WORKFORCE DEVELOPMENT COUNCIL OF SEATTLE – KING COUNTY

Workforce Development Council Health Care Talent Pipeline 2013

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September 2013

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The WDC is a nonprofit workforce think tank and grant-making organization whose mission is to support a strong economy and the ability of each person to achieve self-sufficiency.

EXECUTIVE SUMMARY

Introduction

This report presents findings of the King County Health Care Talent Pipeline Study commissioned by the Workforce Development Council of Seattle-King County (WDC). The findings in the report inform an understanding of WDC programs and market opportunities for employers and job seekers in Health Care.

The Workforce Development Council of Seattle-King County supports the local economy by matching the skills of the workforce to the skills that employers need, while ensuring that every person has the opportunity to gain skills and be self-sufficient. The WDC funds job training and employment services for adults, youth and employers throughout King County. The WDC oversees the WorkSource system of employment centers, and also serves as a workforce think tank, facilitating collaboration among business, education, labor, nonprofit and other leaders to find and fund solutions to workforce gaps.

The Seattle-King County Talent Pipeline Study is an occupational study of supply and demand that aims to calculate the supply of workers by industry sector and occupation and compare it to demand projections to determine the gaps that may persist without changes in workforce preparation efforts. The WDC will use the results to ensure workforce development planning efforts take into consideration these estimates.

This report updates past work on the Seattle-King County Talent Pipeline Study, which has targeted three of the WDC's focus sectors—Health Care, Manufacturing and Transportation and Logistics. This report focuses specifically on occupations within the Health Care sector. The WDC's focus sectors are reviewed biennially to determine the economic size and scope of the industry, potential job demand, alignment of demand with labor supply, and the sector's potential for impacting the labor supply.

This report identifies 41 occupations within the Health Care sector for detailed analysis. Each was analyzed to determine the projected annual supply (through existing unemployment and a yearly supply of new candidates) and demand (through new job openings). The occupations studied were selected based on the following criteria:

- Requirement of industry-specific training

- Projected growth of employment
- Minimum threshold of total annual job openings available

A list of the 41 occupations studied is included in **Appendix A**.

Key Findings

The Health Care Sector

Overall, the data suggest that the Health Care sector will continue to grow. The 41 occupations selected for this analysis are projected to grow by an average of 2.1% annually from 2015 to 2020, while total occupational employment in King County is projected to grow at the more modest pace of 1.3%. The selected Health Care occupations are projected to produce nearly 23,800 of the total job openings in King County during this period, and 53% of those openings will come from new jobs in King County. The remaining 47% of total job openings result from positions vacated by another worker through retirement, career change, etc.

Exhibit E-1, below, summarizes the results of the supply and demand analysis for the 41 selected occupations in the Health Care sector. Overall, a shortage of workers is projected though variation exists by occupation.

Exhibit E-1. Health Care Talent Pipeline Supply and Demand Summary, 2015-2020

Estimated Total Employment	
2010	103,311
2015	115,211
2020	127,731
Projected Talent Supply (Annual)	
Unemployed	372
Newly-Trained Candidates	3,669
Annual Surplus or (Shortage)	
Total Openings (Demand)	4,752
Total Supply	4,041
Surplus or (Shortage)	(711)

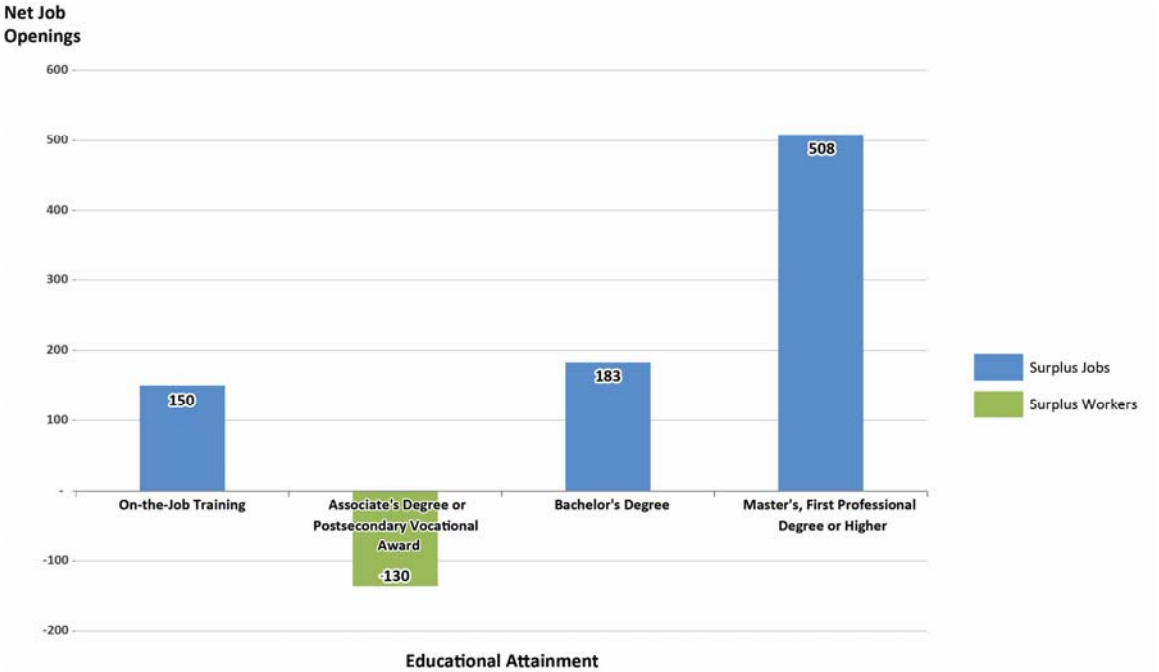
Source: WA ESD, WA UI, NCES, Community Attributes (2013)

Educational Attainment

The Health Care sector is rather broad, and individuals working within the sector exhibit a wide range of educational attainment. This report categorizes Health Care occupations by the level of education required for entry into the position. For all levels of educational attainment, certain occupations are projected to experience an annual shortage of workers. Occupations that require on-the-job training, the lowest level of educational attainment identified in this report, are projected to experience a shortage of 150 workers; every occupation that requires a Master's degree or higher, the highest level of educational attainment identified in this report, is projected to experience a shortage, with a total shortage of 508 workers.

Despite these projected shortages, some occupations are projected to experience a surplus of workers. While the shortages generally exceed the surpluses across the four identified levels of educational attainment, a notable exception is the Associate's degree or postsecondary vocational award category, which is projected to experience a net surplus in workers. Excluding this category, net shortages increase in severity as requisite educational attainment rises. This trend is visible in **Exhibit E-2**.

Exhibit E-2. Annual Average Net Job Openings by Level of Educational Attainment, 2015-2020



