$18.73	$46,218
Physical Therapist Assistants	$21.74	$22.16	$24.57	$24.34	$24.54	$24.57	$45,219
Medical Equipment Repairers	$21.03	$21.76	$20.93	$21.81	$20.92	$21.89	$43,742
Medical Records and Health Information Technicians*	$20.28	$21.89	$15.91	$17.09	$16.01	$17.27	$42,182
Dental Assistants	$17.80	$18.17	$16.65	$17.45	$16.42	$16.70	$37,024
Massage Therapists	$16.51	$16.21	$15.88	$15.44	$13.89	$14.23	$34,341
Pharmacy Technicians	$16.03	$16.69	$13.70	$14.09	$13.95	$14.46	$33,342

Occupation	NoVA Median Hourly Earnings	NoVA Avg. Hourly Earnings	State Median Hourly Earnings	State Avg Hourly Earnings	National Median Hourly Earnings	National Avg Hourly Earnings	NoVA Annualized Median Income
Occupational Therapy Aides	$15.42	$15.82	$12.71	$13.17	$13.56	$15.28	$32,074
Dental Laboratory Technicians	$15.20	$15.06	$17.22	$17.82	$17.48	$18.65	$31,616
Medical Assistants	$15.14	$15.50	$14.30	$14.82	$14.17	$14.68	$31,491
Social and Human Service Assistants	$14.32	$15.33	$13.61	$14.35	$13.82	$14.77	$29,786
Nursing Aides, Orderlies, and Attendants	$11.57	$12.00	$11.12	$11.44	$11.58	$12.14	$24,066
Home Health Aides	$10.50	$10.73	$9.20	$9.48	$9.99	$10.41	$21,840
Total	**$30.69**	**$27.43**	**$22.74**	**$23.38**	**$22.42**	**$23.36**	**$63,835**

Source: EMSI
** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Long commutes also contribute to costs and diminish quality of life

For people living and/or working in Northern Virginia, traffic congestion and long commutes to and from work also contribute to high living costs and detract from the quality of life—hurting workforce attraction and retention efforts further. The average commuter in Northern Virginia faces longer drive times than their counterparts in the rest of the Commonwealth and the nation, according to the Commonwealth Institute. Strikingly, nearly 15 percent of NoVA commuters traveled at least 60 minutes to work, compared to less than 10 percent in Virginia and the national average of 8 percent. This may give pause to workers considering whether to relocate to the region.

One reason for the long commutes is that the population of Prince William and Loudoun Counties has increased more swiftly than employment opportunities. As the Commonwealth Institute explains, people seeking affordable housing are working farther away from their jobs. Commute times may ease up in the future as more health care facilities continue to open in these outlying counties. A health care executive described to JFF how she hired a nurse who until recently commuted more than an hour to work from Loudoun County to Alexandria City. Rather than relocate closer to work, she took a new position in a health care establishment near her home.

But, even if Northern Virginia residents work closer to home, they will still be sharing the congested roads with workers who commute into the region for employment. Northern Virginia attracts more residents from Maryland, DC, and elsewhere in Virginia who commute into the region for work than it loses NoVA residents to out-migration (*Table 2.16*). While contributing to congestion, the influx of out-of-area workers is a sign of the economic vitality of Northern Virginia.

Table 2.16: 2010 Annual Commuting Patterns

Commuters Working In	Total Commuters Out of NoVA	Into NoVA Area	Plus or Minus
Virginia	464,145	560,125	95,980
District of Columbia	157,707	37,414	-120,293
Maryland	63,686	116,877	53,191
TOTAL	**685,538**	**714,416**	**28,878**

CHAPTER 3: WORKFORCE DEMAND FOR NON-NURSE STUDY OCCUPATIONS

This chapter delves into the specific workforce needs for the non-nurse occupations studied in this report. Organized into seven subsections corresponding with each of the seven non-nurse occupational groupings, this chapter reports on a range of workforce supply and demand data and estimates workforce shortage. It includes employer perspectives on current and future workforce needs and insights on education capacity.

ALLIED HEALTH/OTHER

Potential future workforce shortages most likely for surgical technologists and medical and health services managers

Description of Occupational Group

The Allied Health/Other Group comprises 11 non-nurse occupations examined in the study. It is a broad and diverse grouping of low- and middle-skilled "tech" positions such as emergency medical technicians and surgical technologists, as well as high-skilled professional and administrative roles, including pharmacists and medical and health services managers (*Table 3.1*).[59]

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Allied Health/Other Group employ about 20 percent of the Northern Virginia study workforce—ranking second behind the Nursing Group in total employed.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online and Burning Glass, NoVA employers have posted the highest number of job advertisements online within the Allied Health/Other grouping for medical and health services managers and surgical technologists. In both occupations, hiring activity generally has increased since 2005, but the number of monthly ads is down more recently (*see Figure 2.18 in Chapter 2*). Aside from these two occupations, Burning Glass also has captured strong hiring demand for surgical technologists, pharmacists, and pharmacy technicians.

Using Burning Glass analytics tools, JFF more closely examined job ads for the highest demand occupations (surgical technologists and medical and health services managers) to identify qualifications that employers most commonly request. These occupations also have the smallest applicant pool relative to advertised jobs. In job ads for medical and health services managers, employers are seeking candidates with a mix of business, clinical, and managerial skills, who have a background in nursing and at least four years of managerial experience, and

who have attained advanced degrees (*Tables 3.3-3.8*). In job ads for surgical technologists, employers listed a range of surgical specific skills and certifications they prefer applicants to have, but they did not place much emphasis on prior work experience or higher education (*Tables 3.9-3.13*)

Employer Insights: According to the survey of NoVA hospital systems, acute care employers are having difficulty filling open jobs in two of the Allied Health/Other-related occupations: surgical technologists and pharmacists. In informant interviews, several hospital executives also emphasized the challenge in finding a sufficient number of surgical technologists. One of the region's largest hospital systems said it has failed to reach its new 65-35 nurse-to-tech ratio in surgery and OR departments due to a shortage of surgical technologists. Looking forward, survey respondents noted that hiring workers qualified to be sterile processing technicians (a job title closely associated with surgical technologists) will be a critical workforce need over the next three years.

Looking Ahead

Occupational Projections: Six of the eleven Allied Health/Other occupations are projected to increase employment levels at a faster growth rate than the overall study average. Biomedical engineering is the fastest growing allied health profession, while the medical assistant occupation is expected to add the greatest number of jobs.

Pipeline of New Workers

Regional education institutions offer training and degree programs in six of the eleven Allied Health/Other professions, graduating a total of nearly 1,750 students in 2011. The vast majority of medical assistant graduates completed programs offered at five regional schools. Meanwhile, the high-demand field of surgical technology is among five occupations without regional training offerings; Northern Virginia Community College recently discontinued its program due to low student enrollment.

The majority of employers interviewed said they rely on internal training programs for ancillary staff positions such as nursing assistants, pharmacy technicians, and phlebotomists. These fields can be an entry point for internal career ladders. One employer attracts nursing students to work as CNAs prior to graduation, thus creating a training and employment pipeline. Increasingly, employers are looking towards area colleges that offer certification for various allied health support positions, adding to the overall professionalism of these careers.

Applicant Pool: In comparing current workers and new entrants against current and future hiring activity, JFF finds that eight Allied Health/Other occupations have fewer than fifteen potential applicants available to fill each job opening. Surgical technologist and medical and health services management have the smallest applicant pool to satisfy employer demand, as measured through job ads.

Priority Workforce Need: Considering all available sources of labor market intelligence, the surgical technologist career field carries the greatest risk for workforce shortage. Northern Virginia should strengthen its recruitment and training pipeline in order to satisfy growing employer demand for surge techs.

Table 3.1A: Allied Health Occupations

SOC	29-1051	29-2052	29-2041	29-1124
Occupation	**Pharmacists**	**Pharmacy Technicians**	**Emergency Medical Technicians and Paramedics**	**Radiation Therapists***
May 2011 OES	1,860	1,650	1,080	N/A
2010 Jobs	1,727	1,581	914	38
2020 Jobs	2,127	2,091	1,230	51
Change	400	510	316	13
% Change	23%	32%	35%	34.2%
Openings	914	841	568	20
Job Openings Due to Growth	40	51	32	1
Job Openings Due to Replacement	51	33	25	1
Total Annual Openings	91	84	57	2
Median Hourly Earnings	$55.18	$16.03	$22.80	$50.11
Avg. Hourly Earnings	$54.26	$16.69	$23.29	$50.06
Regional Completions (2011)	129	59	19	39
Most Common Education	First professional degree	Moderate-term on-the-job training	Postsecondary non-degree award	Associate degree
2012 Job Ads	158	152	55	16
# of Potential NoVA Area Applicants per Job Opening	22	20	19	19

# of Potential NoVA Area Applicants per Job Ad	13	11	20	2
Virginia License holders	11,756	13,007		

Source: OES, EMSI, Burning Glass, IPEDS, Virginia Department of Health Professions

** Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI.*

Table 3.1B: Allied Health Occupations

SOC	29-1126	29-2054	11-9111	29-2055
Occupation	**Respiratory Therapists**	**Respiratory Therapy Technicians***	**Medical and Health Services Managers**	**Surgical Technologists**
May 2011 OES	390	N/A	1,550	530
2010 Jobs	407	91	1,669	551
2020 Jobs	473	84	2,046	617
Change	66	-7	377	66
% Change	16%	-8%	23%	12%
Openings	168	20	853	190
Job Openings Due to Growth	7	-1	38	7
Job Openings Due to Replacement	10	3	48	12
Total Annual Openings	17	2	85	19
Median Hourly Earnings	$38.38	$31.74	$44.72	$23.56
Avg. Hourly Earnings	$38.13	$32.44	$47.08	$23.86
Regional Completions (2011)	34		259	
Most Common Education	Associate degree	Associate degree	Bachelor degree	Postsecondary non-degree award

2012 Job Ads	33	N/A	1,964	266
# of Potential NoVA Area Applicants per Job Opening	25	46	21	28
# of Potential NoVA Area Applicants per Job Ad	13	N/A	1	2
Virginia License holders	3,900			

Source: OES, EMSI, Burning Glass, IPEDS

** Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI. See footnote B in Table 0.1 on page 26 for further explanation.*

Table 3.1C: Allied Health Occupations

SOC	31-9092	49-9062	17-2031
Occupation	**Medical Assistants**	**Medical Equipment Repairers**	**Biomedical Engineers**
May 2011 OES	2,710	180	310
2010 Jobs	2,736	212	274
2020 Jobs	3,754	277	450
Change	1,018	65	176
% Change	37%	31%	64%
Openings	1,673	141	261
Job Openings Due to Growth	102	7	18
Job Openings Due to Replacement	66	8	9
Total Annual Openings	167	14	26
Median Hourly Earnings	$15.14	$21.03	$39.09
Avg. Hourly Earnings	$15.50	$21.76	$40.30
Regional Completions (2011)	1,248		
Most Common Education	Moderate-term on-the-job training	Associate degree	Bachelor degree
2012 Job Ads	202	15	22
# of Potential NoVA Area Applicants per Job Opening	24	13	12
# of Potential NoVA Area Applicants per Job Ad	20	12	14

Source: OES, EMSI, Burning Glass, IPEDS

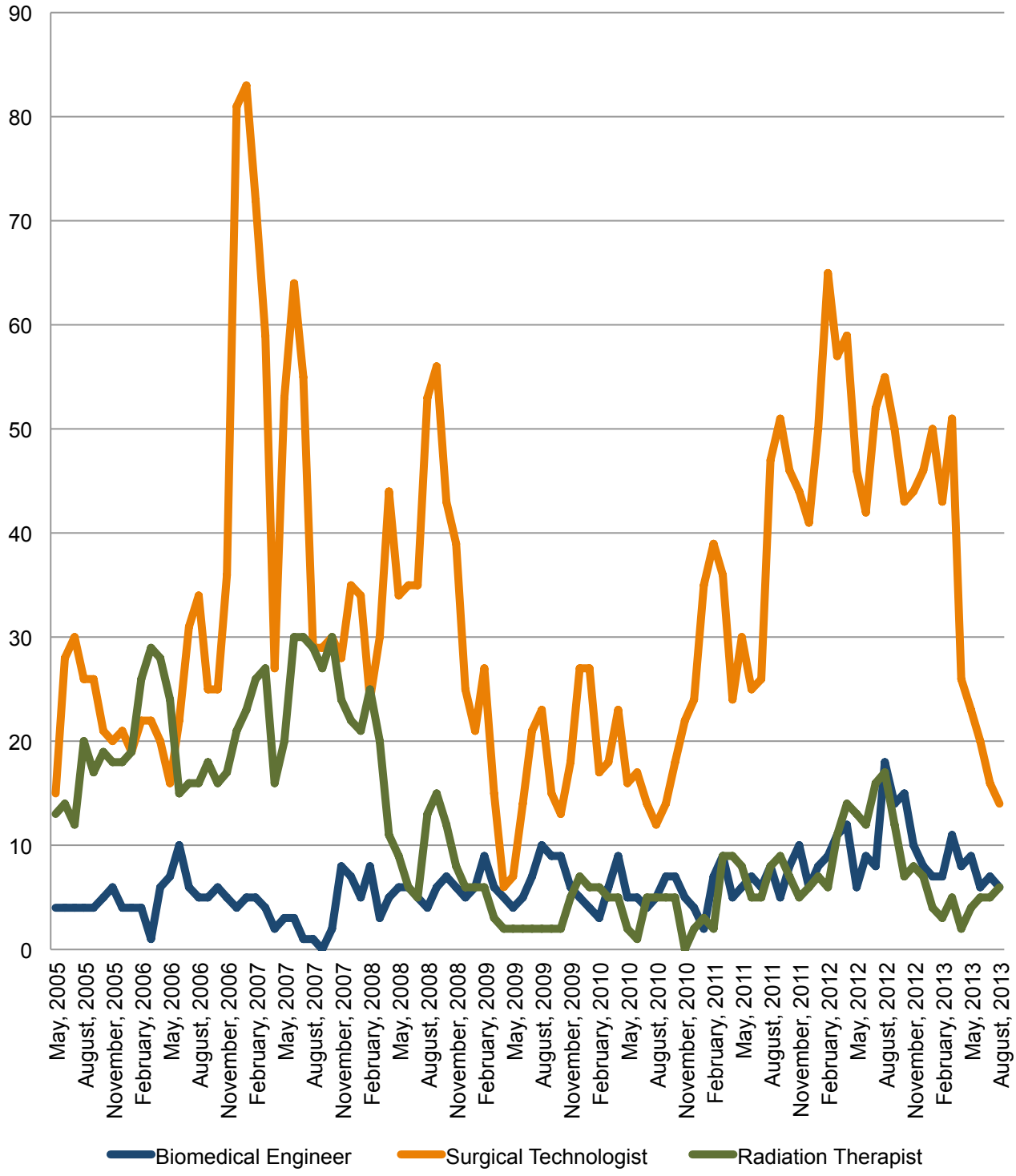
Table 3.2: Approximate Turnover Rates for Selected Allied Health Occupations

Occupation	Proxies		
	Designated Education Class	Designated Industries	2011-12 Turnover
Medical Assistants	High School*	Doctor's Office	7.6%
Surgical Technologists	Some College or Associate degree	General Hospital Outpatient	9.9% 4.9%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Physicians, General and Surgical Hospitals, and Outpatient Care Centers for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

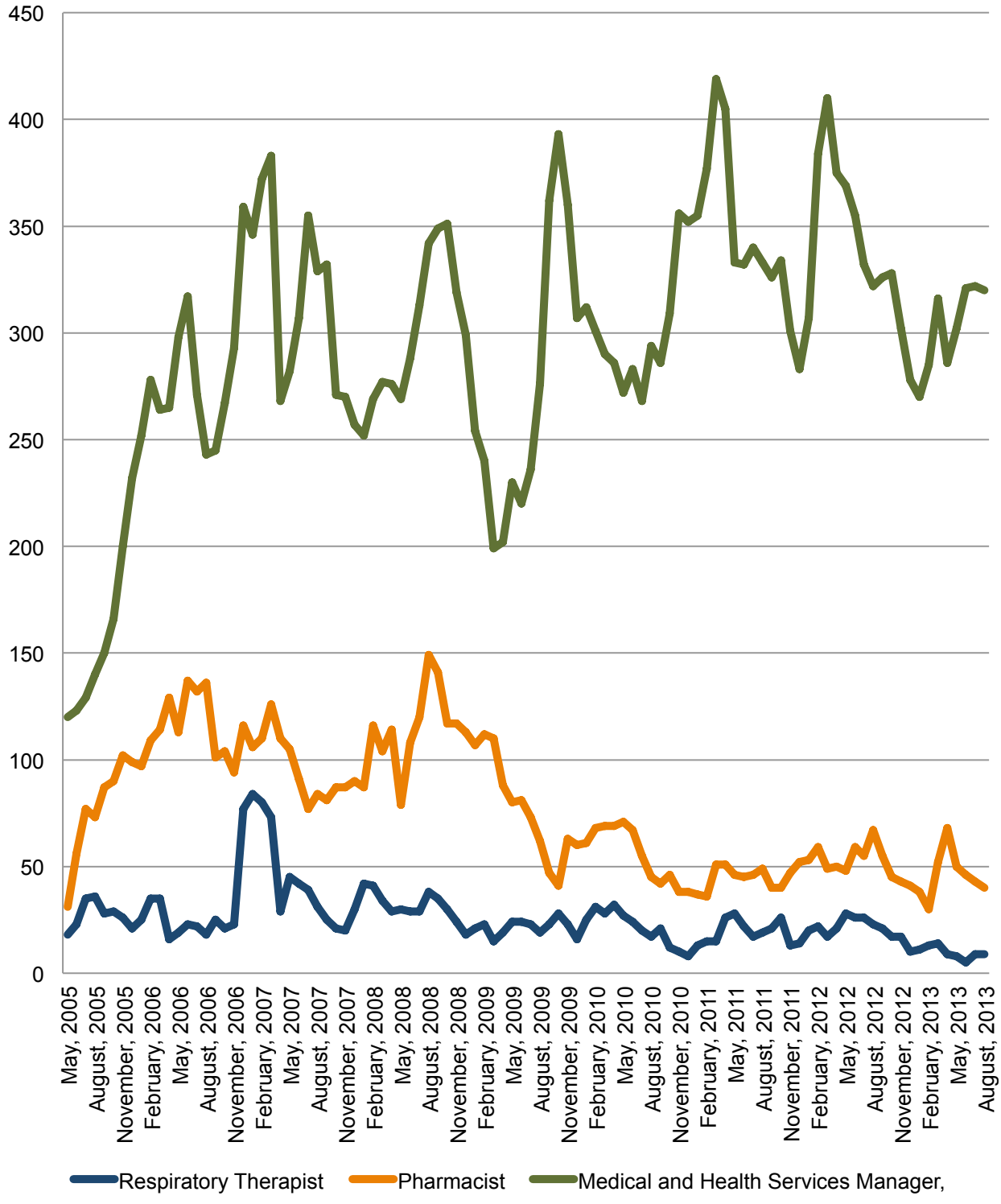
** Workers in these occupations may need some formal or on-the-job training but may not necessarily enroll in a college.*

Figure 3.1A: Number of Allied Health Job Ads



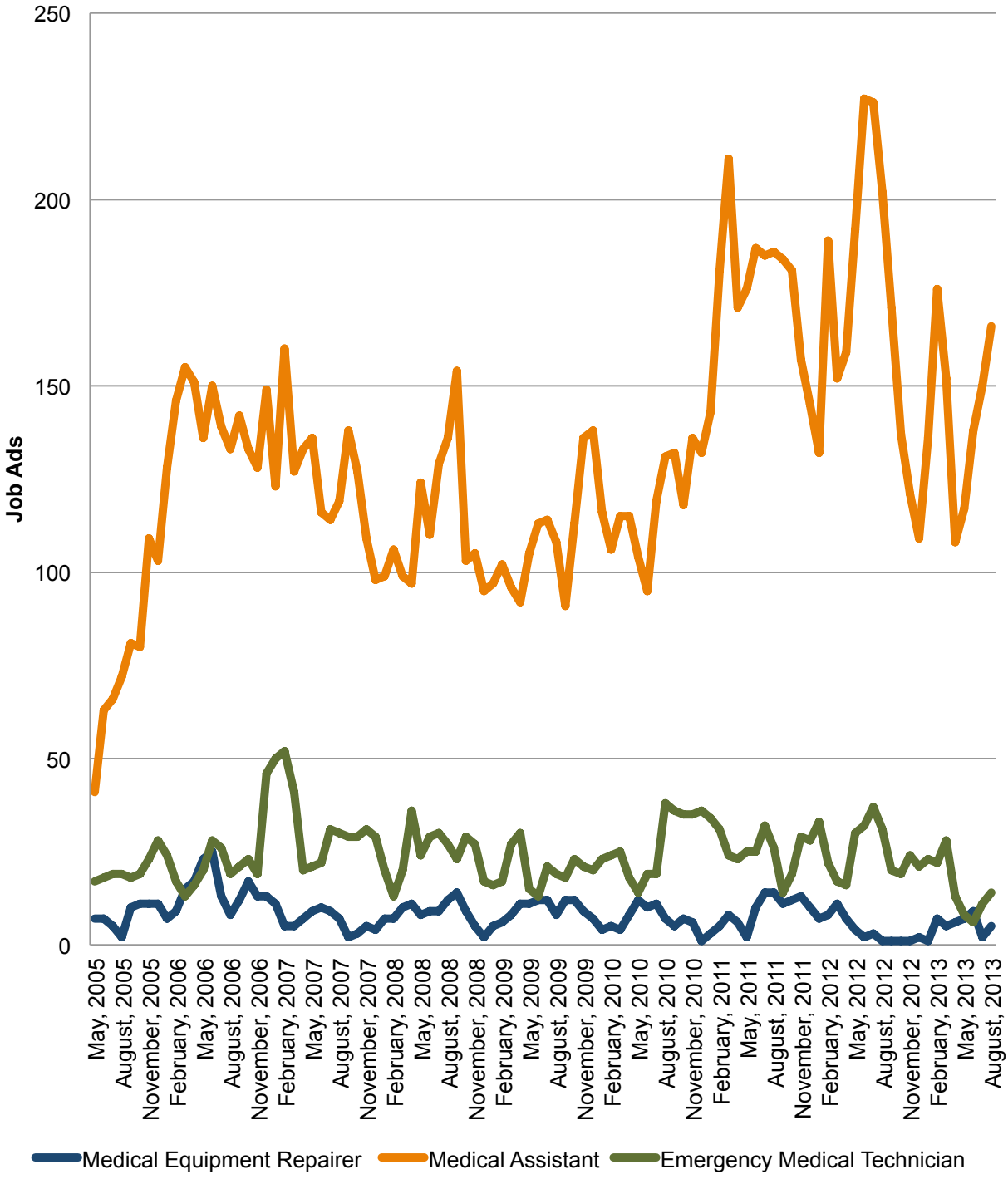
*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.1B: Allied Health Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.1C: Allied Health Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

The following tables present skills and certifications requested by employers for the two Allied Health/Other occupations with the most job ads, and the smallest number of potential applicants relative to job ads.

Medical and Health Services Managers

Table 3.3 illustrates the top 10 desired specialized skills for Medical and Health Services Managers requested by employers in 2012. These skills were requested by employers in job postings and represent 85 percent of job ads in 2012.

Table 3.3: Desired Specialized Skills for Medical and Health Services Managers

Specialized Skills	% of Job Ads
Patient Care	14.96%
Business Development	12.40%
Clinical Experience	10.86%
Case Management	10.56%
Scheduling	7.83%
Nurse Management	7.54%
Contract Management	6.11%
Financial Management	5.22%
Staff Development	5.16%
Therapy	5.16%

Source: Burning Glass; N=1,685; 85 percent of job ads

Table 3.4 illustrates the top 10 desired baseline skills for Medical and Health Services Managers requested by employers in 2012. These skills were requested by employers in job postings and represent 85 percent of job ads in 2012. Baseline skills are interpersonal and broadly applicable, in contrast to specialized skills, which correspond to a person's skill set and ability to perform a certain type of task or activity.

Table 3.4: Desired Baseline Skills for Medical and Health Services Managers

Baseline Skills	% of Job Ads
Leadership	39.64%
Communication Skills	36.08%
Organizational Skills	31.16%
Writing	30.21%
Management	26.82%
Planning	22.91%
Supervisory Skills	21.54%
Problem Solving	19.64%
Project Management	15.19%
Research	13.77%

Source: Burning Glass; N=1,685; 85 percent of job ads

Table 3.5 illustrates the certifications requested by employers. Only 38 percent of job ads contained information on desired certifications for Medical and Health Services Managers; therefore, this sample may not be representative of employer demand.

Table 3.5: Desired Certifications for Medical and Health Services Managers

Certification	% of Job Ads
Registered Nurse	56.02%
First Aid CPR AED	11.37%
Project Management Certification (e.g., PMP)	9.61%
Basic Cardiac Life Support Certification	7.31%
Nursing Specialty Certification	5.95%
Certified Public Accountant	3.38%
Social Work License	3.11%
Certified Case Manager	2.71%
Certified Dialysis Nurse	2.44%
Licensed Professional Counselor	1.76%

Source: Burning Glass; N=739

Table 3.6 illustrates desired education levels for Medical and Health Services Managers. Sixty-seven percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories show.

Table 3.6: Desired Degrees for Medical and Health Services Managers

Degree Level	% of Job Ads
High School	4%
Postsecondary or Associate Degree	8%
Bachelor Degree	70%
Graduate or Professional Degree	49%

Source: Burning Glass; N=1,316

Table 3.7 illustrates the desired experience skills for Medical and Health Services Managers requested by employers in 2012.

Table 3.7: Desired Experience for Medical and Health Services Managers

Experience Level	% of Job Ads
1 to 4 years	44.19%
4 to 7 years	32.78%
7+ years	21.01%
Less than 1 year	2.03%

Source: Burning Glass; N=1,333; 67 percent of job ads

Table 3.8 presents the top five employers in Northern Virginia with the most job postings for Medical and Health Services Managers in 2012.

Table 3.8: Top Employers for Medical and Health Services Managers

Employer	Job Openings
Inova Health System	202
Deloitte Development LLC	52
Hospital Corporation of America	40
George Mason University	39

Source: Burning Glass

Surgical Technologists

Table 3.9 illustrates the top 10 desired specialized skills for Surgical Technologists requested by employers in 2012. Only 41 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.9: Desired Specialized Skills for Surgical Technologists

Specialized Skill	% of Job Ads
Surgical Technician	52.78%
Surgery	47.22%
Aseptic Technique	31.48%
Patient Positioning	14.81%
Patient Preparation	13.89%
Sterile Instrument Preparation	13.89%
Gynecology	12.96%
Acute Care	10.19%
Surgical Technology	9.26%
Patient Care	9.26%

Source: Burning Glass; N=108

Table 3.10 illustrates the top 10 desired baseline skills for Surgical Technologists requested by employers in 2012. As with the specialized skills, only 41 percent of job ads contain information on desired baseline skills; therefore, the sample may not be representative of employer demand.

Table 3.10: Desired Baseline Skills for Surgical Technologists

Baseline Skill	% of Job Ads
Communication Skills	28.70%
Writing	15.74%
Organizing and Maintaining Clean Work Area	13.89%
English	12.96%
Organizational Skills	11.11%
Building Effective Relationships with Customers / Co-Workers	10.19%
Management	9.26%
Customer Service	8.33%
Troubleshooting	7.41%
Positive Disposition	7.41%

Source: Burning Glass; N=108

Table 3.11 illustrates the certifications requested by employers for Surgical Technologists. Only 41 percent of job ads contained information on desired certifications for Surgical Technologists; therefore, this sample may not be representative of employer demand.

Table 3.11: Desired Certifications for Surgical Technologists

Certification	% of Job Ads
Certified Surgical Technician	62.60%
Certified Surgical Technologist	25.20%
Certified Scrub Technician	11.38%
Certified Network Systems Technician (CNST)	8.94%
Basic Cardiac Life Support Certification	8.13%
Operating Room Technician	5.69%
Certified Sterile Processing Technician	5.69%
Certified Public Accountant	5.69%
Acute Care Certification	1.63%
Chartered Financial Analyst (CFA)	1.63%

Source: Burning Glass; N=123

Table 3.12 illustrates the desired degrees for Surgical Technologists. Only 19 percent of job ads contain information on desired degrees; therefore, sample may not be representative of employer demand. The table lists both the preferred and required education levels. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.12: Desired Degrees for Surgical Technologists

Degree Level	% of Job Ads
High School	82%
Bachelor Degree	6%
Graduate or Professional Degree	18%

Source: Burning Glass; N=50

Table 3.13 suggests the top four employers in Northern Virginia with the most job postings for Surgical Technologists.

Table 3.13: Top Employers for Surgical Technologists

Employer
Inova Health System
Hospital Corporation of America
Kaiser Permanente
Sentara Health Care

Source: Burning Glass

Table 3.14 illustrates desired experience levels for Surgical Technologists. Only 26 percent of job ads contain information on desired experience. In addition, the list includes the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories show.

Table 3.14: Desired Experience for Surgical Technologists

Experience Level	% of Job Ads
1 to 4 years	71.64%
Less than 1 year	11.94%
4 to 7 years	11.94%
7+ years	4.48%

Source: Burning Glass; N=67

DENTAL

Stronger demand expected for dental assistants than for dental hygienists

Description of Occupational Group

The Dental Group comprises Dental Laboratory Technicians, Dental Assistants, and Dental Hygienists, which all represent support roles within a dental practice (*Table 3.15*).

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Dental Group employ about 8 percent of the Northern Virginia workforce under study in this report—ranking fourth alongside Rehabilitation & Therapy and Social & Human Services among total employed. Dental assistants were the fifth largest among the study occupations in 2011.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online and Burning Glass, NoVA employers have posted the highest number of job advertisements online for Dental Assistants within the Dental grouping. While hiring activity for Dental Assistants has increased since the Great Recession, the number of monthly ads remains below pre-recession levels (*Figure 3.2 on page 125*).

Employer Insights: According to a dental educator and practitioner, dentists' views vary on the value of the recently established Dental Assistant II certification. In this role, the DAII can assume responsibility, under a dentist's supervision, for restorative work—allowing the dentist to expand his or her scope of patient services. Older dentists, in this view, are less prone to delegate the "artistic" functions of restoration to ancillary staff, suggesting that demand for the Dental Assistant II could increase as the number of younger practitioners increases.

Dental Assistants more generally need better knowledge of the care and maintenance of instruments, and perhaps more importantly, an understanding of *why* they are doing certain tasks. Better teamwork skills are needed for dental assistants at all levels as well as Dental Hygienists. Employers believe that while newly educated Dental Hygienists are very well prepared clinically, they are not as skilled in "salesmanship," or presenting prospective services to patients. In this view, dental hygienists also need a better overall understanding of how a practice functions.

