

Spokane Area Workforce Development Council

Spokane Area Healthcare Workforce Roadmap

June 2015

Spokane Area
Workforce Development Council

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EXECUTIVE SUMMARY

Background and Purpose

The Spokane Area Workforce Development Council (SAWDC) is a business-led board that identifies and addresses labor demand and supply gaps in the Spokane area. In order to better anticipate and plan for forthcoming labor shortages or surpluses, the SAWDC has commissioned a cluster and talent pipeline analysis of the region's healthcare industry.

Methods

The healthcare industry comprises all private hospitals, government hospitals, private physician and dentist offices, nursing care facilities, mental care facilities, emergency and relief services, family services, medical and diagnostic services, and other health services.

The analysis draws from secondary data published by the Washington State Employment and Security Department (ESD), the Bureau of Labor Statistics (BLS), the National Center for Education Statistics (NCES), and the Idaho Department of Labor. These data are supplemented with interview feedback from 13 leaders from healthcare organizations in the study region.

Program completion data used in this analysis is published by the National Center for Education Statistics in the Integrated Postsecondary Education Data System (IPEDS). It is important to note that IPEDS data is published by academic year—which straddles two calendar years—so that completions during academic year 2012-2013 are matched to calendar year 2013.

The data for employment and occupations come defined by the four-digit North American Industry Classification System (NAICS) and Standard Occupational Classifications (SOCs). These data help frame the demand portion of the analysis, and economic forecasts adhere to these codes. The supply portion of the analysis draws on data that count graduates of degree and certificate programs that serve relevant occupations, and unemployment claims by occupation.

Key Findings

The Spokane area healthcare industry is a significant employer in the region, accounting for 48,700 direct jobs in 2013. Inter-and-intra-industry purchases and personal consumption expenditures attributed to the industry support an additional 20,000 jobs, resulting in a total economic impact of 68,700 jobs. The industry's total revenue impact in 2013 was \$9.3 billion and its total wage impact was \$3.7 billion.

By 2022, total employment in the Spokane area's healthcare industry is anticipated to reach 56,415 core and ancillary jobs. 89% of these jobs are core jobs, those directly involved in healthcare activities. Ancillary jobs, which include occupations like human resource specialists and managers,

constitute the remaining 11% of jobs. The **Talent Pipeline Dashboard** displays top occupations by size in both core and ancillary jobs organized by educational requirement. The expected compound annual growth rate (CAGR) for each occupation from 2012 to 2022 is presented to show how fast occupations are anticipated to grow relative to each other.

Growth through 2022 will average 1,583 openings per year—including positions made available due to individuals leaving the industry or area—for occupations in the cluster. Graduates from local institutions will provide 875 trained workers per year. Unemployed workers suitable for employment in healthcare, in total, will average 315 annually if trends remain as they are today. With a projected annual supply of 1,547 positions and a demand of 1,583, the sector is expected to experience a shortfall of 36 jobs per year.

Core occupational shortfalls are expected in each educational requirement category, with the largest absolute shortfall expected in healthcare positions that require a Master's degree or higher with an annual projected shortfall of 86 jobs per year. Positions that require on-the-job training are slated to experience an undersupply of approximately 96 jobs per year, while jobs that require an Associate's degree or postsecondary award are expected to experience an oversupply of 77 jobs, largely due to the number of anticipated graduates qualified as Registered Nurses and Medical Assistants.

IPEDS data assign RN, ASN, BSN, and MSN program completions to the CIP code for Registered Nursing, which in turn maps to the SOC code for Registered Nurses. This data limitation means that job-specific degree requirements are not completely accounted for. A hospital may post an opening for a Registered Nurse, for example, but require a MSN degree. This variation in hiring needs is not represented in the data.

Individuals qualified for healthcare positions that require a Bachelor's degree are expected to exceed demand by 86 persons per year. Across all occupations, the industry is slated to experience a shortfall of 20 positions per year.

Spokane Area Healthcare Talent Pipeline

On-the-Job Training

Annual Average Demand and Supply All Occupations by Education	Occupation Ranked by Total Openings (2017-2022)	Employment		CAGR 2012-2022	Annual Demand and Supply, 2017-2022	
		2012	2022		Scale: 0 - 200 annual openings	Gap
	1 Personal Care Aides	4,425	5,697	2.6%	Demand 127 Supply 99	(28)
	2 Home Health Aides	1,469	1,886	2.5%	Demand 56 Supply 10	(47)
	3 Social and Human Service Assistants	1,197	1,473	2.1%	Demand 51 Supply 0	(51)
	4 Medical Secretaries	1,243	1,590	2.5%	Demand 45 Supply 65	19
	5 Healthcare Support Workers, All Other	529	621	1.6%	Demand 19 Supply 14	(5)
	6 Substance Abuse and Behavioral Disorder Counselors	375	443	1.7%	Demand 12 Supply 13	0
	7 Psychiatric Aides	259	314	1.9%	Demand 10 Supply 0	(10)

Associate's degree or Postsecondary Award

Annual Average Demand and Supply All Occupations by Education	Occupation Ranked by Total Openings (2017-2022)	Employment		CAGR 2012-2022	Annual Demand and Supply, 2017-2022	
		2012	2022		Scale: 0 - 350 annual openings	Gap
	1 Registered Nurses	6,584	8,027	2.0%	Demand 219 Supply 321	102
	2 Nursing Assistants	3,334	4,143	2.2%	Demand 99 Supply 0	(99)
	3 Medical Assistants	1,424	1,781	2.3%	Demand 58 Supply 199	141
	4 Massage Therapists	613	876	3.6%	Demand 36 Supply 4	(32)
	5 Dental Assistants	1,017	1,218	1.8%	Demand 36 Supply 22	(14)
	6 Licensed Practical and Licensed Vocational Nurses	1,003	1,239	2.1%	Demand 32 Supply 72	40
	7 Dental Hygienists	458	571	2.2%	Demand 21 Supply 10	(11)
	8 Medical Records and Health Information Technicians	419	515	2.1%	Demand 18 Supply 29	11
	9 Phlebotomists	387	504	2.7%	Demand 15 Supply 0	(15)

Bachelor's degree

Annual Average Demand and Supply All Occupations by Education	Occupation Ranked by Total Openings (2017-2022)	Employment		CAGR 2012-2022	Annual Demand and Supply, 2017-2022	
		2012	2022		Scale: 0 - 50 annual openings	Gap
	1 Medical and Health Services Managers	707	873	2.1%	Demand 30 Supply 51	20
	2 Medical and Clinical Laboratory Technologists	584	716	2.1%	Demand 27 Supply 0	(27)
	3 Child, Family, and School Social Workers	839	951	1.3%	Demand 25 Supply 25	0
	4 Human Resources Specialists	844	979	1.5%	Demand 25 Supply 102	77
	5 Social and Community Service Managers	502	593	1.7%	Demand 18 Supply 109	91
	6 Recreation Workers	553	626	1.3%	Demand 9 Supply 0	(9)
	7 Mental Health and Substance Abuse Social Workers	279	313	1.1%	Demand 7 Supply 10	3

Master's degree or Higher

Annual Average Demand and Supply All Occupations by Education	Occupation Ranked by Total Openings (2017-2022)	Employment		CAGR 2012-2022	Annual Demand and Supply, 2017-2022	
		2012	2022		Scale: 0 - 50 annual openings	Gap
	1 Rehabilitation Counselors	1,215	1,335	0.9%	Demand 30 Supply 0	(30)
	2 Physicians and Surgeons	596	715	1.8%	Demand 26 Supply 0	(26)
	3 Physical Therapists	589	759	2.6%	Demand 20 Supply 29	9
	4 Pharmacists	578	669	1.5%	Demand 20 Supply 13	(6)
	5 Mental Health Counselors	491	578	1.7%	Demand 15 Supply 29	14
	6 Nurse Practitioners	343	429	2.3%	Demand 13 Supply 0	(13)
	7 Healthcare Social Workers	323	403	2.2%	Demand 10 Supply 10	(0)
	8 Family and General Practitioners	212	259	2.0%	Demand 9 Supply 0	(9)

Sources: Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

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INTRODUCTION

Background and Purpose

This healthcare industry cluster analysis will assist the Spokane Area Workforce Development Council (SAWDC) as it plans for future labor shortages or surpluses within the region. The SAWDC has partnered with the State of Washington, Community Colleges of Spokane, multiple businesses, regional school districts and community-based organizations to develop a regional strategic plan for workforce development.

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 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.

Methods

The Spokane area covers six counties in Washington State and one county in Idaho. These are Spokane, Pend Oreille, Stevens, Ferry, Whitman, Lincoln counties (WA), and Kootenai County (ID). 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), the Idaho State Department of Labor and the Bureau of Labor Statistics.** These data provide current estimates and forecasted demand for occupations in the Spokane area and associated educational requirements, as well as occupational wages. Occupational forecasts include openings created by retirements and separations. For this reason, average annual openings are larger than the average of net jobs created over a period of time.
- **Washington and Idaho unemployment insurance (UI) claims.** These data, also from WA ESD and ID DOL, provide monthly unemployment claims and the previous occupations of the claimant, and the industry alignment of their last employer.
- **Educational attainment data from the National Center for Education Statistics Integrated Postsecondary Education System (IPEDs).** IPEDS provides the number of graduates by educational program, defined according to the Classification of

Instructional Programs (CIP), for the Spokane area's higher education institutions and a table of equivalences used to translate between educational programs and occupations.

Subsequent sections present the details and limits of these data. In general, these 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 and industries are delineated using definitions from the North American Industry Classification System (NAICS).

Interviews with healthcare organization human resources experts and other leaders in the Spokane area inform key assumptions in data analytics. Furthermore, interview feedback supplements and reinforces supply and demand conclusions.

Organization of Report

- **Demand Analysis.** Describes the composition of occupational demand in the Spokane area.
- **Supply Analysis.** Breaks out the two elements of talent supply: new graduates entering the workforce and the existing pool of Unemployment Insurance claimants.
- **Healthcare Talent Pipeline.** Discusses the healthcare industry talent pipeline analysis sequentially starting from definitions and proceeding to elements of supply and demand before presenting high-level results.
- **Stakeholder Interviews.** Summarizes key findings from interviews with leaders at healthcare institutions in the Spokane area.
- **Conclusions.** Assesses in detail the results of the talent pipeline analysis, focusing on key implications for the Spokane area.
- **Appendices.** Provide supplemental information.

