



Healthcare Sector Analysis in Kentucky

Labor Market Information, Program
Demand Gap Analysis, & Migration
Analysis

JULY 2020

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Acknowledgements

This study was prepared for the Kentucky Council on Postsecondary Education to assess the effectiveness of Kentucky institutions in meeting workforce demand in the healthcare sector. The study identifies opportunities for new academic and workforce programming based on analysis of healthcare sector jobs, wages, and worker migration trends.

Emsi gratefully acknowledges the excellent support of the DXtera Institute for making this study possible. Special thanks go to the Kentucky Council on Postsecondary Education, for approving the study and providing requested information, and the Strada Education Network, for data collection on insights of Kentucky alumni. Any errors in the report are the responsibility of Emsi and not of any of the above-mentioned parties.



Key Takeaways



ENVIRONMENTAL SCAN

- Kentucky job growth is projected to be slower than the U.S. over the next decade (15% and 23%, respectively).
- The Central WPR and Kentuckiana LWA lead the state in terms of jobs and are projected to grow slightly over the next decade.
- The Local Government industry subsector supported the most jobs in Kentucky in 2019 and it is expected to remain the top regional employer.
- Hospitals, as an industry subsector, have an employment concentration of 1.2. This value is comparable to the U.S. average (1.0) and an indication that employment in Kentucky's Hospitals industry subsector is not overly represented in the state.
- The Manufacturing industry sector faces the largest unemployment in Kentucky, and at a much higher rate compared to the U.S.
- Population growth in Kentucky is projected to be slower than the U.S. over the next 10 years (6% and 11%, respectively). Notably, the population of the East WPR is projected to decline by 10%.
- Kentucky adults (25 years and above) hold lower educational attainments compared to the U.S., with 48% holding a high school diploma or less compared to 41% of U.S. adults.
- Significantly fewer White, non-Hispanic and slightly fewer Black, non-Hispanic adults in Kentucky have a postsecondary education compared to those groups across the U.S.
- Socioeconomic indicators vary by county across Kentucky. McCreary County has the lowest median household income in the state (\$19,264), compared to the state average of \$46,535 and the county with the highest median household income (Oldham County with \$92,237).



OCCUPATIONAL OVERVIEW

- Kentucky healthcare jobs are growing slower than healthcare jobs in the U.S. (14% compared to 17%).
- All regions are projected to add more healthcare jobs over the next decade, but the Central WPR leads the state in terms of job growth.
- The East and South WPRs have a greater concentration of healthcare jobs, led by Owsley and Cumberland Counties, which have upwards of 17% of all jobs in healthcare compared to a typically U.S. county (7%).
- Registered nurses, nursing assistants, licensed practical & licensed vocational nurses, and medical assistants account for about 50% of healthcare jobs in Kentucky, compared to 40% of healthcare jobs in the U.S.
- When healthcare workers are organized into occupational groups, the largest number of jobs are for Direct Care Workers & Nurses, followed by jobs for Clinical Practitioners.
- Statewide job growth for Clinical Practitioners between 2009 and 2019 (42%) surpasses the other occupational groups, and recent job growth for Mental & Social Healthcare Workers is also quite high (34%). U.S. job growth in the two occupational groups is 43% and 38%, respectively, for those years.
- The General Medical & Surgical Hospitals industry employed the most healthcare workers in the state, although many healthcare workers are also employed in doctors' offices and nursing care facilities.



JOB POSTINGS & DEMOGRAPHIC ANALYSIS

- Top employers looking for healthcare workers are the University of Kentucky, Anthem, Catholic Health Initiatives, and LHC Group.
- Job postings in Kentucky are primarily in Louisville and Lexington.
- Employers post the most for Direct Care Workers & Nurses due to the number of postings for registered nurses, an occupation that typically requires a bachelor's degree level of education.
- Nursing assistants are the most represented certificate level occupation in the job postings, and licensed practical & licensed vocational nurses are the most represented associate degree level occupation.



- At the graduate degree level, medical doctors (i.e. general internists, general practitioners, and all other physicians & surgeons) are most represented, followed by physical and occupational therapists.
- Healthcare workers in Kentucky are typically White females between 25 and 34 years.



PROGRAM DEMAND GAP ANALYSIS

- The Pharmacy Technician and Allied Health Sciences programs look to be areas of expansion. This is the case at the state-level, as well as for most regions.
- Several programs, such as the Emergency Medical Technician, Respiratory Care Therapist, and Dental Hygienist programs, appear to be performing well across the state.
- Certificate and associate degree level Licensed Practical/Vocational Nursing and Registered Nursing programs should be considered for consolidation from a labor market perspective, based on the large surpluses of their program completers relative to their occupational demands.
- The Central WPR has a need for nursing assistants, trained for in programs such as Allied Health Diagnostic, Intervention, & Treatment Professions (Other) at the certificate and associate degree levels.
- In the East WPR, the top (four) gap programs at the bachelor's degree level are all related to nursing. While registered nurses drive the demand across the programs, medical & health services managers are also in demand.
- The Kentuckiana LWA results show a need for more completers from the region's certificate level medical records and medical office programs, and less of a demand for students seeking employment as registered nurses with less than a bachelor's degree.
- The South WPR is offering programs well-aligned with the market at the bachelor's, master's, and doctoral degree levels, with no programs facing a large gap or surplus.
- The West WPR is the only region where the Registered Nursing program appears as an opportunity for expansion at the BACH+ level, even considering the region's CERT+ surplus in the program.



MIGRATION ANALYSIS

Profile Analytics

- According to Emsi's Profiles Analytics data, around 56% of alumni from Kentucky's healthcare programs remain in Kentucky, the same percentage compared to all majors.
- More Kentucky healthcare alumni stay in the state (56%), compared to the portion of healthcare alumni in the U.S. staying in their state (49%).
- Tennessee, Ohio, Florida, Indiana, and Texas are the top states where the Kentucky healthcare alumni are moving.
- Kentucky's wages for top healthcare occupations rank towards the bottom relative to the states where healthcare alumni are migrating, except for the wages for pharmacists and nursing assistants, which rank second and third, respectively.
- Children's Hospital Medical Center, Vanderbilt University, and the Department of Veterans Affairs are top out-of-state employers of Kentucky healthcare alumni.
- Indiana Wesleyan University, University of Cincinnati, and Indiana University Southeast are top non-Kentucky educators of Kentucky's healthcare workers.

Consumer Insight

- According to Strada's Consumer Insight data, Kentucky STEMH bachelor's degree graduates are more likely to leave the state compared to the other award levels, perhaps due to wage differences.
- More Kentucky associate and graduate degree STEMH graduates would study the same major compared to graduates in the U.S., whereas fewer bachelor's degree graduates would do the same.
- More Kentucky associate, bachelor's, and graduate degree STEMH graduates would attend the same school compared to graduates in the U.S.
- Kentucky STEMH bachelor's degree graduates seem to not value their educations – namely in terms of the degree's cost and its ability to create an attractive candidate – as much as Kentucky alumni at different award levels and non-Kentucky alumni in general.
- More Kentucky STEMH associate degree graduates found their major/field of study to be very helpful in their career compared to graduates in the U.S.



- Similarly, more Kentucky STEMH graduate degree respondents said the people they met had been very helpful in their career compared to graduates across the U.S.
- The top reasons Kentucky associate, bachelor's, and master's degree STEMH graduates pursue a degree is to: get a good job/make money, advance their careers, and advance their knowledge.
- Close location to home, reputation of the school or program, availability of specific programs, and availability of scholarships are top factors why Kentucky bachelor's degree STEMH graduates choose a school.



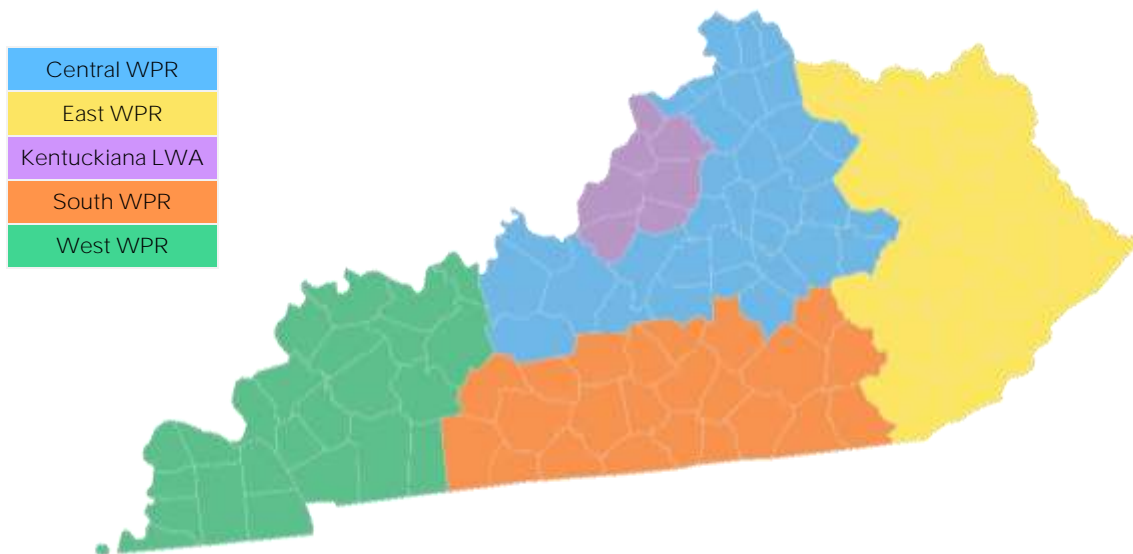
Executive Summary

INTRODUCTION

The Council on Postsecondary Education (Council) is charged with guiding the reform efforts envisioned by state policy leaders in the Kentucky Postsecondary Education Improvement Act of 1997 and is Kentucky's statewide postsecondary and adult education coordinating agency. Its mission is to strengthen the state's workforce, economy, and quality of life. The Council does this by guiding the continuous improvement and efficient operation of a high-quality, diverse, innovative, accessible, and affordable system of postsecondary education in the commonwealth of Kentucky.

To gain better insight into economic conditions and workforce trends, specifically within three targeted sectors, the Council partnered with Emsi, a labor market analytics firm serving higher education, economic and workforce development, talent acquisition, and site selection. In this report, Emsi focuses on the Healthcare sector by providing an overview of healthcare occupations and industries through traditional labor market information and a job postings analysis, conducting a program demand gap analysis of Kentucky institutions' healthcare program offerings, and analyzing migration patterns and other qualitative characteristics that help explain why Kentucky healthcare alumni stay in or migrate out of the

Figure 1: Kentucky's WPRs and the Kentuckiana LWA



Source: Regions provided by the Council.

state. Emsi also provides an environmental scan of the state's economy to provide context for the Healthcare sector.¹

Data around the Healthcare sector are provided for the state and, where pertinent, by region (Figure 1). The regions are based on Kentucky's Workforce Planning Regions (WPRs).² In addition, data for the city of Louisville and its surrounding counties, which comprise the Kentuckiana Local Workforce Area (LWA), are shown distinct from the Central WPR.

ENVIRONMENTAL SCAN

The environmental scan provides key information on the economic and social structure of Kentucky and its WPRs. By providing data across Kentucky as a whole, the data provide context for Healthcare within the state. For example, beyond just the Healthcare sector, the data:

- Reveal whether there are industries that may be overlooked because of recent economic growth;
- Identify the top occupations within driving industries; and
- Provide the Council a deeper understanding of state and regional population characteristics and the socioeconomic background of current and future postsecondary students.

Total Jobs

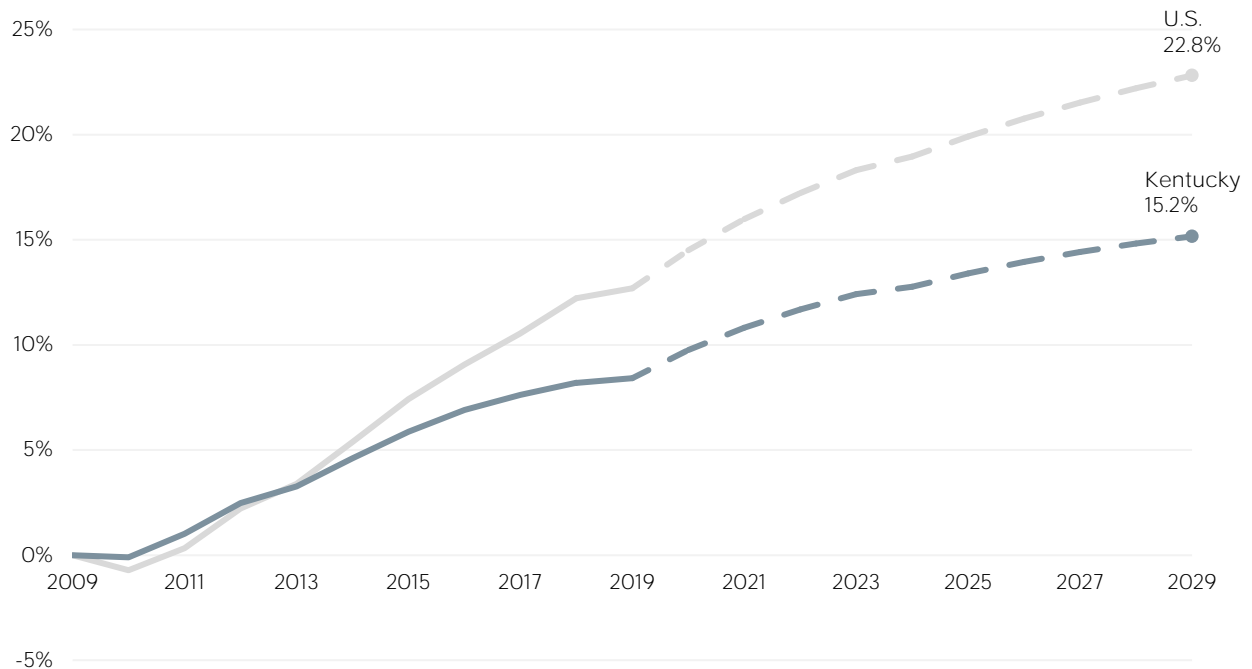
Figure 2 displays the historical and projected job change, by percent, for the state and the U.S. between 2009 and 2029, with 2009 serving as the base year. Kentucky's job declines in the years following the 2008 Recession were similar to that of the U.S. But after 2013, the state's job growth was less than that of the U.S. Using Emsi's job projections, job growth from 2009 to 2029 in Kentucky and the U.S. is expected to be 15% and 23%, respectively.

Figure 3 refers to the number of jobs by Kentucky region. The Central WPR and Kentuckiana LWA lead the state in terms of the majority of jobs and are both projected to grow slightly over the next decade. The South WPR also has a slightly upward projection of expected growth. The East WPR and the West WPR, however, appear to be regions where growth will remain fairly flat over the next decade.

1 The environmental scan is presented first in the executive summary so as to provide context for the healthcare sector, although it is purposefully presented last amongst the chapters in the main body of the report.

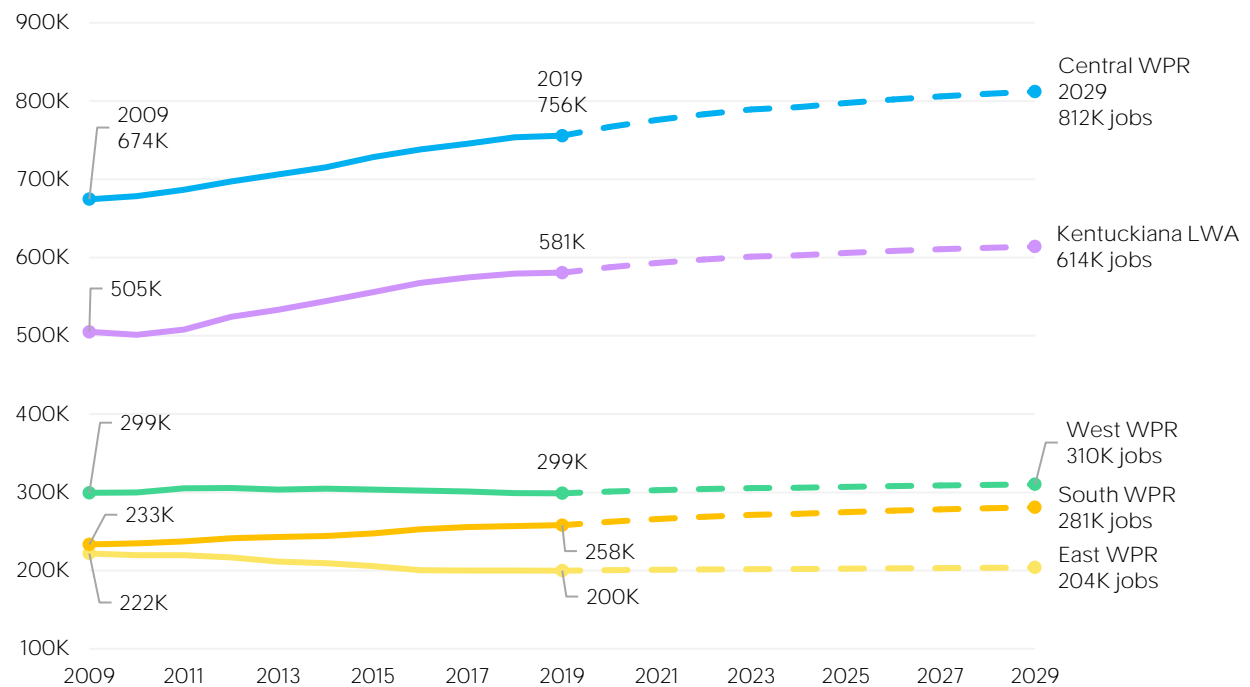
2 Source: https://kystats.ky.gov/Reports/ShowReports?ReportId=Map_LWAWIB&publishDate=20170401.

Figure 2: Percent Job Change in Kentucky and the U.S., 2009 to 2029



Source: Emsi Employees & Self-Employed 2019.4.

Figure 3: Historical and Projected Jobs in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2019.4.

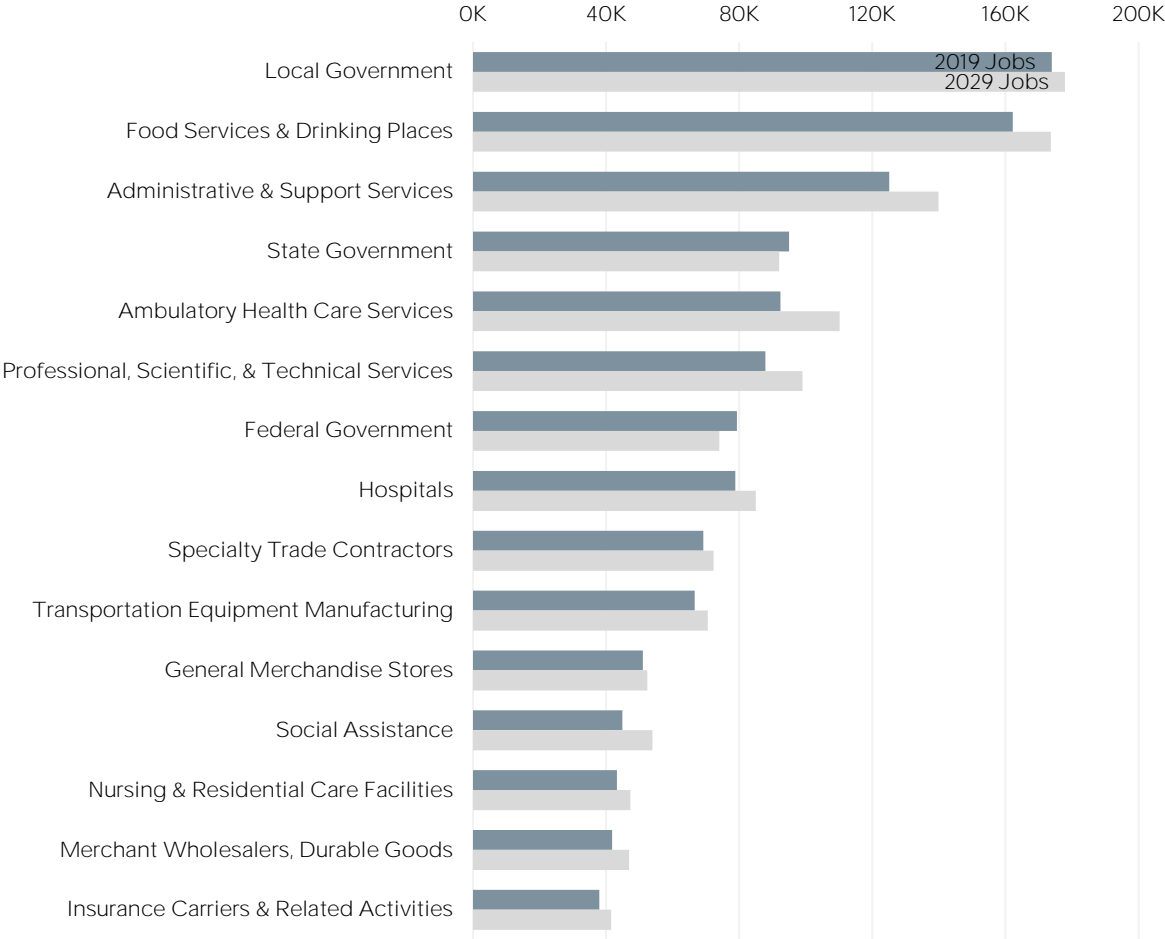
Industry Composition

Evaluating current and future employment by the industries supporting jobs in the state provides information on its economic diversity. For the analysis in this section, Emsi has aggregated jobs by industries using the North American Industry Classification System (NAICS). In Emsi data, all establishments in the main NAICS hierarchy (i.e. non-government industries) are private sector only.

Largest Employers

Kentucky supported 2.1 million jobs in 2019, and by 2029, the state is projected to add 131,960 new jobs, for a 6% job increase. The Local Government industry subsector supported the most jobs in Kentucky in 2019 (173,860 jobs), and it is expected to remain the top regional employer (Figure 4). The Local Government and State Government industry subsectors,

Figure 4: Jobs in Kentucky’s Top 15 Industry Subsectors, 2019 and 2029



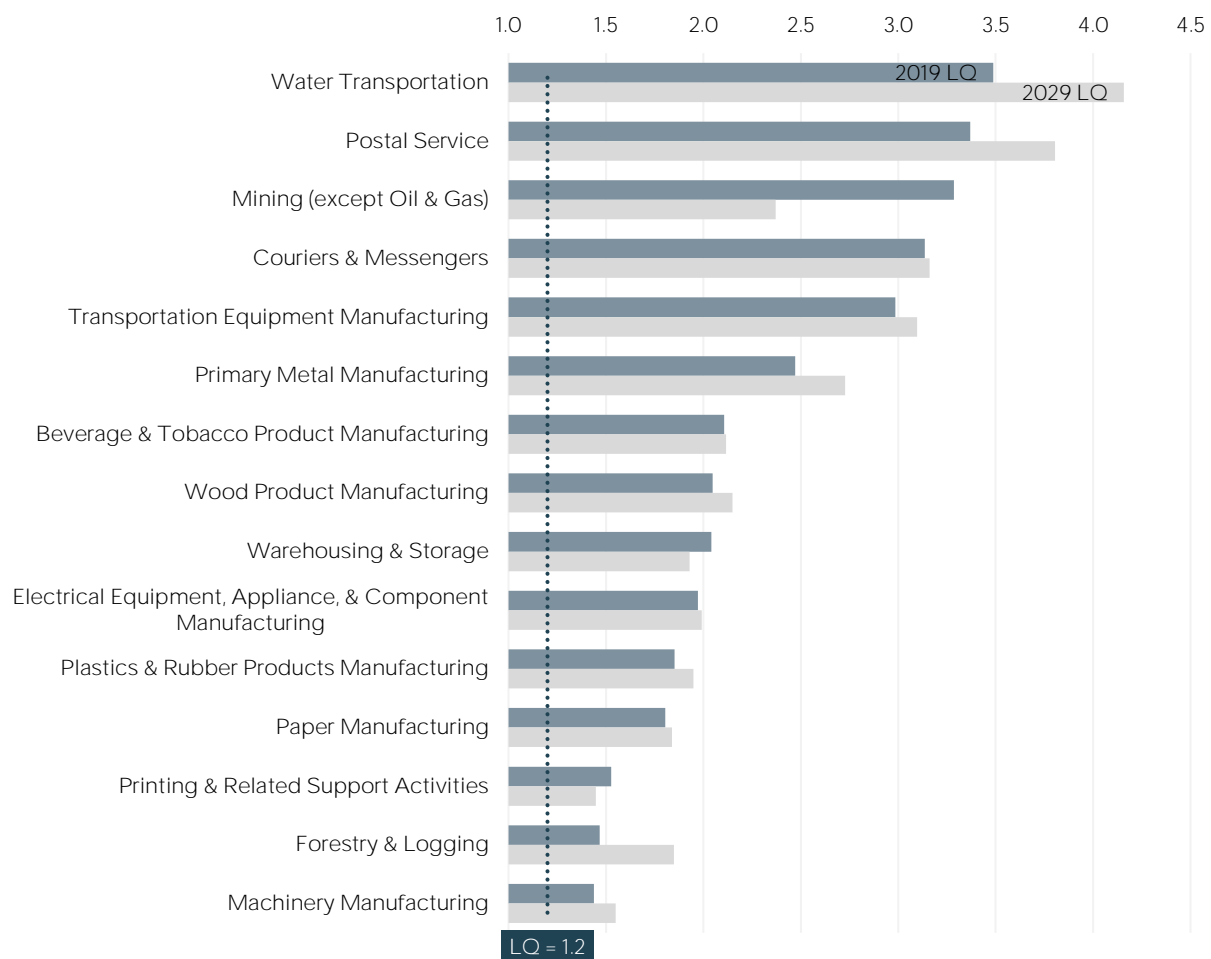
Source: Employees & Self-Employed 2019.4.

which both include hospital jobs, are first and fourth in terms of state jobs, respectively. Ambulatory Health Care Services ranks fifth, and the Hospitals industry sector ranks eighth.

Employment Concentration

The employment concentration of the state’s industry subsectors is measured by a location quotient (LQ). The top-ranked industry subsector is Water Transportation, with an LQ of 3.5 in 2019. Despite the few subsectors projected to decline, all the state’s top 15 industry subsectors will remain above the 1.2 high-LQ threshold, as indicated by the dotted line in Figure 5. Industries related to healthcare do not appear in the top 15 industry subsectors in terms of employment concentration. In fact, Hospitals, as an industry subsector, have an employment concentration of 1.2. This value is comparable to the U.S. average (1.0).

Figure 5: Employment Concentrations (LQs) of Kentucky’s Top 15 Industry Subsectors, 2019 and 2029

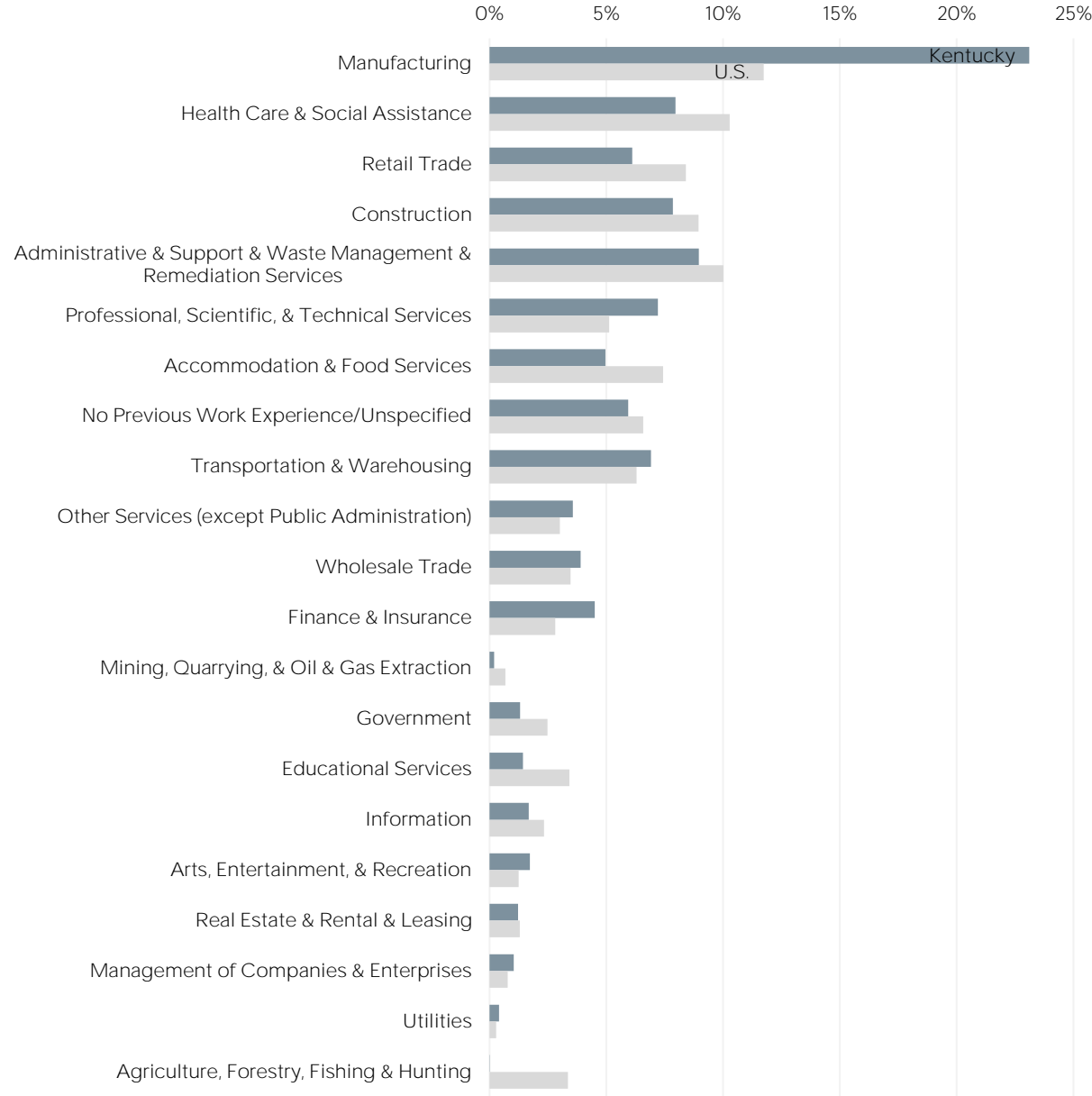


Source: Employees & Self-Employed 2019.4.

Unemployment

Emsi industry- and occupation-specific unemployment estimates are derived from several federal sources. Emsi final industry and occupation data, as well as state-specific data, are also used. Figure 6 shows the percentage of Kentucky residents unemployed in each industry sector compared to the U.S. As shown in the figure, nine out of 21 industry sectors see higher unemployment in Kentucky compared to the U.S. The Manufacturing industry

Figure 6: Monthly Unemployed Workers by Industry Sector in Kentucky with U.S. Comparison



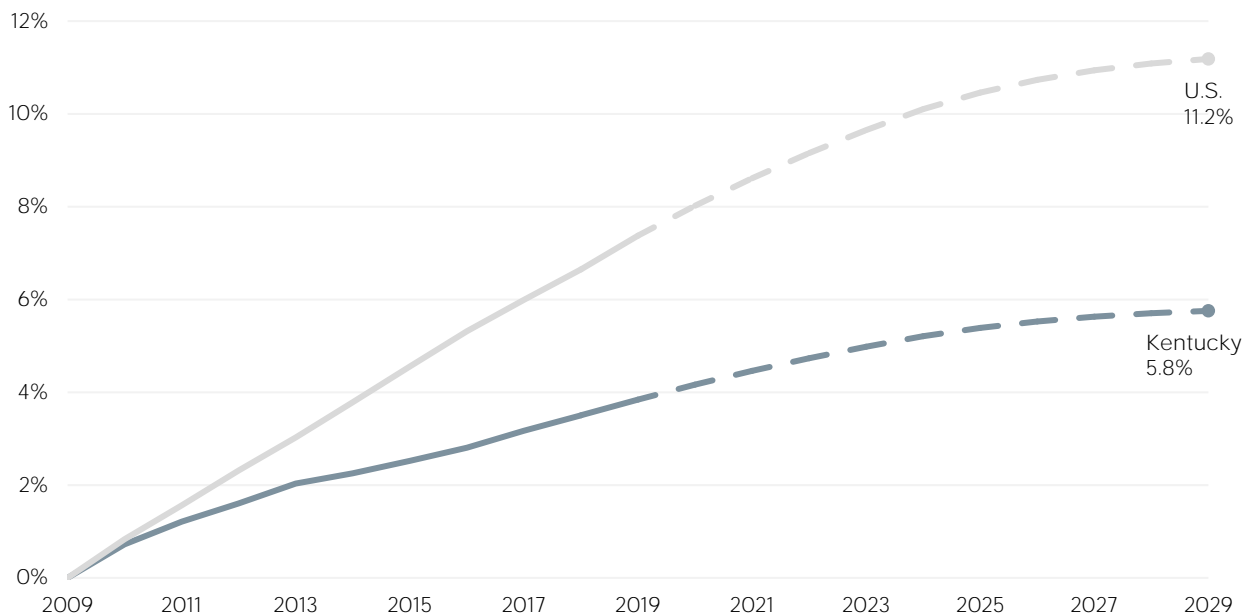
Source: Emsi Total Unemployment (July 2019).

sector faces the largest unemployment in Kentucky, and at a much higher rate compared to the U.S. The Health Care & Social Assistance industry sector ranks second in terms of unemployment but faces a lower percentage of unemployment compared to the U.S.

Population Demographics

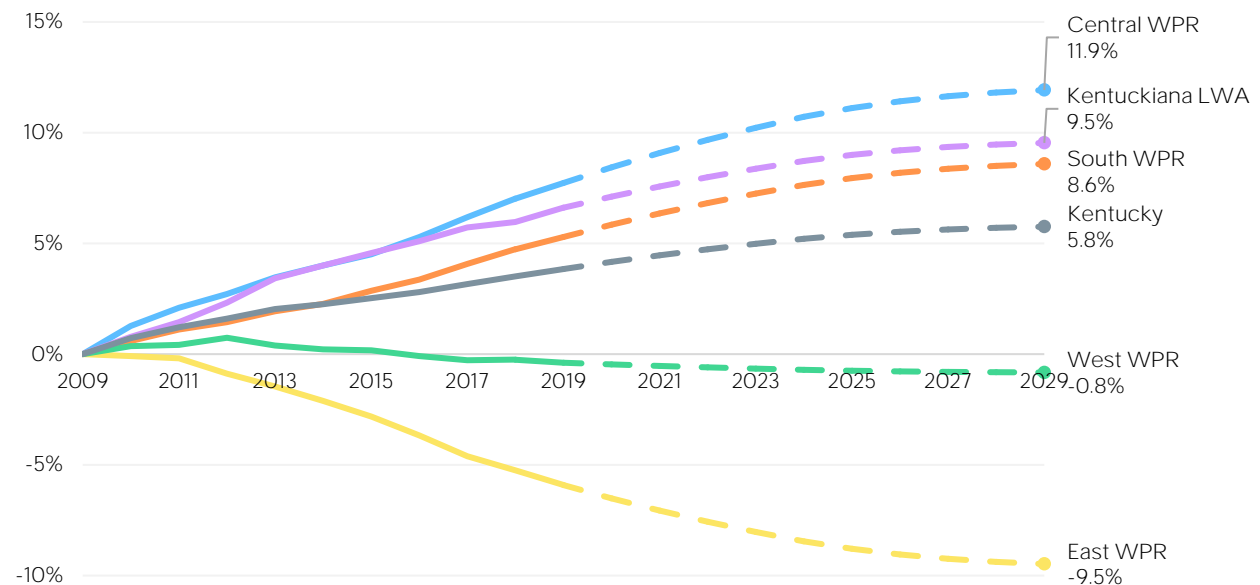
Historical and projected changes in the state population are presented in the following figures. In 2009, 4.3 million people lived in Kentucky, and 4.6 million people are projected to live in the state by 2029. Using 2009 as the base year, this reflects a 6% growth rate (Figure 7). The U.S. population is projected to increase by 11% over the same 20-year period. Figure 8 displays similar information, but for the Kentucky's WPRs and the Kentuckiana LWA. As shown, the East WPR is projected to decline quite significantly (10%) in population over the next decade. The West WPR is projected to slightly decline, while the Central and South WPRs and the Kentuckiana LWA are projected to large percentage growths.

Figure 7: Percent Population Change in Kentucky and the U.S., 2009 to 2029



Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 8: Percent Population Change in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029

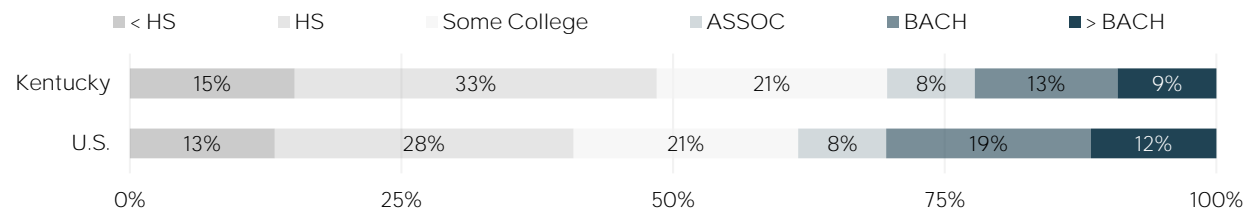


Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Educational Attainment

Educational attainment data are useful for targeting specific population groups with less than or greater than average education levels. Figure 9 displays the highest educational attainments of Kentucky's adults, without reference to gender and the major race and ethnic groups. Comparative to the U.S., Kentucky has lower educational attainments. In the state, 48% of adults have a high school diploma or less, which is more than the national average (41%). While similar percentages of the Kentucky population compared to the U.S. have some college or associate degree educational attainments (21% and 8%, respectively), six percent fewer Kentucky adults hold a bachelor's degree. These results correspond with similar data available through the Lumina Foundation.³

Figure 9: Highest Educational Attainments of Adults in Kentucky and the U.S.



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

³ Lumina Foundation source: <https://luminafoundation.org/stronger-nation/report/2020/#state/KY>

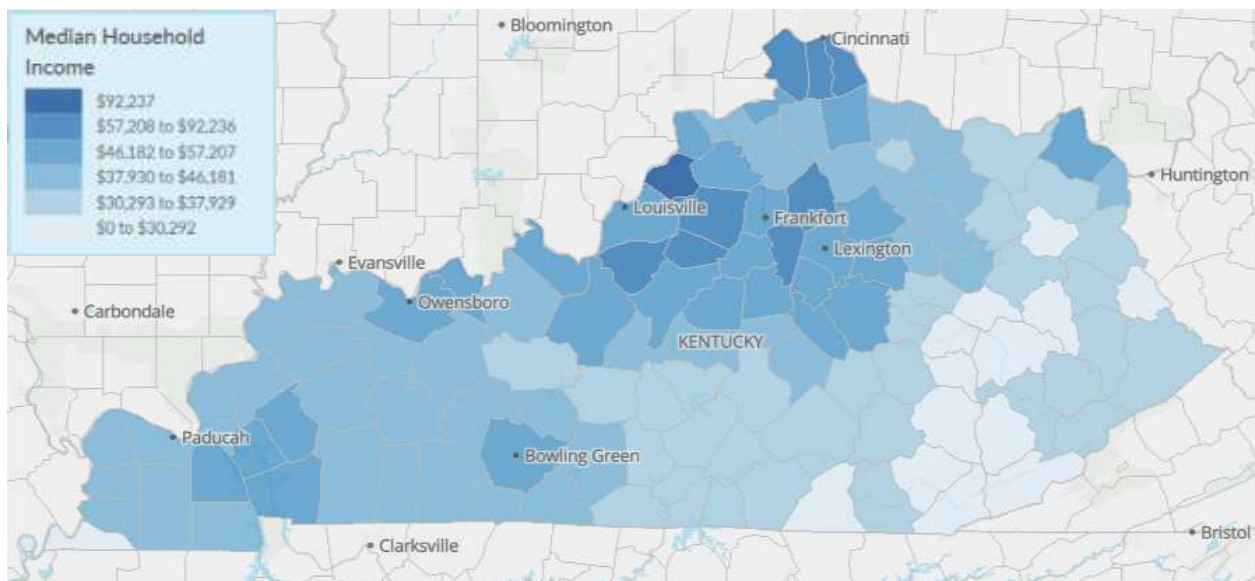
Fifty-one percent of adults in the White, non-Hispanic group, the largest population group in Kentucky, have a postsecondary education, compared to 64% of these adults across the U.S. Another 51% of adults in the Black, non-Hispanic category, the second largest population group in Kentucky, show some level of attainment, which is somewhat less than the U.S. (53%). Across all groups, these data suggest that there are many opportunities to increase the educational attainments of the state's adults.

Socioeconomic Indicators

The data in this section show several of the region's socioeconomic indicators. The percentages of per capita income represent the share of people below the federal poverty income threshold, which varies by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. Detailed rates on children, who are under 18 years, and seniors, who are over 65 years, are also shown.

Figure 10 visualizes the median household income across each county in Kentucky. It highlights the counties' socioeconomic differences, with the East WPR facing some of the lowest household incomes. Table 1 displays the counties with the top five highest and lowest median household incomes, along with per capita income and poverty. For perspective, Kentucky's median household income is \$46,535. McCreary County, which has the lowest income at \$19,264, also has considerably higher poverty rates compared to the state.

Figure 10: Median Household Incomes of Counties in Kentucky



Source: Emsi demographics data, U.S. Census Bureau.

