

Healthcare

A Susquehanna Region Industry Brief



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Sage Policy Group, Inc.

Submitted to:

The Susquehanna Workforce Network



Healthcare: Suddenly, It's More than Cost Containment at Stake

Executive Summary

Background

Even prior to the COVID-19 induced global economic meltdown, worldwide healthcare spending was expected to rise at an average annual rate of 5 percent from 2019-2023. A variety of factors are driving growth and change in healthcare, including growing populations of the elderly, rising prevalence of chronic diseases such as diabetes and heart disease, much-needed infrastructure investments to expand capacity, technological advancements that result in purchases of equipment, training, and demand for new space, evolving care models, higher labor costs amidst workforce shortages, and the expansion of health care systems in developing markets.¹ All of these factors will remain at work whether in the presence or absence of pandemics.

Mental health is another driver of healthcare demand – one that at long last is attracting more scrutiny. The World Health Organization (WHO) has designated mental healthcare a fundamental right. One in four people worldwide will be affected by a mental or neurological disorder at some point in their lives.²

Against the backdrop of relentlessly expanding demand are growing shortages of skilled health delivery professions. The lack of available human capital represents a challenge for public and private health systems alike, with the novel coronavirus spotlighting the fragility of America's healthcare system.

However, while the shortfall of human capital represents a challenge to those entities that deliver care, it represents an opportunity for those seeking to identify career paths. In the U.S., employment in the healthcare and social assistance sector is expected to grow faster than in any other industry between 2018 and 2028.³ As with most of the forecasts presented in this report, this one was generated prior to the pandemic. Accordingly, employment in healthcare is likely to expand even faster than anticipated even as potentially human-replacing technologies and processes emerge, including robotics, telemedicine and artificial intelligence. Among the 30 fastest growing

¹ Deloitte, "2020 Global Health Care Outlook". <https://www2.deloitte.com/global/en/pages/life-sciences-and-healthcare/articles/global-health-care-sector-outlook.html>.

² Deloitte, "2020 Global Health Care Outlook".

³ U.S. Bureau of Labor Statistics. *Employment Projections — 2018-2028*. News Release, 9/4/2019. <https://www.bls.gov/news.release/pdf/ecopro.pdf>.

occupations in the U.S. from 2018 to 2028, 18 occupations are classified in healthcare and related occupations.⁴

Findings

This industry brief addresses the following questions:

1. What are the realistic growth prospects for healthcare employment in the Susquehanna region?
2. To what extent is there evidence of inadequate human capital supply now and into the future with respect to regional healthcare?
3. What does an individual need to do to access healthcare opportunities and are those opportunities available within the confines of the Susquehanna region?

Sage concludes that: 1) the Susquehanna region will experience significant growth in demand for healthcare services and the technical and support staff required to deliver those services; 2) that there exists compelling evidence of inadequate human capital supply presently and that this state of affairs will persist into the future; and 3) that Susquehanna residents will have plentiful opportunities to enter healthcare occupations during the years to come. That would have been the case even in the absence of a COVID-19-induced pandemic, but it is even more likely given the stepped-up demand for more rapid public health responses and greater dedication to public health.

Healthcare is also an arena in which SWN can generate significant benefits for its service territory. While both local community colleges offer plentiful programs for those seeking a career in healthcare, among the most important sets of skills are interpersonal skills and a commitment to customer service. Sage continues to recommend that SWN stand up and manage a credentialing program focused on customer service that cuts across industries.

⁴ U.S. Bureau of Labor Statistics. *Employment Projections — 2018-2028*. News Release, 9/4/2019.

I. Industry Overview

Industry/Sector Definition. Healthcare forms part of the Health Care and Social Assistance sector, which is itself part of the Education and Health Services super-sector as defined by federal agencies. The sector embodies both activities because it is sometimes difficult to distinguish the boundaries between healthcare and social assistance. The services provided by establishments in the Health Care and Social Assistance Sector are typically delivered by trained professionals, health practitioners or social workers with requisite expertise. Many of the industries in the sector are defined based on the educational degree held by the practitioners in that industry.⁵

Key Subsectors/Industries. The Health Care and Social Assistance sector includes four subsectors/industries: Ambulatory Health Care Services (NAICS 621), Hospitals (NAICS 622), Nursing and Residential Care Facilities (NAICS 623), and Social Assistance (NAICS 624). For purposes of this analysis, we focus primarily on the three industries most closely related to healthcare. These three healthcare subsectors as defined by the U.S. Bureau of Labor Statistics are described below.

- *Ambulatory Health Care Services (NAICS 621):* “Industries in the Ambulatory Health Care Services subsector provide health care services directly or indirectly to ambulatory patients and do not usually provide inpatient services. Health practitioners in this subsector provide outpatient services, with the facilities and equipment not usually being the most significant part of the production process.”⁶
- *Hospitals (NAICS 622):* “Industries in the Hospitals subsector provide medical, diagnostic, and treatment services that include physician, nursing, and other health services to inpatients and the specialized accommodation services required by inpatients. Hospitals may also provide outpatient services as a secondary activity. Establishments in the Hospitals subsector provide inpatient health services, many of which can only be provided using the specialized facilities and equipment that form a significant and integral part of the production process.”⁷
- *Nursing and Residential Care Facilities (NAICS 623):* “Industries in the Nursing and Residential Care Facilities subsector provide residential care combined with either nursing, supervisory, or other types of care as required by the residents. In this subsector, the facilities are a significant part of the production process and the care provided is a mix of health and social services with the health services being largely some level of nursing services.”⁸

⁵ U.S. Bureau of Labor Statistics. *Industries at a Glance: Health Care and Social Assistance: NAICS 62.* <https://www.bls.gov/iag/tgs/iag62.htm>.

⁶ U.S. Bureau of Labor Statistics. *Industries at a Glance: Ambulatory Health Care Services: NAICS 621.* <https://www.bls.gov/iag/tgs/iag621.htm>.

⁷ U.S. Bureau of Labor Statistics. *Industries at a Glance: Hospitals: NAICS 622.* <https://www.bls.gov/iag/tgs/iag622.htm>.

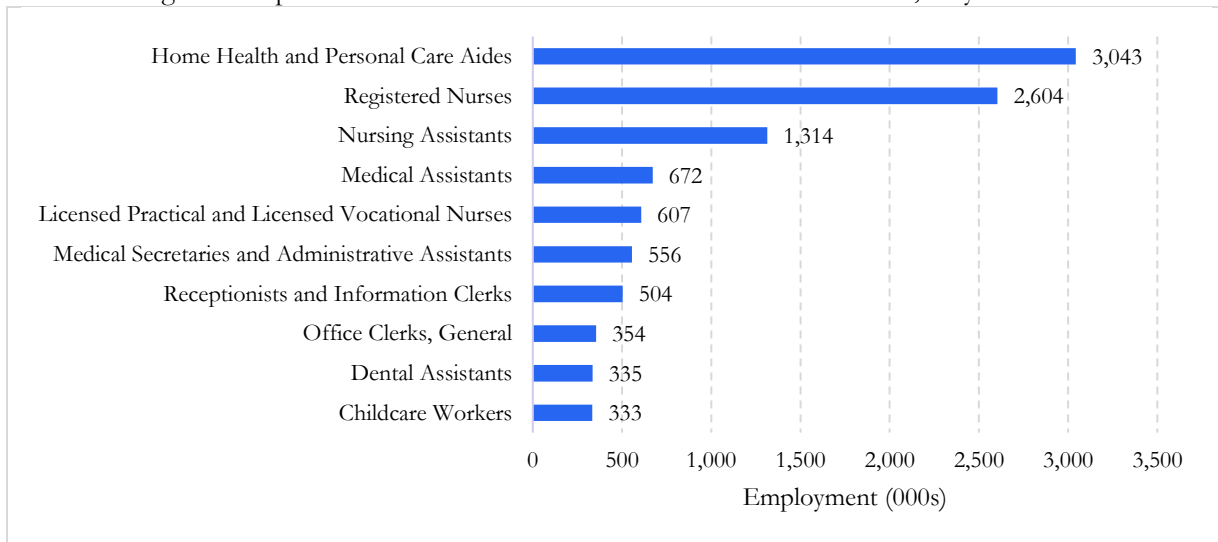
⁸ U.S. Bureau of Labor Statistics. *Industries at a Glance: Nursing and Residential Care Facilities: NAICS 623.* <https://www.bls.gov/iag/tgs/iag623.htm>.

