

SUPPLY AND DEMAND OF HEALTH CARE PROFESSIONALS IN WEST VIRGINIA

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Supply and Demand of Health Care Professionals in West Virginia

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This report was commissioned by the West Virginia Legislature. The opinions herein are those of the authors and do not necessarily reflect those of the West Virginia Higher Education Policy Commission or the West Virginia University Board of Governors.

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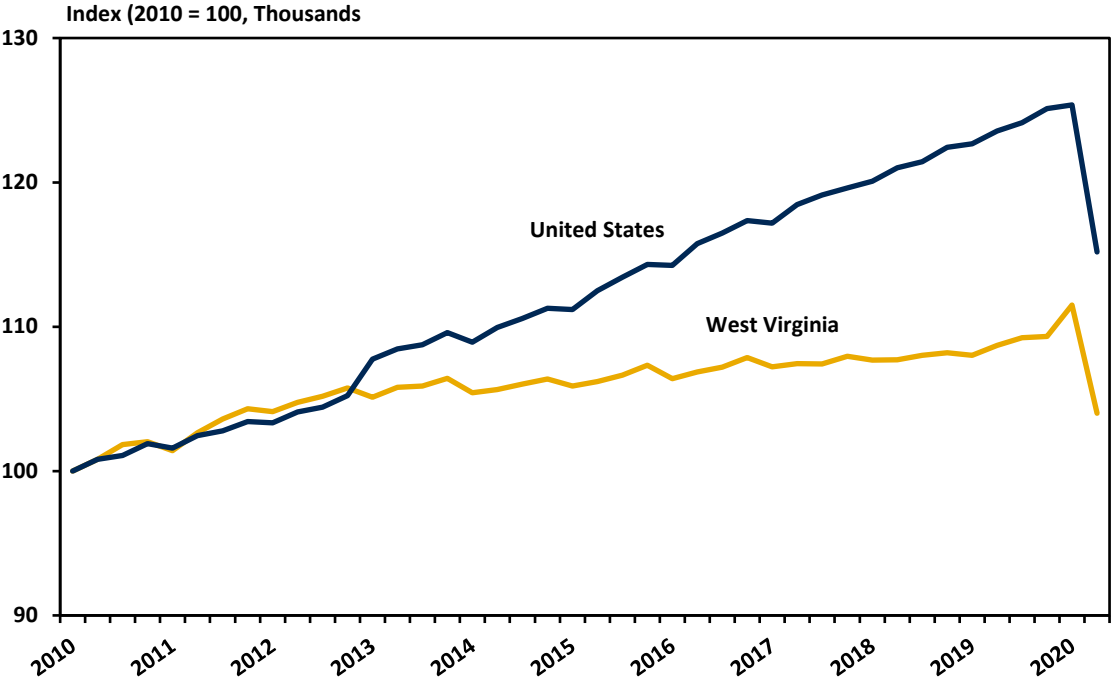
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1 Introduction

The health care and social services industry has been growing strongly in both the US and West Virginia. In the last decade through 2019, national employment in the industry grew 2.3 percent per year, far outpacing the growth in overall employment of 1.7 percent. During the same period, West Virginia employment in this industry grew steadily at 0.8 percent per year. While this growth was slower than the nation, it is relatively strong in a state as the overall employment in West Virginia declined during the same period. In 2020, due to the COVID-19 pandemic that forced an economic lockdown, employment in the industry dropped significantly. However, the pandemic has revealed the necessity of ensuring a strong health care workforce in the state to care for ill patients.

Figure 1: Employment in the Health Care and Social Services Industry



Source: Bureau of Labor Statistics
Note: Quarterly data

After the pandemic, the industry is expected to continue to grow strongly in the next few decades due to, among others, continued aging of the US population. Accordingly, the demand for health care professionals is expected to grow as well. For that reason, it is important for the State of West Virginia to anticipate this increased demand by ensuring an adequate supply of health care professionals to support the industry’s growth. Keep in mind that the state will likely have to compete with the neighboring states in recruiting these health care professionals. Failure to anticipate this future increase in demand could result in the state not capturing the maximum benefits of the industry’s growth.

The West Virginia Legislature commissioned this study to examine this issue more closely. The purpose of this study is to ascertain whether the state has the capability to provide a sufficient supply of health care workers to meet the projected demand in the industry. More specifically, the study focuses the analysis on a subset of the Health Care and Social Services industry specified as Health Care Continuum Industry, defined in this study as consisting of nine sub-industries listed in Table 1.

The study begins by comparing the supply and demand of health care workers at state-level, followed by analysis at the sub-state-level labor. This study has two separate products: The first is this report; the second is the Health Professionals Data File. This report uses only a specific subset of the data that can help explain the supply-demand condition of jobs in the health care industry. The data file contains not only the data used in this report, but also more detailed data associated with the health care industry in West Virginia and data on a regional- and county-level.