Table 1: Income, Unemployment, and Poverty Characteristics for Kentucky Counties with the Top 5 Highest and Lowest Median Household Incomes

COUNTY	TOP 5 HIGHEST MEDIAN HOUSEHOLD INCOMES			% POVERTY		
	MEDIAN HOUSEHOLD INCOME	PERCENTILE RANK IN KY	PER CAPITA INCOME	FAMILIES	CHILDREN	SENIORS
Oldham	\$92,237	100%	\$38,063	4.0%	7.2%	3.7%
Boone	\$72,731	99%	\$33,553	6.0%	10.6%	5.2%
Spencer	\$68,916	98%	\$30,779	7.3%	8.3%	9.6%
Scott	\$65,598	97%	\$30,702	8.6%	16.1%	7.1%
Shelby	\$63,171	97%	\$30,240	8.4%	17.1%	7.2%
	TOP 5 LOWEST MEDIAN HOUSEHOLD INCOMES			% POVERTY		
McCreary	\$19,264	0%	\$11,492	36.7%	49.5%	3.7%
Wolfe	\$21,999	1%	\$13,533	33.0%	45.3%	19.3%
Owsley	\$22,736	2%	\$16,582	31.4%	34.9%	31.7%
Lee	\$23,297	3%	\$16,489	30.4%	43.8%	22.1%
Bell	\$23,558	3%	\$14,754	31.9%	49.3%	20.9%
Kentucky	\$46,535	--	\$25,888	13.8%	24.7%	11.1%

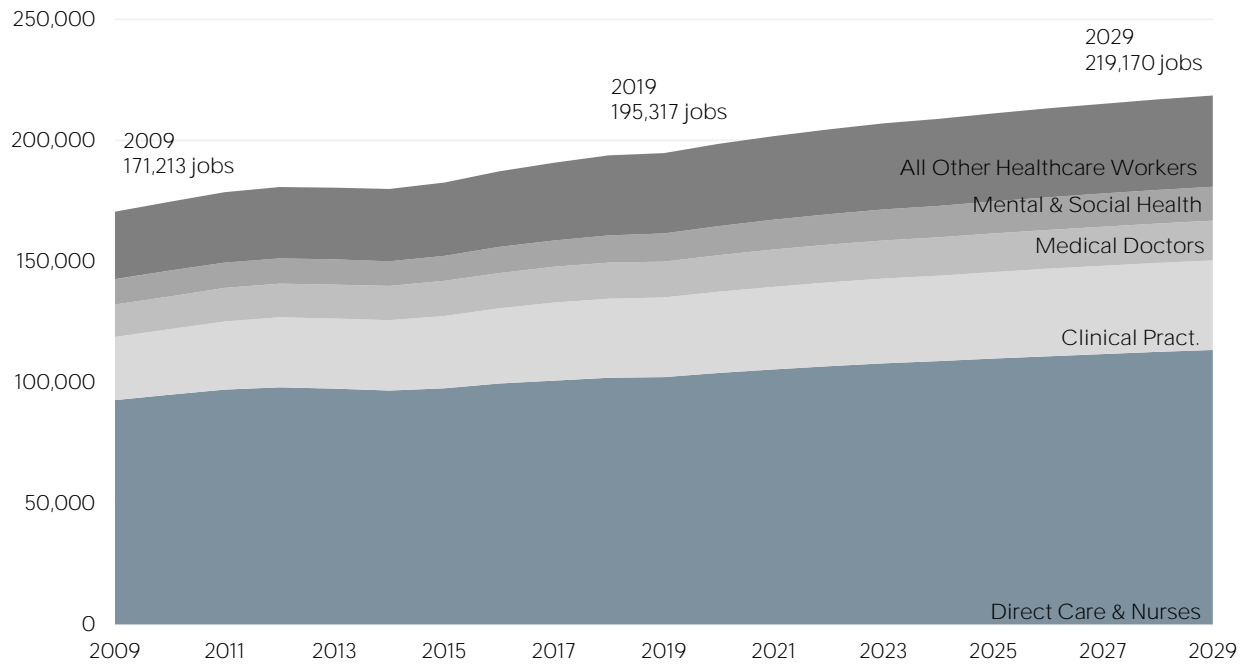
Source: American Community Survey five-year estimates from the U.S. Census Bureau data API.

OCCUPATIONAL OVERVIEW

Job counts and the changes in jobs over time provide insight into Kentucky as an attractive region for healthcare workers and companies looking to hire healthcare workers. Figure 11 shows statewide jobs for healthcare workers by occupational group from 2009 to 2029. As shown, Kentucky supported around 171,210 healthcare jobs in 2009, more than half of which were for direct care workers and nurses. Statewide jobs from 2009 to 2029 are shown in Figure 12 for a selection of the occupations in the direct care workers and nurses occupation group, and Figure 13 show statewide jobs for a selection of doctors and medical professionals. By 2019, the number of healthcare jobs increased to around 195,320 jobs, for a 14% job growth. For context, the job growth for healthcare workers in the U.S. between 2009 and 2019 was 16%. From 2019 to 2029, the state is projected to add 23,850 healthcare jobs, for a 12% 10-year job growth. Notably, clinical practitioners, medical doctors, and mental and social healthcare workers also account for a substantial amount of the state’s healthcare jobs.

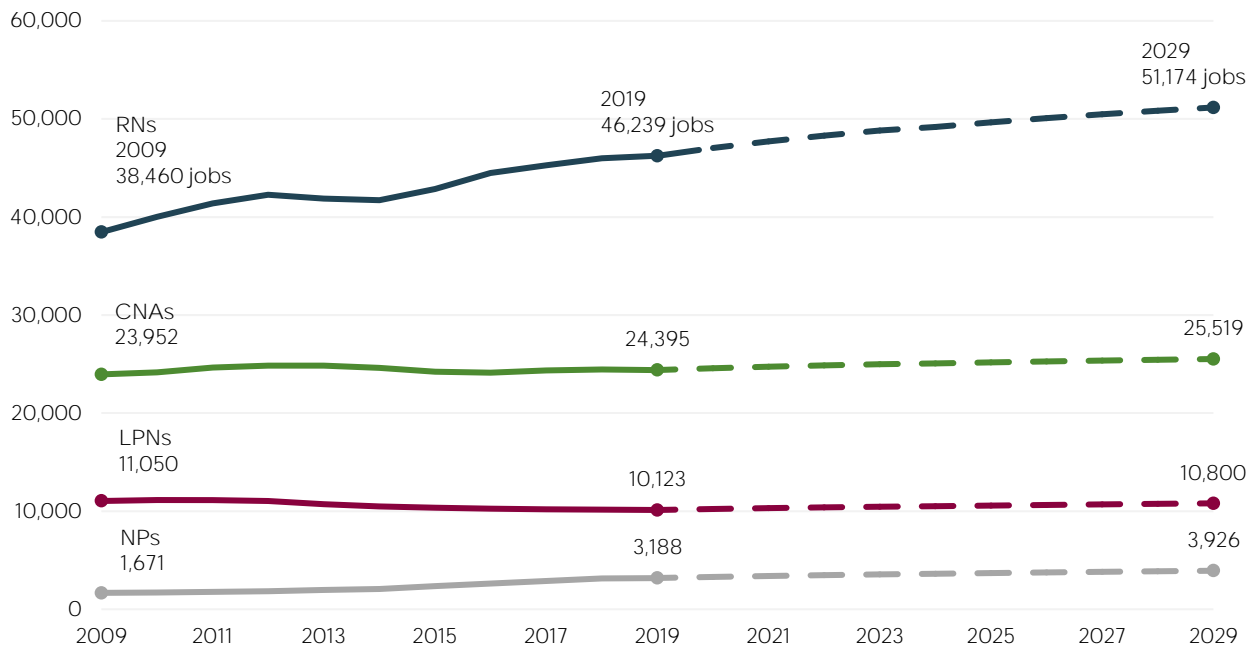
As shown in Figure 14, Central WPR supported the state’s largest share of healthcare workers, with the Kentuckiana LWA following in second. The Central WPR and South WPR are projected to add the most healthcare jobs (both are 15%) among all region between 2019 and 2029 relative to the state (12%). However, job growth in the Central WPR has been far greater compared to the state and its regions.

Figure 11: Historical and Projected Jobs for Healthcare Workers in Kentucky, 2009 to 2029



Source: Emsi Employees & Self-Employed 2020.1.

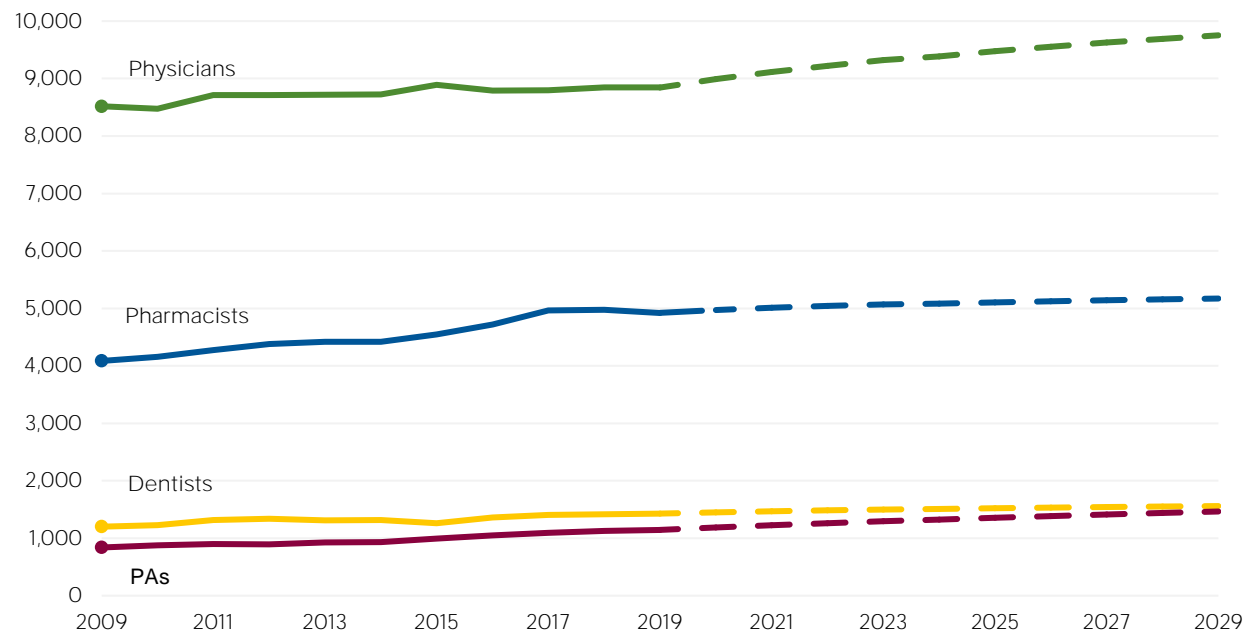
Figure 12: Historical and Projected Jobs for Select Occupations in the Direct Care Workers and Nurses Occupational Group in Kentucky, 2009 to 2029



RN refers to a registered nurse, CNA refers to a certified nursing assistant, LPN refers to a licensed practical & licensed vocational nurse, and NP refers to a nurse practitioner.

Source: Emsi Employees & Self-Employed 2020.1.

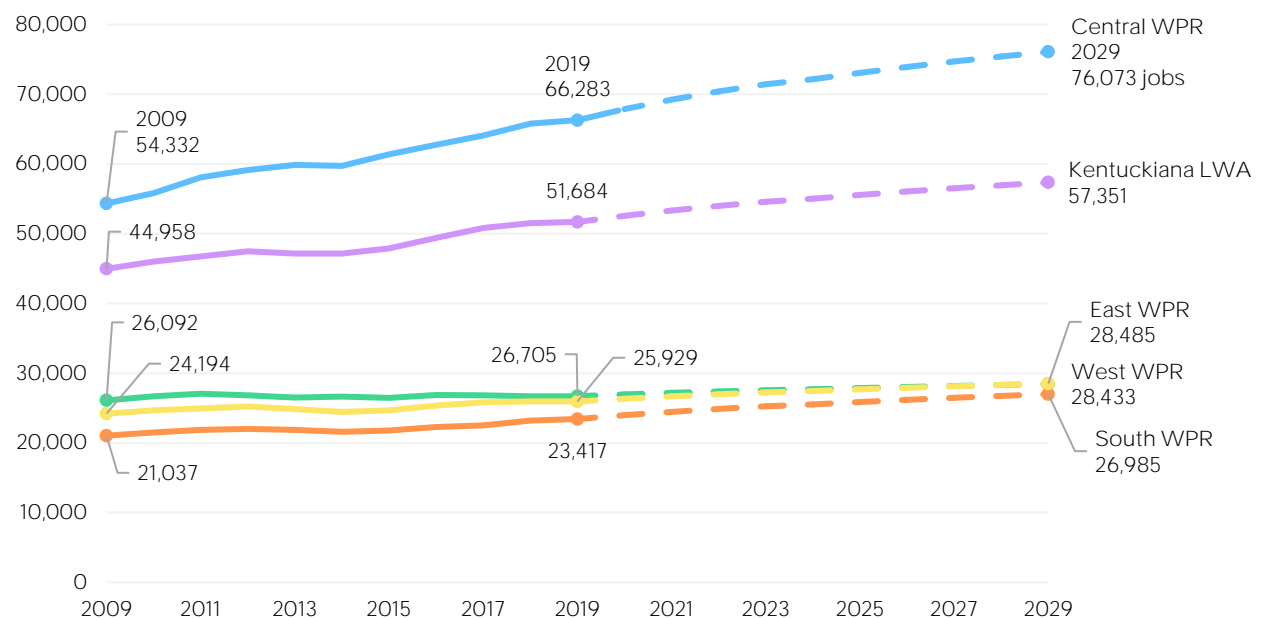
Figure 13: Historical and Projected Jobs for Select Doctors and Medical Professionals in Kentucky, 2009 to 2029



Physicians include the following occupations: all other health diagnosing & treating practitioners; all other physicians & surgeons; anesthesiologists; chiropractors; family & general practitioners; general internists; general pediatricians; medical scientists, except epidemiologists; obstetricians & gynecologists; oral & maxillofacial surgeons; podiatrists; and surgeons, and PA refers to a physician assistant.

Source: Emsi Employees & Self-Employed 2020.1.

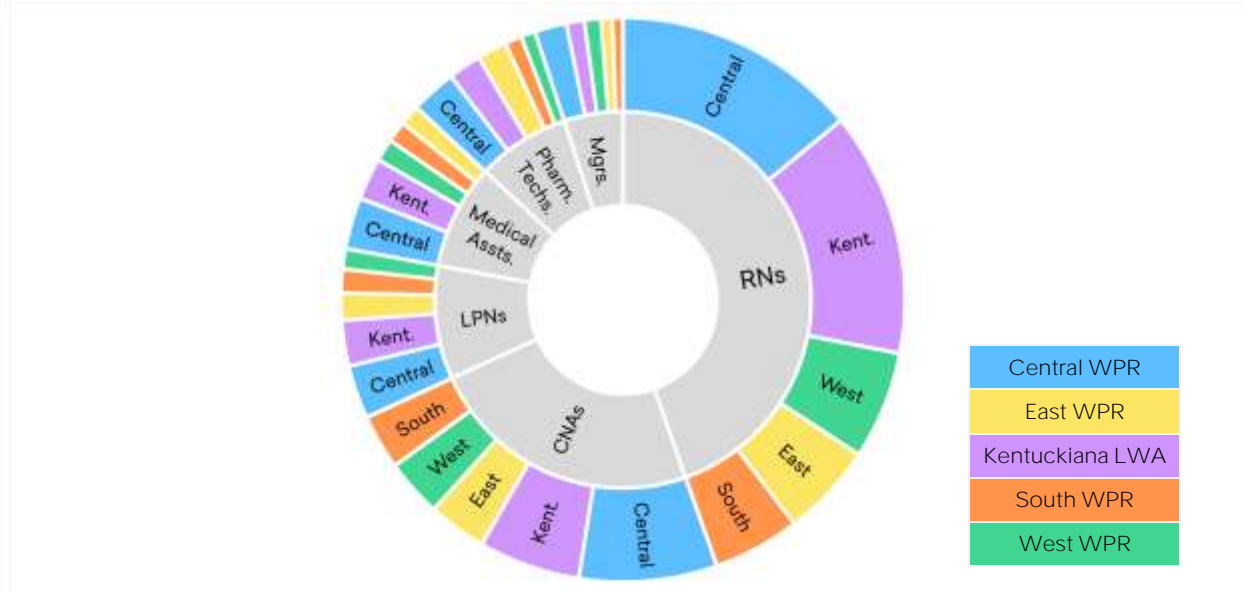
Figure 14: Historical and Projected Jobs for Healthcare in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2020.1.

Across all healthcare workers, the state supported the most jobs for registered nurses (46,240 jobs in 2019), followed by nursing assistants (24,400 jobs in 2019), licensed practical & licensed vocational nurses (10,120 jobs in 2019), and medical assistants (9,390 jobs in 2019). These four occupations, alone, accounted for about half of all healthcare workers in Kentucky. Figure 15 provides a regional breakdown of 2019 jobs for the top healthcare occupations. Data show that the Central WPR and the Kentuckiana LWA supported the state’s largest share of healthcare workers across all the types of healthcare occupations. However, there appears to be more jobs for registered nurses in the West WPR, compared to the region’s employment trends within the healthcare occupations and across all five regions.

Figure 15: Breakdown of 2019 Jobs for a Selection of Kentucky’s Healthcare Occupations by the WPRs and the Kentuckiana LWA



RN refers to a registered nurse, CNA refers to a certified nursing assistant, and LPN refers to a licensed practical & licensed vocational nurse.

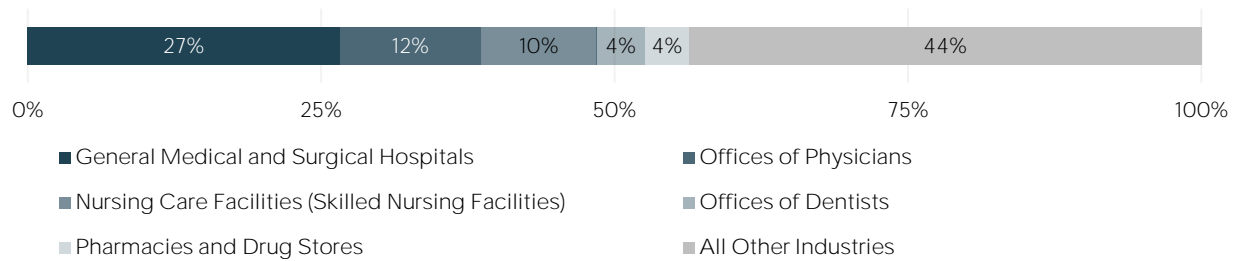
Source: Employees & Self-Employed 2020.2.

With the healthcare occupations in mind, we can now turn to healthcare industries. The healthcare occupations appear in a variety of industries. In other words, while there is a General Medical & Surgical Hospitals industry, medical doctors, nurses, and clinical practitioners also work in drug stores, pharmacies, and government-owned agencies.

As shown in Figure 16, the General Medical & Surgical Hospitals industry employed 52,160 of the healthcare workers in 2019, or 27% of all healthcare jobs. Healthcare workers were also employed in Offices of Physicians and Nursing Care Facilities, with 12% and 10% of all 2019

healthcare jobs, respectively. Registered nurses accounted for one-third of General Medical & Surgical Hospitals industry jobs alone.

Figure 16: Top Five Industries in Kentucky Employing the Largest Share of Healthcare Occupations



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.

By region, General Medical & Surgical Hospitals is the top industry employing healthcare occupations across all regions. In fact, the top five industries are very similar across the regions. The exception are Hospitals (State Government) in the Central WPR and Hospitals (Local Government) and Federal Government (Civilian) in the West WPR.

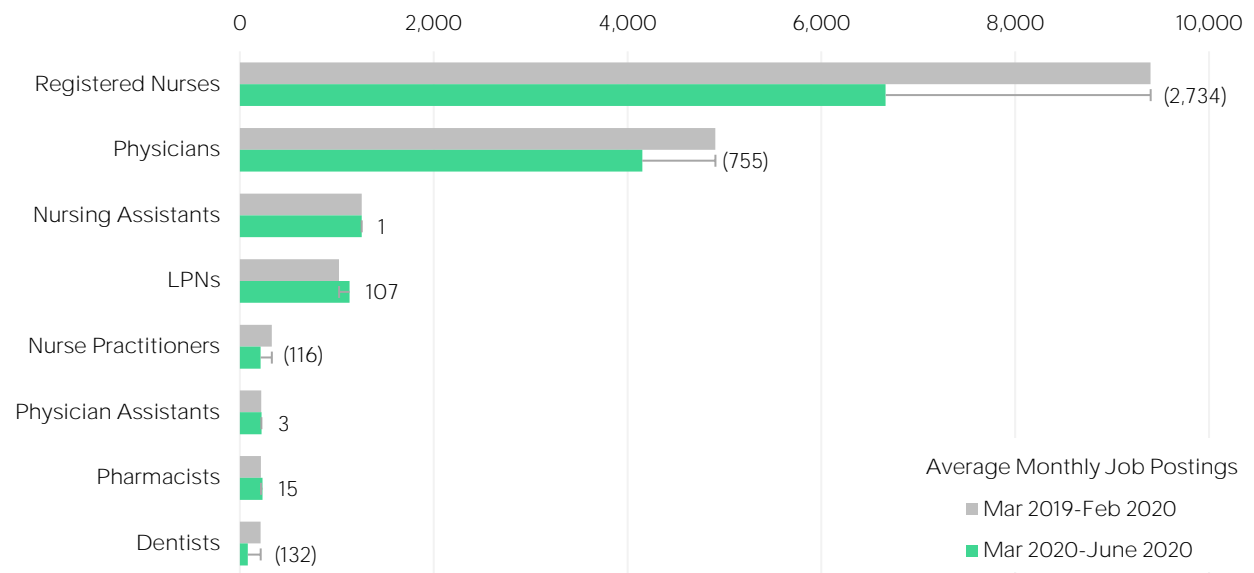
JOB POSTINGS & DEMOGRAPHIC ANALYSIS

Job postings are online advertisements for jobs, posted by companies trying to attract applicants. Analyzing job postings for information on the labor market can yield valuable insight, such as the companies that are posting jobs, where those jobs are located, and greater specificity in job titles. In addition, job postings have virtually no lag time, as they can be collected from sites soon after being posted. The job posting analysis reflects eight occupational areas in healthcare and represents job postings in Kentucky from February 2017 to February 2020.

Across Kentucky, job postings for each of the occupational groups ranged between 1,720 and 82,410. The largest number of job postings were in the Direct Care Workers & Nurses occupational group, and registered nurses alone had 49,120 statewide postings. The occupation typically employs people with a bachelor's degree level of education. Job postings for other occupations by level of education further emphasize the need for nursing programs. Across all occupational groups, postings for nursing assistants (with 11,100 postings) and licensed practical & licensed vocational nurses (with 9,100 postings) ranked second and third behind registered nurses. The two occupations typically require certificate and associate degree levels of education, respectively. At the graduate degree level, general internists, general practitioners, and all other physicians & surgeons accounted for about 11,500 postings, and physical and occupational therapists together accounted for about

9,500 postings. The University of Kentucky and the University of Louisville are the only medical degree-granting institutions in the state, and both universities have residency programs (as well as the University of Pikeville-Kentucky College of Osteopathic Medicine’s residency program in osteopathic medicine). Average monthly job postings for a selection of the healthcare occupations are shown in Figure 17, with an emphasis on the time period before March 2020 and after.

Figure 17: Average Monthly Job Postings for Select Healthcare Occupations, March 2019 to February 2020 and March 2020 to June 2020



Physicians include the following occupations: all other health diagnosing & treating practitioners; all other physicians & surgeons; anesthesiologists; chiropractors; family & general practitioners; general internists; general pediatricians; medical scientists, except epidemiologists; obstetricians & gynecologists; oral & maxillofacial surgeons; podiatrists; and surgeons.
 Source: Emsi Job Posting Analytics.

Healthcare workers are typically White females between 25 and 34 years. The exceptions are medical doctors (54% are male) and medical administrators. For the latter, the greatest number of people working as medical administrators are in the 45 to 54 years age band. Furthermore, 15% of the people in Kentucky working as direct care workers & nurses are non-White. Typically, 10% of the people working in one of the occupational groups are non-White, and 13% of all Kentucky adults, 25 years and above, are non-White.

PROGRAM DEMAND GAP ANALYSIS

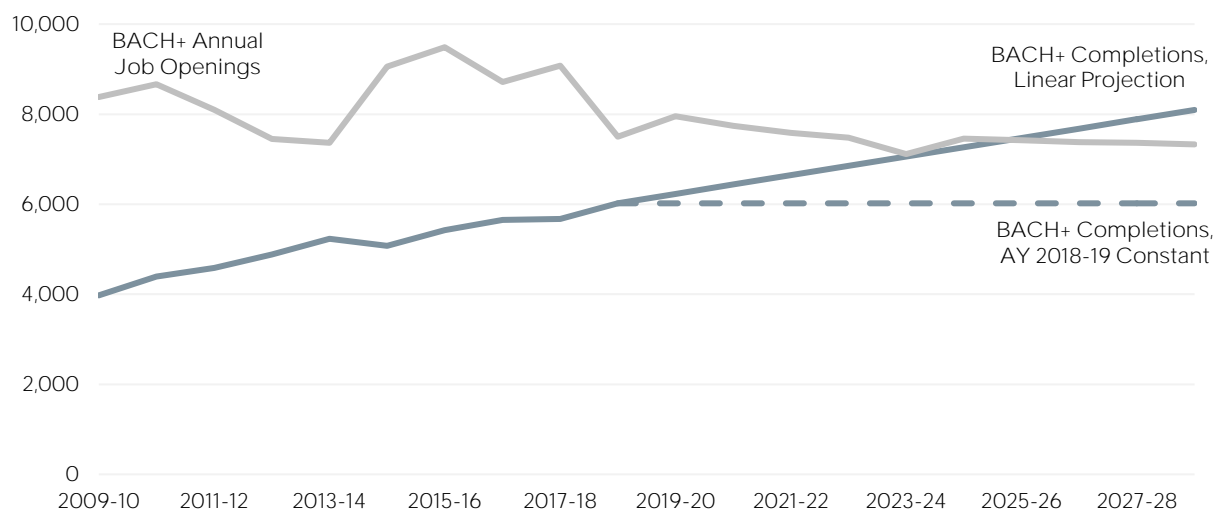
Knowing now how healthcare workers are employed in the state and its regions, the program demand gap analysis offers a better understanding of the connection between healthcare jobs and educational institutions, answering the following question:

Where are there misalignments between the workforce demand and the supply of college and university completers?

Before the detailed analysis is presented, Figure 18 provides an overview of Kentucky's healthcare bachelor's degree and above (BACH+) historical and projected unduplicated degrees and annual job openings. Future healthcare BACH+ unduplicated degrees were projected using two different methods. Regardless of how they are projected, there will be a gap until at least 2024. If degrees continue to be completed at the same pace as in academic year (AY) 2018-19, then degree completion will never match demand.

This section outlines the deficit of Kentucky's program completions to the workforce (gap), as well as the oversupply of completions to the workforce (surplus). Results are provided for the state and each region by combined award level and for each award level.

Figure 18: Overview of Kentucky's Healthcare BACH+ Historical and Projected Degrees and Annual Job Openings



Source: Emsi's Employees & Self-Employed 2020.2 and KY CPE Data and Advanced Analytics Team.

Kentucky

Table 2 provides program recommendations based on combining Kentucky’s healthcare programs into two categories – certificate and associate degree combined (CERT+) and bachelor’s, master’s, and doctoral degrees combined (BACH+). In the table, a subset of the programs appears in four quadrants based on specific action items. Note that this categorization of the programs into the quadrants is designed to initiate conversations around the programs. Figure 19 provides support for the BACH+ program recommendations by displaying the top 20 BACH+ programs with a gap.

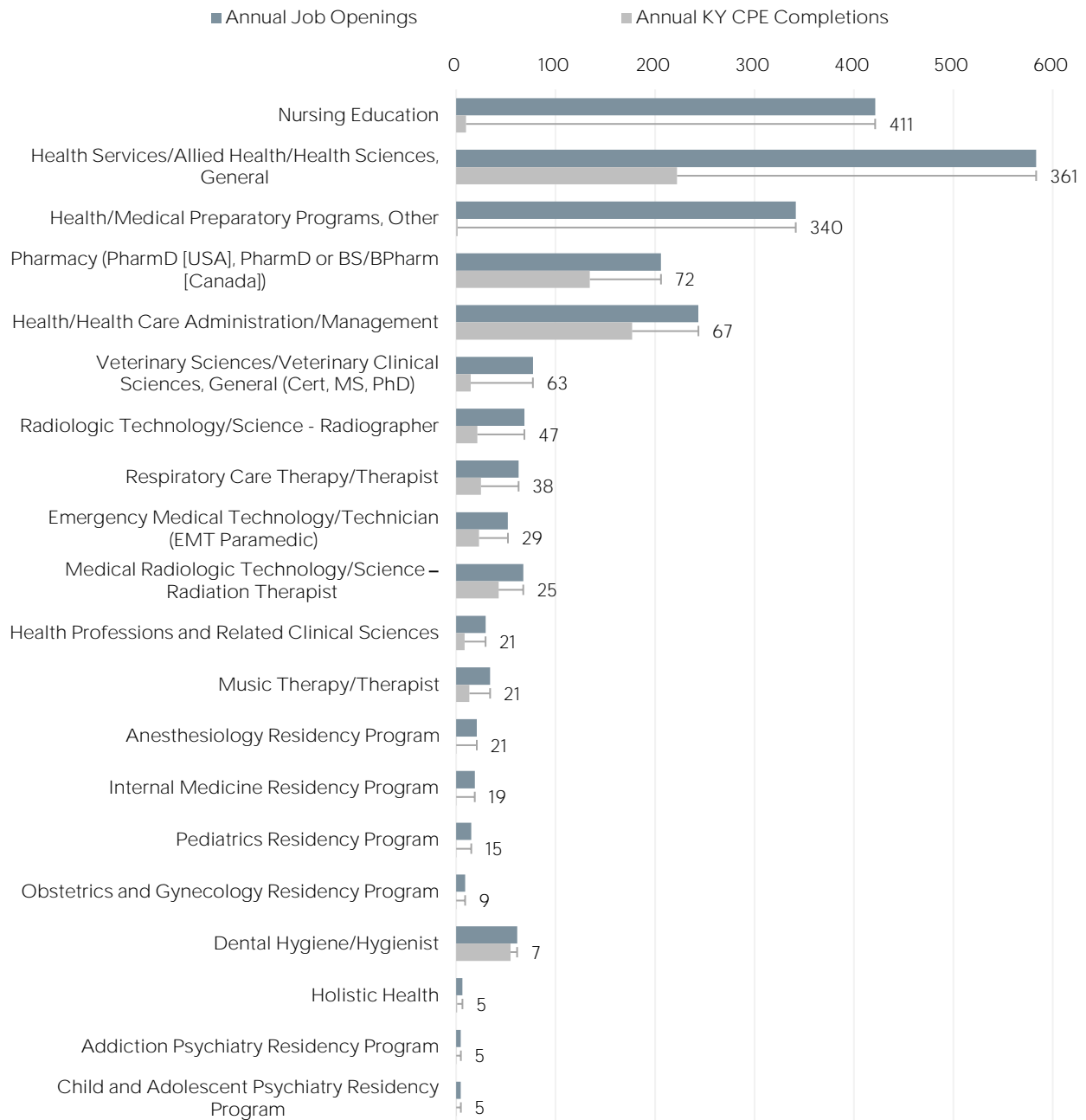
Table 2: Kentucky Program Recommendations

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Pharmacy Technician (CERT+)</p> <p>Nursing Education (BACH+)</p> <p>Health Services/Allied Health, General (CERT+, BACH+)</p> <p>Health/Medical Preparatory Programs, Other (BACH+)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>How can we maintain focus on program quality & student success?</i></p> <p>Emergency Medical Technology/Technician (CERT+)</p> <p>Respiratory Care Therapy/Therapist (CERT+)</p> <p>Dental Hygienist (BACH+)</p> <p>Radiologic Technology/Science – Radiographer (CERT+)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Community Health & Preventive Medicine (CERT+)</p> <p>Clinical Laboratory Science/Medical Technology/Technologist (CERT+)</p> <p>Health Care Administration/Management (CERT+)</p> <p>Family Medicine Residency Program (BACH+)</p> <p>Pedodontics Specialty (BACH+)</p> <p>Medical Physics (BACH+)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Can we consolidate or reduce enrollment in these programs?</i></p> <p>Public Health, General (BACH+)</p> <p>Nurse Midwife/Nursing Midwifery (BACH+)</p> <p>Family Practice Nurse/Nursing (BACH+)</p> <p>Health Information/Medical Records Technology/Technician (CERT+)</p>

Source: Emsi program demand gap model.

As seen in the table and figure, the Pharmacy Technician (CERT+), Nursing Education (BACH+), and Health Services/Allied Health/Health Sciences, General (CERT+ and BACH+) programs look to be areas of expansion. Each of these programs are discussed in more detail in Chapter 4. A number of programs, such as the Emergency Medical

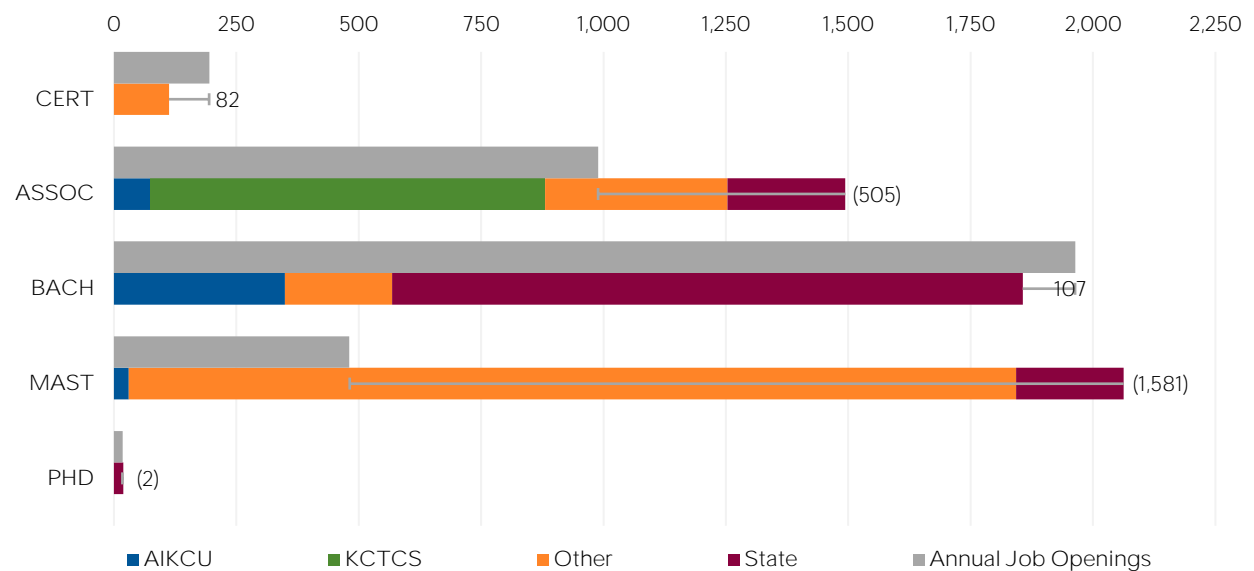
Figure 19: Kentucky's Top 20 BACH+ Degree Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Technology/Technician (EMT, CERT+), Respiratory Care Therapy/Therapist (CERT+), and Dental Hygienist (BACH+) programs, appear to be performing well in terms of high levels of demand and supply. The institutions should maintain focus on the success of these programs. A number of programs – such as Licensed Practical/Vocational Nurse (LPN) Training (CERT+) and Registered Nursing/Registered Nurse (RN, CERT+ and BACH+) should be reconsidered for consolidation from the labor market perspective based on a large surplus of program completers with not a comparable amount of occupational demand. As shown in Figure 20, the state’s RN programs (CIP 51.3801) have large surpluses of program completers at the associate degree and master’s degree levels. The master’s degree level surplus is attributable to a relatively large number of completions from licensed out-of-state schools, classified as the Other institutional sector.

Figure 20: Kentucky’s Nursing Program Completions (CIP 51.3801) by Award Level and Institutional Sector



Source: Emsi program demand gap model.

Central Workforce Planning Region



Table 3 provides CERT+ and BACH+ program recommendations for the Central WPR, and Figure 21 displays the CERT+ gaps and surpluses. The Allied Health Diagnostic, Intervention, & Treatment Professions, Other program (CERT+) and the Health/Medical Preparatory, Other program (BACH+) are areas to consider for expansion, whereas the Medical Administrative/Executive Assistant & Medical Secretary program (CERT+) should maintain its success. Several programs, such as the Nuclear Medical Technology/Technologist program (CERT+) and several of the residency programs, should be carefully considered for continuation and/or for consolidation.

At the individual award levels, KCTCS plays an important role in the Central WPR by providing the region with certificate and associate degree level programs of study. Across both award levels, the largest programs, in terms of completions, are from two programs, both at the certificate level: LPN Training and Medical Administrative/Executive Assistant & Medical Secretary. However, the greatest healthcare employment opportunities in the Central WPR for the two award levels are for the Allied Health Diagnostic, Intervention, & Treatment Professions, Other program, particularly for nursing assistants. Pharmacy technicians are also in high demand at the certificate level.

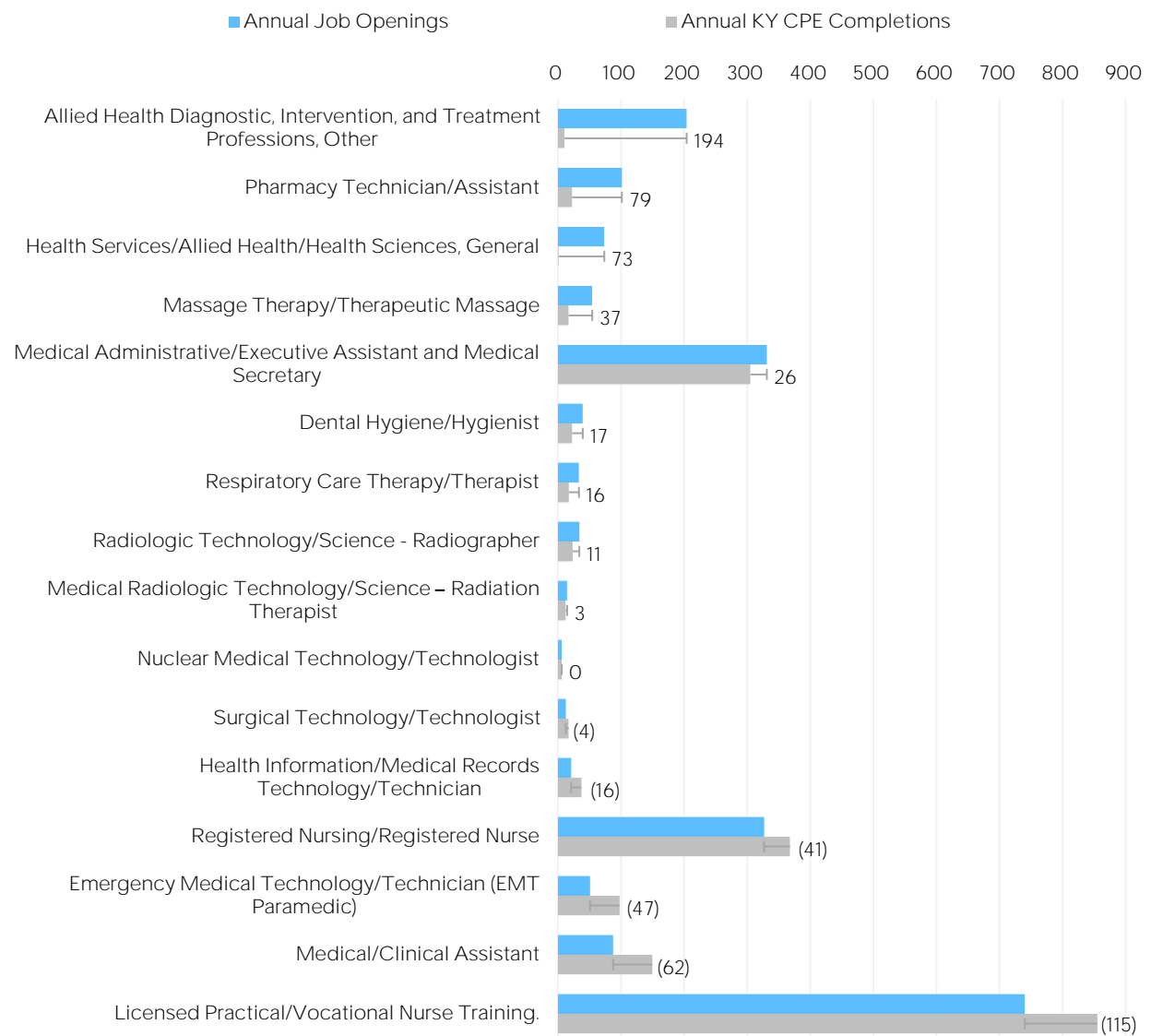
Table 3: Central WPR Program Recommendations

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Allied Health Diagnostic, Intervention, & Treatment Professions, Other (CERT+)</p> <p>Health/Medical Preparatory, Other (BACH+)</p> <p>Pharmacy Technician/Assistant (CERT+)</p> <p>Nursing Education (BACH+)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>How can we maintain focus on program quality & student success?</i></p> <p>Medical Administrative/Executive Assistant & Medical Secretary (CERT+)</p> <p>Health/Health Care Administration/Management (BACH+)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Nuclear Medical Technology/Technologist (CERT+)</p> <p>Plastic Surgery Residency Program (BACH+)</p> <p>Pathology Residency Program (BACH+)</p> <p>Dietetics/Dietitians (BACH+)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Can we consolidate or reduce enrollment in these programs?</i></p> <p>Public Health, General (BACH+)</p> <p>Occupational Therapy/Therapist (BACH+)</p> <p>Medical/Clinical Assistant (CERT+)</p>

Source: Emsi program demand gap model.

A variety of occupations are driving the large bachelor's degree level gaps in the Health/Medical Preparatory, Other program and the Health Services/Allied Health/Health Sciences, General program, such as clinical laboratory technologists & technicians and physical therapy assistants. However, some of the demand is also stemming from occupations for which a bachelor's degree may not be relevant. At the master's degree level, Nursing Education is a large gap. Much of the demand is driven by postsecondary teachers, which as an occupation may not be specific to healthcare, but it does include teaching in health-related fields. The Veterinary Sciences/Veterinary Clinical Sciences, General program, offered by the University of Kentucky, faces the largest gap at the doctoral level.