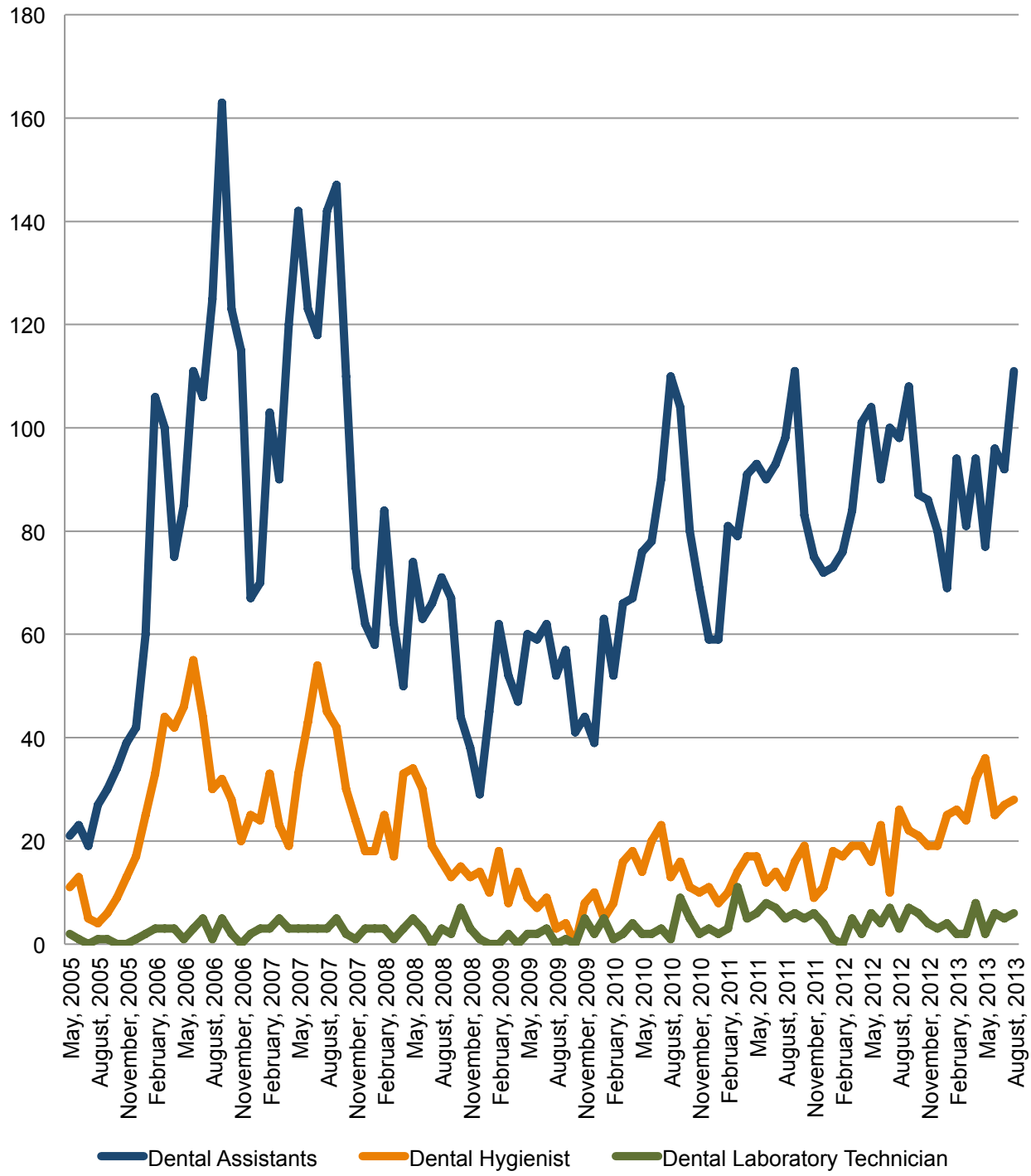
Table 3.15: Dental Occupations

SOC	29-2021	31-9091	51-9081
Occupation	**Dental Hygienists**	**Dental Assistants**	**Dental Laboratory Technicians**
May 2011 OES	1360	2680	290
2010 Jobs	1469	2706	308
2020 Jobs	2298	3933	316
% Change	56.4%	45.3%	2.6%
Job Openings Due to Growth	83	123	1
Job Openings Due to Replacement	40	71	16

Total Annual Openings	123	194	17
Median Hourly Earnings	$49.71	$17.8	$15.2
Avg. Hourly Earnings	$49.86	$18.17	$15.06
Regional Completions (2011)	96	70	5
Most Common Education	Associate or Bachelor degree	Postsecondary non-degree award	Moderate-term on-the-job training
2012 Job Ads	30	153	5
# of Potential NoVA Area Applicants per Job Opening	12	14	17
# of Potential NoVA Area Applicants per Job Ad	49	18	59
Virginia License holders	5,270	4 (DAII)	

Source: OES, EMSI, Burning Glass, IPEDS, Virginia Department of Health Professions

Figure 3.2: Dental Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Looking Ahead

Occupational Projections: All three of the Dental Group occupations are projected to increase in employment by 2020. While demand is currently low for Dental Hygienists, the number employed in the region is projected to increase by 56.4 percent, with a 45.3 percent increase in Dental Assistants. Dental Laboratory Technicians will see little growth at 2.6 percent.

The growing demand for dental assistants and the creation of the Dental Assistant II (DAII) certification follows a similar trend seen among medical providers—to increase the demand for support-role workers (certified nursing assistants, pharmacy technicians, physical therapy assistants, etc.) rather than those with higher-skill degrees. The DAII certification is a relatively new approach to training the dental assistant workforce, and while it is too soon to determine the impacts of the certification, it is likely that employer demand will continue to follow this path taken in the acute care medical setting.

Pipeline of New Workers

Regional education institutions offer training and degree programs in two of the three dental professions, graduating a total of 166 students in 2011. All Dental Assistant graduates (70) graduated from a single regional institution, while Dental Hygienists (96) graduated from two regional institutions.

Interviews with dental education providers said they receive many more applicants for the dental hygiene program than for dental assistant programs. However, they noted that dental hygiene students are having a hard time finding full-time employment, and some students take up to a year before securing employment—suggesting a need for getting current labor market information to prospective program applicants.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that all dental occupations have at least 12 potential applicants available to fill each job opening. As many as 49 Dental Hygienists and 59 Dental Laboratory Technicians are available to fill each opening recently advertised online—suggesting that workforce supply far outstrips employer demand. Dental Assistants have the smallest applicant pool to satisfy employer demand. As indicated in Table 3.16, turnover in Dental Assistants may be contributing to shortages.

Priority Workforce Need: Considering all available sources of labor market intelligence, the Dental Assistant occupation carries the greatest risk for workforce shortage. Northern Virginia should strengthen its recruitment and training pipeline in order to satisfy growing employer demand for Certified Dental Assistants.

Table 3.16: Approximate Turnover Rates for Selected Dental Occupations

Occupation	Proxies		
	Designated Education Class	Designated Industries	2011-12 Turnover
Dental Assistants	High School*	Dentist Offices	8.2%
Dental Hygienists	Some College or Associate Bachelor and Above	Dentist Offices	7.2% 5.9%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Dentists for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

** Workers in these occupations need some formal or on-the-job training but not necessarily in a postsecondary institution.*

DIAGNOSTIC AND LABORATORY

Future workforce shortages most likely for Diagnostic Medical Sonographers

Description of Occupational Group

This occupational group encompasses technicians who operate diagnostic imaging technology or those who draw and analyze blood and other bodily fluids. Most of the Diagnostic and Laboratory occupations within the group require an Associate degree, with the exception of Medical and Clinical Laboratory Technologists, which requires a Bachelor's degree, or Phlebotomists, which requires postsecondary training and, in some cases, a non-degree award or certificate (*Table 3.17*).

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Diagnostic and Laboratory Occupations Group employ about 7 percent of the Northern Virginia study workforce—ranking fifth among total employed. Medical and Clinical Laboratory Technologists were the thirteenth largest occupation in 2011 among those analyzed here.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online and Burning Glass, NoVA employers have posted the highest number of job advertisements online within this occupational grouping for Radiologic Technologists and Technicians among diagnostic job ads, and Medical and Clinical Lab Technologists and Technicians among lab job ads (*Figures 3.3 and 3.4 on pages 131-132*).

Using Burning Glass analytics tools, JFF more closely examined job ads for Medical and Clinical Lab Technicians to identify qualifications that employers most commonly request. In job ads for Medical and Clinical Lab Technicians, employers are seeking candidates with a mix of patient direction, treatment planning, and patient care, who have strong communication skills and one to four years of experience, and who have attained at least a high school diploma (*Tables 3.20- 3.23*).

Employer Insights: Several employers reported lower demand for diagnostic tests because some patients have become more cost conscious while others lost health insurance during the recession. Demand for these services appears to be growing again. Across the region, an increasing number of freestanding radiology clinics are opening to provide access to testing in non-hospital settings. In addition, several hospitals reported difficulty in recruiting radiology techs, MRI/CT techs, and ultra-sonographers.

Table 3.17: Diagnostic Occupations

SOC	29-2032	29-2033	29-2037
Occupation	**Diagnostic Medical Sonographers**	**Nuclear Medicine Technologists**	**Radiologic Technologists and Technicians**
May 2011 OES	310	100	1140
2010 Jobs	287	102	1258
2020 Jobs	408	133	1569
Change	121	31	311
% Change	42.2%	30.4%	24.7%
Job Openings Due to Growth	12	3	31
Job Openings Due to Replacement	6	2	24
Total Annual Openings	18	5	55
Median Hourly Earnings	$44.48	$48.57	$34.73
Avg. Hourly Earnings	$44.11	$46.58	$35.37
Regional Completions (2011)	7	6	74
Most Common Education	Associate degree	Associate degree	Associate degree
2012 Job Ads	115	5	73
# of Potential NoVA Area Applicants per Job Opening	18	21	22

# of Potential NoVA Area Applicants per Job Ad	3	21	17
Virginia License holders			3,890

Source: OES, EMSI, Burning Glass, IPEDS

Table 3.18: Laboratory Occupations

SOC	29-2011	29-2012	n/a
Occupation	**Medical and Clinical Laboratory Technologists**	**Medical and Clinical Laboratory Technicians**	**Phlebotomists**
May 2011 OES	1,260	990	N/A
2010 Jobs	1,247	1,011	N/A
2020 Jobs	1,361	1,161	N/A
Change	114	150	N/A
% Change	9%	15%	N/A
Openings	399	382	N/A
Job Openings Due to Growth	11	15	N/A
Job Openings Due to Replacement	29	23	N/A
Total Annual Openings	40	38	N/A
Median Hourly Earnings	$33.49	$22.22	N/A
Avg. Hourly Earnings	$33.34	$24.12	N/A
Regional Completions (2011)	31	42	
Most Common Education	Bachelor degree	Associate degree	Postsecondary non-degree award
2012 Job Ads	164	364	279
# of Potential NoVA Area Applicants per Job Opening	32	27	N/A
# of Potential NoVA Area Applicants per Job Ad	8	3	N/A

Source: OES, EMSI, Burning Glass, IPEDS

Looking Ahead

Occupational Projections: Only one of the six occupations is projected to increase employment levels at a faster growth rate than the overall study average. Diagnostic Medical Sonographers is the fastest growing profession.

Pipeline of New Workers

Regional education institutions offer training and degree programs in five of the occupations graduating a total of 160 students in 2011. Radiologic Technologists and Technicians represented the bulk of new graduates (74) and completed degrees from two regional institutions.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that all the diagnostic and laboratory occupations had at least 18 applicants to fill each projected job opening. However, the number of job openings advertised online recently would suggest higher employer demand in three occupational fields—sharply lowering the applicant per job ratio. There are only three Diagnostic Medical Sonographers and Medical and Clinical Laboratory Technicians available per job ad. As indicated in Table 3.19, staff turnover in general hospitals may be contributing to shortages.

Priority Workforce Need: Considering all available sources of labor market intelligence, medical laboratory fields deserve special attention due to the sheer size of the technologist and technician labor market and signs of weakness in the applicant pool measured through job ads. In addition, demand for diagnostic workers also appears to be stronger than workforce supply.

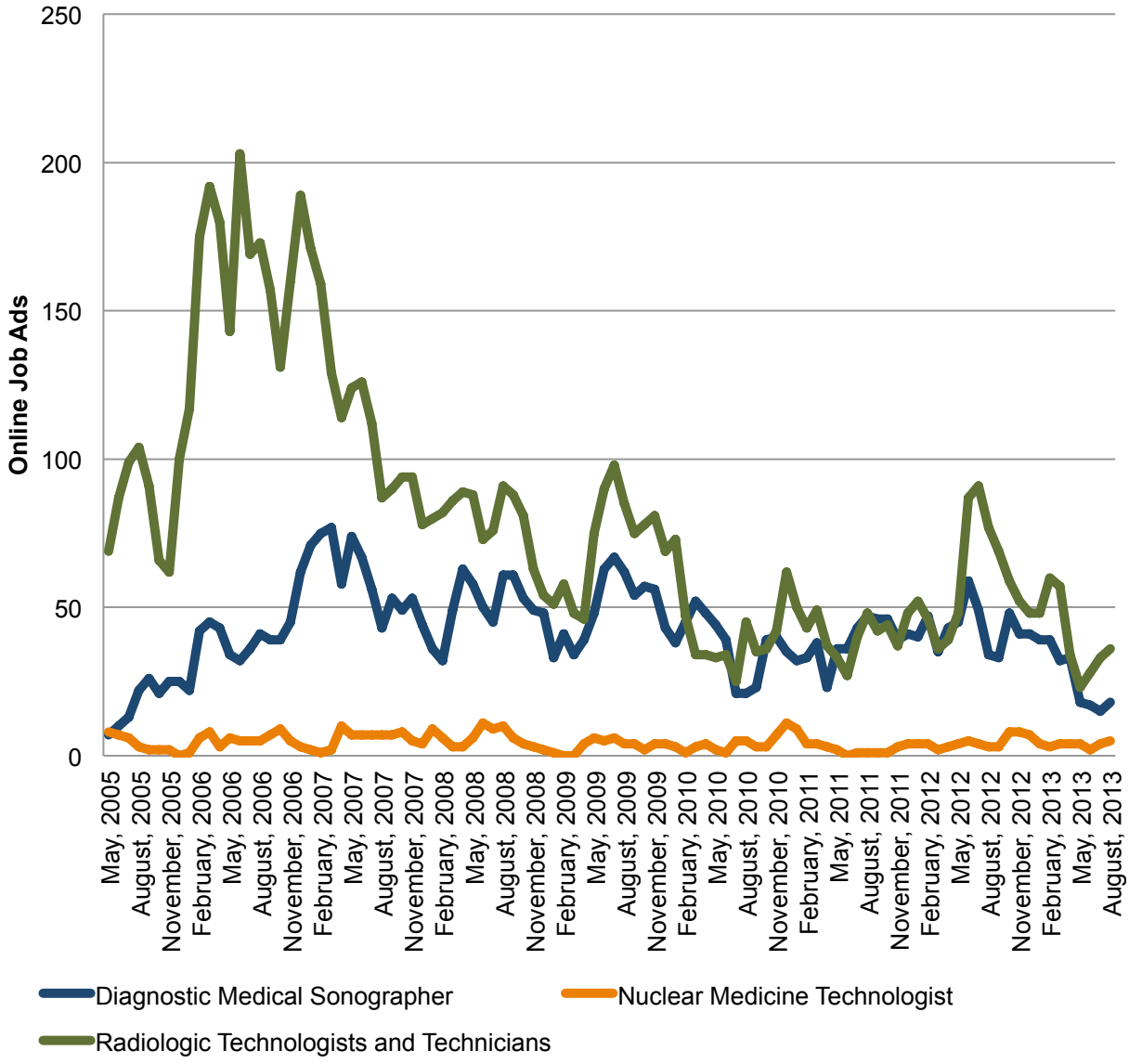
Table 3.19: Approximate Turnover Rates for Selected Diagnostic and Laboratory Occupations

Occupation	Proxies		
	Designated Education Class	Designated Industries	2011-2012 Turnover
Diagnostic Medical Sonographers	Some college or Associate degree	Med/Diagnostic Labs General Hospital	5.7% 9.9%
Medical and Clinical Laboratory Technicians	Some college or Associate degree	Med/Diagnostic Labs General Hospital	5.7% 9.9%
Medical and Clinical Laboratory Technologists	Bachelor degree	Med/Diagnostic Labs General Hospital	4.7% 9.1%

Radiologic Technologists and Technicians	Some college or Associate degree	Med/Diagnostic Labs General Hospital	5.7% 9.9%

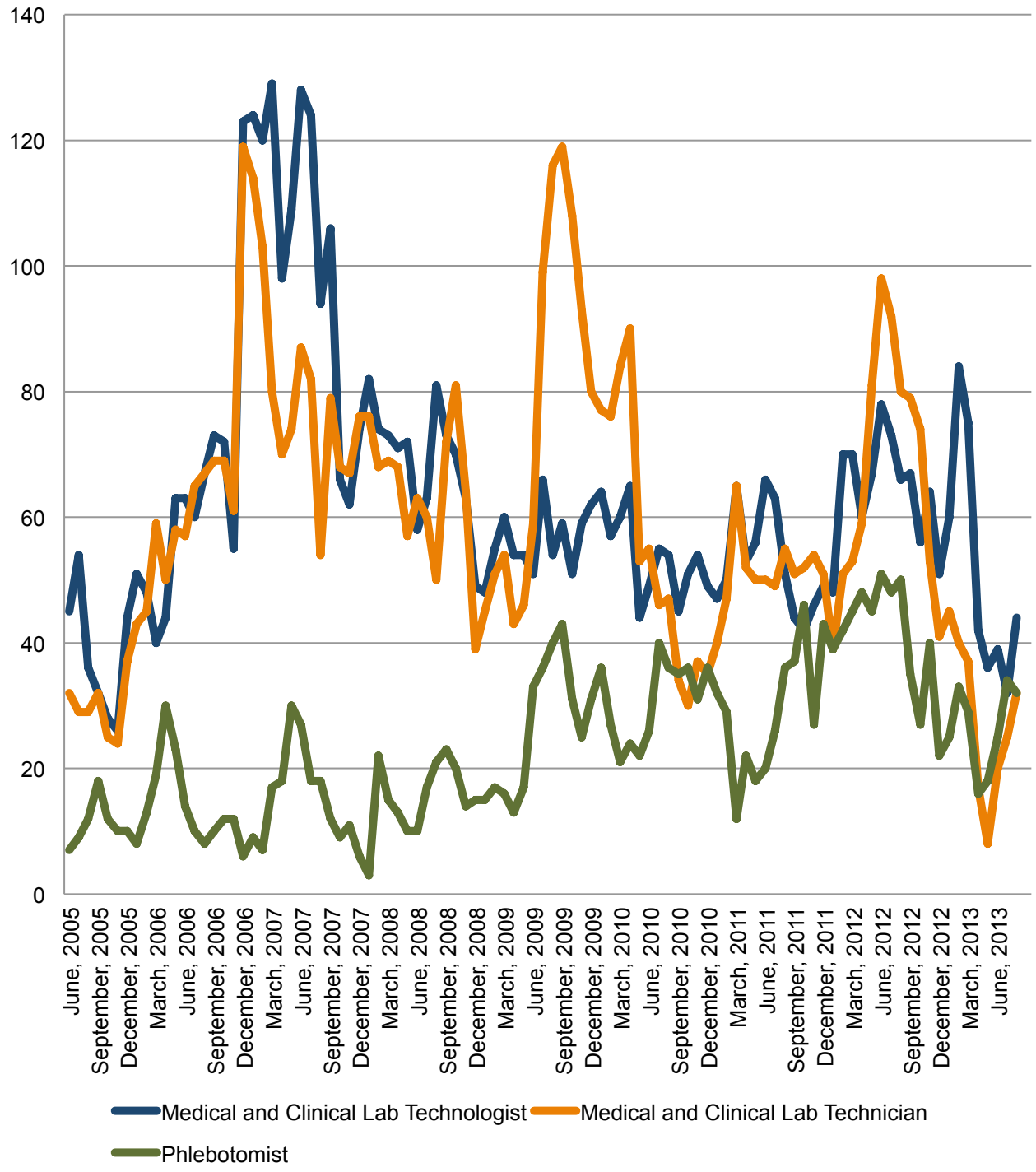
Source: Local Employment Dynamics: Quarterly Workforce Indicators for General and Surgical Hospitals and Medical and Diagnostic Laboratories for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

Figure 3.3: Diagnostic Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.4: Laboratory Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Table 3.20 illustrates the top 10 desired specialized skills for Medical and Clinical Lab Technicians requested by employers in 2012. These skills were requested by employers in job postings and represent 75 percent of job ads in 2012.

Table 3.20: Desired Specialized Skills for Medical and Clinical Lab Technicians

Specialized Skill	% of Job Ads
Patient Direction	56.00%
Treatment Planning	53.09%
Patient Care	52.00%
Long-Term Care	36.00%
Biology	10.18%
Chemistry	9.45%
Laboratory Procedures	8.36%
Telemetry	8.00%
Specimen Collection	7.64%
Laboratory Testing	6.91%

Source: Burning Glass; N= 275

The following tables present skills and certifications requested by employers for the diagnostic and laboratory occupations with the greatest number of job ads posted in 2012 (Medical and Clinical Lab Technicians and Phlebotomists). In the case of Lab Techs, the occupation is also highlighted because of the relatively small pool of applicants (three per job advertisement).

Table 3.21 illustrates the top 10 desired baseline skills for Medical and Clinical Lab Technicians requested by employers in 2012. These skills were requested by employers in job postings and represent 75 percent of job ads in 2012. Baseline skills are interpersonal and broadly applicable, in contrast to specialized skills, which correspond to a person's skill set and ability to perform a certain type of task or activity.

Table 3.21: Desired Baseline Skills for Medical and Clinical Lab Technicians

Baseline Skill	% of Job Ads
Communication Skills	53.09%
English	46.91%
Computer Skills	43.64%
Organizational Skills	11.64%
Quality Assurance and Control	10.55%
Writing	7.64%
Research	6.91%
Microsoft Office	6.91%
Typing	5.45%
Troubleshooting	5.45%

Source: Burning Glass; N= 275

Table 3.22, illustrates the certifications requested by employers. Only 41 percent of job ads contained information on desired certifications for Medical and Health Services Managers; therefore, this sample may not be representative of employer demand.

Table 3.22: Desired Certifications for Medical and Clinical Lab Technicians

Certification	% of Job Ads
Professional Development	72.48%
Emergency Medical Technician	72.48%
Certified Medical Laboratory Technician	7.38%
Phlebotomy Certification	5.37%
American Society For Clinical Pathology (ASCP) Certification	1.34%

Source: Burning Glass; N= 149

Table 3.23 illustrates desired education levels for Medical and Clinical Lab Technicians. Seventy-one percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.23: Desired Degrees for Medical and Clinical Lab Technicians

Degree Level	% of Job Ads
High School	84%
Postsecondary or Associate Degree	14%
Bachelor Degree	13%
Graduate or Professional Degree	15%

Source: Burning Glass; N=261

Table 3.24 illustrates the desired experience skills for Medical and Health Services Managers requested by employers in 2012.

Table 3.24: Desired Experience for Medical and Clinical Lab Technicians

Experience Level	% of Job Ads
1 to 4 years	66.22%
Less than 1 year	14.86%
4 to 7 years	14.86%
7+ years	4.05%

Source: Burning Glass; N=74

Table 3.25 suggests that Inova Health System and Quest Diagnostics Incorporated represents at least 5 percent of job ads.

Table 3.25: Top Employers for Medical and Clinical Lab Technicians

Top Employer
Inova Health System
Quest Diagnostics Incorporated

Source: Burning Glass

Phlebotomists

Table 3.26 illustrates the top ten desired specialized skills for Phlebotomists requested by employers in 2012. These skills were requested by employers in job postings and represent 59 percent of job ads in 2012.

Table 3.26: Desired Specialized Skills for Phlebotomists

Specialized Skill	% of Job Ads
Phlebotomy	100.00%
Venipuncture	71.60%
Specimen Collection	61.73%
Blood Samples	23.46%
Blood Draws	14.20%
Appointment Setting	10.49%
Laboratory Procedures	10.49%
Packaging	9.26%
Specimen Preparation	9.26%
Patient/Family Education and Instruction	9.26%

Source: Burning Glass; N=162.

Table 3.27 illustrates the top 10 desired baseline skills for Phlebotomists requested by employers in 2012. These skills were requested by employers in job postings and represent 85 percent of job ads in 2012. Baseline skills are interpersonal and broadly applicable, in contrast to specialized skills, which correspond to a person's skill set and ability to perform a certain type of task or activity.

Table 3.27: Desired Baseline Skills for Phlebotomists

Baseline Skill	% of Job Ads
Quality Assurance and Control	57.41%
Communication Skills	54.94%
Customer Service	51.23%
Clerical Duties	51.23%
Organizational Skills	50.62%
File Management	43.83%
Listening	12.35%
Typing	4.32%
Computer Skills	3.70%
Detail-oriented	3.09%

Source: Burning Glass; N=162

Table 3.28 illustrates the certifications requested by employers. Eighty-eight percent of job ads contained information on desired certifications for Phlebotomists; therefore, this sample may not be representative of employer demand.

Table 3.28: Desired Certifications for Phlebotomists

Certification	% of Job Ads
Phlebotomy Certification	96.77%
Certified Nursing Assistant	25.40%
Basic Cardiac Life Support Certification	2.42%
Clinical Laboratory Scientist (CLS)	0.81%

Source: Burning Glass; N=248

Table 3.29 illustrates desired education levels for Phlebotomists. Seventy-nine percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories show.

Table 3.29: Desired Degrees for Phlebotomists

Degree Level	% of Job Ads
High School	100%
Bachelor Degree	0%
Graduate or Professional Degree	1%

Source: Burning Glass; N=223

Table 3.30 illustrates the desired experience skills for Phlebotomists requested by employers in 2012. Only 46% of job ads specified experience, as a result, the chart may not be representative of employer demand.

Table 3.30: Desired Experience for Phlebotomists

Experience Level	% of Job Ads
1 to 4 years	92.06%
4 to 7 years	5.56%
Less than 1 year	2.38%

Source: Burning Glass; N=126

The employers noted in Table 3.31 represents at least 5 percent of job ads.

Table 3.31: Top Employers for Phlebotomists

Employer
Laboratory Corporation of America
Quest Diagnostics Incorporated
Kaiser Permanente
Hospital Corporation of America

Source: Burning Glass

DIRECT CARE

Shortage of Home Health Aides is looming if job growth is as strong as projected

Description of Occupational Group

The Direct Care Group comprises Home Health Aides, and Nursing Aides, Orderlies and Attendants. This employment group is comprised of low-skilled aide positions, which require little more than a postsecondary non-degree award and short-term on-the-job training (*Table 3.32*).

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Direct Care Group employ about 15 percent of the Northern Virginia study workforce—ranking third behind the Nursing and Allied Health Groups in total employed. Nurse Assistants were the second largest occupation employed in 2011, and Home Health Aides were seventh largest among the NoVA study occupations.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online, NoVA employers have posted an increasing number of job advertisements online for Home Health Aides. The number of monthly ads has nearly tripled since 2005 (*Figure 3.5 on page 142*). Meanwhile, demand for Nursing Aides, while not matching pre-recession levels, remains strong, as measured by online advertising.

Using Burning Glass analytics tools, JFF more closely examined job ads for Nursing Assistants to identify qualifications that employers most commonly request. In job ads for Nursing Assistants, employers are seeking candidates with a mix of patient care, vital signs recording, and patient assistance, who have a background in home health and at least four years of experience, and who have a high school diploma and attained the CNA designation (*Tables 3.34-3.36*).

Employer Insights: Employers agree that home health care is an area of significant employment growth in the region, due in large part to the aging population. Although the demand among employers is reportedly high, employers expressed a strong need for more standardized training. Some aides, however, are reluctant to take advantage of training subsidized by county government, particularly when on-the-job training is available. It was also reported that turnover is high, reflecting difficult work conditions, low wages and benefits, and for some, difficulty with accessing transportation.

Acute care employers are looking to Nursing Aides—in some cases referenced as Clinical Technicians or Patient Care Assistants—to assist in achieving lower costs while enabling nurses to function at a higher level. In at least one large NoVA system, this means reduced

hiring of nurses and expanded use of Clin Techs. Hospital employers are also expanding the responsibilities and performance expectations for this occupation. Among the skill needs cited for expanded Nursing Aide roles are strong interpersonal and caring abilities; assisting with Activities of Daily Living (ADLs), such as bathing, toileting, and dressing; hourly rounding of patients; participating on care teams; and documenting patient care in electronic medical records.

Table 3.32: Direct Care Occupations

SOC	31-1011	31-1012
Occupation	Home Health Aides	Nursing Aides, Orderlies, and Attendants
May 2011 OES	1,960	5,980
2010 Jobs	3,699	6,448
2020 Jobs	6,898	7,691
Change	3,199	1,243
% Change	86%	19%
Openings	3,940	2,231
Job Openings Due to Growth	320	124
Job Openings Due to Replacement	74	99
Total Annual Openings	394	223
Median Hourly Earnings	$10.50	$11.57
Avg. Hourly Earnings	$10.73	$12.00
Regional Completions (2011)	N/A	1,184
Most Common Education	Short-term on-the-job training	Postsecondary non-degree award
2012 Job Ads	75	384
# of Potential NoVA Area Applicants per Job Opening	5	32
# of Potential NoVA Area Applicants per Job Ad	26	19
Virginia License holders (2013)		66,484

Source: OES, EMSI, Burning Glass, Virginia Board of Nursing, Virginia Department of Health Professions

Looking Ahead

Occupational Projections: Between 2010 and 2020, the Home Health Aide occupation is projected to grow faster and create more new jobs than any other study field. The Nursing Aide field is expected to gain the third highest number of new jobs among study occupations but at a much slower growth rate.

Pipeline of New Workers

Regional education institutions offer training and non-degree programs in the Nursing Assistant occupation, certifying a total of nearly 1,184 students in 2011. As a result, NoVA employers will likely have a deep applicant pool to fill CNA job openings. Meanwhile, community colleges in the region are apprehensive about the future of home health care and the role of education programs. Given the limited resources that many educational institutions face, and the current reimbursement levels for home health care services resulting in low employee wages, there are no signs of formal degree programs taking shape. While employers feel the need for more standardized training, community colleges are hesitant to engage the industry due to the low wages typically paid by employers.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that Home Health Aide occupations have only five potential applicants available to fill each job opening. Nursing Aides, Orderlies, and Attendants have a larger applicant pool fill each job opening. As indicated in Table 3.33, double-digit turnover in Home Health Aide workers may be contributing to shortages.

Priority Workforce Need: Considering all available sources of labor market intelligence, the Home Health Aide field deserves special attention due to the sheer size of the labor force and strong projected job growth, as well as the needs of a growing aging population. Special attention should be paid to strengthening educational and career pathways from this low-paid profession to other patient care fields, such as nursing, while working with employers to improve working conditions and stem high turnover rates.