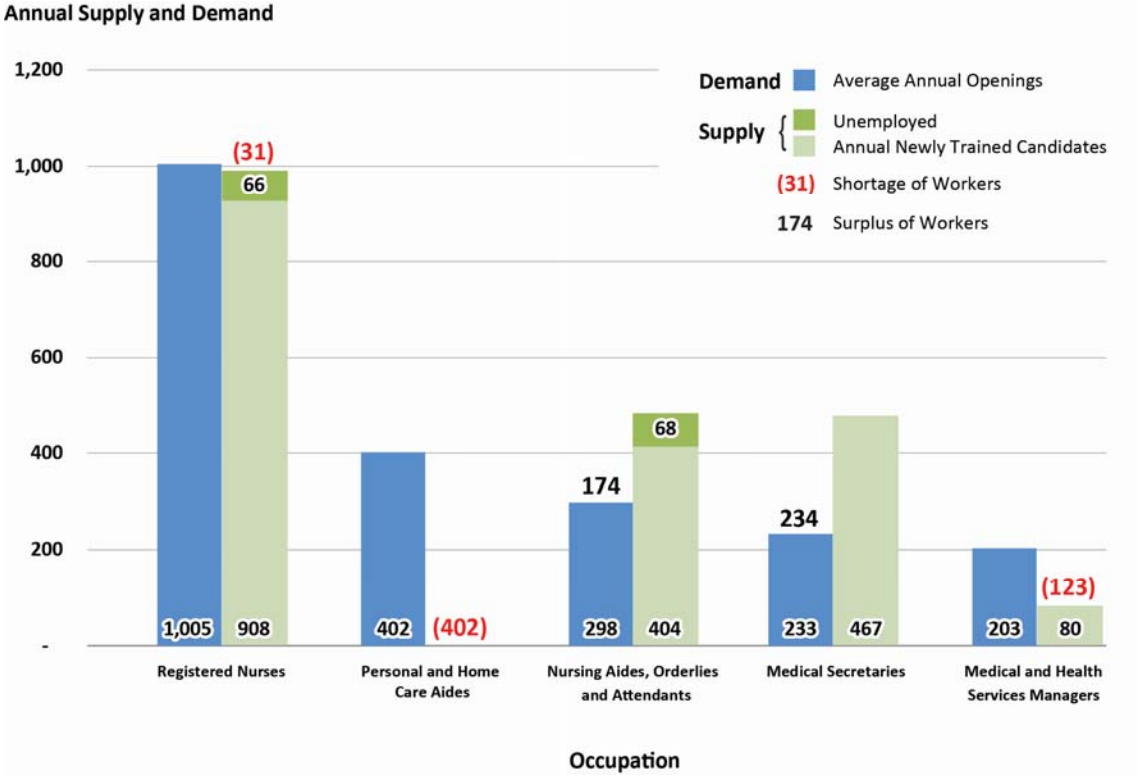
Source: WA ESD, WA UI, NCES, Community Attributes (2013).

Occupational Forecasts

Within the Health Care sector the greatest numbers of annual job openings are projected to occur in the occupations of Registered Nurse, Personal and Home Care Aide, Nursing Aide, Medical Secretary and Medical and Health Services Manager. These occupations are projected to account for nearly half of all job openings in the Health Care sector in King County between 2015 and 2020.

When occupations are ranked by total annual openings, as above, three of the top five are projected to experience a labor shortage relative to demand; shortages are most acute for Personal Home Care Aides and Medical and Health Services Managers, while Nursing Aides, Orderlies and Attendants, as well as Medical Secretaries are projected to experience a labor surplus. Registered Nurses, the largest occupation when ranked by total number of average annual openings, is projected to face a modest annual labor shortage. **Exhibit E-3** illustrates these labor projections for all 41 occupations analyzed, of which 31 are projected to experience a shortage of workers relative to demand.

Exhibit E-3. Annual Demand and Supply for Top Five Occupations (by Annual Openings) in the Health Care Sector, 2015-2020



Source: WA ESD, WA UI, NCES, Community Attributes (2013)

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INTRODUCTION

Background and Purpose

The goal of the Talent Pipeline Study is to anticipate King County's future labor demand by occupation and industry, and to identify shortages (or surpluses) of local workers with the skills, experience and educational qualifications to meet demand. The previous two iterations of the Talent Pipeline Study focused on 'Health Care, Manufacturing, and Transportation and Logistics' and 'Information Technology, Finance and Insurance, and Business Services.' Analysis of potential gaps in demand and supply allows workforce development professionals to collaborate to ensure the region is offering the appropriate mix of educational and training opportunities. Linking educational preparation to occupation demand ensures that a competitive workforce is available to support the regional economy. This update of the Talent Pipeline Study focuses on the field of Health Care, including occupations ranging from Health Care Aids and Assistants to Nurses, Physicians, Scientists and Surgeons.

Companies and local and state governments anticipate shortfalls of competitive labor due to a variety of factors, including rapid product innovations that require updated skill sets, a more complex and technical environment, an aging workforce and population and evolving industry roles. This analysis aims to increase awareness of the local labor demand and supply chain as well as highlight opportunities for support organizations involved in economic and workforce development.

The Workforce Development Council recognizes the need to identify the skill sets required to staff emerging and growing occupations as well as those occupations anticipating openings due to retirements. As part of this effort, the Workforce Development Council contracted Community Attributes Inc. to conduct the Talent Pipeline Study.

Methods

Similar to past versions of the Talent Pipeline study, Community Attributes' analysis relies on data regularly published by Washington State and federal agencies. Specifically, the following data sources form the foundation of the modeling:

- **Occupational estimates and forecasts from the Washington State Employment Security Department (WA ESD) and the Bureau of Labor Statistics.** These data provide current estimates and forecasted demand for occupations in King County and associated educational requirements, as well as occupational wages.

- **Washington unemployment insurance (UI) claims**. These data, provided by the Workforce Development Council, measure monthly unemployment claims by the previous occupation of the claimant.
- **Educational attainment data from the National Center for Education Statistics Integrated Postsecondary Education System (IPEDS).** IPEDS provides the number of graduates by educational program for King County's higher education institutions and a crosswalk (a table of equivalences used to translate) between educational programs and occupations.

Subsequent sections present the details and limits of these data. In general, the data provide measures of demand and supply by occupation across industry sectors. The occupations are defined using definitions from the Bureau of Labor Statistics Standard Occupational Classification (SOC) system.

Organization of Report

This report includes the following sections:

- **Approach.** Provides an overview of methods and data sources used to calculate workforce demand and supply, along with limitations of the study and data.
- **Talent Pipeline Analysis.** Presents updated findings on workforce supply and demand for the Health Care sector. Demand and supply for the highest demand occupations within this sector are highlighted, as are workforce needs by educational requirements.
- **Observations and Considerations.** Provides observations of Talent Pipeline data to existing WDC WorkSource and Career Pathways programs and presents Health Care stakeholder perspectives on evolving occupation definitions, skills and training needs for Health Care occupations in this study.

APPROACH

Occupation Definitions

The analysis presented in this report calculates the supply of specific occupations across the Health Care sector and compares the supply to occupational forecasts produced independently by Washington State's Employment Security Department.

The first step in determining the most relevant occupations for the analysis was to identify occupations of interest within the Health Care sector. This update of the initial talent pipeline uses the same criteria for inclusion as the original Health Care supply and demand report, and the list of occupations studied is identical.

Occupations included in the study met the following criteria:

- **Industry-specific occupations.** Occupations were considered for inclusion in this study if 20% or more work in the Health Care sector.
- **Industry-specific training.** Occupations were included that were associated with the Bureau of Labor Statistics (BLS) educational data.
- **Projected growth.** Growth refers to forecasts in total annual employment from 2015 to 2020 based on WA ESD occupational forecasts for King County.
  - This five year time period was selected since the current study period, 2010-2014, is nearly complete.
  - For Health Care, occupations selected must have at least 20 total annual openings from 2015 to 2020 and an expected compound annual growth rate of 1.0% or more.

Demand Calculations

Workforce demand is based on occupational forecasts for Seattle-King County for years 2010, 2015 and 2020. Occupational forecasts were publically released by the WA ESD in May 2012.

This analysis uses the average annual openings (2015 to 2020) for the 41 selected occupations to illustrate future employment demand on a yearly basis. Total annual openings, as defined by ESD, account for new jobs created by occupational and industry growth as well as openings created by retirement and separation from occupations for other reasons. ESD's estimate of total openings "does not include the normal turnover in each occupation as workers go from one employer to another or from one area to another without changing their occupations."

The analysis identifies occupations of interest within the Health Care industry. However, the forecasted demand for each occupation analyzed includes demand for that occupation from all sectors. For example, some health-related occupations may cut across multiple sectors. A registered nurse may work in a hospital, which is included in the Health Care sector, or in a school, in which case the job would be counted in the Government or Education sector. The demand forecast for registered nurses includes all nursing positions, not just those in hospitals.

Supply Calculations

The Talent Pipeline calculates the supply for two cohorts: unemployed workers and recently trained candidates such as college graduates. Combining these two data sources for the overall supply calculation provides a more comprehensive snapshot of qualified candidates based on both educational attainment and previous work experience. This study assumes that unemployed workers are eligible and qualified for positions they previously held and are as competitive in the marketplace as recently trained candidates. This may not always be the case; however, rather than attempting to estimate relative competitiveness, the study clearly distinguishes the two sources of supply in associated exhibits for easy reference. Industry experts can determine whether the unemployed are comparably competitive to trained candidates for particular occupations in each sector.