Table 1: Health Care Continuum Industries

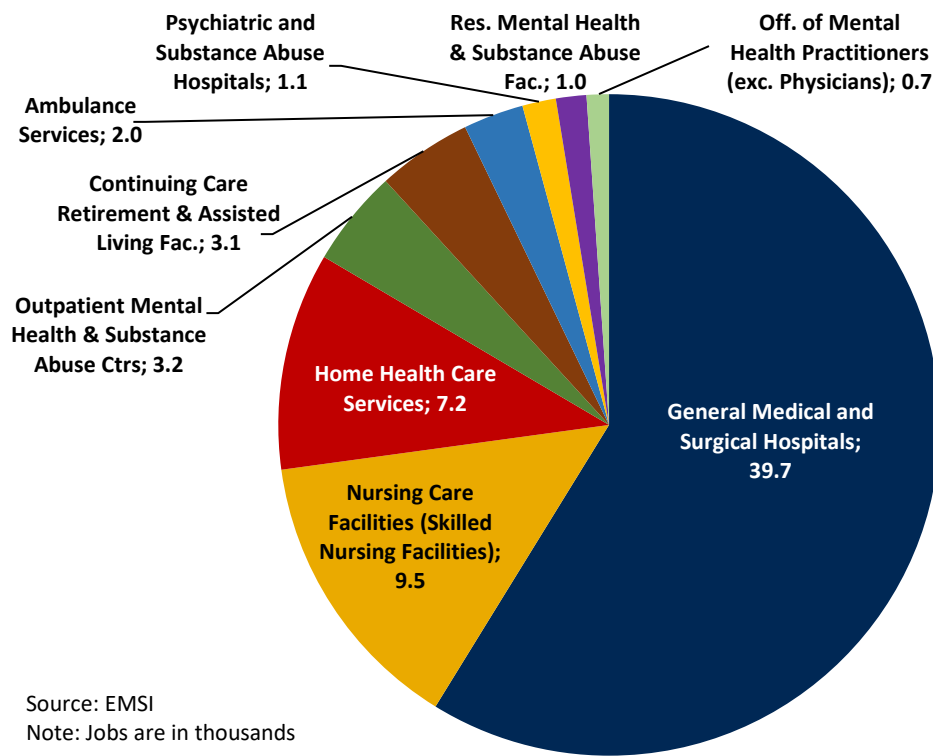
NAICS ¹	Description
62133	Offices of Mental Health Practitioners (except Physicians)
62142	Outpatient Mental Health and Substance Abuse Centers
62161	Home Health Care Services
62191	Ambulance Services
62211	General Medical and Surgical Hospitals
62221	Psychiatric and Substance Abuse Hospitals
62311	Nursing Care Facilities (Skilled Nursing Facilities)
62322	Residential Mental Health and Substance Abuse Facilities
62331	Continuing Care Retirement Communities and Assisted Living Facilities for the Elderly

¹ NAICS = North American Industry Classification System.

2 Health Care Continuum Industries in West Virginia

We begin by examining the profile of jobs within these health care continuum industries. Based on data published by EMSI,² of the nine health continuum industries in West Virginia, the general medical and surgical hospitals industry is the largest, employing nearly 40 thousand workers in 2020, or about 59 percent of total employment in the whole health care continuum industries. The second largest industry is nursing care facilities, employing nearly 10 thousand workers or 14 percent, followed by home health care services with more than 7 thousand workers or 11 percent. The outpatient mental health and substance abuse centers come next, employing more than 3 thousand workers, followed by continuing care retirement and assisted living facilities with 2.7 thousand workers. The other industries employ no more than 2 thousand workers each (Figure 2) in 2020.

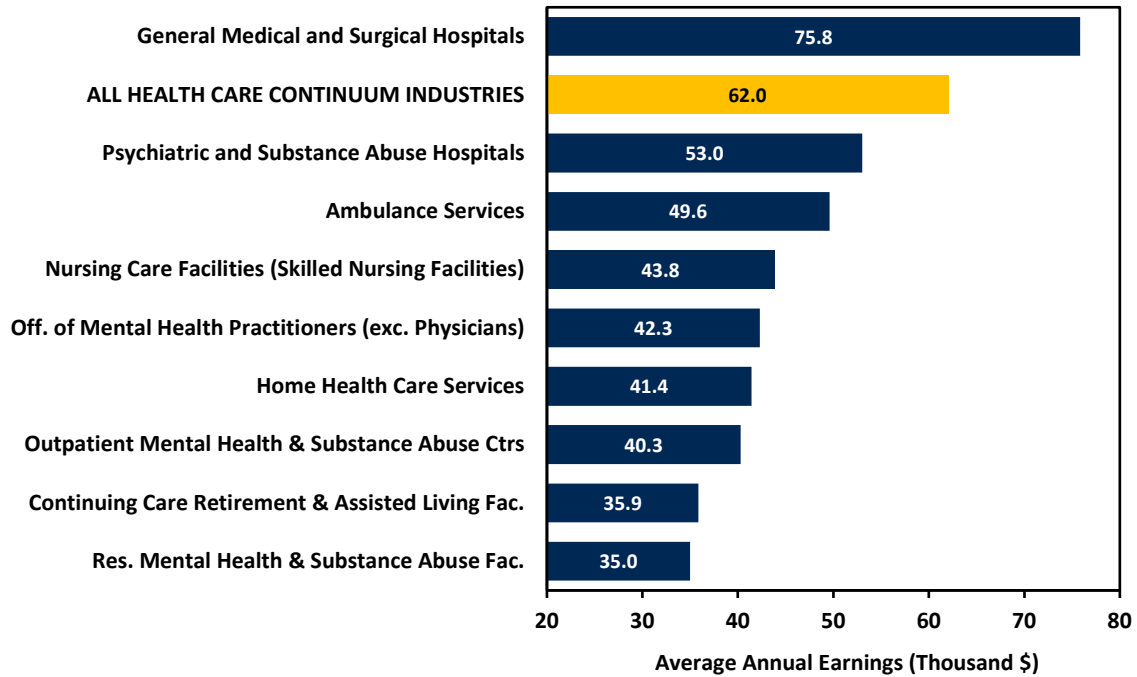
Figure 2: Employment in the Health Care Continuum Industries, West Virginia, 2020



Besides being the largest of the nine industries, jobs in the general medical and surgical hospitals also hold the highest average earnings of more than \$75,000 annually in 2020. For comparison, jobs in the psychiatric and substance abuse hospitals have the distant second highest average earnings of \$53,000, followed by jobs in the ambulance services with nearly \$50,000 average earnings. In contrast, jobs in the residential mental health and assisted living facilities hold the lowest average earnings of around \$35,000. Most other jobs have the average earnings of around \$40,000 (Figure 3).