Key Occupations. Employment in healthcare is projected to expand by 14 percent or 1.9 million new jobs between 2018 and 2028. Unless otherwise noted, projections such as these have yet to be adjusted to reflect post-COVID circumstances.

Healthcare and related occupations are projected to add more jobs than any other occupational group, driven mainly by aging population and accompanying growth in utilization.⁹ There are two primary groups of healthcare related occupations: 1) healthcare practitioners and technical occupations and 2) healthcare support occupations.¹⁰

Healthcare practitioners and technical occupations include positions such as registered nurses, physicians and surgeons, and dental hygienists. Healthcare support occupations include positions such as home health aides, occupational therapy assistants, and medical transcriptionists. On average healthcare practitioners and technical occupations have higher wages than most occupations, while healthcare support occupations earn wages lower than most occupations.¹¹

Exhibit 1. Largest Occupations in U.S. Health Care and Social Assistance Sector, May 2019



Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics (OES); Sage.

Home health and personal care aides represent the largest group of healthcare related occupations in the U.S., followed by registered nurses. Exhibit 1 shows U.S. employment in the top 10 healthcare and social assistance sector occupations ranked by total employment. As of May 2019, there were

⁹ U.S. Bureau of Labor Statistics. *Occupational Outlook Handbook*: Healthcare Occupations. <https://www.bls.gov/ooh/healthcare/home.htm>.

¹⁰ U.S. Bureau of Labor Statistics. *Occupational Employment Statistics (OES)*. May 2019 Occupation Profiles.

¹¹ U.S. Bureau of Labor Statistics. *Occupational Outlook Handbook*: Healthcare Occupations.

more than 3 million home health and personal care aides working in the U.S. There were more than 2.6 million registered nurses employed and more than 1.3 million nursing assistants.

In the Susquehanna region, various categories of nurses represent four of the top ten occupational categories in terms of healthcare related employment, five if one includes home health aides. At the top of the list is registered nurses, a category associated with a 2016 employment estimate exceeding 2,000. Home health aides and medical assistants rank second and third, respectively, in terms of Susquehanna regional employment totals within the healthcare industry.

Exhibit 2. Top 10 Healthcare/Healthcare Support Occupations in Susquehanna Region, 2016

Rank	Occupation	2016 Employment
1	Registered Nurses	2,050
2	Nursing Assistants	923
3	Home Health Aides	813
4	Medical Assistants	614
5	Nurse Practitioners	544
6	Veterinary Technologists and Technicians	499
7	Emergency Medical Technicians and Paramedics	400
8	Licensed Practical and Licensed Vocational Nurses	376
9	Physicians and Surgeons, All Other	332
10	Veterinarians	295

Source: Maryland Department of Labor, Licensing and Regulation (DLLR), Workforce Region Occupational Projections; Sage.

Of the 30 fastest growing occupations in the U.S. from 2018 to 2028, 18 occupations are in healthcare and related occupations. Among healthcare occupations, the fastest growing are home health aides and personal care aides. Other healthcare occupations that are expected to grow rapidly, including nurse practitioners, physician assistants, and medical assistants, will be in greater demand as the healthcare industry continues to move toward delivery of team-based care.¹²

One suspects that if anything the global pandemic that struck America beginning in the first quarter of 2020 will accelerate demand growth for healthcare professionals, including those who work in public health and related policy fields. Many of these people will not be classified as healthcare workers, but nonetheless will owe their employment to demand for the delivery of healthcare services, including preventive care at individual and society-wide levels. Medical researchers will also not be counted among those delivering care, but also will owe their careers to the generalized desire for well being at individual and collective levels.

Beyond aging and growth in population of those with chronic conditions, demand for health services will also be driven by improvements in technology, growing emphasis on preventive care, and an expanding need for substance abuse and counseling services.

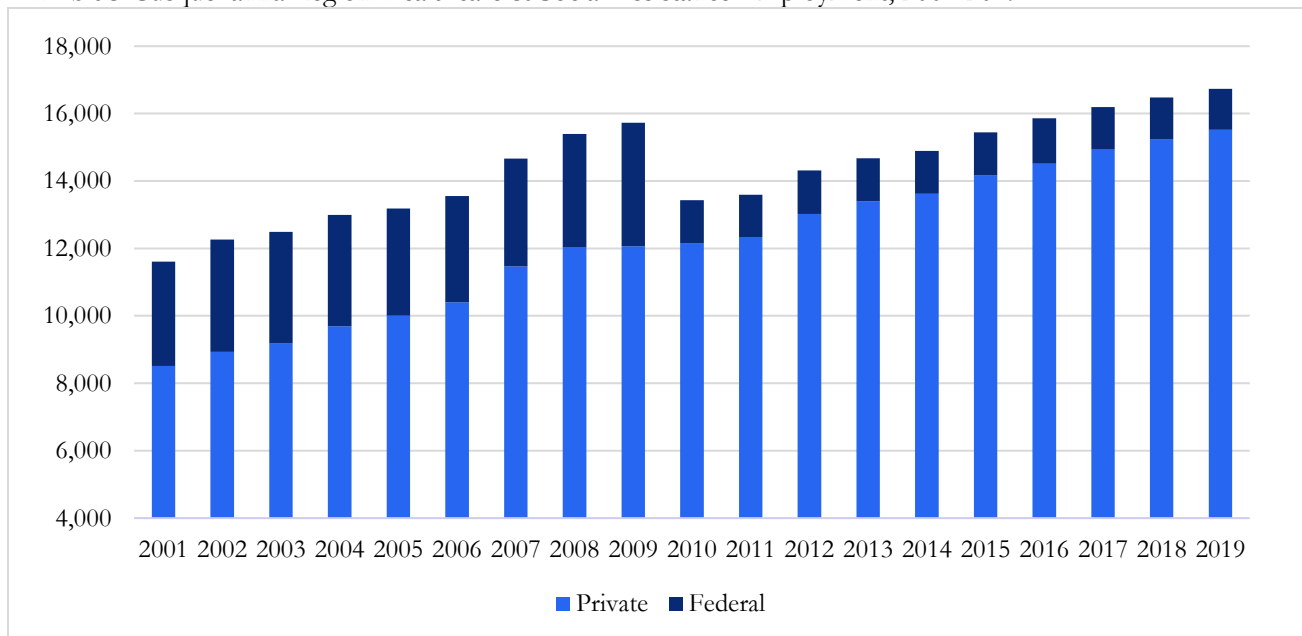
¹² U.S. Bureau of Labor Statistics. *Employment Projections — 2018-2028*. News Release, 9/4/2019.

II. Healthcare in the Susquehanna Region

Based on expected growth in demand for health services and the opportunity to work with emerging technologies, any economic and/or workforce development strategy deployed in the Susquehanna region must include healthcare as one of the leading target industries. Exhibit 3 indicates the level of healthcare and social assistance employment in the Susquehanna region over time. Within healthcare and social assistance, social assistance only represents around 13 percent of total sector employment. The majority of healthcare and social assistance employment is private (92.7%), with a small portion of industry employment classified as federal (7.3%).

Since declining dramatically during the aftermath of the Great Recession, healthcare and social assistance employment in the Susquehanna region has expanded steadily, growing by a total of 24.6 percent between 2010 and 2019, or at an average annual rate of 2.5 percent. Still, it is important to remember that healthcare, while less susceptible to large-scale downturns like tourism, construction, manufacturing and other highly cyclical industries, is still negatively impacted during periods of economic stress.