Unemployed Workers

The supply of unemployed workers is estimated based on current unemployment insurance claimants (October 2012) and averaged with unemployment figures from 2007. Data for 2012 unemployment claimants categorizes workers by previous occupation using the BLS Standard Occupational Classification Codes (SOC); however, occupational categorization of the unemployed is not available for 2007. To account for this, 2012 occupational classifications are discounted to reflect unemployment figures from 2007, a year of relatively low unemployment. Due to higher than usual unemployment figures in 2012 following the economic recession, an average was then used between a low period (2007) and high period (2012). This average unemployment is used to illustrate a more typical supply of unemployed workers categorized by occupation.

Trained Candidates

Trained candidates include college graduates and other individuals that completed post-secondary training at King County higher education institutions in the year 2010-2011. Estimates of trained candidates are based on data published by

National Center for Education Statistics (NCES) IPEDS, which identifies the number of students that complete specific instructional programs at various award levels (such as post-secondary certificate, bachelor's or master's degree) at each King County higher education institution. See **Appendix B** for a list of King County institutions.

For each instructional program, NCES identifies relevant occupations that trained candidates may be eligible to fill. This analysis uses the NCES Classifications of Instructional Programs (CIP) to the SOC crosswalk table as well as King County occupational demand forecasts to determine the total number of trained candidates for specific occupations. When one degree program prepares students for several possible occupations, the supply of newly trained candidates is distributed among the possible occupations according to the distribution of expected job openings among those occupations.

Trained candidate supply calculations attempt to account for out-migration by taking into consideration the reality that some locally-educated certificate recipients and graduates will not stay in King County. To account for out-migration, supply calculations incorporate an out-migration factor. Based on outreach with industry experts and guidance from phase one of the Talent Pipeline Study, this analysis estimated an out-migration factor of 30%. This is a generalized assumption across educational levels, economic conditions and programs.

In-migration can also affect supply and represent additional competition for locally-trained candidates and unemployed workers. Ideally, this analysis would take into account the flow of workers in and out of the job market. However, data on in-migration is limited, especially at the sector and local level. Further information about the flow of trained candidates in and out of the region can be found in the Washington Higher Education Coordinating Board's annual Key Facts, a high-altitude look at some of these factors.[1]

Surplus and Shortage Assessment

In order to determine either a shortage or a surplus of workers in a given sector and occupation we applied this simple equation:

(UI claimants + Trained Candidates) - Demand = Surplus or (Shortage)

This equation is applied to determine the surplus or shortage by occupation. The study also assesses demand and supply of occupations based on educational attainment to determine what type and level of coursework is expected to be in

[1] http://www.hecb.wa.gov/KeyFacts2012

high demand in future years. By understanding supply and demand by both occupation and educational preparation, stakeholders can determine the competitiveness of their academic and auxiliary programs.

Demand figures are based on annual projections from 2015 to 2020. Supply data are a snapshot in time based on the most recent educational attainment data available (2010-2011), and averaged unemployment insurance data from 2007 (a year with low unemployment) and 2012 (a year with relatively high unemployment).

In some cases, industry leaders may find less significant shortages than anticipated. However, the Workforce Development Council's mission is to evaluate both demand for and supply of labor, and providing a combined supply figure with both unemployed claimants and trained candidates takes into consideration the total labor pool available in King County.

Educational Attainment

This update of the Talent Pipeline Study uses the typical education requirement identified by the Bureau of Labor Statistics to determine how many of the recent graduates in a field of study are adequately prepared for a given occupation. The BLS identifies the educational attainment most commonly required for entry into the occupation reported through national survey data from the American Community Survey and O*NET. Some occupations employ individuals with a wide range of educational attainment, and people with higher levels of training should not be considered over-qualified.

The BLS data include eight different levels of educational attainment. For simplicity, this report condenses the education levels into four groups based on a review of the types of occupations held for education level. The four groups are defined as follows based on the BLS education definitions[2].

- **On-the-Job training** includes short, moderate and long-term on–the-job training as well as work experience in a related occupation. Jobs that require a high school degree or less are considered ones for which on-the-job training is the most significant qualification. Occupations in this category may also employ workers who pursue post-secondary certificates or licenses.
- **Associate's Degree or Post-Secondary Vocational Awards** usually require at least two years of full-time academic study beyond high school.

[2] Bureau of Labor Statistics Occupational Variable Data Definitions. For more information see: http://www.bls.gov/emp/ep_nem_definitions.htm#education

Post-secondary vocational awards are programs that lead to a certificate or other award, but not a degree. Such programs may last anywhere from a few weeks to more than a year. Occupations in this category include those that require only the completion of a training program and others that require individuals to pass a licensing exam after completion of the program before they are considered eligible for a specific occupation.

- **Bachelor's Degrees** generally require at least four years, but not more than five years of full-time academic study beyond high school.
- **Master's Degree, First Professional Degree (or Higher Degrees)** typically involve completion of one or two years of full-time academic study beyond a bachelor's degree, while first professional degrees usually require at least three years of full-time study beyond a bachelor's degree. This category also includes doctoral degrees.

The BLS defines typical entry level education as the level of educational attainment most commonly required to enter an occupation. For some occupations, there may be multiple combinations of education and training that qualify an individual for an entry-level position. In those cases, the BLS identifies the most typical path based on survey data and advice from industry experts. [3]

Data and Model Limitations

This project makes use of available data to estimate supply and projected demand by occupation in the Health Care sector. Key limitations are listed below.

The precision of supply estimates may be impacted by the following:

- Industries may hire people with higher or lower educational attainment than the typical entry level educational attainment identified by the BLS for each occupation. People may drop out of educational programs and still be hirable for the same occupation.
- The class of 2010-2011 is the only group of trained candidates considered for the purposes of this analysis. For occupations that do not require higher education, there is a ready supply of new candidates among the area's high school graduates.
- Some occupations may show an exaggerated shortage due to the fact that there is zero projected supply. In these instances, the data contained no UI claims and no new completions for the occupation in question. It is possible that there are no degree or certificate programs that align with these occupations, but in reality, especially for

[3] Bureau of Labor Statistics. Measures of Education and Training. For more information see: http://www.bls.gov/emp/ep_education_tech.htm

occupations that require only on-the-job training, there should be some discernible supply of workers to meet the projected demand.

- Supply estimates do not include transferable skills, advancement and the current workforce's ability to transform with changing economic conditions.
- Because Unemployment Insurance claimant data filters by both occupation and industry code, UI data does not include claimants that work the same occupations in sectors outside of this study (unlike employment demand and completions supply data, which forecasts demand across all sectors for occupations of interest).
- The model assumes that all unemployed individuals previously employed in a given occupation are hirable again for that same occupation. The analysis does not address that the local workforce competes with people from outside the area for local jobs.

The most granular definitions of occupations by the BLS may not classify occupations in the same way as the job market. For example, in Registered Nurses, the typical entry level education associated with the occupation is an associate's degree. Based on industry experience, many employers in the area actually require that candidates have a bachelor's degree.

Furthermore, some occupational classifications include a number of related professions, though they are treated as one occupation for the purposes of this study. For instance, again, in Registered Nurses, the SOC code associated with the occupation is 29-1111, which actually contains nurse practitioners, nurse anesthetists and nurse midwives. These occupations may have different educational requirements than a Registered Nurse, but are treated as one occupation for the purposes of this study because of limitations in data availability and specificity.

Due to public reporting requirements, unemployment insurance data for some occupations may be suppressed to protect the privacy of individual claimants. In addition, UI data provided by the WDC does not list occupations that show zero unemployment claims. Because of suppression requirements, it is not possible to identify which occupations are suppressed and which have zero unemployment claims. For these reasons, some occupations may have no useable UI data, and are indicated in the appropriate tables in this analysis.

KEY FACTS AND FINDINGS

Demand

- **Growth Rate:** Overall, the Health Care sector will continue in a growth mode. The 41 Health Care occupations studied are projected to grow by 2.1% annually between 2015 and 2020, outpacing total King County employment growth of 1.3%.