HEALTHCARE CLUSTER OVERVIEW

Determining occupations involved in the Spokane area’s healthcare industry begins with developing an operational definition for the industry. The North American Industry Classification System (NAICS) groups industries in increasingly specific segments from the two-digit to the six-digit level. For the purposes of this analysis, all four-digit NAICS codes in the two-digit industry 62 (Health Care and Social Assistance), excluding daycare services, as well as healthcare-related establishments in state, local, and federal government were considered, such as government-run hospitals. The largest government-run segment of healthcare employment is Local Government Other (NAICS 9993), which includes local public healthcare services. For these NAICS, only jobs estimated to be in healthcare are included. (**Exhibit 1**)

Exhibit 1. Spokane Area Healthcare NAICS by Employment, 2013

Four Digit NAICS	Description	Estimated Jobs in Study Region, 2013
6211	Offices of physicians	6,200
6212	Offices of dentists	2,390
6213	Offices of other health practitioners	1,810
6214	Outpatient care centers	1,860
6215	Medical and diagnostic laboratories	1,940
6216	Home health care services	1,880
6219	Other ambulatory health care services	610
6221	General medical and surgical hospitals	9,000
6222	Psychiatric and substance abuse hospitals	930
6223	Other hospitals	580
6231	Nursing care facilities	2,580
6232	Residential mental health facilities	1,770
6233	Community care facilities for the elderly	3,570
6239	Other residential care facilities	460
6241	Individual and family services	3,880
6242	Emergency and other relief services	680
6243	Vocational rehabilitation services	890
9991	Federal Government (Healthcare only)	1,230
9992	State Government Other (Healthcare only)	2,670
9993	Local Government Other (Healthcare only)	3,800
Total		48,730

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

The second way to define the Spokane area healthcare cluster is to identify all occupations that compose the cluster—such as physicians and registered nurses—and all other occupations that area associated with the operations of healthcare. Some of these occupations may be significantly represented in other industries (e.g. Registered Nurses are an important part of the education sector).

Exhibits 2 and **3** list the occupations that define healthcare for this study. Defining the list began by examining the code system that the Bureau of

Labor Statistics reports for occupations, many of which are identified as part of the Health Care occupation category (with code prefixes of 29 in **Exhibit 2** and prefix 31 in **Exhibit 3**). Certain SOC codes with prefixes 11, 21, 39, and 41 were also found to be significantly concentrated within the cluster.

Exhibit 2. Core Healthcare Occupations, SOC 29, Employment in Cluster and Total Employment, Spokane Area, 2012

SOC	Occupation	Employment in Cluster	Total Employment	Share in Cluster
29-1141	Registered Nurses	6,584	6,932	95%
29-2061	Licensed Practical and Licensed Vocational Nurses	1,003	1,173	86%
29-2011	Medical and Clinical Laboratory Technologists	584	591	99%
29-2021	Dental Hygienists	458	458	100%
29-2071	Medical Records and Health Information Technicians	419	425	99%
29-1123	Physical Therapists	589	671	88%
29-2055	Surgical Technologists	398	399	100%
29-1069	Physicians and Surgeons, All Other	398	404	98%
29-2034	Radiologic Technologists	327	330	99%
29-2012	Medical and Clinical Laboratory Technicians	330	333	99%
29-1171	Nurse Practitioners	343	364	94%
29-2099	Health Technologists and Technicians, All Other	256	257	100%
29-2041	Emergency Medical Technicians and Paramedics	225	230	98%
29-2052	Pharmacy Technicians	690	1,948	35%
29-1051	Pharmacists	578	1,414	41%
29-1126	Respiratory Therapists	208	215	97%
29-1067	Surgeons	198	198	100%
29-1071	Physician Assistants	198	209	95%
29-1062	Family and General Practitioners	212	216	98%
29-1122	Occupational Therapists	236	314	75%
29-2031	Cardiovascular Technologists and Technicians	143	144	99%
29-2032	Diagnostic Medical Sonographers	144	144	99%
29-1063	Internists, General	131	131	100%
29-1151	Nurse Anesthetists	114	119	96%
29 Subtotal		14,765	17,618	90%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Exhibit 3. Core Healthcare Occupations, SOCs 31, 11, and 21, Employment in Cluster and Total Employment, Spokane Area, 2012

SOC	Occupation	Employment in Cluster	Total Employment	Share in Cluster
31-1014	Nursing Assistants	3,334	3,601	93%
31-1011	Home Health Aides	1,469	1,515	97%
31-9092	Medical Assistants	1,424	1,484	96%
31-9091	Dental Assistants	1,017	1,019	100%
31-9097	Phlebotomists	387	387	100%
31-9099	Healthcare Support Workers, All Other	529	924	57%
31-1013	Psychiatric Aides	259	259	100%
31-9094	Medical Transcriptionists	387	473	82%
31-9011	Massage Therapists	613	807	76%
31-9093	Medical Equipment Preparers	156	194	80%
31-1015	Orderlies	135	135	100%
	31 Subtotal	9,709	10,578	92%
21-1011	Substance Abuse and Behavioral Disorder Counselors	375	402	93%
21-1014	Mental Health Counselors	491	524	94%
21-1015	Rehabilitation Counselors	1,215	1,215	100%
21-1021	Child, Family, and School Social Workers	693	725	96%
21-1022	Healthcare Social Workers	323	334	97%
21-1023	Mental Health and Substance Abuse Social Workers	279	279	100%
21-1093	Social and Human Service Assistants	1,197	1,329	90%
	21 Subtotal	4,574	4,812	95%
11-9111	Medical and Health Services Managers	707	775	91%
11-9151	Social and Community Service Managers	502	632	79%
	11 Subtotal	1,208	1,400	86%
39-9021	Personal Care Aides	4,425	5,175	86%
43-6013	Medical Secretaries	1,243	1,256	99%
	Other Subtotal	5,668	6,431	88%
	All Core Occupations	35,925	40,839	88%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

These occupations are also found in other industries. Across non-healthcare industries, the largest healthcare occupation by employment is pharmacy technicians with more than 1,200 employees, pharmacists, with 837 employees in other industries, and personal care aides, with 750 employees in other industries, are the two next-largest occupations. Seven core occupations are only represented in the Spokane area's healthcare cluster, including dental hygienists, surgical technologists, surgeons, dental assistants, phlebotomists, psychiatric aides, orderlies, rehabilitation counselors, and mental health and substance abuse social workers. (Exhibit 4)

Exhibit 4. Core Healthcare Occupational Employment in Other Industries, 2012

SOC	Occupation	Employment in Other Industries
29-2052	Pharmacy Technicians	1,258
29-1051	Pharmacists	837
39-9021	Personal Care Aides	750
31-9099	Healthcare Support Workers, All Other	395
29-1141	Registered Nurses	347
31-1014	Nursing Assistants	267
31-9011	Massage Therapists	194
29-2061	Licensed Practical and Licensed Vocational Nurses	170
21-1093	Social and Human Service Assistants	132
11-9151	Social and Community Service Managers	131
31-9094	Medical Transcriptionists	86
29-1123	Physical Therapists	81
29-1122	Occupational Therapists	78
11-9111	Medical and Health Services Managers	68
31-9092	Medical Assistants	61
31-1011	Home Health Aides	46
31-9093	Medical Equipment Preparers	38
21-1014	Mental Health Counselors	34
21-1021	Child, Family, and School Social Workers	31
21-1011	Substance Abuse and Behavioral Disorder Counselors	26
29-1171	Nurse Practitioners	21
43-6013	Medical Secretaries	13
21-1022	Healthcare Social Workers	11
29-1071	Physician Assistants	11
29-2011	Medical and Clinical Laboratory Technologists	7
29-1126	Respiratory Therapists	7
29-1069	Physicians and Surgeons, All Other	6
29-2071	Medical Records and Health Information Technicians	6
29-2041	Emergency Medical Technicians and Paramedics	5
29-1151	Nurse Anesthetists	5
29-1062	Family and General Practitioners	4
29-2034	Radiologic Technologists	3
29-2012	Medical and Clinical Laboratory Technicians	3
31-9091	Dental Assistants	2
29-2055	Surgical Technologists	1
29-2032	Diagnostic Medical Sonographers	1
29-2031	Cardiovascular Technologists and Technicians	1
29-2099	Health Technologists and Technicians, All Other	1
29-2021	Dental Hygienists	-
29-1067	Surgeons	-
29-1063	Internists, General	-
31-9097	Phlebotomists	-
31-1015	Orderlies	-
21-1015	Rehabilitation Counselors	-
21-1023	Mental Health and Substance Abuse Social Workers	-
	Total	5,137

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

In addition to core healthcare occupations, several other occupations are included in this analysis. These are summarized in **Exhibit 5** below and are included because of high concentration in health care industries (the NAICS codes shown in **Exhibit 1**). Those occupations are included if both of the following two criteria are met: a total of at least 30% of occupational employment in the Spokane area are accounted for in the healthcare industry and there are at least 100 jobs in 2012 in that occupation in the Spokane area's healthcare industry. The SAWDC identified additional occupations that did not meet the employment size qualification but were nevertheless essential to the healthcare industry. These occupations are highly specialized, as demonstrated by their relatively low employment totals within healthcare.

Exhibit 5. Ancillary and Requested Occupations, Employment in Cluster and Total Employment, Spokane Area, 2012

SOC	Occupation	Employment in Cluster	Total Employment	Share in Cluster
43-4171	Receptionists and Information Clerks	2,290	4,583	50%
43-3021	Billing and Posting Clerks	1,658	4,722	35%
43-4111	Interviewers, Except Eligibility and Loan	743	1,922	39%
43-2011	Switchboard Operators, Including Answering Service	399	988	40%
43-9021	Data Entry Keyers	391	1,157	34%
43-5021	Couriers and Messengers	196	256	77%
35-2012	Cooks, Institution and Cafeteria	1,094	2,798	39%
35-3041	Food Servers, Nonrestaurant	635	683	93%
39-9032	Recreation Workers	553	759	73%
13-1071	Human Resources Specialists	844	2,502	34%
11-9199	Managers, All Other	1,349	3,791	36%
	Ancillary Subtotal	10,152	21,952	46%
19-4091	Environmental Science and Protection Technicians, Including Health	99	187	53%
19-4021	Biological Technicians	129	377	34%
19-1042	Medical Scientists, Except Epidemiologists	68	424	16%
51-9081	Dental Laboratory Technicians	206	498	41%
11-9121	Natural Sciences Managers	111	193	58%
	Requested Subtotal	613	1,679	41%
	All Ancillary and Requested Occupations	10,766	23,630	46%
	Grand Total of Core, Ancillary and Requested Occupations	46,690	64,470	72%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Ancillary and requested occupations are much more common in non-healthcare industries than core healthcare occupations. The top two occupations in this category by employment outside of healthcare, billing and posting clerks and all other managers, together total more than 5,500 jobs. (**Exhibit 6**)

Exhibit 6. Ancillary and Requested Occupational Employment in Other Industries, Spokane Area, 2012

Occupation	Employment in Other Industries
Billing and Posting Clerks	3,064
Managers, All Other	2,441
Receptionists and Information Clerks	2,292
Cooks, Institution and Cafeteria	1,704
Human Resources Specialists	1,657
Interviewers, Except Eligibility and Loan	1,179
Data Entry Keyers	766
Switchboard Operators, Including Answering Service	589
Medical Scientists, Except Epidemiologists	356
Dental Laboratory Technicians	292
Biological Technicians	248
Recreation Workers	206
Environmental Science and Protection Technicians, Including Health	88
Natural Sciences Managers	82
Couriers and Messengers	60
Food Servers, Nonrestaurant	49
Ancillary and Requested Occupations	15,074

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

INFORMATION TECHNOLOGY IN HEALTHCARE

Organizations in the Spokane area's healthcare industry are constantly seeking and implementing new information technology to improve operations, efficiency, and patient care. In 2012, 707 healthcare industry employees in the Spokane area worked in IT, 14% of total IT employment in the area (**Exhibit 7**).