² Researchers for this study attempted to conduct a survey of health providers in West Virginia, but were unable to garner enough response to have a statistically valid sample. Instead, this study uses data provided by EMSI, a privately held data broker.

Figure 3: Average Annual Earnings, Health Care Jobs, 2020



Source: EMSI

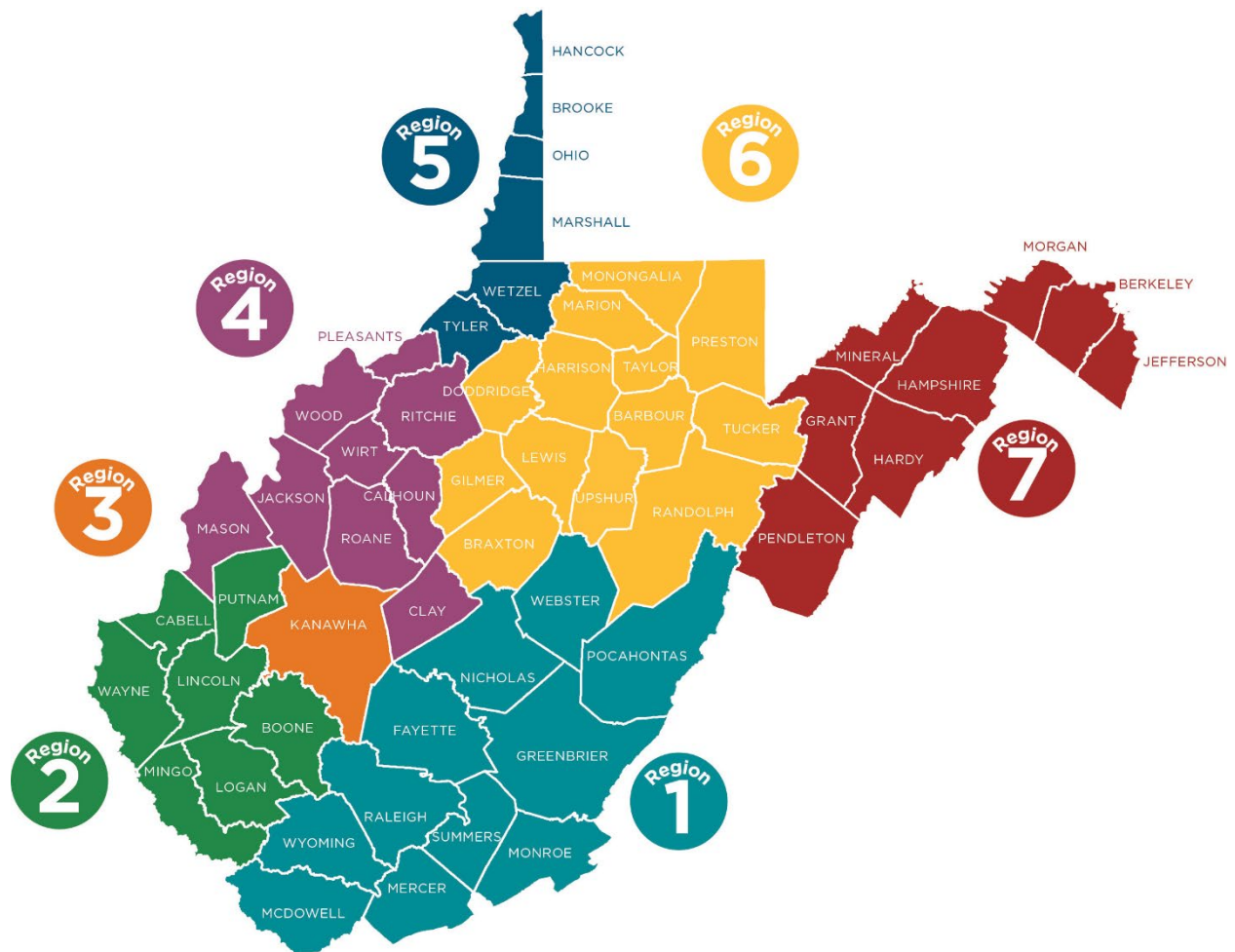
We examine the supply-demand comparison across regions in the state, so it is useful to first look at how jobs in these health care continuum industries are distributed across West Virginia’s Workforce Investment Areas (WIA) and across counties.

Figure 4 shows the map of seven WIAs in the state.

While jobs in these health care continuum industries are not evenly distributed across WIAs, the difference in magnitude is not extreme. WIA 6 has the largest share of the jobs, with nearly 29 percent of all of the employment in the industry. It is understandable considering the large clusters of health care industry located in Monongalia County and the surrounding counties in the north-central part of the state. WIA 3—which is Kanawha County—has the second largest share of total employment, with 16.5 percent, followed by WIA 2 and WIA 1 with 16 percent and 12 percent shares, respectively. In contrast, WIA 7 has the smallest share of nearly 8 percent (Figure 5).