- **Job Openings:** The Health Care occupations included in the study are projected to produce nearly 23,800 openings in King County from 2015 to 2020, of which 12,500 will be new jobs added in the five year period. The sector's top 10 jobs, which account for 64% of Health Care employment, will grow from approximately 73,100 in 2015 to more than 81,400 by 2020; a gain of 8,300 new jobs from 2015-2020.

- **Highest Demand:** The five highest demand jobs in terms of total annual job openings are projected to account for nearly half of all job openings, and include: Registered Nurses, Personal and Home Care Aides, Nursing Aides, Medical Secretaries, and Medical and Health Services Managers.

- **Issues and Trends:** Industry observers have commented on an employer trend toward higher education requirements when hiring for some occupations, such as Registered Nurse and Medical Assistant. According to the BLS, the most significant education for RNs is an associate's degree, yet data indicate that 60% of trained candidates in King County have a bachelor's degree. More generally, the study shows that there tend to be greater shortages at higher levels of educational attainment, underscoring the continued need for higher education.

Supply

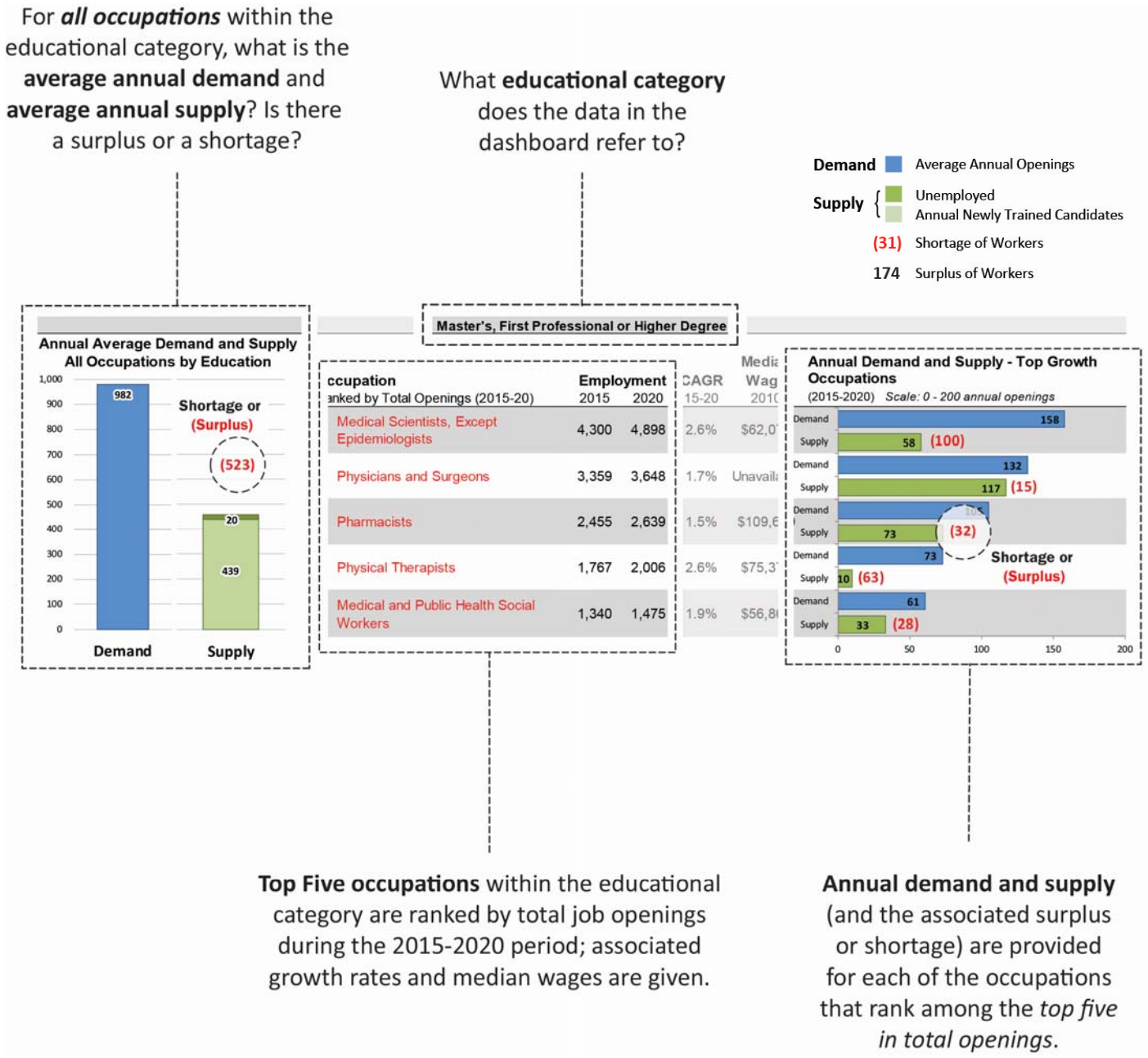
- **Supply Gap:** Across all Health Care occupations studied, there is a projected labor shortage for 31 of 41 occupations. Shortages appear for at least five occupations in every educational attainment level and all 12 occupations at the master's degree or higher level show shortages, with a total shortage of 508 candidates annually. Occupations with on-the-job-training show significant shortages, with a *gross* shortage of 787 candidates annually.

- **Greatest Shortages:** The greatest shortages are for the Personal and Home Care Aides, Social and Human Service Assistants, Home Health Aides, Medical and Health Services Managers, and Medical Scientists except Epidemiologists. All of these occupations show shortages above 100 openings.

- **Issues & Trends:** The number of graduates from private vocational schools is projected to create surpluses in occupations such as Medical Assistant and Medical Secretary.

The data dashboards on the following page provide a snapshot of the analysis that underlies the key facts and findings detailed above. Exhibit 1, below, illustrates how to use the dashboards to efficiently understand the occupational supply and demand at each level of educational attainment.

Exhibit 1. Prototype of Health Care Sector Data Dashboard, 2013



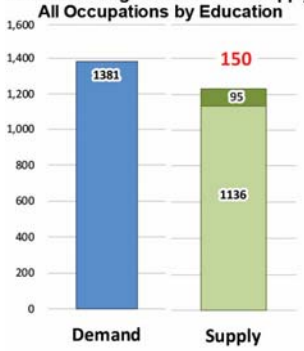
Seattle-King County Health Care Occupations: 2013 Update

Occupations with Highest Projected Growth by Education Level

WORKFORCE DEVELOPMENT COUNCIL OF SEATTLE – KING COUNTY

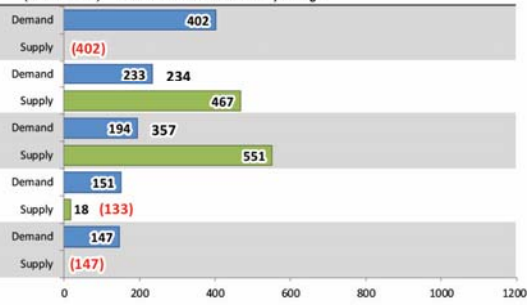
On-the-Job Training

Annual Average Demand and Supply All Occupations by Education



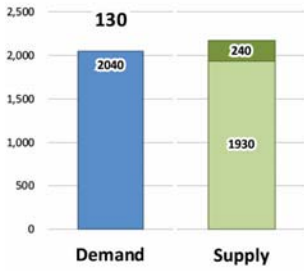
Occupation (Ranked by Total Openings 2015-20)	Employment 2015	Employment 2020	CAGR 15-20	Median Wage 2010
1 Personal and Home Care Aides	11,323	12,762	2.4%	$22,660
2 Medical Secretaries	6,670	7,361	2.0%	$39,650
3 Medical Assistants	5,443	5,934	1.7%	$34,890
4 Home Health Aides	4,021	4,471	2.1%	$23,270
5 Social and Human Service Assistants	3,241	3,588	2.1%	$27,700

Annual Demand and Supply for Top Growth Occupations (2015-2020) *Scale: 0 - 1200 annual openings*