Figure 21: Gaps and Surpluses for the Central WPR's CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

East Workforce Planning Region



Table 4 provides CERT+ and BACH+ program recommendations for the East WPR, and Figure 22 displays the BACH+ gaps and surpluses. The Allied Health & Medical Assisting Services, Other program (CERT+) is an area to consider, especially as it relates to the Pharmacy Technician program (CERT+), as pharmacy technicians have a large regional demand in both programs. More appropriate award levels for the region’s RN programs (CERT+ and BACH+) should be considered, considering that the region is facing a large surplus at the CERT+ level and a gap at the BACH+ level.

At the individual award levels, KCTCS again plays an important role in Kentucky’s East WPR region by providing almost all the healthcare programs’ certificate and associate degree level program completions. The largest programs, in terms of completions at both award levels, are from the certificate level LPN Training program and the Medical Administrative/Executive Assistant program. The greatest employment opportunities for the two award levels are for nursing assistants and registered nurses, although both occupations are already being trained for by programs with a surplus of completers.

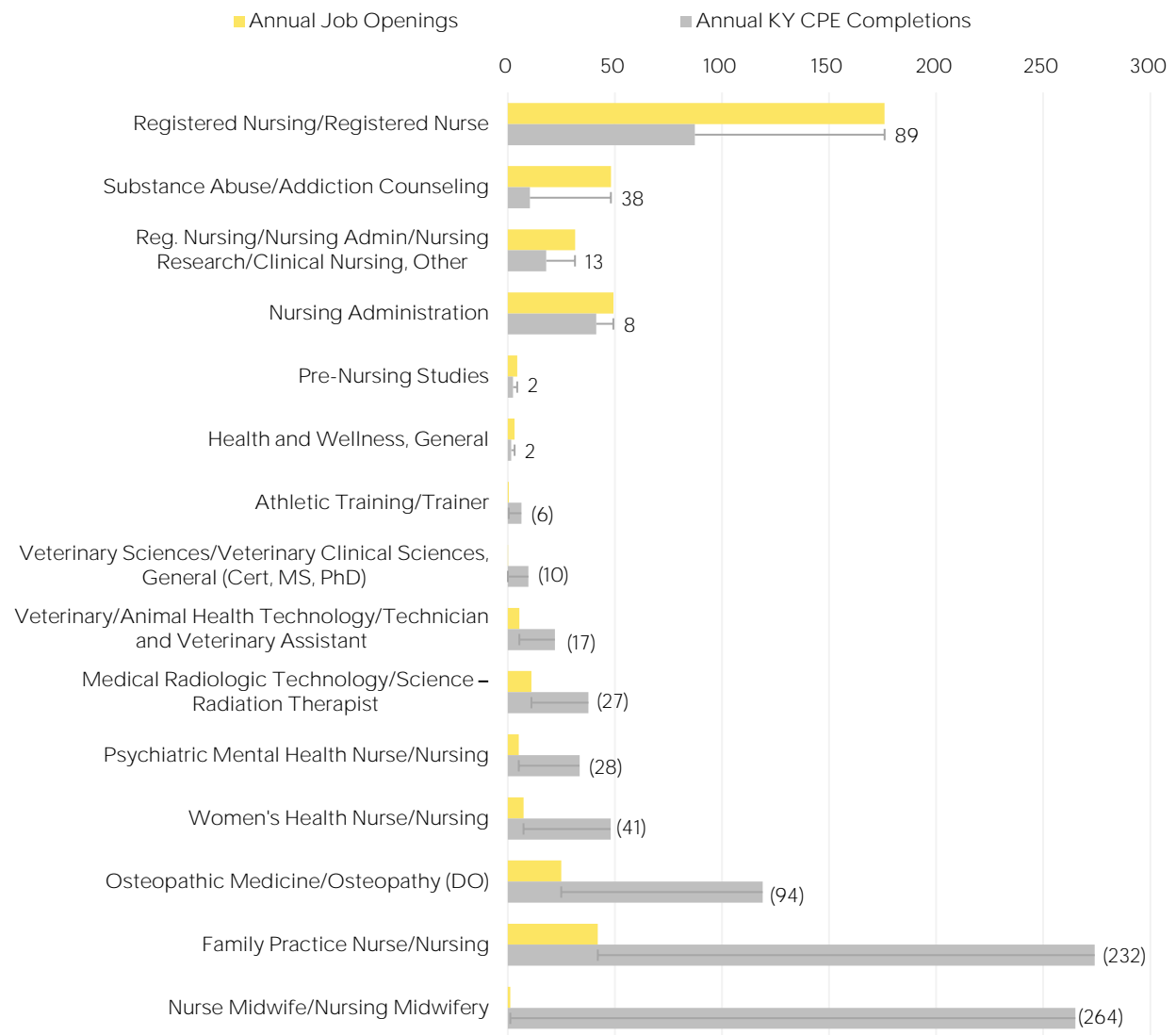
Table 4: East WPR Program Recommendations

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Allied Health & Medical Assisting Services, Other (CERT+)</p> <p>Pharmacy Technician (CERT+)</p> <p>Health Services/Allied Health/Health Sciences, General (CERT+)</p> <p>Substance Abuse/Addiction Counseling (BACH+)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>How can we maintain focus on program quality & student success?</i></p> <p>Nursing Administration (BACH+)</p> <p>Physical Therapist Assistant (CERT+)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Pre-Nursing Studies (BACH+)</p> <p>Health & Wellness, General (BACH+)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Can we consolidate or reduce enrollment in these programs?</i></p> <p>Medical Administrative/Executive Assistant (CERT+)</p> <p>Medical/Clinical Assistant (CERT+)</p> <p>Nurse Midwife/Nursing Midwifery (BACH+)</p> <p>Family Practice Nurse/Nursing (BACH+)</p>

Source: Emsi program demand gap model.

The top four gap programs at the bachelor's degree level are all related to nursing. While registered nurses drive the demand across the programs, medical & health services managers are also in demand. The region's master's degree programs are only facing a gap in the Substance Abuse/Addiction Counseling program, particularly for substance abuse, behavioral disorder, & mental health counselors. The Family Practice Nurse/Nursing and Nurse Midwife/Nursing Midwifery programs, along with the doctoral level Osteopathic Medicine Osteopathy (DO) program, are facing large surpluses of completers. There is relatively low demand in the region for the programs. On the other hand, they are niche programs, and completers could be finding employment in other regions in Kentucky.

Figure 22: Gaps and Surpluses for the East WPR's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Kentuckiana Local Workforce Area



Table 5 provides CERT+ and BACH+ program recommendations for the Kentuckiana LWA, and Figure 23 displays the CERT+ gaps and surpluses. The LPN Training (CERT+) program is an area to consider for expansion, whereas the Medical Insurance Coding Specialist/Coder and Family Practice Nurse/Nursing programs (CERT+ and BACH+, respectively) should maintain their success. Placement rates for the Dentistry (DDS, DMD) and Medicine (MD) programs (both BACH+) should be considered, as both programs face a large surplus. However, completers may be moving outside the region or even the state for residency programs and/or employment.

At the certificate level, results show a need for more completers from the region's medical records and medical office programs, and less of a demand for students seeking employment as registered nurses with less than a bachelor's degree. In fact, Kentucky's Licensed Out-of-State Schools (Other) provide the Kentuckiana LWA with the majority of the region's certificate and associate degree RN program completers. In addition to the LPN Training program mentioned in the paragraph above, the Pharmacy Technician/Assistant program at both the certificate and associate degree levels is recommended for expansion.

The region's high demand for nursing occupations explains its gaps for various nursing programs. However, the current oversupply of nurses in CERT+ programs should be

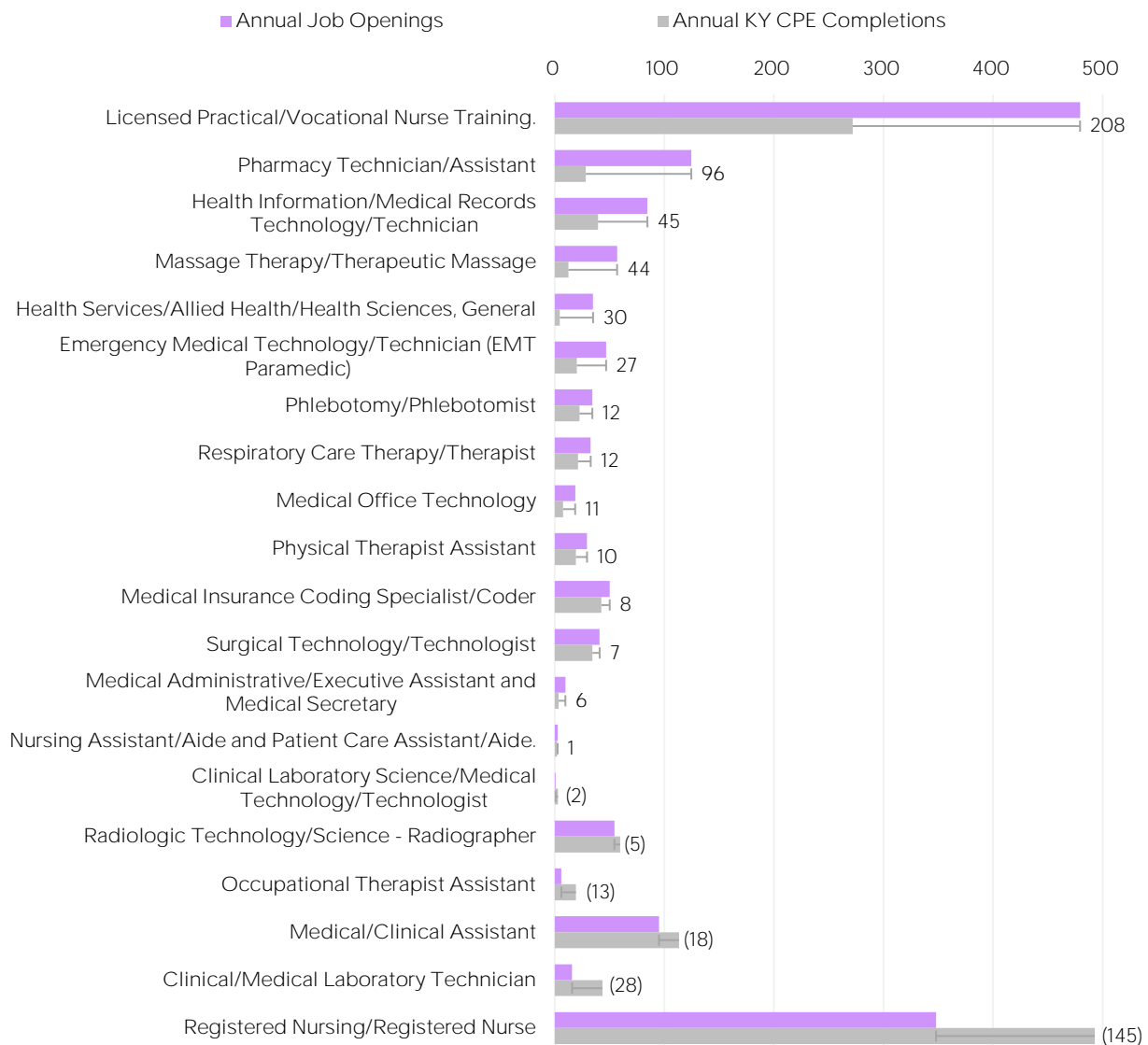
Table 5: Kentuckiana LWA Program Recommendations

HIGH DEMAND, LOW SUPPLY <i>How can we expand these program opportunities?</i>	HIGH DEMAND, HIGH SUPPLY <i>How can we maintain focus on program quality & student success?</i>
Licensed Practical/Vocational Nurse Training (CERT+) Pharmacy Technician/Assistant (CERT+) Health/Health Care Administration/Management (BACH+)	Medical Insurance Coding Specialist/Coder (CERT+) Radiologic Technology/Science (CERT+) Family Practice Nurse/Nursing (BACH+) Registered Nursing (BACH+)
LOW DEMAND, LOW SUPPLY <i>Should we discontinue these programs?</i>	LOW DEMAND, HIGH SUPPLY <i>Can we consolidate or reduce enrollment in these programs?</i>
Prosthodontics/Prosthodontology (BACH+) Endodontics/Endodontology (BACH+) Periodontics/Periodontology (BACH+) Clinical Lab Science/Medical Technology (CERT+)	Dentistry (BACH+) Medicine (MD) (BACH+) Occupational Therapy/Therapist (BACH+) Clinical/Medical Laboratory Technician (CERT+)

Source: Emsi program demand gap model.

considered before expanding any BACH+ nursing programs. The Health Services/Allied Health/Health Sciences, General bachelor's degree level program has the largest gap, but many of the occupations driving the gap do not necessarily require a bachelor's degree. All the region's master's degree level programs seem to be serving the region well, with no programs facing a large gap or surplus. All the doctoral degree level programs have a surplus, although only two of the surpluses are large. As discussed above, completers may be moving outside the region to continue their careers.

Figure 23: Gaps and Surpluses for the Kentuckiana LWA's CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

South Workforce Planning Region



Table 6 provides CERT+ and BACH+ program recommendations for the South WPR, and Figure 24 displays the CERT+ gaps and surpluses. Only the Health/Medical Preparatory Programs, Other (CERT+) program is recommended for expansion, particularly how the program trains for dental assistants and pharmacy technicians, the occupations driving the demand. The Physical Therapist Assistant and Family Practice Nurse/Nursing programs (CERT+ and BACH+, respectively) should maintain their success. Some programs, such as the Medical Administrative/Executive Assistant & Medical Secretary (CERT+) program, should be carefully considered for continuation and/or for consolidation. In addition, completers' placement upon program success should be evaluated for the RN program, as it faces a surplus at both the CERT+ and BACH+ levels in the region.

At the individual award level, between the South WPR's certificate and associate degree award levels, the largest programs by far are the certificate level Medical Administrative/Executive Assistant and LPN Training programs, with over 320 and 360 average annual completions, respectively. However, the region does not have a comparable number of job openings for related occupations. A review of the programs' employment outcomes is recommended.

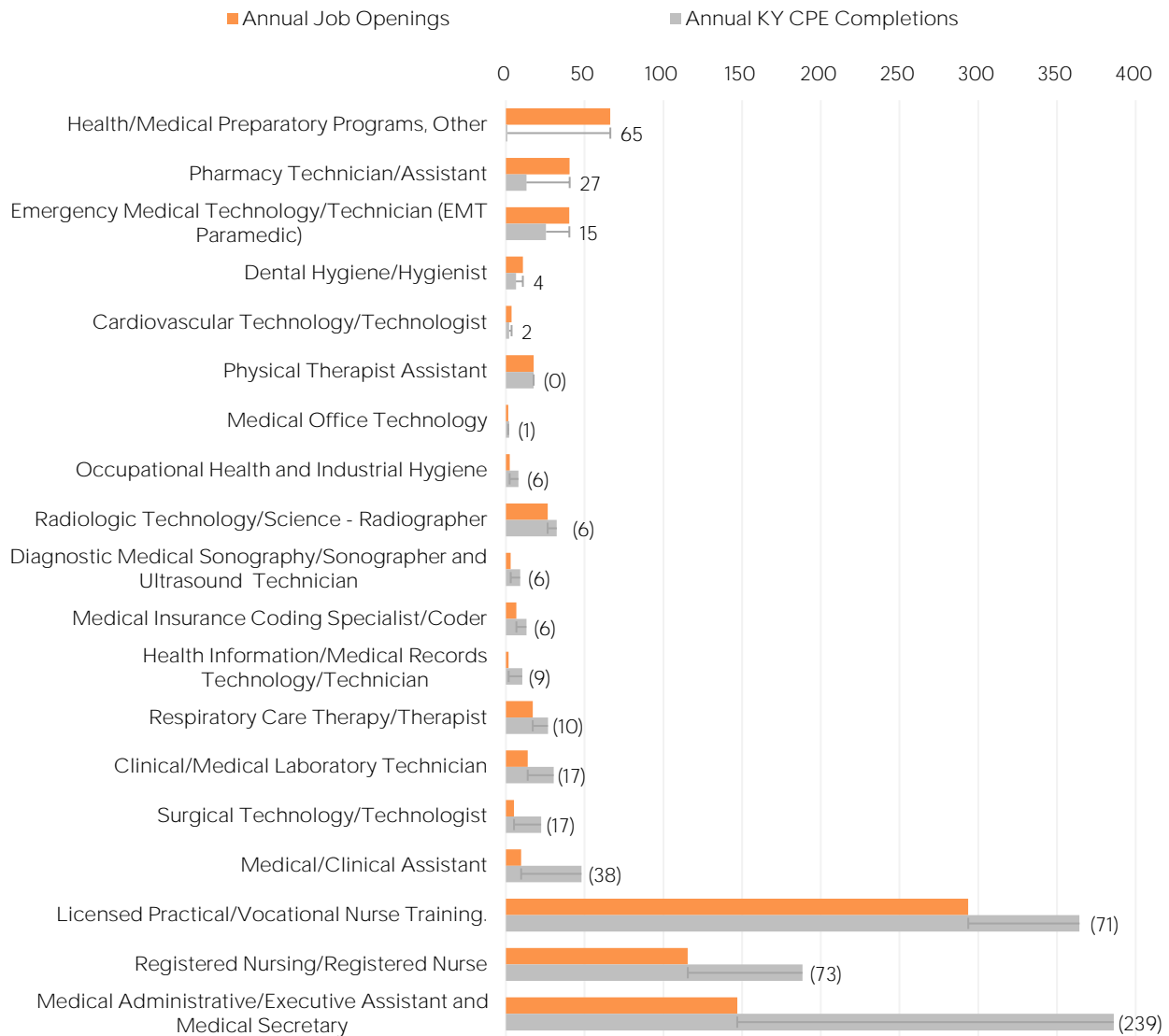
Table 6: South WPR Program Recommendations

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Health/Medical Preparatory Programs, Other (CERT+)</p> <p>Pharmacy Technician/Assistant (CERT+)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>How can we maintain focus on program quality & student success?</i></p> <p>Physical Therapist Assistant (CERT+)</p> <p>Radiologic Technology/Science – Radiographer (CERT+)</p> <p>Family Practice Nurse/Nursing programs (BACH+)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Clinical Laboratory Science/Medical Technology/Technologist (BACH+)</p> <p>Community Health Services/Liaison/Counseling (BACH+)</p> <p>Medical Office Technology (BACH+)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Can we consolidate or reduce enrollment in these programs?</i></p> <p>Medical Administrative/Executive Assistant (CERT+)</p> <p>Audiology/Audiologist and Speech-Language Pathology/Pathologist (BACH+)</p>

Source: Emsi program demand gap model.

The region is serving programs well-aligned with the market at the bachelor's, master's, and doctoral degree levels, with no programs facing a large gap or surplus. As in other regions, the South WPR's high demand for registered nurses is the occupation in the most demand across the award levels, although as mentioned above, the RN program does face an overall surplus across the award levels. With that said, nursing-related programs at the master's and doctoral degree level do generally face a small gap.

Figure 24: Gaps and Surpluses for the South WPR's CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

West Workforce Planning Region



Table 7 provides CERT+ and BACH+ program recommendations for the West WPR, and Figure 25 displays the CERT+ gaps and surpluses. The RN program appears as an opportunity for expansion at the BACH+ level, even considering the region’s CERT+ surplus in the program. The Pharmacy Technician/Assistant and Physical Therapist Assistant programs (CERT+) are recommended for maintaining their success. The region faces a large surplus in several CERT+ programs, such as the LPN Training and Medical Administrative/Executive Assistant programs. These programs should be carefully considered for continuation and/or for consolidation.

At the individual award level, KCTCS is the primary provider of completions at the certificate and associate degree levels. The two programs mentioned above as ones to consider for continuation and/or consolidation are by far the largest programs, with 885 and 223 completions, respectively, at the certificate level. While they do face some of the largest demand across all certificate and associate degree programs, supply by far outstrips demand.

At the bachelor’s degree level, as mentioned above, the RN program is an area for expansion. The Health Services/Allied Health/Health Sciences, General program also appears ready for

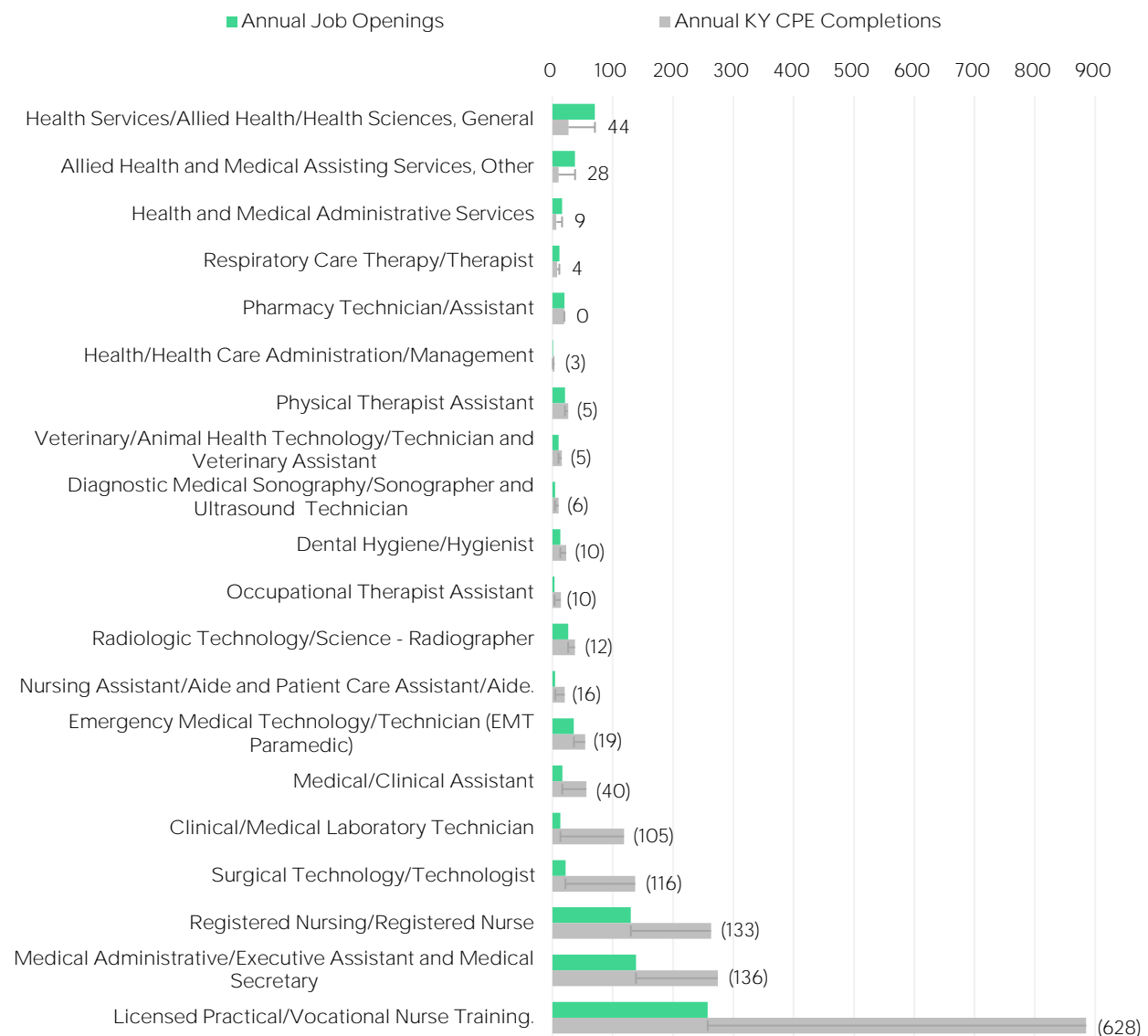
Table 7: West WPR Program Recommendations

<p>HIGH DEMAND, LOW SUPPLY</p> <p><i>How can we expand these program opportunities?</i></p> <p>Registered Nursing/Registered Nurse (BACH+)</p> <p>Health Services/Allied Health/Health Sciences, General (CERT+)</p>	<p>HIGH DEMAND, HIGH SUPPLY</p> <p><i>How can we maintain focus on program quality & student success?</i></p> <p>Pharmacy Technician/Assistant (CERT+)</p> <p>Physical Therapist Assistant programs (CERT+)</p> <p>Radiologic Technology/Science – Radiographer (CERT+)</p>
<p>LOW DEMAND, LOW SUPPLY</p> <p><i>Should we discontinue these programs?</i></p> <p>Athletic Training/Trainer (BACH+)</p> <p>Health/Health Care Administration/Management (CERT+)</p>	<p>LOW DEMAND, HIGH SUPPLY</p> <p><i>Can we consolidate or reduce enrollment in these programs?</i></p> <p>Licensed Practical/Vocational Nurse Training (CERT+)</p> <p>Medical Administrative/Executive Assistant (CERT+)</p> <p>Surgical Technology/Technologist (CERT+)</p> <p>Veterinary/Animal Health Technology/Technician & Veterinary Assistant (BACH+)</p>

Source: Emsi program demand gap model.

expansion. However, the occupations driving the demand for the program, such as nursing assistants and medical assistants, do not require a bachelor’s degree level of education. Therefore, the program is not recommended for expansion at this time. The region only offers one master’s degree and one doctoral degree level program – Audiology & Speech-Language Pathology and Nursing Practice, respectively. Both programs face a small surplus, but no program adjustments are recommended at this time.

Figure 25: Gaps and Surpluses for the West WPR’s CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

MIGRATION ANALYSIS

Profile Analytics

Kentucky supports tens of thousands of healthcare jobs, for those with a certificate level of education to those with a doctoral degree. Traditional labor market information (LMI) shows us how many healthcare workers are employed in Kentucky and its WPRs or Kentuckiana LWA (Chapter 2). However, using LMI, it is a challenge to understand more about the people who successfully find jobs as healthcare workers. Emsi's Profile Analytics database provides access to more than 100 million professional profiles, filterable by education history, specific employers, job titles, industries, skills, and more. See Chapter 5 or Appendix 2 for more information around the database.

As shown in Table 8, around 56% of alumni from Kentucky's healthcare programs remain in Kentucky. Compared with all the institutions' alumni (56% remaining in-state), it appears as if the same percentage of Kentucky healthcare alumni migrate out of the state compared to all programs' alumni. However, when compared to looking across the U.S., more Kentucky healthcare alumni stay in Kentucky compared to healthcare alumni of other states staying in their state (49% remain in-state).

Table 8: In-State and Out-of-State Migration of Kentucky's Healthcare Alumni* by Sector, with State Comparison of All Alumni

SECTOR	KY HEALTHCARE ALUMNI			ALL KY ALUMNI		
	PROFILES	% IN-STATE	% OUT-OF-STATE	PROFILES	% IN-STATE	% OUT-OF-STATE
State University	15,093	55%	45%	477,491	56%	44%
KCTCS	2,454	62%	38%	67,634	68%	32%
AIKCU	3,056	66%	34%	57,111	65%	35%
KY Institutions	22,575	56%	44%	748,030	56%	44%
	U.S. HEALTHCARE ALUMNI			ALL U.S. ALUMNI		
U.S. Comparison	2,100,955	49%	51%	94,180,933	44%	56%

* Based on students completing a healthcare program (CIP code 51) from an educational institution in Kentucky.
Source: Emsi Profile Analytics.

The top states where the Kentucky healthcare alumni move to are Tennessee, Ohio, Florida, Indiana, and Texas. Wages in Texas are consistently higher than in Kentucky across the top healthcare occupations, with Kentucky's wages on the lower end of most of the occupational rankings compared to the other states. The exceptions are the pharmacists occupation and the nursing assistants occupation, which Kentucky ranks second and third, respectively, in terms of wages. A few of the out-of-state employers of Kentucky healthcare alumni are

Children’s Hospital Medical Center, Vanderbilt University, and the Department of Veterans Affairs (Table 5.6). Of course, not all healthcare workers in Kentucky attended a Kentucky institution. As shown in Table 5.7, top institutions providing healthcare talent to Kentucky are Indiana Wesleyan University, University of Cincinnati, and Indiana University Southeast.

Consumer Insight

The Strada-Gallup Education Consumer Survey (referred to as Consumer Insight throughout the analysis) is the largest database of education consumer insights in the nation. The survey provides greater insight into people’s perceptions of higher education. For this analysis, we used the survey to assemble more information on Kentucky’s science, technology, engineering, mathematics, and healthcare (STEMH) majors, emphasizing their programs of study, highest award levels, and current occupations.⁴ In addition, we look at qualitative responses of STEMH graduates of Kentucky institutions, which is valuable to the state’s educational providers seeking to improve their programs.

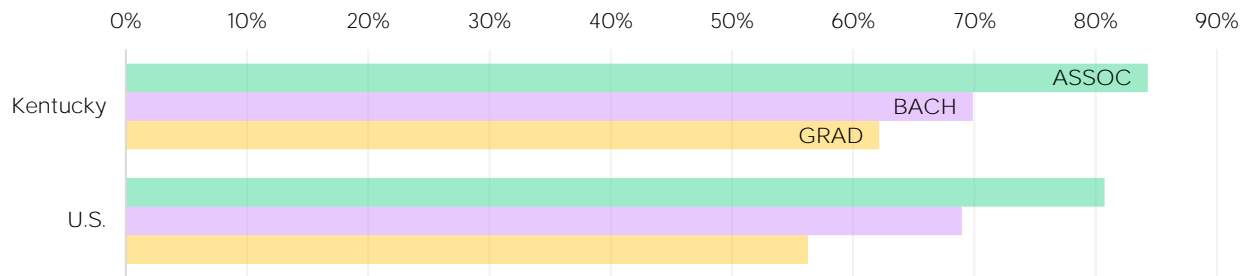
Health professions & related majors reflect the most respondents for both associate degrees and bachelor’s degrees. At the associate degree level, health professions comprise 68% of the respondents, meaning it is fair to say the subsequent associate degree results primarily reflect health. At the bachelor’s degree level, health professions rank first with engineering majors ranking a close second. This information is helpful when interpreting the results of subsequent STEMH tables and figures.

Kentucky STEMH graduates are somewhat more likely to remain in Kentucky than respondents from other states (Figure 26). However, Kentucky STEMH bachelor’s degree graduates are more likely to leave the state compared to the other award levels, and at a slightly higher rate than STEMH graduates from other states.

The Consumer Insights data provide “Hindsight Indicators” to determine the likelihood of respondents repeating parts of their educational experience – in this case, study the same major or attend the same school. Kentucky STEMH graduates at the associate and graduate degree levels said “yes” to studying the same major at a higher rate than graduates from across the U.S., although only 59% of Kentucky bachelor’s degree STEMH graduates said “yes” compared to 64% across the U.S. (Figure 27). Similar patterns emerge on whether the respondents would attend the same school, although this time a higher percentage of Kentucky bachelor’s degree STEMH graduates said “yes” compared to STEMH graduates from across the U.S.

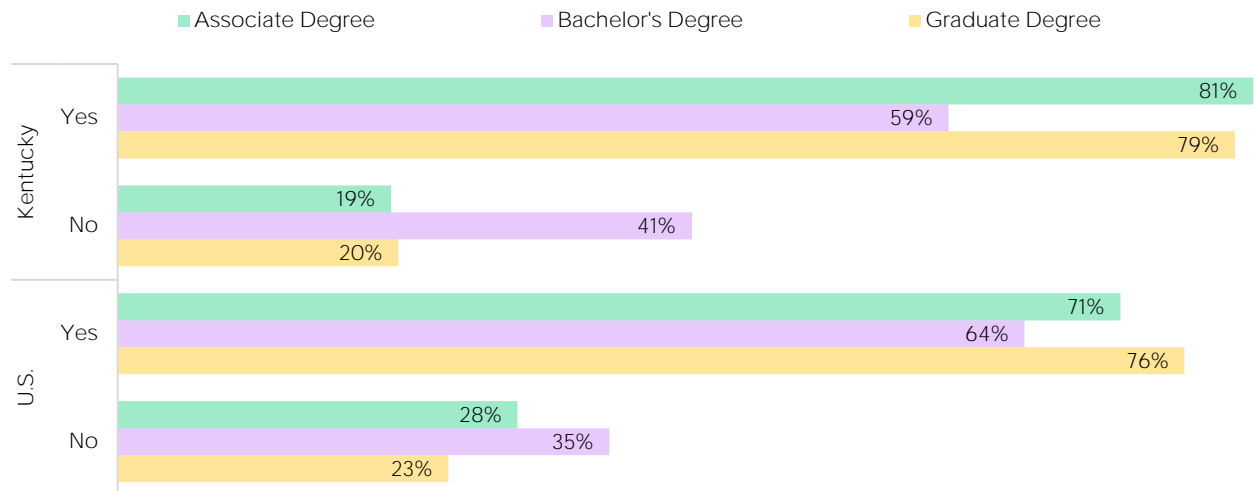
4 The sample size for healthcare majors in Kentucky was too small for analysis; therefore, this section focuses on STEMH across the associate, bachelor’s, and graduate degree levels.

Figure 26: STEMH Graduates from Public Institutions in Kentucky and the U.S. Remaining in the State



The Kentucky total is 405. The U.S. total is 24,159.
Source: Strada Consumer Insights.

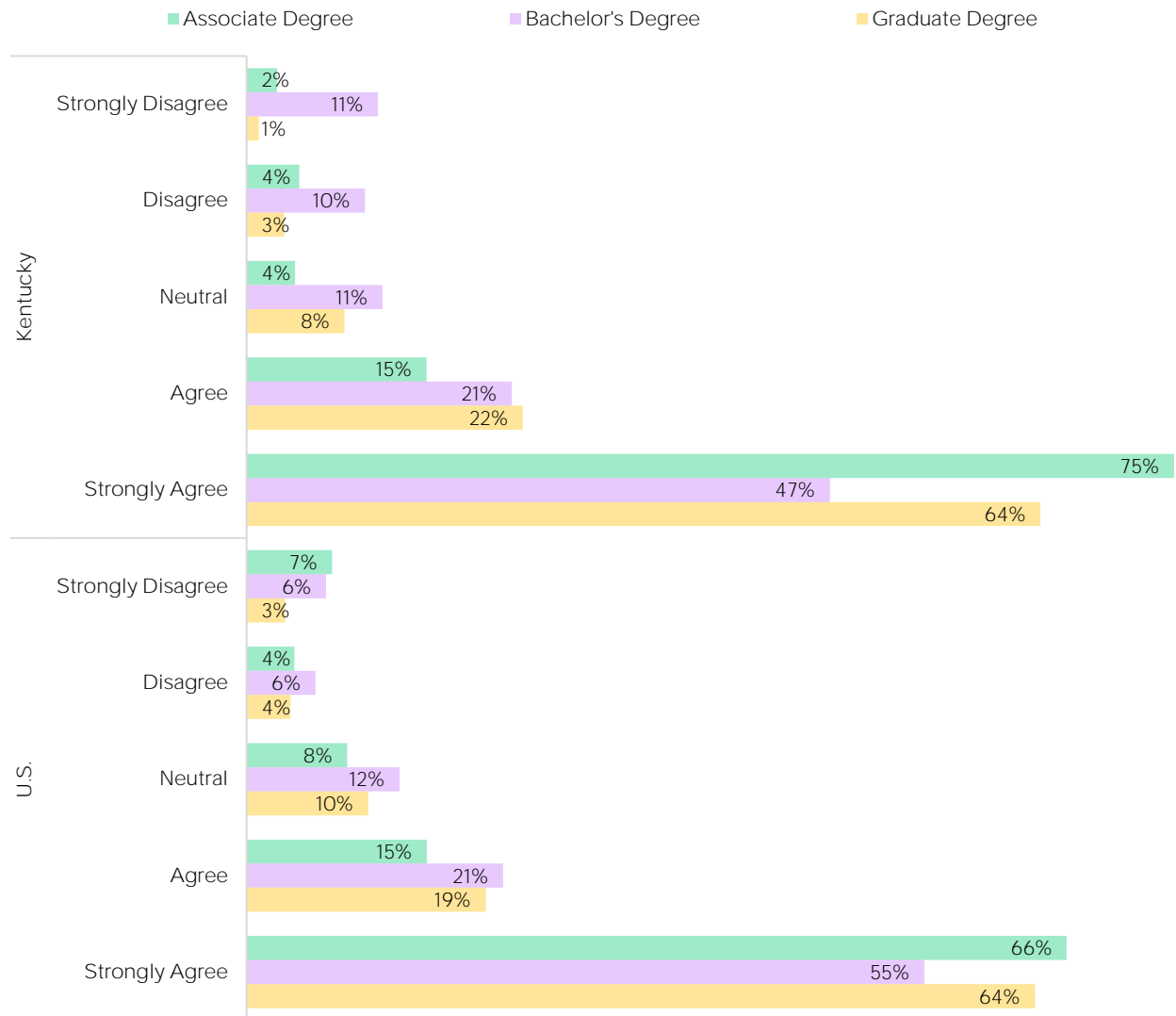
Figure 27: Response of STEMH Graduates of Public Institutions to "If You Had to Do It All Over Again, Would You Study the Same Major/Course"



Source: Strada Consumer Insights.

We also look at "Value Indicators" to provide inference on how respondents rate the value of their Kentucky STEMH education, again compared against STEMH graduates from across the U.S. In general, Kentucky STEMH associate and graduate degree respondents "strongly agreed" more than respondents from across the U.S., whereas a smaller percentage of Kentucky STEMH bachelor's degree graduates "strongly agreed" compared to national respondents (Figure 28). This indicates that Kentucky STEMH bachelor's degree graduates may not have valued their education – namely in terms of worth the cost and creating an attractive candidate – as much as both Kentucky alumni at different award levels and non-Kentucky alumni in general. Bachelor's and graduate degree STEMH graduates do not really feel the need for further education to advance their career, whereas it is an almost even split for associate degree graduates.

Figure 28: Response of STEMH Graduates of Public Institutions to "Your Highest Level of Education was Worth the Cost"



Source: Strada Consumer Insights.

Similar trends as we saw above appear in the “Helpful Elements” responses, with Kentucky STEMH bachelor’s degree respondents again being generally more conservative in their responses. However, Kentucky STEMH associate and graduate degree graduates generally outperform the U.S. comparison when it comes to finding the Kentucky institutions helpful in various aspects of their career. For example, 65% of Kentucky STEMH associate degree graduates found their major/field of study to be very helpful in their career, compared to only 50% at the national level. Similarly, for the Kentucky STEMH graduate degree respondents, 44% said the people they met had been very helpful in their career, compared to 35% at the national level.

The final area of the Consumer Insights analysis was around “Motivation Indicators” to identify the top motivations for why STEMH majors in Kentucky and across the U.S. pursued their degree and chose a school. The analysis found that the top motivation for pursuing a degree across all Kentucky STEMH award levels was to get a good job/make money. Kentucky associate degree STEMH graduates also seem to prefer when the school offers specific programs, and those from a Kentucky graduate degree STEMH program often choose the degree to advance their career. In terms of why respondents chose their school, the data demonstrates that the top motivator for Kentucky STEMH graduates is due to a close location. Other top motivators on school choice are good reputation of school and the school offers specific programs.



Introduction

The Council on Postsecondary Education (Council) is charged with guiding the reform efforts envisioned by state policy leaders in the Kentucky Postsecondary Education Improvement Act of 1997 and is Kentucky's statewide postsecondary and adult education coordinating agency. Its mission is to strengthen the state's workforce, economy, and quality of life. The Council does this by guiding the continuous improvement and efficient operation of a high-quality, diverse, innovative, accessible, and affordable system of postsecondary education in the commonwealth of Kentucky. Among its many responsibilities, the Council:

- Develops and implements a strategic agenda and accountability system for postsecondary education that includes measures of educational attainment, effectiveness, and efficiency;
- Defines and approves all academic programs at public institutions; and
- Coordinates statewide efforts to improve college readiness, access to postsecondary education, and student success, including statewide transfer agreements, adult learner initiatives, and postsecondary work related to college and career readiness.

An efficient labor market requires a seamless flow of skilled workers, the postsecondary educational institutions that educate and train them, and the employers that hire them. One factor behind workforce misalignment stems from when the needs of the employers evolve differently than the programs that train their workers. These misalignments may happen at different times and for different reasons:

- Employer training becomes more tailored and comprehensive;
- Businesses come and go, and certain educational programs become more or less pertinent to a specific region;
- Rapid advances in technology and business create curriculum needs that few educational institutions possess; and
- As economic conditions shift, businesses have different hiring requirements of their employees.



In light of these dynamics, an up-to-date understanding of the Kentucky economy and the demand for skilled labor is vital to the planning efforts of statewide colleges and universities seeking to adapt their program offerings to the requirements of an ever-changing workforce.

To gain better insight into economic conditions and workforce trends, specifically within three targeted sectors, the Council partnered with Emsi, a labor market analytics firm serving higher education, economic and workforce development, talent acquisition, and site selection. In this report, Emsi focuses on the Healthcare sector by providing an overview of healthcare occupations and industries through traditional labor market information and a job postings analysis, conducting a program demand gap analysis of Kentucky institutions' healthcare program offerings, and analyzing migration patterns and other qualitative characteristics that help explain why Kentucky healthcare alumni stay in or migrate out of the state. Emsi also provides an environmental scan of the state's economy so as to provide context for the Healthcare sector.