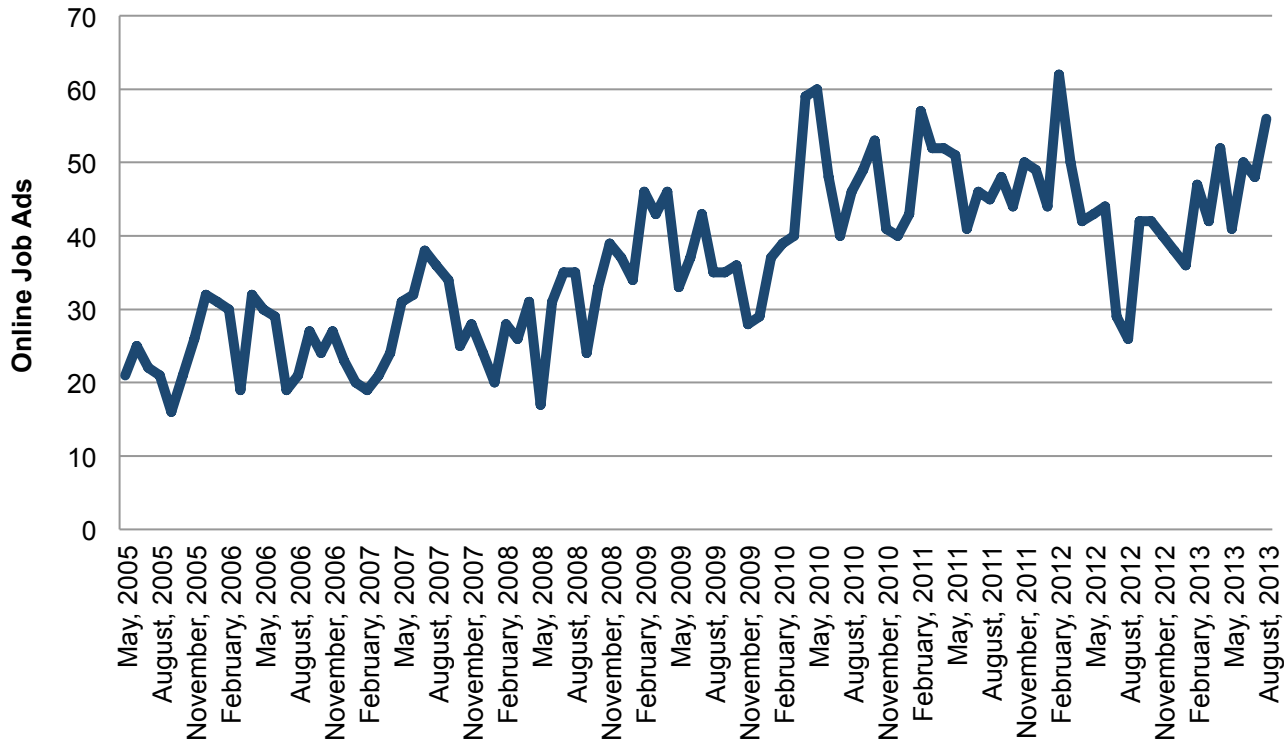
Table 3.33: Approximated Turnover Rates for Selected Direct Care Occupations

Occupation	Proxies		
	Designated Education Class	Designated Industries	2011-12 Turnover
Home Health Aides	No High School High School*	Home Health Agency	16.8% 15.8%
Nursing Aides, Orderlies, and Attendants	High School*	Nursing Home	7.8%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Home Health Agencies and Nursing and Rehabilitation Care Facilities for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

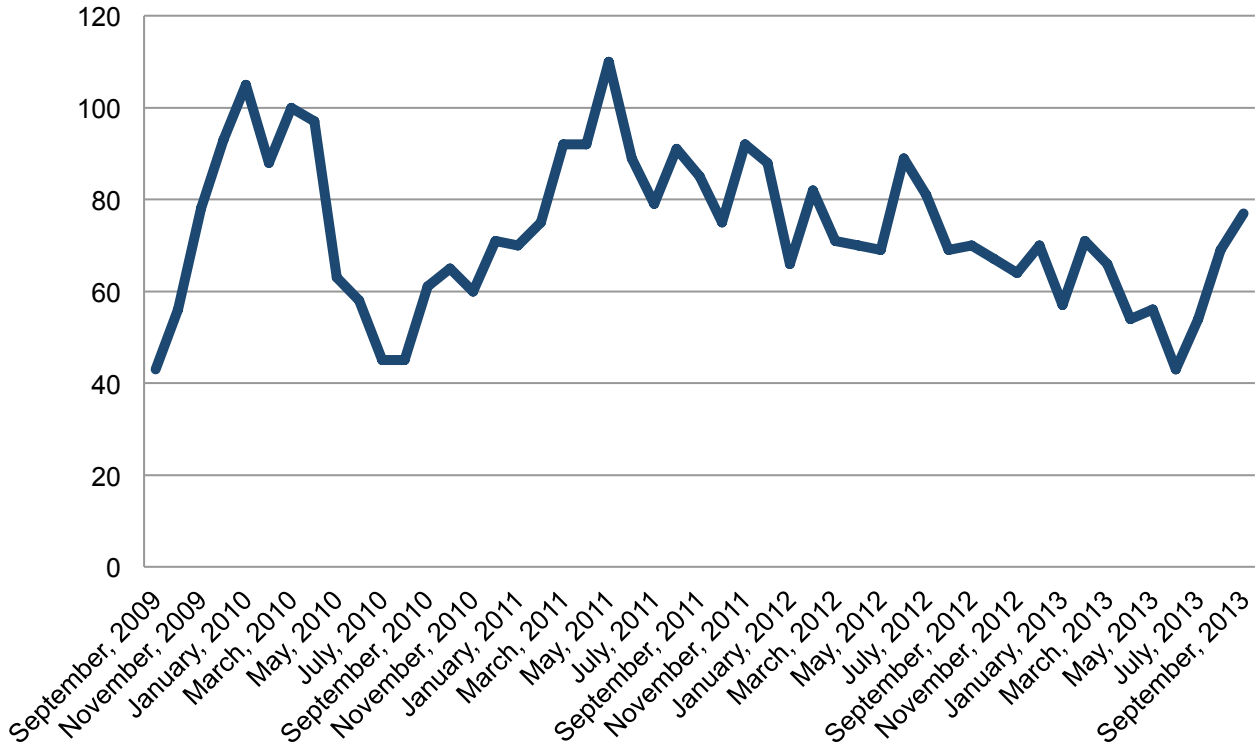
** Workers in these occupations need some formal or on-the-job training but may not necessarily enroll in a college.*

Figure 3.5: Home Health Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.6: Nursing Assistant Job Ads (2009-2013)



Source: ***Help Wanted Online*** *® (HWOL)*

Advertisements for Nursing Assistants indicate it was the largest occupation posted online in the Direct Care group. The following tables illustrate the skills and certifications desired by employers in the region.

Table 3.34 illustrates the top 10 desired specialized skills for Nursing Assistants requested by employers in 2012. Only 59 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.34: Desired Specialized Skills for Nursing Assistants

Specialized Skill	% of Job Ads
Patient Care	38.10%
Vital Signs Recording	16.40%
Patient Assistance	15.87%
Home Health	15.87%
Scheduling	14.81%
Therapy	14.29%
Patient Hygiene Assistance	14.29%
Appointment Setting	13.23%
Hospice	12.70%
Ambulatory Care	12.17%

Source: Burning Glass; N=189

Table 3.35 illustrates the top 10 desired baseline skills for Nursing Assistants requested by Employers in 2012. As with the specialized skills, only 59 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.35: Desired Baseline Skills for Nursing Assistants

Baseline Skill	% of Job Ads
Communication Skills	23.81%
English	19.58%
Listening	12.70%
Writing	10.58%
Customer Service	10.05%
Leadership	8.99%
Teaching	7.94%

Organizational Skills	6.88%
Problem Solving	5.29%
Time Management	3.70%

Source: Burning Glass; N=189

Table 3.36 illustrates the certifications requested by employers. Sixty percent of job ads contained information on desired certifications for Nursing Assistants; therefore, this sample may not be representative of employer demand.

Table 3.36: Desired Certifications for Nursing Assistants

Certification	% of Job Ads
Certified Nursing Assistant	74.21%
First Aid CPR AED	23.16%
Home Health Aide	17.37%
Basic Cardiac Life Support Certification	13.68%
Phlebotomy Certification	11.58%
Emergency Medical Technician	11.05%
Certified Medical Assistant	10.00%
Geriatric Nursing Assistant	10.00%
American Heart Association Certificate	4.74%
Personal Care Assistant	4.74%

Source: Burning Glass; N=190

Table 3.37 illustrates desired education levels for Nursing Assistants. Sixty-seven percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.37: Desired Degrees for Nursing Assistants

Degree level	% of Job Ads
High School	98%
Postsecondary or Associate Degree	2%
Bachelor Degree	2%
Graduate or Professional Degree	3%

Source: Burning Glass; N=161; 51 percent of job ads. This report provides information on both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.38 illustrates desired experience levels for Nursing Assistants. Sixty-seven percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.38: Desired Experience for Nursing Assistants

Preferred/ Required Experience	% of Job Ads
7+ years	36.00%
1 to 4 years	33.00%
Less than 1 year	25.00%
4 to 7 years	6.00%

Source: Burning Glass; N=100; only 32 percent of job ads specified experience; therefore, sample may not be representative of employer demand

The employers listed in Table 3.39 represent at least 5 percent of job ads in 2012.

Table 3.39: Top Employers for Nursing Assistants

Employer
Hospital Corporation of America
Emeritus Senior Living
Kaiser Permanente
Davita Incorporated
Sentara Health Care
Inova Health System
HCR ManorCare

*Source: Burning Glass; *Represents at least 5 percent of job ads*

HEALTH INFORMATION MANAGEMENT AND TECHNOLOGY

Shortage of HIM and HIT professionals is looming if job growth is as strong as projected

Description of Occupational Group

The HIM/HIT Group is represented by the health information technology and medical records position. In the standard definition of this position from the BLS Occupational Employment Statistics, it requires a postsecondary non-degree (*Table 3.40*). Note, however, *the official definition and associated educational requirements lag behind current labor market trends driven by technology, policy, and other changes in delivery of health care*—suggesting that employment in this group may demand higher skills and credentials than indicated. As noted elsewhere in this report, the OES data on this position is used to allow consistent comparison across time and occupations, using federal data sets and projections. It represents the closest fit with several occupations requested in this study, including Clinical Coder, Registered Health Information Technicians (RHIT)—usually requiring an Associate degree—and Registered Health Information Analyst (RHIA), which often requires a Bachelor's degree.

Another limitation of the federal definition of Medical Records and Health Information Technicians is that it does not clearly distinguish "Health Information Management," which focuses on acquiring, analyzing, and protecting digital and traditional medical information, and "Health Information Technology," which focuses on the design and support of information technology and systems in health care. Both federal datasets consulted for this report and real time data on job ads in Northern Virginia lack clear categories that differentiate information

management and information *technology* occupations in health care. Moreover, industry and educational sources, including NoVA HIT/HIM survey and focus group participants, see some blurring and overlap of HIT and HIM knowledge, skills, and tasks required by employers of HIM and HIT candidates in functions such as integration and management of electronic medical records (EMR).

A helpful analogy for differentiating HIM and HIT activities is that of the circulatory system, where health information management specializes in blood and its properties (health data), while health information technology focuses on the heart and circulatory system that pumps and conveys blood throughout the body (IT infrastructure).

The occupational category of "Medical Records and Health Information Technician" was developed prior to the development of electronic health records and other recent applications of information technology to health care; it has traditionally encompassed administrative functions such as medical billing and coding of medical records data for insurance and revenue purposes. These occupations typically required postsecondary certifications requiring less than one year. Today, it includes both entry-level roles, such as "Clinical Data Coder" and "Health Information Technician" and higher skilled occupations—requiring Associate, Bachelor's, or higher degrees—involving management of coding and allied functions ("HIM Manager"), or analysis of data captured in new systems ("Clinical Information Analyst").

HIT positions are more closely associated with the infrastructure that supports health information, including electronic medical records, such as "EHR Implementation Specialists" and "Clinical Informatics Coordinators." Other HIT positions involve the development of systems and support functions for making health information accessible and usable; roles in this category range from Support Technicians and Retrieval Specialists to higher skilled Programmers and Systems Analysts.

The data captured for this report is weighted towards the HIM side of this occupational group. Where possible, the analysis below will distinguish findings unique to HIT functions.

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, the occupation comprising the HIM/HIT Group employs about one percent of the Northern Virginia study workforce—ranking last in total employed.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online and Burning Glass, NoVA employers have posted a generally increasing number of monthly ads (*Figure 3.7*).

Using Burning Glass analytics tools, JFF more closely examined job ads for Medical Records and Health Information Technicians to identify qualifications that employers most commonly request. In job ads, employers are seeking candidates with a mix of health information, medical

coding, and communication skills, who have a background in health information, one to four years of experience, and who have attained postsecondary or Associate and higher degrees (*Tables 3.41-3.45*).

Employer Insights: In Health Information Management, Clinical Data Coders are one of the eight study occupations that NoVA hospitals report having difficulty filling. Upgrading of coding systems and staff to ICD-10 is also a pressing issue, but employers interviewed were not anticipating additional hiring on a large scale. They are outsourcing a portion of HIM work to contractors, who compete with health care employers for hiring experienced coders.

The role of HIT is playing an increasingly important role in the acute clinical care setting. Accordingly, employer demand for HIT staff is growing as well. Area hospitals report that their greatest hiring needs lie in recruiting candidates into traditional IT roles who have specific experience in health care and related IT systems. They are also recruiting health professionals with technology and analytic skills into newly created roles, such as nursing informatics.

The adoption of electronic medical records is changing the skill expectations of employers. Workers in both HIM and HIT roles are increasingly expected to have knowledge of EMRs. The staffing for integration and support of EMRs is especially challenging in smaller, outpatient settings, where there is less capacity to train staff in proprietary systems, such as the widely used EPIC, as well as in understanding the electronic health environment. Employers also stress the need—for both HIM and HIT workers—for strong interpersonal and presentation skills, given their role in educating physicians and other health professionals, as well as the ability to work with EMRs and data analysis.

Looking Ahead

Occupational Projections: HIM/HIT occupations are projected to increase employment levels nearly as fast as the overall study average, at a rate of 27 percent.

Pipeline of New Workers

Regional education institutions offer training and non-degree certificate programs in HIM/HIT professions, certifying a total of nearly 114 students in 2011. The vast majority of graduates completed Medical Records and Health Information Technician programs offered at three regional schools.

In an effort to meet the demand for these positions, community colleges and four-year colleges are increasingly offering HIM and HIT programs. One educational institution recently began a Master's level HIT program, which focuses on the business management side of HIT, while other schools are in the process of increasing Health Informatics and Health Information Technology programs due to strong demand by students.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that HIM/HIT occupations have 20 potential applicants available to fill each projected job opening. If recent online hiring activity holds true, there may be only one applicant available per opening.

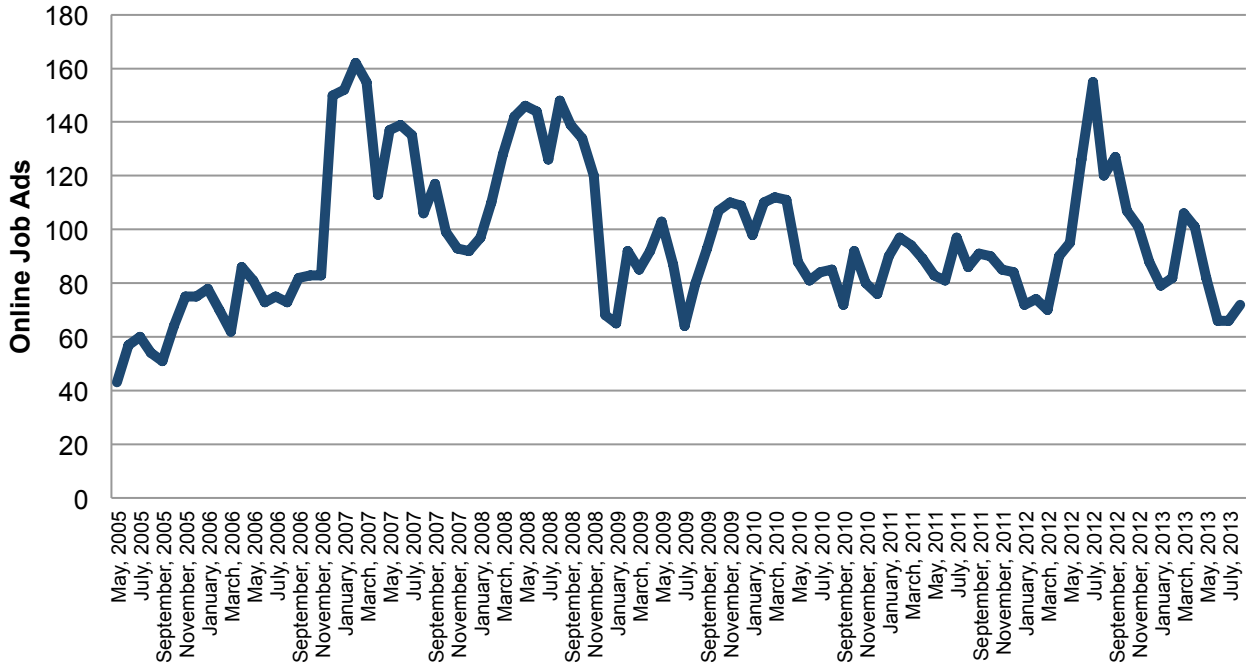
Priority Workforce Need: Considering all available sources of labor market intelligence, the region should monitor and, if necessary respond to, possible shortages of clinical coders and/or health information technicians, particularly those with prior experience in acute care. Also critical are clinicians with training in IT and in informatics.

Table 3.40: HIM/HIT Occupations

SOC	29-2071
Occupation	Medical Records and Health Information Technicians
May 2011 OES	780
2010 Jobs	864
2020 Jobs	1,101
Change	237
% Change	27%
Openings	445
Job Openings Due to Growth	24
Job Openings Due to Replacement	21
Total Annual Openings	44
Median Hourly Earnings	$20.28
Avg. Hourly Earnings	$21.89
Regional Completions (2011)	114
Most Common Education	Postsecondary non-degree award (but may require Associate, Bachelor, or higher degrees)
2012 Job Ads	614
# of Potential NoVA Area Applicants per Job Opening	20
# of Potential NoVA Area Applicants per Job Ad	1

Source: OES, EMSI, Burning Glass, IPEDS

Figure 3.7: HIM/HIT Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Table 3.40: Desired Specialized Skills for Medical Records and Health Information Technicians

Specialized Skill	% of Job Postings
Health Information	20.67%
Medical Coding	19.69%
Health Information Technology	15.55%
Business Process	11.22%
Medical Records	9.06%
Epic Systems	6.69%
Validation	6.50%
Outpatient Coding	6.50%
Systems Integration	6.30%
Oracle	6.30%

Source: Burning Glass; N=508; 82 percent of job ads

Table 3.41: Desired Baseline Skills for Medical Records and Health Information Technicians

Baseline Skills	% of Job Postings
Communication Skills	34.06%
Organizational Skills	30.12%
Writing	25.79%
Leadership	23.23%
Planning	18.31%
Project Management	16.54%
Microsoft Excel	14.96%
Management	14.57%
Research	14.17%
Problem Solving	13.58%

Source: Burning Glass; N=508; 82 percent of job ads

Table 3.42: Desired Certifications for Medical Records and Health Information Technicians

Certification	% of Job Postings
Registered Health Information Administrator	36.13%
Registered Health Information Technician	34.19%
Certified Professional Coder	24.52%
Certified Coding Specialist	20.00%
Certified Professional Coder-Hospital Outpatient	10.32%
Project Management Certification (E.G. PMP)	7.10%
Registered Nurse	6.45%
Certified Public Accountant	6.45%
Medical Billing And Coding Certification	5.16%
Basic Cardiac Life Support Certification	4.52%

Source: Burning Glass; N=155; only 26 percent of job ads specified certifications; therefore, sample may not be representative of employer demand.

Table 3.43: Desired Degrees for Medical Records and Health Information Technicians

Degree Level	% of Job Postings
High School	24%
Postsecondary or Associate Degree	18%
Bachelor Degree	71%
Graduate or Professional Degree	28%

Source: Burning Glass; N=406; 66 percent of job ads. Lists both the preferred and required education levels listed in job postings. For this reason, a job posting may be counted in more than one of the educational categories shown

Table 3.44 Top Employers* for Medical Records and Health Information Technicians

Employer
Inova Health System
Northrop Grumman
General Dynamics

Source: Burning Glass

**Represents at least 5 percent of job ads*

Table 3.45: Desired Experience for Medical Records and Health Information Technicians

Experience Level	% of Job Postings
1 to 4 years	41.51%
4 to 7 years	32.88%
7+ years	21.56%
Less than 1 year	4.04%

Source: Burning Glass; N=371; 60 percent of job ads

REHABILITATION AND THERAPY

Eight of the ten Rehab/Therapy occupations are projected to increase employment levels at a faster growth rate than the overall study average

Description of Occupational Group

The Rehabilitation and Therapy Group comprises a diverse grouping of both middle- and high-skilled positions, including Chiropractors, Audiologists, and Occupational/Physical Therapists and Assistants (*Table 3.46*).

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Rehab/Therapy Group employ about 8 percent of the Northern Virginia study workforce—ranking fourth in total employed, ranking alongside Dental, and Social and Human Services.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online and Burning Glass, NoVA employers have posted the highest number of job advertisements online in the Rehab/Therapy grouping for Physical Therapists (PT) and Occupational Therapists (OT). In both occupations, the number of monthly ads has generally increased since 2005 (*Figure 3.8*). Aside from these two occupations, Burning Glass also has captured strong hiring demand for Physical Therapy Assistants (PTA).

Using Burning Glass analytics tools, JFF more closely examined job ads for PTs and OTs to identify qualifications that employers most commonly request. In job ads, employers are seeking candidates with a mix of physical/occupational therapy, treatment planning, writing, and computer skills; who have at least four years of experience; and who have attained advanced degrees (*Tables 3.47-3.58*).

Employer Insights: NoVA employers have generally found it difficult to sufficiently fill job openings for PTs and OTs. To address the shortage of therapists, some employers have begun recruiting for PT and OT positions earlier than in the past, while others have partnered with regional colleges to create a pipeline of PT and OT workers.

Table 3.46A: Rehabilitation and Therapy Occupations

SOC	29-1011	31-9011	29-1127	29-1181
Occupation	**Chiropractors**	**Massage Therapists**	**Speech-Language Pathologists**	**Audiologists**
May 2011 OES	380	930	790	60

2010 Jobs	446	2,771	1,019	82
2020 Jobs	630	3,891	1,351	117
Change	184	1,120	332	35
% Change	41%	40%	33%	43%
Openings	314	1,696	576	50
Job Openings Due to Growth	18	112	33	4
Job Openings Due to Replacement	13	58	24	2
Total Annual Openings	31	170	58	5
Median Hourly Earnings	$28.14	$16.51	$44.41	$48.69
Avg. Hourly Earnings	$31.58	$16.21	$44.75	$50.98
Regional Completions (2011)		213	49	49
Most Common Education	First professional degree	Postsecondary non-degree award	Master's degree	First professional degree
2012 Job Ads	4	109	191	12
# of Potential NoVA Area Applicants per Job Opening	12	7	14	22
# of Potential NoVA Area Applicants per Job Ad	95	10	4	9
Virginia License holders	1,683	6,533	3,111	467

Table 3.46B: Rehabilitation and Therapy Occupations

SOC	29-2091	29-1123	31-2021
Occupation	**Orthotists and Prosthetists***	**Physical Therapists**	**Physical Therapist Assistants**
May 2011 OES	N/A	1,030	230
2010 Jobs	103	1,189	331
2020 Jobs	119	1,589	486
Change	16	400	155
% Change	16%	34%	47%
Openings	46	613	225
Job Openings Due to Growth	2	40	16
Job Openings Due to Replacement	3	21	7
Total Annual Openings	5	61	22
Median Hourly Earnings	$45.16	$43.25	$21.74
Avg. Hourly Earnings	$49.38	$44.06	$22.16
Regional Completions (2011)		167	30
Most Common Education	Master's degree	First professional degree	Associate degree
2012 Job Ads	0	699	165
# of Potential NoVA Area Applicants per Job Opening	21	20	12
# of Potential NoVA Area Applicants per Job Ad	N/A	2	2
Virginia License holders		6,663	2,653

Source: OES, EMSI, Burning Glass, and IPEDS, Virginia Department of Health Professions

** Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI*

Table 3.46C: Rehabilitation and Therapy Occupations

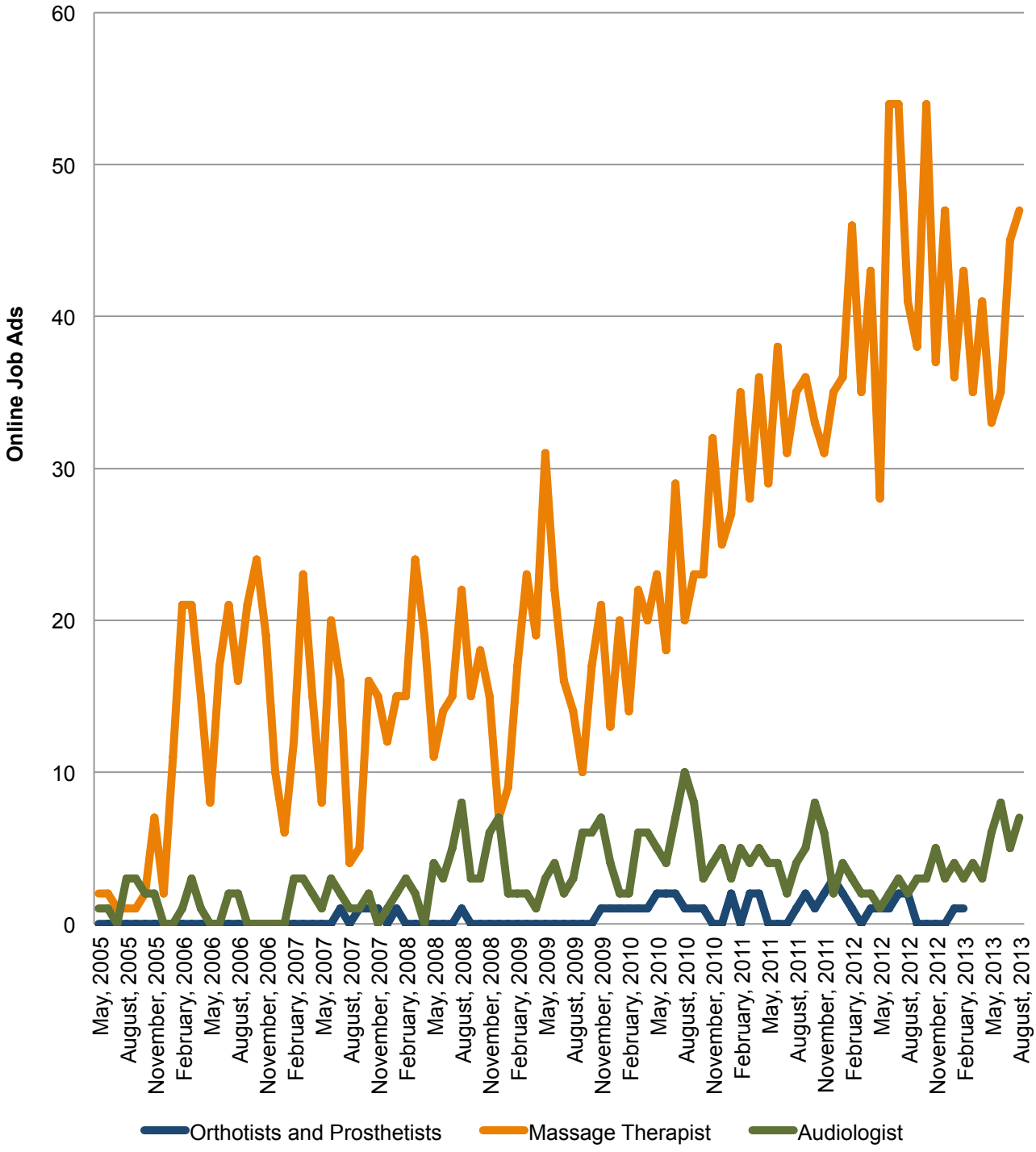
SOC	29-1122	31-2011	31-2012
Occupation	**Occupational Therapists**	**Occupational Therapy Assistants**	**Occupational Therapy Aides***
May 2011 OES	550	70	N/A
2010 Jobs	562	82	45
2020 Jobs	729	133	61
Change	167	51	16
% Change	30%	62%	36%
Openings	310	68	25
Job Openings Due to Growth	17	5	2
Job Openings Due to Replacement	14	2	1
Total Annual Openings	31	7	3
Median Hourly Earnings	$45.68	$26.88	$15.42
Avg. Hourly Earnings	$45.61	$27.71	$15.82
Regional Completions (2011)	26	14**	
Most Common Education	Master's degree	Associate degree	Short-term on-the-job training
2012 Job Ads	673	180	22
# of Potential NoVA Area Applicants per Job Opening	19	10	15
# of Potential NoVA Area Applicants per Job Ad	>1	>1	2
Virginia License holders	3,209	1,008	

Source: OES, EMSI, Burning Glass, IPEDS

**Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI.*

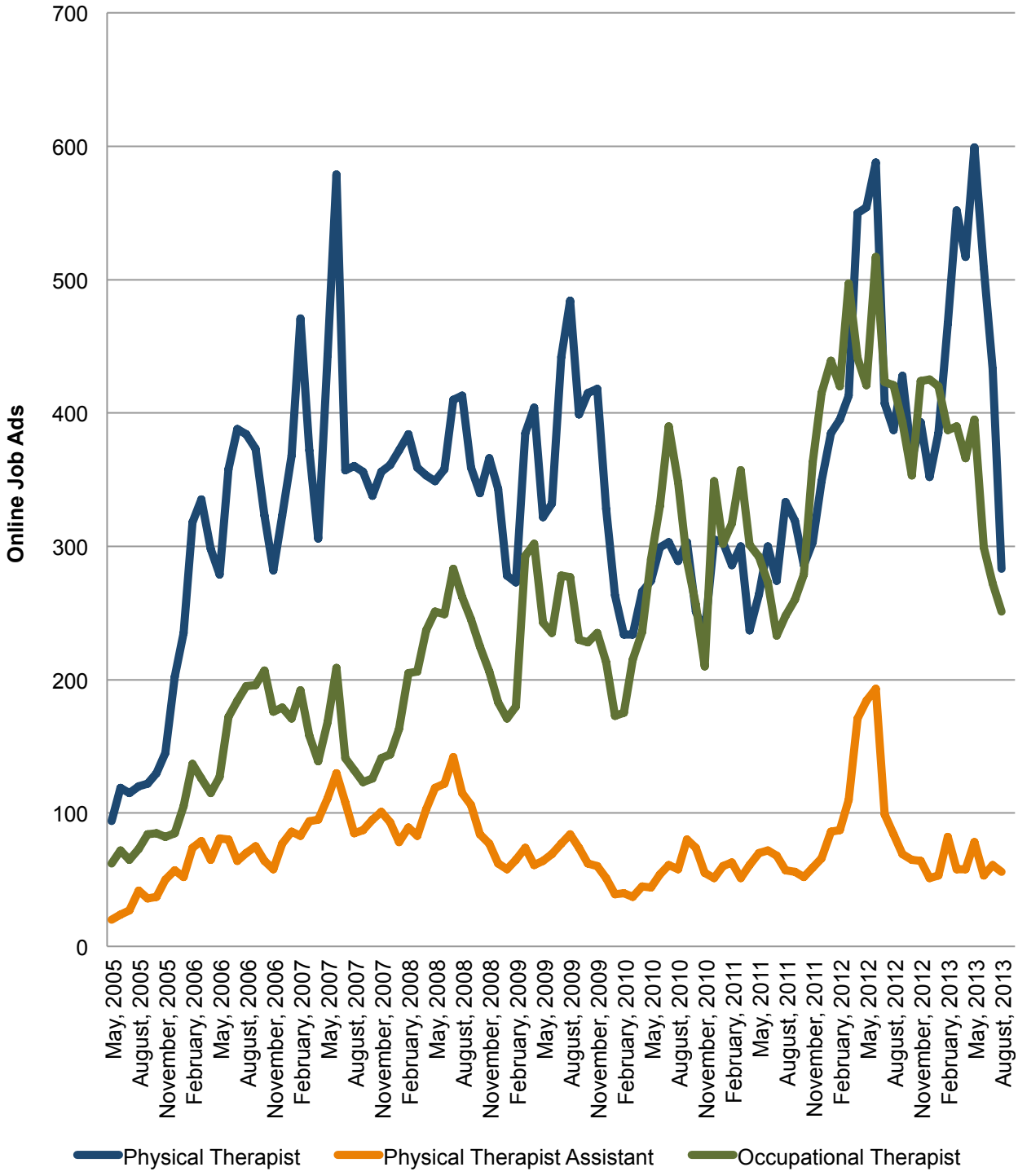
***Northern Virginia is expecting to graduate the first cohort of 14 students in spring 2015*