Exhibit 7. IT Employment in Healthcare and Region, 2012

SOC	Description	Total	
		Employment in Healthcare	Regional Employment
15-1151	Computer User Support Specialists	210	1,052
15-1199	Computer Occupations, All Other	110	337
15-1142	Network and Computer Systems Administrators	105	555
13-1161	Market Research Analysts and Marketing Specialists	74	697
15-1132	Software Developers, Applications	51	834
15-1152	Computer Network Support Specialists	50	320
11-3021	Computer and Information Systems Managers	46	410
15-1131	Computer Programmers	37	408
15-1134	Web Developers	13	385
17-2072	Electronics Engineers, Except Computer	11	145
Total		707	5,142

Sources: Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Together, these positions are expected to grow a combined 22% between 2012 and 2022, a CAGR of 2.1%, just under the sector's total employment CAGR of 2.2% (**Exhibit 8**). Interviewed employers expressed satisfaction with the IT skills of recent graduates. Employers further indicated that employees who can adapt quickly to new software are highly valued.

Exhibit 8. IT Employment in Healthcare and Region, 2022

SOC	Description	Total	
		Employment in Healthcare	Regional Employment
15-1151	Computer User Support Specialists	261	1,305
15-1199	Computer Occupations, All Other	133	407
15-1142	Network and Computer Systems Administrators	125	662
13-1161	Market Research Analysts and Marketing Specialists	89	837
15-1132	Software Developers, Applications	65	1,065
15-1152	Computer Network Support Specialists	61	392
11-3021	Computer and Information Systems Managers	58	523
15-1131	Computer Programmers	46	503
15-1134	Web Developers	15	452
17-2072	Electronics Engineers, Except Computer	12	165
Total		866	6,310

Sources: Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

INDUSTRY GROWTH AND IMPACTS

Economic Impacts

The Spokane area’s healthcare industry is a significant employer, accounting for 48,730 jobs—or roughly 20% of total jobs in the area—with broader economic impacts to the regional economy. The healthcare industry directly generated an estimated \$6.5 billion in business revenues in 2013, including the operating budgets of non-profits in the sector. These revenues were directly associated with 48,700 jobs and \$2.9 billion in wage and salary disbursements, including benefits.

Economic impacts of the healthcare industry include additional jobs, wages, and business revenues supported through business-to-business transactions (indirect impacts) and additional impacts due to the spending of earned income among these workers on goods and services in the regional economy (induced impacts). In 2013, the industry indirectly supported—through inter-and-intra-industry expenditures—an additional 3,100 employees, \$0.6 billion in revenues, and \$0.2 billion in wages. Together, earnings among workers employed through these direct and indirect activities (induced impacts) supported an additional \$2.2 billion in business revenues and 16,900 jobs. Together, these activities yielded a total economic impact of \$9.3 billion in business revenues, 68,700 jobs, and \$3.7 billion in labor income (**Exhibit 9**).

Exhibit 9. Economic Impacts of the Spokane Area Healthcare Cluster, 2013

	Direct	Indirect	Induced	Total
Employment	48,700	3,100	16,900	68,700
Business Revenues (mils \$)	6,504	574	2,193	9,271
Labor Income (mils \$)	2,877	177	641	3,694

Sources: Washington State Office of Financial Management, 2014; Community Attributes, 2015.

Multipliers help illustrate the extent to which healthcare activities support additional economic activity throughout the regional economy. In 2013, every dollar in direct revenue attributed to the Spokane area healthcare industry was resulted in an additional \$0.40 in revenues throughout the regional economy (a multiplier of 1.4). Similarly, each direct job in the healthcare industry supported a total of 1.4 jobs across the region (**Exhibit 10**).¹

¹ Impact modeling presented in this analysis adjusts for only impacts retained within the Spokane area, by way of industry employment location quotients and commuter patterns. Resulting multipliers are thus lower than those reported by the statewide Washington State Input-Output Model. The healthcare industry does support many more jobs and business revenues across the state, but these are accrued in other counties outside the Spokane area.

Exhibit 10. Economic Multipliers of the Spokane Area Healthcare Cluster, 2013

	Multiplier
Total Output per Dollar Direct Revenue	1.4
Total Jobs per Direct Jobs	1.4
Total Labor Income per \$ Direct Income	1.3
Total Jobs Per Mil Dollar Direct Output	10.6

Sources: Washington State Office of Financial Management, 2014; Community Attributes, 2015.

Indirect economic impacts—those due to business-to-business transactions—were largest in the region’s non-highway and street construction sector: the healthcare industry paid a total of \$236.8 million to the construction industry in 2013.

The wholesaling industry in the region earned an estimated \$60.4 million in sales supported by demand from the healthcare industry. A large share of these revenues, which in impact modeling represent only the wholesale gross margins from sales and not the value of the underlying products being sold, came from purchases of medicine, furniture, and administrative items critical to the operation of healthcare facilities in the region.

Regional and Industry Effects on Growth

This section presents an analysis of the causes for employment changes in healthcare in the greater Spokane area. Some of the change is due to broad changes in Washington and Idaho, referred to as the “regional growth effect” in this analysis. Other changes come from industry-wide growth and change across Washington, plus Kootenai County (the “industry mix effect”), and the remainder is explained by local circumstances (the “local area effect”).²

Between 2001 and 2013, the healthcare industry³ grew in employment by 44%, or by approximately 14,500 jobs. The same sector in the larger economy of Washington plus Kootenai County, ID experienced growth of 51% during the same period. Of this overall growth in the Spokane area healthcare industry of 14,500 jobs, 3,526 jobs (24%) were attributable to the growth of the benchmark region.

Employment across all sectors grew 11% between 2001 and 2013 in the benchmark region, compared with 9% in the Spokane region. The

² This approach is known as a shift-share model. The reference area is Washington State plus Kootenai County. The local area is the greater Spokane region, including Kootenai County.

³ Due to data suppression, only non-suppressed private sector healthcare employment is used in this analysis, resulting in a slightly lower employment total than is determined through the industry-occupational total defined in **Exhibit 1**.

Spokane region's healthcare industry had a CAGR of 0.8%. Growth in healthcare jobs across Washington state plus Idaho (51%) were the primary driver of the Spokane region's healthcare, supporting the 13,192 jobs (91%) over this period. The local effect was negative (-15%), implying that all growth in healthcare in the Spokane area owes to regional growth overall and region-wide industry growth. (**Exhibit 11**)

Exhibit 11. Components of Growth, 2001-2013

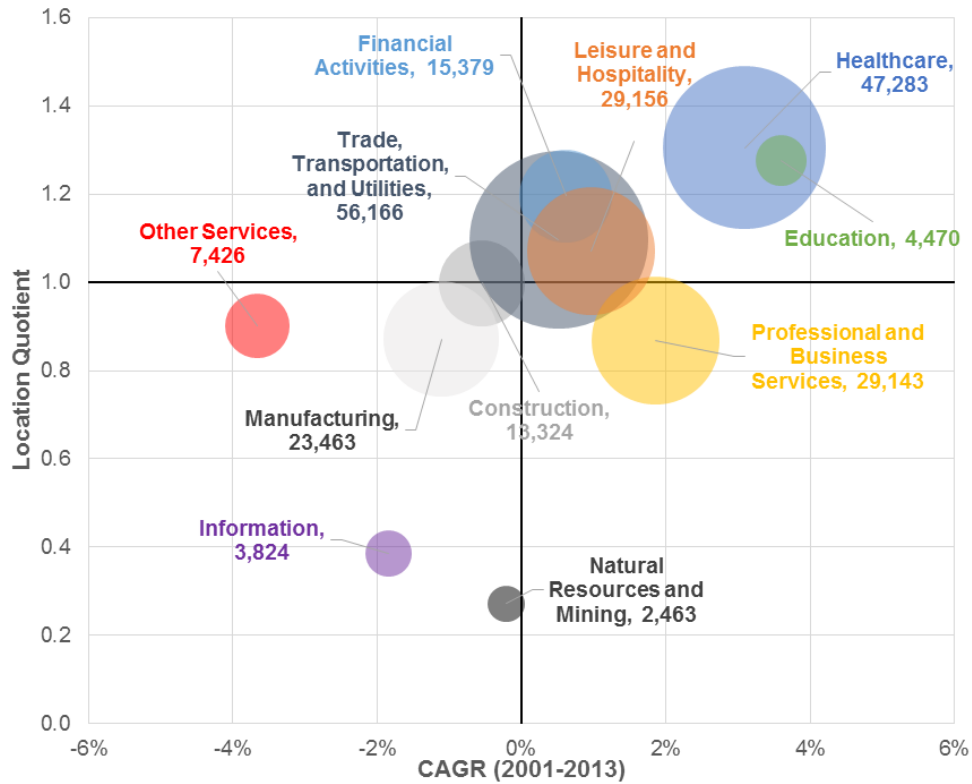
Rank	Sector	Employment		Net Change	Contributions to Net Change		
		2001	2013		Regional Effect	Industry Mix Effect	Local Effect
1	Healthcare	32,799	47,283	14,484	3,526	13,192	(2,234)
2	Professional and Business Services	23,355	29,143	5,788	2,511	3,053	224
3	Trade, Transportation, and Utilities	52,789	56,166	3,377	5,675	(2,250)	(47)
4	Leisure and Hospitality	25,985	29,156	3,171	2,793	1,731	(1,353)
5	Education	2,924	4,470	1,546	314	888	343
6	Financial Activities	14,285	15,379	1,094	1,536	(2,171)	1,730
7	Natural Resources and Mining	2,525	2,463	(62)	271	205	(539)
8	Construction	14,229	13,324	(905)	1,530	(2,169)	(266)
9	Information	4,779	3,824	(955)	514	(162)	(1,306)
10	Manufacturing	26,826	23,463	(3,363)	2,884	(5,243)	(1,004)
11	Other Services	11,613	7,426	(4,187)	1,248	(4,060)	(1,375)
	All Sectors	212,110	232,098	19,988	22,802	3,014	(5,827)

Sources: U.S. Bureau of Labor Statistics, 2014; Community Attributes, 2015

Exhibit 12 illustrates the healthcare industry's role in the Spokane area economy. The x-axis displays each industry's CAGR. The y-axis shows each industry's location quotient from 0.0 to 1.6. Location quotients demonstrate an industry's concentration in a given region relative to a larger area, which in this case is Washington State plus Kootenai County, Idaho. A location quotient of 1 indicates that the sector's employment in the sub-region is compositionally identical to the sector's employment in the greater region. Location quotients greater than 1 show that a sector's employment in the sub-region is compositionally greater than in the larger region. The bubble size represents each industry's absolute employment in the Spokane area.