Exhibit 3. Susquehanna Region Healthcare & Social Assistance Employment, 2001-2019



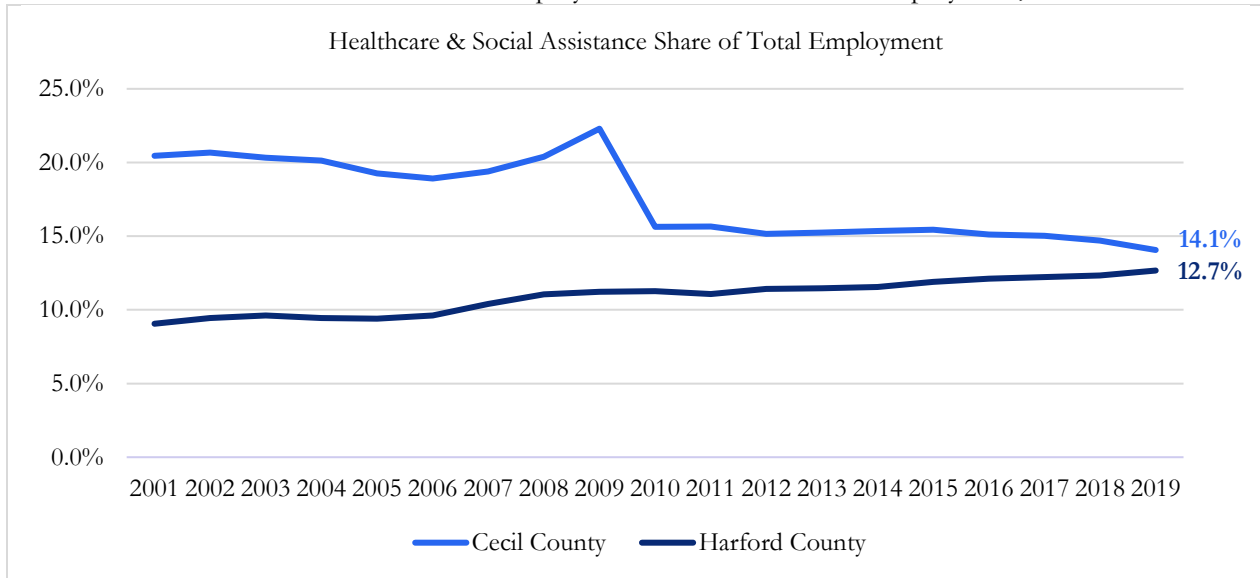
Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. Data are not seasonally adjusted (NSA).

In 2019, healthcare and social assistance represented 13 percent of total regional employment, a share that has been increasing gradually since 2011. Exhibit 4 shows that healthcare and social assistance is slightly more concentrated in Cecil County as a share of total employment than in Harford County, but the difference is minimal.

In Cecil County, healthcare and social assistance represents 14.1 percent of total employment, while it represents 12.7 percent of total employment in Harford County. This is a distinction without

much significance. Harford County employment is bolstered significantly by the presence of Aberdeen Proving Ground, which has the statistical effect of diluting healthcare’s share of total countywide employment.

Exhibit 4. Healthcare & Social Assistance Employment as a Share of Total Employment, 2001-2019



Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. Data are not seasonally adjusted (NSA).

Exhibit 5 presents private health care and social assistance employment growth in Maryland and the Susquehanna region over two five-year periods. Susquehanna regional private healthcare and social assistance employment declined 1.1 percent annually between 2009 and 2014. But this statement obfuscates the true trend. Sectoral employment peaked in 2009, fell sharply in 2010, and then began to expand gradually thereafter. Picking up on that trend, during the ensuing five-year period, private healthcare and social assistance employment grew 2.4 percent annually in the Susquehanna region, faster than the statewide growth rate and far faster than the pace of growth across all industries.

There are many large employers in the healthcare field, which means that shifts in staffing models among individual hospitals and other medical centers can produce reasonably large changes in aggregate industry employment performance. For instance, in Cecil County, private healthcare and social assistance employment contracted between 2009 and 2014, and then was essentially unchanged between 2014 and 2019. It is also conceivable that this was due to a reclassification of an employer or employers that had previously been categorized within the private health care/social assistance segment as opposed to an actual decline in industry employment. The trend was the mirror opposite in Harford County, which experienced faster healthcare job growth between 2014 and 2019 than it did during the prior five-year period.

Exhibit 5. Recent Growth in Private Healthcare & Social Assistance Employment

	Employment			Net Growth		CAGR	
	2009	2014	2019	2009-2014	2014-2019	2009-2014	2014-2019
Maryland	332,392	361,239	394,989	28,847	33,750	1.7%	1.8%
Susquehanna WIA	15,729	14,892	16,736	-837	1,844	-1.1%	2.4%
Cecil County, MD	6,734	4,707	4,695	-2,027	-12	-6.9%	-0.1%
Harford County, MD	8,995	10,185	12,041	1,190	1,856	2.5%	3.4%

Source: U.S. Bureau of Labor Statistics; Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. Data are not seasonally adjusted (NSA).

Exhibit 6 breaks down private healthcare employment in the Susquehanna region by detailed industry as of 2019Q2. For data at this detailed level, not all industries are represented because the U.S. Bureau of Labor Statistics suppresses figures when they do not meet U.S. Census Bureau publication standards regarding confidentiality.

The largest healthcare employment category in the Susquehanna region is general medical and surgical hospitals, followed by offices of physicians and nursing care facilities. These industries employ a wide range of employees, from highly trained physicians and surgeons, leading administrators, nurses and assistants, as well as support and custodial staff. This wide range of positions represents another appealing characteristic of healthcare as a workforce development driver.

Exhibit 6. Susquehanna Region Private Healthcare Employment by Detailed Industry, 2019Q2

Industry	Stable Employment
General Medical and Surgical Hospitals*	3,726
Offices of Physicians	1,430
Nursing Care Facilities (Skilled Nursing Facilities)	1,169
Outpatient Care Centers	913
Offices of Dentists	805
Offices of Other Health Practitioners	772
Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly	681
Home Health Care Services	484
Other Ambulatory Health Care Services	439
Residential Intellectual and Developmental Disability, Mental Health, and Substance Abuse Facilities	265
Medical and Diagnostic Laboratories	49
Psychiatric and Substance Abuse Hospitals	N/A
Specialty (except Psychiatric and Substance Abuse) Hospitals	N/A
Other Residential Care Facilities	N/A

Source: U.S. Bureau of Labor Statistics, LED Extraction Tool - Quarterly Workforce Indicators (QWI); Sage.

Notes: 1. Data are not seasonally adjusted (NSA). 2. Employment figures are the number of stable jobs: the number of jobs that are held on both the first and last day of the quarter with the same employer. 3. Some healthcare industries are not represented above because the U.S. Bureau of Labor Statistics suppresses figures when they do not meet US Census Bureau publication standards. *Data for these industries may be distorted/fuzzed.

As of 2019, there were 689 business establishments in the Susquehanna region classified within the three primary healthcare industries (ambulatory health care services, hospitals, or nursing and residential care facilities) representing 9.0 percent of total private business establishments in the

region. The majority of healthcare establishments fall into the ambulatory health care services industry (86.1%). Nursing and residential care facilities represent 12.9 percent of healthcare establishments. Hospitals represent the smallest portion of healthcare establishments (1%). There are of course few hospitals, and they tend to be large because of significant economies of scale and scope.

Exhibit 7. Susquehanna Region: Number of Private Business Establishments in Select Industries, 2019

Industry	Cecil County	Harford County	Susquehanna Region
Total Private Establishments (All Industries)	1,844	5,831	7,675
Ambulatory Health Care Services (NAICS 621)	140	453	593
Hospitals (NAICS 622)	2	5	7
Nursing and Residential Care Facilities (NAICS 623)	18	71	89

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program; Sage. Notes: 1. Data are not seasonally adjusted (NSA).

Offices of physicians represent nearly 29 percent of healthcare establishments in the Susquehanna region. Offices of other health practitioners and offices of dentists each represent more than 17 percent. The implication is that many jobs in healthcare are administrative, and require managerial expertise rather than pure medical expertise.

Exhibit 8. Susquehanna Region Healthcare Business Establishments by Detailed Industry, 2019

Industry	Total Susq. Region	
	# of Establishments	% of Total Healthcare Ests.
Offices of physicians	197	28.6%
Offices of other health practitioners	122	17.7%
Offices of dentists	120	17.4%
Outpatient care centers	65	9.4%
Medical and diagnostic laboratories	44	6.4%
Residential mental health facilities	38	5.5%
Continuing care, assisted living facilities	36	5.2%
Home health care services	28	4.1%
Other ambulatory health care services	17	2.5%
Nursing care facilities, skilled nursing	13	1.9%
Hospitals	7	1.0%
Other residential care facilities	2	0.3%
Total	689	100.0%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW) program-QCEW NAICS-Based Data Files; Sage. Notes: 1. Data are not seasonally adjusted (NSA).