Figure 3.8A: Rehab/Therapy Job Ads



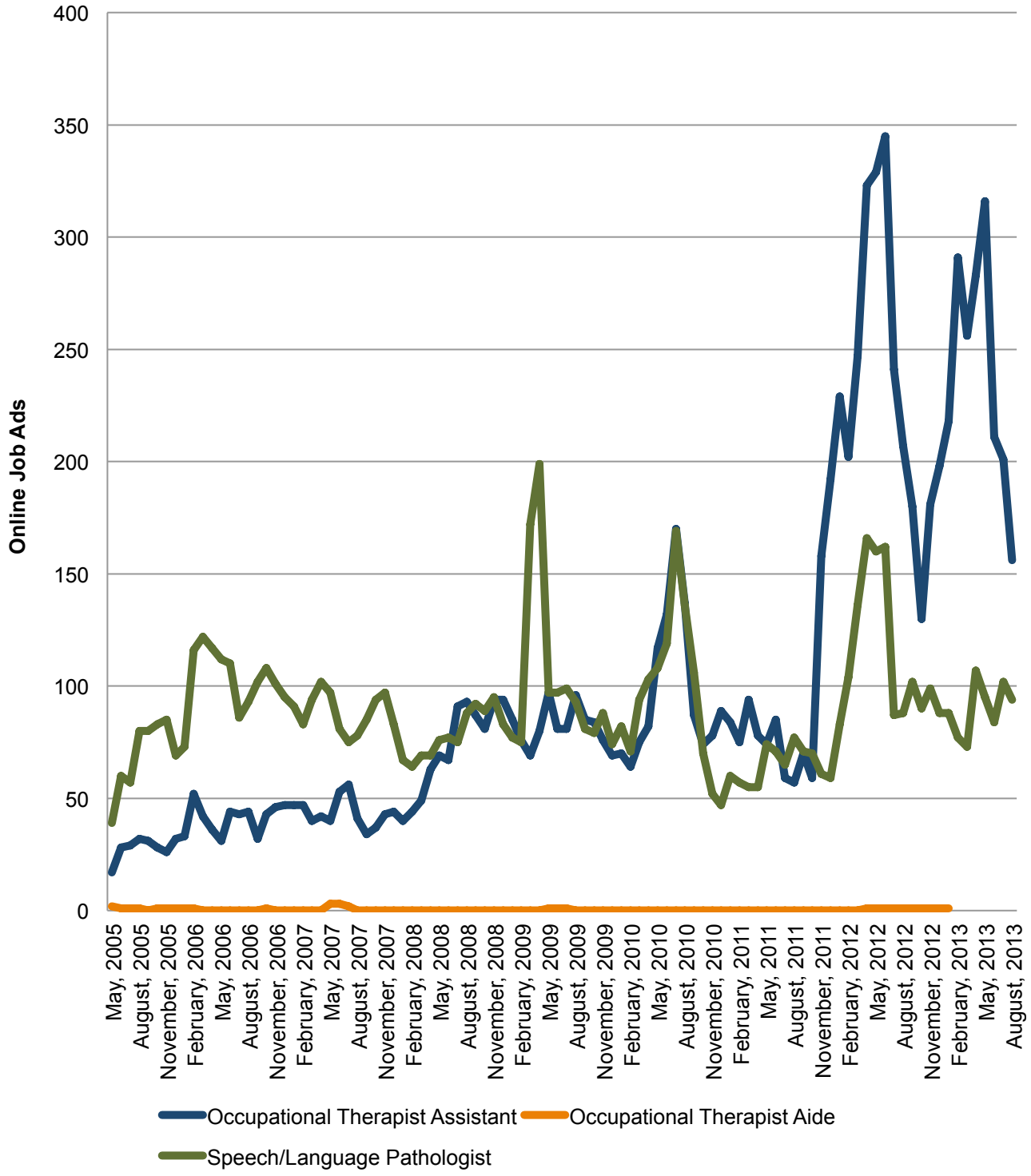
*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.8B: Rehab/Therapy Job Ads



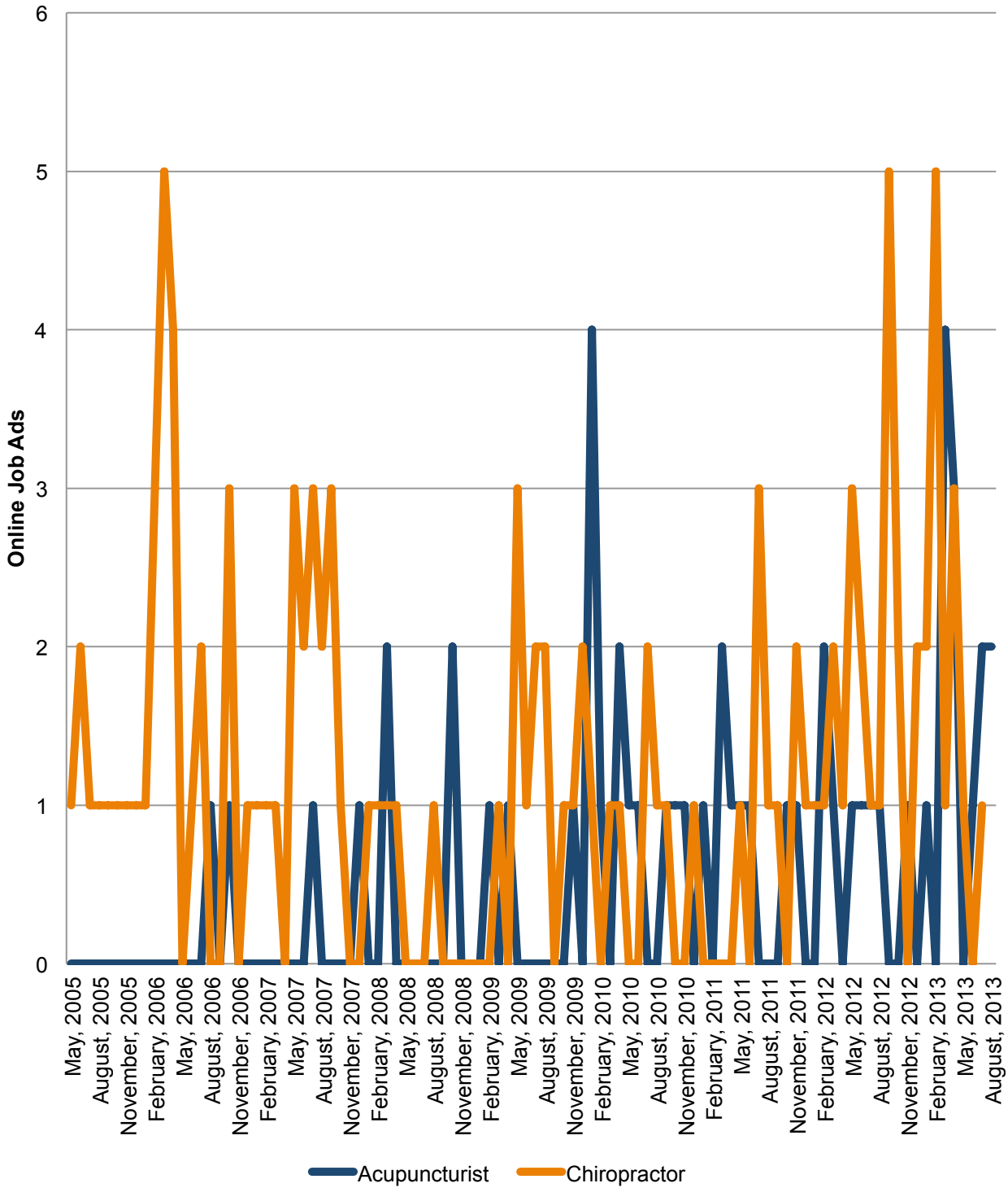
*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.8C: Rehab/Therapy Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 3.8D: Rehab/Therapy Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Looking Ahead

Occupational Projections: Eight of the ten Rehab/Therapy occupations are projected to increase employment levels at a faster growth rate than the overall study average. Occupational Therapy Assistant is the fastest growing profession, while Massage Therapists and Physical Therapy Assistants are also expected to grow faster than average.

Pipeline of New Workers

Regional education institutions offer training and degree programs in six of the ten Rehab/Therapy professions, graduating a total of 534 students in 2011. The vast majority of graduates completed programs offered at five regional schools.

The PT and OT supply challenges are not due to a lack of interest among potential therapists. Educational institutions report that demand for enrollment, as demonstrated by high numbers of applications for PT programs, regularly exceeds the number of classroom seats available. To meet the demand of employers, PT, OT, and PTA degree programs are actively seeking expansion.

Some employers point to the requirement that PTs earn a Doctor of Physical Therapy degree (DPT) rather than a Master's degree as one factor contributing to the supply/demand gap.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that the potential applicant pool available to fill each job opening is generally low across the therapy occupations. Based on recent online job ads, six fields have fewer than four applicants—Speech-Language Pathologists; Physical Therapists and Assistants; and Occupational Therapists, Assistants, and Aides. As indicated in Table 3.47, turnover among workers may be contributing to shortages.

Priority Workforce Need: Considering all available sources of labor market intelligence, the region should pay close attention to addressing potential shortages of PTs, and to the growing job demand and the potential for increased skill requirements for Physical Therapist Assistants and Occupational Therapist Assistants.

Table 3.47: Approximate Turnover Rate for Selected Rehab/Therapy Occupations, by Industry

Occupation	Proxies		
	Designated Education Class	Designated Industries	2011-12 Turnover
Audiologists	Bachelor's and Above	Offices of Other Health Practitioners	8.4%
Chiropractors	Bachelor's and Above	Offices of Other Health Practitioners	8.4%
Occupational Therapists	Bachelor's and Above	Offices of Other Health Practitioners	8.4%
Occupational Therapy Aides	High School*	Offices of Other Health Practitioners	10.4%
Occupational Therapy Assistants	Some College or Associate	Offices of Other Health Practitioners	9.6%
Physical Therapist Assistants	Some College or Associate	Offices of Other Health Practitioners	9.6%
Physical Therapists	Bachelor's and Above	Offices of Other Health Practitioners	8.4%
Speech-Language Pathologists	Bachelor's and Above	Offices of Other Health Practitioners	8.4%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Offices of Other Health Practitioners for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

** Workers in these occupations need some formal or on-the-job training but may not necessarily enroll in a college; According to Virginia Department of Health Professions survey of workers in 2012, 10 percent of Physical Therapists and 12 percent of Physical Therapist Assistants switched jobs over the past year.*

Physical Therapists

Table 3.48 illustrates the top 10 desired specialized skills for Physical Therapists requested by employers in 2012. Only 58 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.48: Desired Specialized Skills for Physical Therapists

Skill	% of Job Ads
Physical Therapy	99.01%
Treatment Planning	57.92%
American Physical Therapy Association (APTA)	21.04%
Occupational Therapy	19.06%
Therapy	15.84%
Physical Therapist Assistance	15.10%
Patient Care	14.85%
Clinical Experience	14.60%
Rehabilitation	13.86%
Home Health	13.37%

Source: Burning Glass; N=404

Table 3.49 illustrates the top 10 desired baseline skills for Physical Therapists requested by employers in 2012. As with the specialized skills, only 58 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.49: Desired Baseline Skills for Physical Therapists

Baseline Skills	% of Job Ads
Writing	28.71%
Computer Skills	25.99%
Lotus Notes	25.99%
English	25.74%
Research	7.43%
Organizational Skills	6.68%
Communication Skills	6.44%
Teaching	5.94%
Planning	2.72%
Problem Solving	1.73%

Source: Burning Glass; N=404

Table 3.50 illustrates the certifications requested by employers. Only 23 percent of job ads contained information on desired certifications for Nursing Assistants; therefore, the sample may not be representative of employer demand.

Table 3.50: Desired Certifications for Physical Therapists

Certification	% of Job Ads
First Aid CPR AED	71.70%
American Heart Association Certificate	18.24%
Basic Cardiac Life Support Certification	8.18%
Certified Medical Assistant	6.29%
Nurse Anesthetist	5.03%

Source: Burning Glass; N=159

Table 3.51 illustrates desired education levels for Physical Therapists. Only 22 percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.51: Desired Degrees for Physical Therapists

Degree Level	% of Job Ads
High School	3%
Postsecondary or Associate Degree	1%
Bachelor Degree	5%
Graduate or Professional Degree	97%

Source: Burning Glass; N=151

The employers listed in Table 3.52 represent at least 5 percent of job ads in 2012.

Table 3.52: Top Employers* for Physical Therapists

Employer
Inova Health System
Kindred Health Care Incorporated
HCR ManorCare
Kaiser Permanente

Source: Burning Glass

** Represents at least 5 percent of job ads*

Table 3.53 illustrates desired experience levels for Physical Therapists. Only 13 percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.53: Desired Experience for Physical Therapists

Experience Level	% of Job Ads
1 to 4 years	62.79%
4 to 7 years	32.56%
7+ years	3.49%
Less than 1 year	1.16%

Source: Burning Glass; N=86

Occupational Therapists

Table 3.54 illustrates the top 10 desired specialized skills for Occupational Therapists requested by employers in 2012. Only 49 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.54: Desired Specialized Skills for Occupational Therapists

Specialized Skills	% of Job Ads
Occupational Therapy	96.62%
Treatment Planning	36.31%
Physical Therapist Assistance	22.77%
Respiratory Therapy	20.00%
Medical Coding	19.69%
Certified Occupational Therapy Assistant	18.15%
Orthotics	16.62%
Histotechnology	16.62%
Scheduling	15.38%
Radiology	12.92%

Source: Burning Glass; N=325; 49 percent of job ads

Table 3.55 illustrates the top 10 desired baseline skills for Occupational Therapists requested by employers in 2012. As with the specialized skills, only 49 percent of job ads contain information on desired specialized skills; therefore, the sample may not be representative of employer demand.

Table 3.55: Desired Baseline Skills for Occupational Therapists

Baseline Skills	% of Job Ads
Writing	20.31%
Computer Skills	14.46%
English	13.85%
Communication Skills	10.15%
Planning	9.85%
Organizational Skills	8.92%
Lotus Notes	4.92%
Leadership	3.08%
Teaching	2.77%
Team Work	2.46%

Source: Burning Glass; N=325

Table 3.56 illustrates the certifications requested by employers. Only 28 percent of job ads contained information on desired certifications for Occupational Therapists; therefore, this sample may not be representative of employer demand.

Table 3.56: Desired Certifications for Occupational Therapists

Certification	% of Job Ads
First Aid CPR AED	66.67%
Nbcot	17.20%
Certified Medical Assistant	17.20%
Basic Cardiac Life Support Certification	3.76%
Nurse Anesthetist	3.23%

Source: Burning Glass; N=186

Table 3.57 illustrates desired education levels for Occupational Therapists. Only 20 percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.57: Desired Degrees for Occupational Therapists

Degree level	% of Job Ads
High School	5%
Postsecondary or Associate Degree	1%
Bachelor Degree	5%
Graduate or Professional Degree	90%

Source: Burning Glass; N=128

The employers listed in Table 3.58 represent at least 5 percent of job ads in 2012.

Table 3.58: Top Employers for Occupational Therapists

Employer
Inova Health System
Kindred Health Care Incorporated
Genesis Health Care Corporation
HCR ManorCare

Source: Burning Glass

Table 3.59 illustrates desired experience levels for Occupational Therapists. Only 10 percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 3.59: Desired Experience for Occupational Therapists

Experience Level	% of Job Ads
1 to 4 years	58.46%
7+ years	32.31%
Less than 1 year	7.69%
4 to 7 years	1.54%

Source: Burning Glass

SOCIAL AND HUMAN SERVICES

Three of the four Social and Human Services occupations are projected to increase employment levels at a faster growth rate than the overall study average, perhaps reflecting increased needs for patient education and navigation of community services

Description of Occupational Group

The Social and Human Services Group comprises high-skilled positions such as Community Service Managers and Social Workers, both of which require a Bachelor's degree. An exception is the position of Social and Human Service Assistant, which is most commonly open to individuals with short-term on-the-job training (*Table 3.60*).

Current Labor Market and Workforce Assessment

Current Employment Levels and Recent Trends: As noted earlier, occupations comprising the Social and Human Services Group employ about 8 percent of the Northern Virginia study workforce—ranking fourth in total employed alongside Dental and Rehab/Therapy. Child, Family, and School Social Workers were the sixth largest occupation employed in 2011.

Trends in Online Job Postings and Hiring Preferences: According to Help Wanted Online, NoVA employers have posted the highest number of job advertisements online (within the Social and Human Services group) for Social and Human Service Assistants, and Social and Community Service Managers. In both occupations, the number of monthly ads has increased since 2005 (*Figure 3.9*).

Employer Insights: According to interviews conducted with employers, one area hospital's case management department has established a working relationship with nearby long-term care facilities to better transition patients entering into long-term care and prevent returning to the hospital. With the ultimate goal of patient safety and improving the quality of care, educating patients with chronic diseases and referring them to community resources is a major focus among acute care providers. Some are engaging social workers as well as nurses to serve these "case management" and "navigation" functions. Nationally, there are signs that social work staff with less than a Bachelor's degree, such as Social and Human Service Assistants, are being engaged as navigators or similar patient education and coordination roles.[60]

Looking Ahead

Occupational Projections: Three of the four Social and Human Services occupations are projected to increase employment levels at a faster growth rate than the overall study average. Social Workers, and Social and Human Service Assistants are the fastest growing professions, while Child, Family, and School Social Workers has a below average projected growth rate.

Pipeline of New Workers

Regional education institutions offer training and degree programs in three of the four Social and Human Services professions, graduating a total of 242 students in 2011.

Applicant Pool: In comparing current workers and new entrants against future hiring demand, JFF finds that each Social and Human Service occupation has at least 15 potential applicants available to fill each job opening. Meanwhile, online hiring activity suggests the pool of applicants may be considerably smaller for Social and Human Service Assistants (8), other Social Workers (2), and Social and Community Services Managers (5).

Priority Workforce Need: Given the limited applicant pool for Social and Human Service Assistants and the absence of programs for training them, the region should consider strategies for recruiting and training for this occupation. As with other ancillary workers assuming new roles in implementing the Affordable Care Act goals of better patient care at lower cost (Medical Assistants, Nursing Assistants), Social and Human Service Assistants are a valuable resource, and could enable higher skilled employees to expand their reach with patients.

Table 3.60: Social and Human Services Occupations

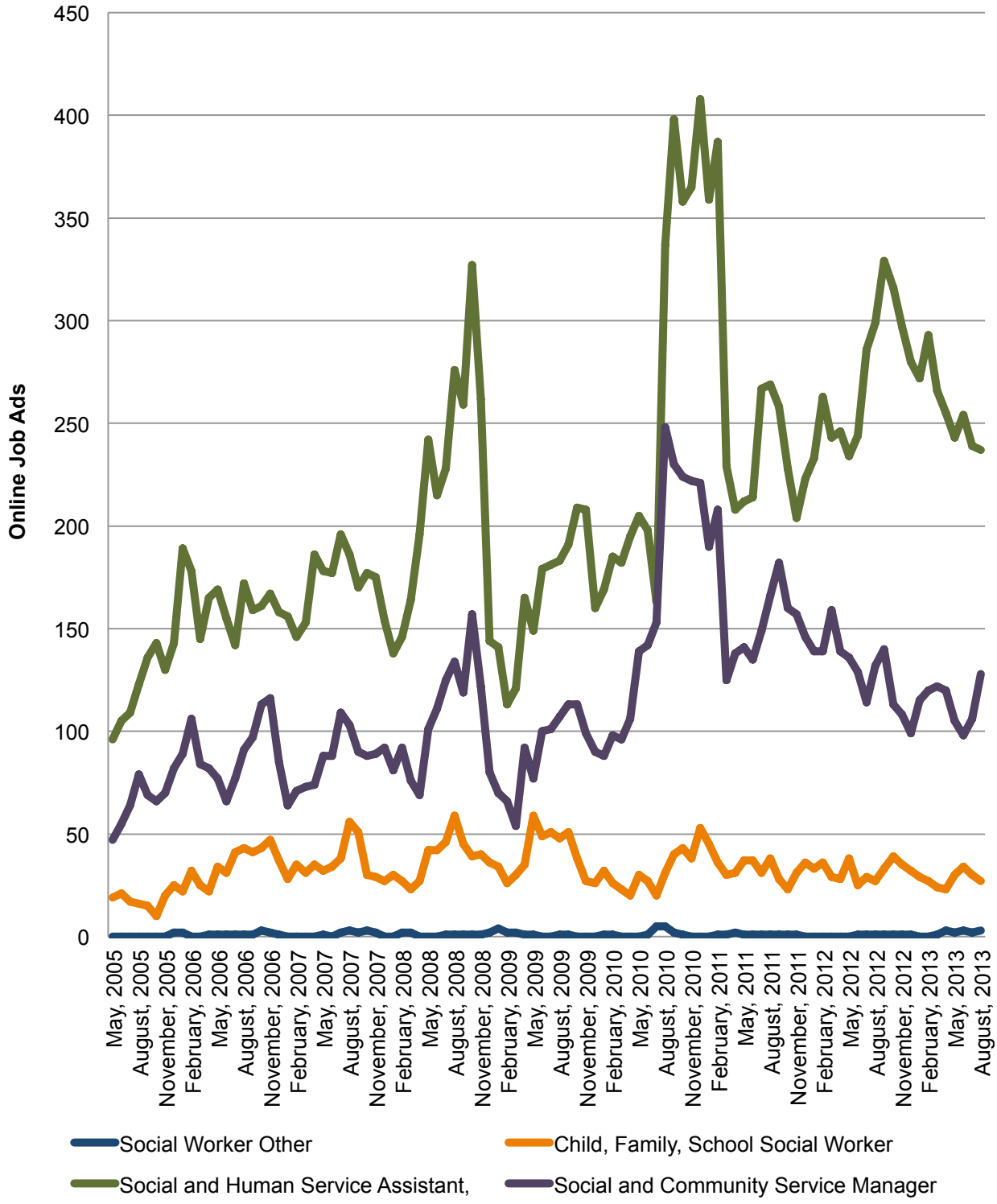
SOC	11-9151	21-1021	21-1029	21-1093
Occupation	Social and Community Service Managers	Child, Family, and School Social Workers	Social Workers, All Other*	Social and Human Service Assistants
May 2011 OES	520	2,000	N/A	1,430
2010 Jobs	643	1,980	261	1,539
2020 Jobs	850	2,403	351	2,065
Change	207	423	90	526
% Change	32%	21%	34%	34%
Openings	394	991	177	938
Job Openings Due to Growth	21	42	9	53
Job Openings Due to Replacement	19	57	9	41
Total Annual Openings	39	99	18	94
Median Hourly Earnings	$39.08	$25.58	$27.00	$14.32

Avg. Hourly Earnings	$39.65	$26.59	$26.61	$15.33
Regional Completions (2011)	86	78	78	
Most Common Education	Bachelor degree	Bachelor degree	Bachelor degree	Short-term on-the-job training
2012 Job Ads	123	65	208	169
# of Potential NoVA Area Applicants per Job Opening	16	21	19	15
# of Potential NoVA Area Applicants per Job Ad	5	32	2	8
Virginia License holders		5,468 LCSWs		

Source: OES, EMSI, Burning Glass, IPEDS, Virginia Department of Health Professions

**Study occupation for which OES does not provide current employment statistics; therefore, JFF calculated current workforce supply through 2010 projection data reported by EMSI.*

Figure 3.9: Social/Human Services



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

CHAPTER 4: NURSING WORKFORCE—SUPPLY, DEMAND, AND THE IMPACT OF THE INSTITUTE OF MEDICINE'S BSN RECOMMENDATIONS

This special section on nursing presents workforce supply and demand information similar to the other study occupations, and offers a broader examination of the future of nursing. In the context of the Institute of Medicine's recommendations for increasing the proportion of registered nurses with a Bachelor of Science in Nursing, this section considers employer and education provider perspectives on current and future hiring preferences, education program capacity, outcomes, and strategies, and implications for future supply and demand of nurses.

Description of Occupational Group

For the purposes of this study, the Nursing occupational group consists of registered nurses (RN) and licensed practical nurses (LPN). Within the RN classification, this chapter looks more closely at the demand and supply by credential level, including RNs with a Diploma in Nursing, an Associate of Applied Science (ADN), and a Bachelor of Science in Nursing (BSN).

Table 4.1: Nursing Occupational Group

SOC	29-1111	29-2061
Occupation	Registered Nurses	Licensed Practical and Licensed Vocational Nurses
May 2011 OES	14,000	3,430
2010 Jobs	13,950	3,888
2020 Jobs	16,707	4,744
Change	2,757	856
% Change	20%	22%
Openings	5,682	2,049
Job Openings Due to Growth	276	86
Job Openings Due to Replacement	293	119
Total Annual Openings	568	205
Median Hourly Earnings	$35.41	$22.43
Avg. Hourly Earnings	$36.39	$22.65
Regional Completions (2011)	911 completed ADN or BSN* 217 completed Master's and Doctorate programs	250
Most Common Education	Associate or Bachelor degree	Postsecondary non-degree award
2012 Job Ads	2,511	448
# of Potential NoVA Area Applicants per Job Opening	27	18
# of Potential NoVA Area Applicants per Job Ad	6	8
Virginia License holders	104,201	34,510

Source: OES, EMSI, Burning Glass, IPEDS, Virginia Department of Health Professions, Virginia Board of Nursing (for LPN completion totals).

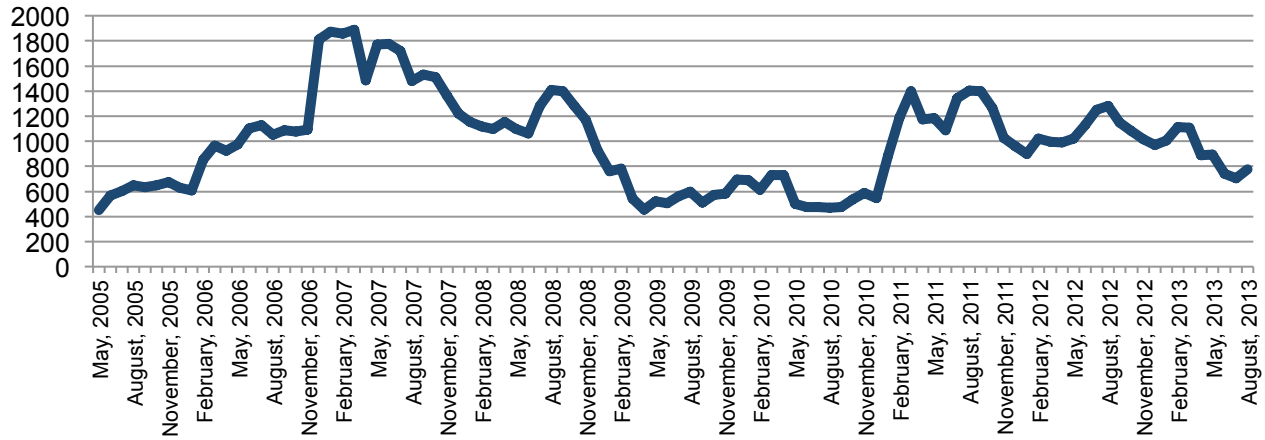
**Only ADN and BSN completers are factored into applicant pool. NCLEX data reports 785 RN graduates sat for the NCLEX in 2012.*

Current Labor Market and Workforce Assessment

Current Employment Levels: As described earlier in the report, the Nursing Occupational Group accounts for one-third of the Northern Virginia workforce employed in the 40 health care occupations examined in this study. Nursing is the leading source of employment among the eight occupational groups studied, due to the size of the RN workforce (*see Figure 2.15 in Chapter 2*). Registered nursing is the single largest source of employment, representing 20 percent of NoVA's study workforce—comprising a higher share than all other occupational groups except the Allied Health/Other group. Meanwhile, practical nursing is the third largest source of employment in Northern Virginia among all study occupations (*see Figure 2.16 in Chapter 2*).