In 2013, the healthcare industry exhibited a location quotient of approximately 1.3. This high location quotient suggests a surplus of healthcare-related activity and implies a share of this is produced to serve populations outside the area. The industry has also grown faster than other industries in the Spokane area, with a CAGR of more 3% per year between 2001 and 2013, second only to education, with a CAGR of 4%.

Exhibit 12. Spokane Area Industry 2001-2013 CAGRs, Location Quotients, and Employment, 2013



Sources: U.S. Bureau of Labor Statistics, 2014; Community Attributes, 2015.

DEMAND ANALYSIS: SPOKANE AREA HEALTHCARE OCCUPATIONAL FORECASTS

Healthcare employment forecasts are derived from the Washington Employment Security Department's occupational employment projections and Idaho State Department of Labor data⁴. Occupational openings include openings created by retirements and separations but not openings created from turnover where the employee in question remains in the same occupational category in the region, thus undercounting real openings.

Core occupations are expected to grow at a CAGR of 2.4% and ancillary occupations are expected to grow at a CAGR of 1.5 from 2017 through 2022. Occupational demand is greatest for Registered Nurses, with 304 average annual openings in the Spokane area. IPEDS data matches several nursing degrees to the CIP for Registered Nurses, including ASN, RN, BSN, and MSN, resulting in an imperfect match between qualifications and specific occupations. Differences in hiring needs from market to market are not represented in the data; a graduate with a MSN is listed in the same CIP as a graduate with an ASN and, simultaneously, anticipated openings do not differentiate between different degree levels.

The next-greatest occupational gaps are expected in Personal Care Aides, with 174 average annual openings, and Nursing Assistants, with 157 average annual openings. In ancillary occupations, demand is strongest for Receptionists and Information Clerks with 101 average annual openings and Billing and Posting Clerks with 72 average annual openings. **(Exhibits 13 and 14).**

Occupations with "all other" in the title, such as "Physicians and Surgeons, All Other," refer to occupations not specifically delineated in other 6-digit SOC codes under that 5-digit heading. The five digit heading 29-106 refers to all Physicians and Surgeons. Only Anesthesiologists, Family and General Practitioners, Internists, Obstetricians and Gynecologists, Pediatricians, Psychiatrists, and Surgeons are expressly defined under that heading. 29-1069, "Physicians and Surgeons, All Other" is a catch-all heading to capture undefined physicians and surgeons.

⁴ Some SOC-specific employment data in Kootenai County was not available due to the suppression needs of the Department of Labor. In these cases, occupation-level growth rates from Eastern Washington were applied. Spokane County growth rates were applied when neither Kootenai County nor Eastern Washington data were available.

Exhibit 13. Spokane Area Core Occupational Demand per Year, 2017 and 2022

Occupation Category	SOC	Occupation	Estimated Employment 2017	Estimated Employment 2022	Average Annual Openings (2017 - 2022)	CAGR (2017-2022)
Core	29-1141	Registered Nurses	7,149	8,027	304	2.3%
	39-9021	Personal Care Aides	4,901	5,697	174	3.1%
	31-1014	Nursing Assistants	3,589	4,143	157	2.9%
	31-1011	Home Health Aides	1,622	1,886	76	3.1%
	31-9092	Medical Assistants	1,599	1,781	68	2.2%
	21-1093	Social and Human Service Assistants	1,351	1,473	62	1.7%
	43-6013	Medical Secretaries	1,399	1,590	52	2.6%
	29-2061	Licensed Practical and Licensed Vocational Nurses	1,075	1,239	52	2.9%
	31-9091	Dental Assistants	1,104	1,218	46	2.0%
	21-1015	Rehabilitation Counselors	1,287	1,335	40	0.7%
	31-9011	Massage Therapists	739	876	37	3.5%
	11-9111	Medical and Health Services Managers	780	873	37	2.3%
	29-1123	Physical Therapists	656	759	34	2.9%
	29-2011	Medical and Clinical Laboratory Technologists	651	716	31	1.9%
	21-1021	Child, Family, and School Social Workers	896	951	31	1.2%
	29-2021	Dental Hygienists	503	571	26	2.6%
	29-1051	Pharmacists	619	669	25	1.6%
	29-2071	Medical Records and Health Information Technicians	463	515	23	2.2%
	31-9099	Healthcare Support Workers, All Other	573	621	21	1.6%
	11-9151	Social and Community Service Managers	547	593	21	1.6%
	21-1014	Mental Health Counselors	525	578	21	1.9%
	29-2052	Pharmacy Technicians	744	811	20	1.7%
	31-9097	Phlebotomists	439	504	20	2.8%
	29-2012	Medical and Clinical Laboratory Technicians	368	421	19	2.7%
	29-1069	Physicians and Surgeons, All Other	432	472	19	1.8%
	29-1171	Nurse Practitioners	381	429	17	2.4%
	21-1022	Healthcare Social Workers	351	403	16	2.8%
	29-2055	Surgical Technologists	439	503	16	2.7%
	21-1011	Substance Abuse and Behavioral Disorder Counselors	404	443	15	1.8%
	29-2034	Radiologic Technologists	361	402	14	2.1%
	29-2041	Emergency Medical Technicians and Paramedics	258	295	14	2.7%
	31-9094	Medical Transcriptionists	420	446	13	1.2%
	29-1122	Occupational Therapists	271	309	12	2.7%
	29-1062	Family and General Practitioners	235	259	11	1.9%
	21-1023	Mental Health and Substance Abuse Social Workers	292	313	10	1.4%
	29-1067	Surgeons	223	243	10	1.7%
	31-1013	Psychiatric Aides	282	314	10	2.2%
	29-1071	Physician Assistants	221	247	9	2.3%
	29-2099	Health Technologists and Technicians, All Other	284	319	9	2.4%
	29-1126	Respiratory Therapists	228	254	9	2.2%
	29-2032	Diagnostic Medical Sonographers	172	204	8	3.5%
	31-1015	Orderlies	152	171	7	2.4%
	29-1063	Internists, General	147	161	6	1.8%
	31-9093	Medical Equipment Preparers	169	196	6	3.0%
	29-2031	Cardiovascular Technologists and Technicians	160	179	6	2.3%
	29-1151	Nurse Anesthetists	127	150	5	3.5%
		Core Subtotal	39,589	44,558	1,641	2.4%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Exhibit 14. Spokane Area Ancillary Occupational Demand per Year, 2017 and 2022

Occupation Category	SOC	Occupation	Estimated Employment 2017	Estimated Employment 2022	Average Annual Openings (2017 - 2022)	CAGR (2017-2022)
Ancillary	43-4171	Receptionists and Information Clerks	2,486	2,670	101	1.4%
	43-3021	Billing and Posting Clerks	1,829	2,005	72	1.9%
	11-9199	Managers, All Other	1,444	1,519	47	1.0%
	35-2012	Cooks, Institution and Cafeteria	1,184	1,288	43	1.7%
	35-3041	Food Servers, Nonrestaurant	716	811	39	2.5%
	43-4111	Interviewers, Except Eligibility and Loan	811	918	37	2.5%
	13-1071	Human Resources Specialists	923	979	30	1.2%
	39-9032	Recreation Workers	578	626	14	1.6%
	43-2011	Switchboard Operators, Including Answering Service	422	437	10	0.7%
	43-5021	Couriers and Messengers	206	209	3	0.3%
	43-9021	Data Entry Keyers	398	395	3	-0.1%
		Ancillary Subtotal	10,996	11,857	398	1.5%
		Grand Total	50,585	56,415	2,039	2.2%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Two interim years, 2018 and 2021 reflect the same trends as those described for 2017 and 2022. (Exhibits 15 and 16)

Exhibit 15. Core Occupational Demand per Year, Spokane Area, 2018 and 2021

Occupation Category	SOC	Occupation	Estimated Employment 2018	Estimated Employment 2021	Average Annual Openings (2017 - 2022)	CAGR (2017-2022)
Core	29-1141	Registered Nurses	7,292	7,867	304	2.3%
	39-9021	Personal Care Aides	5,026	5,551	174	3.1%
	31-1014	Nursing Assistants	3,668	4,052	157	2.9%
	31-1011	Home Health Aides	1,663	1,839	76	3.1%
	31-9092	Medical Assistants	1,635	1,741	68	2.2%
	21-1093	Social and Human Service Assistants	1,380	1,443	62	1.7%
	43-6013	Medical Secretaries	1,434	1,550	52	2.6%
	29-2061	Licensed Practical and Licensed Vocational Nurses	1,098	1,212	52	2.9%
	31-9091	Dental Assistants	1,124	1,196	46	2.0%
	21-1015	Rehabilitation Counselors	1,299	1,322	40	0.7%
	31-9011	Massage Therapists	766	844	37	3.5%
	11-9111	Medical and Health Services Managers	796	854	37	2.3%
	29-1123	Physical Therapists	673	739	34	2.9%
	29-2011	Medical and Clinical Laboratory Technologists	664	701	31	1.9%
	21-1021	Child, Family, and School Social Workers	907	939	31	1.2%
	29-2021	Dental Hygienists	515	558	26	2.6%
	29-1051	Pharmacists	629	659	25	1.6%
	29-2071	Medical Records and Health Information Technicians	472	505	23	2.2%
	31-9099	Healthcare Support Workers, All Other	582	611	21	1.6%
	11-9151	Social and Community Service Managers	556	583	21	1.6%
	21-1014	Mental Health Counselors	534	569	21	1.9%
	29-2052	Pharmacy Technicians	756	798	20	1.7%
	31-9097	Phlebotomists	451	490	20	2.8%
	29-2012	Medical and Clinical Laboratory Technicians	377	411	19	2.7%
	29-1069	Physicians and Surgeons, All Other	439	464	19	1.8%
	29-1171	Nurse Practitioners	390	419	17	2.4%
	21-1022	Healthcare Social Workers	359	394	16	2.8%
	29-2055	Surgical Technologists	449	491	16	2.7%
	21-1011	Substance Abuse and Behavioral Disorder Counselors	411	435	15	1.8%
	29-2034	Radiologic Technologists	369	393	14	2.1%
	29-2041	Emergency Medical Technicians and Paramedics	265	287	14	2.7%
	31-9094	Medical Transcriptionists	426	440	13	1.2%
	29-1122	Occupational Therapists	278	301	12	2.7%
	29-1062	Family and General Practitioners	240	254	11	1.9%
	21-1023	Mental Health and Substance Abuse Social Workers	296	310	10	1.4%
	29-1067	Surgeons	227	238	10	1.7%
	31-1013	Psychiatric Aides	287	308	10	2.2%
	29-1071	Physician Assistants	226	241	9	2.3%
	29-2099	Health Technologists and Technicians, All Other	290	312	9	2.4%
	29-1126	Respiratory Therapists	232	249	9	2.2%
	29-2032	Diagnostic Medical Sonographers	178	197	8	3.5%
	31-1015	Orderlies	155	167	7	2.4%
	29-1063	Internists, General	150	157	6	1.8%
	31-9093	Medical Equipment Preparers	173	192	6	3.0%
	29-2031	Cardiovascular Technologists and Technicians	164	175	6	2.3%
	29-1151	Nurse Anesthetists	130	146	5	3.5%
		Core Subtotal	40,434	43,601	1,641	2.4%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Exhibit 16. Spokane Area Ancillary Occupational Demand per Year, 2018 and 2021