- Wages

Average industry wages in the Susquehanna region are presented in Exhibit 9. Wages in the hospitals industry are the highest among the three healthcare industries, a reflection of the high degree of specialization among physicians, registered nurses, and top administrators. Wages in the other two healthcare industries are lower than average wages across all industries in the region.

The implication is that there is a mix of entry-level, mid-level, and high-level jobs in the segment. Given the devastation wrought by the 2020 pandemic to the economy, the presence of entry-level jobs becomes all the more important. That said, health services is associated with many career paths allowing for upward mobility.

The Susquehanna Workforce region ranks 8th out of Maryland’s 12 workforce region in terms of the highest average wages in healthcare and social assistance. This is not cause for concern, and largely reflects the higher cost of living in the heart of the Washington-Baltimore corridor as well as the large salaries of surgeons and other specialists at major medical centers like Johns Hopkins and the University of Maryland Medical Center (UMMC).

Exhibit 9. Average Wages in the Susquehanna Workforce Region for Select Industries, 2019Q3

Industry	Avg. Hourly Wage*	Avg. Weekly Wage	Avg. Annual Wage*
All Industries	\$25.70	\$1,028	\$53,456
Ambulatory Health Care Services (NAICS 621)	\$24.53	\$981	\$51,012
Hospitals (NAICS 622)	\$31.65	\$1,266	\$65,832
Nursing and Residential Care Facilities (NAICS 623)	\$16.08	\$643	\$33,436

Source: Maryland Workforce Exchange, Labor Market Statistics, Covered Employment and Wages Program; Sage.

*Assumes a 40-hour week worked year round.

III. Looking Ahead: Meeting Future Demands in Healthcare

In addition to profiling the industry nationally and regionally, this industry brief also addresses the following questions:

1. What are the realistic growth prospects for healthcare employment in the Susquehanna region?
2. To what extent is there evidence of inadequate human capital supply now and into the future with respect to regional healthcare?
3. What does an individual need to do to access healthcare opportunities and are those opportunities available within the confines of the Susquehanna region?

- Growth Prospects for Susquehanna Healthcare Employment

Projections produced by the Office of Workforce Information and Performance (OWIP) within Maryland’s Department of Labor indicate that Susquehanna region healthcare industries are expected to grow 0.6 percent annually between 2016 and 2026, slightly slower than the average growth rate for all industries. These projections seem dubious given known demographics. They appear even less likely in the wake of COVID-19.

In net terms, employment in ambulatory health care services is expected to grow the most according to OWIP projections, by 344 positions. Ambulatory health care services also ranks within the top 10 industries expected to experience the most net growth in the Susquehanna region from 2016 to 2026. All three healthcare industries rank within the top 20 industries expected to experience the most growth.

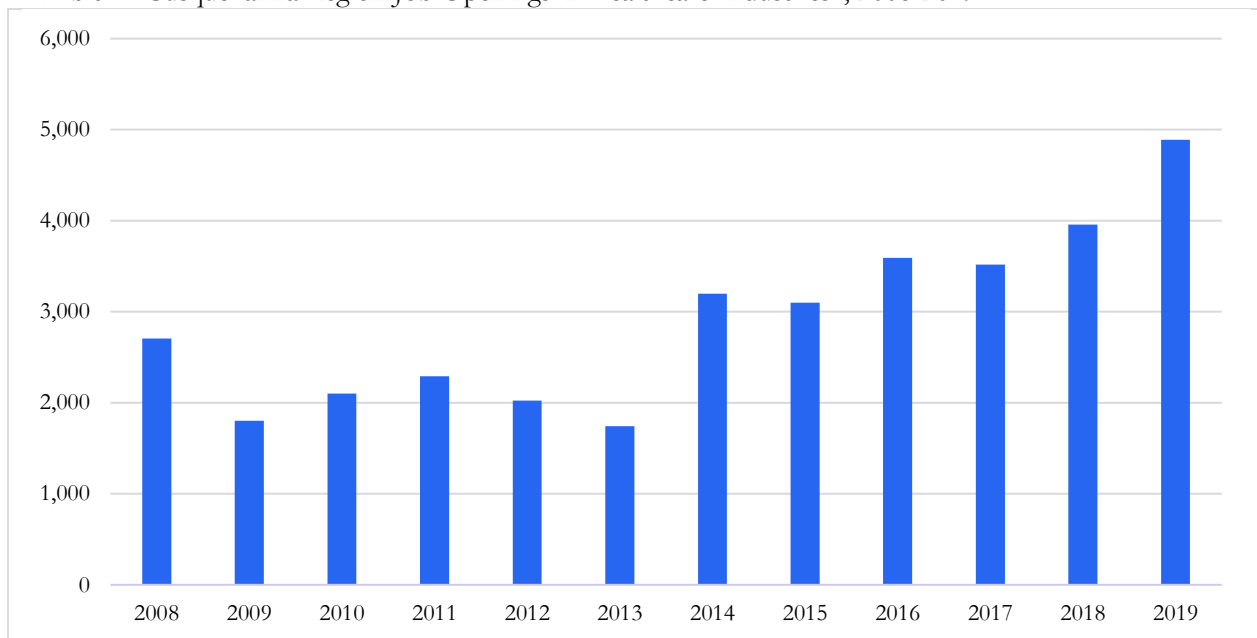
Exhibit 10. Susquehanna Region – Projected Employment Growth in Select Industries, 2016-2026

Industry	2016	2026	2016-2026	
			Total Growth	Annual % Growth
ALL INDUSTRIES	130,904	141,205	10,301	0.8%
HEALTH CARE INDUSTRIES				
Ambulatory Health Care Services (NAICS 621)	5,180	5,524	344	0.6%
Hospitals (NAICS 622)	4,432	4,726	294	0.6%
Nursing and Residential Care Facilities (NAICS 623)	2,554	2,724	170	0.6%

Source: Maryland Department of Labor, Licensing and Regulation (DLLR), Workforce Region Industry Projections; Sage.

Exhibit 11 shows the number of job openings in the Susquehanna region in the three main healthcare industries (ambulatory health care services, hospitals, and nursing and residential care facilities) posted online on the Maryland Workforce Exchange from 2008-2019. As the graph clearly indicates, the need for healthcare workers has been growing in recent years. The number of jobs postings in healthcare industries jumped by more than 23 percent in 2019, a period unimpacted by pandemic.

Exhibit 11. Susquehanna Region Job Openings in Healthcare Industries*, 2008-2019



Source: Maryland Workforce Exchange: Labor Market Information (Job Source: Online advertised jobs data); Sage. Notes: 1. The table shows the number of job openings advertised online in the Susquehanna Workforce Region (Jobs De-duplication Level 2). 2. Jobs De-duplication Level 2: high level de-duplication of advertised job openings (for statistical analysis). *Job openings in the following industries: Ambulatory Health Care Services (NAICS 621), Hospitals (NAICS 622), Nursing and Residential Care Facilities (NAICS 623).

Exhibit 12 supplies data regarding job openings in the Susquehanna region posted on the Maryland Workforce Exchange in healthcare industries in 2019. The industry with the most job openings was general medical/surgical hospitals, with more than 2,700 positions advertised throughout the year. Medical and diagnostic laboratories posted more than 760 positions and there were more than 200 positions available in each of the following three industries: community care facilities for the elderly, other ambulatory health care services, and home health care services.

Exhibit 12. Advertised Healthcare Job Openings in the Susquehanna Region, 2019

Industry	Job Openings
General Medical and Surgical Hospitals: NAICS 6221	2,719
Medical and Diagnostic Laboratories: NAICS 6215	762
Community Care Facilities for the Elderly: NAICS 6233	255
Other Ambulatory Health Care Services: NAICS 6219	254
Home Health Care Services: NAICS 6216	239
Offices of Other Health Practitioners: NAICS 6213	197
Outpatient Care Centers: NAICS 6214	192
Residential, Mental Health, and Substance Abuse Facilities: NAICS 6232	82
Nursing Care Facilities: NAICS 6231	72
Offices of Dentists: NAICS 6212	66
Psychiatric and Substance Abuse Hospitals: NAICS 6222	33
Specialty (except Psychiatric and Substance Abuse) Hospitals: NAICS 6223	12
Offices of Physicians: NAICS 6211	7
Other Residential Care Facilities: NAICS 6239	N/A

Source: Maryland Workforce Exchange, Labor Market Information. Job Source: Online advertised jobs data; Sage. Notes: 1. The table shows the number of job openings advertised online in the Susquehanna Workforce Region in 2019 (Jobs De-duplication Level 2). 2. Jobs De-duplication Level 2: high level de-duplication of advertised job openings (for statistical analysis).