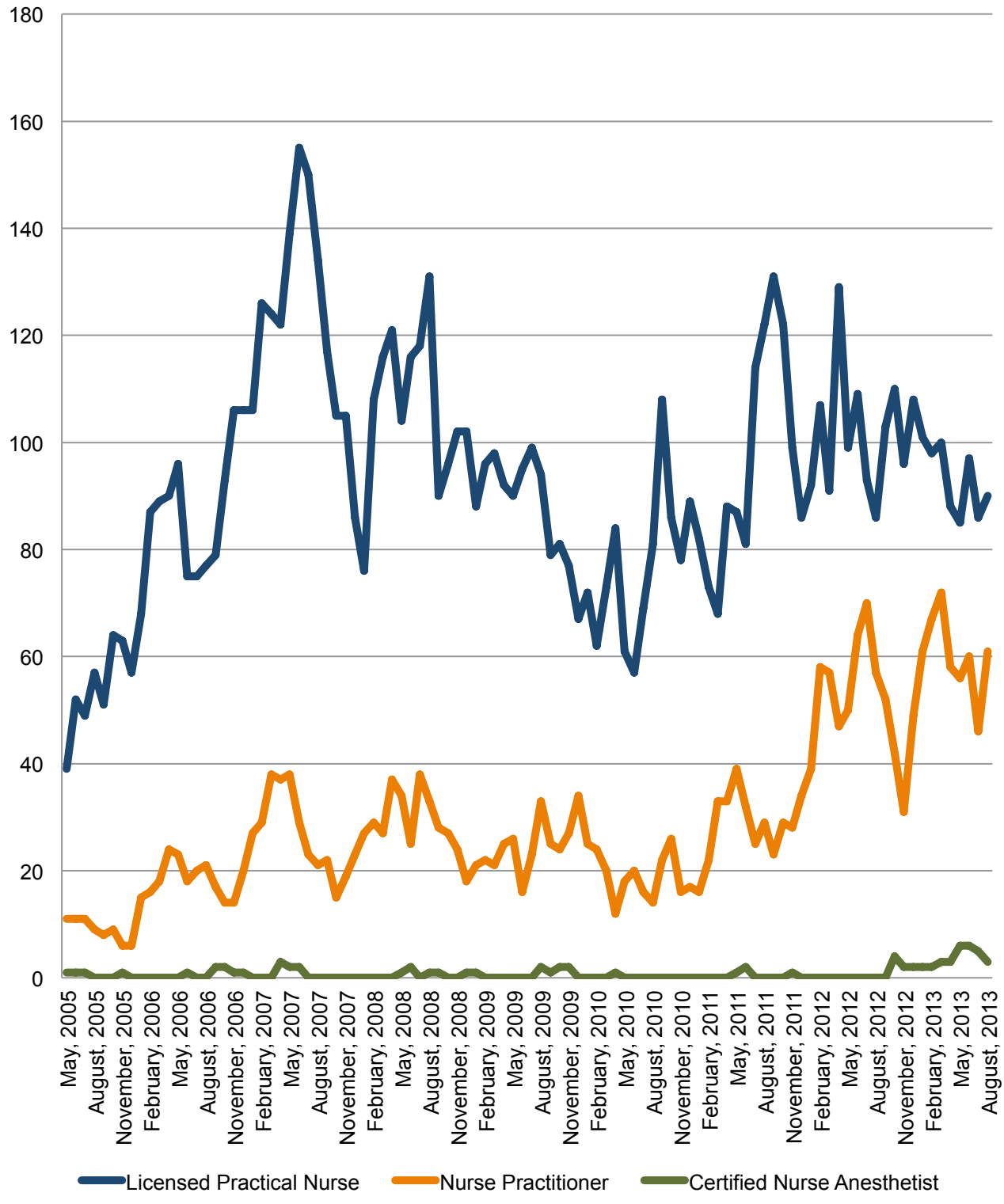
Trends in Online Job Postings and Hiring Preferences: Employers have consistently advertised more RN jobs online than any other occupation. According to Help Wanted Online, hiring activity for RNs reached its peak in March 2007 before plummeting during the Great Recession. Since then, hiring activity picked up for a period before declining once again, if to a lesser degree, in recent months (*Figure 4.1*). According to Burning Glass, demand for LPNs is also high, ranking number six among all study occupations in job ads posted online in 2012. Moreover, according to Help Wanted Online's data, demand for LPNs tracked fairly closely with demand for RNs. This source picked up a relatively small number of ads for advanced nursing roles (Nurse Practitioner and Certified Nurse Anesthetist). While demand for NPs has climbed since the recession's end, demand for Certified Nurse Anesthetists has remained relatively flat over time (*Figure 4.2*).

Figure 4.1: Registered Nurse Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Figure 4.2: Nursing Job Ads



*Source: The Conference Board **Help Wanted OnLine**® (HWOL)*

Using Burning Glass analytics tools, JFF more closely examined job ads for RNs and LPNs to identify qualifications that employers most commonly request. In job ads for RNs, employers are seeking candidates with a mix of clinical and interpersonal skills. Employers expressed preference for BSN and MSN candidates in two out of every three ads. In some ads, employers stated minimum and preferred levels of education, helping to explain why half of ads listed an Associate degree. Although degree requirements are creeping upward, nearly 80 percent of RN ads requested fewer than four years of prior work experience (*Tables 4.2-4.7*).

In job ads seeking LPNs, employers emphasized a host of clinical skills and certifications, as well as good verbal and written abilities. Two-thirds of job ads requested fewer than four years of prior work experience (*Tables 4.8-4.12*).

Table 4.2 illustrates the top 10 desired specialized skills for RNs requested by employers in 2012. These skills were requested by employers in job postings and represent 64 percent of job ads in 2012.

Table 4.2: Desired Specialized Skills for Registered Nurses

Specialized Skill	% of Job Postings
Patient Care	34.79%
Advanced Cardiac Life Support (ACLS)	17.64%
Patient Direction	15.80%
Patient/Family Education and Instruction	15.61%
Case Management	14.07%
Therapy	13.34%
Patient Evaluation	12.78%
Vital Signs Measurement	12.23%
Critical Care	11.49%
Treatment Planning	11.31%

Source: Burning Glass; N=1,627

Table 4.3 illustrates the top 10 desired baseline skills for RNs requested by employers in 2012. These skills were requested by employers in job postings and represent 85 percent of job ads in 2012. Baseline skills, unlike specialized skills, which correspond to a person's skill set and ability to perform a certain type of task or activity, are interpersonal and broadly applicable.

Table 4.3: Desired Baseline Skills for Registered Nurses

Baseline Skill	% of Job Postings
Communication Skills	30.12%
Writing	27.41%
Leadership	25.69%
English	23.36%
Computer Skills	23.29%
Problem Solving	20.96%
Organizational Skills	16.78%
Planning	14.14%
Critical Thinking	12.78%
Listening	10.57%

Source: Burning Glass; N=1,627

Table 4.4 illustrates the certifications requested by employers. Seventy-six percent of job ads contained information on desired certifications for RNs.

Table 4.4: Desired Certifications for Registered Nurses

Certification	% of Job Postings
Registered Nurse	92.16%
First Aid CPR AED	15.01%
Basic Cardiac Life Support Certification	11.99%
Advanced Cardiac Life Support (ACLS) Certification	10.96%
Critical Care Registered Nurse (CCRN)	5.50%
American Heart Association Certificate	5.40%
Certified Oncology Nurse	4.00%
Certified Nurse Operating Room (CNOR)	4.00%

Nursing Specialty Certification	3.63%
Certified Rehab Nurse	3.48%

Source: Burning Glass; N=1926

Table 4.5 illustrates desired education levels for RNs. Eighty-five percent of job ads list both the preferred and required education level. For this reason, a job posting may be counted in more than one of the educational categories shown.

Table 4.5: Desired Degrees for Registered Nurses

Preferred and/or Required Degree	% of Job Postings
Postsecondary or Associate Degree	50%
Bachelor Degree	40%
Graduate or Professional Degree	25%
Other	4%

Source: Burning Glass; N=2,143

Table 4.6 illustrates the top employers that represent at least five percent of job ads in 2012.

Table 4.6: Top Employers for Registered Nurses

Employer
Inova Health System
Hospital Corporation of America
Sentara Health care
Kaiser Permanente

*Source: Burning Glass; *Represents at least five percent of job ads.*

Table 4.7 illustrates the desired experience level for RNs requested by employers in 2012. Fifty-seven percent of records have been excluded because they did not include an experience level. As a result, the chart below may not be representative of the full sample.

Table 4.7: Desired Experience for Registered Nurses

Experience Level	% of Job Postings
1 to 4 years	78.18%
7+ years	7.96%
4 to 7 years	7.77%
Less than 1 year	6.09%

Source: Burning Glass; N=1,068

Table 4.8 illustrates the top 10 desired specialized skills for Licensed Practical Nurses requested by employers in 2012. Sixty-six percent of job ads in 2012 requested these skills.

Table 4.8: Desired Specialized Skills for Licensed Practical Nurses

Specialized Skill	% of Job Postings
Patient Care	34.46%
Medication Administration	29.39%
Health Promotion Programs	26.01%
Care Planning	20.61%
Pediatrics	17.23%
Smell and Taste	12.84%
Pediatric Home Health	12.84%
Immunizations	11.82%
Infection Control	9.46%
Inventory Maintenance	9.46%

Source: Burning Glass; N=296

Table 4.9 illustrates the top 10 desired baseline skills for Licensed Practical Nurses requested by employers in 2012. Eighty-five percent of job ads in 2012 requested these skills.

Table 4.9: Desired Baseline Skills for Licensed Practical Nurses

Baseline Skills	% of Job Postings
Communication Skills	48.65%
Teaching	30.07%
Writing	16.22%
English	14.19%
Computer Skills	10.81%
Building Effective Relationships with Customers / Co-Workers	9.80%
Spanish	9.46%
Planning	6.76%
Leadership	6.76%
Problem Solving	6.42%

Source: Burning Glass; N=296

Table 4.10 illustrates the certifications requested by employers. Fifty-seven percent of job ads contained information on desired certifications for Licensed Practical Nurses.

Table 4.10: Desired Certifications for Licensed Practical Nurses

Certification	% of Job Postings
First Aid CPR AED	50.59%
Licensed Vocational Nurse (LVN)	34.78%
Basic Cardiac Life Support Certification	19.76%
Nurse Practitioner	10.67%
Clinical Nurse Specialist (CNS)	9.88%
Phlebotomy Certification	5.14%
Certified Pediatric Nurse	3.56%
Advanced Practice Nurse	2.37%
Family Medicine	1.98%
American Heart Association Certificate	1.98%

Source: Burning Glass; N=256

Table 4.11 illustrates the top employers that represent at least five percent of job ads in 2012.

Table 4.11: Top Employers for Licensed Practical Nurses

Employer
Inova Health System
PSA Healthcare
Mollen Immunization Clinics
Community Residences Incorporated
Sentara Health care

Source: Burning Glass

Table 4.12 illustrates the desired experience level for Licensed Practical Nurses requested by employers in 2012. Twenty-three percent of records have been excluded because they did not include an experience level. As a result, the chart below may not be representative of the full sample.

Table 4.12: Desired Experience for Licensed Practical Nurses

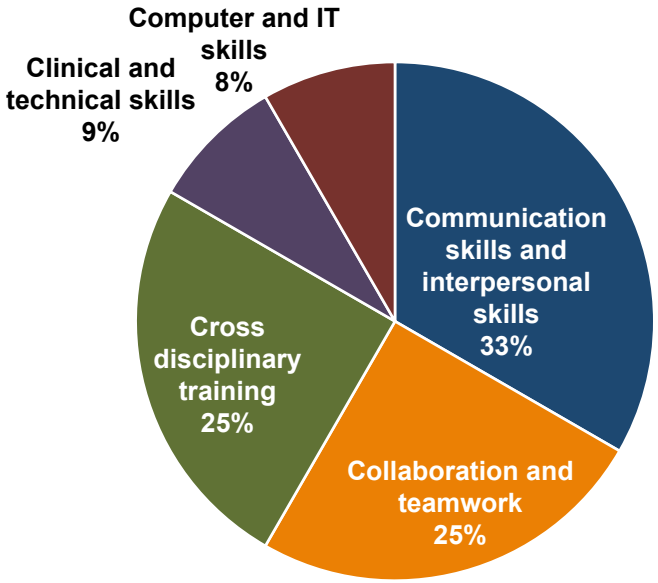
Experience Level	% of Job Postings
1 to 4 years	14.29%
4 to 7 years	5.13%
Less than 1 year	1.56%
7+ years	1.56%

Source: Burning Glass; N=101

Employer Insights on Current RN Workforce: Officials at all of the region's major hospital systems told JFF they are having difficulty finding qualified candidates to fill specialty nursing positions in emergency and operating rooms, critical care units, obstetrics, and labor/delivery, among others.

Otherwise, the hiring trends and preferences captured through online job postings largely reinforce what employers told JFF about their demand for nurses. In surveys, focus groups, and interviews, several hospital executives said the region has an adequate supply at present of RNs, except in some specialty areas. In fact, one of the largest hospital systems in Northern Virginia is attempting to *reduce* its RN workforce in acute care facilities and employ more support staff, commonly called clinical technicians. As echoed in job ads and displayed in survey results (*Figure 4.3*), several hospital executives expressed a desire for RNs to work "at the top of their license" emphasizing leadership and interpersonal skills as well as completion of clinical tasks. By and large these hospitals have introduced team-based approaches to delivery care, in which RNs delegate ancillary tasks to support staff and spend more of their time at the bedside to better manage care and improve customer service.

Figure 4.3: Skills Most Commonly Preferred in RNs in Survey of NoVA Hospital Systems



Source: Survey respondents; six major hospitals

Looking forward, survey respondents expect that filling specialty nurse positions, improving customer service, and implementing team-based care would continue to present major workforce challenges over the next three years.

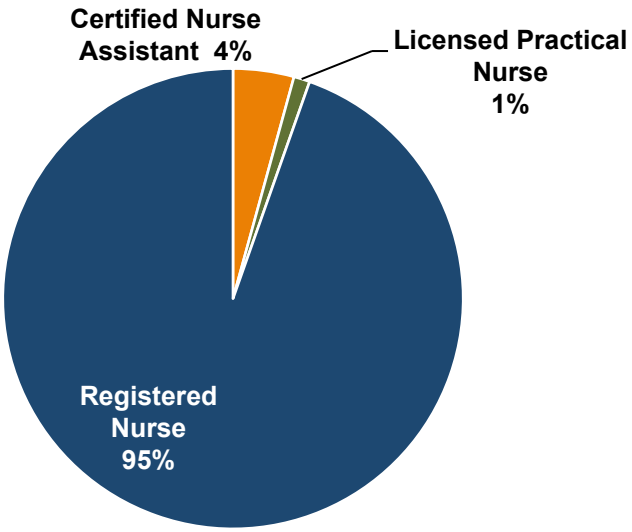
Also mirroring trends in job ads, nearly all of NoVA's major hospitals express preference for hiring BSN nurses. Some employers have adopted policies to cease hiring ADN nurses, while others have put less emphasis on credentials in their hiring decisions—the longer-term implications toward exclusively employing RNs with a Bachelor degree or above will be discussed later in this chapter. Moreover, officials at most of NoVA's major hospitals said that they regularly hire new graduates although they prefer candidates with several years experience. In contrast, one health care system is prohibited under union contract to hire new graduates, officials said.

In the context of diminished hiring activity and preference for candidates with higher degrees, prior experience, and specialty skills, most college administrators interviewed by JFF said that new nursing graduates are facing longer job searches. Some graduates look for work for upwards of six months but, college officials noted, all graduates are eventually employed.

Employer Insights on Current LPN Workforce: The employment picture for licensed practical nurses is diverging from that of registered nurses. Officials at major hospital systems told JFF that they have all but stopped hiring LPNs and only have a handful of longstanding employees

left on staff (*Figure 4.4*). One large hospital system presents an exception to that practice. After undertaking a lean process, its officials determined a need for support staff with LPN-level clinical skills. After years of diminishing demand for LPNs, the hospital system starting hiring LPNs again but now under a new job title, Clinical Technicians II. On the other hand, LPNs remain in high demand in ambulatory and long-term care settings, as evidenced in the list of top job advertisers (*see Table 4.11 on page 183*) and in an interview with a nursing home executive.

Figure 4.4: Patient Care Workforce in Acute Care Facilities



Source: Survey respondents; Total FTE for RN, LPN, and CNA reported by six hospital systems

Looking Ahead

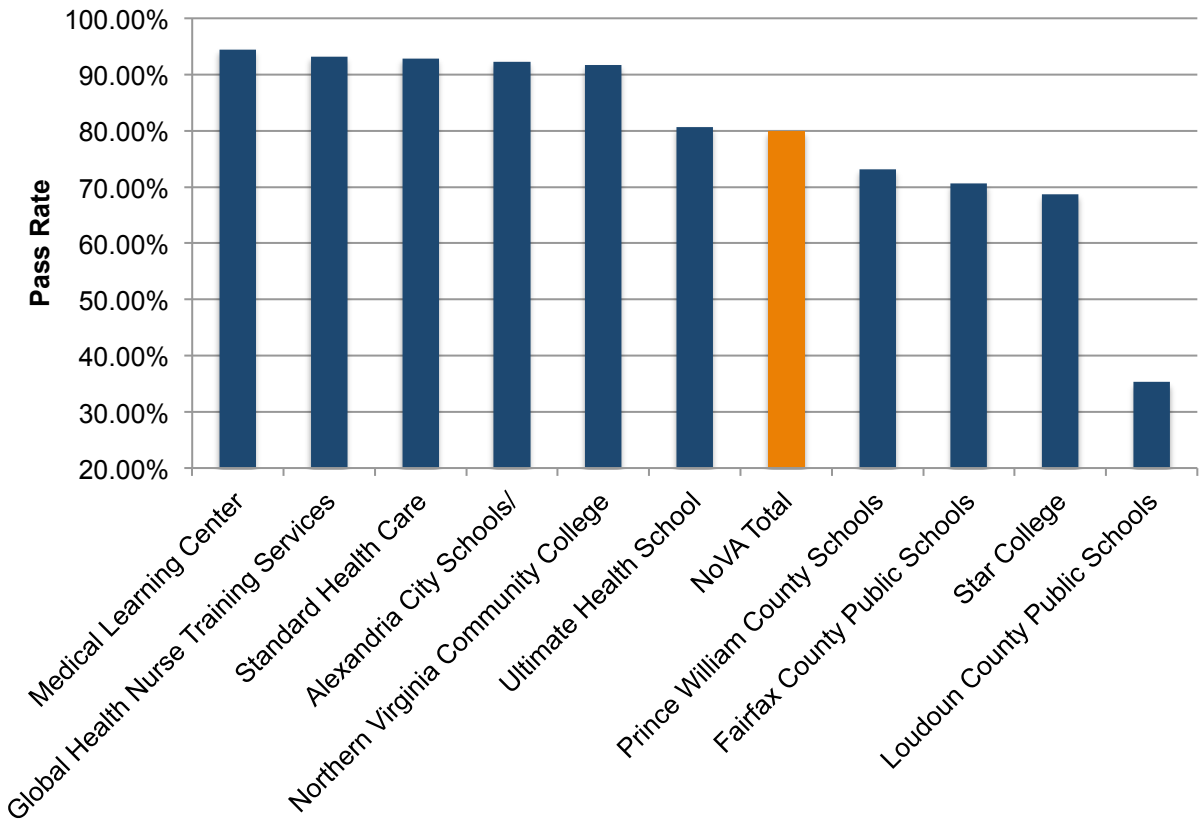
Occupational Projections: RN and LPN workforces are both projected to grow more slowly than most other occupations examined in the study. Despite lower rates of job growth, in real terms, Northern Virginia employers are expected to add more jobs for RNs than for all other study occupations except for home health aides. Moreover, the RN field is projected to have the greatest number of job openings each year (*see Figure 2.21 in Chapter 2*). The LPN field also ranks high in number of new jobs and annual openings (*see Figure 2.20 in Chapter 2*).

Pipeline of New Workers

A total of 250 students completed licensed practical nursing programs offered at nine public schools, proprietary colleges, and other organizations. Northern Virginia Community College launched an LPN program in 2011 and graduated its 12 students in 2012. One employer has called into question the quality of education delivered by several other schools that have

launched LPN programs in recent years. In 2012, nearly 80 percent of students who completed LPN programs in Northern Virginia passed the NCLEX, but passage rates varied widely among institutions (*Figure 4.5*).

Figure 4.5: NCLEX Pass Rates for LPN Graduates Attending NoVA Institutions (2012)



Source: Virginia Board of Nursing

Seven colleges in the broader Northern Virginia region award degrees in registered nursing, including five schools that offer a range of program types to complete a Bachelor of Science in Nursing. According to federal higher education data, 911 students enrolled in NoVA colleges received either an ADN or BSN degree in 2011. Just under 92 percent of Associate and Bachelor degree graduates passed the NCLEX in 2011 (pass rates by institution are displayed later in this chapter). An additional 217 students completed graduate or doctorate-level nursing programs at four regional colleges. (The composition of education completers will be discussed in greater detail later in this chapter.)

Although the greater Northern Virginia region produces an ample supply of new nursing graduates each year—so much so that some new grads struggle to find employment—hospital

executives and education administrators both cited ways in which nursing programs could be enhanced to reflect the skill demands of the workplace.

Several employers raised concerns that colleges are not preparing students to enter specialty nursing fields. As a result, some hospital systems have established fellowship programs to grow their own specialty nursing workforce. One employer places incumbent nurses in a six-month internship program in which they spend time in each of the specialty departments. Once a nurse chooses a desired field, nurses are offered additional training and on-boarding orientation.

Moreover, several employers said colleges are too slow in adapting curriculum to align with changing models of care. They said that ADN and BSN programs alike focus too much attention on training nursing students how to do basic tasks, like inserting an IV. When nursing grads enter the workplace, informants noted, more than likely they will delegate these tasks to clinical technicians and other support staff. Beyond mastering routine clinical tasks, hospital executives told JFF that they want nursing students to acquire leadership and teamwork skills. (Nursing educators have noted that these skills are contained in the curriculum.) In response to perceived skill gaps among nursing grads, one of the NoVA hospital systems has instituted a two-day workshop on leadership and communication for newly hired nurses.

Administrators at several regional colleges and universities raised major concerns about the availability and content of clinical rotations, which nursing students must complete in order to graduate and receive their licensure. Across the board, college officials said regional hospitals offer too few clinical slots to satisfy student demand. As a result, some regional hospitals have rationed slots by giving preference to BSN students and to colleges that pay to place their students, college officials told JFF. The limited supply of clinical slots has forced some colleges to forego plans to increase student enrollment. Moreover, college administrators expressed the concern that their students have sufficient opportunity to perform clinical tasks as well as observing bedside care alongside other students.

To supplement the clinical experience, colleges have opened simulator labs, under the guidelines of The Virginia Board of Nursing (VBON), which has allowed for the substitution of 20% of its 500 hours of required clinical education to take place on high fidelity human patient simulators. These hours cannot be devoted only to the practicing of clinical tasks. Simulation must be integrated into an approved curriculum. The Virginia Board of Nursing outlines essential components when substituting simulation for direct patient care.[61] Clinical simulation must immerse students into an authentic clinical setting with realistic clinical conditions. Students are expected to assimilate and integrate core concepts and administer appropriate care using critical thinking and decision-making skills. The simulation scenario can be video recorded so that it can be used in a student/educator debriefing session and evaluation.

For their part, hospital executives agreed that the tried-and-true approach to clinical rotations is broken. They cited cost constraints and other major priorities of hospital staff—such as the implementation of electronic health records—to explain the drop-off in availability of clinicals.

Several hospital and college officials expressed a desire for a more meaningful method for delivering work-based learning, such as extended internships or "residencies."

Employers and educators alike expressed praise for nursing students who have created their own pathways for acquiring workplace skills and experiences. They reported that some RNs work part-time as Clinical Technicians as a way to help pay for school and gain clinical experience. The school-to-work trend is even more pronounced among students enrolled in the Prince William Public Schools LPN program. A school district official told JFF that many high school and adult students who complete its LPN program take a gap year to work as Clinical Technicians before continuing their studies to become an RN. Upwards of 90 percent of LPN completers go on to obtain their RN, the official said.

Applicant Pool: When comparing workforce supply to projected annual job openings, JFF finds that the applicant pool of RNs and LPNs is relatively large per job opening, at 27 and 18 respectively. But the labor pool drops drastically when measured against the greater number of job openings advertised online, resulting in only six RNs available to apply for each job opening and eight LPNs.

Neither the federal (OES) projection of job openings, nor current online advertising, is ideal for assessing future trends for planning purposes, and use of either should be supplemented by primary data, such as JFF's interviews and surveys with employers. Evidence from the latter sources suggest at least an adequate supply of RN and LPN candidates now and in the near future, lending more credence to the larger estimate of available applicants. However, three factors could cause the applicant pool to shrink, raising the risk for more severe shortages in the RN workforce.

First, a spike in turnover could result in more job vacancies and increase competition for applicants. According to the Local Employment Dynamics quarterly workforce indicators dataset, staff turnover has generally declined in recent years across the health industries that employ the vast majority of RNs—acute care facilities, doctor's offices, and outpatient centers (*see Figures 2.8, 2.9, 2.14 in Chapter 2*). Although quarterly data for these industries provide only a rough approximation for attrition specifically in the nursing field, turnover rates reported for the hospital sector fall within the range specified by four hospital systems. From July 2011 to June 2012, turnover among hospital staff with postsecondary credentials (a proxy for nurses with an ADN, BSN, or above) fell between 9 and 10 percent (*Table 4.13*). In comparison, four hospital systems responding to a JFF survey reported RN turnover rates ranging from 6 to 12 percent. The similarity in turnover rates reported through LED data and by employers helps to reinforce the overall validity of the LED dataset in approximating nurse attrition over time in the three major health industries, not to mention for other health care industries and occupations examined in this study as well. This evidence reinforces a statement made by a hospital executive that RN turnover is lower than expected because older nurses have deferred retirement. One can reasonably assume that turnover rates will climb again as aging Baby Boomers retire in greater numbers.

Table 4.13: Approximated Turnover Rates for Nursing Occupations

Occupation	Proxies		
	Designated Education Class	Designated industries	2011-12 Turnover
Licensed Practical and Licensed Vocational Nurses	Some College or Associate	Nursing Home Doctor Offices	7.2% 6.7%
Registered Nurses	Some College or Associate	General Hospital Outpatient Doctor Offices	9.9% 4.9% 6.7%
	Bachelor and Above	General Hospital Outpatient Doctor Offices	9.1% 4.3% 5.6%

Source: Local Employment Dynamics: Quarterly Workforce Indicators for Nursing and Rehabilitative Care Facilities, Offices of Physicians, General and Surgical Hospitals, and Outpatient Care Centers for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII)

Second, the retirement of large numbers of Baby Boomer nurses will have profound effects on the size and quality of the applicant pool in Northern Virginia. Unquestionably, the regional nurse workforce is aging. Through several sources of information (*Table 4.14*), JFF finds convincing evidence that the average age of the regional nurse workforce is 49—this means that roughly half of all RNs employed in NoVA health care sector are in their 50s, 60s, and up.

Table 4.14: Average Age of RN Workforce in NoVA and across Virginia (By Source)

Source	Method	Reported number
JFF survey results from four of six regional hospital systems	Weighted mean age by hospital workforce size	49
Virginia Department of Health Professions survey of RNs licensed to work in the state	Median age for RNs residing in Northern Virginia	49
	Median age for RNs residing in Virginia	48

Source: Jobs for the Future, Virginia Department of Health Professions

Three employers surveyed by JFF were able to report the average age of their nurse workforces by education credential. To account for differences in workforce size, JFF weighted their reported numbers and found the following:

- Diploma in Nursing: 51 years old
- Associate Degree in Nursing: 55 years old
- Bachelor of Science in Nursing: 46 years old
- Master of Science in Nursing: 51 years old

The results, while based on a small number of employers, suggest that nurses with graduate degrees may be older on average than the regional workforce. This reinforces employer concerns over looming shortages of highly skilled and experienced nurses, particularly those employed in specialty departments. On the other hand, the survey data presents a stark contrast in the average age of ADN versus BSN nurses—providing a clear signal that community college educated nurses are aging out and being replaced with university graduates.

This trend in aging is reflected in the third factor affecting future nurse supply—employer demand moving from ADNs to BSNs, which will be addressed in the section below.

Priority Workforce Need: Considering all available sources of labor market intelligence, the region should continue to focus on employer demand for RNs. Although job growth is not predicted to be nearly as robust as it had been in the 2000s, there will continue to be substantial numbers of job openings due to growth and staff retirements. Special attention should be paid to recruiting and training nurses in specialty fields, as well as to improving their customer service and leadership abilities.

IMPLICATIONS OF THE INSTITUTE OF MEDICINE'S RECOMMENDATIONS

In its 2010 report, *The Future of Nursing: Leading Change, Advancing Health*[62]*,* the Institute of Medicine made eight overarching recommendations to ensure the nursing workforce can meet evolving health care demands. IOM's fourth recommendation is stated below:

> ***Increase the proportion of nurses with a baccalaureate degree to 80 percent by 2020.*** *Academic nurse leaders across all schools of nursing should work together to increase the proportion of nurses with a baccalaureate degree from 50 to 80 percent by 2020. These leaders should partner with education accrediting bodies, private and public funders, and employers to ensure funding, monitor progress, and increase the diversity of students to create a workforce prepared to meet the demands of diverse populations across the lifespan.*

NoVAHealthFORCE asked JFF to address the effects of the IOM's recommendation for an "80 percent" BSN workforce through four study questions:

1. What is the likely impact of IOM's 80/20 recommendation on nursing in the region?
2. Should the region maintain or increase the number of Associate degree nurses in order to meet demand for RNs and RN to BSN educational programs?
3. How will changes in the capacity of Associate degree nurses affect the pipeline of students entering nursing education with regard to accessibility and affordability?
4. How will increased educational requirements affect diversity of the nursing profession in the region?

Each of these questions is addressed in turn, below.

1. What is the likely impact of IOM's 80/20 recommendation on nursing in the region?

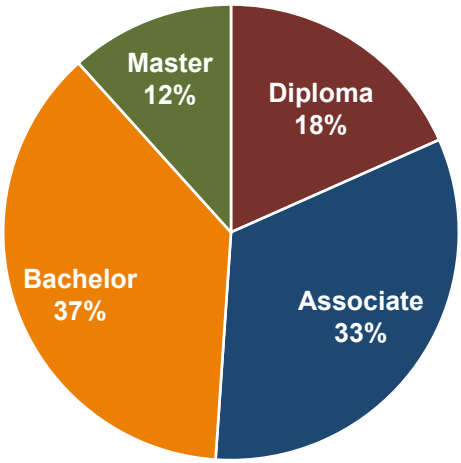
To provide a clear response to this question, JFF has posed two specific questions:

1. How likely is it that major health care employers in Northern Virginia will reach the 80 percent BSN workforce goal by 2020?
2. Can regional colleges and universities graduate enough BSN students to meet the demand for the 80 percent goal?

How likely is it that major health care employers in Northern Virginia will reach the 80 percent BSN workforce goal by 2020?

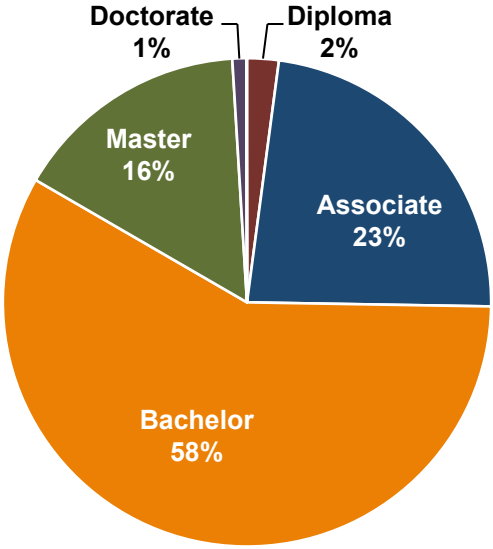
In 2010-2012, data reported by the Virginia Department of Health Professions showed that the education composition of Virginia's current nursing workforce is nowhere close to reflecting the 80 percent BSN goal. Although more nurses licensed to work in Virginia now hold a BSN (37 percent) than an ADN (33 percent), the BSN share of the nursing workforce is well below the national average of 50 percent of all nurses[63] (*Figure 4.6*). Through interviews and surveys of the major regional hospital systems, JFF found indications that the Northern Virginia nursing workforce is closer to reaching the mark. BSNs comprise 58 percent of all nurses employed across four of Northern Virginia's hospital systems (*Figure 4.7*), while ADNs comprise 23 percent. There are 2.5 times as many BSNs employed in these hospitals than ADNs (*Figure 4.8*). Moreover, as reported earlier, nurses with ADNs and diplomas working in these hospitals are on average nine years older than BSN nurses—so it stands to reason that the ratio of BSN-to-ADN will continue to grow over time.