Occupation Category	SOC	Occupation	Estimated Employment 2018	Estimated Employment 2021	Average Annual Openings (2017 - 2022)	CAGR (2017-2022)
Ancillary	43-4171	Receptionists and Information Clerks	2,524	2,629	101	1.4%
	43-3021	Billing and Posting Clerks	1,864	1,967	72	1.9%
	11-9199	Managers, All Other	1,462	1,501	47	1.0%
	35-2012	Cooks, Institution and Cafeteria	1,204	1,267	43	1.7%
	35-3041	Food Servers, Nonrestaurant	734	791	39	2.5%
	43-4111	Interviewers, Except Eligibility and Loan	828	899	37	2.5%
	13-1071	Human Resources Specialists	937	964	30	1.2%
	39-9032	Recreation Workers	585	619	14	1.6%
	43-2011	Switchboard Operators, Including Answering Service	426	433	10	0.7%
	43-5021	Couriers and Messengers	207	207	3	0.3%
	43-9021	Data Entry Keyers	398	395	3	-0.1%
		Ancillary Subtotal	11,168	11,670	398	1.5%
		Grand Total	51,602	55,271	2,039	2.2%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

SUPPLY ANALYSIS: AVAILABILITY OF REGIONAL TALENT AND EMPLOYABLE WORKFORCE

Local workforce supply is composed of two elements: the entry of new graduates into the talent pool and the existing talent pool of unemployed persons actively seeking employment. Qualified graduates are drawn from NCES data through a match of CIP codes to SOC codes and adjusted according to workforce-wide occupational demand. Unemployment Insurance claimants organized by most recent occupation (SOC) constitute the second element of supply. It is important to note that changes in migration can affect changes in supply and demand.

Local Graduates

The National Center for Education Statistics standardizes educational curricula with Classification of Instructional Program (CIP) codes. Each CIP code maps to multiple SOC codes since graduates from the same program go on to employment in a range of occupations. At the same time, each occupation draws graduates from several relevant CIPs. For example, the SOC for Registered Nurses attracts graduates from five distinct but related CIPs. These five CIPs, in turn, match variously to two other SOCs: nursing instructors and medical and health services managers. (**Exhibit 17**)

Exhibit 17. Other Occupational Matches for Graduates Who are Qualified to Work as Registered Nurses

CIP	Description	SOC	Description
51.3801	Registered Nursing/Registered Nurse	29-1141	Registered Nurses
51.3802	Nursing Administration	25-1072	Nursing Instructors and Teachers, Postsecondary
51.3805	Family Practice Nurse/Nursing	11-9111	Medical and Health Services Managers
51.3808	Nursing Science		
51.3810	Psychiatric/Mental Health Nurse/Nursing		

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

In order to determine how many graduates will be available to fill anticipated occupational openings in the Spokane area's healthcare industry, all graduates from CIP codes that match to a core healthcare occupation were summarized.

Graduate data is tied to the primary location of the educational institution. Wenatchee Valley Community College, for example, is located primarily in Wenatchee. However, the college offers a training program that actually takes place in Spokane itself. These trainees and others like them at programs in the Spokane area that are listed as being trained elsewhere represent an important limitation of IPEDS data.

CIP programs with very few graduates are often highly specialized programs. There was one doctoral graduate from WSU, for example, in the CIP for Pharmaceutical Sciences. While these specialized CIPs have relatively few graduates each year, the healthcare occupations for which

they are qualified are also supplied by graduates from other CIPs, as demonstrated above.

One important result of using the IPEDS CIP to SOC crosswalk is small, specialized programs often map to general education positions. Physical therapy program graduates, for example, are mapped both to the physical therapy occupation and to health specialties teachers. Since the occupational demand for health specialties teachers is significantly higher than physical therapists, all physical therapy graduates would normally be matched to the health specialties education occupation. In the case of physical therapists and diagnostic medical sonographers, a manual override prevents all graduates from matching to education occupations outside of the sector, providing a more accurate picture of which occupations graduates from those programs would take.

Twenty-one positions require only on-the-job training. Since few college programs correspond to occupations that require only on-the-job training, supply for these positions is understated. The Spokane area is home to several training and certification programs that develop the region's talent pool but are not included in IPEDS data. Certified Nurse Assistant training programs, for example, create an additional, unmeasured supply of qualified workers. The same is true of phlebotomy programs; local training programs that are not included in the IPEDS data are providing an additional supply into the regional healthcare cluster. Additionally, phlebotomy students may receive training in another program but, after receiving the state phlebotomy certification, embark on a career in phlebotomy. For this reason, it is not possible to estimate students who will go on to be phlebotomists versus other students across healthcare training programs.

Due to data limitations, especially a lack of data linking high school graduates who do not matriculate to a higher educational institution to occupations, the supply of local high school graduates who are interested in positions that require on-the-job training cannot be defensibly estimated. Some postsecondary award programs do match to on-the-job training occupations, however, as do Bachelor's programs for which past graduates have gone on to work in on-the-job training positions. Not all training programs that would qualify an individual for these positions are included in IPEDS data, and, as a result, the talent pool available for employers looking to fill jobs that require on-the-job training is understated.

Taken together, local educational institutions confer degrees or awards to 3,087 individuals annually in CIPs that match to one or more core healthcare occupations (**Exhibit 18**).

Exhibit 18. Total Graduates by CIP Codes that Match to One or More Core Healthcare Occupations, Spokane Area, 2013

CIP	Description	Graduates
51.3801	Registered Nursing/Registered Nurse.	910
52.0201	Business Administration and Management, General.	789
44.0701	Social Work.	181
51.0801	Medical/Clinical Assistant.	162
51.0601	Dental Assisting/Assistant.	109
51.3901	Licensed Practical/Vocational Nurse Training.	103
51.2001	Pharmacy.	96
51.0602	Dental Hygiene/Hygienist.	77
51.3501	Massage Therapy/Therapeutic Massage.	74
51.0805	Pharmacy Technician/Assistant.	69
52.0101	Business/Commerce, General.	45
51.0701	Health/Health Care Administration/Management.	43
51.2308	Physical Therapy/Therapist.	42
51.0716	Medical Administrative/Executive Assistant and Medical Secretary.	40
51.0714	Medical Insurance Specialist/Medical Biller.	34
51.0907	Medical Radiologic Technology/Science - Radiation Therapist.	32
51.2306	Occupational Therapy/Therapist.	31
44.0401	Public Administration.	30
51.0999	Allied Health Diagnostic, Intervention, and Treatment Professions, Other.	26
51.1599	Mental and Social Health Services and Allied Professions, Other.	26
51.0713	Medical Insurance Coding Specialist/Coder.	25
51.0710	Medical Office Assistant/Specialist.	22
51.0911	Radiologic Technology/Science - Radiographer.	16
51.0707	Health Information/Medical Records Technology/Technician.	16
51.1501	Substance Abuse/Addiction Counseling.	16
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	15
51.0712	Medical Reception/Receptionist.	12
44.0799	Social Work, Other.	8
51.2699	Health Aides/Attendants/Orderlies, Other.	8
51.0909	Surgical Technology/Technologist.	8
51.3808	Nursing Science.	4
51.1508	Mental Health Counseling/Counselor.	3
51.0706	Health Information/Medical Records Administration/Administrator.	3
51.0708	Medical Transcription/Transcriptionist.	3
51.0799	Health and Medical Administrative Services, Other.	2
51.3805	Family Practice Nurse/Nursing.	2
51.3810	Psychiatric/Mental Health Nurse/Nursing.	2
51.3802	Nursing Administration.	1
51.2010	Pharmaceutical Sciences.	1
51.0904	Emergency Medical Technology/Technician (EMT Paramedic).	1
Total		3,087

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Not all local institutions have graduates that are qualified to work in core healthcare occupations. Although ITT Technical Institute-Spokane Valley does not produce graduates prepared to work in core healthcare occupations, an average of 23 graduates per year are qualified to work in healthcare ancillary occupations. Whitworth University-Adult Degree Programs primarily trains people to be teachers, which are not included in the healthcare industry in this study. The Northwest HVAC/R Training

Center is focused on its core area of training heating, ventilation, and air conditioning technicians, who are also not a part of the healthcare industry. (Exhibit 19)

Exhibit 19. Spokane Area Educational Institutions by Graduates Qualified for Core Healthcare Occupations, 2013

Institution	Graduates Qualified for Core Healthcare Occupations
Washington State University	696
Eastern Washington University	664
Spokane Community College	493
Gonzaga University	487
Carrington College-Spokane	299
North Idaho College	222
Spokane Falls Community College	96
Whitworth University	66
Inland Massage Institute	44
Interface College-Spokane	20
ITT Technical Institute-Spokane Valley	0
Whitworth University-Adult Degree Programs	0
Northwest HVAC/R Training Center	0
Total	3,087

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Graduates were totaled by every combination of CIP and SOC. Each combination was adjusted to match the ratio of occupational demand to total occupational demand for all possible occupations in that CIP, estimating how many graduates would be able to gain employment in each available occupation. For this reason, however, graduates from programs that map to occupations in education are effectively excluded, as education positions are not included in the scope of this analysis. Finally, each estimate was multiplied by 70%, which, according to feedback from 13 regional hospitals and medical providers that indicate demand-side perception, represents the approximate share of local graduates who work in the area after graduation. An additional 120 graduates per year are qualified for ancillary occupations in the healthcare industry. (Exhibit 20)

Exhibit 20. Core Healthcare Occupations by Total Graduates, On-the-Job Training and Associate's Degree or Postsecondary Award, Spokane Area, 2013