Jobs in the health care continuum industries, however, vary greatly across West Virginia counties. Three counties, including Kanawha, Monongalia, and Cabell counties, contain an unusually large share of the state's health care jobs. These three counties combined have nearly 30,000 health care jobs, or about 44 percent of all health care jobs in the state. The second group consist of 10 counties that have between 1,000 and 3,800 health care jobs. The other 42 counties have no more than 1,000 health care jobs (Figure 6).

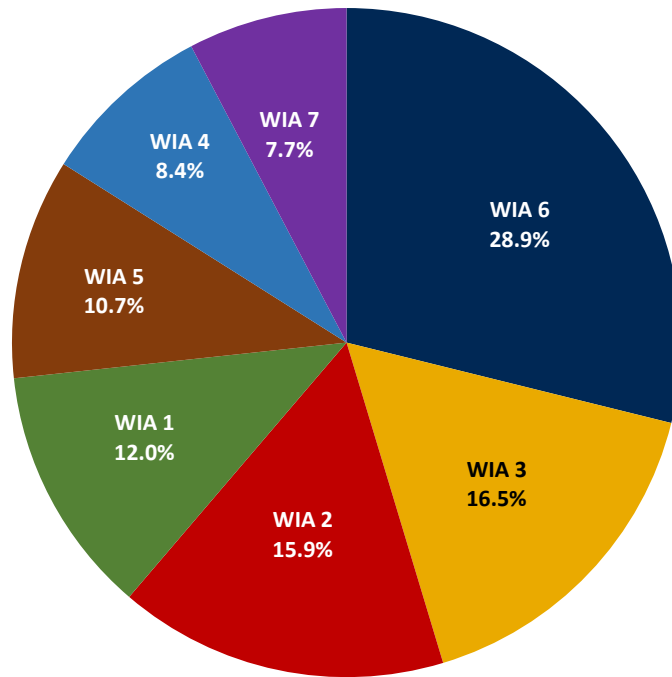
Figure 4: Map of Workforce Investment Area, West Virginia



Source: Workforce West Virginia

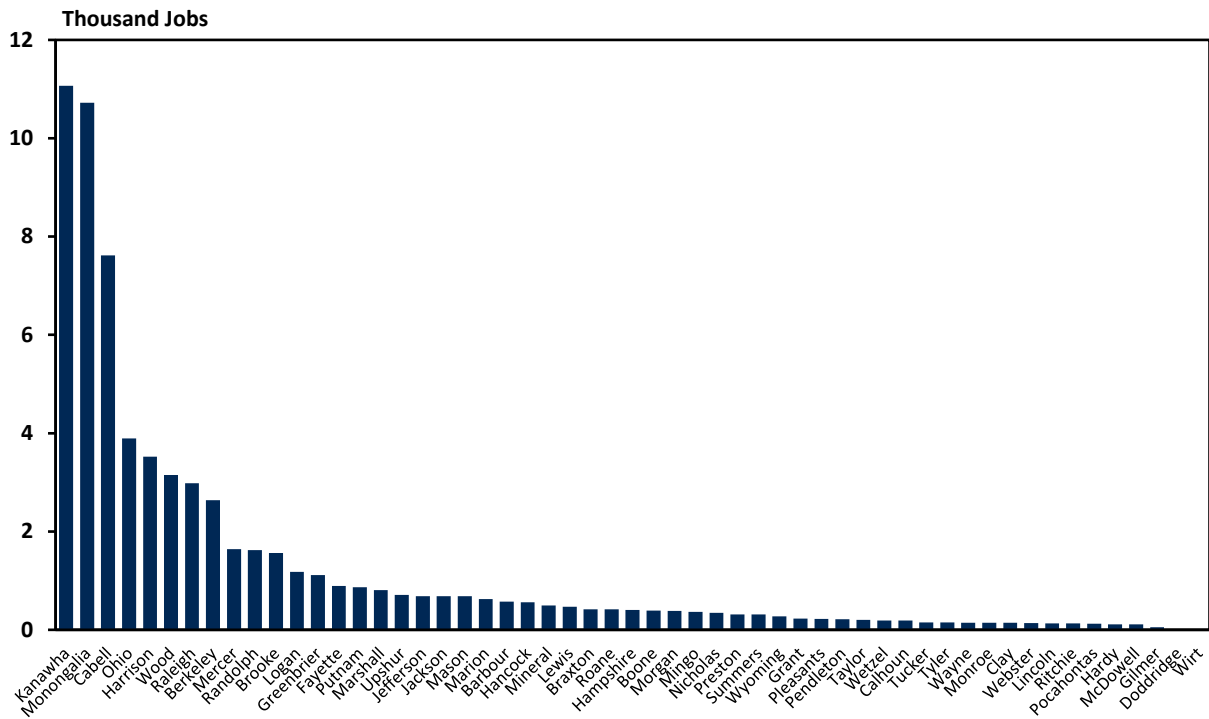
Note: This figure was created by Workforce West Virginia and is posted at this address:
<https://workforcewv.org/images/files/job-seekers/DistrictMAP-WithRegionNumbers.png>

Figure 5: Distribution of Jobs in the Health Care Continuum Industries by WIA, 2020