Exhibit 13 reflects the top 10 healthcare occupations by projected growth in absolute terms between 2016 and 2026 in the Susquehanna region. The healthcare occupation expected to expand the most is home health aides. Positions for home health aides are expected to expand 2.0 percent annually between 2016 and 2026, much faster than the 0.8 percent annual growth rate among all regional occupations. This occupation also ranks among the top 10 fastest growing occupations overall in the region. Demand for registered nurses and nursing assistants is also expected to be robust.

Exhibit 13. Susquehanna Region – Projected Employment Growth in Select Occupations, 2016-2026

Occupations	2016	2026	2016-2026	
			Total Growth	Annual % Growth
ALL OCCUPATIONS	130,904	141,202	10,298	0.8%
DETAILED HEALTH CARE OCCUPATIONS, TOP 10 BY NET GROWTH				
Home Health Aides	813	992	179	2.0%
Registered Nurses	2,050	2,188	138	0.7%
Nursing Assistants	923	1,032	109	1.1%
Medical Assistants	614	668	54	0.8%
Nurse Practitioners	544	582	38	0.7%
Pharmacy Technicians	277	310	33	1.1%
Medical and Health Services Managers	323	354	31	0.9%
Dietitians and Nutritionists	175	204	29	1.5%
Physical Therapists	215	243	28	1.2%
Mental Health Counselors	102	126	24	2.1%

Source: Maryland Department of Labor, Licensing and Regulation (DLLR), Workforce Region Occupational Projections; Sage.

In 2019, there were more than 1,300 job openings for registered nurses in the Susquehanna region posted on the Maryland Workforce Exchange throughout the year. Exhibit 14 details the number of Susquehanna region job openings in healthcare/healthcare support occupations in 2019. Other occupations in high demand include nursing assistants, speech-language pathologists, occupational therapists, licensed practical/licensed vocational nurses, physical therapists, medical assistants, critical care nurses and pharmacy technicians.

Exhibit 14. Susquehanna Region: Healthcare Related Occupations with the Most Job Openings, 2019

Occupation Title	Job Openings	Mean Annual Wage
Registered Nurses	1,331	\$78,898
Nursing Assistants	364	\$35,632
Speech-Language Pathologists	358	\$68,249
Occupational Therapists	218	N/A
Licensed Practical and Licensed Vocational Nurses	175	\$51,147
Physical Therapists	168	\$80,217
Medical Assistants	162	\$32,797
Critical Care Nurses	136	\$46,425
Pharmacy Technicians	133	N/A
Healthcare Practitioners and Technical Workers, All Other	111	N/A
Nurse Practitioners	103	N/A
Physicians and Surgeons, All Other	88	N/A
Emergency Medical Technicians and Paramedics	73	\$41,614
Phlebotomists	68	N/A
Medical and Clinical Laboratory Technologists	64	\$69,691

Source: Maryland Workforce Exchange: Labor Market Information (Wage Data Source: Labor Market Statistics, Occupational Employment Statistics & Wages Program; Job Source: Online advertised jobs data); Sage. Notes: 1. The table shows the number of job openings advertised online in the Susquehanna Workforce Region in 2019 (Jobs De-duplication Level 2). 2. Jobs De-duplication Level 2: high level de-duplication of advertised job openings (for statistical analysis).

- Evidence of Human Capital Shortfalls Related to Healthcare in the Susquehanna Region

According to data from the U.S. Census Bureau, nearly 13,000 people worked in health care and social assistance in the Susquehanna region in 2017, including people who do not live in the region. There were more than 21,000 residents of the Susquehanna region working in healthcare and social assistance, many of whom commute outside of the region to work.

While U.S. Census Bureau data do not break down exact numbers of residents who commute outside of the region to healthcare and social assistance jobs, one can presume that it is a significant number based on the number of healthcare and social assistance jobs in the region (12,900) versus the number of residents filling those kinds of jobs (21,129). Conceivably, those Susquehanna residents who presently commute out of the region for jobs in healthcare could fill many of the positions created within the region going forward. This would limit the number of available job openings within the region all things being equal.

But all things are not equal. Other regions will also experience growth in demand for healthcare workers, which ultimately means that Susquehanna residents will have plentiful opportunities to enter healthcare occupations during the years to come.

Exhibit 15. Susquehanna Region Health Care & Social Assistance Employment: Work v. Home Area, 2017

Industry	Work Area	Home Area
Health Care and Social Assistance	12,900	21,129
All Industries	102,610	152,822

Source: U.S. Census Bureau. Longitudinal-Employer Household Dynamics Program, OnTheMap Application; Sage. Notes: 1. Numbers represent *primary* jobs, not total jobs. Primary Jobs: Public and private-sector jobs, one job per worker. A primary job is the highest paying job for an individual worker. 2. Job figures presented are for the Susquehanna Workforce Investment Area (WIA), which is comprised of Cecil County and Harford County.

There is another factor to consider along these lines. Exhibit 16 supplies statistical detail regarding the characteristics of healthcare workers in the Susquehanna region. More than a quarter of employees are at least 55 years old, suggesting that there will be plentiful demand for younger healthcare workers to fill positions vacated by retirees in the future.

It may be worth noting that today’s healthcare workers are overwhelmingly female (80%). Moreover, in excess of 30 percent of healthcare workers in the Susquehanna region have an associate’s degree or some college training.

Exhibit 16. Characteristics of Healthcare Employees in the Susquehanna Region, 2019Q2

	# of Employees	% of Total
TOTAL EMPLOYEES	11,049	100.0%
SEX		
Male	2,240	20.3%
Female	8,809	79.7%
AGE		
<19	92	0.8%
19-24	826	7.5%
25-34	2,453	22.2%
35-44	2,301	20.8%
45-54	2,489	22.5%
55-64	2,127	19.3%
65+	762	6.9%
RACE		
White Alone	8,476	76.7%
Black or African American Alone	1,862	16.9%
All Other	711	6.4%
ETHNICITY		
Hispanic or Latino	379	3.4%
Not Hispanic or Latino	10,670	96.6%
EDUCATION LEVEL		
Less than high school	1,037	9.4%
High school or equivalent, no college	2,564	23.2%
Some college or Associate degree	3,504	31.7%
Bachelor's degree or advanced degree	3,028	27.4%
Educational attainment NA*	918	8.3%

Source: U.S. Census Bureau, LED Extraction Tool - Quarterly Workforce Indicators (QWI); Sage. Notes: 1. Data are not seasonally adjusted (NSA). 2. Employment figures are the number of stable jobs: the number of jobs that are held on both the first and last day of the quarter with the same employer. 3. Figures include employment in the following industries: Ambulatory Health Care Services (NAICS 621), Hospitals (NAICS 622), and Nursing and Residential Care Facilities (NAICS 623). 4. Data for Hospitals (NAICS 622) may be distorted/fuzzed. *Educational attainment not available—workers aged 24 or younger.

Exhibit 17 compares numbers of online job postings with candidates with active resumes in the Maryland Workforce Exchange for healthcare related occupations as of early April 2020. While this represents only a snapshot in time, it supplies some sense of the scale of the healthcare worker shortfall.

According to these data, there were only 18 candidates seeking employment as a registered nurse in the Susquehanna region compared to more than 360 openings for registered nurses in the region. For many of the occupations listed below, there was fewer than one identified candidate per job opening.

Thus far, the impact of COVID-19 on the job openings data appears limited. For instance, in April there were 361 openings for registered nurses in the Susquehanna region, up only moderately from the average of 318 openings for RNs during the months of 2019.

Data also suggest that the majority of jobseekers are not firmly tied to the Susquehanna region of Maryland. Most candidates are willing to work anywhere in Maryland. As an example, of the potential candidates for Susquehanna region job openings in the category of nursing assistants, 40 candidates were only looking for jobs located in the Susquehanna region. Another 191 candidates indicated that they were willing to work anywhere in Maryland.