Description	All Graduates	Graduates after 70% retention
Medical Secretaries	53	37
Health Technologists and Technicians, All Other	26	18
Healthcare Support Workers, All Other	8	6
Pharmacy Technicians	6	4
Substance Abuse and Behavioral Disorder Counselors	4	3
Personal Care Aides	0	0
Social and Human Service Assistants	0	0
Interviewers, Except Eligibility and Loan	0	0
Billing and Posting Clerks	0	0
Psychiatric Aides	0	0
Data Entry Keyers	0	0
Couriers and Messengers	0	0
Home Health Aides	0	0
Cooks, Institution and Cafeteria	0	0
Dental Laboratory Technicians	0	0
Switchboard Operators, Including Answering Service	0	0
Medical Equipment Preparers	0	0
Orderlies	0	0
Food Servers, Nonrestaurant	0	0
Managers, All Other	0	0
Receptionists and Information Clerks	0	0
On-the-Job Training Subtotal	97	68
Registered Nurses	458	321
Medical Assistants	241	168
Licensed Practical and Licensed Vocational Nurses	103	72
Medical Records and Health Information Technicians	19	14
Radiologic Technologists	18	12
Diagnostic Medical Sonographers	15	11
Dental Assistants	13	9
Dental Hygienists	7	5
Massage Therapists	6	4
Medical Transcriptionists	3	2
Surgical Technologists	0	0
Emergency Medical Technicians and Paramedics	0	0
Nursing Assistants	0	0
Medical and Clinical Laboratory Technicians	0	0
Phlebotomists	0	0
Respiratory Therapists	0	0
Environmental Science and Protection Technicians, Including Health	0	0
Cardiovascular Technologists and Technicians	0	0
Associate's degree or Postsecondary Award Subtotal	884	618

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Exhibit 21 below demonstrates the same breakdown for occupations that require a Bachelor's degree or higher. All told, 324 graduates with a Bachelor's degree or higher are matched to a core occupation in the Spokane area's healthcare industry. Combined with the occupations in **Exhibit 20**, a total of 913 graduates are mapped to the industry.

Exhibit 21. Core Healthcare Occupations by Total Graduates, Bachelor's Degree and Master's Degree or Higher, Spokane Area, 2013

SOC	Description	All Graduates	Graduates after 70% retention
11-9151	Social and Community Service Managers	140	98
11-9111	Medical and Health Services Managers	46	32
21-1021	Child, Family, and School Social Workers	14	10
21-1023	Mental Health and Substance Abuse Social Workers	14	10
29-2011	Medical and Clinical Laboratory Technologists	0	0
19-4021	Biological Technicians	0	0
39-9032	Recreation Workers	0	0
13-1071	Human Resources Specialists	0	0
11-9121	Natural Sciences Managers	0	0
Bachelor's degree Subtotal		215	150
21-1014	Mental Health Counselors	41	29
29-1123	Physical Therapists	42	29
21-1022	Healthcare Social Workers	14	10
29-1051	Pharmacists	11	8
29-1122	Occupational Therapists	1	1
29-1067	Surgeons	0	0
29-1069	Physicians and Surgeons, All Other	0	0
29-1063	Internists, General	0	0
29-1062	Family and General Practitioners	0	0
19-1042	Medical Scientists, Except Epidemiologists	0	0
29-1171	Nurse Practitioners	0	0
21-1015	Rehabilitation Counselors	0	0
29-1071	Physician Assistants	0	0
29-1151	Nurse Anesthetists	0	0
Master's degree or higher Subtotal		109	76
Grand Total		1,304	913

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Unemployment Insurance

The second key element of supply is the pool of Unemployment Insurance (UI) claimants whose previous occupations match to those in the region's healthcare sector. Due to nondisclosure rules, not all UI data is available for every combination of county and SOC. Based on occupation-specific data from the Washington State Employment Security Department and known unemployment data, suppressed claimants were estimated, resulting in a total additional supply of 508 workers. (Exhibit 22)

Exhibit 22. Unemployment Insurance Claimants by Previous SOC, Spokane Area, 2013

SOC	Occupation	Unemployment Insurance Claimants
39-9021	Personal Care Aides	99
11-9199	Managers, All Other	72
29-2052	Pharmacy Technicians	36
43-4171	Receptionists and Information Clerks	30
35-2012	Cooks, Institution and Cafeteria	28
43-6013	Medical Secretaries	28
43-9021	Data Entry Keyers	25
43-3021	Billing and Posting Clerks	22
31-1011	Home Health Aides	10
21-1011	Substance Abuse and Behavioral Disorder Counselors	10
31-9099	Healthcare Support Workers, All Other	9
35-3041	Food Servers, Nonrestaurant	6
On-the-Job Training Subtotal		374
31-9092	Medical Assistants	31
29-2071	Medical Records and Health Information Technicians	15
31-9091	Dental Assistants	12
29-2021	Dental Hygienists	6
29-2034	Radiologic Technologists	6
31-9094	Medical Transcriptionists	5
Associate's degree or Postsecondary Award Subtotal		75
11-9111	Medical and Health Services Managers	18
21-1021	Child, Family, and School Social Workers	15
13-1071	Human Resources Specialists	15
11-9151	Social and Community Service Managers	10
Bachelor's degree Subtotal		59
29-1051	Pharmacists	6
Master's degree Subtotal		6
Grand Total		508

Sources: Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

SUPPLY AND DEMAND

Combining the elements of expected supply with projected demand yields annual occupational gaps. Forty-two SOC-based occupations have anticipated shortages and one occupation, Healthcare Social Workers, has identical supply and demand. In total, the Spokane area healthcare cluster can expect a shortfall of 20 jobs per year.

The largest absolute final shortages are expected in Nursing Assistants (99) and Social and Human Service Assistants (51). With no graduates or recent UI claimants to draw from, the healthcare cluster will have to attract talent from outside the Spokane area to fill anticipated openings in Nursing Assistant positions. Social and Human Service Assistant positions can be filled with high school graduates, as they may receive on-the-job training (Exhibits 23 and 24).

Exhibit 23. Spokane Area Supply and Demand, Core Healthcare Occupations, On-the-Job Training and Associate's Degree or Postsecondary Award, Annual, 2017-2022

Occupation	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap ↓
Social and Human Service Assistants	0	51	(51)	0	(51)
Home Health Aides	0	56	(56)	10	(46)
Personal Care Aides	0	127	(127)	99	(28)
Psychiatric Aides	0	10	(10)	0	(10)
Medical Equipment Preparers	0	6	(6)	0	(6)
Orderlies	0	5	(5)	0	(5)
Healthcare Support Workers, All Other	6	19	(13)	9	(4)
Substance Abuse and Behavioral Disorder Counselors	3	12	(9)	10	1
Health Technologists and Technicians, All Other	18	8	10	0	10
Medical Secretaries	37	45	(8)	28	20
Pharmacy Technicians	4	15	(11)	36	25
On-the-Job Training Subtotal	68	356	(288)	192	(96)
Nursing Assistants	0	99	(99)	0	(99)
Massage Therapists	4	36	(32)	0	(32)
Phlebotomists	0	15	(15)	0	(15)
Dental Assistants	9	36	(27)	12	(15)
Medical and Clinical Laboratory Technicians	0	14	(14)	0	(14)
Emergency Medical Technicians and Paramedics	0	12	(12)	0	(12)
Surgical Technologists	0	11	(11)	0	(11)
Dental Hygienists	5	21	(16)	6	(10)
Respiratory Therapists	0	8	(8)	0	(8)
Cardiovascular Technologists and Technicians	0	6	(6)	0	(6)
Medical Transcriptionists	2	12	(10)	5	(5)
Diagnostic Medical Sonographers	11	7	4	0	4
Radiologic Technologists	12	11	1	6	7
Medical Records and Health Information Technicians	14	18	(4)	15	11
Licensed Practical and Licensed Vocational Nurses	72	32	40	0	40
Registered Nurses	321	219	102	0	102
Medical Assistants	168	58	110	31	141
Associate's degree or Postsecondary Award Subtotal	618	616	2	75	77

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Exhibit 24. Spokane Area Supply and Demand, Core Healthcare Occupations, Bachelor's Degree or Higher, Annual, 2017-2022

Occupation	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap ↓
Medical and Clinical Laboratory Technologists	0	27	(27)	0	(27)
Child, Family, and School Social Workers	10	25	(15)	15	0
Mental Health and Substance Abuse Social Workers	10	7	3	0	3
Medical and Health Services Managers	32	30	2	18	20
Social and Community Service Managers	98	18	80	10	90
Bachelor's degree Subtotal	150	107	43	43	86
Rehabilitation Counselors	0	30	(30)	0	(30)
Physicians and Surgeons, All Other	0	16	(16)	0	(16)
Nurse Practitioners	0	13	(13)	0	(13)
Surgeons	0	10	(10)	0	(10)
Family and General Practitioners	0	9	(9)	0	(9)
Occupational Therapists	1	9	(8)	0	(8)
Physician Assistants	0	7	(7)	0	(7)
Pharmacists	8	20	(12)	6	(6)
Internists, General	0	6	(6)	0	(6)
Nurse Anesthetists	0	5	(5)	0	(5)
Healthcare Social Workers	10	10	(0)	0	(0)
Physical Therapists	29	20	9	0	9
Mental Health Counselors	29	15	14	0	14
Master's degree or higher Subtotal	77	169	(92)	6	(86)
Grand Total	913	1249	(336)	316	(20)

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

STAKEHOLDER INTERVIEWS

Research Approach

In order to validate key talent pipeline analysis findings, in-depth telephone interviews were conducted between March 17 and April 14, 2015 with 13 key leaders from healthcare organizations in the study region (**Exhibit 25**).

Interviews were conducted over the phone and took between 15 and 30 minutes each. Together, the 13 organizations represented through stakeholder feedback had a combined 165 locations and more than 29,000 employees in the Spokane area.

Exhibit 25. List of Interviewee Organizations

Interviewee Organizations

Community Health Association of Spokane
Department of Social and Health Services
Hollister Steer
Incyte Diagnostics
Inland Northwest Health Services
Interim HealthCare
Mt. Carmel Hospital
Northeast Washington Health Partners
Pioneer Human Services
Providence Healthcare
Rockwood Clinic
Shriners Hospital for Children
Spokane Eye Clinic

Source: Community Attributes, 2015.

Key Findings

Supply

Interviewees agreed that healthcare occupations will need an increased supply of qualified candidates to meet the region's demand, that demand is high for candidates with Master's degrees or higher as well as candidates with Associate-level degrees, and that healthcare occupations within the study region will grow at different rates in the next ten years.

Due to shortages in key occupations and degree fields, nine of the 13 interviewees (69%) said they are held back from hiring quality candidates for priority positions, indicating a gap in supply or challenges in recruiting qualified candidates (**Exhibit 26**).

Exhibit 26. Is anything keeping you from hiring qualified candidates for each of your priority positions?