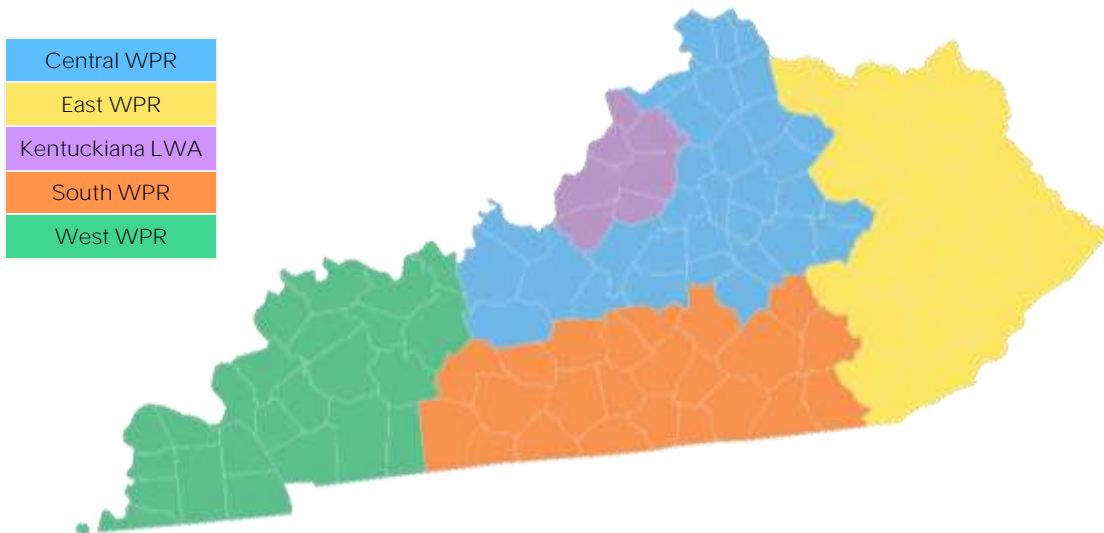


Occupational Overview

The occupational overview provides key information on employment opportunities for healthcare workers in Kentucky and its Workforce Planning Regions (WPRs). The counties included in the Central, East, South, and West WPRs are determined by the Kentucky Center for Education & Workforce Statistics and provided by the Council (Figure 2.1).⁵ In addition, data for the city of Louisville and its surrounding counties, which comprise the Kentuckiana Local Workforce Area (LWA), are shown distinct from the Central WPR. Identifying the areas of employment for healthcare workers in Kentucky and its five workforce regions is an important task for several reasons. The data:

- Identify where Kentucky’s healthcare workers are employed, with regards to geography;
- Give the Council a deeper understanding of state and regional job trends for those working in healthcare; and

Figure 2.1: Kentucky’s WPRs and the Kentuckiana LWA



Source: Regions provided by the Council.

5 Source: https://kystats.ky.gov/Reports/ShowReports?ReportId=Map_LWAWIB&publishDate=20170401.

- Help the Council understand where the state’s colleges and universities should logically target their efforts, considering healthcare program development.

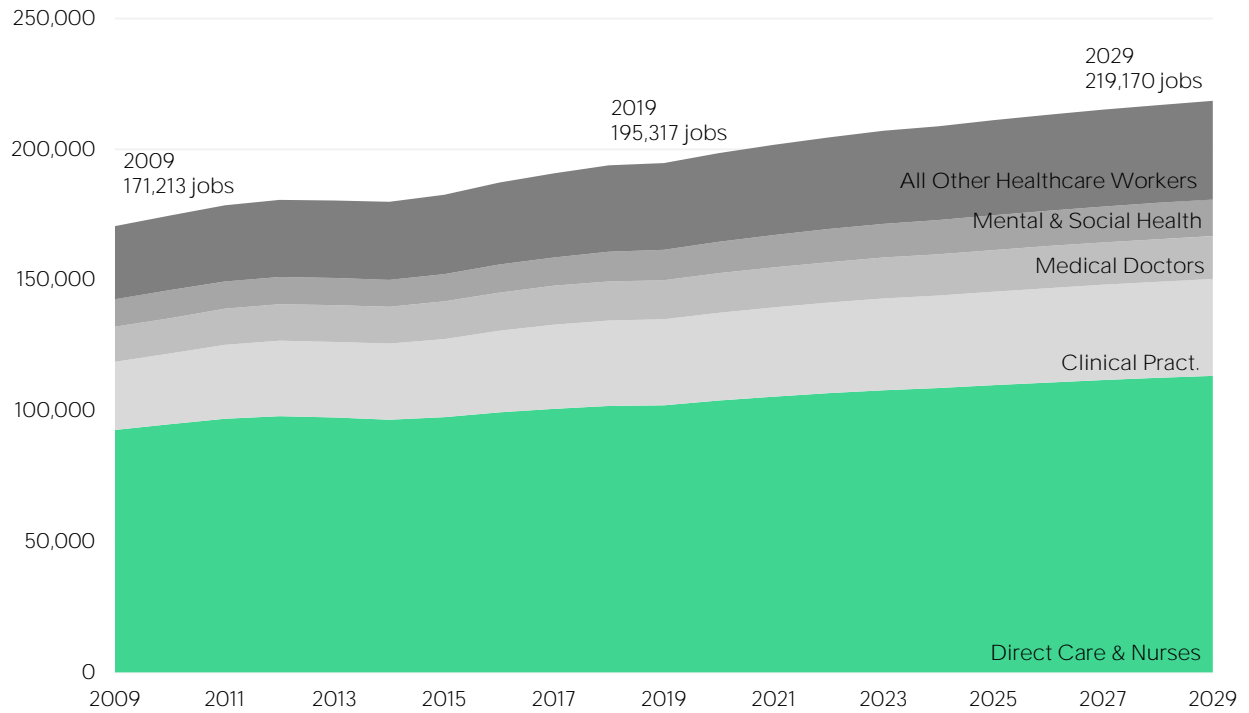
This chapter provides an overview of past, current, and future jobs for healthcare workers in the state and its regions, compares the state’s and county’s share of healthcare jobs relative to a typical region, and identifies the industries employing healthcare workers at the state and regional levels. Tables and figures, in some cases, also present data at the national level.

TOTAL JOBS

Job counts and the changes in jobs over time provide insight into Kentucky as an attractive region for healthcare workers and companies looking to hire healthcare workers. Figure 2.2 shows statewide jobs for healthcare workers by occupational group from 2009 to 2029, and Figure 2.3 presents the same data, using 2009 as a base year. As shown in Figure 2.2, Kentucky supported around 171,210 healthcare jobs in 2009, more than half of which were for direct care workers and nurses. By 2019, that number increased to around 195,320 jobs, for a 14.1% job growth. For context, the job growth for healthcare workers in the U.S. between 2009 and 2019 was 16.5%. From 2019 to 2029, the state is projected to add 23,850 healthcare jobs, for a 12.2% 10-year job growth. Notably, clinical practitioners, medical doctors, and mental and social healthcare workers also account for a substantial amount of the state’s healthcare jobs.

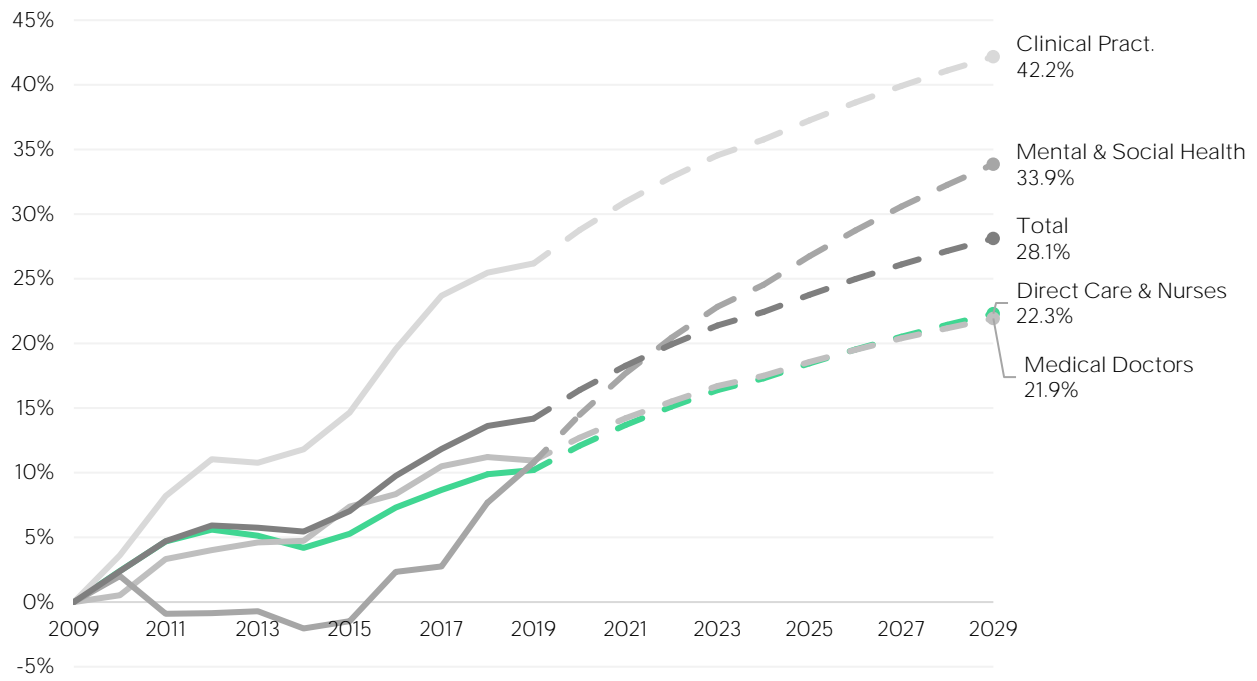
Figures 2.4 and 2.5 show healthcare jobs at the regional level. The Central WPR supported the state’s largest share of healthcare workers, with the Kentuckiana LWA following in second (Figure 2.4). The Central WPR and South WPR are projected to add the most healthcare jobs (14.8% and 15.2%, respectively) among all region between 2019 and 2029 relative to the state (12.2%). However, job growth in the Central WPR has been far greater compared to the state and its regions (Figure 2.5).

Figure 2.2: Historical and Projected Jobs for Healthcare Workers in Kentucky, 2009 to 2029



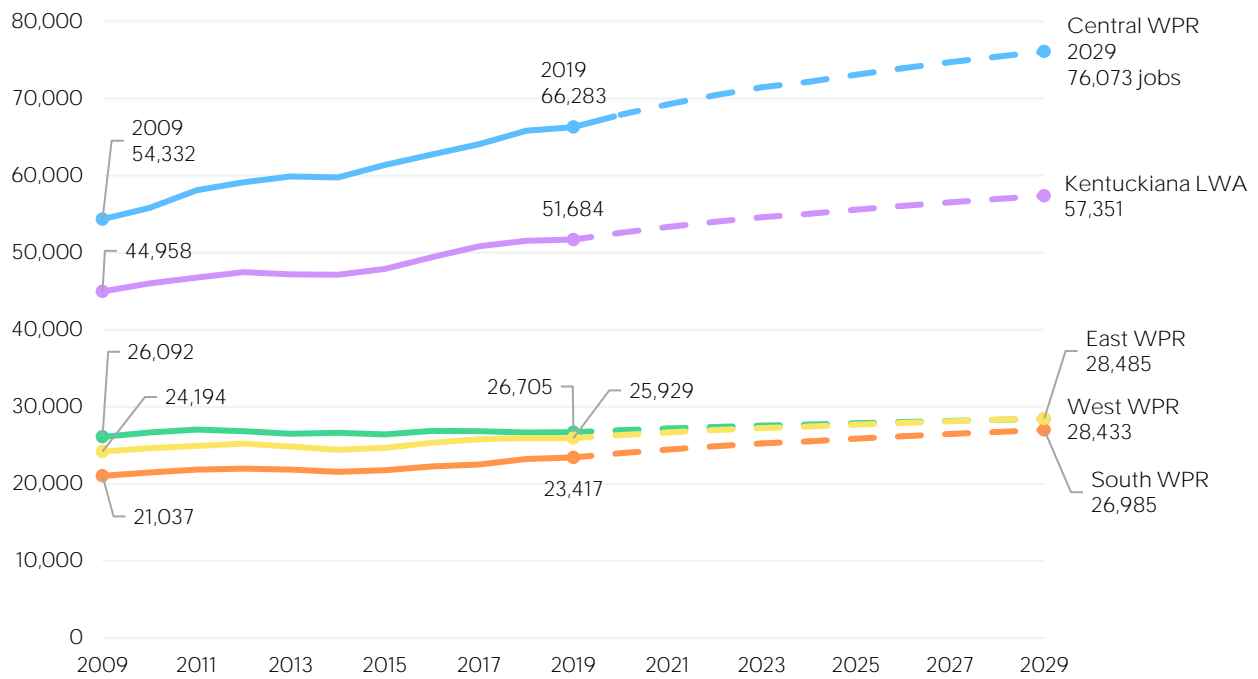
Source: Emsi Employees & Self-Employed 2020.1.

Figure 2.3: Percent Job Change for Healthcare Workers in Kentucky from 2009 to 2029



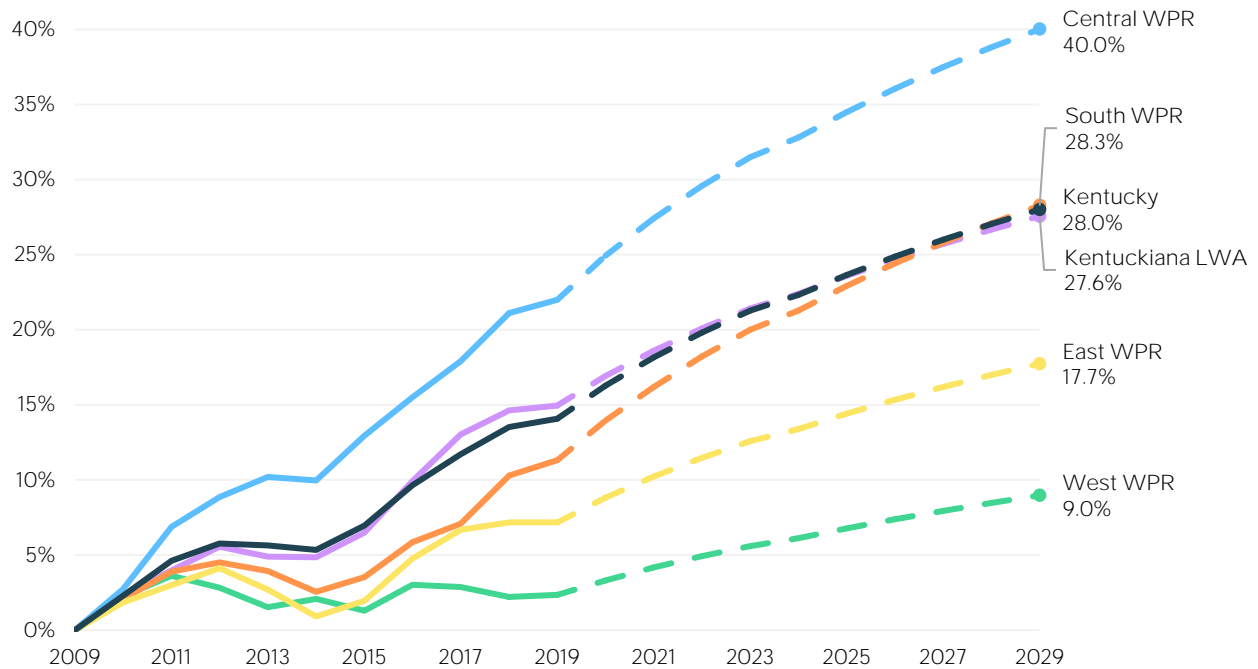
Source: Emsi Employees & Self-Employed 2020.1.

Figure 2.4: Historical and Projected Jobs for Healthcare in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2020.1.

Figure 2.5: Percent Job Change for Healthcare in Kentucky, Kentucky's WPRs, and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2020.1.

The occupations identified as healthcare workers appear in Table 2.1. Kentucky supported the most jobs for registered nurses (46,240 jobs in 2019), followed by nursing assistants (24,400 jobs in 2019), licensed practical & licensed vocational nurses (10,120 jobs in 2019), and medical assistants (9,390 jobs in 2019). These four occupations, alone, accounted for about half of all healthcare workers in the state. See Appendix 3 for the complete list of healthcare occupations. Additional information for the state's largest healthcare occupations, highlighted in the table, are shown in Figure 2.6, and a regional breakdown for a selection of the healthcare occupations are shown in Figure 2.7. Regional occupational data follows and are presented in Tables 2.2 to 2.6 and Figures 2.8 to 2.12.

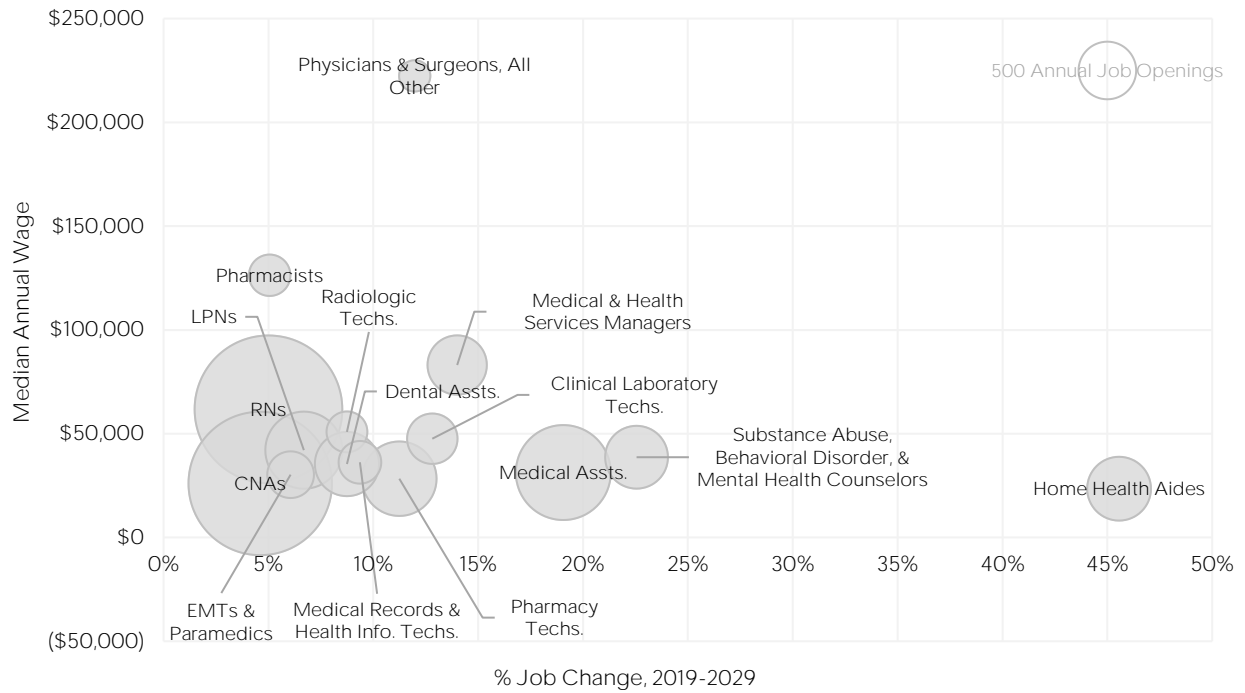
Table 2.1: Jobs, Annual Job Openings, and Median Hourly Wages of Healthcare Occupations in Kentucky, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	46,239	51,174	4,935	10.7%	3,148	\$29.69
31-1014	Nursing Assistants	24,395	25,519	1,124	4.6%	2,973	\$12.52
29-2061	Licensed Practical & Licensed Vocational Nurses	10,123	10,800	677	6.7%	879	\$20.23
31-9092	Medical Assistants	9,387	11,176	1,789	19.1%	1,320	\$15.04
29-2052	Pharmacy Technicians	8,346	9,284	938	11.2%	821	\$13.61
11-9111	Medical & Health Services Managers	5,265	6,002	737	14.0%	527	\$39.95
29-1051	Pharmacists	4,923	5,172	249	5.1%	264	\$60.74
31-9091	Dental Assistants	4,804	5,224	420	8.7%	616	\$17.02
29-2018	Clinical Laboratory Technologists & Technicians	4,293	4,843	550	12.8%	386	\$22.88
29-2041	Emergency Medical Technicians & Paramedics	4,260	4,518	258	6.1%	333	\$14.55
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	4,257	5,217	960	22.6%	590	\$18.59
29-2034	Radiologic Technologists	3,798	4,130	332	8.7%	258	\$24.46
29-2071	Medical Records & Health Information Technicians	3,600	3,937	337	9.4%	280	\$17.42
29-1069	Physicians & Surgeons, All Other	3,466	3,881	415	12.0%	155	\$106.93
31-1011	Home Health Aides	3,310	4,818	1,508	45.6%	608	\$11.31
29-1171	Nurse Practitioners	3,188	3,926	738	23.1%	264	\$46.22
29-1123	Physical Therapists	2,591	3,048	457	17.6%	168	\$40.72
29-1126	Respiratory Therapists	2,477	2,933	456	18.4%	192	\$23.79
31-9097	Phlebotomists	2,245	2,670	425	18.9%	305	\$14.50
29-2021	Dental Hygienists	2,197	2,456	259	11.8%	186	\$28.54

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1127	Speech-Language Pathologists	2,094	2,514	420	20.1%	165	\$32.29
31-9096	Veterinary Assistants & Laboratory Animal Caretakers	2,028	2,373	345	17.0%	393	\$11.93
29-2055	Surgical Technologists	1,768	1,922	154	8.7%	170	\$21.01
21-1022	Healthcare Social Workers	1,741	2,043	302	17.3%	217	\$24.72
29-2099	Health Technologists & Technicians, All Other	1,708	1,977	269	15.7%	153	\$21.90
All Other Healthcare Occupations		32,816	37,613	4,801	14.6%	3,012	--
Total		195,317	219,170	23,853	12.2%	18,384	--

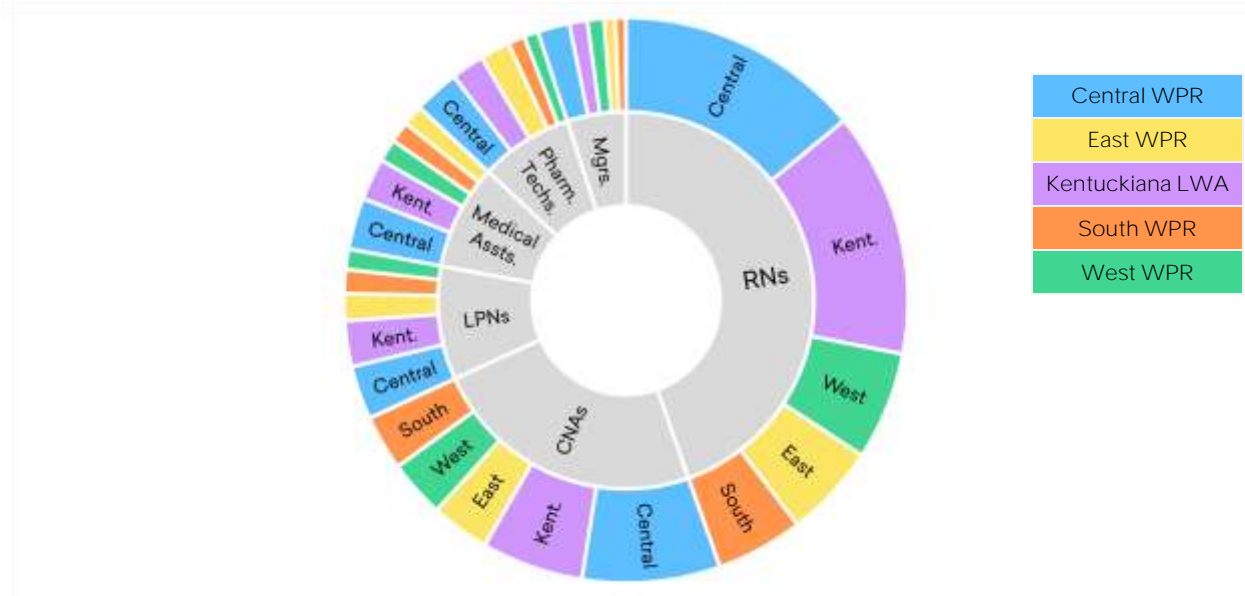
Numbers may not sum due to rounding. Highlighted occupations are shown in more detail in the following figure.
Source: Employees & Self-Employed 2020.2.

Figure 2.6: Job Change and Median Annual Wages of Healthcare Occupations* in Kentucky with Projected Average Annual Job Openings, 2019 to 2029



* Healthcare occupations include the 15 largest occupations, by 2019 jobs. Annual wages consider 2,080 working hours in a year. Source: Employees & Self-Employed 2020.2.

Figure 2.7: Breakdown of 2019 Jobs for a Selection of Kentucky's Healthcare Occupations by the WPRs and the Kentuckiana LWA



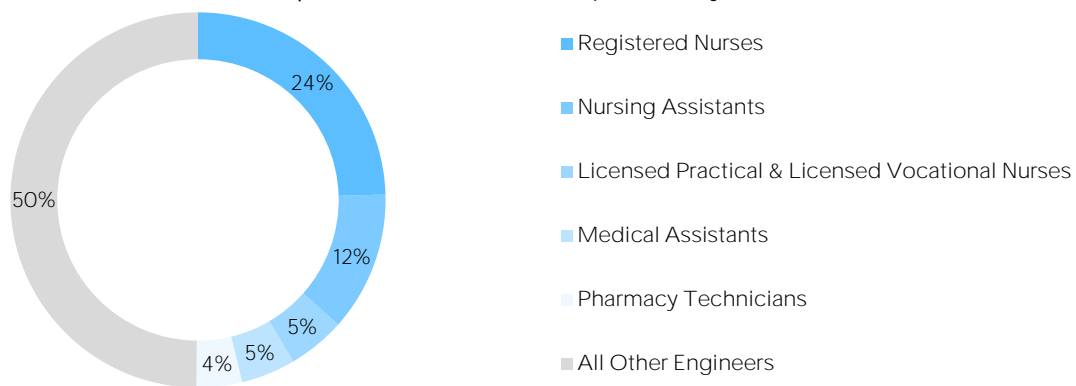
Source: Employees & Self-Employed 2020.2.



Table 2.2: Jobs, Annual Job Openings, and Median Annual Wages of Healthcare Occupations in the Central WPR, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN ANNUAL WAGE
29-1141	Registered Nurses	28,949	32,417	3,468	12.0%	1,986	\$30.81
31-1014	Nursing Assistants	14,171	15,193	1,022	7.2%	1,763	\$13.27
29-2061	Licensed Practical & Licensed Vocational Nurses	5,850	6,271	421	7.2%	506	\$21.30
31-9092	Medical Assistants	5,527	6,535	1,008	18.2%	768	\$15.80
29-2052	Pharmacy Technicians	4,643	5,223	580	12.5%	462	\$14.09
31-9091	Dental Assistants	3,040	3,363	323	10.6%	395	\$17.72
29-1051	Pharmacists	2,981	3,184	203	6.8%	162	\$59.99
11-9111	Medical & Health Services Managers	2,942	3,424	482	16.4%	302	\$41.79
29-2018	Clinical Laboratory Technologists & Technicians	2,923	3,325	402	13.8%	265	\$24.60
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	2,430	2,903	473	19.5%	322	\$18.94
29-2071	Medical Records & Health Information Technicians	2,403	2,630	227	9.4%	185	\$18.19
29-2034	Radiologic Technologists	2,224	2,442	218	9.8%	152	\$25.75
29-1069	Physicians & Surgeons, All Other	2,061	2,319	258	12.5%	91	\$91.49
29-2041	Emergency Medical Technicians & Paramedics	2,024	2,132	108	5.3%	153	\$15.07
31-1011	Home Health Aides	1,882	2,689	807	42.9%	338	\$11.96
All Other Healthcare Occupations		33,918	39,375	5,451	16.1%	3,250	--
Total		117,967	133,424	15,451	13.1%	11,098	--

Figure 2.8: The Central WPR's Top Five Healthcare Occupations by 2019 Jobs



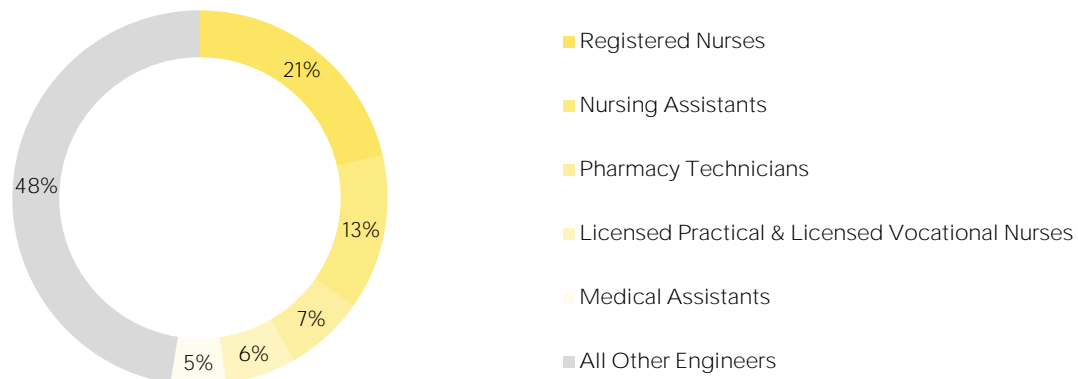
Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.



Table 2.3: Jobs, Annual Job Openings, and Median Annual Wages of Healthcare Occupations in the East WPR, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN ANNUAL WAGE
29-1141	Registered Nurses	5,536	6,003	467	8.4%	370	\$27.45
31-1014	Nursing Assistants	3,474	3,596	122	3.5%	420	\$11.46
29-2052	Pharmacy Technicians	1,779	1,901	122	6.9%	167	\$13.08
29-2061	Licensed Practical & Licensed Vocational Nurses	1,595	1,682	87	5.5%	138	\$17.83
31-9092	Medical Assistants	1,232	1,437	205	16.6%	169	\$13.58
29-2041	Emergency Medical Technicians & Paramedics	779	818	39	5.0%	65	\$13.90
29-1051	Pharmacists	726	742	16	2.2%	37	\$62.73
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	714	954	240	33.6%	111	\$15.74
11-9111	Medical & Health Services Managers	669	779	110	16.4%	69	\$35.66
31-1011	Home Health Aides	586	747	161	27.5%	91	\$11.36
29-2034	Radiologic Technologists	516	552	36	7.0%	35	\$23.57
29-1171	Nurse Practitioners	502	619	117	23.3%	42	\$43.43
29-2071	Medical Records & Health Information Technicians	496	534	38	7.7%	38	\$15.83
29-1069	Physicians & Surgeons, All Other	442	469	27	6.1%	18	\$119.54
31-9091	Dental Assistants	429	406	(23)	(5.4%)	50	\$14.87
All Other Healthcare Occupations		6,455	7,249	794	12.3%	597	--
Total		25,929	28,485	2,558	9.9%	2,415	--

Figure 2.9: The East WPR's Top Five Healthcare Occupations by 2019 Jobs



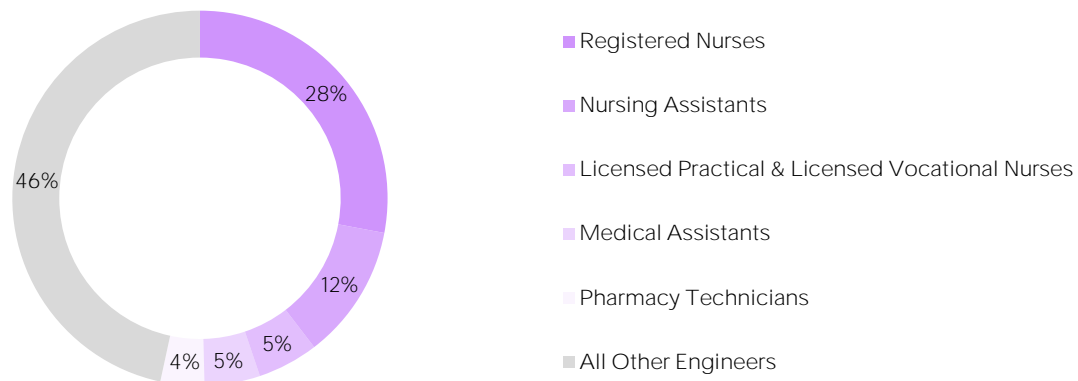
Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.



Table 2.4: Jobs, Annual Job Openings, and Median Annual Wages of Healthcare Occupations in the Kentuckiana LWA, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN ANNUAL WAGE
29-1141	Registered Nurses	14,451	15,891	1,440	10.0%	950	\$31.47
31-1014	Nursing Assistants	6,007	6,209	202	3.4%	707	\$13.17
29-2061	Licensed Practical & Licensed Vocational Nurses	2,706	2,807	101	3.7%	220	\$20.88
31-9092	Medical Assistants	2,478	2,869	391	15.8%	333	\$17.22
29-2052	Pharmacy Technicians	1,957	2,300	343	17.5%	208	\$13.79
29-1051	Pharmacists	1,412	1,549	137	9.7%	81	\$64.16
31-9091	Dental Assistants	1,263	1,379	116	9.2%	160	\$18.98
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	1,245	1,443	198	15.9%	158	\$19.52
29-2071	Medical Records & Health Information Technicians	1,122	1,217	95	8.5%	85	\$17.29
11-9111	Medical & Health Services Managers	1,048	1,222	174	16.6%	107	\$39.35
29-2034	Radiologic Technologists	932	1,021	89	9.5%	63	\$24.78
29-2041	Emergency Medical Technicians & Paramedics	893	970	77	8.6%	69	\$14.33
29-2099	Health Technologists & Technicians, All Other	747	817	70	9.4%	60	\$21.31
29-1126	Respiratory Therapists	713	849	136	19.1%	55	\$24.34
29-1123	Physical Therapists	689	723	34	4.9%	34	\$38.58
All Other Healthcare Occupations		14,020	16,085	2,066	14.7%	1,330	--
Total		51,684	57,351	5,669	11.0%	4,620	--

Figure 2.10: The Kentuckiana LWA's Top Five Healthcare Occupations by 2019 Jobs



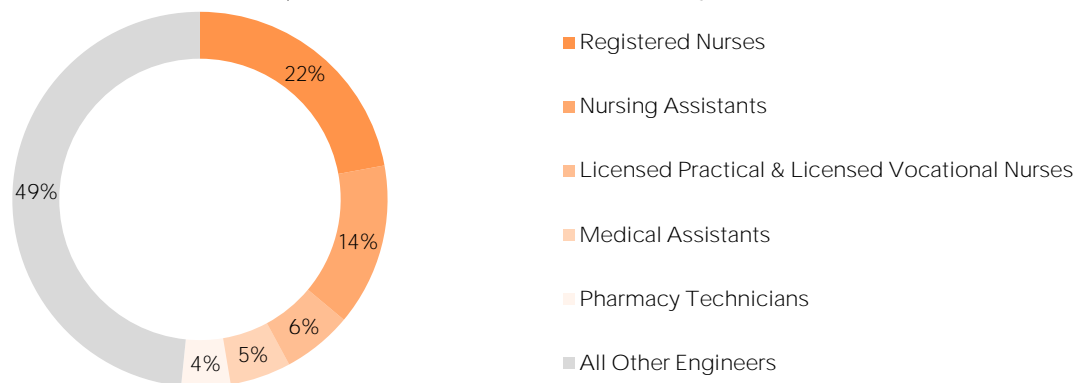
Numbers may not sum due to rounding.
 Source: Employees & Self-Employed 2020.2.



Table 2.5: Jobs, Annual Job Openings, and Median Annual Wages of Healthcare Occupations in the South WPR, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN ANNUAL WAGE
29-1141	Registered Nurses	5,176	5,840	664	12.8%	367	\$28.22
31-1014	Nursing Assistants	3,274	3,405	131	4.0%	397	\$11.41
29-2061	Licensed Practical & Licensed Vocational Nurses	1,411	1,528	117	8.3%	127	\$18.87
31-9092	Medical Assistants	1,233	1,536	303	24.6%	185	\$14.17
29-2052	Pharmacy Technicians	991	1,174	183	18.5%	108	\$13.57
29-2041	Emergency Medical Technicians & Paramedics	763	831	68	8.9%	61	\$14.97
31-9091	Dental Assistants	669	761	92	13.8%	91	\$16.90
11-9111	Medical & Health Services Managers	632	737	105	16.6%	65	\$42.07
29-1051	Pharmacists	572	632	60	10.5%	34	\$61.68
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	523	638	115	22.0%	73	\$18.13
29-2034	Radiologic Technologists	495	536	41	8.3%	33	\$24.14
31-1011	Home Health Aides	455	743	288	63.3%	96	\$11.89
29-2018	Clinical Laboratory Technologists & Technicians	408	444	36	8.8%	35	\$22.71
29-1171	Nurse Practitioners	377	484	107	28.4%	34	\$45.75
29-1126	Respiratory Therapists	359	431	72	20.1%	29	\$22.22
All Other Healthcare Occupations		6,079	7,266	1,191	19.6%	596	--
Total		23,417	26,985	3,573	15.3%	2,329	--

Figure 2.11: The South WPR's Top Five Healthcare Occupations by 2019 Jobs



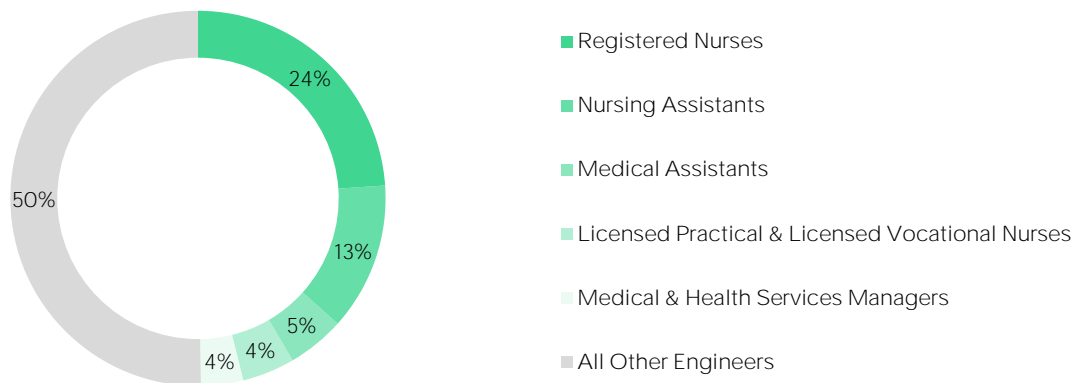
Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.

Table 2.6: Jobs, Annual Job Openings, and Median Annual Wages of Healthcare Occupations in the West WPR, 2019 to 2029



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN ANNUAL WAGE
29-1141	Registered Nurses	6,382	6,653	271	4.2%	407	\$28.51
31-1014	Nursing Assistants	3,400	3,250	(150)	(4.4%)	385	\$11.72
31-9092	Medical Assistants	1,321	1,562	241	18.2%	185	\$13.45
29-2061	Licensed Practical & Licensed Vocational Nurses	1,207	1,244	37	3.1%	102	\$19.24
11-9111	Medical & Health Services Managers	975	998	23	2.4%	86	\$37.08
29-2052	Pharmacy Technicians	851	878	27	3.2%	75	\$14.53
29-2041	Emergency Medical Technicians & Paramedics	679	715	36	5.3%	53	\$12.08
31-9091	Dental Assistants	647	671	24	3.7%	79	\$15.79
29-1069	Physicians & Surgeons, All Other	639	680	41	6.4%	27	\$108.86
29-1051	Pharmacists	600	555	(45)	(7.5%)	27	\$58.94
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	571	690	119	20.8%	79	\$19.68
29-2034	Radiologic Technologists	549	584	35	6.4%	37	\$24.43
29-2018	Clinical Laboratory Technologists & Technicians	513	568	55	10.7%	45	\$24.13
29-1171	Nurse Practitioners	506	612	106	20.9%	41	\$46.93
29-2071	Medical Records & Health Information Technicians	361	371	10	2.8%	27	\$17.86
All Other Healthcare Occupations		7,504	8,404	900	12.0%	710	--
Total		26,705	28,433	1,730	6.5%	2,363	--

Figure 2.12: The West WPR's Top Five Healthcare Occupations by 2019 Jobs



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.

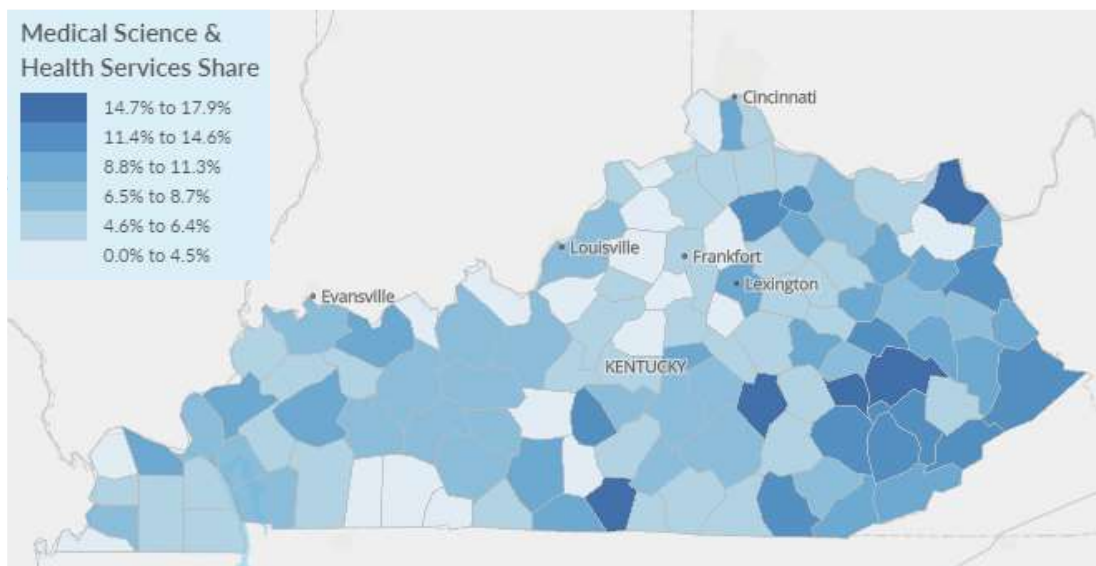
OCCUPATIONAL DIVERSITY

Evaluating employment by how the state supports jobs in occupational groups provides information on its economic diversity. Understanding the mix of jobs present in Kentucky is also important for drawing connections to the industries and companies that are in-demand and, by extension, the educational programs offered by the state's institutions. Grouping occupations according to function can help to:

- Broadly characterize the economic roles an occupation plays in its region;
- Provide insight into the economic relationships and similarities a place has with other regions;
- Identify factors that make regions comparatively better fits for certain economic activities; and
- Speak to the broader economic and demographic forces that are likely to impact a region's economic prospects.