Source: EMSI

Figure 6: Distribution of Jobs by County, 2020

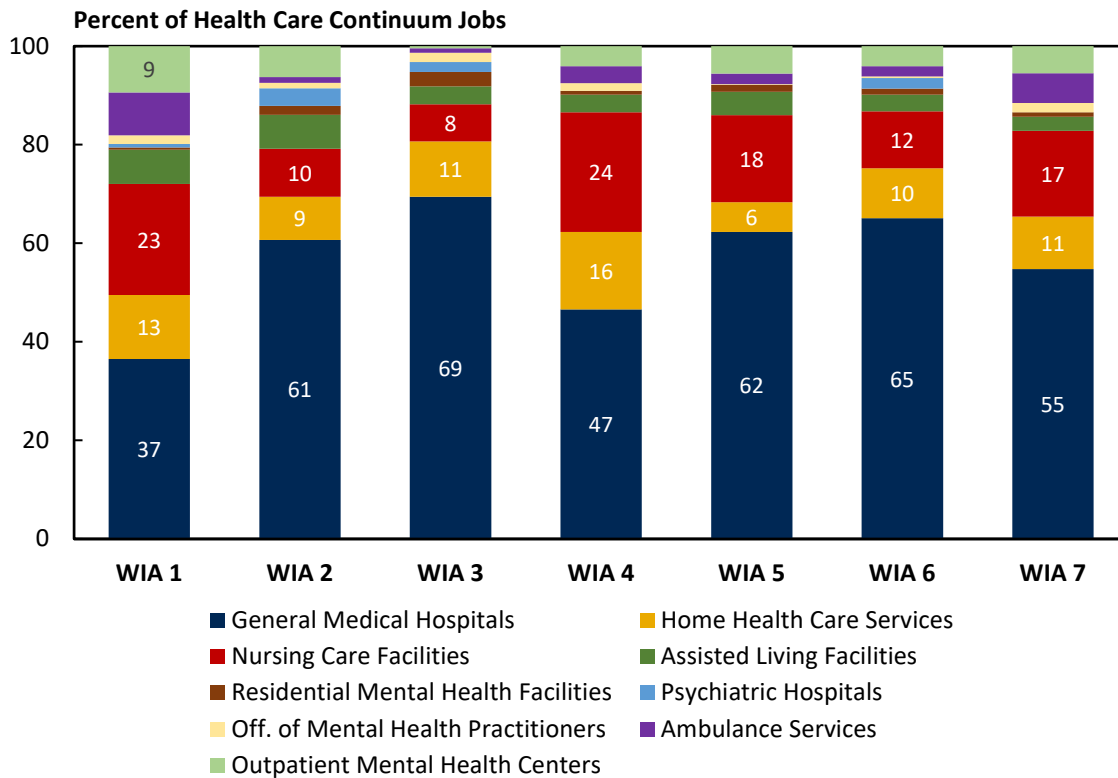


Source: EMSI

Next, we examine the distribution of jobs across the nine health care industries in each WIA. The distribution of jobs across the nine industries is somewhat similar in all seven WIAs. The three industries, general medical hospitals, home health care services, and nursing facilities stand as the three biggest industries in all seven WIAs. General medical hospitals is always the biggest industry in all WIAs, more noticeably in WIA 3 and WIA 6 where the industry makes up at least 65 percent of all jobs in the health care continuum industries in each of the two WIAs. Home health care services and nursing facilities come in either as the second or the third largest industries in different WIA.

WIA 1 exhibits the most atypical employment distribution among the seven WIAs. This region has the smallest share of jobs in the general medical hospital industry, which account for only 37 percent of all jobs in the health care continuum industry in the region. On the other hand, this region has the largest share of jobs in the ambulance services and outpatient mental health centers industries, each of which makes up 9 percent of all health care continuum jobs in the region (Figure 7).