Answer	Respondents	Share
Yes	9	69%
No	4	31%

Source: Community Attributes, 2015.

Employers were eager to encourage community colleges to expand their programs to meet demand in the study area. Furthermore, interviewees noted that training programs will need to compensate for the increasing licensing and training requirements in Washington State. Six of 13 interviewees said they have to hire from outside Washington State for many occupations.

“We have to do more work with the community colleges to increase the pipeline. We used to get 20 resumes for every job. Now, we’re lucky if we get five.”

While more than 80% of interviewees agreed that community college students graduating in the study region are likely to stay in the area after graduation, there are persistent challenges in retaining qualified graduates in the study area (**Exhibit 27**). These interviewees, representing hospitals, diagnostics laboratories, and other healthcare providers, indicate the perception of graduates staying and working in the Spokane area from the demand side. The supply side, educators in the Spokane area, is not addressed in this question.

Exhibit 27. If you had to guess, what percentage of community college graduates stay and work in the Spokane area?

Category	Responents	Share
Less than 25%	0	0%
25% to 50%	2	18%
50%-75%	8	73%
More than 75%	1	9%

Source: Community Attributes, 2015.

The most significant recruiting and retention challenges are low salaries compared to what employers in Western Washington or other states can pay and perceptions around the rural quality of life. These challenges affect hiring at all levels and within all types of organizations.

Interviewees described several other challenges to maintaining a high-quality workforce, including:

- Cost of implementing Initiative 1169
- Uncertainty in implementing the Affordable Care Act
- Expansion of Medicaid

- State-required competency and drug tests

“The applicant pool is sometimes small and not that great, while the pay in Spokane is drastically different than Western Washington.”

Demand

Health care is a field that mostly scales in response to fluctuations in the demographics of the area it serves.

“[We are] a 24-7 facility, so if there’s a gap in coverage, we need to hire. Also, our funding is government based, so it depends on what comes through the pipeline.”

Hiring is also accelerated by:

- Retirements, promotions, restructuring or departures
- Key staff (e.g. RNs) wanting more flexibility/a part-time schedule
- The creation of a new service line(s), e.g. urgent care
- Hiring of physicians and other specialists that require additional ancillary positions for support
- Changes to guidelines governing the ratio of providers to patients or state licensing requirements
- Funding availability at the federal level

Large and small organizations approach the hiring process differently. Larger health systems typically utilize a hybrid recruiting model, where they outsource some key leadership or technical positions and manage other hires within the organization.

Of the 13 organizations interviewed, eight of them expressed there are not enough RNs to meet demand. Three employers said they were moving toward changing qualifications to require that RNs have a bachelor’s degree in nursing (**Exhibit 28**).

“We used to require new hires to be a licensed RN within WA with one-year experience as a minimum, but we dropped it to zero experience because we hardly got any candidates.”

“It is within our five year plan to encourage nurses to pursue the degree, but we will not eliminate hiring associate level nurses.”

“It’s not a good fit [to require RNs to have a bachelor’s degree in nursing] with our reality. It’s hard enough without instituting this requirement.”

Exhibit 28. Are there enough RN’s produced locally to meet demand in the greater Spokane area?

Answer	Respondents	Share
Yes	4	33%
No	8	67%

Source: Community Attributes, 2015.

Of the 13 organizations interviewed, six said they are experiencing a shortage of RNs in specialty areas such as ER or Obstetrics. Medical assistants/CNAs which require only an associate’s degree, are also in high-demand because many organizations are moving away from more expensive and hard-to-find RNs to the CNA model in the clinical setting (Exhibit 29).

Exhibit 29. What, if any, are the most challenging health care occupations to recruit and hire for?

Most Challenging Positions to Fill	Respondents
Specialty Nurse (OR, OB, ER)	6
Physician	4
Certified Nursing Assistant (CNA) or Medical Assistant	4
Licensed Practical Nurse (LPN)	3
Tech Manager, Manufacturing, Quality	3
Occupational Therapist, Physical Therapist	2
Medical Assistant	2
Supervisory and Leadership positions	2

Source: Community Attributes, 2015.

Training and Workforce Development

Ten of the 13 stakeholder interviewees expressed that they are satisfied with the technical skills of entry-level hires, going further to say that the strongest job candidates have at least some work experience in a similar health care setting. These 10 employers explained that fresh graduates, though educationally qualified, often need additional customer service experience and other on-the-job training to be successful.

“If you have basics and good intuition, we can train the rest. A majority of candidates are coming in with these skills.”

IT skills are becoming increasingly valuable within the workplace. Basic computer knowledge of the Microsoft Office suite is essential. The most successful workers (even in administrative or non-technical roles) can pivot quickly and calmly when the IT being used changes or becomes more complex. It is common for different hospitals or clinics to adopt a variety of IT software and equipment that can be customized for that setting. In general, employers are pleased with how quickly younger workers can learn or be trained on new platforms or applications. They

acknowledge that most schools and programs are playing an important role to help students realize the importance of an applied IT background.

Seven of the 13 interviewees are working closely with Community Colleges of Spokane to identify skilled workers and co-develop degree programs, tailoring talent development to their workforce needs. Another three interviewees said they send job postings only but aren't involved in giving feedback or offering internship opportunities. Employers are also working with other schools and training programs, both in the region and outside.

Employers want the local community college system to play a robust role in the training and development of an expanding pipeline of qualified health care workers. There is a particular need for a credentialed CNA program and programs for medical secretaries/administrative assistants.

In addition, three employers said they would be open to working with even younger high school students so that more local youth are exposed to the opportunities that the health care field presents in both urban and rural settings with many different types of employers and occupations. Some employers are also watching WSU and Eastern Washington University as they expand offerings and faculty at the River point Campus.

Interviewees indicated that there is currently very little engagement between employers in the study region and the workforce programs and academic curriculum at North Idaho College. Two employers currently have a relationship with the school. Overall, there is low awareness among interviewed health care employers about the program offerings at the campus. Even so, there was mostly a positive association with the quality of NIC's graduates. Looking forward, employers did not express strong motivation to engage with program and workforce staff there for two important reasons: proximity and Washington's stricter certification requirements.

SUMMARY OF KEY FINDINGS

The healthcare industry in the Spokane area is slated to experience an average of 1,583 openings per year, growing from 46,223 jobs in 2012 to an anticipated 56,415 jobs in 2022.

The Spokane area's healthcare industry can expect an annual local supply of 514 UI claimants and 1,033 graduates that both match to occupations in healthcare and can be expected to stay in the area (**Exhibit 30**).

Exhibit 30. Summary of Annual Spokane Area Healthcare Industry Talent Supply, 2017-2022

Projected Talent Supply (Annual)	Core	Ancillary	Total
Unemployed	315	198	514
Newly-Trained Candidates	913	120	1,033

Sources: Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

The industry will experience an annual shortage of 36 positions during this time. Twenty jobs in this shortfall are in core occupations, those directly involved in healthcare activities. (**Exhibit 31**)

Exhibit 31. Summary of Annual Spokane Area Healthcare Industry Talent Supply and Demand, 2017-2022

Annual Surplus or (Shortage)	Core	Ancillary	Total
Total Openings (Demand)	1,249	334	1,583
Total Supply	1,228	319	1,547
Surplus or (Shortage)	(20)	(16)	(36)

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Demand for core occupations, those directly involved in the practice of healthcare, differ according to educational requirements. Core occupations that require a Master's degree or higher are expected to experience the greatest relative supply shortage, filling only 49% of 169 openings. (**Exhibit 32**)

Exhibit 32. Summary of Annual Core Occupational Demand by Education Requirement, 2017-2022

Educational Requirement	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap
On-the-Job Training	68	356	(288)	192	(96)
Associate's degree or Postsecondary Award	618	616	2	75	77
Bachelor's degree	150	107	43	43	86
Master's degree or higher	77	169	(92)	6	(86)
Total	913	1249	(336)	316	(20)

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Interview feedback from key stakeholders was consistent with expected shortages. Interviewees agreed that healthcare occupations in the Spokane area will be undersupplied in the coming years, that demand is particularly high for candidates with Master's degrees or higher as well as candidates with Associate-level degrees, and that healthcare occupations within the study region will grow at different rates in the next ten years.

Employers in the Spokane area's healthcare industry, though expected to experience a shortage of occupational supply from the region, are able to import talent. Interviewees recognize this option, but noted that there are two significant challenges to importing and retaining talent: low salaries compared to what employers in Western Washington or other states are able to pay, and perceptions around the rural quality of life.

APPENDICES

Appendix A. Spokane Area Educational Institutions

Together, institutions in the Spokane area confer 17,495 degrees per year across all majors and degrees. These institutions primarily confer Bachelor's degrees in addition to 2,879 Master's, Doctoral, and professional degrees. **(Exhibit A)**

Exhibit A Spokane Area Completions by Award Level and Institution, 2013

Institution	Associate's degree					Total
	On-the-Job Training	or Postsecondary Award	Bachelor's Degree	Master's Degree	Doctoral or Prof. degree	
Washington State University	144	0	5,442	800	457	6,843
Eastern Washington University	29	0	2,298	465	42	2,834
Gonzaga University	0	0	1,429	806	179	2,414
Spokane Community College	610	1,026	0	0	0	1,636
Spokane Falls Community College	255	995	0	0	0	1,250
North Idaho College	340	743	0	0	0	1,083
Whitworth University	0	0	607	130	0	737
Carrington College-Spokane	276	24	0	0	0	300
ITT Technical Institute-Spokane Valley	0	114	34	0	0	148
Whitworth University-Adult Degree Progi	0	0	109	0	0	109
Interface College-Spokane	54	9	0	0	0	63
Inland Massage Institute	44	0	0	0	0	44
Northwest HVAC/R Training Center	34	0	0	0	0	34
Total	1,786	2,911	9,919	2,201	678	17,495

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Appendix B. SOC-Based Occupations without Local Unemployment Insurance Claimants

Not all occupations have Unemployment Insurance claimants in the local area. In the Spokane area, 39 healthcare occupations lack UI claimants. Due to disclosure laws, ESD cannot report information that would allow a data user to identify individuals or organizations in the data. For this reason, some UI claims at the six-digit SOC level are reported as zero but are actually suppressed. In order to capture as many claimants as possible, UI claims at the six-digit SOC level were controlled against the less-suppressed UI claim totals at the two-digit SOC level. **(Exhibit B)**

Exhibit B SOC-Based Occupations without Local Unemployment Insurance Claimants, Spokane Area, 2013

SOC	Occupation
31-1014	Nursing Assistants
11-9121	Natural Sciences Managers
21-1093	Social and Human Service Assistants
19-1042	Medical Scientists, Except Epidemiologists
31-9011	Massage Therapists
21-1015	Rehabilitation Counselors
29-2011	Medical and Clinical Laboratory Technologists
29-1123	Physical Therapists
29-1069	Physicians and Surgeons, All Other
43-5021	Couriers and Messengers
19-4091	Environmental Science and Protection Technicians, Includ
31-9097	Phlebotomists
29-2012	Medical and Clinical Laboratory Technicians
19-4021	Biological Technicians
29-1171	Nurse Practitioners
29-2041	Emergency Medical Technicians and Paramedics
29-2055	Surgical Technologists
29-1067	Surgeons
31-1013	Psychiatric Aides
29-1062	Family and General Practitioners
29-1122	Occupational Therapists
29-1126	Respiratory Therapists
51-9081	Dental Laboratory Technicians
29-1071	Physician Assistants
29-2032	Diagnostic Medical Sonographers
43-2011	Switchboard Operators, Including Answering Service
39-9032	Recreation Workers
21-1014	Mental Health Counselors
29-1063	Internists, General
31-9093	Medical Equipment Preparers
29-2031	Cardiovascular Technologists and Technicians
29-1151	Nurse Anesthetists
31-1015	Orderlies
21-1022	Healthcare Social Workers
21-1023	Mental Health and Substance Abuse Social Workers
29-2099	Health Technologists and Technicians, All Other
43-4111	Interviewers, Except Eligibility and Loan
29-2061	Licensed Practical and Licensed Vocational Nurses
29-1141	Registered Nurses

Sources: Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; Community Attributes, 2015.