Exhibit 17. Susquehanna Region Job Openings & Candidates for Select Healthcare Related Occupations, as of 4/1/2020

Occupation Title	Job Openings	Potential Candidates		Candidates Per Job Opening	
		Only Looking in Susq.	Willing to Work Anywhere in MD	Only Looking in Susq.	Willing to Work Anywhere in MD
Registered Nurses	361	18	90	0.05	0.25
Nursing Assistants	54	40	231	0.74	4.28
Physicians and Surgeons, All Other	46	2	11	0.04	0.24
Licensed Practical and Licensed Vocational Nurses	28	5	24	0.18	0.86
Personal Care Aides	24	11	47	0.46	1.96
Medical Assistants	21	42	166	2.00	7.90
Pharmacy Technicians	16	6	37	0.38	2.31
Nurse Practitioners	13	1	5	0.08	0.38
Cardiovascular Technologists and Technicians	11	2	4	0.18	0.36
Medical Secretaries	11	15	65	1.36	5.91
Nuclear Medicine Technologists	11	0	0	N/A	N/A
Radiologic Technologists	11	2	4	0.18	0.36
Surgical Technologists	11	3	10	0.27	0.91
Family and General Practitioners	9	0	0	N/A	N/A
Medical and Clinical Laboratory Technologists	9	3	5	0.33	0.56
Pharmacists	9	14	59	1.56	6.56
Diagnostic Medical Sonographers	7	0	0	N/A	N/A

Source: Maryland Workforce Exchange; Labor Market Information (Wage Data Source: Labor Market Statistics, Occupational Employment Statistics & Wages Program; Candidate Source: Individuals with active resumes in the workforce system; Job Source: Online advertised jobs data); Sage. Notes: 1. Jobs De-duplication Level 2: high level de-duplication of advertised job openings (for statistical analysis).

- Healthcare Career Pathways for Young People and Others

There are many ways to initiate a career in healthcare. Often, specific education and training as well as the acquisition of licenses, certifications, and/or registrations are required. A BLS publication entitled “Healthcare: Millions of jobs now and in the future” provides a valuable resource for students/adults/workers considering a career in healthcare and serves as the basis for much of the ensuing discussion regarding healthcare education and credentialing.

Building a foundation for a career in healthcare can start long before preparation for a specific occupation. As early as high school, students should study algebra, biology, chemistry and related subjects.

Beyond high school, most occupations in healthcare require additional education, but the paths to enter a specific occupation vary. For instance, there are several paths to becoming a registered nurse. Some registered nurses earn a diploma from an approved nursing program or a master’s degree in nursing, while many registered nurses prepare by earning an associate’s degree or bachelor’s of science degree in nursing.

There are many educational programs for careers in healthcare. Prospective students should research programs carefully and verify that a school’s credentials are up to date and that their program enjoys a good reputation. Some healthcare occupations require on-the-job training in addition to education, such as a residency, employer-sponsored training program, or informal training combined with experience on the job.

To gain employment in certain healthcare occupations, particularly those that treat patients, workers need a license, certification, or registration. Requirements differ by state and by occupation.

All states require physicians and surgeons to be licensed, but states vary in their requirements for nursing assistants. Acquiring a license, certification, or registration typically involves completing an approved education/training program and passing competency examinations. Additionally, workers must often pass a background check.¹³

¹³ U.S. Bureau of Labor Statistics, “Healthcare: Millions of jobs now and in the future”, by Elka Torpey. Occupational Outlook Quarterly, Spring 2014. <https://www.bls.gov/careeroutlook/2014/spring/art03.pdf>.

Exhibit 18 details entry level educational levels and licenses/certifications required for the top 10 healthcare related occupations with the most expected growth in the Susquehanna region from 2016-2026. Four of the 10 occupations require a postsecondary nondegree award or lower level of education (HS diploma/equivalent + postsecondary nondegree award). Three of the 10 occupations require a bachelor’s degree and another three require a master’s/doctoral degree. In addition, all of these occupations require some kind of state or national license or certification.

Exhibit 18. Education Requirements in Top 10 Healthcare Related Occupations with the Most Projected Growth in the Susquehanna Region

Occupation	2018 Median Pay (U.S.)	Entry Level Education	Licenses/Certifications Required	On-the-job Training
Home Health Aides	\$24,060	HS Diploma or Equivalent	Home Health Aide (HHA) Federal Certification	Short-term Training
Registered Nurses	\$71,730	Bachelor’s Degree	State Certification	None
Nursing Assistants	\$28,530	Postsecondary Nondegree Award	Certified Nursing Certificate (CNA) State Certification	Short-term Training
Medical Assistants	\$33,610	Postsecondary Nondegree Award	Not Required, But Employers May Prefer Candidates w/ Certifications*	None
Nurse Practitioners	\$113,930	Master’s Degree	State Board Certification and Nursing License	None
Pharmacy Technicians	\$32,700	HS Diploma or Equivalent/ Postsecondary Education in Some Cases	National Certification or Board-Approved Training Program**	Moderate-term Training
Medical and Health Services Managers	\$99,730	Bachelor’s Degree	Not Required Except for in Some Areas of Practice	None
Dietitians and Nutritionists	\$60,370	Bachelor’s Degree	State License	Internship/ Residency
Physical Therapists	\$87,930	Doctoral or Professional Degree	State License	None
Mental Health Counselors	\$44,630	Bachelor’s Degree/Master’s Degree	State License	Internship/ Residency

Source: U.S. Bureau of Labor Statistics. Occupational Outlook Handbook; Maryland Board of Nursing; Maryland Department of Health-Board of Pharmacy; Sage. Notes: *The National Commission for Certifying Agencies, part of the Institute for Credentialing Excellence, accredits five certifications for medical assistants: CMA, RMA, NCMA, CCMA, CMAA. **MD Requires either a national certification or completion of a Board-approved pharmacy technician training program that includes 160 hours of work experience (including the signature of the registrar, pharmacy trainer, and/or pharmacy manager) and evidence of having passed a Board-approved technician examination.

Exhibit 19 lists certification requirements associated with Susquehanna region job postings on the Maryland Workforce Exchange related to healthcare as of February 2020 for 1) ambulatory care, 2) hospitals, and 3) nursing/residential care facilities. American Heart Association (AHA) CPR & first aid certification is among the top five required certifications in all three healthcare subsectors. The implication is that attaining certain health care certifications allows workers to apply their skills in a variety of contexts, allowing for adaptability as the needs of employers shift.

Exhibit 19. Susquehanna Region Advertised Jobs During the Month of February 2020 Certification Requirements by High-Level Healthcare Subsectors

Rank	Certification
Ambulatory Health Care Services	
1	American Heart Association (AHA) CPR & First Aid Certifications
2	Nursing Credentials and Certifications
3	American Society of Phlebotomy Technicians (ASPT)
4	Hospice and Palliative Nurses Association (HPNA) Certifications
5	National Registry of Emergency Medical Technicians (NREMT)
Hospitals	
1	American Heart Association (AHA) CPR & First Aid Certifications
2	Social Worker Credentials and Certifications
3	Nursing Credentials and Certifications
4	State Licensed Counselors
5	American Health Information Management Association (AHIMA) Certifications
Nursing and Residential Care Facilities	
1	Nursing Credentials and Certifications
2	American Heart Association (AHA) CPR & First Aid Certifications
3	American Red Cross - First Aid Certifications
4	Social Worker Credentials and Certifications
5	Behavior Analyst Certification Board (BACB)

Source: Maryland Workforce Exchange, Labor Market Information. Job Source: Online advertised jobs data; Sage. Notes: 1. The table shows the top advertised certifications found in job openings advertised online in Susquehanna Workforce Region in February 2020 (Jobs De-duplication Level 1) 2. Jobs De-duplication Level 1: low level de-duplication of advertised job openings (more jobs).

- Skills & Technology in Demand

Providing healthcare requires good people skills since healthcare workers interact considerably with both patients and colleagues. This requires caring, compassion, collaboration, and patience, among other qualities. Not surprisingly, many of the skills requested in job postings are in the category of basic skills and interpersonal skills.

Exhibit 20 lists job skill requirements associated with Susquehanna regional job postings on the Maryland Workforce Exchange in the three main healthcare subsectors as of February 2020. As a testament to the great diversity of available job openings, the number one skill in demand is “light housekeeping”. Given the impact of the COVID-19 pandemic on skilled nursing facilities, hospitals, and other centers of medical care delivery, it is likely that maintaining pristine work places will be even more important going forward. Other critical skills in demand include software support, critical thinking, and being able to work independently.