Figure 7: Distribution of Jobs by Industry and WIA, 2020

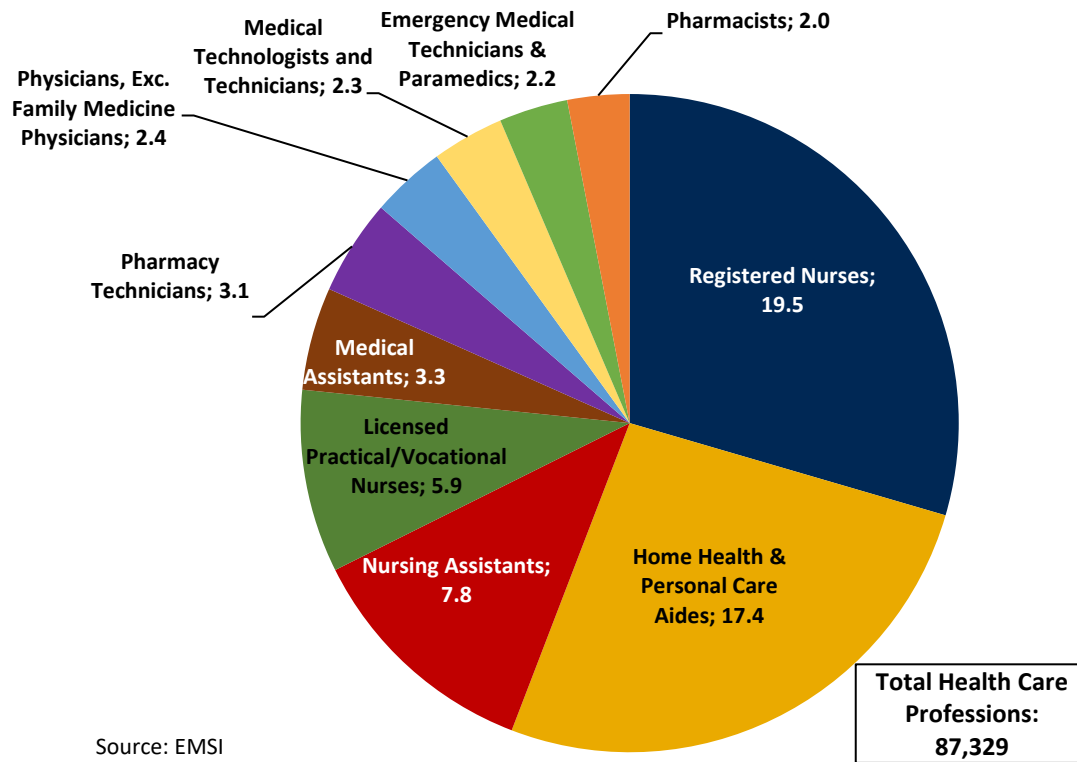


Source: EMSI

3 Demand and Supply Comparison by Health Care Occupations in West Virginia

This section presents the supply-demand comparison analysis. However, before we start the analysis, we begin this section by looking at the profile of health care professions in West Virginia. As many as 46 health care professions are identified in West Virginia. To simplify the discussion, in Figure 7 we only show ten largest health care professions, in terms of employment, in West Virginia. These top 10 professions have 66,000 jobs total, already accounting for more than 75 percent of total health care professions in the state. Of these ten professions, the registered nurse profession has the largest employment of 19.5 thousand, or more than 22 percent of all health care professions. The second biggest profession is the personal care aide profession with 17.4 jobs or nearly 20 percent, followed by nursing assistant profession with 7.8 jobs or nearly 9 percent, and licensed practical/vocational nurse profession with nearly 6 thousand jobs or nearly 7 percent (Figure 8). For more detailed information see the Data File.

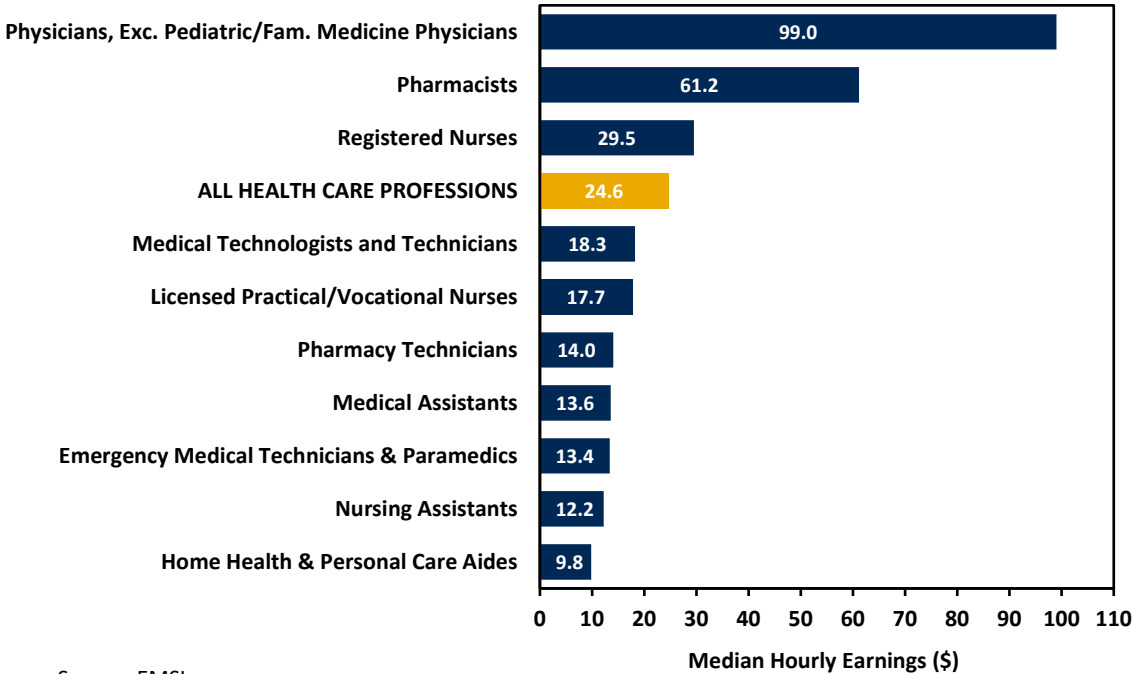
Figure 8: Ten Largest Health Care Professions in West Virginia, 2020 (thousands of jobs)



Source: EMSI

Figure 9 shows earnings for the top 10 health care professions in the state. Two high-skilled health care professions—physicians and pharmacists—lead the list. These professions comprise 2.8 percent and 2.3 percent of the total health care employment, respectively. At the same time, they are also among the highest-paid health care professions, with median hourly earnings of \$99 and \$61, respectively. In contrast, the second largest profession, home health and personal care aide, only makes a median hourly earnings of less than \$10, the lowest earnings of all health care professions in the state. The largest health profession in the state, the registered nurse, receives a median hourly earnings of nearly \$30, which is well above the state’s average median hourly earnings across all industries of \$24.6. For more complete information, and more information about characteristics of all health care professions in the state, see Data File.

Figure 9: Median Hourly Earnings of the Ten Largest Health Care Professions in West Virginia, 2020



Source: EMSI

Finally, now we can compare the demand and supply of health care professions in the state. For this purpose, demand is measured in terms the number of job vacancies, also known as job openings, in health care professions per year. The number of job vacancies is estimated based on the 2020 to 2030 occupational projections, from which we calculate the expected job changes from 2020 through 2030 for each health care profession. Total job changes do not directly represent total vacancies. We need to apply the expected rates of new hires, separation, and turnover to job changes in each occupation to calculate the number of jobs vacancies in 10 years. We then simply divide the 10-year job vacancies by 10 to estimate the number of job vacancies, which represents labor demand, per year.