Kentucky had an occupational diversity ranking of 25 in 2019, which was in the 53rd percentile among U.S. states and the District of Columbia (Table 2.7). When occupations are organized into functional groups, the state supported 156,820 jobs in the Medical Science & Health Services Occupation Cluster, which accounted for 7.4% of all jobs in Kentucky in 2019. A typical region in the U.S. supported 6.6% such jobs in 2019. At the county level, no one region

Figure 2.13: Share of Medical Science & Health Services Jobs by County in Kentucky



Source: Employees & Self-Employed 2020.2.

in the state has a large concentration of jobs in the occupation cluster, but the East WPR appears to have more jobs in the occupation cluster (Figure 2.13). Owsley County ranked highest, in terms of its share of jobs in the Medical Science & Health Services Occupation Cluster, with 17.9% of its 2019 jobs in the occupation cluster (Table 2.7). Hancock County ranked lowest in the state, with 2.0% of its 2019 jobs in the occupation cluster (Table 2.8). Figure 2.14 shows the Kentucky counties with the five highest and lowest shares of 2019 jobs in the cluster, highlighting the region in which the county is located.

Table 2.7: Job Shares in the Medical Science & Health Services Occupation Cluster for the 10 Highest Ranked Counties in Kentucky

COUNTY	2019 JOBS IN OCC. CLUSTER	% JOBS IN OCC. CLUSTER	TYPICAL % JOBS IN OCC. CLUSTER	DIVERSITY RANK, ALL OCCS.	DIVERSITY RANK PERCENTILE, ALL OCCS.
Owsley County	163	17.9%	6.6%	1,132 / 3,142	64.0%
Cumberland County	449	17.4%	6.6%	1,058 / 3,142	66.3%
Breathitt County	686	15.4%	6.6%	1,049 / 3,142	66.6%
Rockcastle County	806	15.0%	6.6%	179 / 3,142	94.3%
Greenup County	1,526	14.7%	6.6%	669 / 3,142	78.7%
Perry County	2,236	14.0%	6.6%	863 / 3,142	72.6%
Green County	364	13.8%	6.6%	2,819 / 3,142	10.3%
Pike County	3,650	13.5%	6.6%	407 / 3,142	87.1%
Leslie County	314	13.4%	6.6%	184 / 3,142	94.2%
Lawrence County	685	13.2%	6.6%	748 / 3,142	76.2%
Kentucky	195,317	7.4%	6.6%	25 / 51	52.9%

Source: Employees & Self-Employed 2020.2.

Table 2.8: Job Shares in the Medical Science & Health Services Occupation Cluster for the 10 Lowest Ranked Counties in Kentucky

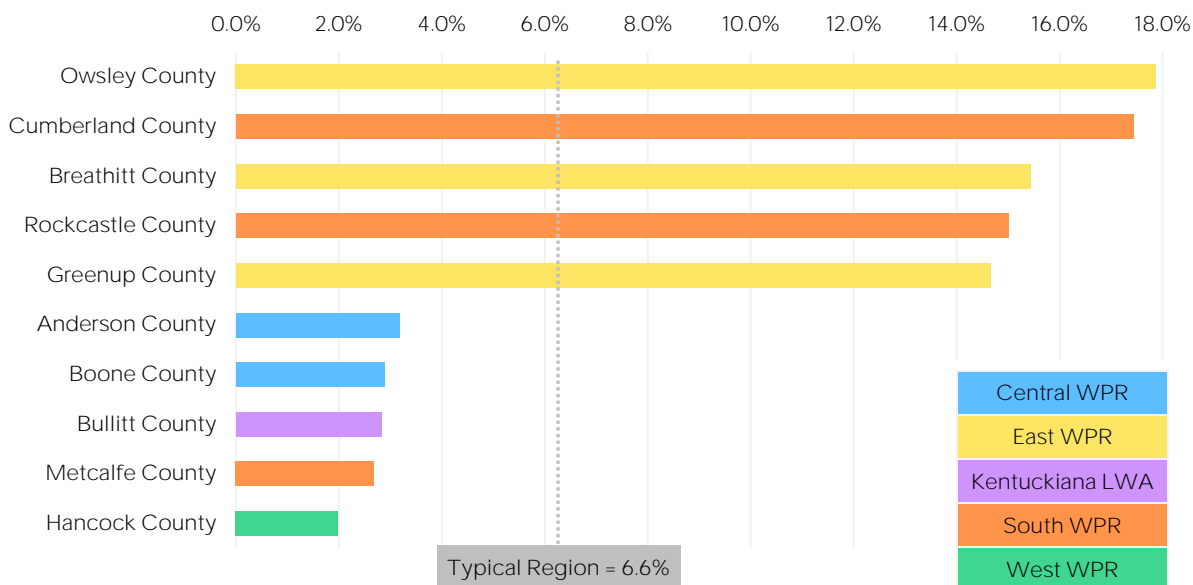
COUNTY	2019 JOBS IN OCC. CLUSTER	% JOBS IN OCC. CLUSTER	TYPICAL % JOBS IN OCC. CLUSTER	DIVERSITY RANK, ALL OCCS.	DIVERSITY RANK PERCENTILE, ALL OCCS.
Hancock County	134	2.0%	6.6%	3,088 / 3,142	1.7%
Metcalfe County	88	2.7%	6.6%	2,913 / 3,142	7.3%
Bullitt County	1,001	2.8%	6.6%	2,868 / 3,142	8.7%
Boone County	3,908	2.9%	6.6%	2,385 / 3,142	24.1%
Anderson County	254	3.2%	6.6%	2,595 / 3,142	17.4%
Simpson County	387	3.2%	6.6%	2,782 / 3,142	11.5%
Carter County	312	3.2%	6.6%	2,652 / 3,142	15.6%
Carroll County	317	3.4%	6.6%	1,287 / 3,142	59.1%



COUNTY	2019 JOBS IN OCC. CLUSTER	% JOBS IN OCC. CLUSTER	TYPICAL % JOBS IN OCC. CLUSTER	DIVERSITY RANK, ALL OCCS.	DIVERSITY RANK PERCENTILE, ALL OCCS.
Meade County	228	3.5%	6.6%	2,202 / 3,142	29.9%
Fulton County	107	3.6%	6.6%	2,727 / 3,142	13.2%
Kentucky	195,317	7.4%	6.6%	25 / 51	52.9%

Source: Employees & Self-Employed 2020.2.

Figure 2.14: Job Shares in the Medical Science & Health Services Occupation Cluster for the Five Highest and Lowest Ranked Counties in Kentucky



Source: Employees & Self-Employed 2020.2.

TOP INDUSTRIES

With healthcare occupations in mind, we can now turn to healthcare industries. The healthcare occupations appear in a variety of industries. In other words, while there is a General Medical & Surgical Hospitals industry, medical doctors, nurses, and clinical practitioners also work in drug stores, pharmacies, and government-owned agencies. To identify the top industries employing the healthcare occupations in Kentucky, we use inverse staffing patterns from the National Occupational Employment Statistics program, projections from the National Industry-Occupation Employment Matrix, and Emsi's proprietary employment data. Results are provided according to the North American Industry Classification System (NAICS) at the five-digit NAICS code level. In Emsi data, all establishments in the main NAICS hierarchy are private sector only. For example, jobs in

General Medical & Surgical Hospitals or Offices of Physicians are not associated with the local, state, or federal governments.

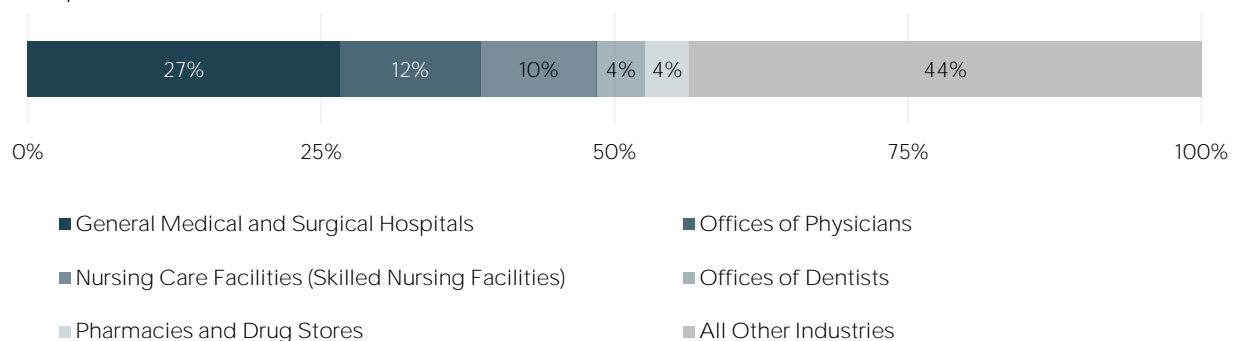
As shown in Table 2.9, the General Medical & Surgical Hospitals industry employed 52,160 of the healthcare workers in 2019, or 27% of all healthcare jobs. Healthcare workers were also employed in Offices of Physicians and Nursing Care Facilities, with 12% and 10% of all 2019 healthcare jobs, respectively. Tables 2.10 and 2.11 provide a breakdown of healthcare workers within General Medical & Surgical Hospitals and Offices of Physicians, given that the two industries employ a diverse population of healthcare and non-healthcare workers. In the former, registered nurses alone accounted for one-third of industry jobs, and in the latter, medical assistants and receptionists & information clerks accounted for one-quarter of industry jobs. Not shown are the data for Nursing Care Facilities in Kentucky, an industry predominantly comprised of nursing assistants (40% of total industry jobs), licensed practical & licensed vocational nurses (13% of total industry jobs), and registered nurses (10% of total industry jobs).

Regional data are shown in Tables 2.12 to 2.26 and Figures 2.16 to 2.20. General Medical & Surgical Hospitals, Nursing Care Facilities, and Offices of Physicians are the top three industries employing healthcare workers in all five regions, except for the Central WPR in which Hospitals (State Government) are the third largest employer and Nursing Care Facilities are the fourth largest. As for the occupations in the General Medical & Surgical Hospitals industry, registered nurses and nursing assistants are most represented. In addition, medical assistants are the most represented occupation in the Offices of Physicians industry. These results reiterate the need for bachelor's degree level nursing programs and sub-degree level programs for medical and nursing assistants at Kentucky's educational institutions.

Table 2.9: Industries in Kentucky that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	52,159	56,030	3,871	7.4%	26.6%	73.3%
62111	Offices of Physicians	23,647	27,006	3,359	14.2%	12.1%	61.9%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	19,177	18,328	(849)	(4.4%)	9.8%	70.0%
62121	Offices of Dentists	8,033	8,778	745	9.3%	4.1%	70.4%
44611	Pharmacies & Drug Stores	7,262	7,933	671	9.2%	3.7%	56.4%
62161	Home Health Care Services	6,088	7,790	1,702	28.0%	3.1%	60.0%
90262	Hospitals (State Government)	5,808	7,125	1,317	22.7%	3.0%	61.7%
62149	Other Outpatient Care Centers	5,077	7,079	2,002	39.4%	2.6%	72.4%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	4,331	5,401	1,070	24.7%	2.2%	72.5%
90119	Federal Government, Civilian, Excluding Postal Service	4,259	3,674	(585)	(13.7%)	2.2%	15.2%
54194	Veterinary Services	4,016	4,837	821	20.4%	2.1%	66.8%
90362	Hospitals (Local Government)	3,723	4,043	320	8.6%	1.9%	71.8%
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	3,643	4,858	1,215	33.4%	1.9%	76.7%
90399	Local Government, Excluding Education & Hospitals	3,095	3,226	131	4.2%	1.6%	4.9%
62142	Outpatient Mental Health & Substance Abuse Centers	2,826	3,594	768	27.2%	1.4%	52.4%
All Other Industries		42,689	49,851	7,162	16.8%	21.8%	--
Total		195,834	219,551	23,717	12.1%	100.0%	--

Figure 2.15: Top Five Industries in Kentucky that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.

Table 2.10: Ten Most Represented Occupations in General Medical and Surgical Hospitals in Kentucky

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	23,287	2,064	32.7%	\$29.69	BACH
31-1014	Nursing Assistants	5,414	264	7.6%	\$12.52	CERT
29-2034	Radiologic Technologists	2,022	96	2.8%	\$24.46	ASSOC
29-2018	Clinical Laboratory Technologists & Technicians	1,923	147	2.7%	\$22.88	BACH
29-1126	Respiratory Therapists	1,671	254	2.3%	\$23.79	ASSOC
11-9111	Medical & Health Services Managers	1,409	60	2.0%	\$39.95	BACH
37-2012	Maids & Housekeeping Cleaners	1,343	55	1.9%	\$9.87	None
43-6013	Medical Secretaries	1,198	133	1.7%	\$15.31	HS/GED
43-4111	Interviewers, Except Eligibility & Loan	1,134	11	1.6%	\$14.72	HS/GED
29-2055	Surgical Technologists	1,126	47	1.6%	\$21.01	CERT

Table 2.11: Ten Most Represented Occupations in Offices of Physicians in Kentucky

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	5,561	1,096	14.6%	\$15.04	CERT
43-4171	Receptionists & Information Clerks	4,215	433	11.0%	\$12.89	HS/GED
29-1141	Registered Nurses	3,212	349	8.4%	\$29.69	BACH
43-6013	Medical Secretaries	1,823	289	4.8%	\$15.31	HS/GED
43-3021	Billing & Posting Clerks	1,776	173	4.7%	\$16.26	HS/GED
29-1069	Physicians & Surgeons, All Other	1,710	224	4.5%	\$106.93	PHD
29-1171	Nurse Practitioners	1,575	363	4.1%	\$46.22	MAST
29-2061	Licensed Practical & Licensed Vocational Nurses	1,385	154	3.6%	\$20.23	CERT
43-1011	First-Line Supervisors of Office & Administrative Support Workers	1,199	83	3.1%	\$22.31	HS/GED
29-1062	Family & General Practitioners	990	96	2.6%	\$96.00	PHD

Numbers may not sum due to rounding.

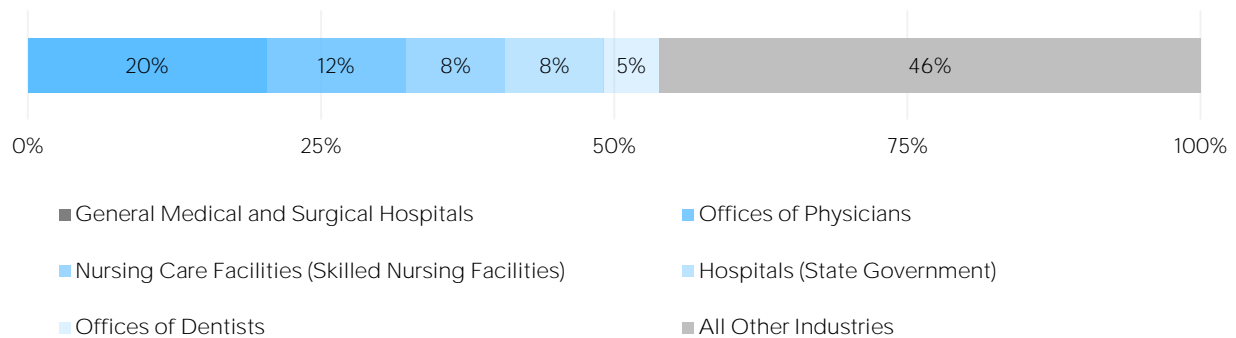
Source: Employees & Self-Employed 2020.2.



Table 2.12: Industries in the Central WPR that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	13,565	14,616	1,051	7.7%	20.4%	74.0%
62111	Offices of Physicians	7,845	8,742	897	11.4%	11.8%	63.0%
90262	Hospitals (State Government)	5,584	6,843	1,259	22.5%	8.4%	62.4%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	5,581	5,770	189	3.4%	8.4%	70.6%
62121	Offices of Dentists	3,112	3,463	351	11.3%	4.7%	70.3%
62161	Home Health Care Services	2,203	3,010	807	36.6%	3.3%	62.9%
90362	Hospitals (Local Government)	2,056	2,342	286	13.9%	3.1%	69.9%
44611	Pharmacies & Drug Stores	2,030	2,128	98	4.8%	3.1%	59.6%
90119	Federal Government, Civilian, Excluding Postal Service	1,902	1,701	(201)	(10.6%)	2.9%	13.1%
54194	Veterinary Services	1,776	2,104	328	18.5%	2.7%	64.2%
90261	Education (State Government)	1,435	1,322	(113)	(7.9%)	2.2%	5.7%
62149	Other Outpatient Care Centers	1,390	2,174	784	56.4%	2.1%	74.5%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	1,372	2,006	634	46.2%	2.1%	72.9%
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	1,349	1,802	453	33.6%	2.0%	79.1%
90299	State Government, Excluding Education & Hospitals	1,322	1,371	49	3.7%	2.0%	7.6%
All Other Industries		13,865	16,598	2,732	19.7%	20.9%	--
Total		66,283	76,073	9,790	14.8%	100.0%	--

Figure 2.16: Top Five Industries in the Central WPR that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.



Table 2.13: Ten Most Represented Occupations in General Medical and Surgical Hospitals in the Central WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	5,439	546	29.7%	\$30.15	BACH
31-1014	Nursing Assistants	1,408	71	7.7%	\$13.36	CERT
29-2018	Clinical Laboratory Technologists & Technicians	884	49	4.8%	\$24.62	BACH
29-2034	Radiologic Technologists	536	25	2.9%	\$26.48	ASSOC
11-9111	Medical & Health Services Managers	416	19	2.3%	\$42.99	BACH
29-1126	Respiratory Therapists	402	62	2.2%	\$23.84	ASSOC
43-4111	Interviewers, Except Eligibility & Loan	298	2	1.6%	\$14.87	HS/GED
29-2031	Cardiovascular Technologists & Technicians	277	16	1.5%	\$25.75	ASSOC
29-2052	Pharmacy Technicians	276	11	1.5%	\$14.32	HS/GED
37-2012	Maids & Housekeeping Cleaners	263	13	1.4%	\$9.90	None

Table 2.14: Ten Most Represented Occupations in Offices of Physicians in the Central WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	1,739	284	14.0%	\$14.60	CERT
43-4171	Receptionists & Information Clerks	1,263	99	10.1%	\$12.20	HS/GED
29-1141	Registered Nurses	1,034	93	8.3%	\$30.15	BACH
29-1069	Physicians & Surgeons, All Other	663	61	5.3%	\$102.29	PHD
43-3021	Billing & Posting Clerks	549	44	4.4%	\$17.07	HS/GED
29-1171	Nurse Practitioners	546	110	4.4%	\$45.48	MAST
43-6013	Medical Secretaries	514	64	4.1%	\$14.73	HS/GED
29-2061	Licensed Practical & Licensed Vocational Nurses	415	34	3.3%	\$21.71	CERT
43-1011	First-Line Supervisors of Office & Administrative Support Workers	411	17	3.3%	\$22.22	HS/GED
29-1062	Family & General Practitioners	328	22	2.6%	\$85.15	PHD

Numbers may not sum due to rounding.

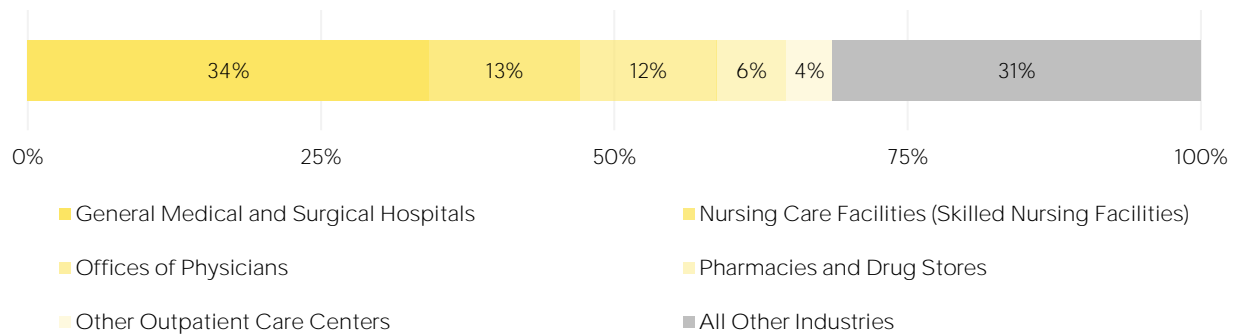
Source: Employees & Self-Employed 2020.2.



Table 2.15: Industries in the East WPR that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	8,855	9,282	427	4.8%	34.1%	71.2%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	3,366	3,421	55	1.6%	13.0%	69.1%
62111	Offices of Physicians	3,017	3,244	227	7.5%	11.6%	61.4%
44611	Pharmacies & Drug Stores	1,532	1,668	136	8.9%	5.9%	64.0%
62149	Other Outpatient Care Centers	1,058	1,643	585	55.3%	4.1%	69.9%
62142	Outpatient Mental Health & Substance Abuse Centers	1,005	1,399	394	39.2%	3.9%	51.8%
62161	Home Health Care Services	754	824	70	9.3%	2.9%	63.4%
62121	Offices of Dentists	655	620	(35)	(5.3%)	2.5%	63.0%
62191	Ambulance Services	561	567	6	1.1%	2.2%	82.4%
62412	Services for the Elderly & Persons with Disabilities	448	660	212	47.3%	1.7%	16.3%
90361	Education (Local Government)	441	436	(5)	(1.1%)	1.7%	2.5%
90399	Local Government, Excluding Education & Hospitals	428	434	6	1.4%	1.6%	5.1%
90299	State Government, Excluding Education & Hospitals	415	424	9	2.2%	1.6%	7.3%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	403	516	113	28.0%	1.5%	72.9%
90119	Federal Government, Civilian, Excluding Postal Service	291	242	(49)	(16.8%)	1.1%	16.6%
All Other Industries		2,761	3,192	432	15.6%	10.6%	--
Total		25,929	28,485	2,557	9.9%	100.0%	--

Figure 2.17: Top Five Industries in the East WPR that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.



Table 2.16: Ten Most Represented Occupations in General Medical and Surgical Hospitals in the East WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	3,721	208	29.9%	\$27.45	BACH
31-1014	Nursing Assistants	986	27	7.9%	\$11.46	CERT
37-2012	Maids & Housekeeping Cleaners	391	10	3.1%	\$9.98	None
29-2034	Radiologic Technologists	352	13	2.8%	\$23.57	ASSOC
29-1126	Respiratory Therapists	312	35	2.5%	\$21.84	ASSOC
29-2052	Pharmacy Technicians	296	0	2.4%	\$13.08	HS/GED
43-6013	Medical Secretaries	276	25	2.2%	\$13.39	HS/GED
29-2018	Clinical Laboratory Technologists & Technicians	259	28	2.1%	\$21.84	BACH
11-9111	Medical & Health Services Managers	257	16	2.1%	\$35.66	BACH
29-2061	Licensed Practical & Licensed Vocational Nurses	221	(9)	1.8%	\$17.83	CERT

Table 2.17: Ten Most Represented Occupations in Offices of Physicians in the East WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	727	90	14.8%	\$13.58	CERT
43-4171	Receptionists & Information Clerks	468	30	9.5%	\$11.40	HS/GED
29-1141	Registered Nurses	344	14	7.0%	\$27.45	BACH
43-3021	Billing & Posting Clerks	329	7	6.7%	\$14.83	HS/GED
43-6013	Medical Secretaries	266	22	5.4%	\$13.39	HS/GED
29-1069	Physicians & Surgeons, All Other	224	6	4.6%	\$119.54	PHD
29-1171	Nurse Practitioners	222	40	4.5%	\$43.43	MAST
29-2061	Licensed Practical & Licensed Vocational Nurses	199	10	4.1%	\$17.83	CERT
43-1011	First-Line Supervisors of Office & Administrative Support Workers	167	0	3.4%	\$20.37	HS/GED
43-9061	Office Clerks, General	123	(7)	2.5%	\$13.15	HS/GED

Numbers may not sum due to rounding.

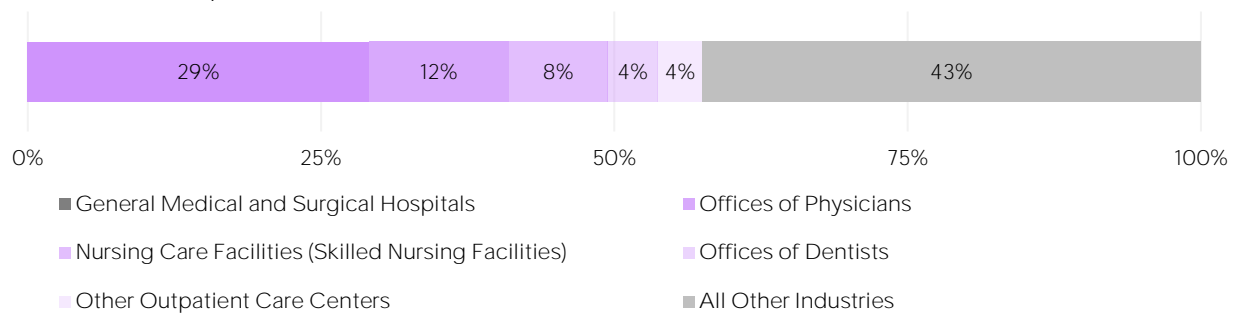
Source: Employees & Self-Employed 2020.2.



Table 2.18: Industries in the Kentuckiana LWA that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	15,125	16,649	1,524	10.1%	29.1%	74.7%
62111	Offices of Physicians	6,393	7,296	903	14.1%	12.3%	60.1%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	4,319	3,868	(451)	(10.4%)	8.3%	73.3%
62121	Offices of Dentists	2,229	2,451	222	10.0%	4.3%	69.8%
62149	Other Outpatient Care Centers	1,949	2,348	399	20.5%	3.8%	70.8%
44611	Pharmacies & Drug Stores	1,765	2,046	281	15.9%	3.4%	55.9%
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	1,685	2,127	442	26.2%	3.2%	74.4%
52411	Direct Life, Health, & Medical Insurance Carriers	1,564	1,684	120	7.7%	3.0%	11.2%
62161	Home Health Care Services	1,418	1,465	47	3.3%	2.7%	61.6%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	1,212	1,198	(14)	(1.2%)	2.3%	67.3%
54194	Veterinary Services	1,097	1,324	227	20.7%	2.1%	71.0%
56132	Temporary Help Services	953	948	(5)	(0.5%)	1.8%	5.6%
62221	Psychiatric & Substance Abuse Hospitals	829	929	100	12.1%	1.6%	50.1%
62331	Continuing Care Retirement Communities & Assisted Living Facilities for the Elderly	808	1,183	375	46.4%	1.6%	40.2%
90399	Local Government, Excluding Education & Hospitals	665	700	35	5.3%	1.3%	4.7%
All Other Industries		9,942	11,508	1,566	15.7%	19.1%	--
Total		51,684	57,351	5,667	11.0%	100.0%	--

Figure 2.18: Top Five Industries in the Kentuckiana LWA that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.



Table 2.19: Ten Most Represented Occupations in General Medical and Surgical Hospitals in the Kentuckiana LWA

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	7,710	834	38.1%	\$31.47	BACH
31-1014	Nursing Assistants	1,510	108	7.5%	\$13.17	CERT
29-2034	Radiologic Technologists	512	36	2.5%	\$24.78	ASSOC
29-1126	Respiratory Therapists	489	90	2.4%	\$24.34	ASSOC
43-6013	Medical Secretaries	423	49	2.1%	\$17.45	HS/GED
29-2055	Surgical Technologists	365	24	1.8%	\$22.40	CERT
43-4111	Interviewers, Except Eligibility & Loan	333	8	1.6%	\$15.92	HS/GED
29-2099	Health Technologists & Technicians, All Other	317	16	1.6%	\$21.31	CERT
29-2018	Clinical Laboratory Technologists & Technicians	313	36	1.5%	\$24.53	BACH
31-9092	Medical Assistants	306	50	1.5%	\$17.22	CERT

Table 2.20: Ten Most Represented Occupations in Offices of Physicians in the Kentuckiana LWA

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	1,548	308	14.6%	\$17.22	CERT
43-4171	Receptionists & Information Clerks	1,339	121	12.6%	\$13.35	HS/GED
29-1141	Registered Nurses	1,034	102	9.7%	\$31.47	BACH
43-6013	Medical Secretaries	656	97	6.2%	\$17.45	HS/GED
29-2061	Licensed Practical & Licensed Vocational Nurses	409	44	3.8%	\$20.88	CERT
29-1069	Physicians & Surgeons, All Other	383	59	3.6%	\$75.37	PHD
43-3021	Billing & Posting Clerks	370	43	3.5%	\$17.76	HS/GED
29-1171	Nurse Practitioners	327	80	3.1%	\$47.20	MAST
43-1011	First-Line Supervisors of Office & Administrative Support Workers	306	23	2.9%	\$25.49	HS/GED
43-9061	Office Clerks, General	252	7	2.4%	\$12.19	HS/GED

Numbers may not sum due to rounding.

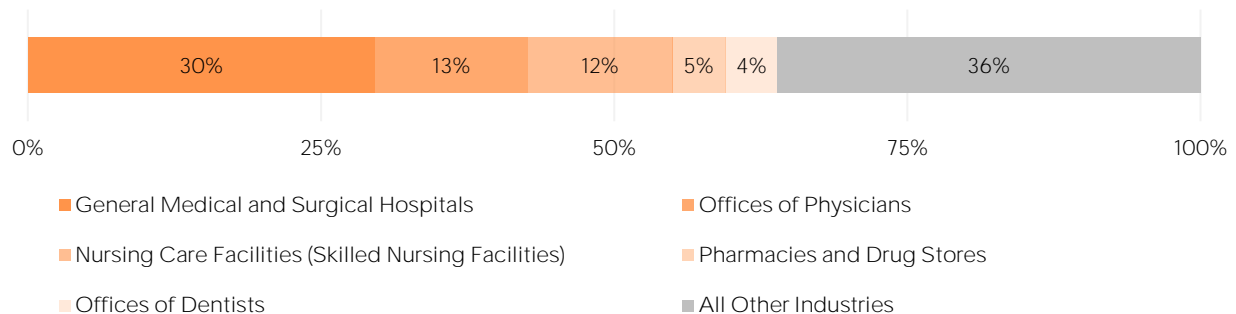
Source: Employees & Self-Employed 2020.2.



Table 2.21: Industries in the South WPR that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	6,938	7,492	554	8.0%	29.5%	73.1%
62111	Offices of Physicians	3,084	3,825	741	24.0%	13.1%	61.2%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	2,863	2,697	(166)	(5.8%)	12.2%	69.1%
44611	Pharmacies & Drug Stores	1,065	1,259	194	18.2%	4.5%	48.9%
62121	Offices of Dentists	1,026	1,167	141	13.7%	4.4%	75.5%
62161	Home Health Care Services	894	1,234	340	38.0%	3.8%	53.4%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	533	648	115	21.6%	2.3%	76.1%
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	516	775	259	50.2%	2.2%	77.6%
90399	Local Government, Excluding Education & Hospitals	489	525	36	7.4%	2.1%	5.8%
90362	Hospitals (Local Government)	471	470	(1)	(0.2%)	2.0%	77.9%
54194	Veterinary Services	419	502	83	19.8%	1.8%	76.7%
90361	Education (Local Government)	355	365	10	2.8%	1.5%	2.2%
62221	Psychiatric & Substance Abuse Hospitals	336	569	233	69.3%	1.4%	43.1%
62412	Services for the Elderly & Persons with Disabilities	336	534	198	58.9%	1.4%	12.1%
62142	Outpatient Mental Health & Substance Abuse Centers	334	330	(4)	(1.2%)	1.4%	49.5%
All Other Industries		3,820	4,695	875	22.9%	16.3%	--
Total		23,417	26,985	3,568	15.2%	100.0%	--

Figure 2.19: Top Five Industries in the South WPR that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.



Table 2.22: Ten Most Represented Occupations in General Medical and Surgical Hospitals in the South WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	3,032	280	32.0%	\$28.22	BACH
31-1014	Nursing Assistants	789	38	8.3%	\$11.41	CERT
29-2034	Radiologic Technologists	297	14	3.1%	\$24.14	ASSOC
29-1126	Respiratory Therapists	266	44	2.8%	\$22.22	ASSOC
29-2018	Clinical Laboratory Technologists & Technicians	223	15	2.4%	\$22.71	BACH
11-9111	Medical & Health Services Managers	213	13	2.2%	\$42.07	BACH
37-2012	Maids & Housekeeping Cleaners	202	10	2.1%	\$9.24	None
29-2041	Emergency Medical Technicians & Paramedics	197	7	2.1%	\$14.97	CERT
29-2055	Surgical Technologists	180	8	1.9%	\$19.31	CERT
43-4111	Interviewers, Except Eligibility & Loan	171	2	1.8%	\$12.39	HS/GED

Table 2.23: Ten Most Represented Occupations in Offices of Physicians in the South WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	793	227	15.7%	\$14.17	CERT
43-4171	Receptionists & Information Clerks	612	104	12.1%	\$12.40	HS/GED
29-1141	Registered Nurses	414	79	8.2%	\$28.22	BACH
43-3021	Billing & Posting Clerks	273	46	5.4%	\$14.84	HS/GED
29-2061	Licensed Practical & Licensed Vocational Nurses	215	39	4.3%	\$18.87	CERT
29-1171	Nurse Practitioners	210	66	4.2%	\$45.75	MAST
29-1069	Physicians & Surgeons, All Other	175	50	3.5%	\$111.63	PHD
43-1011	First-Line Supervisors of Office & Administrative Support Workers	172	24	3.4%	\$19.16	HS/GED
43-6013	Medical Secretaries	160	53	3.2%	\$13.79	HS/GED
43-9061	Office Clerks, General	134	25	2.7%	\$105.26	HS/GED

Numbers may not sum due to rounding.

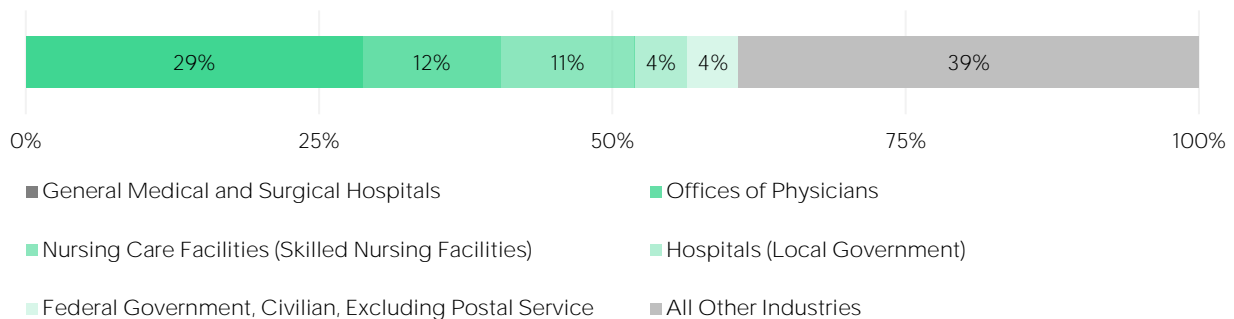
Source: Employees & Self-Employed 2020.2.



Table 2.24: Industries in the West WPR that Employ the Largest Share of the Healthcare Occupations

NAICS CODE	NAICS TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	% OCCS IN INDUSTRY	% OF TOTAL JOBS IN INDUSTRY
62211	General Medical & Surgical Hospitals	7,668	7,985	317	4.1%	28.7%	71.9%
62111	Offices of Physicians	3,154	3,678	524	16.6%	11.8%	64.4%
62311	Nursing Care Facilities (Skilled Nursing Facilities)	3,030	2,571	(459)	(15.1%)	11.3%	66.6%
90362	Hospitals (Local Government)	1,195	1,230	35	2.9%	4.5%	72.9%
90119	Federal Government, Civilian, Excluding Postal Service	1,184	771	(413)	(34.9%)	4.4%	24.5%
90120	Federal Government, Military	1,018	1,025	7	0.7%	3.8%	3.6%
62121	Offices of Dentists	991	1,053	62	6.3%	3.7%	72.1%
44611	Pharmacies & Drug Stores	831	780	(51)	(6.1%)	3.1%	49.2%
62161	Home Health Care Services	701	985	284	40.5%	2.6%	53.8%
62134	Offices of Physical, Occupational & Speech Therapists, & Audiologists	535	614	79	14.8%	2.0%	80.7%
54194	Veterinary Services	481	619	138	28.7%	1.8%	68.1%
90399	Local Government, Excluding Education & Hospitals	454	446	(8)	(1.8%)	1.7%	4.8%
62142	Outpatient Mental Health & Substance Abuse Centers	441	572	131	29.7%	1.7%	52.7%
62149	Other Outpatient Care Centers	396	546	150	37.9%	1.5%	76.2%
90361	Education (Local Government)	352	353	1	0.3%	1.3%	2.3%
All Other Industries		4,275	5,067	792	18.5%	16.0%	--
Total		26,705	28,433	1,728	6.5%	100.0%	--

Figure 2.20: Top Five Industries in the West WPR that Employ the Largest Share of the Healthcare Occupations



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.2.



Table 2.25: Ten Most Represented Occupations in General Medical and Surgical Hospitals in the West WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
29-1141	Registered Nurses	3,378	198	31.7%	\$28.51	BACH
31-1014	Nursing Assistants	721	19	6.8%	\$11.72	CERT
29-2034	Radiologic Technologists	326	6	3.1%	\$24.43	ASSOC
11-9111	Medical & Health Services Managers	278	-15	2.6%	\$37.08	BACH
29-2018	Clinical Laboratory Technologists & Technicians	244	20	2.3%	\$24.13	BACH
29-2055	Surgical Technologists	232	9	2.2%	\$19.97	CERT
37-2012	Maids & Housekeeping Cleaners	228	-3	2.1%	\$9.98	None
29-1126	Respiratory Therapists	202	22	1.9%	\$23.91	ASSOC
43-4111	Interviewers, Except Eligibility & Loan	202	-8	1.9%	\$13.53	HS/GED
31-9092	Medical Assistants	163	18	1.5%	\$13.45	CERT

Table 2.26: Ten Most Represented Occupations in Offices of Physicians in the West WPR

SOC CODE	SOC TITLE	2019 JOBS	10-YEAR JOB CHANGE	% OF TOTAL JOBS IN INDUSTRY	MEDIAN HOURLY WAGE	TYPICAL ENTRY LEVEL EDUCATION
31-9092	Medical Assistants	713	168	14.6%	\$13.45	CERT
43-4171	Receptionists & Information Clerks	502	67	10.2%	\$11.98	HS/GED
29-1141	Registered Nurses	363	52	7.4%	\$28.51	BACH
29-1171	Nurse Practitioners	257	62	5.3%	\$46.93	MAST
29-1069	Physicians & Surgeons, All Other	253	43	5.2%	\$108.86	PHD
43-3021	Billing & Posting Clerks	241	30	4.9%	\$15.45	HS/GED
43-6013	Medical Secretaries	212	48	4.3%	\$14.15	HS/GED
29-1062	Family & General Practitioners	151	17	3.1%	\$86.20	PHD
29-1071	Physician Assistants	143	41	2.9%	\$52.09	MAST
29-2061	Licensed Practical & Licensed Vocational Nurses	137	24	2.8%	\$19.24	CERT

Numbers may not sum due to rounding.

Source: Employees & Self-Employed 2020.2.



Job Postings & Demographic Analysis

Job postings are online advertisements for jobs, posted by companies trying to attract applicants. Analyzing job postings for information on the labor market can yield valuable insight, such as skills that employers are requesting, the companies that are posting jobs, where those jobs are located, and greater specificity in job titles. In addition, job postings also have virtually no lag time, as they can be collected from sites soon after being posted. However, not all jobs are posted online, and in some cases, companies post far more positions than they intend to hire in an effort to cast a broad net for talent. Many factors can influence the number of postings that appear on the web for a particular job or company, including:

- Fluctuating prices of job postings;
- Building waiting lists of potential hires should positions become vacant;
- The hiring of new employees immediately or in six months;
- Postings left online after positions have been filled; and
- Duplicate postings for a given position.

It can be helpful to think of the job postings analysis as a measure of the intentions of those who post jobs. For Kentucky's educational institutions, job postings indicate what is currently in demand across statewide or regional employers, including emerging needs. As such, job postings information can be used to help tailor program curricula so that graduates will be competitive in the job market. The sources collect more than 100 million job postings per month from more than 90,000 companies. Emsi de-duplicates these postings down to approximately 8 million unique job postings per month. In the process, geographies are assigned to the postings as well as company names, job locations, skills, and so on.

The following tables and figures show statewide job postings related to eight occupational areas in healthcare. The tables present data on unique job postings and posting intensity. Posting intensity is the ratio between total and unique job postings and can be seen as an indication of the intensity or effort by the poster to advertise and fill the position in question. Unique job postings are the number of posts for the job title, city, or company for the posting duration. Job postings include advertisements in Kentucky from February 2017 to February



2020. Also included in the following tables and figures are demographic information by occupation – age, race/ethnicity, and gender.

Across Kentucky, job postings for each of the occupational groups ranged between 1,720 and 82,410. The largest number of job postings were in the Direct Care Workers & Nurses occupational group, and registered nurses alone had 49,120 statewide postings. The occupation typically employs people with a bachelor's degree level of education. Job postings for other occupations by level of education further emphasize the need for nursing programs. Across all occupational groups, postings for nursing assistants (with 11,100 postings) and licensed practical & licensed vocational nurses (with 9,100 postings) ranked second and third behind registered nurses. The two occupations typically require certificate and associate degree levels of education, respectively. At the graduate degree level, general internists, general practitioners, and all other physicians & surgeons accounted for about 11,500 postings, and physical and occupational therapists together accounted for about 9,500 postings. The University of Kentucky and the University of Louisville are the only medical degree-granting institutions in the state, and both universities have residency programs (as well as the University of Pikeville-Kentucky College of Osteopathic Medicine's residency program in osteopathic medicine).

Healthcare workers are typically White females between 25 and 34 years. The exceptions are medical doctors (54% are male) and medical administrators. For the latter, the greatest number of people working as medical administrators are in the 45 to 54 years age band. Furthermore, 15% of the people in Kentucky working as direct care workers & nurses are non-White. Typically, 10% of the people working in healthcare are non-White, and 13% of all Kentucky adults, 25 years and above, are non-White.