Exhibit 20. Susquehanna Region Advertised Jobs During the Month of February 2020
Jobs Skills Requirements by High-Level Healthcare Subsectors

Skill Rank	Job Skill	Skill Group
Ambulatory Health Care Services		
1	Light housekeeping	Home Health Aide Skills
2	Software support	Computer Support Specialist Skills
3	Customer service	Customer Service Skills
4	Work independently	Basic Skills
5	Must be flexible	Basic Skills
Hospitals		
1	Customer service	Customer Service Skills
2	Must be flexible	Basic Skills
3	Critical thinking	Basic Skills
4	Work independently	Basic Skills
5	Knowledge of medical terminology	Medical Coding Skills
Nursing and Residential Care Facilities		
1	Positive work ethic	Basic Skills
2	Interpersonal skills	Interpersonal Skills
3	Be a team player	Interpersonal Skills
4	Positive attitude	Interpersonal Skills
5	Administer medications	Pharmacists Skills

Source: Maryland Workforce Exchange, Labor Market Information. Job Source: Online advertised jobs data; Sage. Notes: 1. The table shows the top advertised job skills found in job openings advertised online in Susquehanna Workforce Region in February 2020 (Jobs De-duplication Level 1) 2. Jobs De-duplication Level 1: low level de-duplication of advertised job openings (more jobs).

In healthcare, a blend of soft skills and technical skills prove to be a winning combination. Though technology is ushering forth dramatic changes to the healthcare industry, it won't replace the need for qualified health services professionals who can communicate, be compassionate, and be aware. As automation takes over more routine and manual tasks, the need for workers who excel at non-routine interpersonal and analytical tasks will remain undiminished. Therefore, it is important for workers to develop their soft skills to complement their technical training.¹⁴ The implication is that if SWN develops a credentialing program for customer service, enterprises supplying health services would likely emerge as one of the leading stakeholders.

The need for developed interpersonal skills has arguably become more important as technology creates greater likelihood of separation between patient and caregiver. Among other things, the Health Information Technology for Economic and Clinical Health Act of 2009 placed greater emphasis on electronic medical records and electronic health records.¹⁵ This shift has meant a need for healthcare workers to use a variety of computer programs and software on a daily basis, which

¹⁴ "Health Care Job Growth Outpaces Other Industries", Purdue University Global, Blog, 11/7/2019. <https://www.purdueglobal.edu/blog/health-sciences/growing-health-care-workforce/>.

¹⁵ "Health Care Job Growth Outpaces Other Industries", Purdue University Global, Blog, 11/7/2019.

may reduce the opportunity for caregivers to directly communicate with patients beyond data gathering.

Exhibit 21 lists the tool/technology requirements associated with Susquehanna regional job postings on the Maryland Workforce Exchange in the three primary healthcare industries as of February 2020. Many of the tools/technologies requested are relatively easy to be trained in, like Microsoft Office. Other technologies are more difficult to master, including Linux software.

Other technological advances such as telemedicine/telehealth, wearable health tracking devices, centralized medical software, and improved medical analysis require health professionals to have the wherewithal to use the latest technologies.¹⁶ Undoubtedly, the pace of medical innovation will continue to accelerate, resulting in rising demand for ongoing professional development.

Exhibit 21. Susquehanna Region Advertised Jobs During the Month of February 2020
Tools & Technology Requirements by High-Level Healthcare Subsectors

Rank	Tool/Technology
Ambulatory Health Care Services	
1	Deployment software
2	Microsoft (MS) Office
3	Linux software
4	Careerbuilder.com
5	Microsoft PowerPoint
Hospitals	
1	Microsoft (MS) Office
2	Microsoft Word
3	Microsoft Excel
4	Teletypewriters (TTY)
5	Personal Computer (PC)
Nursing and Residential Care Facilities	
1	Electronic medical record (EMR) systems
2	Microsoft (MS) Office
3	Sterilizers
4	Microsoft Word
5	Global positioning systems (GPS)

Source: Maryland Workforce Exchange, Labor Market Information. Job Source: Online advertised jobs data; Sage.
Notes: 1. The table shows the top advertised tools and technologies found in job openings advertised online in Susquehanna Workforce Region in February 2020 (Jobs De-duplication Level 1) 2. Jobs De-duplication Level 1: low level de-duplication of advertised job openings (more jobs).

¹⁶ “Health Care Job Growth Outpaces Other Industries”, Purdue University Global, Blog, 11/7/2019.

- Education & Training Opportunities in the Susquehanna Region

Both of the region's community colleges, Cecil College and Harford Community College (HCC), offer degree, credit certificate, and certification programs in a number of health fields/professions. Cecil College offers degree programs in Medical Assisting (associate of applied science), Nursing (associate of science), and Licensed Practical Nursing to RN, as well as a credit certificate program in Medical Assisting. Cecil College also has 12 certification programs and 3 certificate programs related to health professions.¹⁷

HCC offers 8 degree programs (associate of applied sciences/associate of science) in healthcare fields, including Addictions and Chemical Dependency, Exercise Science, Health Information Technology, Healthcare Sciences, Nursing, Paramedic, Physical Therapist Assistant, and Public Health. HCC also offers 5 credit certificate programs and 7 certification programs related to healthcare.¹⁸ Exhibits A2-A3 in the Appendix list all of the healthcare related degree and certification programs offered at Cecil College and Harford Community College.

Data suggest that healthcare related programs are very popular at these institutions of higher learning. In 2019, Practical Nursing ranked 2nd among the top 10 most awarded lower division certificates at Cecil College and Nursing and Physical Therapy Assistant were both among the top 10 most awarded associates' degrees. At Harford Community College, Medical Assisting and Medical Office Assistant were among the top 10 most awarded lower division certificates and Nursing and Medical Assisting were among the top 10 most awarded associates' degrees in 2019.¹⁹

¹⁷ Cecil Community College, Programs & Courses. <https://www.cecil.edu/programs-courses>.

¹⁸ Harford Community College, Academics-Nursing and Allied Health Professions. <https://www.harford.edu/Academics/nahp.aspx>.

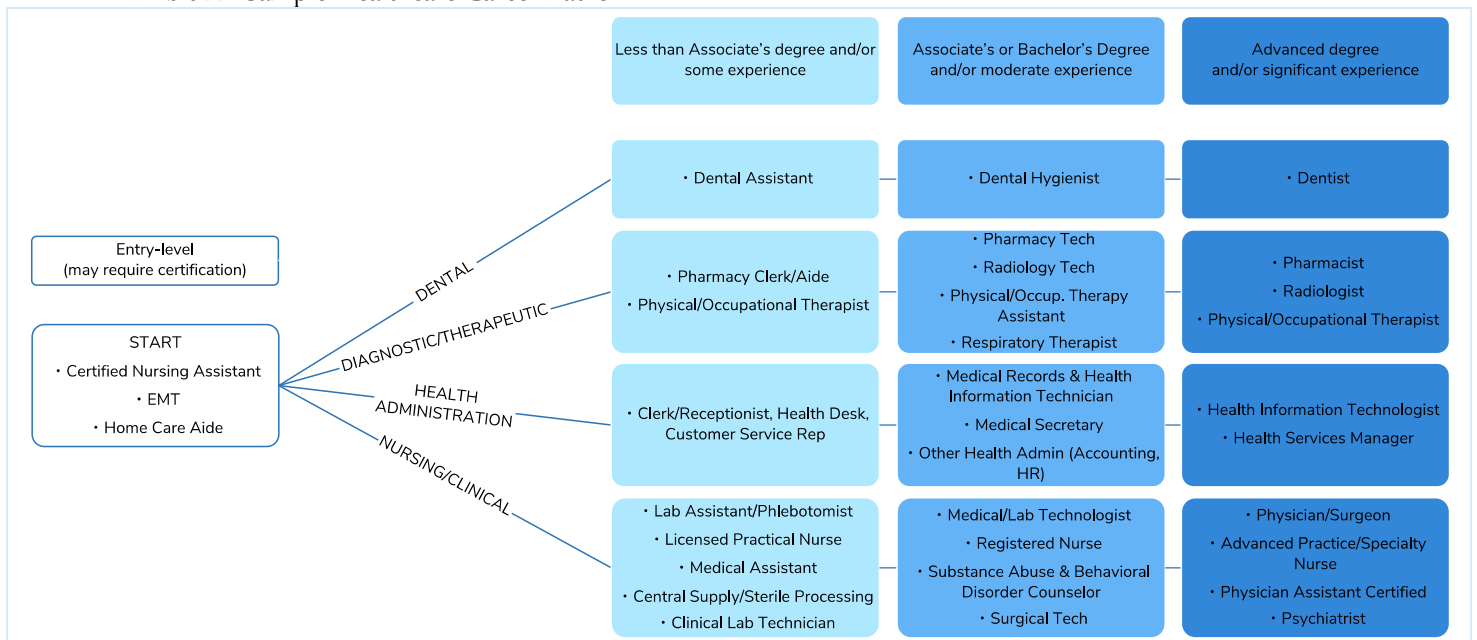
¹⁹ Maryland Higher Education Commission, February 2020. "Trends In Degrees and Certificates by Program, Maryland Higher Education Institutions 2006-2019."