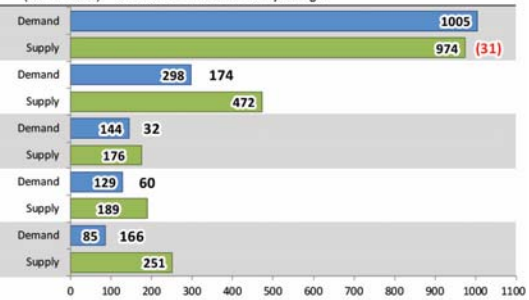
Associate's Degree or Post-Secondary Vocational Award

Annual Average Demand and Supply All Occupations by Education



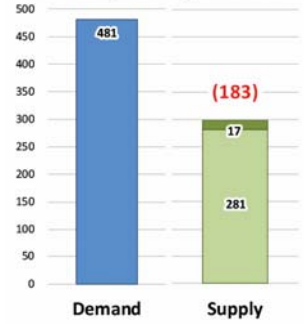
Occupation (Ranked by Total Openings 2015-20)	Employment 2015	Employment 2020	CAGR 15-20	Median Wage 2010
1 Registered Nurses	22,254	24,837	2.2%	$77,650
2 Nursing Aides, Orderlies and Attendants	8,288	9,149	2.0%	$30,290
3 Massage Therapists	3,767	4,130	1.9%	$58,650
4 Licensed Practical and Licensed Vocational Nurses	2,948	3,173	1.5%	$47,690
5 Medical Records and Health Information Technicians	1,942	2,141	2.0%	$38,000

Annual Demand and Supply for Top Growth Occupations (2015-2020) *Scale: 0 - 1100 annual openings*



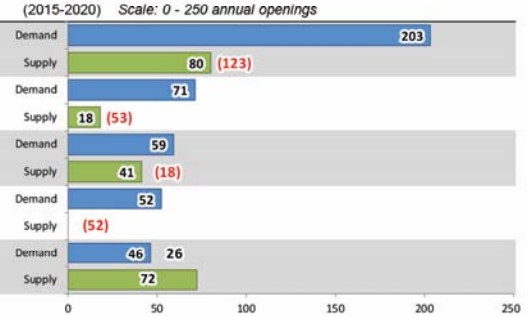
Bachelor's Degree

Annual Average Demand and Supply All Occupations by Education



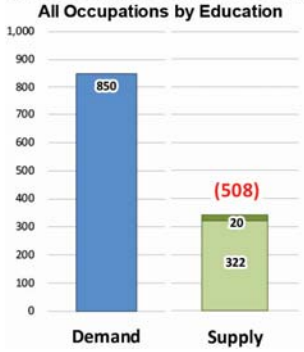
Occupation (Ranked by Total Openings 2015-20)	Employment 2015	Employment 2020	CAGR 15-20	Median Wage 2010
1 Medical and Health Services Managers	3,862	4,315	2.2%	$105,310
2 Medical and Clinical Laboratory Technologists	1,579	1,752	2.1%	$63,220
3 Child, Family and School Social Workers	1,229	1,364	2.1%	$38,370
4 Community and Social Service Specialists, All Other	1,256	1,368	1.7%	$47,370
5 Social and Community Service Managers	1,138	1,228	1.5%	$69,450

Annual Demand and Supply for Top Growth Occupations (2015-2020) *Scale: 0 - 250 annual openings*



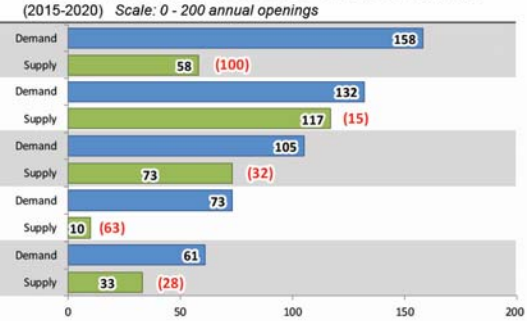
Master's, First Professional or Higher Degree

Annual Average Demand and Supply All Occupations by Education



Occupation (Ranked by Total Openings 2015-20)	Employment 2015	Employment 2020	CAGR 15-20	Median Wage 2010
1 Medical Scientists, Except Epidemiologists	4,300	4,898	2.6%	$62,070
2 Physicians and Surgeons	3,359	3,648	1.7%	Unavailable
3 Pharmacists	2,455	2,639	1.5%	$109,660
4 Physical Therapists	1,767	2,006	2.6%	$75,370
5 Medical and Public Health Social Workers	1,340	1,475	1.9%	$56,860

Annual Demand and Supply for Top Growth Occupations (2015-2020) *Scale: 0 - 200 annual openings*



Health Care Sector Overview

Industry Definition

Health Care is one of the largest employment sectors in Washington State. The 41 occupations analyzed in this report are estimated to produce 12,500 new jobs and more than 4,700 annual job openings in King County alone from 2015 to 2020. Openings are distinguished from jobs insofar as openings include availabilities generated for positions that already exist (e.g. through retirement, termination, etc.). **Exhibit 2** illustrates these impacts.

Exhibit 2. Health Care Talent Pipeline Supply and Demand Summary, 2015-2020

Estimated Total Employment	
2010	103,311
2015	115,211
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Projected Talent Supply (Annual)	
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Surplus or (Shortage)	(711)

Source: WA ESD, WA UI, NCES, Community Attributes (2013)

For the purposes of this analysis, the Health Care sector encompasses 41 occupations primarily employed within the Health Care and Social Assistance industry sector (NAICS 62). See **Appendix A** for a full list of Health Care occupations. NAICS arranges the industries in this sector on a continuum starting with establishments providing medical care exclusively, continuing with those providing medical care and social assistance, and those providing only social assistance. The services provided by establishments in this sector are delivered by trained professionals. Many of the industries in the sector are defined based on the educational degree held by the practitioner.

Specific subsectors which are not typically delivered by health practitioners are excluded from Health Care, such as recreation, nonmedical diet and weight reducing centers, among others.

Top Ranking Occupations

Ten occupations are estimated to account for 64% of Health Care employment by 2020 (**Exhibit 3,** following page). Top ranking occupations include Registered Nurses, Personal and Home Care Aides, Nursing Aides, Medical Secretaries, Medical Assistants, Medical Scientists, Home Health Aides, Medical and Health Service Managers, Massage Therapists, and Social and Human Service Assistants. The remaining 31 occupations that define the Health Care sector in this study are estimated to account for 36% of employment.

The majority of the ten largest Health Care occupations are projected to grow at a faster average annual rate (2.2% CAGR) than the average for all King County employment (1.3% CAGR) for the ten-year period from 2010 to 2020.

Exhibit 3. Health Care Occupations Ranked by Total Projected Employment, King County, 2010-2020

Occupation	Est. Total Employment (2010)	Est. Total Employment (2015)	Est. Total Employment (2020)	% of Total Employment (2020)	CAGR (2010-2020)
Registered Nurses	19,684	22,254	24,837	19%	2.4%
Personal and Home Care Aides	10,184	11,323	12,762	10%	2.3%
Nursing Aides, Orderlies and Attendants	7,401	8,288	9,149	7%	2.1%
Medical Secretaries	6,008	6,670	7,361	6%	2.1%
Medical Assistants	4,932	5,443	5,934	5%	1.9%
Medical Scientists, Except Epidemiologists	3,780	4,300	4,898	4%	2.6%
Home Health Aides	3,595	4,021	4,471	4%	2.2%
Medical and Health Services Managers	3,440	3,862	4,315	3%	2.3%
Massage Therapists	3,423	3,767	4,130	3%	1.9%
Social and Human Service Assistants	2,912	3,241	3,588	3%	2.1%
Subtotal (Top 10)	**65,359**	**73,169**	**81,445**	**64%**	**2.2%**
Remaining Health Care Occupations	37,952	42,042	46,286	36%	2.0%
Total	**103,311**	**115,211**	**127,731**	**100%**	**2.1%**

Source: WA ESD, Community Attributes (2013)

Job Openings

Health Care job openings are forecasted to highly concentrate within 10 of the 41 Health Care occupations in this study. The ten Health Care occupations with the highest numbers of estimated job openings from 2015-2020 will account for 62% of all annual Health Care job openings during that period. The top five occupations are projected to account for nearly half (45%) of all job openings in the sector, see **Exhibit 4**.