MEDICAL DOCTORS

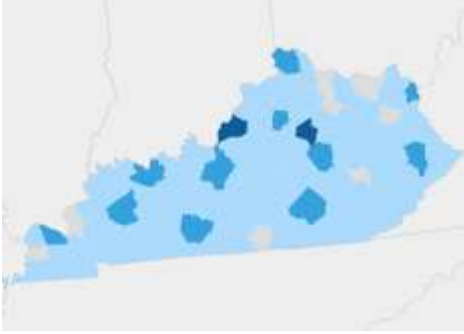
19,599	3 : 1	32 days
Unique Postings 65,087 Total Postings	Posting Intensity State Average: 4 : 1	Median Posting Duration State Average: 29 days
	Top 5 Counties	Unique Postings (Feb 2017 – Feb 2020)
	Jefferson County, KY	3,428
	Fayette County, KY	3,146
	County not reported	2,309
	Warren County, KY	831
	Daviess County, KY	790

Table 3.1: Kentucky Job Postings by Occupation for Medical Doctors

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Physicians & Surgeons, All Other	4,862	24.8%	3 : 1	32 days
Family & General Practitioners	3,631	18.5%	3 : 1	32 days
Internists, General	2,965	15.1%	3 : 1	30 days
Pharmacists	2,381	12.1%	5 : 1	36 days
Physician Assistants	1,418	7.2%	4 : 1	31 days
Surgeons	1,338	6.8%	3 : 1	34 days
Medical Scientists, Except Epidemiologists	1,325	6.8%	5 : 1	36 days
Obstetricians & Gynecologists	618	3.2%	3 : 1	29 days
Pediatricians, General	431	2.2%	3 : 1	28 days
Anesthesiologists	228	1.2%	2 : 1	21 days
All other occupations*	402	2.1%	2 : 1	--
Total	19,599	100.0%	3 : 1	32 days

* All other occupations include postings for oral & maxillofacial surgeons (140 unique postings); podiatrists (133); chiropractors (65); and health diagnosing & treating practitioners, all other (64).

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.1: Required Levels of Education in the Kentucky Job Postings for Medical Doctors

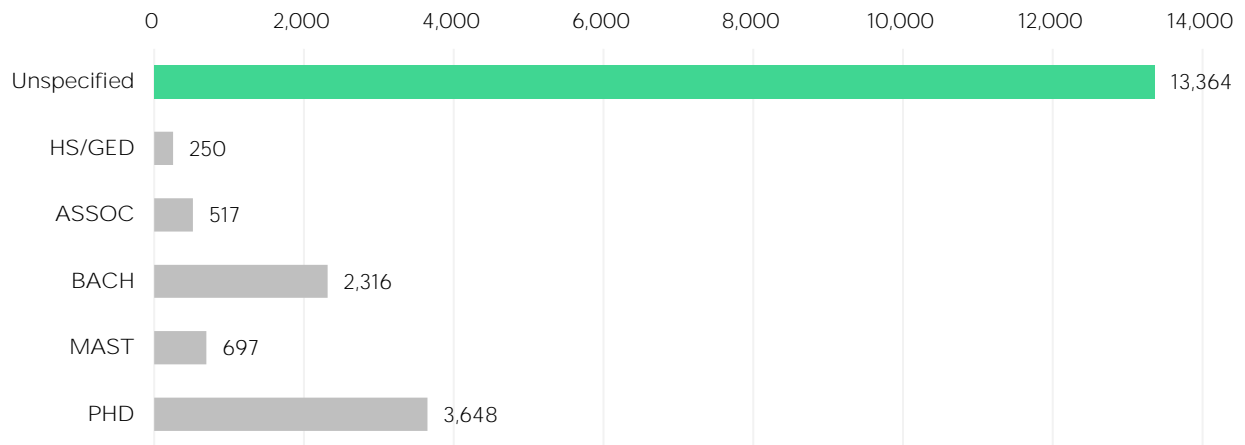


Table 3.2: Top 15 Job Titles in Kentucky Job Postings for Medical Doctors

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Physicians	4,778	24.4%	3 : 1	31 days
Family Practice Physicians	1,626	8.3%	4 : 1	32 days
Pharmacists	1,447	7.4%	4 : 1	36 days
Physician Assistants (PA)	1,308	6.7%	3 : 1	27 days
Surgeons	662	3.4%	4 : 1	41 days
Cardiologists	354	1.8%	3 : 1	36 days
Nurse Practitioners	296	1.5%	3 : 1	26 days
Hospitalists	292	1.5%	3 : 1	31 days
Medical Science Liaisons	261	1.3%	3 : 1	33 days
Registered Nurses	247	1.3%	3 : 1	35 days
Neurologists	233	1.2%	3 : 1	33 days
OB/GYNs (Obstetricians / Gynecologists)	167	0.9%	2 : 1	19 days
Medical Directors	143	0.7%	3 : 1	43 days
Staff Physicians	137	0.7%	8 : 1	84 days
Anesthesiologists	134	0.7%	2 : 1	34 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.3: Top 10 Cities in Kentucky Job Postings for Medical Doctors

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	3,260	16.6%	4 : 1	34 days
Lexington, KY	3,069	15.7%	5 : 1	39 days
Bowling Green, KY	800	4.1%	4 : 1	30 days
Owensboro, KY	769	3.9%	3 : 1	32 days
Paducah, KY	695	3.5%	4 : 1	34 days
Frankfort, KY	494	2.5%	3 : 1	19 days
Richmond, KY	393	2.0%	2 : 1	26 days
Somerset, KY	355	1.8%	3 : 1	44 days
Ashland, KY	337	1.7%	4 : 1	45 days
Madisonville, KY	290	1.5%	4 : 1	35 days

Table 3.4: Top 10 Companies Posting for Medical Doctors in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
University of Kentucky	784	4.0%	8 : 1	49 days
Arlington Health Care, Inc.	548	2.8%	3 : 1	23 days
National Health Partners, Inc.	546	2.8%	2 : 1	33 days
Jackson Physician Corp.	530	2.7%	2 : 1	30 days
United States Department of the Army	516	2.6%	1 : 1	40 days
United States Department of the Air Force	515	2.6%	3 : 1	6 days
Physician Services, Inc.	512	2.6%	5 : 1	31 days
LifePoint Health, Inc.	465	2.4%	4 : 1	59 days
Integrity Healthcare, Inc.	455	2.3%	2 : 1	38 days
CH & G Management LLC	343	1.8%	3 : 1	15 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.2: Kentucky's Medical Doctors by Age Group

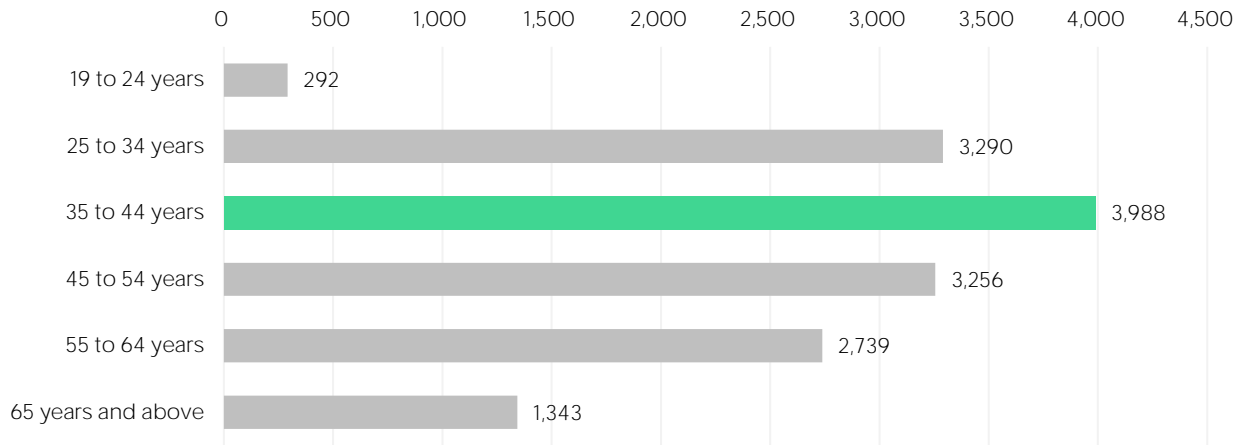


Figure 3.3: Kentucky's Medical Doctors by Major Race and Ethnicity Group

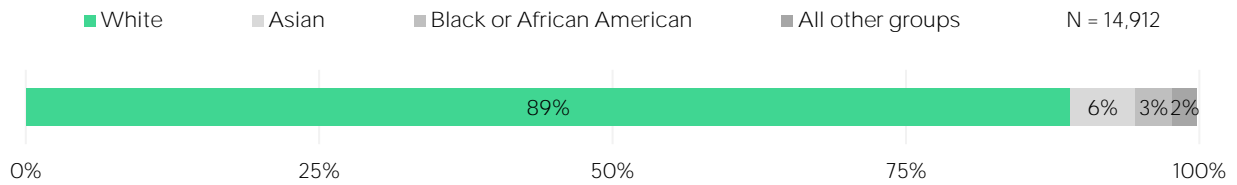
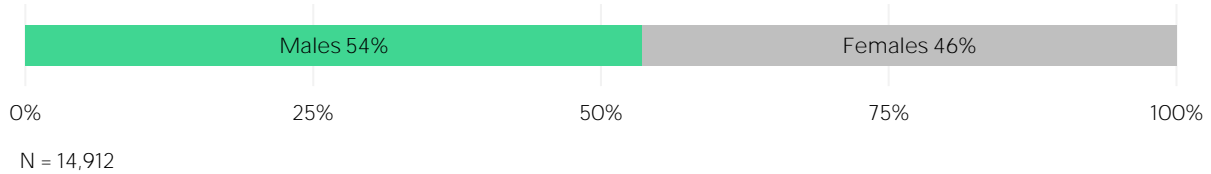


Figure 3.4: Kentucky's Medical Doctors by Gender



Source: Emsi Employees & Self-Employed 2020.1.

DIRECT CARE WORKERS & NURSES

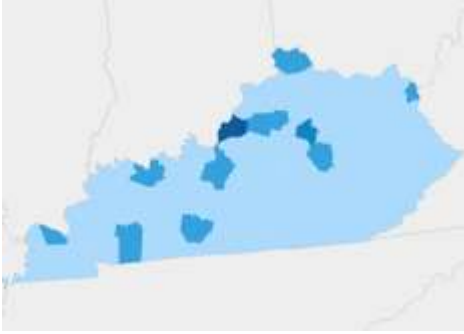
82,411	5 : 1	30 days
Unique Postings 422,700 Total Postings	Posting Intensity State Average: 4 : 1	Median Posting Duration State Average: 29 days
	Top 5 Counties	Unique Postings (Feb 2017 – Feb 2020)
	Jefferson County, KY	17,953
	Fayette County, KY	11,253
	Warren County, KY	3,220
	County not reported	2,999
	Kenton County, KY	2,568

Table 3.5: Kentucky Job Postings by Occupation for Direct Care Workers and Nurses

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Registered Nurses	49,119	59.6%	5 : 1	27 days
Nursing Assistants	11,095	13.5%	6 : 1	36 days
Licensed Practical & Licensed Vocational Nurses	9,116	11.1%	5 : 1	37 days
Medical Assistants	4,829	5.9%	5 : 1	31 days
Home Health Aides	4,175	5.1%	5 : 1	29 days
Nurse Practitioners	2,341	2.8%	4 : 1	33 days
Emergency Medical Technicians & Paramedics	1,503	1.8%	5 : 1	45 days
Nurse Anesthetists	182	0.2%	3 : 1	25 days
Nurse Midwives	51	0.1%	2 : 1	53 days
Total	82,411	100.0%	5 : 1	30 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.5: Required Levels of Education in the Kentucky Job Postings for Direct Care Workers and Nurses

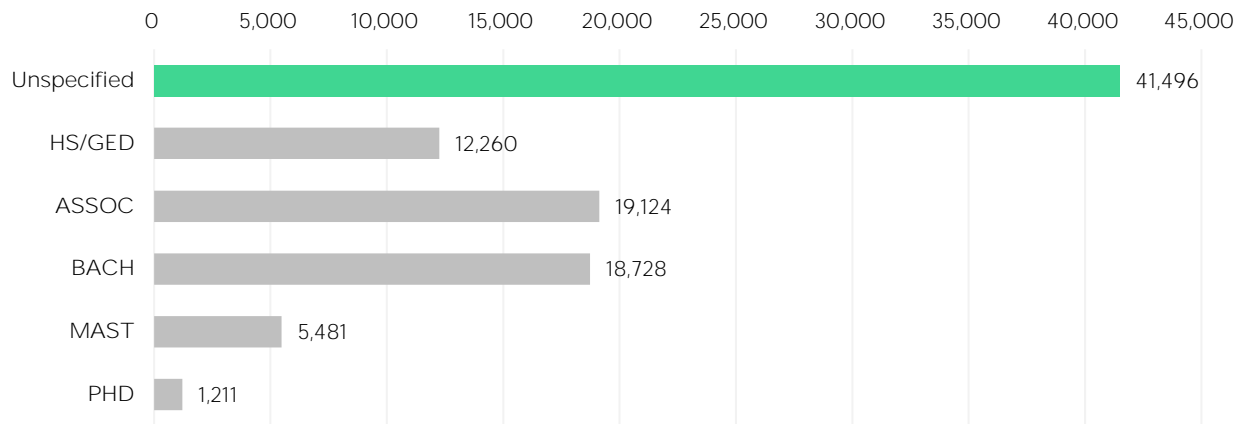


Table 3.6: Top 15 Job Titles in Kentucky Job Postings for Direct Care Workers and Nurses

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Registered Nurses	22,364	27.1%	5 : 1	25 days
Licensed Practical Nurses (LPN)	7,542	9.2%	5 : 1	38 days
Certified Nursing Assistants (CNA)	5,874	7.1%	6 : 1	38 days
Nurse Practitioners	3,699	4.5%	3 : 1	33 days
Medical Assistants	2,713	3.3%	5 : 1	32 days
Home Health Aides (HHA)	1,224	1.5%	4 : 1	33 days
Intensive Care Unit (ICU) Nurses	1,190	1.4%	7 : 1	16 days
Case Managers (Healthcare Practitioners & Technical)	847	1.0%	5 : 1	33 days
Staff Nurses	835	1.0%	6 : 1	29 days
Patient Care Technicians (Healthcare Practitioners & Technical)	813	1.0%	6 : 1	37 days
Home Health Nurses	780	0.9%	6 : 1	41 days
Patient Care Assistants	775	0.9%	7 : 1	28 days
Patient Care Technicians (Healthcare Support)	728	0.9%	7 : 1	42 days
Travel Nurses - Medical/Surgical	724	0.9%	6 : 1	17 days
Travel Nurses - Cardiac Catheterization Laboratory	700	0.8%	3 : 1	16 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.7: Top 10 Cities in Kentucky Job Postings for Direct Care Workers and Nurses

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	16,628	20.2%	7 : 1	32 days
Lexington, KY	10,879	13.2%	8 : 1	33 days
Bowling Green, KY	3,082	3.7%	5 : 1	32 days
Frankfort, KY	2,103	2.6%	6 : 1	28 days
Owensboro, KY	2,057	2.5%	5 : 1	33 days
Paducah, KY	1,679	2.0%	4 : 1	37 days
Elizabethtown, KY	1,626	2.0%	4 : 1	33 days
Florence, KY	1,236	1.5%	4 : 1	31 days
Shelbyville, KY	1,147	1.4%	4 : 1	31 days
Hopkinsville, KY	1,109	1.3%	4 : 1	28 days

Table 3.8: Top 10 Companies Posting for Direct Care Workers and Nurses in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
University of Kentucky	3,699	4.5%	10 : 1	31 days
LHC Group, Inc.	2,964	3.6%	7 : 1	41 days
Travel Nurse, Inc.	2,905	3.5%	2 : 1	8 days
Catholic Health Initiatives	2,855	3.5%	8 : 1	32 days
KentuckyOne Health, Inc.	2,335	2.8%	8 : 1	17 days
Signature Healthcare LLC	1,911	2.3%	4 : 1	33 days
Genesis Healthcare, Inc.	1,877	2.3%	6 : 1	45 days
Norton Healthcare, Inc.	1,587	1.9%	9 : 1	32 days
United States Department of the Air Force	1,574	1.9%	2 : 1	7 days
Fresenius Medical Care	1,376	1.7%	5 : 1	44 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.6: Kentucky's Direct Care Workers and Nurses by Age Group

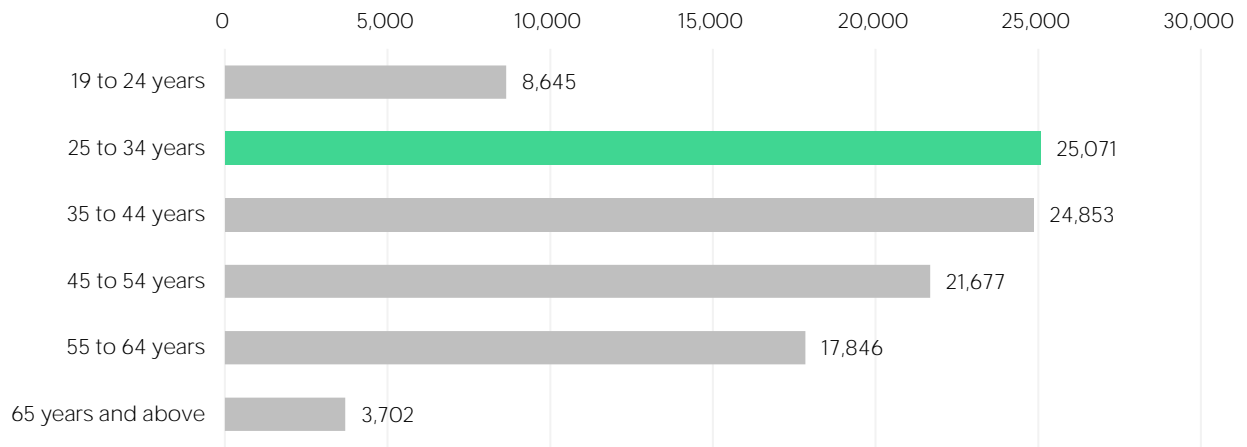


Figure 3.7: Kentucky's Direct Care Workers and Nurses by Major Race and Ethnicity Group

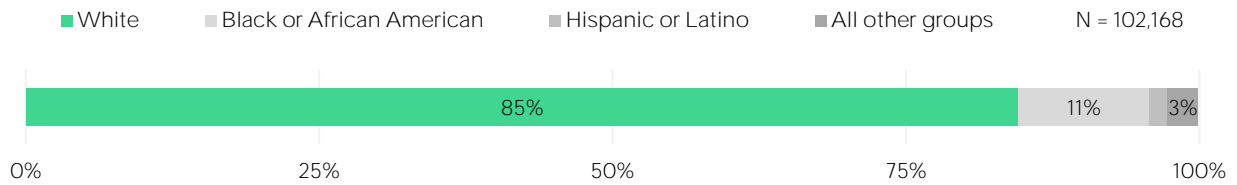
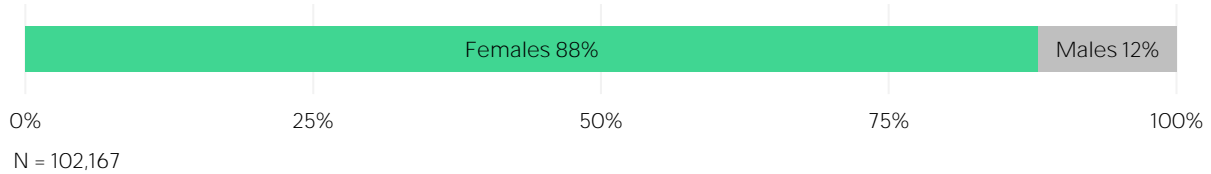


Figure 3.8: Kentucky's Direct Care Workers and Nurses by Gender



Source: Emsi Employees & Self-Employed 2020.1.

CLINICAL PRACTITIONERS

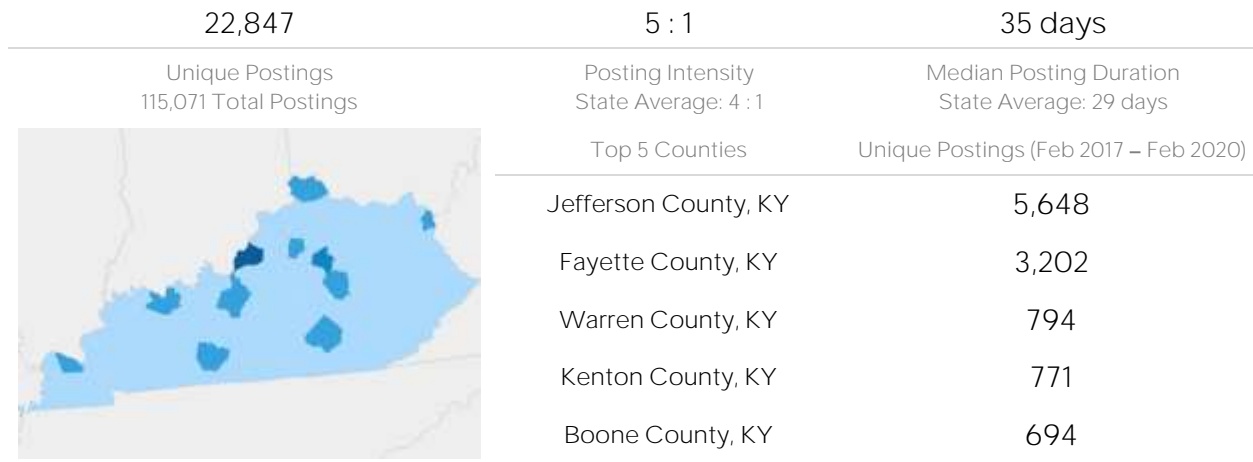


Table 3.9: Kentucky Job Postings by Occupation for Clinical Practitioners

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Pharmacy Technicians	6,732	29.5%	5 : 1	41 days
Clinical Laboratory Technologists & Technicians	3,001	13.1%	4 : 1	32 days
Radiologic Technologists	1,997	8.7%	5 : 1	35 days
Phlebotomists	1,846	8.1%	5 : 1	30 days
Respiratory Therapists	1,619	7.1%	7 : 1	39 days
Surgical Technologists	1,392	6.1%	6 : 1	34 days
Health Technologists & Technicians, All Other	1,234	5.4%	4 : 1	37 days
Cardiovascular Technologists & Technicians	1,168	5.1%	5 : 1	39 days
Occupational Health & Safety Specialists	1,060	4.6%	3 : 1	29 days
Dietitians & Nutritionists	828	3.6%	4 : 1	30 days
All other occupations*	1,970	8.6%	4 : 1	--
Total	22,847	100.0%	5 : 1	35 days

* All other occupations include postings for diagnostic medical sonographers (676 unique postings); massage therapists (633); magnetic resonance imaging technologists (222); nuclear medicine technologists (179); radiation therapists (138); respiratory therapy technicians (64); dietetic technicians (55); and healthcare practitioners & technical workers, all other (3).

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.9: Required Levels of Education in the Kentucky Job Postings for Clinical Practitioners

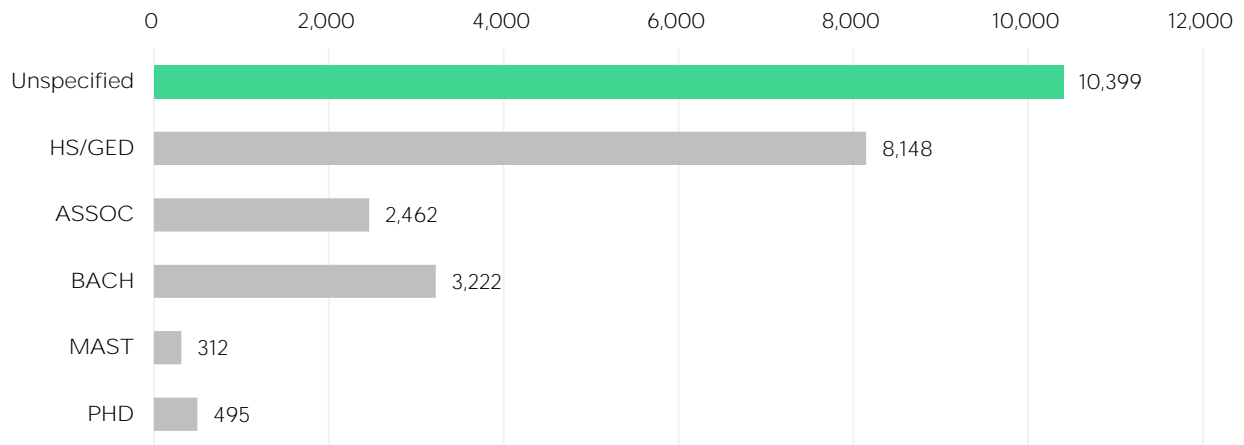


Table 3.10: Top 15 Job Titles in Kentucky Job Postings for Clinical Practitioners

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Pharmacy Technicians	6,077	26.6%	5 : 1	43 days
Respiratory Therapists	1,353	5.9%	7 : 1	41 days
Medical Technologists	1,208	5.3%	5 : 1	35 days
Phlebotomists	1,171	5.1%	5 : 1	30 days
Radiological Technologists	698	3.1%	6 : 1	34 days
Massage Therapists	575	2.5%	5 : 1	21 days
Radiology Technicians	550	2.4%	4 : 1	37 days
Laboratory Technicians (Healthcare Practitioners & Technical)	535	2.3%	4 : 1	32 days
Surgical Technologists	481	2.1%	5 : 1	36 days
Dietitians	426	1.9%	4 : 1	30 days
Surgical Technicians	395	1.7%	10 : 1	37 days
Computed Topography (CT) Technologists	390	1.7%	6 : 1	36 days
Registered Nurses	278	1.2%	5 : 1	40 days
Sonographers	263	1.2%	5 : 1	37 days
Patient Care Technicians (Healthcare Support)	247	1.1%	4 : 1	50 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.11: Top 10 Cities in Kentucky Job Postings for Clinical Practitioners

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	4,958	21.7%	7 : 1	40 days
Lexington, KY	3,108	13.6%	9 : 1	37 days
Bowling Green, KY	780	3.4%	5 : 1	41 days
Frankfort, KY	583	2.6%	5 : 1	31 days
Paducah, KY	561	2.5%	4 : 1	42 days
Florence, KY	505	2.2%	7 : 1	38 days
Lyndon, KY	483	2.1%	2 : 1	31 days
Owensboro, KY	420	1.8%	4 : 1	36 days
Elizabethtown, KY	403	1.8%	3 : 1	33 days
Ashland, KY	305	1.3%	4 : 1	36 days

Table 3.12: Top 10 Companies Posting for Clinical Practitioners in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
University of Kentucky	1,301	5.7%	14 : 1	41 days
Walgreens Boots Alliance, Inc.	1,291	5.7%	5 : 1	37 days
CVS Health Corporation	1,183	5.2%	6 : 1	55 days
The Kroger Co.	1,027	4.5%	6 : 1	49 days
Catholic Health Initiatives	849	3.7%	8 : 1	46 days
Norton Healthcare, Inc.	834	3.7%	6 : 1	43 days
Laboratory Corporation of America Holdings	655	2.9%	5 : 1	25 days
Harris Health System	464	2.0%	2 : 1	31 days
Medical Pharmacy, Inc.	452	2.0%	4 : 1	50 days
KentuckyOne Health, Inc.	446	2.0%	9 : 1	40 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.10: Kentucky's Clinical Practitioners by Age Group

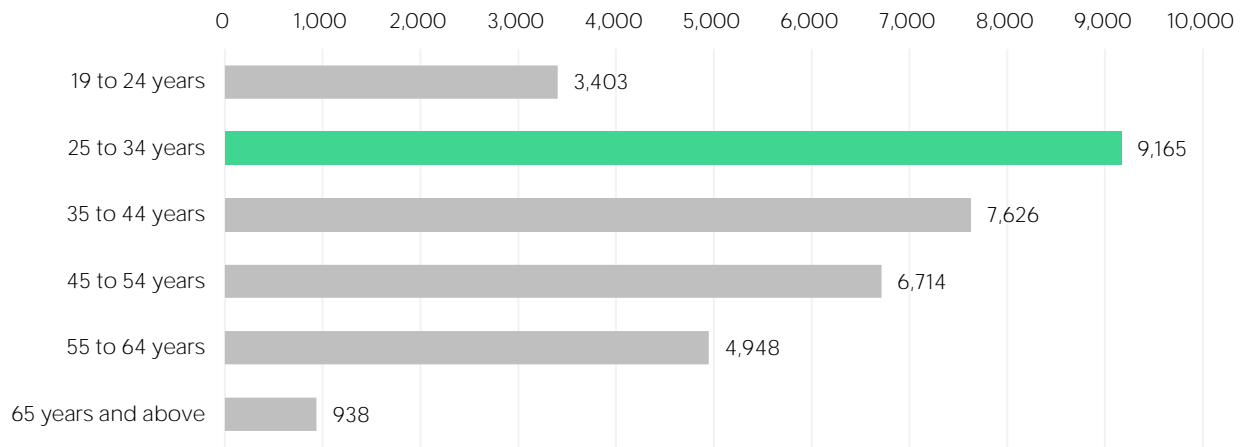


Figure 3.11: Kentucky's Clinical Practitioners by Major Race and Ethnicity Group

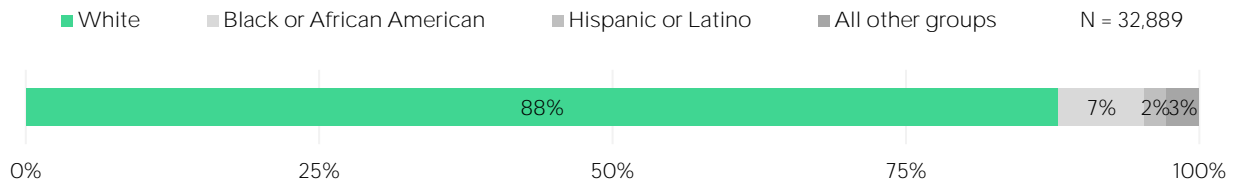
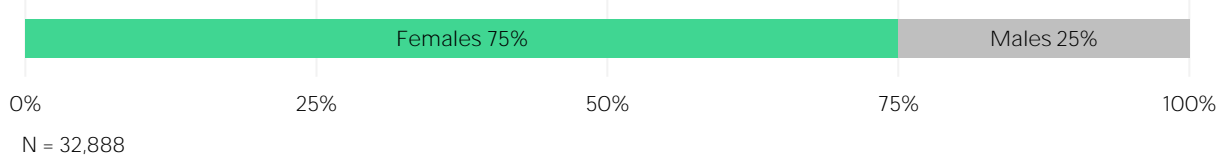


Figure 3.12: Kentucky's Clinical Practitioners by Gender



Source: Emsi Employees & Self-Employed 2020.1.

MENTAL & SOCIAL HEALTHCARE WORKERS

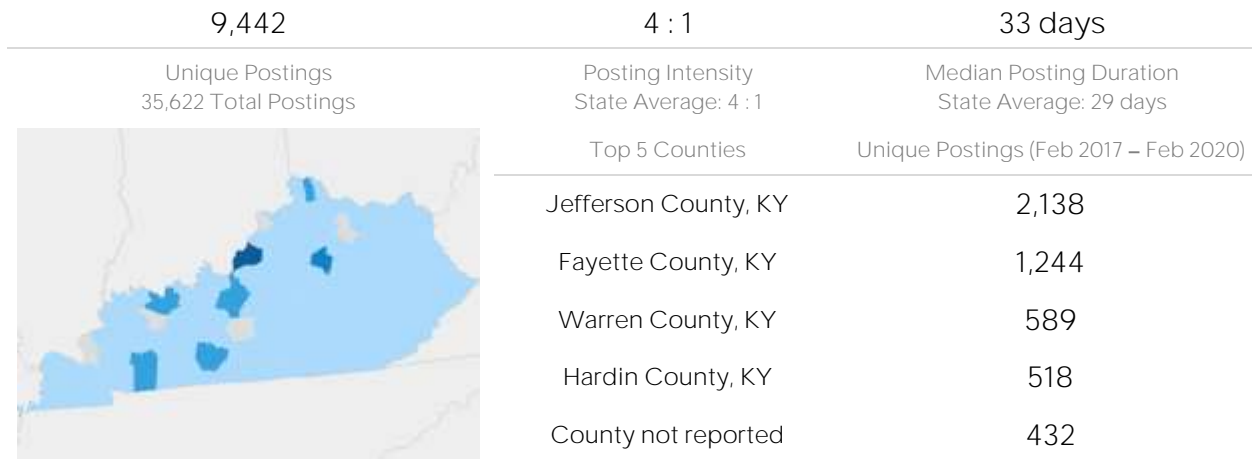


Table 3.13: Kentucky Job Postings by Occupation for Mental and Social Healthcare Workers

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Substance Abuse, Behavioral Disorder, & Mental Health Counselors	3,008	31.9%	4 : 1	34 days
Mental Health & Substance Abuse Social Workers	2,709	28.7%	4 : 1	33 days
Psychiatrists	1,565	16.6%	2 : 1	33 days
Healthcare Social Workers	958	10.1%	4 : 1	30 days
Clinical, Counseling, & School Psychologists	906	9.6%	3 : 1	33 days
Marriage & Family Therapists	195	2.1%	5 : 1	41 days
Rehabilitation Counselors	85	0.9%	2 : 1	19 days
Social Workers, All Other	9	0.1%	2 : 1	14 days
Psychologists, All Other	7	0.1%	4 : 1	18 days
Total	9,442	100.0%	4 : 1	33 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.13: Required Levels of Education in the Kentucky Job Postings for Mental and Social Healthcare Workers

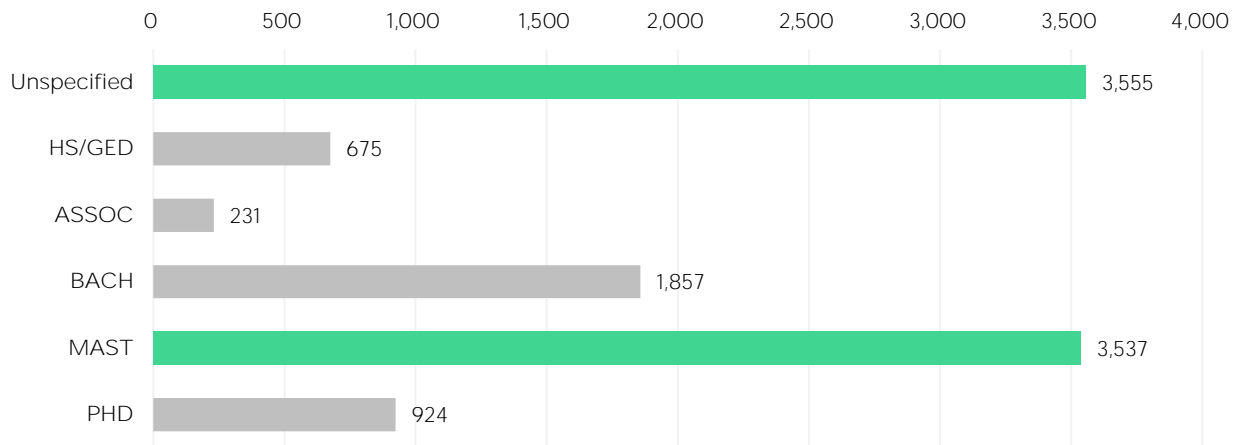


Table 3.14: Top 15 Job Titles in Kentucky Job Postings for Mental and Social Healthcare Workers

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Psychiatrists	751	8.0%	2 : 1	35 days
Psychologists (Life, Physical, & Social Science)	713	7.6%	3 : 1	36 days
Licensed Clinical Social Workers (LCSW)	481	5.1%	3 : 1	27 days
Social Workers	412	4.4%	6 : 1	38 days
Substance Abuse Counselors (SA Counselors)	365	3.9%	3 : 1	37 days
Mental Health Technicians (Healthcare Practitioners & Technical)	323	3.4%	4 : 1	35 days
Mental Health Therapists	234	2.5%	5 : 1	23 days
Mental Health Counselors	220	2.3%	3 : 1	19 days
Behavior Analysts	219	2.3%	5 : 1	51 days
Home Care Social Workers	201	2.1%	4 : 1	29 days
Behavioral Health Case Managers	199	2.1%	3 : 1	24 days
Behavioral Health Therapists	186	2.0%	4 : 1	32 days
Clinical Therapists	180	1.9%	5 : 1	30 days
Physicians	171	1.8%	2 : 1	36 days
Medical Social Workers	159	1.7%	4 : 1	37 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.15: Top 10 Cities in Kentucky Job Postings for Mental and Social Healthcare Workers

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	2,052	21.7%	5 : 1	35 days
Lexington, KY	1,219	12.9%	5 : 1	34 days
Bowling Green, KY	588	6.2%	3 : 1	38 days
Owensboro, KY	298	3.2%	4 : 1	45 days
Radcliff, KY	283	3.0%	6 : 1	45 days
Hopkinsville, KY	221	2.3%	4 : 1	31 days
Paducah, KY	201	2.1%	3 : 1	46 days
Shelbyville, KY	190	2.0%	3 : 1	28 days
Elizabethtown, KY	175	1.9%	3 : 1	36 days
Frankfort, KY	169	1.8%	3 : 1	25 days

Table 3.16: Top 10 Companies Posting for Mental and Social Healthcare Workers in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Universal Health Services, Inc.	632	6.7%	4 : 1	37 days
Anthem, Inc.	367	3.9%	4 : 1	24 days
FCPS	325	3.4%	2 : 1	28 days
Centerstone	296	3.1%	6 : 1	53 days
University of Kentucky	268	2.8%	8 : 1	35 days
United States Department of the Air Force	209	2.2%	2 : 1	17 days
United States Department of the Army	171	1.8%	2 : 1	40 days
Catholic Health Initiatives	148	1.6%	8 : 1	49 days
KVC Health Systems, Inc.	146	1.5%	4 : 1	57 days
FCS, Inc.	142	1.5%	2 : 1	74 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Figure 3.14: Kentucky's Mental and Social Healthcare Workers by Age Group

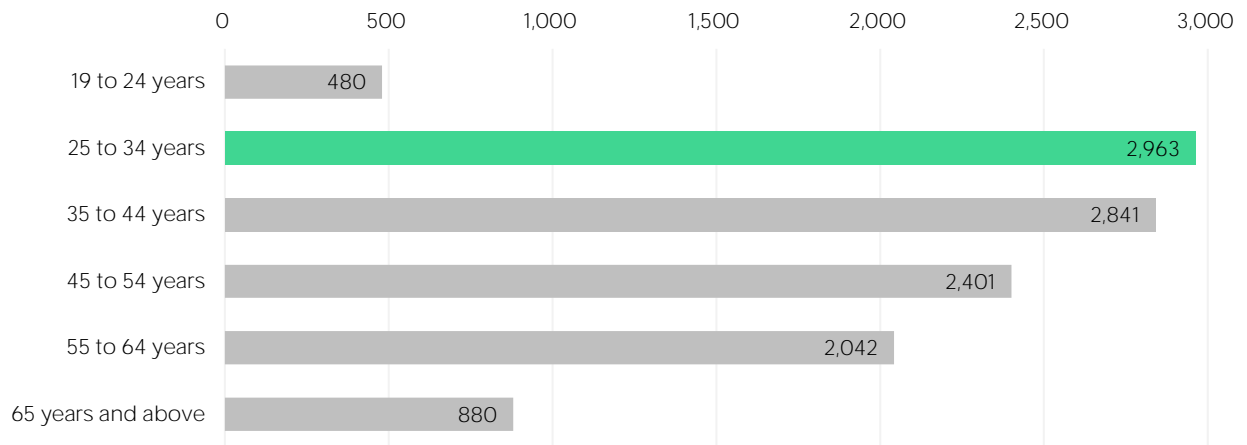


Figure 3.15: Kentucky's Mental and Social Healthcare Workers by Major Race and Ethnicity Group

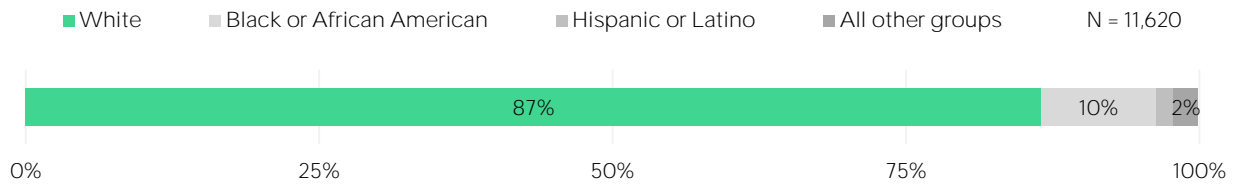
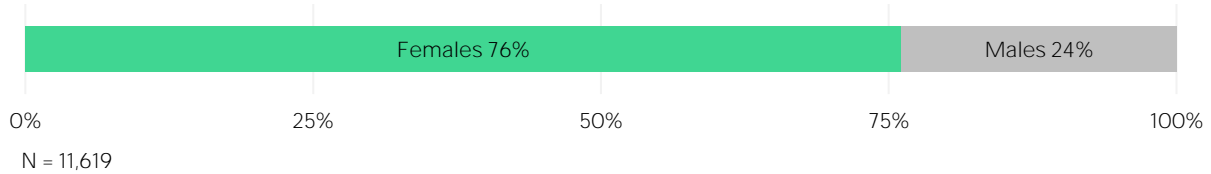


Figure 3.16: Kentucky's Mental and Social Healthcare Workers by Gender



Source: Emsi Employees & Self-Employed 2020.1.