Figure 4.6: Education Attainment of Registered Nurses Licensed to Work in Virginia



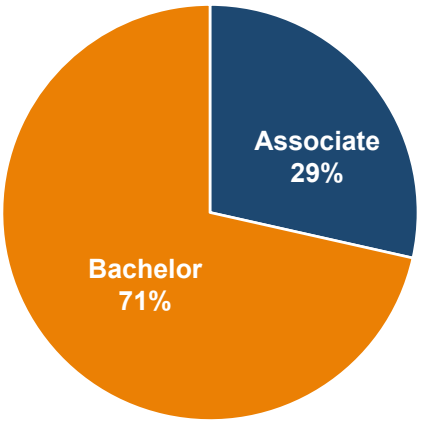
Source: Virginia Department of Health Professions, 2010-12 survey of RNs

Figure 4.7: NoVA Nurse Workforce Employed By Major Hospitals by Credential



Source: Survey respondents; four of the major hospital systems that report FTE totals by credential

Figure 4.8: Number of ADN Vs. BSN in Acute Care Facilities



Source: Survey respondents; Four of the major hospital systems that report FTE totals by credential

Numbers aside, the hiring preferences and professional development policies of employers factor strongly in whether the composition of the Northern Virginia nursing workforce will reflect the 80 percent goal by 2020. Among the major hospital systems, most are now primarily hiring BSNs to fill open nursing positions. According to survey results, five of six major hospital systems in the region said they expect their hiring needs for BSN nurses to increase over the year; in contrast, most hospitals expected flat or declining demand for ADN nurses.

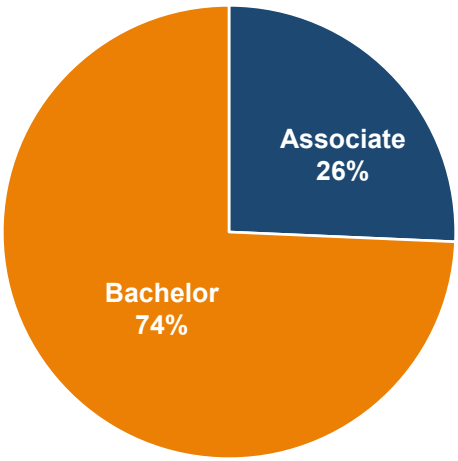
Moreover, these hospital systems have put professional development policies in place requiring new hires and most incumbent workers with ADNs to complete a BSN program. Employers noted that they are examining carefully how to grandfather in ADN nurses with years of experience and close to retirement. Only one of the major hospital systems has not set any preferences on degree levels in making hiring decisions. How representative the former and latter hospitals are to the overall hiring trends in the region is unknown, but they represent a very large segment of overall employment. Among RN job openings in NoVA advertised online in 2012, only 40 percent called for a BSN.

Weighing all the evidence, it appears fairly likely that by 2020 a significant share of RNs employed by the major hospitals in Northern Virginia will have a BSN. While the chances are good that the ratio will reach 80 percent, it is less clear whether their workforce mix will be representative of regional trends.

Can regional colleges and universities graduate enough BSN students to meet the demand for the 80 percent goal?

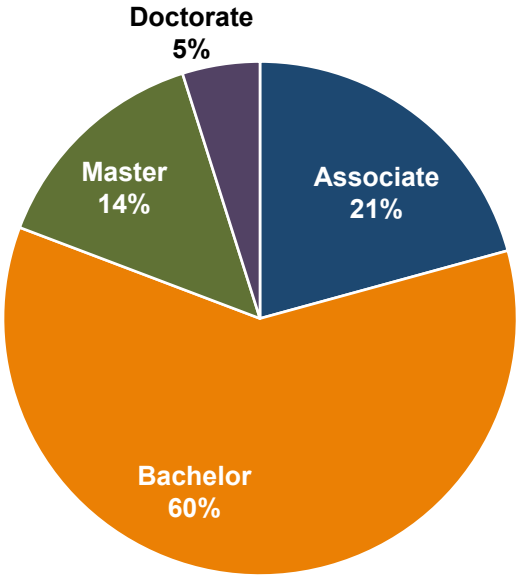
The most straightforward method to answer this question is to see if the proportion of BSN to ADN graduates produced in the region is in line with the 80-20 goal. By that measure, the pool of new grads is just a few percentage points shy of the mark (*Figure 4.9*). When comparing graduation statistics across all credential levels, nearly 80 percent of all nursing program completers in 2011 earned at least a Bachelor degree (*Figure 4.10*). In recent years, regional universities have expanded program options to accelerate BSN degree completion for students who have a Bachelor degree in another academic field and for RNs with an Associate degree (*Table 4.15*). As more working RNs return to school to attain their BSN at the behest of their employers, enrollment in these pathway programs is likely to increase. All things considered, it is reasonable to assume BSN program completers will soon comprise at least 80 percent of all RN completers.

Figure 4.9: NoVA Nurse Graduates by ADN and BSN (2011)



Source: IPEDS, George Washington University

Figure 4.10: NoVA Nurse Graduates by All Nurse Degree (2011)



Source: IPEDS, George Washington University

Table 4.15: BSN pathway program offerings in Northern Virginia

University	Program descriptions
George Washington University	Distance learning program options for ADN to BSN, ADN to BSN/MSN, and ADN to BSN (for ADN nurses with a Bachelor degree in another field) Accelerated BSN program for students with a Bachelor degree in another field
Old Dominion University	Accelerated on-campus and distance learning options for ADN to BSN and MSN Accelerated BSN program for students with a Bachelor degree in another field
Shenandoah University	Advanced placement into traditional BSN program for ADN degree holders Accelerated BSN program for students with a Bachelor degree in another field
George Mason University	Accelerated on-campus program for ADN to BSN

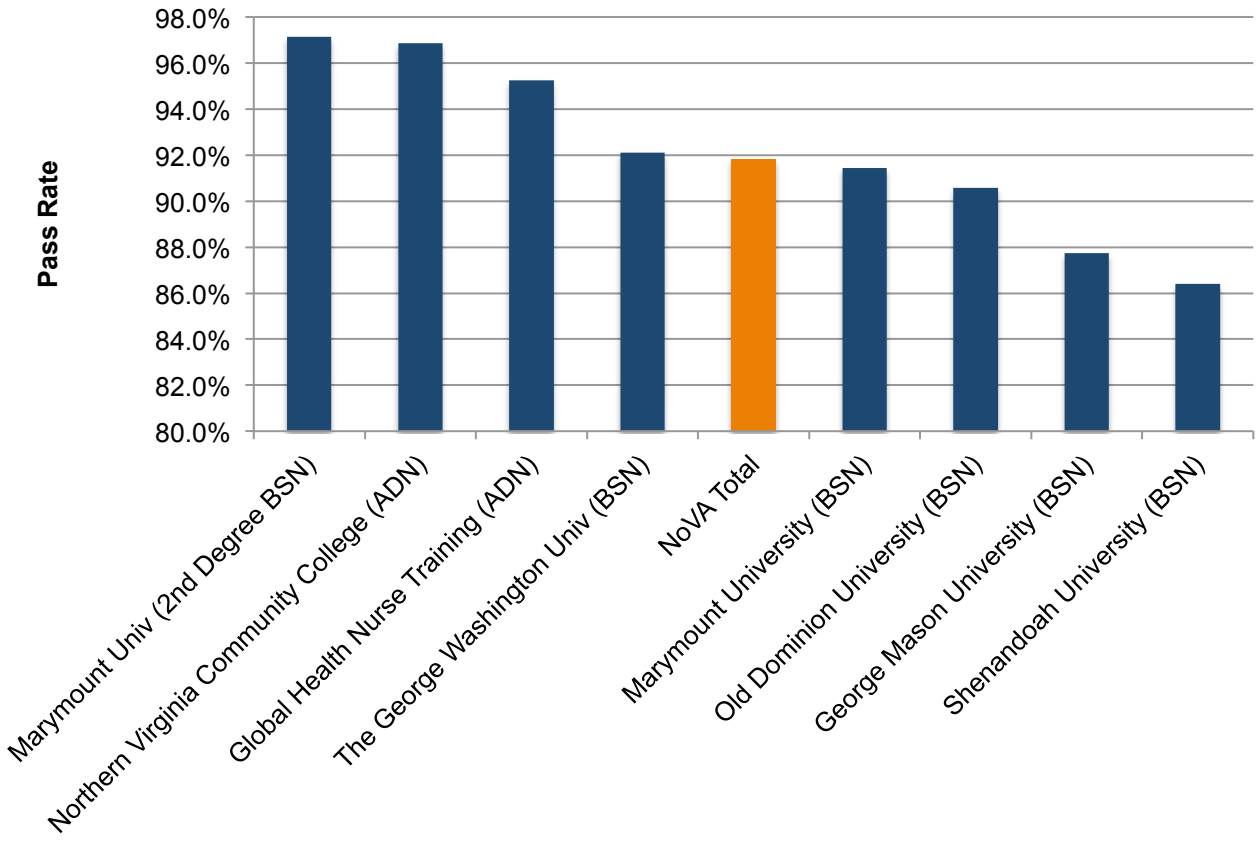
Marymount University	Distance learning and advanced placement on-campus program for ADN to BSN Accelerated BSN program for students with a Bachelor degree in another field

Source: University websites

2. Should the region maintain or increase the number of Associate degree nurses in order to meet demand for RNs and ADN-to-BSN educational programs?

As a testament to the quality of their curriculum and instruction, two colleges offering Associate Degree nursing programs in Northern Virginia achieved among the highest passage rates on the NCLEX in 2011 (*Figure 4.11*). When factoring in the cost of attendance (discussed later), it would appear that ADN programs are a cost-effective route to a first-level nursing credential.

Figure 4.11: NCLEX Pass Rates for NoVA RN Program Completers (2012)



Source: Virginia Board of Nursing

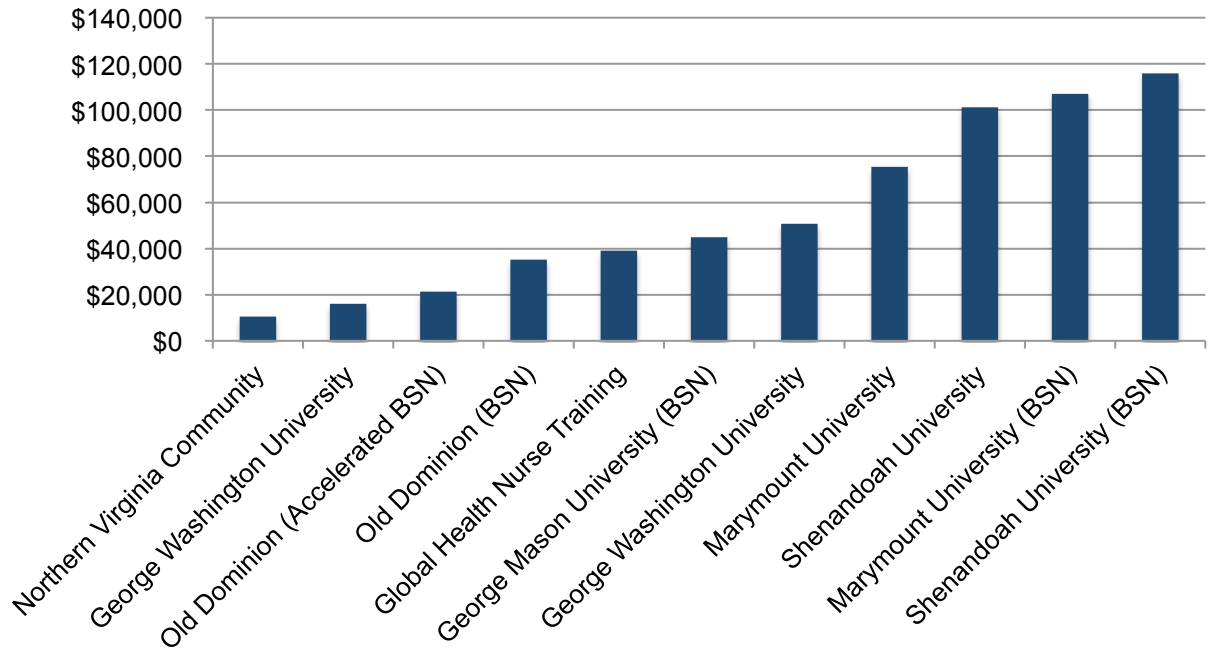
While some hospital executives questioned whether the BSN degree necessarily led to a higher quality nurse than did the Associate degree, other hospital system representatives felt strongly that BSN degree programs produced graduates who are better equipped to think critically and understand the bigger picture on why they do certain clinical tasks at the bedside. Moreover, some employers noted that putting traditional-age students through two additional years of school made them more mature and well-rounded new hires. A final consideration noted for expanded use of BSNs in acute care was attainment of magnet status.

Considering the relative advantages of ADN and BSN degree programs, a viable option would be to retain ADN training while strengthening and expanding ADN-to-BSN pathways. In noting expenses related to clinical rotations, simulator labs, instructors, and classroom space, community college administrators told JFF that they would not be able to continue to bear the high costs of preparing students to pass the NCLEX and earn their RN licensure if the only purpose of an ADN is to provide transfer credit to a BSN. Therefore, community colleges and universities would be wise to form partnerships that would be mutually beneficial—that would put ADN students back on equal footing with BSN students for clinical slots and that would create a steady and reliable stream of BSN candidates for university programs.

3. How will changes in the capacity of Associate degree nurses affect the pipeline of students entering nursing education with regard to accessibility and affordability?

Irrefutably, rising degree requirements carry significant costs for future nurses. The cost of completing the ADN program through Northern Virginia Community College is about one-third the cost of the most affordable four-year BSN program. Moreover, the NVCC degree is less than one-tenth the cost of the most expensive BSN program operating in the region (*Figure 4.12, Table 4.16*).

Figure 4.12: Nursing Degree Program Costs



Source: Tuition and fee information collected by Jobs for the Future.
Note: Assumes in-state tuition; excludes room and board costs.

Table 4.16: Cost of attendance of RN Degrees programs in NoVA region

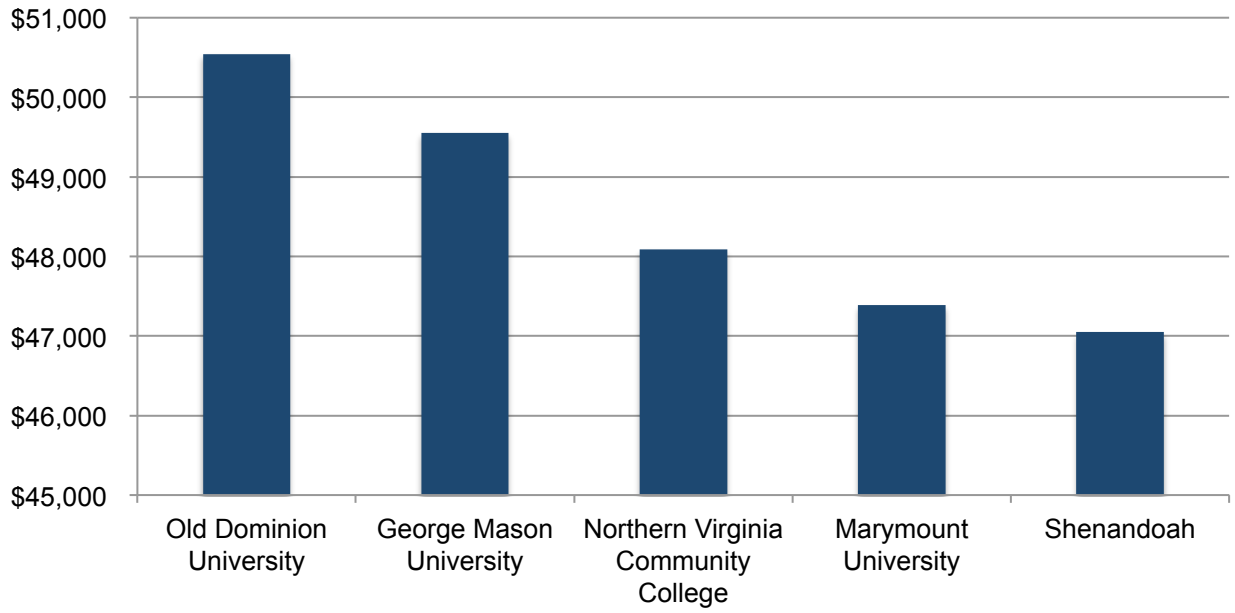
Program	Tuition	Other Costs	Total*
Global Health Nurse Training Registered Nursing Program	$33,300	Additional Fees: $5,809	$39,109
Marymount University Bachelor of Science, Nursing	Per semester: $13,050	$200 per clinical $20 per immunization course $1,340 lab fees NCLEX Prep fee: $450 Nursing: $470 Nursing SlimChart Fee: $220	$107,100
Marymount University Accelerated Bachelor of Science, Nursing	Per credit hour: $850	$200 per clinical $20 per immunization course $1,340 lab fees NCLEX Prep fee: $450 Nursing: $470 Nursing SlimChart Fee: $220	$75,500
Northern Virginia Community College Associate of Applied Science	$143.15/ credit hour	Additional Fees: $10.10/ credit hour	$10,574
George Mason University Bachelor of Science, Nursing	Full-time undergraduate tuition: $9,908	Additional Fees: $2,668	$44,968
Shenandoah University Bachelor of Science, Nursing	Full-time undergraduate tuition: $ $14,257/ semester	NCLEX Review: $350/course Clinical Fee: $175/ clinical Student Services Fee: $150/semester	$115,781 (full-time)
Shenandoah University Accelerated Bachelor of Science, Nursing	$828/credit (121 credits)	NCLEX Review: $350/course Clinical Fee: $175/ clinical Student Services Fee: $150/semester	$101,313

George Washington University Accelerated Bachelor of Science, Nursing	**$760/credit hour**	**$35 Registration Fee/term**	**$50,640**
George Washington University Associate Degree in Nursing	$760/credit hour	$35 Registration Fee/term	$15,960
Old Dominion University Bachelor of Science, Nursing	$285/credit (120 hours)	New Student Transition Fee -$75 General Services Fee- $9.00 Student Health Fee - $76.00/semester Transportation Fee - $50.00/semester	$35,292
Old Dominion University Accelerated Bachelor of Science, Nursing	$285/credit 72-credit core 54-credit prerequisites	New Student Transition Fee -$75 General Services Fee- $9.00 Student Health Fee - $76.00/semester Transportation Fee - $50.00/semester	$21,360

Source: University websites

The hefty tuition bill of attending BSN degree programs does not provide graduates any initial bump in earnings. In fact, graduates of Northern Virginia Community College ADN program earned more on average at their first job than graduates of two of the four regional universities offering BSN degree programs (*Figure 4.13*).

Figure 4.13: Average First-year Earnings (Last 5 Years) for RN Graduates

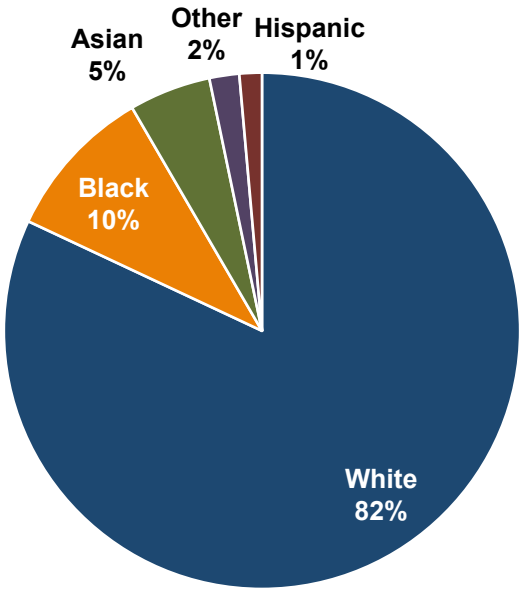


Source: Collegemeasures.org

4. How will increased educational requirements affect diversity of the nursing profession in the region?

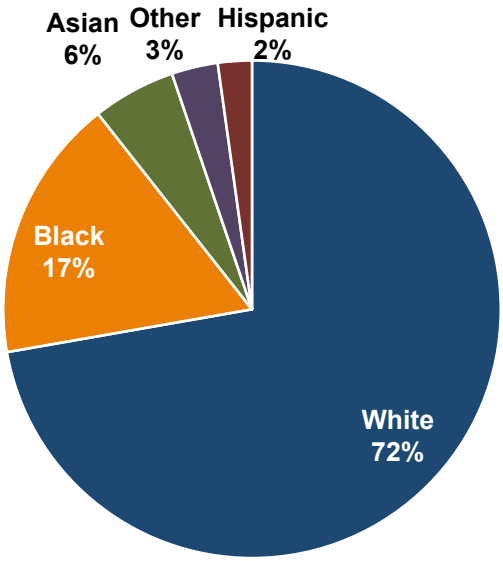
According to the Virginia Department of Health Professions, RNs licensed to work in Virginia are overwhelmingly white (*Figure 4.13*). Even when omitting older nurses, nearly 75 percent of Virginia nurses under the age of 40 are white (*Figure 4.14*). These state-level workforce demographics differ sharply from the growing diversity in the NoVA population.

Figure 4.13: Racial and Ethnic Composition of RNs licensed to work in Virginia



Source: Virginia Department of Health Professions, 2011 survey of RNs

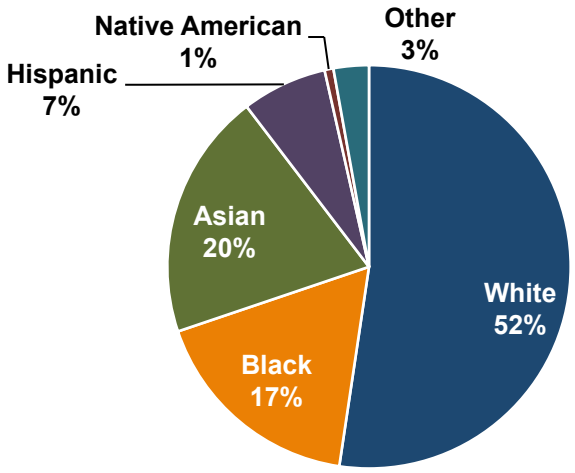
Figure 4.14: Racial and Ethnic Composition for RNs under age of 40 licensed to work in Virginia



Source: Virginia Department of Health Professions, 2011 survey of RNs

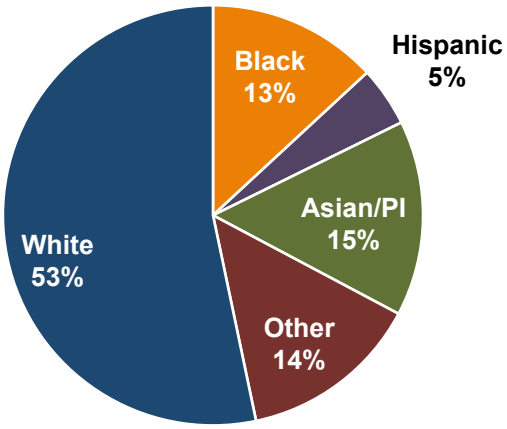
In contrast, diversity is far greater among students enrolled in nursing degree programs in Northern Virginia. This holds true for Bachelor degree nursing students as well as those in Associate degree programs. Therefore, it is reasonable to assume that BSN graduates will contribute to greater diversity in the Northern Virginia nursing workforce along racial and ethnic lines, if not class lines.

Figure 4.16: Races and Ethnicities of ADN Student Body in Northern Virginia Community College



Source: Northern Virginia Community College

Figure 4.18: Races and Ethnicities of BSN Student Body in Northern Virginia



Source: George Mason University and Shenandoah University; Average between two colleges

CHAPTER 5: WORKFORCE DEMAND IN HIGH-GROWTH OUTLYING COUNTIES

This chapter looks more closely at workforce and education needs of Loudoun and Prince William counties as health care providers continue to open or upgrade facilities to keep up with significant population growth.

In its Request for Proposals, NoVAHealthFORCE asks applicants to address three questions:

- What are the health care workforce needs specific to Loudoun County and Prince William County, which are among the fastest-growing counties in the region?
- What is the demand and supply of Loudoun County and Prince William County health care workers?
- What are the logical educational curricula for health care workforce development to locate in these counties?

1. What are the health care workforce needs specific to Loudoun County and Prince William County, which are among the fastest-growing counties in the region?

As reported earlier, Loudoun and Prince William are both expected to grow more rapidly than other localities across Northern Virginia, heightening the demand for health care services (*Table 5.1*). Moreover, Prince William has two alarming trends—a 52 percent projected increase in residents over the age of 65 and an above average percent of residents without health insurance—that are putting additional pressures on the health care system (*Table 5.2*). In response to the growing patient pool in these outlying areas, several health care providers have opened or upgraded health care facilities. Two new hospitals will add a third more acute care beds in the two counties, increasing their share of all beds in the region (*Figure 5.1*).

Table 5.1: 2010-2020 Population Change by Locality

Locality	2010	2020	Change #	Change %
Loudoun County	312,311	397,272	84,961	27.2%
Prince William County	402,002	487,768	85,766	21.3%
Northern Virginia	2,230,623	2,515,782	285,159	12.7%
Virginia, Statewide	8,001,024	8,811,512	810,488	10.1%

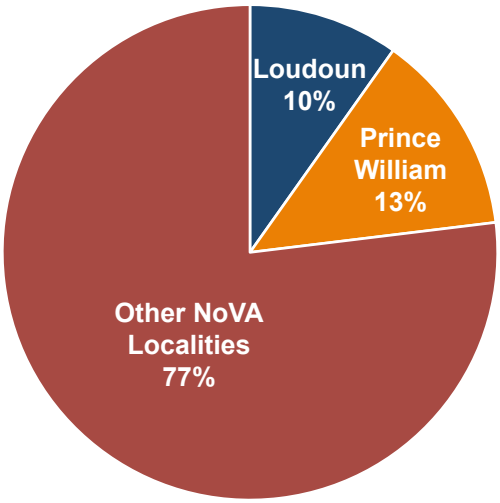
Source: Weldon Cooper

Table 5.2: 2012-2020 Projected Change in 65+ Age Brackets

Locality	2012 Estimates		2020 Projections			
	Number 65+	Percent 65+	Number 65+	Percent 65+	Number Growth 65+	Percent Growth 65+
Loudoun County	24,700	7.33%	31,996	8.05%	7,296	29.5%
Prince William County	32,376	7.52%	49,273	10.10%	16,897	52.2%
Northern Virginia	218,983	9.33%	286,306	11.38%	67,323	30.7%
Virginia, Statewide	1,062,505	12.98%	1,359,168	15.42%	296,663	27.9%

Source: Weldon Cooper

Figure 5.1: Proportion of Current/Planned Acute Care Beds in Outlying Counties



Source: Hospital system websites, interviews

The influx in population and health care services is expected to translate to significant job growth across the occupations examined in this study. In total, employers in Prince William and Loudoun counties are projected to create more than 5,600 new jobs by 2020, increasing their combined workforce by about a half (*Table 5.3*). Leading the way, the three sectors of home health care, dental offices, and doctor's offices are each projected to add about 850 new jobs in the study occupations over the 10-year period (*Tables 5.4-5.5*).

Table 5.3: Projected Number of Jobs in Prince William and Loudoun County

Region	2010 Jobs	2020 Jobs	Change	% Change	Median Hourly Earnings
Loudoun	5,715	8,639	2,924	51%	$25.32
Prince William	5,484	8,193	2,709	49%	$23.84
NoVA	58,491	76,295	17,804	30%	$26.88

Source: EMSI

Table 5.4: Projected Number of Study Jobs in Prince William County

Industry	Study Jobs in Industry (2010)	Study Jobs in Industry (2020)	Change (%)
General Medical and Surgical Hospitals (Private)	794	873	10%
Home Health Care Services	450	1,041	131%
Offices of Physicians	540	862	60%
Offices of Dentists	507	893	76%
Federal Government, Civilian	353	385	9%

Source: EMSI

Table 5.5: Projected Number of Study Jobs in Loudoun County

Industry	Study Jobs in Industry (2010)	Study Jobs in Industry (2020)	Change (%)
General Medical and Surgical Hospitals (Private)	1,104	1,340	21%
Home Health Care Services	252	516	105%
Offices of Physicians	660	1,184	79%
Offices of Dentists	578	1,045	81%
Local Government, Excluding Education and Hospitals	327	413	26%

Source: EMSI

2. What is the demand for and supply of Loudoun County and Prince William County health care workers?

In the context of strong job growth, the two outlying counties are expected to increase their share of the regional workforce employed in every study occupation, except EMTs. By 2020, Prince William and Loudoun counties will account for 22 percent of all study jobs in Northern Virginia, up from 19 percent in 2010—a growth of 15 percent on average across all study occupations. In fourteen of the study occupations, Prince William and Loudoun employers will increase their share of the regional workforce at an even faster rate (*Table 5.7*). More than 25 percent of NoVA-area massage therapists, dental assistants, dental hygienists, pharmacy technicians, speech language pathologists, and physical therapists will be working in the two outlying counties by 2020.

Table 5.6: Combined Employment Share of Prince William and Loudoun

	Prince William & Loudoun County 2010	% NoVA	Prince William & Loudoun County 2020	% NoVA	% Change
Registered Nurses	2,327	16.7%	3,207	19.2%	15.1%
Nursing Aides, Orderlies, and Attendants	1,076	16.7%	1,442	18.7%	12.4%
Home Health Aides	737	19.9%	1,553	22.5%	13.0%
Massage Therapists	708	25.6%	1,087	27.9%	9.3%
Licensed Practical and Licensed Vocational Nurses	654	16.8%	919	19.4%	15.2%
Dental Assistants	688	25.4%	1,199	30.5%	19.9%
Medical Assistants	573	20.9%	920	24.5%	17.0%
Child, Family, and School Social Workers	442	22.3%	570	23.7%	6.3%
Pharmacists	381	22.1%	546	25.7%	16.4%
Dental Hygienists	382	26.0%	714	31.1%	19.5%
Pharmacy Technicians	363	23.0%	559	26.7%	16.4%
Medical and Health Services Managers	278	16.7%	394	19.3%	15.6%
Social and Human Service Assistants	269	17.5%	386	18.7%	6.9%
Speech-Language Pathologists	267	26.2%	387	28.6%	9.3%
Physical Therapists	272	22.9%	427	26.9%	17.5%
Emergency Medical Technicians and Paramedics	214	23.4%	284	23.1%	-1.4%
Radiologic Technologists and Technicians	192	15.3%	267	17.0%	11.5%
Medical and Clinical Laboratory Technologists	160	12.8%	182	13.4%	4.2%

	Prince William & Loudoun County 2010	% NoVA	Prince William & Loudoun County 2020	% NoVA	% Change
Occupational Therapists	133	23.7%	197	27.0%	14.2%
Medical Records and Health Information Technicians*	128	14.8%	189	17.2%	15.9%
Chiropractors	116	26.0%	177	28.1%	8.0%
Medical and Clinical Laboratory Technicians	132	13.1%	163	14.0%	7.5%
Social and Community Service Managers	112	17.4%	157	18.5%	6.0%
Surgical Technologists	100	18.1%	130	21.1%	16.1%
Physical Therapist Assistants	80	24.2%	139	28.6%	18.3%
Respiratory Therapist Technicians*	69	17.0%	90	19.0%	12.2%
Dental Laboratory Technicians	91	29.5%	138	43.7%	47.8%
Diagnostic Medical Sonographers	46	16.0%	75	18.4%	14.7%
Social Workers, All Other	33	12.6%	49	14.0%	10.4%
Biomedical Engineers	33	12.0%	65	14.4%	19.9%
Medical Equipment Repairers	33	15.6%	57	20.6%	32.2%
Audiologists	21	25.6%	35	29.9%	16.8%
Total	**11,110**	**19.1%**	**16,704**	**22.1%**	**15.2%**

Source: EMSI

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Table 5.7: Largest Percentage Increase in Share of NoVA Workforce Employed in Prince William and Loudoun

Dental Laboratory Technicians	47.80%
Medical Equipment Repairers	32.20%
Dental Assistants	19.90%
Biomedical Engineers	19.90%
Dental Hygienists	19.50%
Physical Therapist Assistants	18.30%
Physical Therapists	17.50%
Medical Assistants	17.00%
Audiologists	16.80%
Pharmacists	16.40%
Pharmacy Technicians	16.40%
Surgical Technologists	16.10%
Medical Records and Health Information Technicians*	15.90%
Medical and Health Services Managers	15.60%

Source: EMSI
** See footnote C in Table 0.1 on page 26 for further explanation.*

3. What are the logical educational curricula for health care workforce development to locate in these counties?

The workforce trends described above provide regional educational institutions some insights on the high-growth, high-demand occupations that could attract student enrollment in Prince William and Loudoun counties. In addition, education providers may want to launch new programs in these two counties to address the skill needs of the 10 study occupations without any reported training options across Northern Virginia. Either way, education institutions should consider commuting patterns and traffic congestion in assessing whether sufficient numbers of students would consider attending class in these outlying areas.