By comparison, the remaining 31 Health Care occupations account for only 38% of all projected job openings.

Exhibit 4. Health Care Occupations Ranked by Average Total Annual Job Openings, King County, 2015-2020

Occupation	Avg. Total Annual Openings 2015-2020	% of Total Openings
Registered Nurses	1,005	21.1%
Personal and Home Care Aides	402	8.5%
Nursing Aides, Orderlies and Attendants	298	6.3%
Medical Secretaries	233	4.9%
Medical and Health Services Managers	203	4.3%
Subtotal (Top 5)	2,141	45.1%
Next 5 Highest Occupations	794	16.7%
Remaining Health Care Occupations	1,817	38.2%
Total	4,752	100%

Source: WA ESD, Community Attributes (2013)

Openings (Demand) vs. Supply

Labor shortages are projected for three of the top five highest demand Health Care occupations (**Exhibit 5**). Together, those three show a combined projected shortfall of 556 jobs. The remaining two occupations, Nursing Aides and Medical Secretaries, are projected to experience a surplus of 408 jobs. In total, projected demand for these five occupations is expected to exceed the supply of new workforce talent by 148 jobs annually.

Exhibit 5. Annual Demand and Supply for Top Five Health Care Occupations, Ranked by Average Total Annual Openings, King County, 2015-2020

		Demand	Supply			
Occupation	Education Level	Total Openings	Unemployed	Newly Trained Candidates	Annual Supply	Surplus or (Shortage)
Registered Nurses	Associate's/Postsecondary Voc.	1,005	66	908	974	(31)
Personal and Home Care Aides	On-the-Job Training	402	0	0	0	(402)
Nursing Aides, Orderlies and Attendants	Associate's/Postsecondary Voc.	298	68	404	472	174
Medical Secretaries	On-the-Job Training	233	0	467	467	234
Medical and Health Services Managers	Bachelor's degree	203	0	80	80	(123)
Total		**2,141**	**134**	**1,859**	**1,993**	**(148)**

Source: WA ESD, WA UI, NCES, Community Attributes (2013)

In order to more fully understand the need for well-prepared candidates, it is useful to complement the occupations with the greatest number of openings with those occupations that are expected to experience the greatest shortages. **Exhibit 6**, below, identifies the three occupations expected to witness the greatest labor shortages in each category of educational attainment.

Exhibit 6. Projected Labor Shortages for Health Care Occupations by Educational Attainment, 2015-2020

On-the-Job Training	Surplus/Deficit:	(150)	Average Annual Wage:	$32,597
Occupation Title	**Annual Demand**	**Annual Supply**	**Surplus/Deficit**	**Annual Wage**
Personal and Home Care Aides	402	0	(402)	$22,660
Social and Human Service Assistants	147	0	(147)	$27,700
Home Health Aides	151	18	(133)	$23,270
Associate's Degree or Postsecondary Vocational Award	**Surplus/Deficit:**	**130**	**Average Annual Wage:**	**$49,511**
Occupation Title	**Annual Demand**	**Annual Supply**	**Surplus/Deficit**	**Annual Wage**
Radiologic Technologists and Technicians	73	14	(59)	$67,960
Health Technologists and Technicians, All Other	52	0	(52)	$45,700
Medical Transcriptionists	61	18	(43)	$37,370
Bachelor's Degree	**Surplus/Deficit:**	**(183)**	**Average Annual Wage:**	**$61,816**
Occupation Title	**Annual Demand**	**Annual Supply**	**Surplus/Deficit**	**Annual Wage**
Medical and Health Services Managers	203	80	(123)	$105,310
Medical and Clinical Laboratory Technologists	71	18	(53)	$63,220
Community and Social Service Specialists, All Other	52	0	(52)	$47,370
Master's, First Professional Degree or Higher	**Surplus/Deficit:**	**(508)**	**Average Annual Wage:**	**$82,084**
Occupation Title	**Annual Demand**	**Annual Supply**	**Surplus/Deficit**	**Annual Wage**
Medical Scientists, Except Epidemiologists	158	58	(100)	$62,070
Physical Therapists	73	10	(63)	$75,370
Mental Health Counselors	60	1	(59)	$40,940

Source: WA ESD, WA UI, NCES, Community Attributes (2013)

These occupations are significant due to their significant projected labor shortages. However, this type of ranking can obscure other shortage areas that may merit further attention. For example, input from stakeholders suggests "mid-level" occupations such as Physician Assistants and Nurse Practitioners are a critical focus for local employers at the moment. **Exhibit 7** (following page) includes Physician Assistants and other next ranking occupations that require a Master's degree and are projected to experience a similar shortage of labor.

Compared to these other occupations, Physician Assistants are expected to grow at a moderate rate and to earn above average wages.

Exhibit 7. Health Care Occupations of Interest, King County, 2015-2020

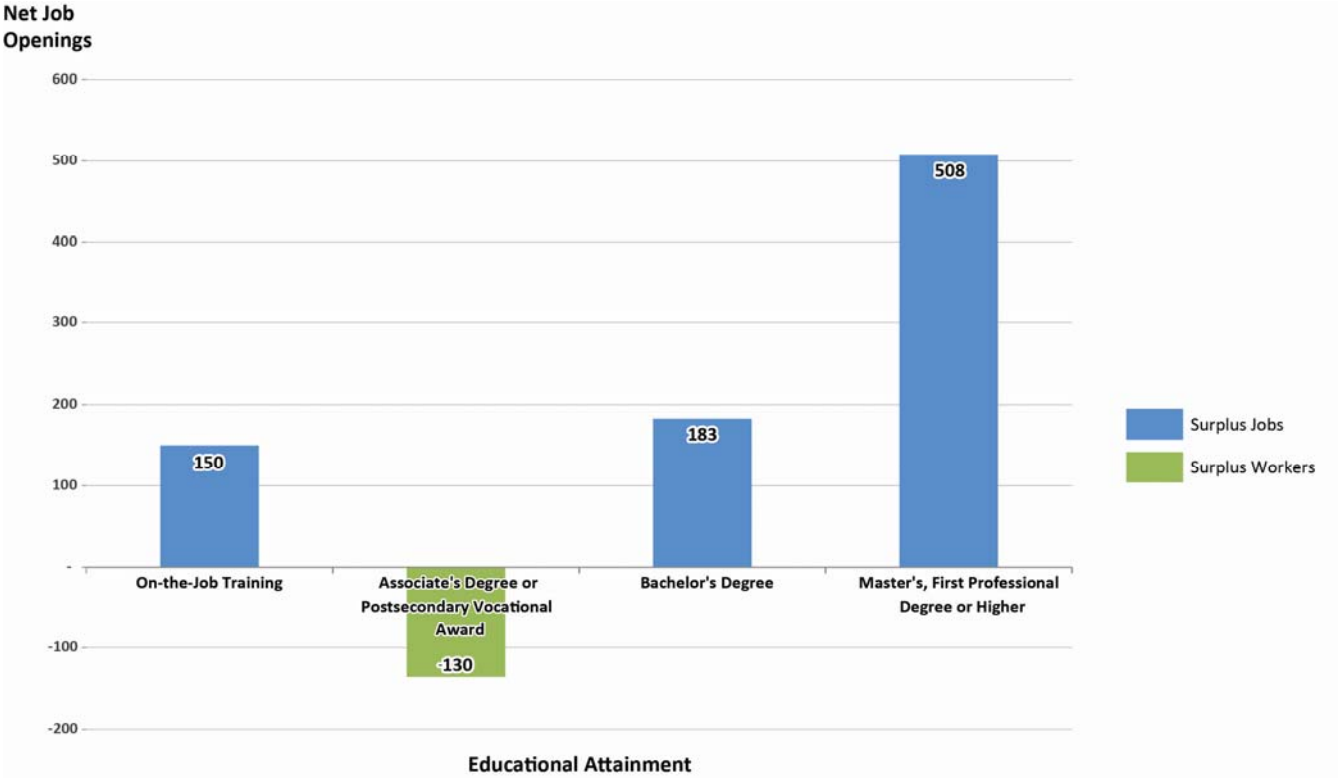
Occupation	Required Educational Attainment	Employment 2015	Employment 2020	CAGR	Median Wage 2010	Surplus or (Shortage)
Chiropractors	Master's degree	852	999	3.2%	N/A	(49)
Occupational Therapists	Master's degree	833	938	2.4%	$71,700	(40)
Physician Assistants	**Master's degree**	**1,016**	**1,128**	**2.1%**	**$99,800**	**(36)**
Speech-Language Pathologists	Master's degree	1,083	1,207	2.2%	$72,760	(34)
Pharmacists	Master's degree	2,455	2,639	1.5%	$109,660	(32)
Total		**6,239**	**6,911**	**2.1%**		**(191)**