Supply is estimated based on the total number of completions of health care related programs in the region. This represents the number of health care licensures, graduates with health care related degrees, and people completing health care training programs in 2019. We assume these numbers will remain consistent in the next few years. Naturally, regions that host or are located near colleges and health care training facilities will likely have a bigger supply of health care professionals. More information about colleges or training facilities that offer health care related degrees or training and the number of health care licensures can be found in the Data File.

The final step is to subtract our job vacancy figure (representing demand) from our regional completion figure (representing supply). If the resulting figure is positive, then there exists a labor surplus for that industry, which indicates that the region is expected to have a greater-than-sufficient supply of skilled individuals to meet the demand in the region. Similarly, if the net result is negative, it suggests that the region will face a shortage of workers in the given industry.

As shown in Figure 10, of the 46 health care professions in the state, 30 have their demand sufficiently met. In some cases, the supply of available workers far outnumbers demand. The medical assistant profession has the biggest surplus of nearly 960 workers. Interestingly, two highly skilled health care professions, all other psychologists and clinical psychologists, have the second and third largest surpluses of 881 and 843, respectively, which may appear counterintuitive because the two professions typically require a master's degree and a doctoral professional degree, respectively. The big surpluses in these two professions reflects more of many students completing their degrees in psychology rather than strong preference for psychologist professions in the state. The same reasoning is true for the surplus in the family medicine physician profession. The state also has sufficient supply to meet the biggest demand for health care profession, registered nurse. In fact, there is still a surplus nearly 500.

From the health care industry's point of view, a surplus or an excess supply is much less of a problem than a shortage, especially if it is a surplus of skilled profession. A shortage of available workers, on the other hand, can be a serious problem for general prosperity and for economic growth because the situation can force residents to leave the state to find medical care, inflicting hardship on the residents and diminishing economic prosperity.

In Figure 10 we also see that home health and personal care aide profession has the biggest shortage of more than 2,800 per year. We need to interpret this number with caution. Notice that this profession, which typically only requires a high school diploma, has a supply of only 15 people. Statistically, there must be plenty of high school graduates in any region in the state. Yet, they are not counted as part of the supply for this profession. This is likely because this supply measure only counts those who demonstrate the willingness to enter the profession by obtaining a license, earning health care related degrees, or completing health care related training or non-degree program. In other words, having a high school diploma alone does not indicate the individual is willing to enter the profession.

Considering all these possible reasons, the shortage of 2,800 does not necessarily indicate that the supply of available workers is limited in such a strict way, which would put the operation of related facilities in a crisis. Keep in mind that this profession is the second largest health care profession in the state (see Figure 8), which means plenty of people (17,400) have already entered this profession. We believe, this shortage represents more of people's lacking preference for this profession than a real crisis. This makes sense considering this profession has the median hourly earnings of less than \$10, the lowest compared to all the other health care profession. In the real world, this shortage will eventually be filled. However, this big shortage also suggests that it takes time to fill it up. In other words, there is a time cost the economy has to pay to fix that shortage. What the policy makers can do is to speed up this process, thus minimizing the time cost.

The health care profession with second biggest shortage of 721 is nursing assistant. What happens here is likely very similar to what happens with the shortage of home health and personal care aide profession, except it is less extreme. Nursing assistant profession also requires only a post-secondary non-degree education, and at the same time also has among the lowest median hourly earnings of \$12.2. We believe the big shortage in this profession also reflects more of lacking preference than a real crisis.

The case can be different with the shortage of nearly 160 in substance abuse and mental health counselor profession. This profession has a median hourly earnings of \$17.4 but typically requires at least a bachelor's degree. While this could also reflect low preference, but this low preference could originate from people unwilling to take the associated bachelor's program or they have the required degree but unwilling to take the job in the state (they may take the same job outside of the state or a different health care profession). In the first case, it would take the whole four years of bachelor's degree program to get a sufficient supply, in the second case it is hard to entice people to take this job as opposed to a potentially better paying job in another state. The policy makers can help fix this shortage by offering more incentives for people to get these degrees or take jobs within West Virginia.

More detailed information about this supply-demand comparison by health care profession can be found in the Data File.