- Career Exploration

The graphic below supplies some sample career paths in healthcare. Of critical importance is the fact that career progression is largely tied to education. Still, there are entry-level positions that can expose one to industry prospects that may require only a certificate or less.

Several of the career paths detailed below embody some of the most in-demand healthcare jobs, including those pertaining to various levels of nursing. But the healthcare industry offers many different types of opportunities, ranging from the growing demand for behavioral health specialists to marketing.

Exhibit 22. Sample Healthcare Career Paths



Source: Sage; Workforce Development Council of Seattle-King County.

For high school and college students, volunteering, part-time jobs, and internships are among the best ways to understand the nature of healthcare delivery and whether one would thrive in such settings. Students or current workers can also ask healthcare workers at local practices/institutions for informational interviews to learn more about entry-level and other positions.²⁰ Occupational profiles on [CareerOneStop](http://www.careeronestop.com), which is sponsored by the U.S. Department of Labor, provide useful resources for people to learn about occupational requirements, relevant skills, needed credentials, compensation, and related industry characteristics.

²⁰ U.S. Bureau of Labor Statistics, “Healthcare: Millions of jobs now and in the future”, by Elka Torpey. Occupational Outlook Quarterly, Spring 2014.

Conclusion

Even prior to the pandemic of 2020, there existed compelling evidence of shortfalls in healthcare talent in Maryland's Susquehanna region. According to available data, there were only 18 candidates seeking employment as a registered nurse in the Susquehanna region compared to more than 360 openings for registered nurses in the region in early 2020. For many other healthcare-related occupations, there was fewer than one identified candidate per job opening.

Among the 30 fastest growing occupations in the U.S. from 2018 to 2028, 18 are classified in healthcare occupations. The implication is that any relevant economic or workforce development strategy must have healthcare identified as one of the critical foundational industries of the future.

Beyond its expected rapid rate of expansion, healthcare offers other benefits for those who devote their energies toward connecting jobseekers with employers. The industry is not only large, but offers positions across the skills and compensation spectrum, from entry-level facility maintenance personnel and home health aides to registered nurses and doctors, including surgeons.

Healthcare is also an arena in which SWN can generate significant benefits for its service territory. While both local community colleges offer plentiful programs for those seeking a career in healthcare, among the most important sets of skills are interpersonal skills and customer service.

The advent of new technologies, while often proves helpful to patients, also creates the possibility of less intense and compassionate engagement between caregiver and care recipient. Accordingly, interpersonal and communications skills may be even more important during the years ahead. Should SWN develop a customer service certification program, among the most likely stakeholders to emerge are enterprises supplying care, whether in the context of hospitals, outpatient centers, clinics, pharmacies, or skilled nursing facilities.

While healthcare technology will continue to evolve rapidly, so, too, will the norms of public health. The COVID-19 induced pandemic is rapidly altering standard operating procedures at the nation's hospitals, nursing homes, pharmacies, and clinics. Accordingly, continuous professional development is critical, which will create additional opportunities for SWN to be of service to the local workforce and employers going forward. According to Deloitte's Global Health Care Outlook, all health care workforce training should be future-focused, offering shorter training times, modularized training programs, apprenticeships, and creative pathways to upskill and help employees move into new positions."²¹

²¹ Deloitte, "2020 Global Health Care Outlook". <https://www2.deloitte.com/global/en/pages/life-sciences-and-healthcare/articles/global-health-care-sector-outlook.html>.

Appendix

Exhibit A1. Examples of Healthcare/Healthcare Support Services Occupations by Education Level

Less Than High School
Dining room and cafeteria attendants and bartender helpers
Institution and cafeteria cooks
Janitors and cleaners, except maids and housekeeping cleaners
Maids and housekeeping cleaners
Personal care aides
Restaurant, lounge, and coffee shop hosts and hostesses
High School Diploma or Equivalent
Home health aides
Billing and posting clerks
First-line supervisors of office and administrative support workers
General office clerks
Interviewers, except eligibility and loan
Medical secretaries
Pharmacy technicians
Receptionists and information clerks
Secretaries and administrative assistants, except legal, medical, and executive
Social and human service assistants
Postsecondary Non-Degree Award
Dental assistants
Emergency medical technicians and paramedics
Licensed practical and licensed vocational nurses
Medical assistants
Medical records and health information technicians
Nursing assistants
Associate's Degree
Dental hygienists
Medical and clinical laboratory technicians
Radiologic technologists
Veterinary technologists and technicians

Table continues on following page

Exhibit A1. Examples of Healthcare/Healthcare Support Services Occupations by Education Level

Bachelor's Degree
Medical and clinical laboratory technologists
Medical and health services managers
Dietitians and nutritionists
Registered nurses
Occupational health and safety specialists
Master's Degree
Healthcare social workers
Nurse practitioners
Occupational therapists
Physician assistants
Nurse anesthetists
Doctoral or Professional Degree
Anesthesiologists
Family and general practitioners
General dentists
General internists
General pediatricians
Medical scientists, except epidemiologists
Obstetricians and gynecologists
Oral and maxillofacial surgeons
Orthodontists
Pharmacists
Physical therapists
Psychiatrists
Surgeons

Source: Maryland Department of Labor, Licensing and Regulation (DLLR), Workforce Region Occupational Projections; U.S. Bureau of Labor Statistics, "Healthcare: Millions of jobs now and in the future", by Elka Torpey. Occupational Outlook Quarterly, Spring 2014; Sage.

Exhibit A2. Cecil College: Healthcare Degree Programs & Certification Programs Offered

Degree Programs
Medical Assisting (AAS)
Nursing (AS)
Licensed Practical Nursing to RN
Credit Certificate Programs
Medical Assisting
Certification Programs/Continuing Education
<i>Certifications</i>
Certified Nursing Assistant
CPR for Healthcare Providers
Dental Assistant
Dental Assistant Expanded Functions
Emergency Medical Technician
Histologic Technician Program
Medication Administration
Medicine Aide
Nurse Refresher
Paramedic
Phlebotomy Technician
Physical Therapy
<i>Certificates</i>
Medical Administrative Assistant
IV Therapy
Phlebotomy Basics for Nurses

Source: Cecil Community College, Programs & Courses. <https://www.cecil.edu/programs-courses>; Sage.
 Notes: AS: Associate of Science; AA: Associate of Arts; AAS: Associate of Applied Science.

Exhibit A3. Harford Community College: Healthcare Degree Programs & Certification Programs Offered

Degree Programs
Addictions and Chemical Dependency (AA)
Exercise Science (AS)
Health Information Technology (AAS)
Healthcare Sciences (AAS)
Nursing (AS)
Paramedic (AAS)
Physical Therapist Assistant (AAS)
Public Health with Areas of Concentration (AS)
Credit Certificate Programs
Addictions and Chemical Dependency
Personal Trainer/Fitness Manager
Practical Nursing
Health Navigator – Public Health Generalist
Public Health for Healthcare Professionals
Certification Programs/Continuing Education
Medical Administrative Assistant
Medical Assistant
Medicine Aide
Nursing Assistant/GNA
Paramedic
Phlebotomist
Physician Professional Coder

Source: Harford Community College, Academics-Nursing and Allied Health Professions.
<https://www.harford.edu/Academics/nahp.aspx>; Sage.
 Notes: AS: Associate of Science; AA: Associate of Arts; AAS: Associate of Applied Science.