Source: WA ESD, WA UI, NCES, Community Attributes (2013)
Note: Wage data unavailable for Chiropractors

Demand vs. Supply by Level of Most Typical Education

To better understand trends in the Health Care sector, occupational supply and demand data can also be grouped by required educational attainment. This illustrates, in broad terms, the education necessary for potential candidates to access the occupations projected to experience the greatest labor shortages. **Exhibit 8** (following page) shows net job openings by level of educational attainment, which is the average annual total demand minus the average annual supply of new trained candidates and unemployed workers for 2015-2020. The data covers all Health Care occupations studied.

Exhibit 8. Annual Average Net Job Openings by Level of Educational Attainment, 2015-2020



Source: WA ESD, WA UI, NCES, Community Attributes (2013)

Three of the four educational attainment categories are projected to experience greater labor shortages than surpluses across all occupations (i.e. a *net* labor shortage). The greatest net shortage appears in the master's, first professional degree or higher category, where every occupation is expected to witness a labor shortage. The on-the-job training and bachelor's degree categories are also projected to experience a net labor shortage, though some individual occupations in those categories are expected to be oversupplied with labor. Only the associate's degree or postsecondary vocational award category shows a net surplus of labor.

In the 41 Health Care occupations studied, total employment is projected to rise from over 115,200 in 2015 to over 127,700 in 2020. The average demand for new talent is projected to marginally outpace supply during that period, with a shortage of approximately 700 workers per year, based on an average of 4,000 candidates and 4,700 openings. Of the 41 Health Care occupations studied, 31 are projected to experience a shortage of available talent.

OBSERVATIONS AND CONSIDERATIONS

Workforce Program Alignment

The WDC's work on this talent pipeline model provides an opportunity to align data analysis with its programs and grant-making. This assessment may yield questions about data validity, or it may illuminate opportunities for the WDC to work with its partners to better align programs and curriculum with occupation needs in the marketplace.

Stakeholder Alignment

The Workforce Development Council of Seattle-King County can use this study as a planning tool for a broad audience of stakeholders, including workforce agencies, local governments, education providers, economic development groups, youth service organizations and more. Sharing this report widely among workforce development stakeholders will expand use and improve the Talent Pipeline for further application.

In addition, the following trends and observations came from stakeholders and research for this study:

- **Ensure experiential as well as classroom training.** To ensure that candidates are competitive when entering the workforce, training programs should emphasize classroom-based learning as well as field work. Employers cite a combination of knowledge and skills as highly desirable in new hires. Creating opportunities for hands-on experience increases a candidate's competitiveness in the job market. Additionally, the three occupations with the highest shortages all have on-the job training as the most typical educational attainment level.
- **Promote Health Care occupations.** The Health Care sector is growing and experiencing a surplus of jobs and a shortage of candidates. Promoting Health Care sector employment to job-seeking candidates at all educational attainment levels can help close the gap and ensure that employers are able to fill job vacancies. Job seekers looking to transition to new careers or seek continued education are especially good candidates for positions which require associate's degree or postsecondary award level of educational attainment.
- **Identify Crossover occupations.** Many new positions in the Health Care sector are characterized by highly transferrable skills. Specifically, occupations requiring technological expertise comprise an emerging new field in Health Care. Increased digitalization of the field, including in

administration and care provision, require candidates highly trained in IT. Providing crossover training and recruiting can assist employers looking to fill these positions.

- **Increase opportunities for advanced education.** All 12 of the occupations citing master's degree or higher as the most typical educational attainment are forecasted to experience a shortage of candidates and a surplus of jobs. Creating opportunities for candidates to receive this level of educational attainment is key to ensuring that the positions can be filled.
- **Improve Competitiveness of training programs.** Workforce training programs should make graduates competitive in the job market and able to successfully perform once on the job. Some employers express a concern that training content may not be sufficiently current, in-depth or skill-based. If this situation occurs, it places graduates at a competitive disadvantage, particularly with larger employers, and can later impact job retention.
- **Increase education requirements.** Some employers express interest in increased education requirements for occupations such as Medical Assistants and Registered Nurses, a trend with several implications. Higher education requirements could translate to fewer job opportunities for lower- and middle-skill candidates. This raises the question of whether higher education requirements are necessary and whether the workforce system should work with employers to preserve more middle-skill opportunities. On the other hand, if this trend is deepening, it is possible that workforce preparation professionals should more actively move students and job seekers onto higher education tracks.

Stakeholder Considerations

The WDC hosts series of Health Care industry employer advisory committee meetings, as part of their ongoing stakeholder engagement and community partnerships programs with educational institutions, employers, and workforce professionals. Employer representatives and leaders have opportunities to review and discuss interim draft findings at these meetings.

Early discussion included data observations and concerns and guidance for additional research to apply the talent pipeline for workforce development programs.

Key observations from that discussion are as follows:

Experience on the job supplements credentials.

- New hires need experience and credentials in order to be ready to work. Newly trained nurses, for example do not come out ready to nurse; they require 12 – 16 week mentoring and preceptor periods.

Jobs in information technology are a growing need in Health Care

- Technology applications to Health Care are the biggest emerging trend, of particular need in Health Care are Master's degrees in information technology.

Some important occupations require better data resolution to illustrate need and importance.

- High demand occupations such as nurse practitioners and physicians assistants would benefit from more in-depth data analysis and examination. For instance, roles for these two occupations vary by setting, such as between primary and specialty care clinics.
- New occupations are emerging which warrant further investigation. Examples include health coaches, navigators of the Health Care system that advocate for patient-clients.
- Some occupations may benefit from regrouping, for instance physicians and surgeons may have distinctions which warrant individual, rather than combined, analysis.
- The data and WDC analysis focuses on direct recipients or people otherwise influenced by workforce development programs, but benefits may exist to using the analysis and pipeline to show trends amongst the physicians and highly trained experts, positions less likely to currently utilize workforce development programs

Segments within Health Care sometimes hire for new positions for different reasons.

- Hiring decisions can vary based on perspectives ranging from a focus on the bottom line to a focus on consumer and other needs. Additionally, employers in community health and private providers have different hiring needs for the same roles.