Table 5.8: Annual Job Openings in Loudoun County

	2010	2020	Annual Openings due to Growth	Annual Openings due to Replacement	Total Openings	Job Ads	Avg. Hourly Earnings
Registered Nurses	1,210	1,713	50	28	78	193	$32.81
Nursing Aides, Orderlies, and Attendants	521	704	18	9	27	64	$11.59
Dental Assistants	363	643	28	11	39	21	$18.17
Home Health Aides	285	599	31	7	38	3	$9.96
Massage Therapists	359	563	20	8	28	35	$17.63
Medical Assistants	301	513	21	8	29	19	$14.22
Licensed Practical and Licensed Vocational Nurses	324	460	14	10	24	70	$21.31
Dental Hygienists	203	385	18	6	24	0	$49.93
Pharmacy Technicians	186	284	10	4	14	17	$14.68
Child, Family, and School Social Workers	219	278	6	6	12	4	$24.64
Pharmacists	195	278	8	6	14	18	$47.96
Physical Therapists	152	222	7	4	11	80	$39.80
Medical and Health Services Managers	140	200	6	4	10	130	$41.92
Speech-Language Pathologists	135	199	6	4	10	42	$41.47
Social and Human Service Assistants	137	189	5	4	9	5	$14.83
Radiologic Technologists and Technicians	107	155	5	2	7	3	$33.43
Emergency Medical Technicians and Paramedics	115	121	1	4	5	0	$20.72

	2010	2020	Annual Openings due to Growth	Annual Openings due to Replacement	Total Openings	Job Ads	Avg. Hourly Earnings
Dental Laboratory Technicians	**65**	**113**	**5**	**3**	**8**	**1**	**$16.74**
Medical and Clinical Laboratory Technologists	91	109	2	2	4	11	$32.12
Medical Records and Health Information Technicians*	68	106	4	2	6	26	$19.67
Occupational Therapists	69	99	3	2	5	96	$41.38
Medical and Clinical Laboratory Technicians	75	99	2	2	4	64	$23.92
Chiropractors	58	95	4	2	6	0	$31.58
Social and Community Service Managers	58	78	2	2	4	7	$35.98
Physical Therapist Assistants	48	75	3	1	4	44	$19.66
Surgical Technologists	54	73	2	1	3	20	$22.43
Respiratory Therapists*	38	51	1	1	2	0	$34.35
Diagnostic Medical Sonographers	27	45	2	0	2	10	$43.07
Biomedical Engineers	18	42	2	1	3	0	$36.40
Medical Equipment Repairers	20	35	2	1	2	0	$18.32
Social Workers, All Other	16	25	1	0	1	5	$26.52
Occupational Therapy Assistants	12	21	1	0	1	20	$25.38
Audiologists	10	17	1	0	1	3	$45.88
Orthotists and	<10	15	n/a	n/a	—	0	$49.82

	2010	2020	Annual Openings due to Growth	Annual Openings due to Replacement	Total Openings	Job Ads	Avg. Hourly Earnings
Prosthetists							
Nuclear Medicine Technologists	<10	11	n/a	n/a	—	1	—
Radiation Therapists	<10	<10	n/a	n/a	—	0	—
Respiratory Therapy Technicians	**<10**	**<10**	**n/a**	**n/a**	**—**	**0**	**—**
Occupational Therapy Aides	<10	<10	n/a	n/a	—	12	—
Total	**5,715**	**8,639**	**291**	**145**	**435**	**1,024**	**$25.83**

Source: EMSI, Burning Glass

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

Table 5.9: Annual Job Openings in Prince William County

	2010	2020	Annual Openings due to Growth	Annual Openings due to Replacement	Total Openings	Job Ads	Avg. Hourly Earnings
Registered Nurses	1,117	1,494	38	24	62	297	$32.50
Home Health Aides	452	954	50	10	60	7	$10.44
Nursing Aides, Orderlies, and Attendants	555	738	18	9	27	45	$10.65
Dental Assistants	325	556	23	10	33	13	$17.95
Massage Therapists	349	524	18	8	25	7	$14.87
Licensed Practical and Licensed Vocational Nurses	330	459	13	11	24	53	$20.08
Medical Assistants	272	407	14	7	20	12	$13.47
Dental Hygienists	179	329	15	5	20	1	$49.25

Child, Family, and School Social Workers	223	292	7	6	13	7	$23.05
Pharmacy Technicians	177	275	10	4	14	16	$14.68
Pharmacists	186	268	8	6	14	15	$47.86
Physical Therapists	120	205	9	3	11	80	$39.96
Social and Human Service Assistants	132	197	7	4	10	9	$13.33
Medical and Health Services Managers	138	194	6	4	10	83	$38.43
Speech-Language Pathologists	132	188	6	3	9	23	$41.48
Emergency Medical Technicians and Paramedics	99	163	6	3	9	14	$20.72
Radiologic Technologists and Technicians	85	112	3	1	4	18	$31.47
Occupational Therapists	64	98	3	2	5	41	$41.63
Medical Records and Health Information Technicians*	60	83	2	2	4	23	$19.00
Chiropractors	58	82	2	2	4	4	$30.59
Social and Community Service Managers	54	79	3	2	4	3	$33.28
Medical and Clinical Laboratory Technologists	69	73	0	2	2	28	$30.02
Medical and Clinical Laboratory Technicians	57	64	1	1	2	16	$21.50
Physical Therapist Assistants	32	64	3	1	4	8	$21.37
Surgical Technologists	46	57	1	1	2	6	$21.76
Respiratory Therapists	31	39	1	1	2	3	$33.89

Diagnostic Medical Sonographers	19	30	1	(0)	1	1	$38.92
Dental Laboratory Technicians	26	25	(0)	1	1	0	$13.38
Social Workers, All Other	17	24	1	0	1	14	$24.41
Biomedical Engineers	15	23	1	0	1	0	$35.71
Medical Equipment Repairers	13	22	1	0	1	0	$18.11
Audiologists	11	18	1	0	1	0	$44.85
Occupational Therapy Assistants	<10	18			—	17	—
Orthotists and Prosthetists	11	14	0	1	1	0	$42.30
Radiation Therapists	<10	<10	n/a	n/a	—	1	—
Nuclear Medicine Technologists	<10	<10	n/a	n/a	—	0	—
Respiratory Therapy Technicians*	<10	<10	n/a	n/a	—	0	—
Occupational Therapy Aides	<10	<10	n/a	n/a	—	1	—
Total	**5,484**	**8,193**	**272**	**134**	**405**	**866**	**$24.33**

Source: EMSI, Burning Glass

** See footnotes B and C in Table 0.1 on page 26 for further explanation.*

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The aim of this report was to update research that NoVAHealthFORCE commissioned for two previous studies, released in 2005 and 2008. It has examined changes in health care demand and health care delivery systems; current and future gaps in the health care workforce; the impact of the goal to have 80 percent of nurses educated with a Bachelor degree by 2020; and emerging demands for health care in the rapidly growing areas of Prince William and Loudoun Counties.

The Northern Virginia health care environment—and conditions for its providers, patients, employees, and educators—has undergone considerable change since 2004. The health care industry has been rapidly reorganizing through acquisitions and mergers of large systems with smaller hospitals and physician groups. The location of care delivery is shifting from hospitals to outpatient and home-based settings. New players are entering the Northern Virginia marketplace in long-term and outpatient rehabilitation, walk-in and in-store health clinics, urgent care centers, assisted living communities, and in-home health care. The implementation of the Affordable Care Act promises further change, in patient enrollment and policies to promote lower costs and better outcomes. Providers, in response, are changing care delivery, staffing, and job duties, to lower costs. As part of this strategy, providers are putting pressure on all staff to work at the top of their license, or job description, creating greater demand for higher performance from both licensed professionals and support staff.

The 2005 study of the Northern Virginia health care labor market projected a shortage of almost 2,800 workers in 24 occupations, most critically in nursing. NoVAHealthFORCE responded with a concrete action plan, and the region's employers, educational institutions, and other stakeholders rallied to increase the supply of trained candidates. Over this same period, the Great Recession in combination with new models of staffing and care delivery have moderated demand for nurses and allied health professionals for the present time. While severe shortages have stabilized, the region faces serious workforce challenges. These include the anticipated retirements of many nurses and faculty members who reportedly postponed retirement during the recession; a continuing shortage of clinical placements; high living costs that may discourage new graduates from remaining in the area; and employers' needs for specialized medical and workplace skills.

Northern Virginia appears likely to meet the Institute of Medicine's 2020 goal of having 80 percent of registered nurses hold a Bachelor degree, rather than a two-year Associate degree. Many of the region's colleges have developed accelerated pathways and other innovations to enable nurses with an Associate degree to attain the higher credential, and major employers offer financial assistance and other supports to enable incumbent registered nurses to study for a Bachelor degree while employed. The much steeper costs for acquiring four-year degrees raises concerns about achieving socioeconomic diversity in nursing.

Beyond nursing, there are supply challenges looming in allied health occupations, including physical therapists, pharmacists, ultrasonographers, and surgical technologists. At present, there is no capacity in the region for training surgical technologists. Other occupations face potential shortages, given a small applicant pool: medical and health service managers, occupational therapists, and speech and language pathologists.

Northern Virginia's population continues to grow, though more slowly than in the past decade. The greatest growth continues to be in Prince William and Loudoun Counties, whose growth rate is approximately double that of the region as a whole. The region is quickly becoming more racially and ethnically diverse, with much of this change occurring in the two outlying counties. By the year 2020, over two in five (41 percent) Northern Virginia residents will be nonwhite or of Hispanic origin.

RECOMMENDATIONS

Based on the findings from the workforce analysis, we present the following recommendations to assist the region in navigating the uncertain times ahead and ensuring a strong and well-qualified workforce capable of delivering excellent care to all.

Improve the Alignment of Nursing Education with Employer Needs

Convene leaders from the region's nursing education programs and major health care employers to determine areas in need of improvement. Appoint a working group of faculty, professional licensing officials, nurse managers, and educators to overhaul curricula and instructional methods. Include development of leadership, communication, and teamwork skills.

Address Gaps in Clinical Education and in Development of Specialized Nursing Candidates

The educator-employer working group should seek both to streamline the process of managing clinical placements and to identify alternative forms of experiential education that meet professional requirements. Identify and replicate the most promising practices in work-based learning, including employer-provided fellowships and institutes to train nurses in specialized roles in high demand. Work with professional licensing authorities to analyze regulations governing clinical placements and other work-based learning experiences, in order to expand the supply, while improving the quality.

Address Workforce Supply Gaps

Collaborate with physical and occupational therapy educators to assess the need for expanded training programs, and with professional licensing authorities on the potential for relaxing doctorate-level requirements. Develop the future pipeline by educating youth and adults about

career paths that begin with physical therapy and occupational therapy aide and assistant credentials. Convene hospital and education leaders to verify need for and feasibility of developing new training program capacity for surgical technologists. Convene dental and education leaders to expand capacity for educating dental assistants, including potential satellite programs in Prince William and Loudoun counties.

Build Regional Capacity for Using Real-time Labor Market Information for Planning

Develop effective ways of collecting regular, up-to-date workforce data from Northern Virginia health providers beyond the major hospitals participating in HealthFORCE, especially primary care, long-term care, home health, and dental care providers. Update findings from this study regularly with real-time labor market information drawn from online job advertising. Continue to monitor occupations noted as potential shortage areas, particularly in rehabilitation and paraprofessional support roles, such as home health aides and dental assistants. Closely monitor the size of the nursing applicant pool relative to demand trends. Study scope and significance of health care employment demand in non-industry settings, such as retail clinics, as well as in newly created urgent care facilities.

Work with Federal and State Agencies and Employers to Align Official Job Categories with Emerging Occupations

A limitation of this report was the inability to distinguish between two different kinds of health information functions—managing health information versus using information technology in health care—owing to outmoded categories used in public data sets. (The U.S. Bureau of Labor Statistics combines both activities under the title “Medical Records and Health Information Technicians.”) Patterns in job advertising reveal important trends, such as the growth of health information management positions requiring higher skills than traditional medical records and coding functions. However, the growing adoption of electronic health records and other applications of technology and data analytics in health care suggests the need for updated occupational categories allowing analysis of workforce trends with greater precision.

Address Cost of Living and Commuting Barriers to Workforce Recruitment and Retention

Convene employers and regional workforce, housing, and transportation officials to identify potential strategies to address cost of living and commuting barriers facing the health care workforce, including entry-level staff and new graduates. Adjust compensation and bonuses to improve recruitment in emerging shortage occupations. Adopt innovations such as transit-oriented development, mixed-use properties, and incentives for affordable housing where practical in new or expanding health care locations. Encourage new applications of

telecommuting and telemedicine. Explore feasibility of additional satellite programs in verified shortage occupations in Prince William and Loudoun counties.

Reduce the Impact of Retiring Health Care Workers and Faculty

Provide alternative work options for older nurses, such as case management or care coordination, in order to extend their tenure and to "bridge" to younger and less experienced employees. Work with educational and professional accrediting bodies to expand use of part-time faculty. Encourage educational leaders from regional colleges to create new models of collaboration on faculty recruitment and hiring, including shared positions in areas with high rates of retirement or shortages.

Facilitate Transition to Bachelor-level Nursing While Maintaining Opportunities for a Diverse Workforce

Educators and employers should continue to promote and expand accelerated educational programs for nurses with Associate degrees to earn Bachelor degrees in nursing. Continue to educate and recruit Associate-level nurses in order to help maintain a diverse pipeline, representative of the region's population, for Bachelor-level candidates.

APPENDICES

APPENDIX A: CRITICAL HEALTH CARE OCCUPATIONS STUDIED

Table A.1: Critical Health Care Occupations Studied

SOC	Occupations	Notes	Occupational Definition
NURSING OCCUPATIONS			
29-1111	Registered Nurses*		Assess patient health problems and needs, develop and implement nursing care plans, and maintain medical records. Administer nursing care to ill, injured, convalescent, or disabled patients. May advise patients on health maintenance and disease prevention or provide case management. Licensing or registration required. Includes Clinical Nurse Specialists. Includes SOC 2010 occupation: 29-1161 Nurse Midwives: Diagnose and coordinate all aspects of the birthing process, either independently or as part of a health care team. May provide well-woman gynecological care. Must have specialized, graduate nursing education. Includes SOC 2010 occupation: 29-1171, Nurse Practitioners: Diagnose and treat acute, episodic, or chronic illness, independently or as part of a health care team. May focus on health promotion and disease prevention. May order, perform, or interpret diagnostic tests such as lab work and X rays. May prescribe medication. Must be registered nurses who have specialized graduate education.

29-1151	*Certified Nurse Anesthetist*	*Nurse Anesthetist*	Administer anesthesia, monitor patient's vital signs, and oversee patient recovery from anesthesia. May assist anesthesiologists, surgeons, other physicians, or dentists. Must be registered nurses who have specialized graduate education.
N/A	A.D.N*		*See Registered Nurses*
N/A	B.S.N*		*See Registered Nurses*
N/A	M.S.N*		*See Registered Nurses*
N/A	PhD*		*See Registered Nurses*
N/A	D.N.P*		*See Registered Nurses*
29-2061	Licensed Practical and Licensed Vocational Nurses		Care for ill, injured, or convalescing patients or persons with disabilities in hospitals, nursing homes, clinics, private homes, group homes, and similar institutions. May work under the supervision of a registered nurse. Licensing required.
29-2055	Surgical Technologists		Assist in operations, under the supervision of surgeons, registered nurses, or other surgical personnel. May help set up operating room, prepare and transport patients for surgery, adjust lights and equipment, pass instruments and other supplies to surgeons and surgeon's assistants, hold retractors, cut sutures, and help count sponges, needles, supplies, and instruments.
N/A	Surgical Technicians	Title does not exist in SOC. Using Surgical Technologists instead.	*See Surgical Technologists*

DIAGNOSTIC IMAGING			
29-1124	*Radiation Oncology Therapist*	*Title does not exist in SOC. Using Radiation Therapist instead.*	Provide radiation therapy to patients as prescribed by a radiologist according to established practices and standards. Duties may include reviewing prescription and diagnosis; acting as liaison with physician and supportive care personnel; preparing equipment, such as immobilization, treatment, and protection devices; and maintaining records, reports, and files. May assist in dosimetry procedures and tumor localization.
29-2032	*Ultra-sonographer*	*Title does not exist. Using Diagnostic Medical Sonographers instead.*	Produce ultrasonic recordings of internal organs for use by physicians
29-2033	*Radiation Technologist*	*Title does not exist in traditional data. Using Nuclear Medicine Technologists instead*	Prepare, administer, and measure radioactive isotopes in therapeutic, diagnostic, and tracer studies using a variety of radioisotope equipment. Prepare stock solutions of radioactive materials and calculate doses to be administered by radiologists. Subject patients to radiation. Execute blood volume, red cell survival, and fat absorption studies following standard laboratory techniques.
29-2037	Radiologic Technologists and Technicians		Take x rays and CAT scans or administer nonradioactive materials into patient's blood stream for diagnostic purposes. Includes technologists who specialize in other scanning modalities. Excludes "Diagnostic Medical Sonographers"(29-2032) and "Magnetic Resonance Imaging Technologists" (29-2035). Includes SOC 2010 occupation: 29-2035—Magnetic Resonance Imaging Technologists: Operate Magnetic Resonance Imaging (MRI) scanners. Monitor patient safety and comfort, and view images of area being scanned to

			ensure quality of pictures. May administer gadolinium contrast dosage intravenously. May interview patient, explain MRI procedures, and position patient on examining table. May enter into the computer data such as patient history, anatomical area to be scanned, orientation specified, and position of entry
N/A	CT Scanning Technologist	Data rolled up in radiologic technologists and technicians, SOC 29-2037	*See Radiologic Technologists and Technicians*
N/A	MRI Technologist	Data rolled up in radiologic technologists and technicians, SOC 29-2037	*See Radiologic Technologists and Technicians*
DENTAL			
29-2021	Dental Hygienists		Clean teeth and examine oral areas, head, and neck for signs of oral disease. May educate patients on oral hygiene, take and develop x rays, or apply fluoride or sealants.
31-9091	Dental Assistants		Assist dentist, set up equipment, prepare patient for treatment, and keep records.
N/A	*Dental Assistant I*	*Data rolled into Dental, Assistants SOC 31-9091*	*See Dental Assistants*
N/A	*Dental Assistant II (DAII)*	*Data rolled into Dental Assistants SOC 31-9091*	Registered to perform specific, reversible, intraoral procedures under direction and direct supervision of a dentist.
51-9081	*Dental Laboratory Technician*		Construct and repair full or partial dentures or dental appliances.

Rehabilitative			
20-1011	*Chiropractor*		Assess, treat, and care for patients by manipulation of spine and musculoskeletal system. May provide spinal adjustment or address sacral or pelvic misalignment.
29-1122	Occupational Therapists		Assess, plan, organize, and participate in rehabilitative programs that help build or restore vocational, homemaking, and daily living skills, as well as general independence, to persons with disabilities or developmental delays.
29-1123	Physical Therapists		Assess, plan, organize, and participate in rehabilitative programs that improve mobility, relieve pain, increase strength, and improve or correct disabling conditions resulting from disease or injury.
29-1127	Speech-Language Pathologists		Assess and treat persons with speech, language, voice, and fluency disorders. May select alternative communication systems and teach their use. May perform research related to speech and language problems.
29-1181	*Audiologist*		Assess and treat persons with hearing and related disorders. May fit hearing aids and provide auditory training. May perform research related to hearing problems.
29-1199	*Acupuncturists*		Provides treatment of symptoms and disorders using needles and small electrical currents. May provide massage treatment and also provide preventive treatments
29-2091	*Orthotic Technicians*	*Title not available. Using Orthotists and Prosthetists instead*	Helps treat patients in need of corrective shoes, braces or other supports. These professionals use measurements of patient's bodies and doctor's prescriptions to construct orthotic appliances.

31-2011	*Occupational Therapist Assistants*		Assist occupational therapists in providing occupational therapy treatments and procedures. May, in accordance with State laws, assist in development of treatment plans, carry out routine functions, direct activity programs, and document the progress of treatments. Generally requires formal training.
31-2012	*Occupational Therapist Aides*		Under close supervision of an occupational therapist or occupational therapy assistant, perform only delegated, selected, or routine tasks in specific situations. These duties include preparing patient and treatment room.
31-2021	Physical Therapist Assistants		Assist physical therapists in providing physical therapy treatments and procedures. May, in accordance with State laws, assist in the development of treatment plans, carry out routine functions, document the progress of treatment, and modify specific treatments in accordance with patient status and within the scope of treatment plans established by a physical therapist. Generally requires formal training.
31-9011	*Massage Therapist*		Perform therapeutic massages of soft tissues and joints. May assist in the assessment of range of motion and muscle strength, or propose client therapy plans.
LONG-TERM CARE			
31-1011	Home Health Aides		Provide routine individualized health care such as changing bandages and dressing wounds, and applying topical medications to the elderly, convalescents, or persons with disabilities at the patient's home or in a care facility. Monitor or report changes in health status. May also provide personal care such as bathing, dressing, and grooming of patient.

31-1012	Nursing Aides, Orderlies, and Attendants		Includes SOC 2010 occupation: 31-1014—Nursing Assistants: Provide basic patient care under direction of nursing staff. Perform duties such as feed, bathe, dress, groom, or move patients, or change linens. May transfer or transport patients. Includes SOC 2010 occupation: 31-1015—Orderlies: Transport patients to areas such as operating rooms or x-ray rooms using wheelchairs, stretchers, or moveable beds. May maintain stocks of supplies or clean and transport equipment. Psychiatric orderlies are included in "Psychiatric Aides" (31-1013).
LABORATORY			
29-1051	Pharmacists		Dispense drugs prescribed by physicians and other health practitioners and provide information to patients about medications and their use. May advise physicians and other health practitioners on the selection, dosage, interactions, and side effects of medications.
29-2011	Medical and Clinical Laboratory Technologists		Perform complex medical laboratory tests for diagnosis, treatment, and prevention of disease. May train or supervise staff.
29-2012	Medical and Clinical Laboratory Technicians		Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.
29-2052	Pharmacy Technicians		Prepare medications under the direction of a pharmacist. May measure, mix, count out, label, and record amounts and dosages of medications according to prescription orders.

HEALTH INFORMATION TECHNOLOGY / HEALTH INFORMATION MANAGEMENT			
29-2071	Medical Records and Health Information Technicians		Compile, process, and maintain medical records of hospital and clinic patients in a manner consistent with medical, administrative, ethical, legal, and regulatory requirements of the health care system. Process, maintain, compile, and report patient information for health requirements and standards in a manner consistent with the health care industry's numerical coding system.
N/A	*Health Data Analyst*		Identifies problematic data areas and conducts research to determine best course of action, analyzes and problem solves issues with legacy, current, and planned systems as they relate to the integration and management of patient data. Analyzes reports of data duplicates or other errors to provide ongoing appropriate inter-departmental communication, monitors metadata for process improvement, identifies, analyzes and interprets trends or patterns in complex data sets, monitors data dictionary statistics.
N/A	*Clinical Data coder*		*See Medical Records and Health Information Technicians*
N/A	*Registered Health Information Technician (RHIT)*		Ensure the quality of medical records by verifying their completeness, accuracy, and proper entry into computer systems. May use computer applications to assemble and analyze patient data to improve patient care or control costs. Specialize in coding diagnoses and procedures in patient records for reimbursement and research. Although most RHITs work in hospitals, they are also found in other healthcare settings including office-based physician practices, nursing

			homes, home health agencies, mental health facilities, and public health agencies. In fact, RHITs may be employed in any organization that uses patient data or health information, such as pharmaceutical companies, law and insurance firms, and health product vendors.
N/A	*Registered Health Information Administrator (RHIA)*		Manages patient health information and medical records, administering computer information systems, collecting and analyzing patient data, and using classification systems and medical terminologies. Posses comprehensive knowledge of medical, administrative, ethical and legal requirements and standards related to healthcare delivery and the privacy of protected patient information. Manage people and operational units, participate in administrative committees, and prepare budgets.
OTHER ALLIED HEALTH			
11-9111*	Medical and Nurse Managers	Title not included in SOC. Using Medical and Health Services Managers instead.	Plan, direct, or coordinate medical and health services in hospitals, clinics, managed care organizations, public health agencies, or similar organizations.
29-1126	Respiratory Therapists		Assess, treat, and care for patients with breathing disorders. Assume primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technicians. Initiate and conduct therapeutic procedures; maintain patient records; and select, assemble, check, and operate equipment.
29-2041	Emergency Medical Technicians		Assess injuries, administer emergency medical care, and extricate trapped individuals. Transport injured or sick persons to medical

	and Paramedics		facilities.
31-9097	Phlebotomists		Draws blood for tests, transfusions, donations, or research. May explain the procedure to patients and assist in the recovery of patients with adverse reactions.
OTHER			
	Biomedical Equipment Technicians	*Using two BLS titles to satisfy request*	Does the day-to-day upkeep of medical equipment used in medial diagnosis and patient care.
17-2031	*Biomedical Engineers*		Apply knowledge of engineering, biology, and biomechanical principles to the design, development, and evaluation of biological and health systems and products, such as artificial organs, prostheses, instrumentation, medical information systems, and heath management and care delivery systems.
49-9062	*Medical Equipment Repairers*		Test, adjust, or repair biomedical or electromedical equipment.
SOCIAL WORK – Using four BLS titles to satisfy request			
11-9151	*Social and Community Service Managers*		Plan, direct, or coordinate the activities of a social service program or community outreach organization. Oversee the program or organization's budget and policies regarding participant involvement, program requirements, and benefits. Work may involve directing social workers, counselors, or probation officers.

21-1021	*Child, Family, and School Social Workers*		Provide social services and assistance to improve the social and psychological functioning of children and their families and to maximize the family well-being and the academic functioning of children. May assist parents, arrange adoptions, and find foster homes for abandoned or abused children. In schools, they address such problems as teenage pregnancy, misbehavior, and truancy. May also advise teachers.
21-1029	*Social Workers, All Other*		*All social workers not listed separately.*
21-1093	*Social and Human Service Assistants*		Assist in providing client services in a wide variety of fields, such as psychology, rehabilitation, or social work, including support for families. May assist clients in identifying and obtaining available benefits and social and community services. May assist social workers with developing, organizing, and conducting programs to prevent and resolve problems relevant to substance abuse, human relationships, rehabilitation, or dependent care.

Notes: Italicized occupations were not previously studied in the 2005 and 2008 studies.

Asterisk (*) indicates inclusion in list of eight nursing professions examined in additional detail.