Figure 10: Supply-Demand Comparison, Health Care Professions, West Virginia

Health Care Profession	Typical Entry Level Education	Job Vacancies (Demand)	Regional Completions (Supply)	Net = (Supply - Demand)
Medical Assistants	Postsec. nondegree award	425	1,384	959
Psychologists, All Other	Master's degree	18	899	881
Clinical, Counseling, and School Psychologists	Doctoral or profess. degree	63	906	843
Medical Technologists and Technicians	Postsec. nondegree award	206	778	572
Medical Technologists and Technicians	Postsec. nondegree award	50	557	507
Registered Nurses	Bachelor's degree	1,230	1,717	487
Family Medicine Physicians	Doctoral or profess. degree	16	452	436
Mental Health / Substance Abuse Social Workers	Master's degree	41	412	371
Social Workers, All Other	Bachelor's degree	44	412	368
Physicians other than Fam Medicine Physicians	Doctoral or profess. degree	112	477	365
Health Care Social Workers	Master's degree	75	412	337
Child, Family, and School Social Workers	Bachelor's degree	107	412	305
Anesthesiologists	Doctoral or profess. degree	<10	255	250
Pediatricians, General	Doctoral or profess. degree	<10	245	240
Surgeons, Except Ophthalmologists	Doctoral or profess. degree	13	237	224
Obstetricians and Gynecologists	Doctoral or profess. degree	<10	153	148
General Internal Medicine Physicians	Doctoral or profess. degree	11	153	142
Pharmacists	Doctoral or profess. degree	88	221	133
Magnetic Resonance Imaging Technologists	Associate's degree	12	128	116
Physician Assistants	Master's degree	81	195	114
Speech-Language Pathologists	Master's degree	63	162	99
Physical Therapists	Doctoral or profess. degree	83	147	64
Dietitians and Nutritionists	Bachelor's degree	40	89	49
Radiologic Technologists and Technicians	Associate's degree	107	143	36
Occupational Therapy Aides	High school diploma	<10	38	33
Ambulance Drivers and Attendants	High school diploma	33	63	30
Physical Therapist Aides	High school diploma	30	59	29
Nuclear Medicine Technologists	Associate's degree	11	27	16
Occupational Therapists	Master's degree	39	53	14
Occupational Therapy Assistants	Associate's degree	36	38	2
Diagnostic Medical Sonographers	Associate's degree	35	34	-1
Psychiatrists	Doctoral or profess. degree	<10	2	-3
Licensed Practical / Vocational Nurses	Postsec. nondegree award	478	472	-6
Respiratory Therapists	Associate's degree	81	72	-9
Cardiovascular Technologists and Technicians	Associate's degree	34	18	-16
Nurse Practitioners	Master's degree	135	106	-29
Health Care Support Workers, All Other	High school diploma	52	15	-37
Medical Transcriptionists	Postsec. nondegree award	53	15	-38
Nurse Anesthetists	Master's degree	44	2	-42
Physical Therapist Assistants	Associate's degree	104	59	-45
Pharmacy Technicians	High school diploma	246	161	-85
Emergency Medical Technicians & Paramedics	Postsec. nondegree award	194	78	-116
Psychiatric Aides	High school diploma	182	42	-140
Substance Abuse and Mental Health Counselors	Bachelor's degree	199	40	-159
Nursing Assistants	Postsec. nondegree award	895	174	-721
Home Health and Personal Care Aides	High school diploma	2,849	15	-2,834
TOTAL	-	8,640	12,529	3,889

Source: EMSI. Note: Totals may not add up due to rounding.

Figure 11 looks at the supply-demand comparison in the seven Workforce Investment Areas in the state, focusing on five health care professions with the biggest shortages in each area. As shown, the seven WIAs share a similar list of health care professions that are in big shortage. Home health and personal care aide and nursing assistant professions come as exactly the first and second professions with the biggest shortages in all seven WIAs. The substance abuse and mental health counselor profession also shows up among the five biggest shortage in all seven WIAs. The other health care professions are also very similar in the seven WIAs except that they are in different orders. The only exception is the shortage of registered nurse, which only shows up in WIA 3.

Note that we do not present this supply-demand analysis at the county-level. We find that at the county level the data is too sparse and will not be able to produce statistically reliable results.

Figure 11: Supply-Demand Comparison for Health Care Professions by WIA

Region: WIA 1

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-564
Nursing Assistants	-95
Emergency Medical Technicians & Paramedics	-32
Pharmacy Technicians	-24
Substance Abuse & Mental Health Counselors	-20

Region: WIA 2

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-520
Nursing Assistants	-109
Pharmacy Technicians	-32
Substance Abuse & Mental Health Counselors	-22
Psychiatric Aides	-18

Region: WIA 3

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-322
Nursing Assistants	-99
Registered Nurses	-95
Pharmacy Technicians	-25
Nurse Practitioners	-21

Region: WIA 4

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-266
Nursing Assistants	-87
Medical Assistants	-24
Substance Abuse & Mental Health Counselors	-20
Emergency Medical Technicians & Paramedics	-17

Region: WIA 5

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-162
Nursing Assistants	-48
Psychiatric Aides	-48
Pharmacy Technicians	-29
Substance Abuse & Mental Health Counselors	-26

Region: WIA 6

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-638
Nursing Assistants	-188
Respiratory Therapists	-40
Substance Abuse & Mental Health Counselors	-39
Pharmacy Technicians	-39

Region: WIA 7

Health Care Profession	Net Supply
Home Health and Personal Care Aides	-318
Nursing Assistants	-78
Emergency Medical Technicians & Paramedics	-15
Psychiatric Aides	-15
Substance Abuse & Mental Health Counselors	-14

Source: EMSI

4 Conclusion

This study examines whether the state has the capability to prepare sufficient supply to meet the anticipated increase in the demand for health care professionals. We compare the supply and demand by comparing job vacancies in each health care profession per year, representing the demand, and the regional completion of health care related licensures, graduates, or training, representing the supply. This study finds that of the 46 health care professions identified, 30 show a surplus, 16 show a shortage. The professions with the biggest shortages are home health and personal care aide and nursing assistant. We believe, however, that these shortages are caused more by personal preference rather than by not having enough qualified workers to take the job. This study also finds that there seems to be a real shortage of qualified workers who are willing to take jobs in the substance abuse and mental health counselor professions.

Looking at the labor market at the WIA regions, the study finds that each of the seven WIAs share a very similar types of shortages. Each WIA faces shortages in the home health and personal care aide; nursing assistant; substance abuse; and mental health counselor professions.

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