HEARING, SPEECH, & VISION HEALTH WORKERS

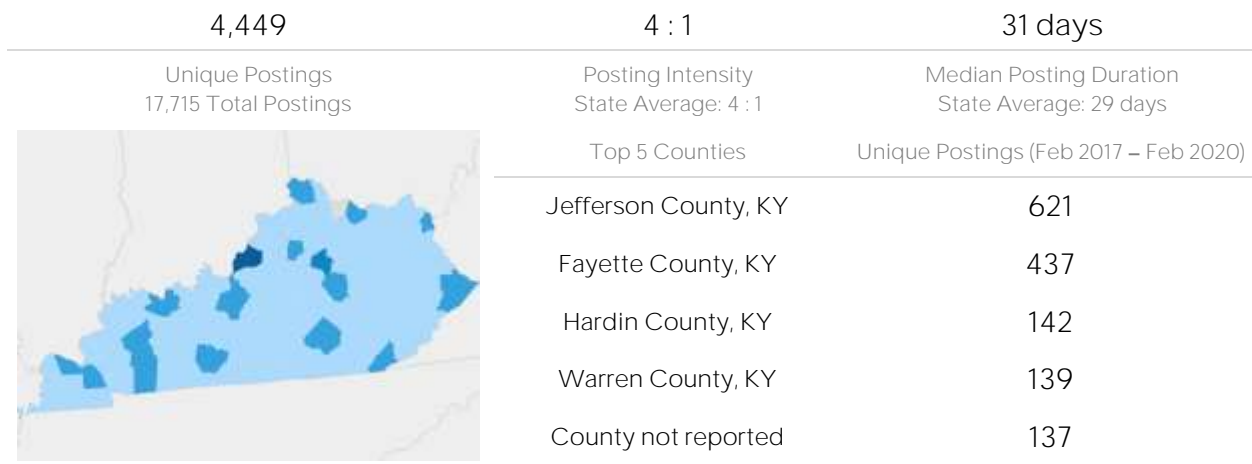
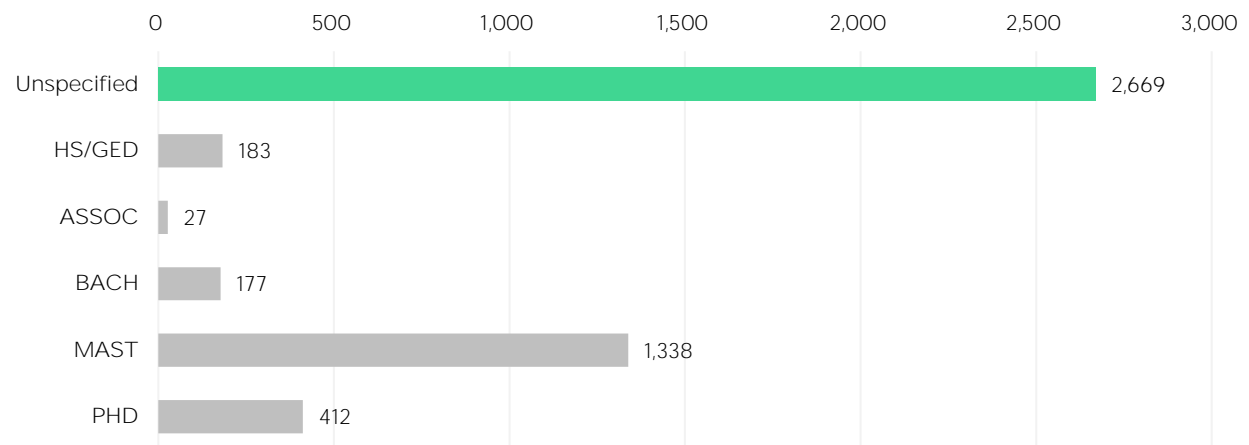


Table 3.17: Kentucky Job Postings by Occupation for Hearing, Speech, and Vision Health Workers

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Speech-Language Pathologists	3,469	78.0%	4 : 1	30 days
Optometrists	468	10.5%	3 : 1	37 days
Ophthalmic Medical Technicians	261	5.9%	8 : 1	37 days
Audiologists	251	5.6%	2 : 1	27 days
Total	4,449	100.0%	4 : 1	31 days

Figure 3.17: Required Levels of Education in the Kentucky Job Postings for Hearing, Speech, and Vision Health Workers



Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.18: Top 15 Job Titles in Kentucky Job Postings for Hearing, Speech, and Vision Health Workers

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Speech Language Pathologists	2,805	63.0%	4 : 1	29 days
Speech Therapists	594	13.4%	3 : 1	34 days
Optometrists	301	6.8%	3 : 1	33 days
Audiologists	154	3.5%	2 : 1	33 days
Ophthalmic Technicians	123	2.8%	11 : 1	38 days
Health Services Directors	53	1.2%	4 : 1	48 days
Ophthalmic Assistants	23	0.5%	3 : 1	37 days
Patient Service Technicians	20	0.4%	10 : 1	26 days
Training Managers (Business & Financial Operations)	18	0.4%	1 : 1	2 days
Opticians	18	0.4%	4 : 1	46 days
Tellers (Office & Administrative Support)	16	0.4%	3 : 1	32 days
Air Force Officers	15	0.3%	4 : 1	27 days
Doctors	13	0.3%	2 : 1	27 days
Assistant Professors	12	0.3%	12 : 1	69 days
Health Technicians	11	0.2%	5 : 1	17 days

Table 3.19: Top 10 Cities in Kentucky Job Postings for Hearing, Speech, and Vision Health Workers

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	568	12.8%	5 : 1	32 days
Lexington, KY	425	9.6%	6 : 1	40 days
Bowling Green, KY	135	3.0%	3 : 1	27 days
Frankfort, KY	123	2.8%	3 : 1	27 days
Elizabethtown, KY	121	2.7%	3 : 1	32 days
Madisonville, KY	93	2.1%	5 : 1	31 days
Maysville, KY	92	2.1%	2 : 1	14 days
Owensboro, KY	85	1.9%	3 : 1	33 days
Paducah, KY	76	1.7%	3 : 1	29 days
Florence, KY	73	1.6%	3 : 1	35 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.20: Top 10 Companies Posting for Hearing, Speech, and Vision Health Workers in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Wal-Mart, Inc.	178	4.0%	4 : 1	44 days
Centra Health, Inc.	154	3.5%	14 : 1	21 days
United States Department of the Air Force	144	3.2%	2 : 1	17 days
A & T Health Care LLC	137	3.1%	1 : 1	8 days
Speech Language Pathologist	130	2.9%	1 : 1	14 days
Rehabcare Group, Inc.	129	2.9%	4 : 1	52 days
Kindred Healthcare, Inc.	112	2.5%	7 : 1	23 days
University of Kentucky	110	2.5%	13 : 1	49 days
LHC Group, Inc.	106	2.4%	6 : 1	53 days
Genesis Healthcare, Inc.	100	2.2%	3 : 1	45 days

Figure 3.18: Kentucky's Hearing, Speech, and Vision Health Workers by Age Group

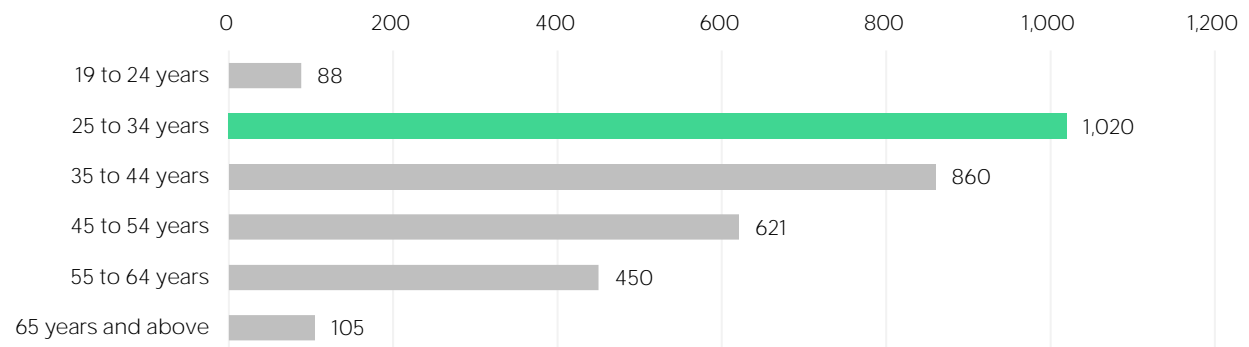


Figure 3.19: Kentucky's Hearing, Speech, and Vision Health Workers by Major Race and Ethnicity Group

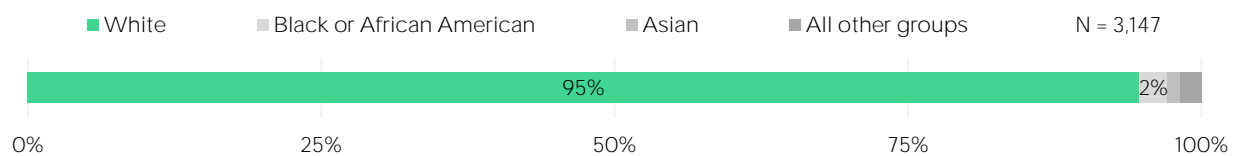
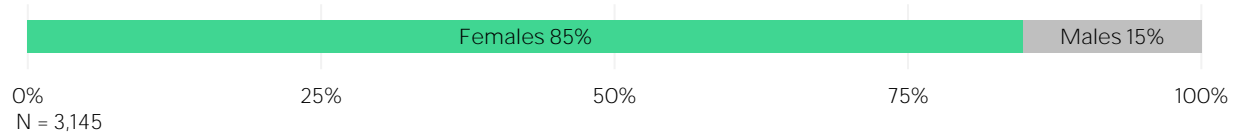


Figure 3.20: Kentucky's Hearing, Speech, and Vision Health Workers by Gender



Source: Emsi Job Posting Analytics February 2017 to February 2020. Emsi Employees & Self-Employed 2020.1.

DENTAL HEALTH WORKERS

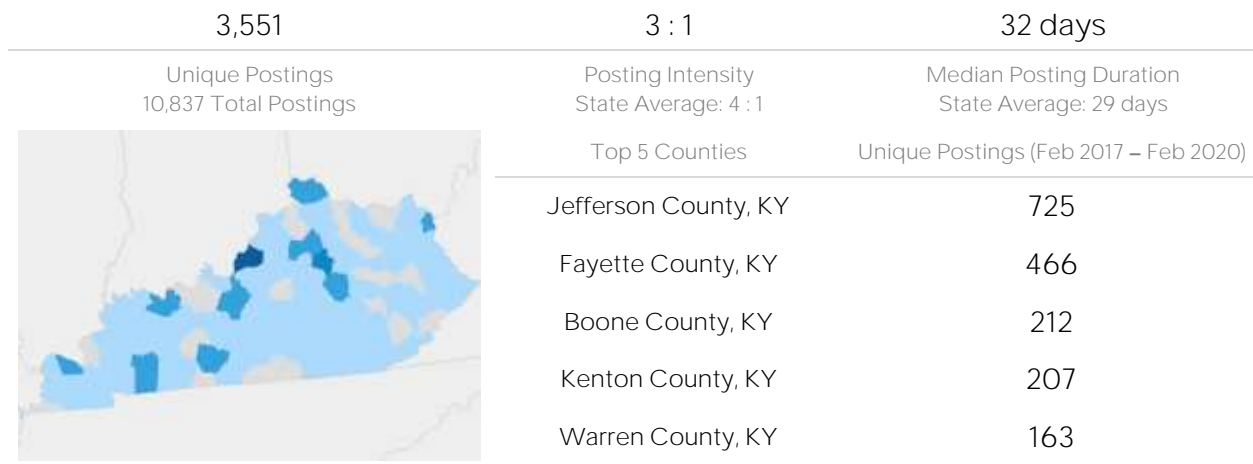
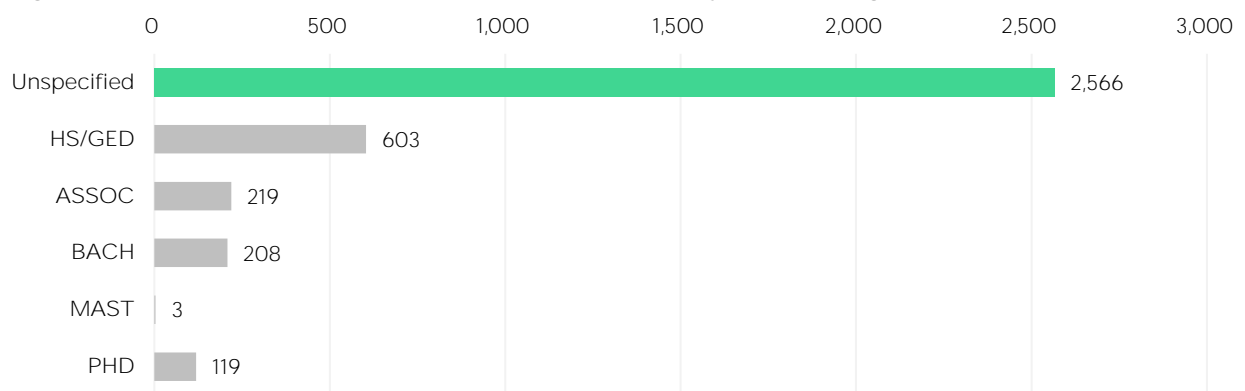


Table 3.21: Kentucky Job Postings by Occupation for Dental Health Workers

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Dental Assistants	1,352	38.1%	3 : 1	30 days
Dentists, General	1,342	37.8%	3 : 1	38 days
Dental Hygienists	727	20.5%	3 : 1	31 days
Orthodontists	78	2.2%	2 : 1	12 days
Prosthodontists	26	0.7%	2 : 1	4 days
Dentists, All Other Specialists	26	0.7%	6 : 1	44 days
Total	3,551	100.0%	3 : 1	32 days

Figure 3.21: Required Levels of Education in the Kentucky Job Postings for Dental Health Workers



Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.22: Top Job Titles in Kentucky Job Postings for Dental Health Workers

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Dental Assistants	1,110	31.3%	3 : 1	32 days
Dentists	1,076	30.3%	3 : 1	43 days
Dental Hygienists	749	21.1%	3 : 1	31 days
Orthodontists	63	1.8%	2 : 1	24 days
Orthodontic Assistants	36	1.0%	2 : 1	16 days
Office Assistants	34	1.0%	2 : 1	17 days
Tellers (Office & Administrative Support)	29	0.8%	2 : 1	16 days
Case Managers (Healthcare Practitioners & Technical)	22	0.6%	2 : 1	3 days
Physical Therapists	19	0.5%	9 : 1	64 days
Graduate Nurses	19	0.5%	1 : 1	73 days
Periodontists	16	0.5%	1 : 1	73 days
Public Health Analysts	15	0.4%	1 : 1	28 days
Dental Assistant Instructors	14	0.4%	1 : 1	31 days

Table 3.23: Top 10 Cities in Kentucky Job Postings for Dental Health Workers

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	659	18.6%	3 : 1	33 days
Lexington, KY	458	12.9%	5 : 1	33 days
Florence, KY	164	4.6%	2 : 1	34 days
Bowling Green, KY	163	4.6%	3 : 1	32 days
Paducah, KY	134	3.8%	3 : 1	41 days
Owensboro, KY	120	3.4%	2 : 1	31 days
Elizabethtown, KY	119	3.4%	3 : 1	32 days
Richmond, KY	108	3.0%	3 : 1	28 days
Hopkinsville, KY	104	2.9%	3 : 1	29 days
Georgetown, KY	95	2.7%	3 : 1	36 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.24: Top 10 Companies Posting for Dental Health Workers in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Aspen Dental Management, Inc.	805	22.7%	4 : 1	55 days
Mortenson Family Dental	226	6.4%	2 : 1	26 days
Heartland Dental	142	4.0%	4 : 1	37 days
Kool Smiles	139	3.9%	4 : 1	49 days
University of Kentucky	137	3.9%	8 : 1	33 days
United States Department of the Army	136	3.8%	1 : 1	46 days
ImmediaDent	119	3.4%	2 : 1	34 days
United States Department of the Air Force	97	2.7%	2 : 1	4 days
Mid-America Health, Inc.	92	2.6%	3 : 1	32 days
360 Cafe	84	2.4%	2 : 1	50 days

Figure 3.22: Kentucky's Dental Health Workers by Age Group

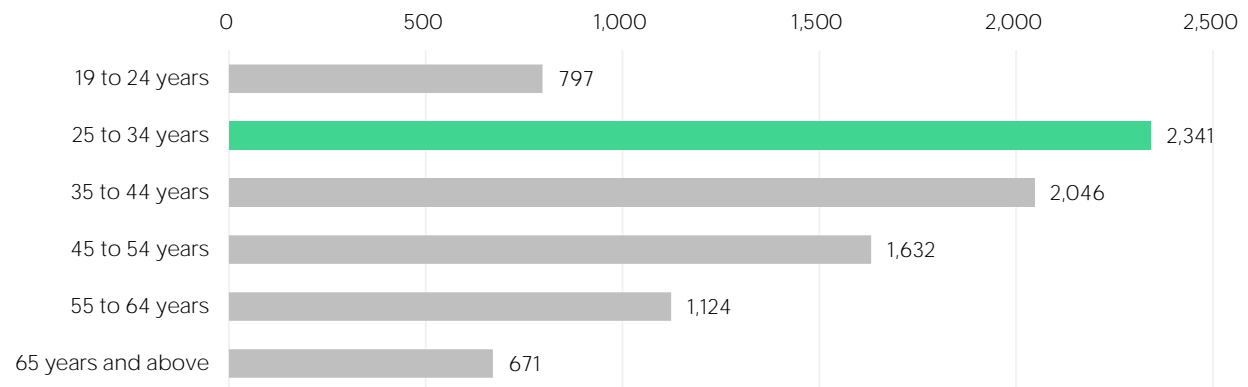


Figure 3.23: Kentucky's Dental Health Workers by Major Race and Ethnicity Group

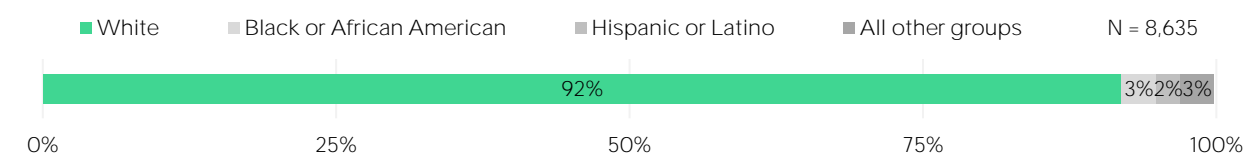
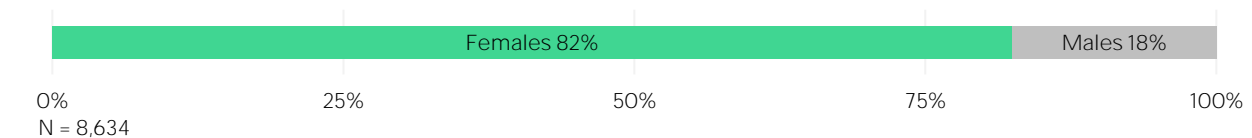


Figure 3.24: Kentucky's Dental Health Workers by Gender



Source: Emsi Job Posting Analytics February 2017 to February 2020. Emsi Employees & Self-Employed 2020.1.

ATHLETIC TRAINERS & PHYSICAL THERAPISTS

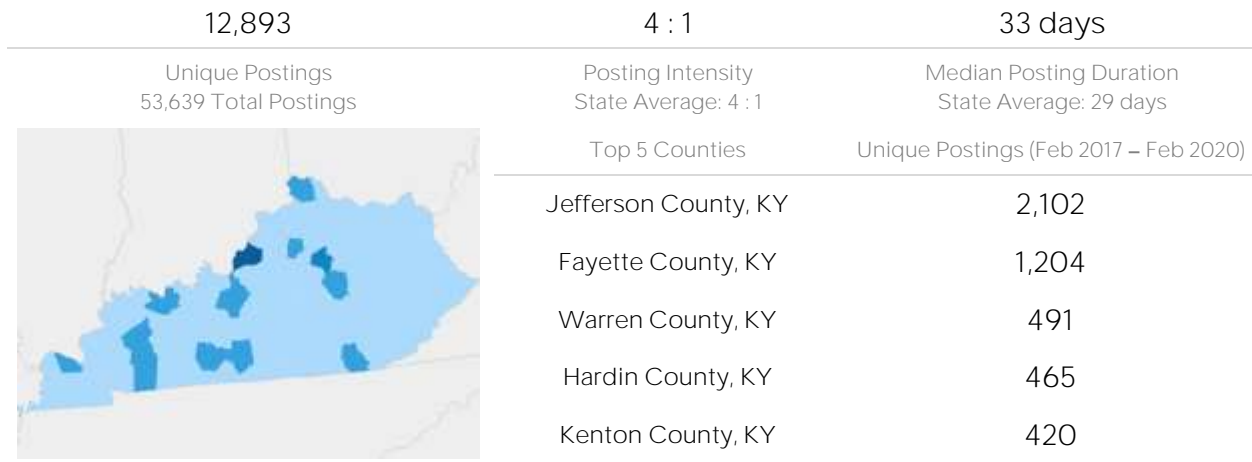
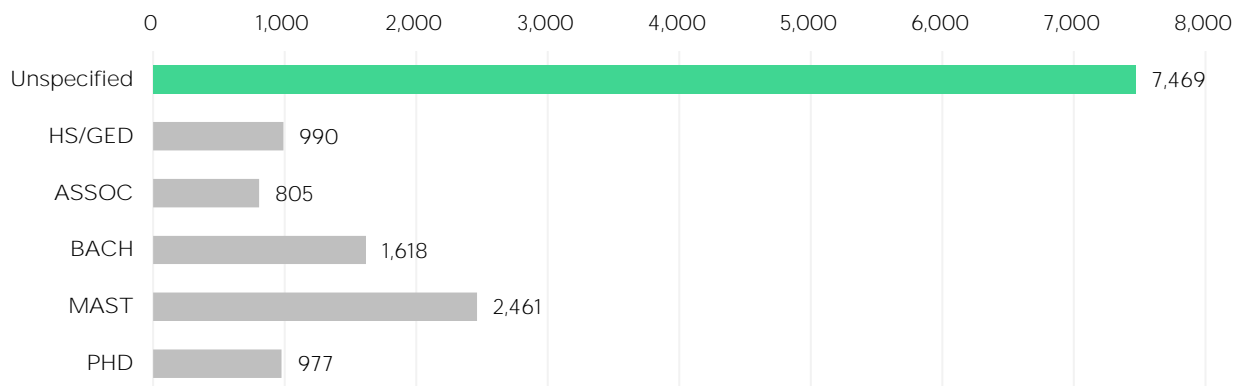


Table 3.25: Kentucky Job Postings by Occupation for Athletic Trainers and Physical Therapists

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Physical Therapists	6,894	53.5%	4 : 1	35 days
Occupational Therapists	2,678	20.8%	4 : 1	26 days
Physical Therapist Assistants	2,549	19.8%	4 : 1	38 days
Recreational Therapists	430	3.3%	4 : 1	34 days
Athletic Trainers	203	1.6%	3 : 1	38 days
Physical Therapist Aides	87	0.7%	4 : 1	33 days
Exercise Physiologists	52	0.4%	3 : 1	33 days
Total	12,893	100.0%	4 : 1	33 days

Figure 3.25: Required Levels of Education in the Kentucky Job Postings for Athletic Trainers and Physical Therapists



Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.26: Top 15 Job Titles in Kentucky Job Postings for Athletic Trainers and Physical Therapists

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Physical Therapists	5,624	43.6%	5 : 1	36 days
Occupational Therapists	2,361	18.3%	4 : 1	26 days
Physical Therapist Assistants (PTA)	2,213	17.2%	4 : 1	38 days
Travel Physical Therapists (PT)	724	5.6%	3 : 1	26 days
Athletic Trainers	196	1.5%	3 : 1	37 days
Physical Therapy Technicians	181	1.4%	6 : 1	35 days
Activity Directors	98	0.8%	4 : 1	26 days
Speech Therapists	96	0.7%	5 : 1	50 days
Therapy Technicians	85	0.7%	3 : 1	49 days
Registered Nurses	62	0.5%	4 : 1	32 days
Therapy Supervisors	62	0.5%	3 : 1	44 days
Recreational Therapists	58	0.4%	5 : 1	33 days
Clinical Directors (Healthcare Practitioners & Technical)	56	0.4%	4 : 1	59 days
Recruiters	51	0.4%	4 : 1	39 days
Exercise Physiologists	50	0.4%	4 : 1	35 days

Table 3.27: Top 10 Cities in Kentucky Job Postings for Athletic Trainers and Physical Therapists

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	1,967	15.3%	5 : 1	32 days
Lexington, KY	1,162	9.0%	5 : 1	42 days
Bowling Green, KY	476	3.7%	4 : 1	41 days
Elizabethtown, KY	364	2.8%	4 : 1	35 days
Frankfort, KY	308	2.4%	4 : 1	41 days
Paducah, KY	259	2.0%	4 : 1	33 days
Owensboro, KY	242	1.9%	3 : 1	37 days
Hopkinsville, KY	219	1.7%	5 : 1	30 days
Glasgow, KY	197	1.5%	6 : 1	43 days
Florence, KY	188	1.5%	4 : 1	42 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.28: Top 10 Companies Posting for Athletic Trainers and Physical Therapists in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
LHC Group, Inc.	703	5.5%	6 : 1	44 days
Centra Health, Inc.	698	5.4%	9 : 1	24 days
Kindred Healthcare, Inc.	510	4.0%	5 : 1	24 days
Rehabcare Group, Inc.	490	3.8%	5 : 1	54 days
Select Medical	366	2.8%	5 : 1	67 days
Aegis Therapies, Inc.	317	2.5%	2 : 1	57 days
Signature Healthcare LLC	299	2.3%	3 : 1	32 days
Catholic Health Initiatives	294	2.3%	5 : 1	50 days
Ardor Health Solutions	280	2.2%	2 : 1	19 days
Amedisys, Inc.	254	2.0%	3 : 1	63 days

Figure 3.26: Kentucky's Athletic Trainers and Physical Therapists by Age Group

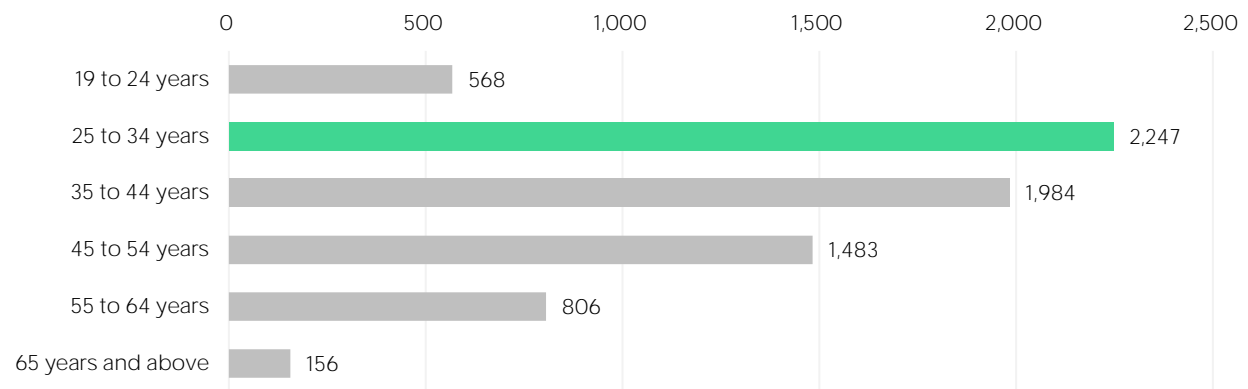


Figure 3.27: Kentucky's Athletic Trainers and Physical Therapists by Major Race and Ethnicity Group

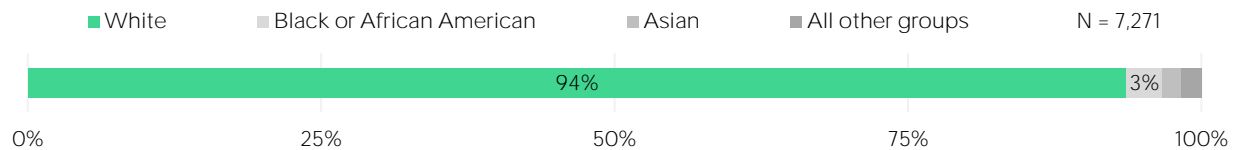
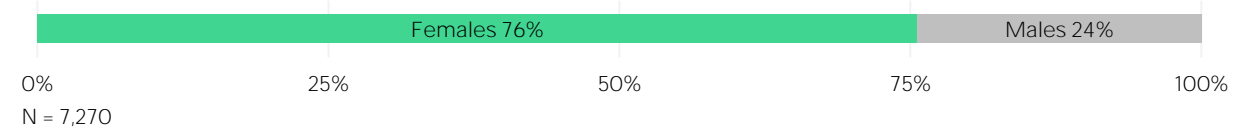


Figure 3.28: Kentucky's Athletic Trainers and Physical Therapists by Gender



Source: Emsi Job Posting Analytics February 2017 to February 2020. Emsi Employees & Self-Employed 2020.1.

MEDICAL ADMINISTRATORS

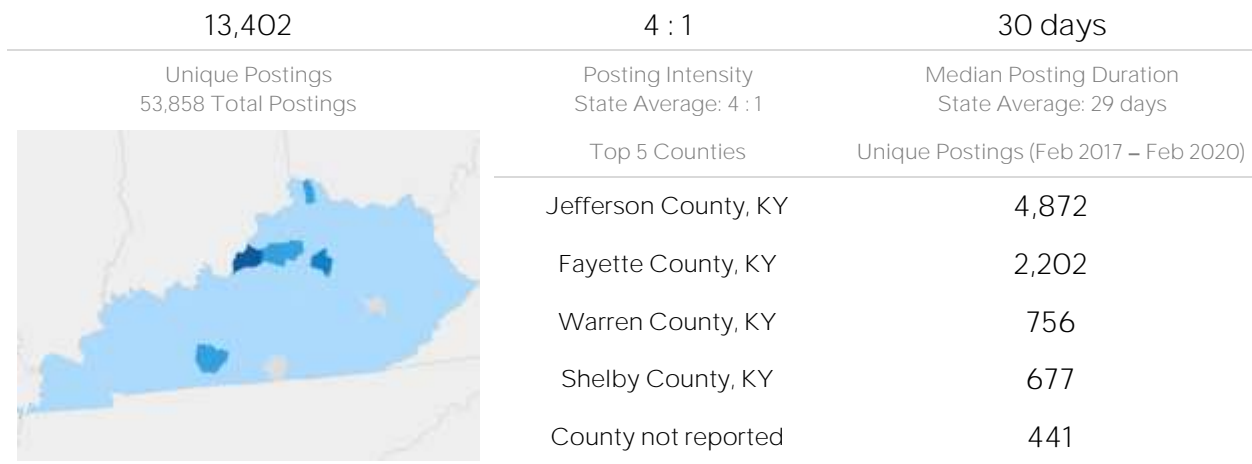
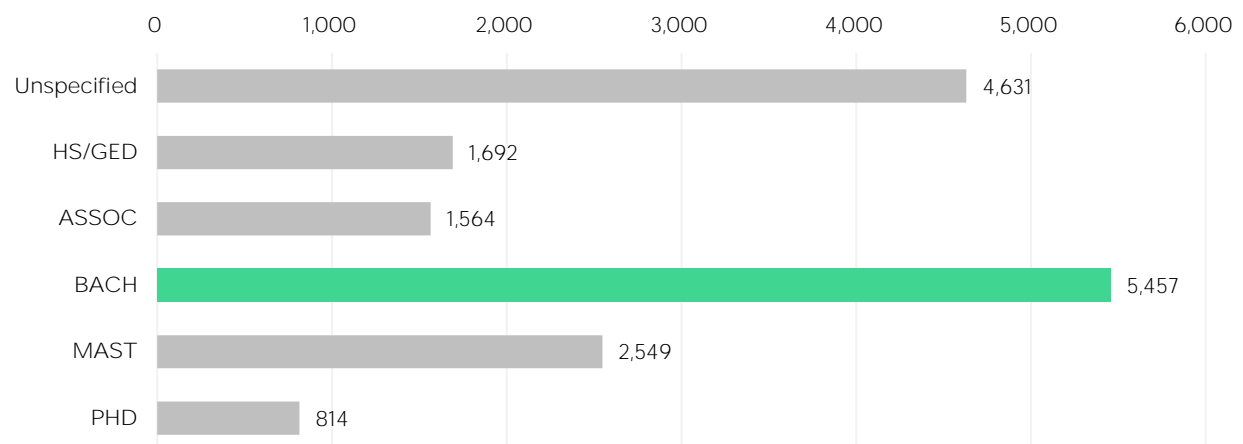


Table 3.29: Kentucky Job Postings by Occupation for Medical Administrators

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Medical & Health Services Managers	9,841	73.4%	4 : 1	32 days
Medical Records & Health Information Technicians	3,375	25.2%	4 : 1	26 days
Medical Transcriptionists	186	1.4%	2 : 1	17 days
Total	13,402	100.0%	4 : 1	30 days

Figure 3.29: Required Levels of Education in the Kentucky Job Postings for Medical Administrators



Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.30: Top 15 Job Titles in Kentucky Job Postings for Medical Administrators

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Medical Directors	1,089	8.1%	4 : 1	44 days
Directors of Nursing (Management)	543	4.1%	4 : 1	30 days
Nurse Managers (Management)	503	3.8%	5 : 1	25 days
Health Services Directors	456	3.4%	3 : 1	30 days
Medical Records Clerks	415	3.1%	4 : 1	23 days
Program Managers (Management)	333	2.5%	3 : 1	29 days
Clinical Managers (Management)	326	2.4%	4 : 1	29 days
Practice Managers	281	2.1%	4 : 1	32 days
Assistant Directors (Management)	247	1.8%	3 : 1	27 days
Medical Coders	239	1.8%	3 : 1	22 days
Health Information Management (HIM) Managers	199	1.5%	4 : 1	30 days
Behavioral Health Care Managers	192	1.4%	4 : 1	23 days
Nurse Auditors	186	1.4%	4 : 1	23 days
Medical Records Specialists	185	1.4%	5 : 1	21 days
Medical Coding Specialists	145	1.1%	5 : 1	30 days

Table 3.31: Top 10 Cities in Kentucky Job Postings for Medical Administrators

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	4,643	34.6%	5 : 1	33 days
Lexington, KY	2,150	16.0%	5 : 1	31 days
Bowling Green, KY	746	5.6%	3 : 1	28 days
Shelbyville, KY	669	5.0%	3 : 1	22 days
Frankfort, KY	360	2.7%	3 : 1	28 days
Owensboro, KY	237	1.8%	3 : 1	32 days
Paducah, KY	205	1.5%	4 : 1	35 days
Elizabethtown, KY	163	1.2%	3 : 1	23 days
Lyndon, KY	140	1.0%	1 : 1	28 days
Ashland, KY	132	1.0%	4 : 1	35 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.32: Top 10 Companies Posting for Medical Administrators in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Anthem, Inc.	2,499	18.6%	4 : 1	22 days
University of Kentucky	537	4.0%	9 : 1	31 days
Humana, Inc.	412	3.1%	7 : 1	44 days
Norton Healthcare, Inc.	347	2.6%	4 : 1	37 days
Catholic Health Initiatives	243	1.8%	5 : 1	33 days
Genesis Healthcare, Inc.	232	1.7%	6 : 1	44 days
Signature Healthcare LLC	215	1.6%	3 : 1	27 days
Kindred Healthcare, Inc.	211	1.6%	8 : 1	32 days
Appalachian Regional Healthcare, Inc.	199	1.5%	2 : 1	17 days
Virtual Vocations	195	1.5%	1 : 1	10 days

Figure 3.30: Kentucky's Medical Administrators by Age Group

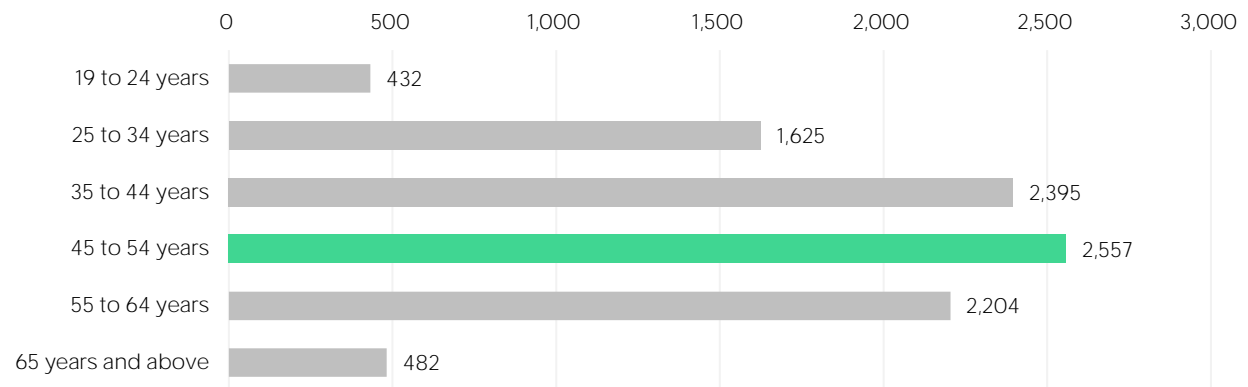


Figure 3.31: Kentucky's Medical Administrators by Major Race and Ethnicity Group

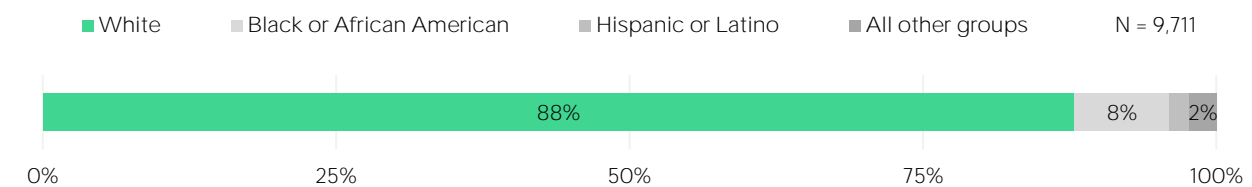
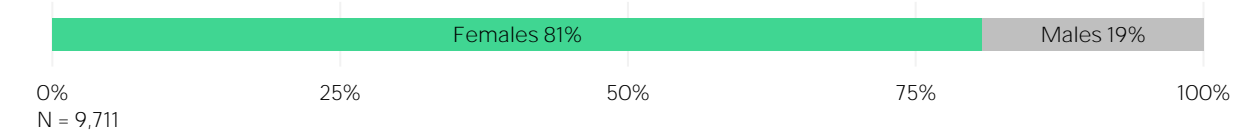


Figure 3.32: Kentucky's Medical Administrators by Gender



Source: Emsi Job Posting Analytics February 2017 to February 2020. Emsi Employees & Self-Employed 2020.1.

VETERINARY MEDICINE WORKERS

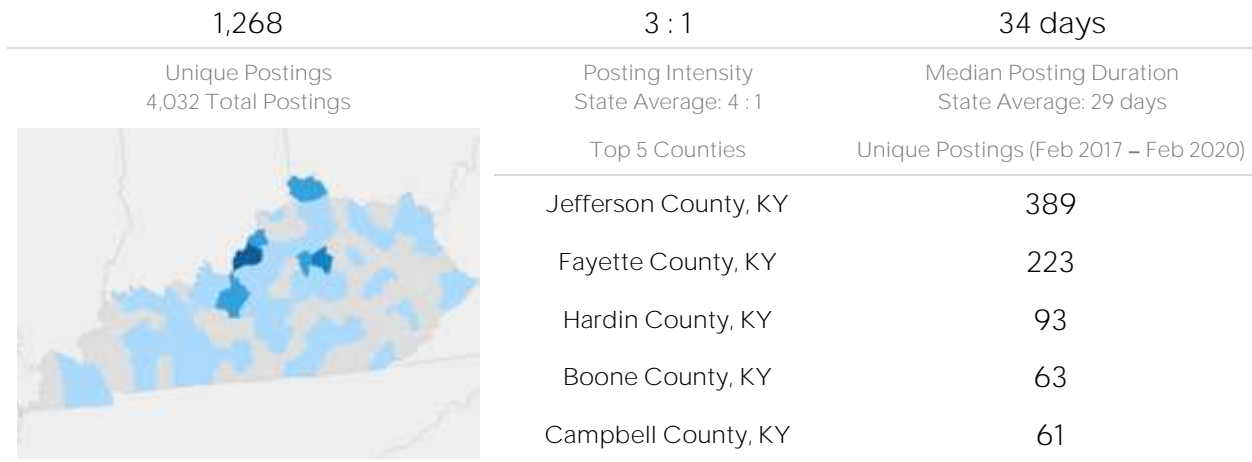
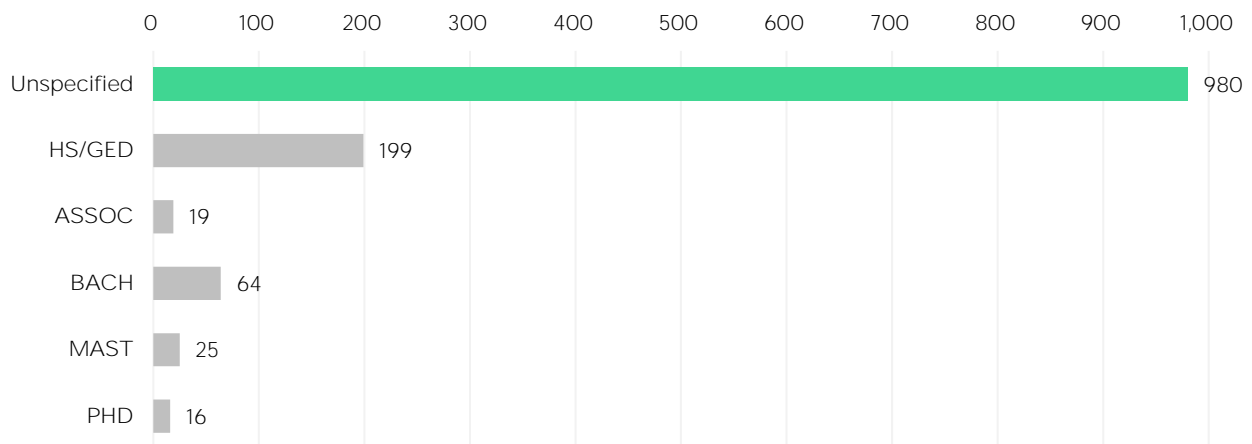


Table 3.33: Kentucky Job Postings by Occupation for Veterinary Medicine Workers

OCCUPATION TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Veterinarians	684	53.9%	3 : 1	39 days
Veterinary Technologists & Technicians	302	23.8%	3 : 1	31 days
Veterinary Assistants & Laboratory Animal Caretakers	282	22.2%	3 : 1	27 days
Total	1,268	100.0%	3 : 1	34 days

Figure 3.33: Required Levels of Education in the Kentucky Job Postings for Veterinary Medicine Workers



Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.34: Top 15 Job Titles in Kentucky Job Postings for Veterinary Medicine Workers

JOB TITLE	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Veterinarians	424	33.4%	3 : 1	43 days
Veterinary Technicians	354	27.9%	3 : 1	29 days
Veterinary Assistants	195	15.4%	3 : 1	32 days
Doctors	71	5.6%	6 : 1	51 days
Animal Technicians	40	3.2%	4 : 1	29 days
Public Health Analysts	12	0.9%	1 : 1	49 days
Animal Laboratory Technicians	10	0.8%	5 : 1	45 days
Health & Safety Officers	9	0.7%	2 : 1	20 days
Professional Services Consultants	9	0.7%	4 : 1	25 days
Practice Managers	7	0.6%	3 : 1	23 days
Surgeons	6	0.5%	1 : 1	9 days
Automotive Technicians	6	0.5%	2 : 1	12 days
Family Practice Physicians	5	0.4%	6 : 1	59 days
Research Assistants	4	0.3%	2 : 1	17 days
Team Member Trainers (Healthcare Practitioners & Technical)	4	0.3%	2 : 1	7 days

Table 3.35: Top 10 Cities in Kentucky Job Postings for Veterinary Medicine Workers

CITY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Louisville, KY	369	29.1%	3 : 1	40 days
Lexington, KY	211	16.6%	5 : 1	34 days
Elizabethtown, KY	66	5.2%	4 : 1	40 days
Florence, KY	45	3.5%	4 : 1	35 days
Versailles, KY	42	3.3%	2 : 1	25 days
Newport, KY	39	3.1%	5 : 1	58 days
Crestwood, KY	33	2.6%	2 : 1	13 days
Nicholasville, KY	27	2.1%	3 : 1	53 days
Frankfort, KY	24	1.9%	2 : 1	21 days
Radcliff, KY	23	1.8%	2 : 1	28 days

Source: Emsi Job Posting Analytics February 2017 to February 2020.