APPENDIX B: RESEARCH TEAM AND KEY INFORMANTS

JFF RESEARCH TEAM

1. *Principal Investigator*—**Dr. Randall Wilson**, JFF Senior Project Manager
2. **David Altstadt**, David Altstadt Consulting, LLC
3. **Myriam Milfort Sullivan**, JFF Senior Project Manager
4. **Jeremy Kelley**, JFF Senior Project Manager
5. **Adwapa Donkoh**, JFF Project Manager
6. **Rich Sheward**, Education Pioneers Fellow for JFF

Project Advisors

7. **Mary V.L. Wright**, JFF Program Director
8. **John Dorrer**, JFF Program Director

INFORMANTS

Focus Group Participants

A. HIT/HIM Focus Group

1. **Senator George Barker**, Virginia State Senate
2. **Celeste Dubeck-Smith**, Division Dean, Business and Public Service, Northern Virginia Community College
3. **Fahmeen Faruki**, NUR Counselor, School of Nursing, Northern Virginia Community College
4. **Peter Keesey**, Workforce Training Program, Office of the National Coordinator for Health Information Technology
5. **Mandy Milot**, Dean of Nursing, Northern Virginia Community College
6. **Chitra Mola**, Director, Workforce Training Program, Office of the National Coordinator for Health Information Technology, U.S. Department of Health and Human Services
7. **Marion Swain**, Sentara Northern Virginia Medical Center

B. Employer Focus Group

1. **Lesley Channell**, Vice President, Human Resources, Reston Hospital
2. **Chris Jackson**, Recruiter, Inova Health System
3. **Mike Malone**, Vice President, Administrative Services, Virginia Hospital Center
4. **Brett Willsie**, Vice President, Human Resources, Sentara Northern Virginia Medical Center

C. Education Focus Group

1. **Tess Cappello**, Dean of Health Sciences, Marymount University
2. **Andy Cornell**, Dean of Allied Health, Northern Virginia Community College
3. **Brian Foley**, Provost, Medical Education Campus, Northern Virginia Community College
4. **Kathy Ganske**, Dean of Nursing, Shenandoah University
5. **Phil Magalong**, Coordinator of Counseling, Northern Virginia Community College
6. **Mandy Milot**, Dean of Nursing, Northern Virginia Community College
7. **Shelly Mishoe**, Dean of Health Sciences, Old Dominion University
8. **Tom Prohaska**, Dean of Health Services, George Mason University
9. **Rita Wung**, Dean of Physical Therapy, Marymount University

D. Nursing Focus Group

1. **Alexis Battista**, GMU/Medstar Research Institute
2. **Tess Cappello**, Marymount University
3. **Tammy Dean**, Prince William County Schools, LPN
4. **Fadia Fedhali**, Inova Health care System
5. **Anne Finnerty**, GMU Grad Student and J.Webb
6. **Sibyl Goodwin**, Birmingham Green
7. **Ju Yeon Hwong**, NVCC – LPN program
8. **Polly Roush**, Novant Health
9. **Jo Ann Webb**, American Association of Nurse Executives

KEY INFORMANT INTERVIEWS

Employers

1. **Tracy Bowers**, Director of Human Resources, Northern Virginia, Novant
2. **Geoffrey Brown**, Chief Information Officer, Inova
3. **Col. Charles Callahan**, Commander, Fort Belvoir Community Hospital
4. **James Cole**, President & CEO, Virginia Hospital Center
5. **John Deardorf**, President and CEO of Reston Hospital Center
6. **Mary Dixon**, Chief Nursing Officer, Inova Alexandria Hospital
7. **Bebe Holt**, Chief Operating Officer, Novant Prince William Medical Center; Chief Nursing Officer, all Northern Virginia Novant facilities
8. **Angela Mannino**, Vice President for Human Resources, Inova
9. **Megan Perry**, President, Sentara Potomac Hospital
10. **Melissa Robson**, Chief Executive Officer, Novant Prince William Medical Center
11. **Maureen Swick**, Senior Vice President, Chief Operating Officer of Inova Fairfax Medical Campus, and Chief Nurse Executive of Inova
12. **Heidi Veltman**, Administrator for Northern Virginia Region, Kaiser Permanente
13. **Darlene Vrosos**, Chief Nursing Officer, Virginia Hospital Center
14. **Brett Willsie**, Regional Vice President of Human Resources, Northern Virginia, Sentara

Education Institutions

1. **John Broderick**, President, Old Dominion University
2. **Tracy Fitzsimmons**, President, Shenandoah University
3. **Misty Mesimer**, Dental Assisting Program Director & Dental Hygiene Program Local Coordinator, Germana Community College
4. **Robert Templin**, President, Northern Virginia Community College
5. **Matthew Shank**, President, Marymount University

APPENDIX C: NORTHERN VIRGINIA SUBSET OF VIRGINIA DEPARTMENT OF HEALTH PROFESSIONS SURVEYS

Table C.1: Northern Virginia AHEC Region

Statistic	Audiologists	Dental Hygienists	Dentists	Pharmacist	Pharmacy Technician	Physical Therapists	Physical Therapy Assistants
Response Rate (Renewals	80%	80%	75%	84%	66%	79%	71%
Workforce							
Licensees	101	1,261	2,042	2,116	2,534	1,571	378
Full-Time Equivalency Units	99	796	1,459	1,365	1,571	1,198	281
Licensees per FTE	1.02	1.58	1.40	1.55	1.61	1.31	1.34
Expect to retire within 10 years	19%	24%	22%	16%	14%	16%	18%
Demographics							
% Female	96%	97%	36%	71%	75%	81%	83%
Median Age	41	44	46	42	31	40	43
Rural Childhood	16%	20%	12%	17%	17%	17%	19%
Urban Childhood	9%	18%	31%	30%	33%	15%	17%
Salary & Compensation							
Median Income	$70,001-$80,000	$60,001-$65,000	$150,001-$175,000	$55.01-$60.00(hrly)	$13.01-$15(hrly)	$70,000-$79,999	$30.01-$33.00(hrly)
Satisfied	99%	93%	96%	88%	88%	97%	97%
Employment instability, past year	20%	58%	33%	23%	37%	37%	42%
Employed over 2 years	61%	68%	75%	61%	54%	59%	63%
Work Setting (Primary Work Site)							
Private Practice*	24%	0%	96%	5%	6%	32%	23%
Hospital or Health System	7%	0%	1%	24%	16%	14%	9%
Long-Term Care	0%	0%	0%	1%	1%	12%	26%
Federal Government	4%	1%	2%	4%	4%	2%	5%

Northern Virginia AHEC Region (continued)

Statistic	Speech Language Pathologists	Physician	Physician Assistant	Registered Nurses	Licensed Practical Nurses	Nurse Practitioners
Response Rate (Renewals	73%	76%	76%	76%	62%	76%
Workforce						
Licensees	899	6,718	505	19,762	3,864	1,517
Full-Time Equivalency Units	560	4,553	485	13,003	2,792	1,278
Licensees per FTE	1.61	1.48	1.04	1.52	1.38	1.19
Expect to retire within 10 years	21%	NA	NA	NA	NA	NA
Demographics						
% Female	98%	43%	81%	95%	90%	91%
Median Age	40	49	35	49	43	48
Rural Childhood	16%	NA	NA	NA	NA	NA
Urban Childhood	13%	NA	NA	NA	NA	NA
Salary & Compensation						
Median Income	$60,001-$70,000	$150,001-$175,000	NA	NA	NA	NA
Satisfied	94%	NA	NA	NA	NA	NA
Employment instability, past year	39%	NA	NA	NA	NA	NA
Employed over 2 years	65%	NA	NA	NA	NA	NA
Work Setting (Primary Work Site)						
Private Practice*	25%	71%	52%	8%	22%	41%
Hospital or Health System	11%	13%	26%	57%	7%	30%
Long-Term Care	8%	12%	0%	5%	40%	1%
Federal Government	2%	NA	NA	NA	NA	NA

Source: http://www.vhwda.org/workforce-development/region/northern-va

APPENDIX D: MAJOR HOSPITAL AND HEALTH SYSTEMS EMPLOYERS

NOVANT HEALTH

A not-for-profit integrated system of 14 medical centers and a medical group consisting of 1,123 physicians in 343 clinic locations, as well as numerous outpatient surgery centers, medical plazas, rehabilitation programs, diagnostic imaging centers and community health outreach programs in North Carolina, Virginia, South Carolina and Georgia.

Northern Virginia Facilities

Acute Care Hospitals

- **Novant Health Prince William Medical Center (Manassas):** 170-bed facility provides emergency services, maternity care, surgery, pediatrics, cancer care and behavioral health services. The hospital campus also features comprehensive outpatient services including surgery, diagnostics, physician offices and fitness center.
- **Novant Health Heathcote Health Center:** 60-bed facility in Haymarket will provide emergency services, imaging, laboratory, and rehabilitation services when it opens in 2014.

Assisted Living

- **Novant Health Caton Merchant House:** a 78-appartment “independent living” complex in Manassas

Imaging/Diagnostic

- **MedQuest** imaging services in Tysons Corner and Vienna.

Physician Offices

- **Novant Health Bull Run Family Medicine** (Manassas) – family medicine
- **Novant Health Bull Run Family Medicine** (South Riding) – family medicine
- **Novant Health Bull Run Family Medicine** (Woodbridge) – family medicine
- **Novant Health Prince William Surgical Associates** (Manassas) – surgery
- **Novant Health Prince William Surgical Associates** (Woodbridge) – surgery
- **Novant Inpatient Care Specialists Prince William** – internal medicine

Fort Belvoir Community Hospital

The 1.3 million-square-foot, 120-bed facility replaced DeWitt Army Community Hospital in August 2011. As part of the Department of Defense's efforts to transform service specific medical facilities into joint service facilities, Fort Belvoir staff includes Army, Navy, and Air Force medical personnel. The hospital has a seven-story main structure, flanked on each side by two outpatient clinic areas providing both primary and specialty care. In total, it consists of five total buildings, 3500 parking spaces, 44 clinics, expanded pharmacy services, 430 exam rooms, 10 operating rooms, two DaVinci surgical systems, two linear accelerator cancer/oncology systems, and one of the military's only dedicated substance abuse programs.

Virginia Hospital Center

The Arlington-based, 334-bed hospital offers comprehensive services including: cardiology & cardiovascular surgery, oncology, neuroscience, urology, and women & infant health, lung cancer center, colorectal surgery. In 2004, Virginia Hospital Center celebrated the grand opening of a new $150 million state-of-the-art facility.

HCA

HCA, a private for-profit health care system with more than 175 hospitals throughout the United States and Europe, operates two acute care hospitals and one mental health hospital in Northern Virginia:

- **Reston Hospital Center (Reston):** 187-bed hospital with emergency, maternal/child health, inpatient and outpatient surgery, urological, cancer care rehabilitation, and diagnostic imaging.
- **StoneSprings Hospital Center (Loudoun):** 124-bed hospital and medical office campus currently under construction, due to be opened in 2015.
- **Dominion Hospital:** a mental health facility in Falls Church.

Kaiser Permanente

An integrated managed care consortium based in Oakland, California, Kaiser Permanente operates in nine states and the District of Columbia and is the largest managed care organization in the United States. Kaiser Permanente has 8.9 million health plan members, 167,300 employees, 14,600 physicians, 37 medical centers, and 611 medical offices. Each independent Permanente Medical Group operates as a separate for-profit partnership or professional corporation in its individual territory.

Northern Virginia Outpatient Facilities

- **Ashburn Medical Center** (Ashburn)
  Services: Labs/Imaging, Pharmacy, Primary Care, Specialty Care
- **Burke Medical Center** (Burke)
  Services: Additional Services, Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision Services
- **Falls Church Medical Center** (Falls Church)
  Services: Additional Services, Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision Services
- **Fair Oaks Medical Center** (Fairfax)
  Services: Additional Services, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision
- **Manassas Medical Center** (Manassas)
  Services: Additional Services, Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care
- **Reston Medical Center** (Reston)
  Services: Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision Services
- **Tysons Corner Medical Center** (New—Now Open) (McLean)
  Services: Additional Services, Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision Services
- **Woodbridge Medical Center** (Woodbridge)
  Services: Additional Services, Amenities, Labs/Imaging, Pharmacy, Primary Care, Specialty Care, Vision Services

SENTARA HEALTH CARE

Based in Virginia Beach, the not-for-profit health system operates more than 100 sites of care including ten acute care hospitals, advanced imaging centers, nursing and assisted-living centers, outpatient campuses, physical therapy, and home health and hospice agencies. Sentara offers medical transport ambulances and Nightingale air ambulance. Optima Health, an award winning Sentara owned health plan, serves 450,000 members in Virginia.

Northern Virginia Facilities

Acute Care Hospitals

- **Sentara Northern Virginia Medical Center (Woodbridge):** the former Potomac Hospital has 183 beds.

Outpatient Facilities

- **Sentara Lake Ridge** (Lakeridge)
  Services: emergency care, diagnostic testing, internal medicine, orthopedics, physical therapy, outpatient surgery
- **Sentara Lorton Marketplace** (Lorton)
  Services: emergency care, diagnostic testing, internal medicine, orthopedics, physical therapy

Medical Group Practices

- Dominion Family Health (Woodbridge)
- Primary Care Associates of Potomac (Woodbridge)
- Sentara Surgery Specialists (Woodbridge)
- Sentara Surgery Specialists – Breast (Lorton)

Imaging

- Advanced Imaging Center (Springfield)
- Sentara Mt. Vernon Imaging Center (Alexandria)

Home Health Aid

- Home Care Services (Woodbridge)

Pharmacy

- The Potomac Center Pharmacy (Woodbridge)

INOVA

Northern Virginia Facilities

Acute Care Hospitals

- **Inova Alexandria Hospital (Alexandria):** 318-bed community hospital that offers a full range of health care services
- **Inova Children's Hospital (Fairfax):** Located on the campus of Inova's flagship hospital, Inova Fairfax Hospital, it is a 186-bed, children's hospital with a full-service pediatric emergency department, the region's only pediatric intensive care unit and the region's largest neonatal intensive care unit.
- **Inova Fairfax Hospital (Fairfax):** 833-bed regional medical center includes a level 1 trauma center and cardiac care.

- **Inova Fair Oaks Hospital (Fair Oaks):** 182-bed acute care community hospital
- **Inova Loudoun Hospital:** 183-bed acute-care community hospital
- **Inova Mount Vernon Hospital:** 237-bed hospital home to Inova Joint Replacement Center and Inova Rehabilitation Center

Five Standalone Emergency Care Centers

- Fairfax
- Franconia/Springfield
- Leesburg
- Lorton
- Reston/Herndon

Six Urgent Care Centers

- Ballston
- Centreville
- Dulles South
- Purcellville
- Vienna
- Woodbridge

Other Medical Campuses/Facilities

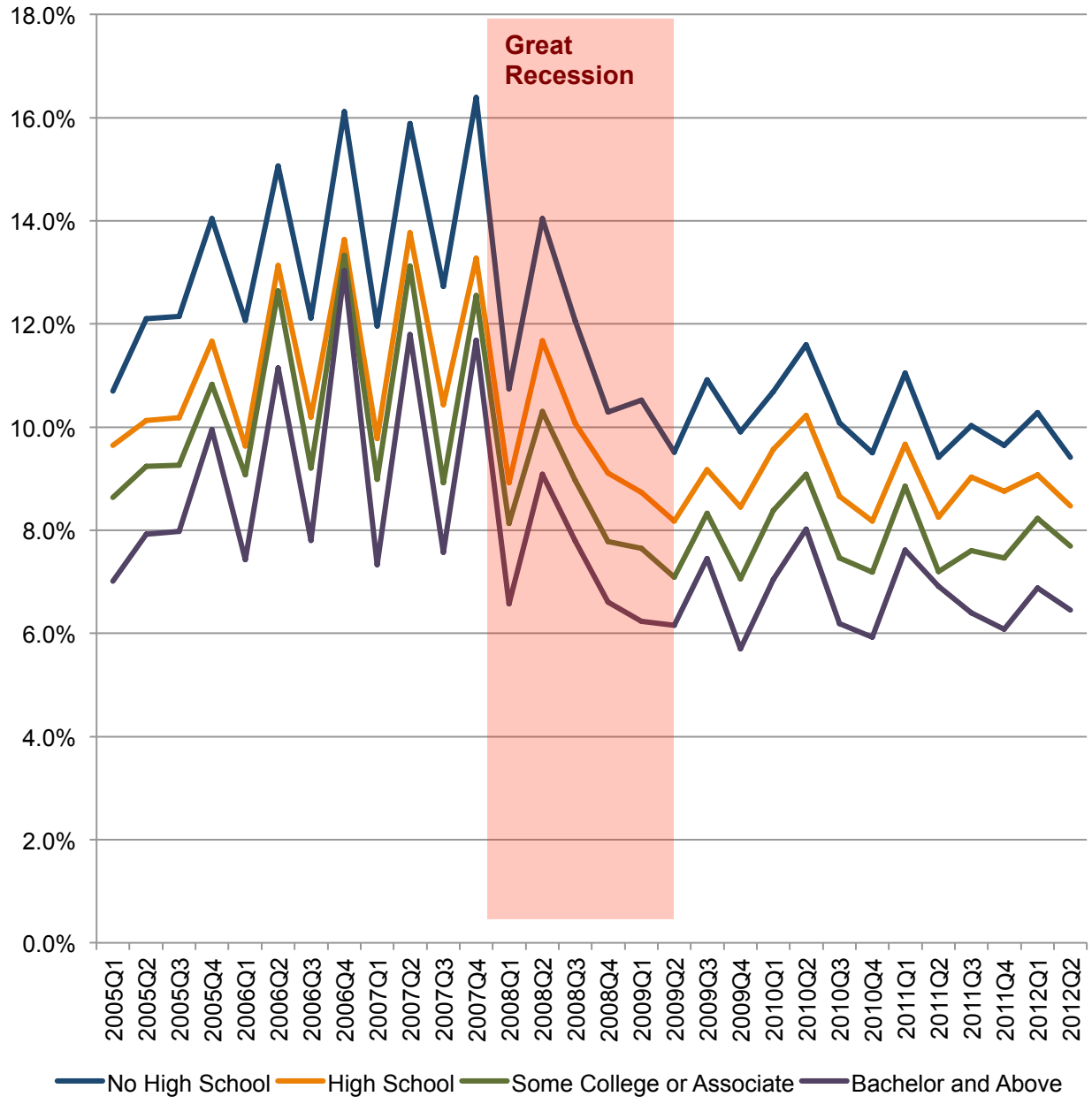
- **Balston:** urgent care center, primary care offices, and specialty Care including orthopedics and sports medicine, behavioral health and OB/GYN physicians
- **Inova HealthPlex—Franconia/Springfield:** a full-service outpatient facility including a 24-hour emergency department, diagnostic radiology, laboratory, surgery, physical therapy, and sports medicine.
- **Inova HealthPlex—Lorton:** ambulatory care center offering emergency, radiology and diagnostic imaging, and laboratory services
- **Inova Loudoun Nursing and Rehabilitation Center:** private, 100-bed not-for-profit skilled nursing facility, including short-term skilled nursing care, long-term care, rehabilitation services, including physical, occupational and speech therapy
- **Inova Medical Pavilion—Dulles South:** diagnostic imaging, urgent care and physical therapy.
- **Inova Medical Pavilion—Mark Center:** diagnostic, primary care offices, breast surgery

Sixteen Primary Care Clinic locations

Several locations for adult and pediatric specialty services

APPENDIX E: STAFF TURNOVER

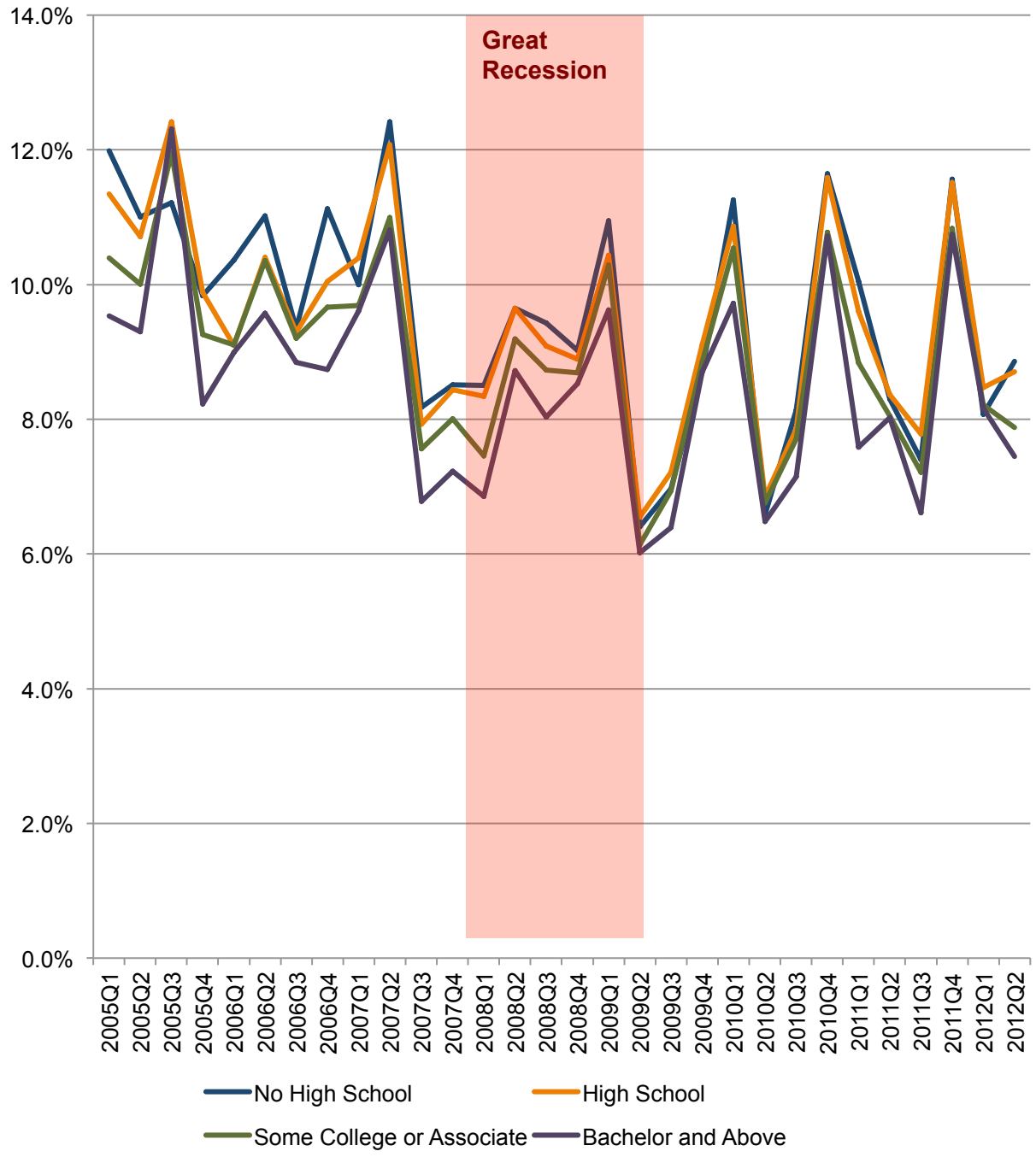
Figure E.1: Staff Turnover in NoVA Ambulatory Centers



Source: Local Employment Dynamics: Quarterly Workforce Indicators for Ambulatory Health Care Services for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII).

**Great Recession period: December 2007-June 2009*

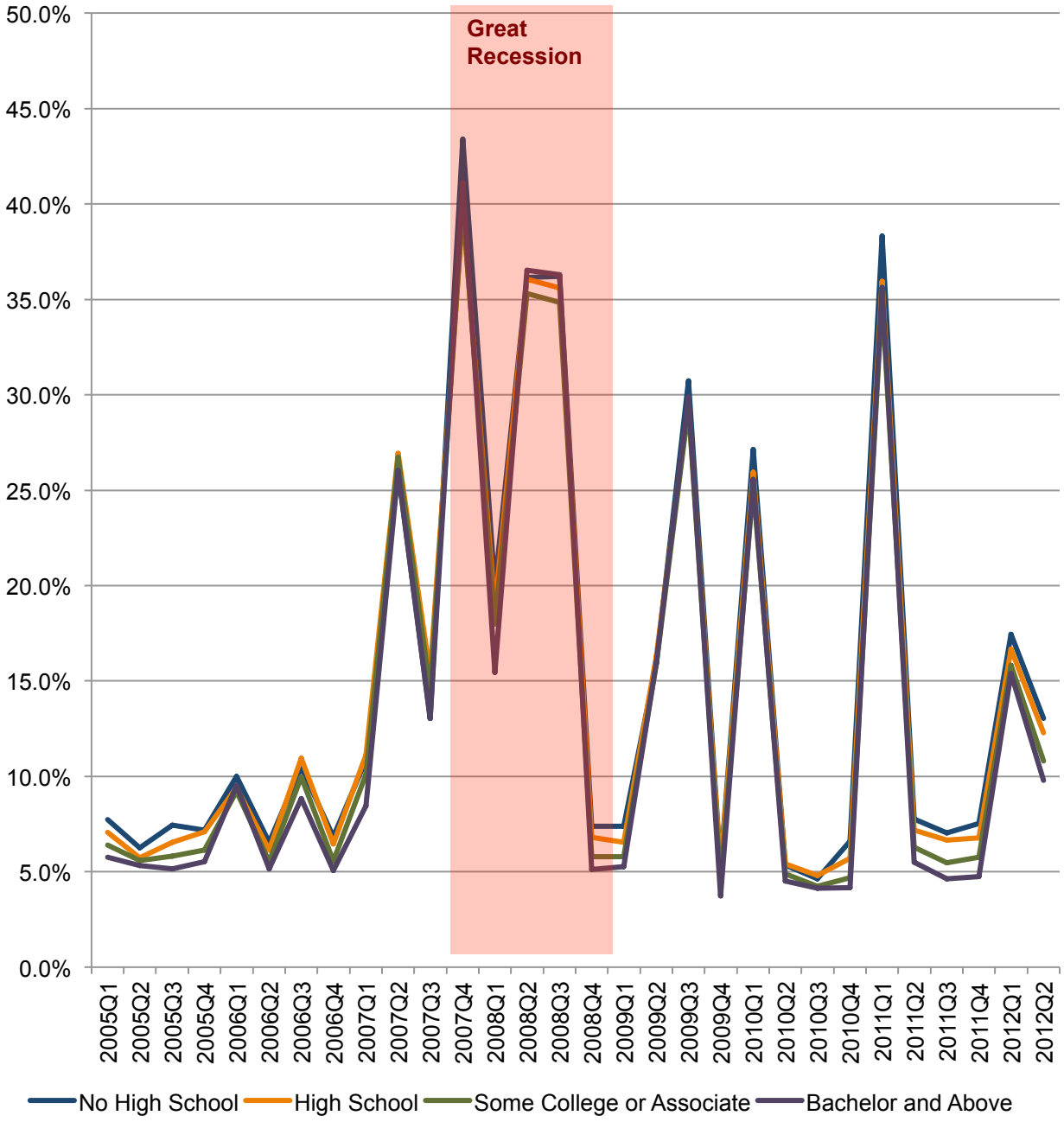
Figure E.2: Staff Turnover in NoVA Residential Nursing Care



Source: Local Employment Dynamics: Quarterly Workforce Indicators for Nursing and Residential Care Facilities for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII).

**Great Recession period: December 2007-June 2009*

Figure E.3: Staff Turnover in NoVA Hospitals



Source: Local Employment Dynamics: Quarterly Workforce Indicators for Hospitals for the combined Workforce Investment Areas of Northern Virginia (LWIA XI) and Alexandria/Arlington (LWIA XII). Data for LWIA XII is missing for 2006Q3, 2007Q2-4, and 2008Q1.

**Great Recession period: December 2007-June 2009*

APPENDIX F: GEORGETOWN CENTER ON EDUCATION AND THE WORKFORCE PROJECTIONS FOR 2010-2020 HEALTH CARE JOB OPENINGS IN VIRGINIA BY EDUCATION LEVEL

Table F.1: Projections for Health Care Job Openings in Virginia by Education Level (2010-2020)

Occupation	High school diploma	Some college, no degree	Associate degree	Bachelor degree	Master's degree	Professional degree	PhD	Total	Wages* (2010)
Chiropractors	10	10	0	50	40	610	450	1,170	$85,230
Dentists	10	10	0	20	30	2,680	1,300	4,050	$191,850
Optometrists	40	30	0	50	40	450	450	1,060	$127,490
Pharmacists	100	180	100	3,420	990	1,250	1,480	7,520	$113,800
Physicians and surgeons	40	30	10	130	360	14,100	5,060	19,730	$174,020
Podiatrists	0	0	0	0	0	500	90	590	$123,460
Veterinarians	20	0	20	20	50	1,460	800	2,370	$95,730
Total Doctors	**220**	**260**	**130**	**3,690**	**1,510**	**21,050**	**9,630**	**36,490**	
Registered nurses	240	670	24,080	30,440	6,140	1,250	190	63,010	$65,020
Licensed practical and licensed vocational nurses	5,050	9,210	5,920	770	70	230	0	21,250	$38,600
Total Nurses	**5,290**	**9,880**	**30,000**	**31,210**	**6,210**	**1,480**	**190**	**84,260**	
Dietitians and nutritionists	400	150	90	730	260	10	20	1,660	$53,490
Physician assistants	130	80	270	760	620	110	70	2,040	$74,820
Therapists	320	800	2,290	5,890	7,110	290	490	17,190	$78,490
Health diagnosing and treating practitioners, all other	230	40	230	190	540	120	230	1,580	$80,180
Clinical laboratory technologists and technicians	760	970	3,040	3,310	280	100	30	8,490	$54,620
Dental hygienists	180	270	2,700	1,720	40	60	0	4,970	$81,150
Diagnostic related technologists and technicians	710	1,480	4,180	1,740	210	90	10	8,420	$63,370
Emergency medial technicians and paramedics	920	2,060	1,270	910	120	0	0	5,280	$35,400

Health practitioner support technologists and technicians	5,100	5,090	2,930	2,250	180	110	60	15,720	$35,040
Medical records and health information technicians	1,260	1,120	800	370	10	0	0	3,560	$35,200
Opticians, dispensing	430	670	400	420	40	60	0	2,020	
Healthcare technologists and technicians, all other	670	810	420	650	210	70	10	2,840	$41,040
Occupational health and safety specialists and technicians	570	680	360	540	170	70	10	2,400	$41,190
Healthcare professional and technical workers, all other	240	290	160	620	290	10	10	1,620	$43,460
Total Allied Health	**11,920**	**14,510**	**19,140**	**20,110**	**10,080**	**1,100**	**940**	**77,790**	
Massage therapists	620	760	590	600	120	40	0	2,730	$46,830
Nursing, psychiatric, and home health aides	14,330	12,930	29,950	5,850	1,710	70	40	64,880	$23,670
Occupational therapy assistants and aides	40	110	670	110	40	0	0	970	$58,480
Physical therapist assistants and aides	350	600	1,050	580	50	0	0	2,630	$50,440
Healthcare support workers, all other	11,830	11,430	8,150	3,040	150	390	60	35,050	$30,870
Total Health Care Support	**27,170**	**25,830**	**40,410**	**10,180**	**2,070**	**500**	**100**	**106,260**	
Total Health Care Jobs	**44,600**	**50,480**	**89,680**	**65,180**	**19,870**	**24,130**	**10,860**	**304,800**	

** OES data, 2010*

Source: Center on Education and the Workforce, Georgetown Public Policy Institute, Georgetown University, June 2012

Note: Numbers may differ slightly from totals due to rounding.

ENDNOTES

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[17] As another approach to identify regional workforce supply, the Virginia Department of Health Professions provided JFF with a regional subset of its recent statewide survey results of workers residing in Virginia who are licensed to work in one of 13 health professions (*see Appendix C*). In some cases, the number of licensees reported in this data far outstrips the number of workers reported through the OES dataset. VDHP

acknowledged that up to 40% of licensees for some professions are not working, or are not working in Virginia. Therefore, JFF does not factor in the VDHP survey data in assessing workforce supply.

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[48] "NAICS" refers to the North American Industry Classification System. It is a set of numerical codes used to classify business organizations by economic activity at varying degrees of specificity. NAICS superseded the former system, based on SIC (Standard Industrial Classification) codes.

[49] Due to missing data, chart excludes hospital turnover rates for 2006Q3, 2007Q2-4, 2008Q1.

[50] Due to missing data, excludes workforce information for LWIA XII for 2006Q1 and 2006Q2.

[51] Due to missing data, does not factor in LWIA XII data for 2008-09.

[52] Due to missing data, 2005-06 turnover rates for workers without a high school diploma or equivalent does not factor in LWIA XII; in addition, 2008Q1 and 2008Q2 data is missing for LWIA XII. Also, the 2005-06 turnover rate for high school graduates is missing data from LWIA XII for 2006Q1 and 2006Q2.

[53] Due to missing data, only contains data from LWIA XI for the turnover rate for workers with less than high school diploma or equivalent. In addition, 2009-09 turnover rate for high school educated workforce is missing data from LWIA XII for 2009Q1 and 2009Q2.

[54] The Associate degree is the minimum credential required for Registered Nurses.

[55] As reported elsewhere in this report, Occupational Employment Statistics (OES) provides occupational employment information at six-digit Standard Occupational Classification (SOC) level at county and city levels—providing a robust source of information on the Northern Virginia labor market. However, the Bureau of Labor Statistics cautions data users not to use OES to compare changes in employment overtime. The American Community Survey provides the only reliable source of longitudinal employment trends. However, ACS reports occupational employment only at three-digit SOC level and only for metropolitan, state, and national levels.

[56] Neither the federal (OES) projection of job openings, or current online advertising, is ideal for assessing future trends for planning purposes, and use of either should be supplemented by primary data.

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[59] The “Allied Health/Other” grouping is somewhat broader than typical references to allied health occupations. Certain occupations deemed critical to NoVAHealthFORCE, such as Biomedical Engineers or Medical and Health Services Managers, were grouped with allied health because they were deemed to have more commonalities with this category than any of the other seven used here, and to avoid categories containing a single occupation with relatively low employment levels.

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