APPENDIX A. DEMAND AND SUPPLY TABLES

			Estimated Total Employment					Projected Talent Supply				
	Occupation	Education Level	2010	2015	2020	% of Total Employment (2020)	CAGR (2010-2020)	Avg. Total Annual Openings (2015 - 2020)	Unemployed (Avg. of Oct. 2007, Oct. 2012)	Annual Newly Trained Candidates (Class of 2010)	Total Annual Supply	Annual Surplus or (Shortage)
1	Registered Nurses	Associate's degree/ Postsecondary award	19,684	22,254	24,837	1.7%	2.4%	1,005	66	908	974	(31)
2	Personal and Home Care Aides	On-the-Job Training	10,184	11,323	12,762	0.9%	2.3%	402	0	0	0	(402)
3	Nursing Aides, Orderlies, and Attendants	Associate's degree/ Postsecondary award	7,401	8,288	9,149	0.6%	2.1%	298	68	404	472	174
4	Medical Secretaries	On-the-Job Training	6,008	6,670	7,361	0.5%	2.1%	233	0	467	467	234
5	Medical Assistants	On-the-Job Training	4,932	5,443	5,934	0.4%	1.9%	194	58	493	551	357
6	Medical Scientists, Except Epidemiologists	Master's or higher	3,780	4,300	4,898	0.3%	2.6%	158	0	58	58	(100)
7	Home Health Aides	On-the-Job Training	3,595	4,021	4,471	0.3%	2.2%	151	18	0	18	(133)
8	Medical and Health Services Managers	Bachelor's Degree	3,440	3,862	4,315	0.3%	2.3%	203	0	80	80	(123)
9	Massage Therapists	Associate's degree/ Postsecondary award	3,423	3,767	4,130	0.3%	1.9%	144	9	167	176	32
10	Social and Human Service Assistants	On-the-Job Training	2,912	3,241	3,588	0.2%	2.1%	147	0	0	0	(147)
11	Physicians and Surgeons	Master's or higher	3,068	3,359	3,648	0.3%	1.7%	132	0	117	117	(15)
12	Licensed Practical and Licensed Vocational Nurses	Associate's degree/ Postsecondary award	2,703	2,948	3,173	0.2%	1.6%	129	35	154	189	60

13	Pharmacy Technicians	On-the-Job Training	2,511	2,760	2,993	0.2%	1.8%	105	14	112	126	21
14	Pharmacists	Master's or higher	2,253	2,455	2,639	0.2%	1.6%	105	11	62	73	(32)
15	Healthcare Support Workers, All Other	On-the-Job Training	1,964	2,202	2,442	0.2%	2.2%	87	0	0	0	(87)
16	Medical Records and Health Information Technicians	Associate's degree/ Postsecondary award	1,756	1,942	2,141	0.1%	2.0%	85	25	226	251	166
17	Radiologic Technologists and Technicians	Associate's degree/ Postsecondary award	1,570	1,755	1,953	0.1%	2.2%	73	14	0	14	(59)
18	Physical Therapists	Master's or higher	1,549	1,767	2,006	0.1%	2.6%	73	0	10	10	(63)
19	Medical and Clinical Laboratory Technologists	Bachelor's Degree	1,420	1,579	1,752	0.1%	2.1%	71	9	9	18	(53)
20	Mental Health Counselors	Master's or higher	1,327	1,457	1,588	0.1%	1.8%	60	0	1	1	(59)
21	Emergency Medical Technicians and Paramedics	Associate's degree/ Postsecondary award	1,232	1,312	1,414	0.1%	1.4%	51	0	24	24	(27)
22	Medical and Public Health Social Workers	Master's or higher	1,211	1,340	1,475	0.1%	2.0%	61	0	33	33	(28)
23	Community and Social Service Specialists, All Other	Bachelor's Degree	1,146	1,256	1,368	0.1%	1.8%	52	0	0	0	(52)
24	Child, Family, and School Social Workers	Bachelor's Degree	1,122	1,229	1,364	0.1%	2.0%	59	0	41	41	(18)
25	Health Technologists and Technicians, All Other	Associate's degree/ Postsecondary award	1,077	1,194	1,315	0.1%	2.0%	52	0	0	0	(52)
26	Social and Community Service Managers	Bachelor's Degree	1,051	1,138	1,228	0.1%	1.6%	46	0	72	72	26
27	Medical Transcriptionists	Associate's degree/ Postsecondary award	987	1,169	1,370	0.1%	3.3%	61	7	11	18	(43)
28	Speech-Language Pathologists	Master's or higher	969	1,083	1,207	0.1%	2.2%	49	0	15	15	(34)

29	Clinical, Counseling, and School Psychologists	Master's or higher	919	1,006	1,099	0.1%	1.8%	49	0	26	26	(23)
30	Medical and Clinical Laboratory Technicians	Associate's degree/ Postsecondary award	896	997	1,106	0.1%	2.1%	45	10	5	15	(30)
31	Physician Assistants	Master's or higher	886	1,016	1,128	0.1%	2.4%	45	9	0	9	(36)
32	Surgical Technologists	Associate's degree/ Postsecondary award	860	965	1,072	0.1%	2.2%	42	6	17	23	(19)
33	Medical Equipment Preparers	On-the-Job Training	808	880	953	0.1%	1.7%	30	5	50	55	25
34	Occupational Therapists	Master's or higher	731	833	938	0.1%	2.5%	40	0	0	0	(40)
35	Chiropractors	Master's or higher	726	852	999	0.1%	3.2%	49	0	0	0	(49)
36	Substance Abuse and Behavioral Disorder Counselors	On-the-Job Training	666	734	809	0.1%	2.0%	32	0	14	14	(18)
37	Respiratory Therapists	Associate's degree/ Postsecondary award	600	676	759	0.1%	2.4%	32	0	8	8	(24)
38	Pediatricians, General	Master's or higher	566	634	707	0.0%	2.2%	29	0	0	0	(29)
39	Mental Health and Substance Abuse Social Workers	Bachelor's Degree	564	597	647	0.0%	1.4%	25	0	18	18	(7)
40	Medical Equipment Repairers	Associate's degree/ Postsecondary award	429	483	525	0.0%	2.0%	23	0	6	6	(17)
41	Dietitians and Nutritionists	Bachelor's Degree	385	424	468	0.0%	2.0%	25	8	61	69	44
TOTAL			**103,311**	**115,211**	**127,731**			4,752	372	3,669	4,041	(372)

APPENDIX B. KING COUNTY HIGHER EDUCATION INSTITUTIONS

Note, all King County institutions were used to support data collection efforts for IPEDS completions data. The institutions listed here are most applicable to the Health Care sector.

Exhibit B. IPEDS Education Institutions, King County, 2012

UNITID	Institution	City
245883	Antioch University-Seattle	Seattle
439057	Argosy University-Seattle	Seattle
235547	Bastyr University	Kenmore
234669	Bellevue College	Bellevue
439190	Cascadia Community College	Bothell
234915	City University of Seattle	Bellevue
419411	Cortiva Institute-Seattle	Seattle
440545	DeVry University-Washington	Federal Way
234784	Everest College-Renton	Renton
236531	Everest College-Seattle	Seattle
235343	Green River Community College	Auburn
235431	Highline Community College	Des Moines
235510	ITT Technical Institute-Seattle	Seattle
235699	Lake Washington Institute of Technology	Kirkland
236133	Northwest University	Kirkland
449074	Pima Medical Institute-Renton	Renton
368629	Pima Medical Institute-Seattle	Seattle
236382	Renton Technical College	Renton
236513	Seattle Community College-Central Campus	Seattle
236072	Seattle Community College-North Campus	Seattle
236504	Seattle Community College-South Campus	Seattle
236577	Seattle Pacific University	Seattle
236595	Seattle University	Seattle
381529	Seattle Vocational Institute	Seattle
236610	Shoreline Community College	Shoreline
441131	The Seattle School of Theology & Psychology	Seattle
432223	University of Phoenix-Western Washington Campus	Tukwila
377555	University of Washington-Bothell Campus	Bothell
236948	University of Washington-Seattle Campus	Seattle

Source: NCES IPEDS (2013)

APPENDIX C. TYPICAL EDUCATION NEEDED FOR ENTRY CLASSIFICATIONS

Exhibit C below provides the Bureau of Labor Statistics Typical Education Needed for Entry classifications and the educational groupings applied in the Talent Pipeline Analysis. Note, educational groupings were further aggregated if few or no studied occupations were associated with a specific education level. For more information see: http://www.bls.gov/emp/ep_education_tech.htm

Exhibit C. Typical Education Needed for Entry Classification

Talent Pipeline Analysis Education Groupings	BLS Typical Education for Entry Classification
On-the-Job Training	Less than high school
On-the-Job Training	High school diploma or equivalent
On-the-Job Training	Some college no degree
Associate's degree or Postsecondary vocational awa	Postsecondary non-degree award
Associate's degree or Postsecondary vocational awa	Associate's degree
Bachelor's degree	Bachelor's degree
Master's, first professional degree or higher	Master's degree
Master's, first professional degree or higher	Doctoral or professional degree

Source: Bureau of Labor Statistics (2013)