Appendix C. SOC-Based Occupational Gaps

Exhibit C.1 displays occupations with anticipated shortages and their associated total supply, total demand, and gap.

Exhibit C.1 Spokane Area Healthcare Industry Annual Occupational Shortages, 2017-2022

Occupation	Total Supply	Total Demand	Gap	Percent in Cluster
Personal Care Aides	99	127	(28)	86%
Nursing Assistants	0	99	(99)	93%
Receptionists and Information Clerks	31	76	(45)	50%
Billing and Posting Clerks	22	65	(43)	35%
Home Health Aides	10	56	(47)	97%
Social and Human Service Assistants	0	51	(51)	90%
Massage Therapists	4	36	(32)	76%
Dental Assistants	22	36	(14)	100%
Interviewers, Except Eligibility and Loan	0	35	(35)	39%
Cooks, Institution and Cafeteria	28	34	(6)	39%
Food Servers, Nonrestaurant	6	32	(26)	93%
Rehabilitation Counselors	0	30	(30)	100%
Medical and Clinical Laboratory Technologists	0	27	(27)	99%
Dental Hygienists	10	21	(11)	100%
Pharmacists	13	20	(6)	41%
Healthcare Support Workers, All Other	14	19	(5)	57%
Physicians and Surgeons, All Other	0	16	(16)	98%
Phlebotomists	0	15	(15)	100%
Medical and Clinical Laboratory Technicians	0	14	(14)	99%
Nurse Practitioners	0	13	(13)	94%
Medical Transcriptionists	7	12	(5)	82%
Emergency Medical Technicians and Paramedics	0	12	(12)	98%
Surgical Technologists	0	11	(11)	100%
Healthcare Social Workers	10	10	(0)	97%
Surgeons	0	10	(10)	100%
Psychiatric Aides	0	10	(10)	100%
Recreation Workers	0	9	(9)	73%
Occupational Therapists	1	9	(8)	75%
Switchboard Operators, Including Answering Service	0	9	(9)	40%
Family and General Practitioners	0	9	(9)	98%
Respiratory Therapists	0	8	(8)	97%
Dental Laboratory Technicians	0	8	(8)	41%
Physician Assistants	0	7	(7)	95%
Internists, General	0	6	(6)	100%
Medical Equipment Preparers	0	6	(6)	80%
Cardiovascular Technologists and Technicians	0	6	(6)	99%
Nurse Anesthetists	0	5	(5)	96%
Orderlies	0	5	(5)	100%
Biological Technicians	0	5	(5)	34%
Environmental Science and Protection Technicians, Including Health	0	4	(4)	53%
Couriers and Messengers	0	3	(3)	77%
Total	278	987	(709)	

Sources: Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Additionally, some occupations are expected to have an excess supply. **Exhibit C.2** shows these occupations with their associated total supply, total demand, and gap.

Exhibit C.2 Spokane Area Healthcare Industry Annual Occupational Surpluses, 2017-2022

Occupation	Total Supply	Total Demand	Gap
Medical Assistants	168	58	141
Registered Nurses	321	219	102
Social and Community Service Managers	98	18	90
Licensed Practical and Licensed Vocational Nurses	72	32	40
Pharmacy Technicians	4	15	25
Medical and Health Services Managers	32	30	20
Medical Secretaries	37	45	20
Mental Health Counselors	29	15	14
Medical Records and Health Information Technicians	14	18	11
Health Technologists and Technicians, All Other	18	8	10
Physical Therapists	29	20	9
Radiologic Technologists	12	11	7
Diagnostic Medical Sonographers	11	7	4
Mental Health and Substance Abuse Social Workers	10	7	3
Substance Abuse and Behavioral Disorder Counselors	3	12	1
Child, Family, and School Social Workers	10	25	0

Sources: Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Idaho State Department of Labor, 2014; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, 2015.

Appendix D. Informal Survey Results

On June 12, 2015, the SAWDC along with a representative from CAI presented initial findings from this Healthcare Workforce Roadmap report to a group of about 40 stakeholders from the Spokane area healthcare workforce. **Exhibit D.1** shows feedback that was received from a survey of seven questions that was distributed to the group at the beginning of the discussion. The survey questions were open to discussion, and participants reported answers as a group rather than individually. Survey results were collected from seven tables.

Exhibit D.1 Small Group Survey Results, June 12, 2015

Small Group Survey Results



Where do you predict the most severe occupational shortages will occur in the Spokane area's healthcare sector during the next five years?

- All 7 tables: Physicians (Primary Care)
 - Several also pointed out specific shortages in hospitals and rural areas
- 3 votes: RN's
- 2 votes:
 - Psychiatry
 - CNA's
 - Medical Assistants
- Other answers:
 - Long-term care workers
 - Behavioral health workers
 - Social workers
 - Occupational therapists and other types of therapists
 - Home health care providers

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Small Group Survey Results



Occupational surpluses?

- Physical Therapists
- Occupational therapy
- Respiratory therapy
- Sub-specialty
- Maybe regulatory positions like lawyers and accountants
- PTA's, LPN's
- RN's
- Medical Coders

Note: There was confusion with how the question was worded and how "surpluses" could be interpreted; several responses had question marks.

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Small Group Survey Results

What are three emerging skills that are critical in healthcare settings?

- Most common answers fell under soft skills
 - Communication
 - Professionalism
 - Customer service
 - Teamwork
 - Work ethic, accountability, reliability
- 3 Votes for team-based care / care coordination
- 2 Votes:
 - Healthcare information technology and telemedicine
 - Inter-professional education (IPE)
- Other Answers:
 - Medical Records
 - Change Management

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Small Group Survey Results

What could policymakers be doing better to support the healthcare sector in the Spokane area?

- Almost all tables had feedback about increased funding and support for education. Examples:
 - Tuition assistance, loan repayment program, scholarships, funding for medical schools
 - Funding for graduate medical residency slots
 - More training programs like PA schools / increased credentialing in demand occupations, support for a dual medical school model
 - Articulated pathways in K-12
 - Professional development for teachers
 - Support collaborations between industry and education
- Other Answers:
 - Continued support for telemedicine
 - Raise awareness of mental health
 - Dementia training
 - Higher reimbursement rates for Medicare and Medicaid

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What could businesses be doing better?

- 3 Votes: Recognizing healthcare as a community issue
 - Increase engagement and willingness to participate
 - Support a healthy lifestyle through benefits (gym, child care)
- 3 Votes for paying more competitive wages
- 2 votes for hosting work-based experiences
 - Internships Tours / career exploration
- Other Answers:
 - Support and advocacy for healthcare education
 - Communicate to training providers what real skills are needed

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What could education providers be doing better?

- Everyone had answers about responsive program development that aligns with industry need. Some examples:
 - Communicate with providers about needed skills
 - Break out of silo'ed programs and accreditation – move toward “team-based care”
 - Reach out to employers and prioritize meeting needs of industry
 - Connect students to employers earlier
 - Align curriculum across system
- Other answers:
 - Continue to train IT professionals
 - Decrease emphasis on getting a degree – certifications are also good opportunities
 - Incorporate more soft skills training

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What could community-based organizations be doing better?

- Most feedback continued to center around education and preparing the job force. Examples:
 - Educate customers about career opportunities
 - Encourage people toward education that will end in job placement.
 - Paid internships
 - Publish and promote career ladders
 - Serve as the connector of employer, education, trainees
- Other answers:
 - Advocacy
 - Clinical care support
 - Creating awareness – increasing community involvement
 - Provide free leadership training
 - Mentorship programs

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There was also an open discussion at the end of the presentation on June 12, 2015. **Exhibit D.2** shows the summary of the main points from that discussion.

Exhibit D.2 Workforce Roadmap Discussion, Summarized

1. It would be helpful to view projections county by county to account for variations across the study region. For example, if Spokane is projecting a significant surplus of Medical Assistants but outlying rural counties are projecting shortages, then this need in rural counties might be overlooked based on regional totals. In many cases, MAs in Spokane might not be willing to relocate to rural areas; therefore it becomes important to develop the talent pipeline into rural areas.
2. Absent from this analysis is an assessment of clinical training sites. It does not matter how severe a projected shortage is if we don't have the clinical training infrastructure to support an increasing number of students seeking to earn high-demand credentials. There needs to be more involvement between education and industry to bridge this gap.
3. A consensus amongst graduate students in healthcare administration programs is that there is a lack of management level job opportunities in Spokane. As a result,

highly qualified students are seeking to launch or continue their careers elsewhere.

4. There are local training and education opportunities which lead to well-paying, in-demand careers that people are unaware of, e.g. EMT and Paramedic programs. Our region needs to step up and do a better job of promoting local opportunities, and our industry partners need to become more active in promoting these opportunities, both to young adults and transitioning military. Leaders in this sector can play a key role in acting as mentors to younger workers and students to aid in guiding them into quality careers. The healthcare sector has an abundance of opportunities, regardless of what one's degree might be in.
5. With expanded insurance coverage through the Affordable Care Act, coupled with a trend of early retirement amongst health care providers, especially primary care physicians, there are major concerns around persons being able to access the care they need. A survey of providers around the topic of early retirement seems especially relevant right now. Also, what is the formula that LMPA uses to project replacement demand – is it based on actual historical patterns or an assumption that providers will retire at 65 years of age?
6. While ACA projected and generally reports decreased utilization of ERs for non-emergencies, we are seeing rising ER utilization locally because persons cannot get in to see their primary care physicians, and also for mental health services.