Table 3.36: Top 10 Companies Posting for Veterinary Medicine Workers in Kentucky Job Postings

COMPANY	UNIQUE POSTINGS	% UNIQUE POSTINGS	POSTING INTENSITY	MEDIAN POSTING DURATION
Banfield Pet Hospital	258	20.3%	5 : 1	61 days
Oklahoma Veterinary Medical Foundation, Inc.	56	4.4%	2 : 1	129 days
VIP Pet Care LLC	41	3.2%	2 : 1	68 days
University of Kentucky	39	3.1%	8 : 1	36 days
Country Critters LTD	35	2.8%	4 : 1	39 days
VCA, Inc.	34	2.7%	2 : 1	56 days
VETCO Clinics	29	2.3%	3 : 1	46 days
BluePearl LLC	28	2.2%	3 : 1	106 days
PetVet Care Centers LLC	25	2.0%	4 : 1	32 days
BluePearl Veterinary Partners LLC	23	1.8%	3 : 1	40 days

Figure 3.34: Kentucky's Veterinary Medicine Workers by Age Group

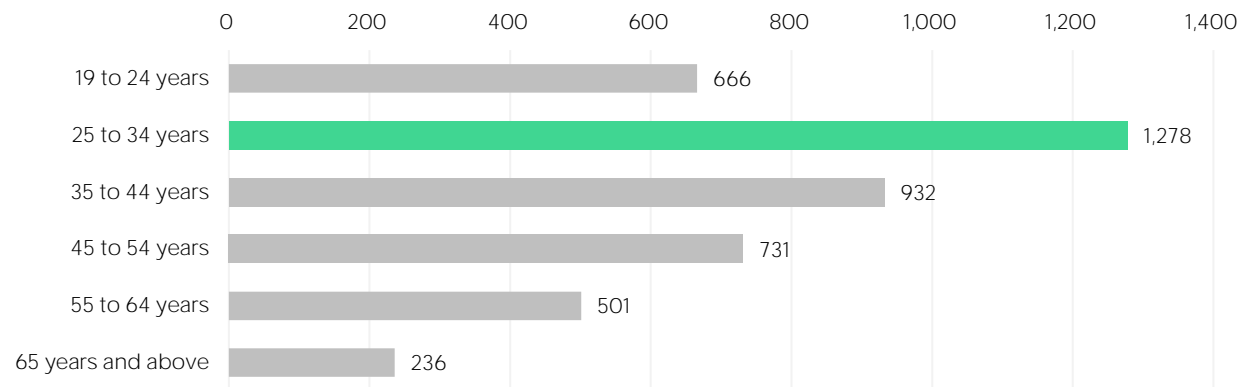


Figure 3.35: Kentucky's Veterinary Medicine Workers by Major Race and Ethnicity Group

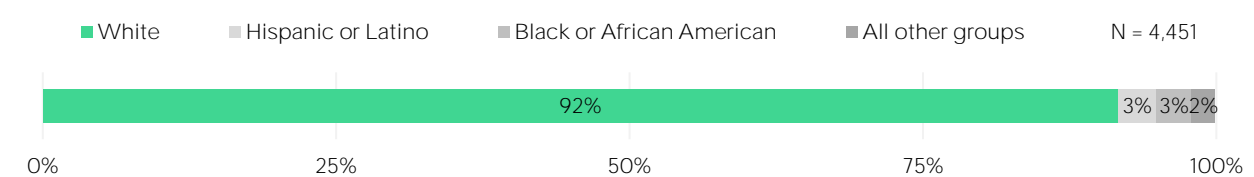
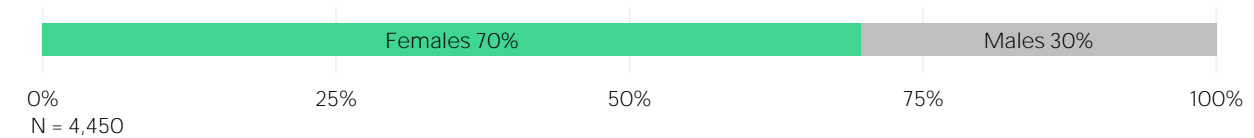


Figure 3.36: Kentucky's Veterinary Medicine Workers by Gender



Source: Emsi Job Posting Analytics February 2017 to February 2020. Emsi Employees & Self-Employed 2020.1.



Program Demand Gap Analysis

Knowing how healthcare workers are employed in the state and its regions, the program demand gap analysis offers a better understanding of the connection between healthcare jobs and educational institutions, answering the following question:

Where are there misalignments between the workforce demand and the supply of college and university completers?

This chapter outlines the deficit of Kentucky's program completions to the workforce (gap), as well as the oversupply of completions to the workforce (surplus). The specific healthcare occupations directly related or mapped to the programs with a large gap and surplus are also displayed. Results are provided for the state and each region by award level. Before providing and discussing the results, we will go over the interpretation of the results.

INTERPRETATION

The terms used in the analysis are as follows:

Gap Represents a deficit, or when there are more job openings in an occupation than there are completions. If left unaddressed, a gap may lead to missed opportunities for economic growth and put stress on local businesses to find the necessary talent elsewhere. Significant gaps translate into higher human resources costs and decreased efficiencies in the economic system. They also provide an opportunity for postsecondary educational institutions to develop new programs and/or strengthen their current programs.

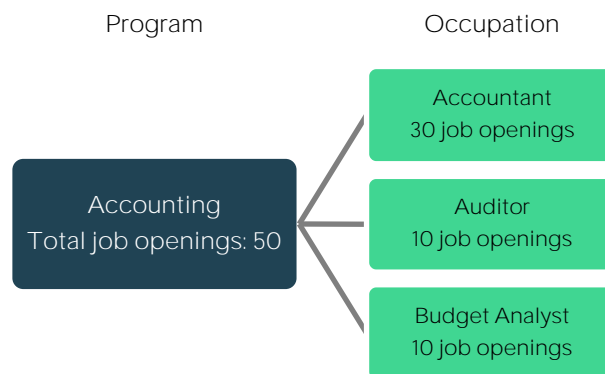
Surplus Represents an oversupply, or when there are more completions than there are job openings in an occupation. If left unaddressed, significant surpluses may lead to higher unemployment rates or higher attrition rates—the college or university could be educating a workforce that is leaving the state or region after program completion because of a lack of job opportunities.

When reviewing the results of the analysis, consider that not all gaps or surpluses indicate necessary program adjustments. Due to labor market inefficiencies, it is common for most programs to face a certain level of gap or surplus. This means only the largest gaps or

surpluses should be reviewed or further developed. In the following sections, the program gaps and surpluses are discussed by award level and presented as figures and tables.

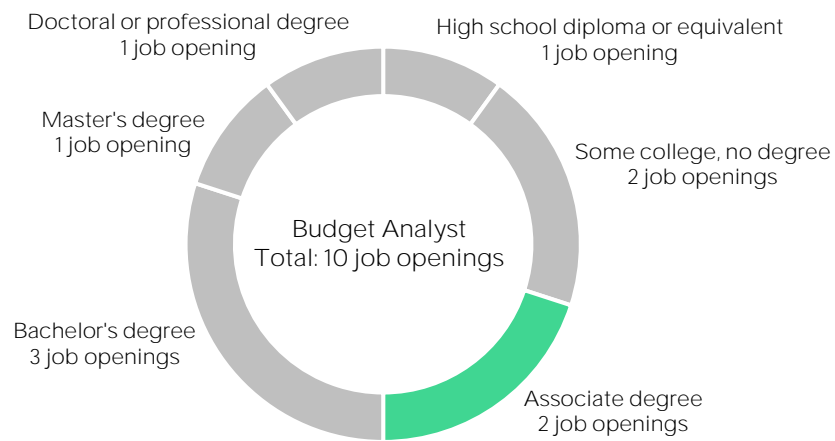
The figures show the gap between job demand and the supply of program completions. An explanation of job demand is warranted here, and a more detailed description can be found in Appendix 5. A program's job demand is measured as its total number of annual job openings, on average, from 2019 to 2029. The total is calculated as the sum of state or regional job openings for each occupation mapped to the program, as illustrated in Figure 4.1.

Figure 4.1: Example of One Program Mapped to Three Occupations



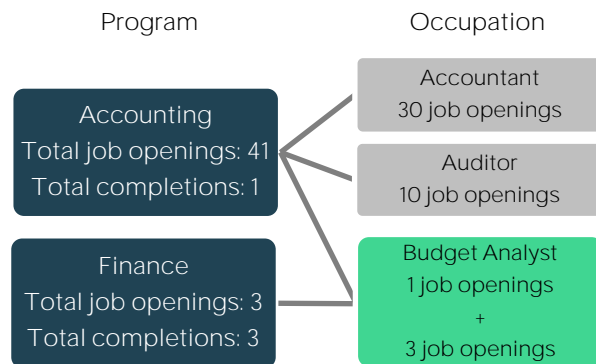
Furthermore, an occupation's job openings are not a gross measure of job openings available in the state or region. For every occupation, job openings have been weighted by the program's award level and account for the highest educational attainments of those employed in the position. The educational attainments in this chapter are for adults less than 34 years, which better reflect the institutions' student populations. Figure 4.2 illustrates how this methodology applies to an occupation's total job openings. For example, two job openings or 20% of total job openings are available to budget analysts at the associate degree level, seeing that there are a total of 10 job openings, and 20% of those working in the occupation have an associate degree level of education.

Figure 4.2: Example of an Occupation's Weighted Job Openings by Award Level



Finally, job openings are de-duplicated and scaled across programs when an occupation is mapped to more than one program. As illustrated in Figure 4.3, budget analysts, which have four total job openings, are mapped to two programs. However, the Finance program is three-times the size of the Accounting program, measured in terms of completions. Thus, one job opening is portioned to the Accounting program and three job openings to the Finance program.

Figure 4.3: Example of Two Programs with One Shared Occupation



Supply is shown as the average number of program completions statewide and in the region by award level. The analysis considers certificates and associate, bachelor's, master's, and doctoral degrees. Completion data are sourced from the Council data portal⁶ and reported as a three-year average of fiscal years (FYs) 2016-17 to 2018-19. Certificates are reported as

6 Source: <https://dataportal.cpe.ky.gov/EnrollmentAndGraduationSummary.aspx>.

undergraduate awards of less than one year, between one and two years, and as diplomas between one and two years. Associate and bachelor's degrees are reported as such, and master's degrees include post-baccalaureate certificates and institutionally defined graduate students. Doctoral degrees are defined as doctoral degree research/scholars. Other award categories, such as undergraduate certificates between two and four years and post-master's certificates, are found in the data portal, but the awards do not include programs related to healthcare. The gap, then, is the difference between job openings and program completions.

A great amount of data is presented in the tables appearing in this chapter. The first set shows the gaps and surpluses across all the healthcare programs offered by Kentucky's institutions. The tables include the Classification of Instructional Program (CIP) code and title, as well as the programs' institutional sector:⁷

- Association of Independent Kentucky Colleges & Universities (AIKCU);
- Kentucky Community & Technical College System (KCTCS);
- Public State Universities (State); and
- Licensed Out-of-State Schools (Other).

The tables also include the average annual number of projected job openings associated with the program (which have been de-duplicated using the process outlined in Appendix 5), the average annual number of program completions from the state or region, and the gap or surplus. The programs' median hourly wage rates are specific to Kentucky or to the region under analysis.

The second set of tables identify the occupations mapped to the programs with a large gap or surplus, by award level, and show detailed occupational data. The tables include the CIP code, CIP title, and occupations mapped to the healthcare program, by their Standard Occupational Classification (SOC) codes and titles. The state and regional job counts, by occupation, are shown for 2019 and 2029, with the change in jobs and average annual job openings for those years. The occupations' median hourly wage rates are specific to the state or region.

Important Note

This analysis is intended to serve as a starting point for the Council as it discusses statewide workforce needs. A deficit (gap) or oversupply (surplus) of workers in a particular occupation category represents a potential problem for Kentucky, making it important for each program and occupation group to be evaluated on a case-by-case basis. The purpose of this analysis

⁷ See Appendix 7 for a list of institutions by sector included in the analysis.

is, therefore, to initiate the conversation on evaluating program effectiveness. Once evaluated internally within the member institutions, specific implications may be considered for programs with substantial gaps or surpluses.

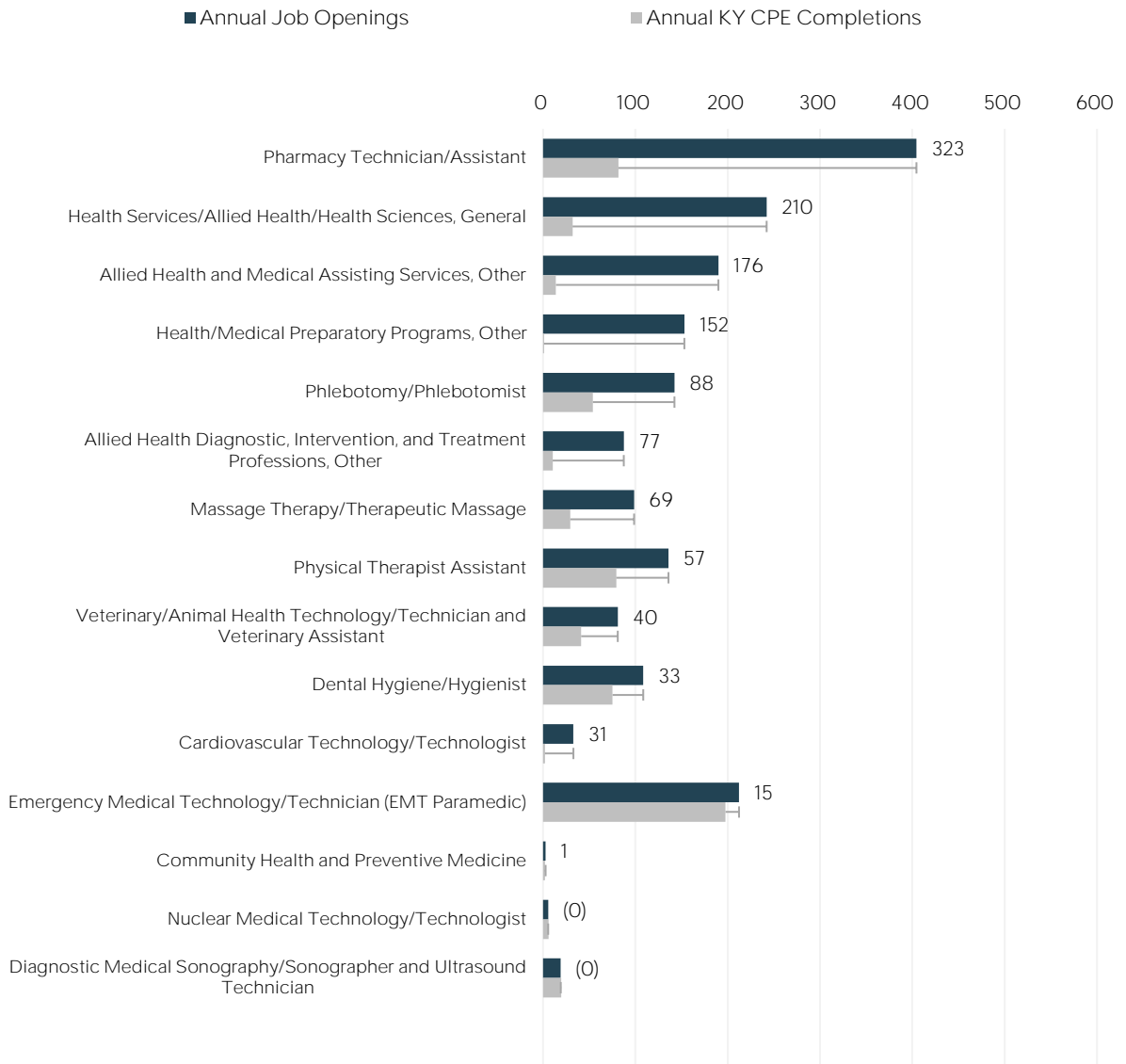
It must be noted that our analysis does have its limitations in that only the education supply pipeline is considered. This is due to data availability at the regional and institutional levels. However, other sources—unemployed workers, industry trained pipelines, workers migrating to the state, and job changers from other occupational categories—can also be a source of skilled workers. These types of considerations are useful when evaluating specific types of occupations. Publicly available data sources are limited in accounting for this, and consequently these labor sources are unavailable for Emsi analysis. Primary data collection methods (i.e., interviews and surveys) are among the only ways to obtain information on the other sources for skilled workers.

KENTUCKY

Combined Level Analysis

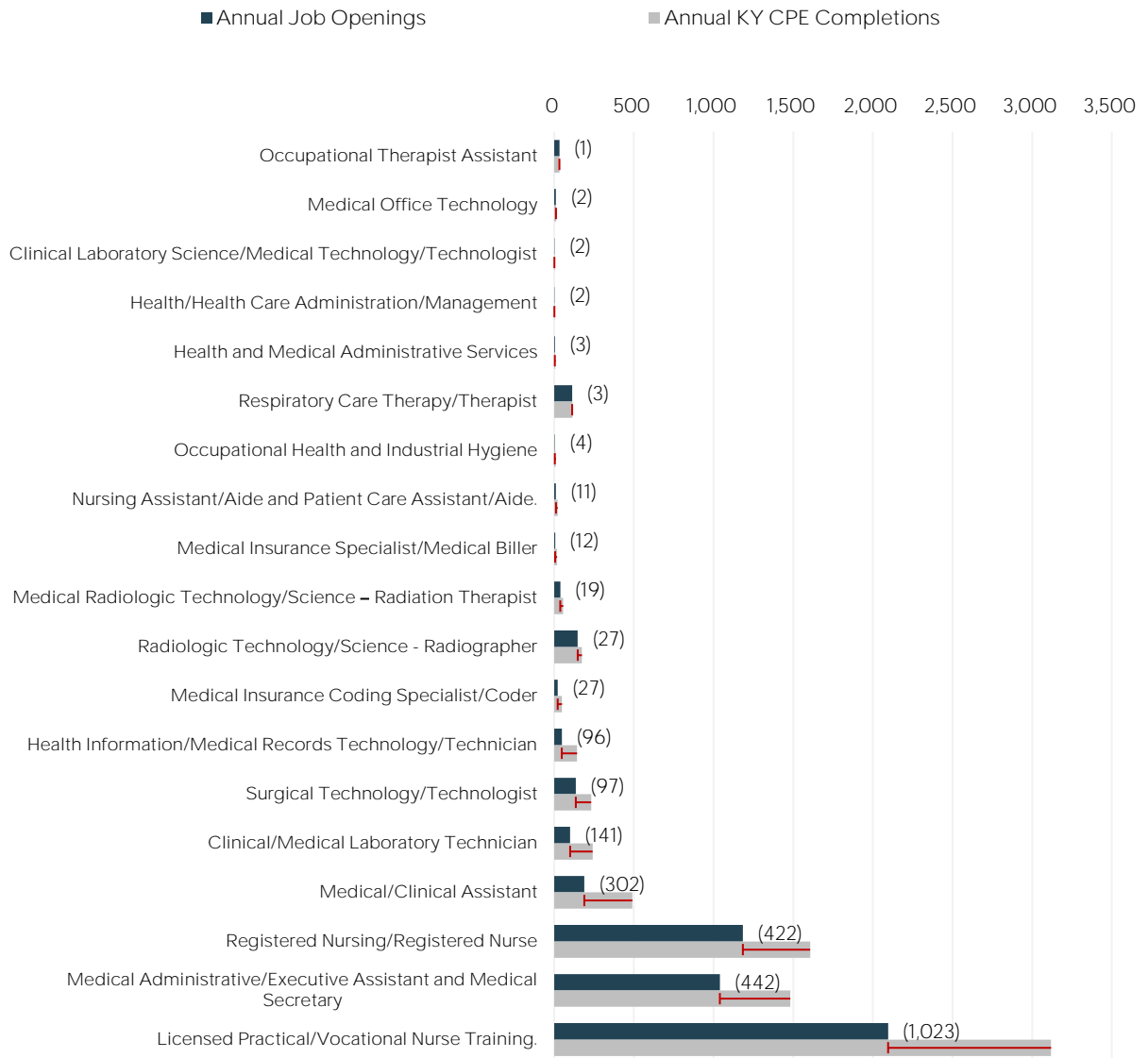
Figure 4.4 through Figure 4.7 display program demand gap analysis results based on combining Kentucky's healthcare programs into two categories – certificate and associate degrees combined (CERT+) and bachelor's, master's, and doctoral degrees combined (BACH+). As seen in the figures, the Pharmacy Technician/Assistant (CERT+), Nursing Education (BACH+), and Health Services/Allied Health/Health Sciences, General (CERT+ and BACH+) programs look to be areas of expansion. Each of these programs are discussed in more detail below. A number of programs, such as the Emergency Medical Technology/Technician (CERT+), Respiratory Care Therapy/Therapist (CERT+), and Dental Hygiene/Hygienist (BACH+) programs, appear to be performing well in terms of high levels of demand and supply. The institutions should maintain focus on the success of these programs. A number of programs – such as Licensed Practical/Vocational Nurse Training (CERT+) and Registered Nursing/Registered Nurse (CERT+ and BACH+) should be reconsidered for consolidation from the labor market perspective based on a large surplus of program completers with not a comparable amount of occupational demand.

Figure 4.4: Kentucky's CERT+ Level Healthcare Programs with a Gap



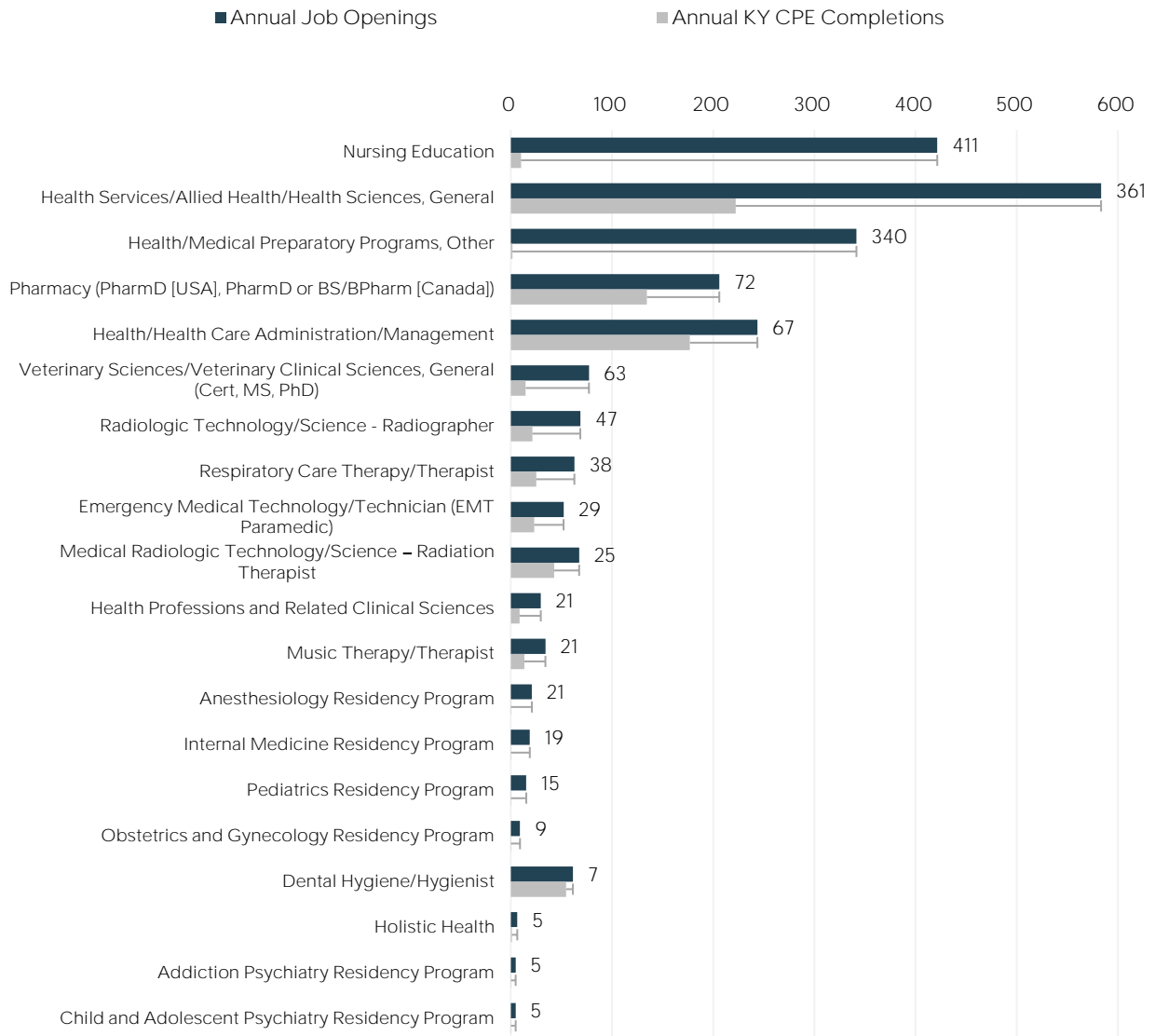
Source: Emsi program demand gap model.

Figure 4.5: Kentucky's CERT+ Level Healthcare Programs with a Surplus



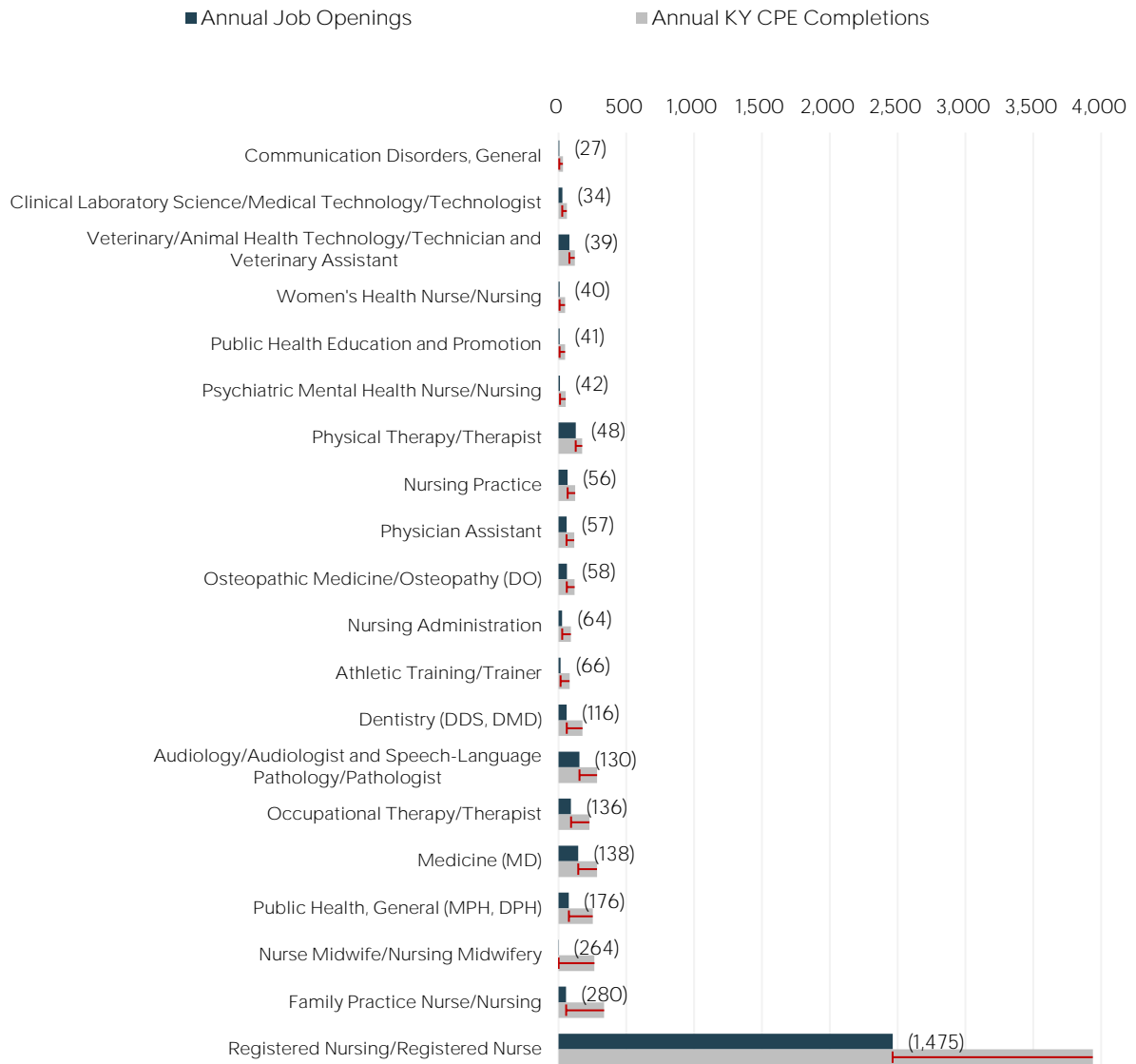
Source: Emsi program demand gap model.

Figure 4.6: Kentucky's Top 20 BACH+ Degree Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Figure 4.7: Kentucky's Top 20 BACH+ Degree Level Healthcare Programs with a Surplus



Source: Emsi program demand gap model.

Certificate Level Analysis

The largest certificate level gap, at 186 job openings, is in the Pharmacy Technician/Assistant program (Figure 4.8). Within the program, Kentucky's institutions have 75 average annual completions, and the program's occupations have about 261 statewide job openings, which accounts for the large program gap. All the award level's program gaps and surpluses are shown in Table 4.1. The Allied Health & Medical Assisting Services, Other program also has a large gap of 176. The Licensed Practical/Vocational Nurse Training program has the largest surplus of program completions, as indicated by the highlighted rows in the table. The

occupations mapped to the large gap and surplus programs are shown in Tables 4.2 and 4.3, respectively.

Results indicate a need for an expansion of the state's Pharmacy Technician/Assistant programs and an outcomes analysis for the state's Licensed Practical/Vocational Nurse Training programs.⁸ For the former, Kentucky supports about 16,700 jobs for the pharmacy technician occupation, with about 261 projected average annual job openings from 2019 to 2029. A certificate level of education seems appropriate for the occupation, and its median annual wage rate is \$13.61 or \$23,309 annually, considering 2,080 working hours in a year.⁹ For context, Kentucky's state minimum wage is \$7.25 per hour,¹⁰ and the state's living wage is \$10.82 for a household with one working adult and no children.¹¹

The Licensed Practical/Vocational Nurse Training program is mapped to three occupations – nursing assistants, licensed practical & licensed vocational nurses, and home health aides. Across the three occupations, there is a large number of job openings. However, there is an even larger number of completers, especially from KCTCS. Students may be finding successful employment after program completion, but it appears as though they are not all finding jobs in the related occupations. The programs' re-evaluations should emphasize students' employment outcomes.

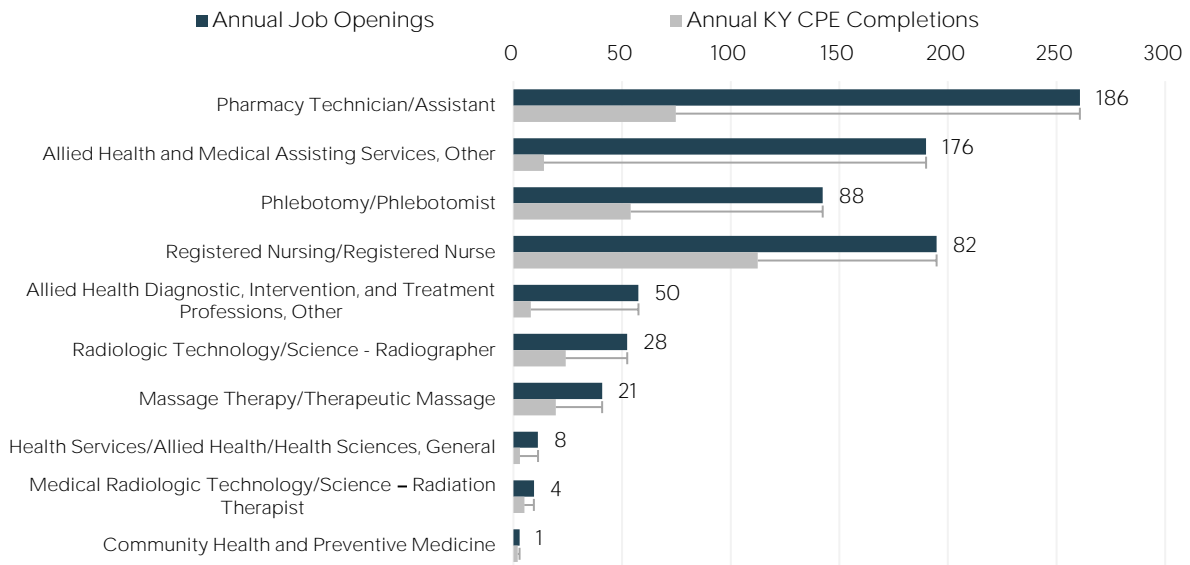
8 Further research must be conducted before making a final determination, such as top employer identification within the state and its regions; business surveys to verify the data; resume analysis to determine trending skills for individuals with similar educations; industry recommendations on curriculum development; and analysis of the strengths, weaknesses, and capacities of similar programs available at Kentucky's higher education institutions.

9 Annual wages in this report consider 2,080 working hours in a year.

10 Kentucky adopts the federal minimum wage rate, and effective July 1, 2009, the federal minimum wage is \$7.25 per hour. Source: Kentucky General Assembly, Kentucky Revised Statutes.

11 Living wage calculations provided by Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology. See Appendix 6.

Figure 4.8: Kentucky's Certificate Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Table 4.1: Gaps and Surpluses for Kentucky's Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0805	Pharmacy Technician/Assistant	KCTCS	248	71	177	--
		Other	13	4	9	--
		<i>Total</i>	<i>261</i>	<i>75</i>	<i>186</i>	<i>\$13.61</i>
51.0899	Allied Health and Medical Assisting Services, Other	KCTCS	190	14	176	--
		<i>Total</i>	<i>190</i>	<i>14</i>	<i>176</i>	<i>\$20.66</i>
51.1009	Phlebotomy/Phlebotomist	Other	142	54	88	--
		<i>Total</i>	<i>142</i>	<i>54</i>	<i>88</i>	<i>\$15.57</i>
51.3801	Registered Nursing/Registered Nurse	Other	195	113	82	--
		<i>Total</i>	<i>195</i>	<i>113</i>	<i>82</i>	<i>\$34.24</i>
51.0999	Allied Health Diagnostic, Intervention, and Treatment Professions, Other	KCTCS	58	8	50	--
		<i>Total</i>	<i>58</i>	<i>8</i>	<i>50</i>	<i>\$24.74</i>
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	20	9	11	--
		Other	33	15	18	--



CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	52	24	28	\$25.04
51.3501	Massage Therapy/Therapeutic Massage	KCTCS	25	12	13	--
		Other	16	8	8	--
		<i>Total</i>	41	20	21	\$21.79
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	11	3	8	--
		<i>Total</i>	11	3	8	\$14.98
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	KCTCS	9	5	4	--
		<i>Total</i>	9	5	4	\$25.54
51.2208	Community Health and Preventive Medicine	KCTCS	3	2	1	--
		<i>Total</i>	3	2	1	\$28.60
51.0799	Health and Medical Administrative Services	KCTCS	3	3	(0)	--
		<i>Total</i>	3	3	(0)	\$34.49
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	AIKCU	1	3	(2)	--
		<i>Total</i>	1	3	(2)	\$22.88
51.0710	Medical Office Technology	Other	3	5	(2)	--
		<i>Total</i>	3	5	(2)	\$15.51
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	148	152	(3)	--
		Other	3	3	(0)	--
		<i>Total</i>	151	155	(3)	\$14.55
51.2206	Occupational Health and Industrial Hygiene	State	4	8	(4)	--
		<i>Total</i>	4	8	(4)	\$28.87
51.0602	Dental Hygiene/Hygienist	KCTCS	19	24	(5)	--
		<i>Total</i>	19	24	(5)	\$28.54
51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide.	KCTCS	11	22	(11)	--
		<i>Total</i>	11	22	(11)	\$12.31

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0714	Medical Insurance Specialist/Medical Biller	Other	6	18	(12)	--
		<i>Total</i>	<i>6</i>	<i>18</i>	<i>(12)</i>	<i>\$15.98</i>
51.0713	Medical Insurance Coding Specialist/Coder	KCTCS	6	15	(9)	--
		Other	10	26	(16)	--
		<i>Total</i>	<i>16</i>	<i>41</i>	<i>(25)</i>	<i>\$15.52</i>
51.0909	Surgical Technology/Technologist	KCTCS	93	119	(26)	--
		<i>Total</i>	<i>93</i>	<i>119</i>	<i>(26)</i>	<i>\$21.35</i>
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	15	53	(38)	--
		Other	4	12	(9)	--
		<i>Total</i>	<i>19</i>	<i>65</i>	<i>(46)</i>	<i>\$15.89</i>
51.1004	Clinical/Medical Laboratory Technician	KCTCS	63	186	(123)	--
		<i>Total</i>	<i>63</i>	<i>186</i>	<i>(123)</i>	<i>\$22.88</i>
51.0801	Medical/Clinical Assistant	KCTCS	100	321	(221)	--
		Other	16	53	(37)	--
		<i>Total</i>	<i>116</i>	<i>374</i>	<i>(257)</i>	<i>\$15.04</i>
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	753	1,210	(457)	--
		Other	1	2	(1)	--
		<i>Total</i>	<i>754</i>	<i>1,212</i>	<i>(457)</i>	<i>\$15.51</i>
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	2,060	3,066	(1,006)	--
		Other	35	53	(17)	--
		<i>Total</i>	<i>2,096</i>	<i>3,119</i>	<i>(1,023)</i>	<i>\$14.20</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.



Table 4.2: Occupations Mapped to Kentucky's Certificate Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	16,692	18,568	1,876	261	\$13.61
ALLIED HEALTH AND MEDICAL ASSISTING SERVICES, OTHER (CIP CODE 51.0899)						
31-2021	Physical Therapist Assistants	1,592	1,841	248	50	\$26.55
29-2052	Pharmacy Technicians	8,346	9,284	938	49	\$13.61
29-2056	Veterinary Technologists & Technicians	1,133	1,385	252	30	\$15.08
29-2031	Cardiovascular Technologists & Technicians	1,083	1,177	94	14	\$22.57
29-2032	Diagnostic Medical Sonographers	756	925	169	8	\$30.90
29-2055	Surgical Technologists	1,768	1,922	154	7	\$21.01
31-1014	Nursing Assistants	24,395	25,519	1,124	6	\$12.52
31-2011	Occupational Therapy Assistants	474	606	132	6	\$26.14
29-2018	Clinical Laboratory Technologists & Technicians	4,293	4,843	550	5	\$22.88
29-2035	Magnetic Resonance Imaging Technologists	367	422	55	5	\$33.41
29-2099	Health Technologists & Technicians, All Other	1,708	1,977	269	4	\$21.90
31-9092	Medical Assistants	9,387	11,176	1,789	4	\$15.04
29-1071	Physician Assistants	1,145	1,465	320	3	\$45.26

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.3: Occupations Mapped to Kentucky's Certificate Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
31-1014	Nursing Assistants	48,791	51,038	2,248	1,323	\$12.52
29-2061	Licensed Practical & Licensed Vocational Nurses	20,245	21,600	1,354	501	\$20.23
31-1011	Home Health Aides	6,620	9,636	3,016	272	\$11.31
MEDICAL ADMINISTRATIVE/EXECUTIVE ASSISTANT AND MEDICAL SECRETARY (CIP CODE 51.0716)						

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
31-9092	Medical Assistants	18,774	22,351	3,577	377	\$15.04
43-6013	Medical Secretaries	10,911	12,971	2,061	250	\$15.31
29-2071	Medical Records & Health Information Technicians	7,201	7,875	674	95	\$17.42
31-9094	Medical Transcriptionists	1,692	1,765	72	32	\$16.93
Medical/Clinical Assistant (CIP Code 51.0801)						
31-9092	Medical Assistants	18,774	22,351	3,577	116	\$15.04
Clinical/Medical Laboratory Technician (CIP Code 51.1004)						
29-2018	Clinical Laboratory Technologists & Technicians	4,293	4,843	550	63	\$22.88

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

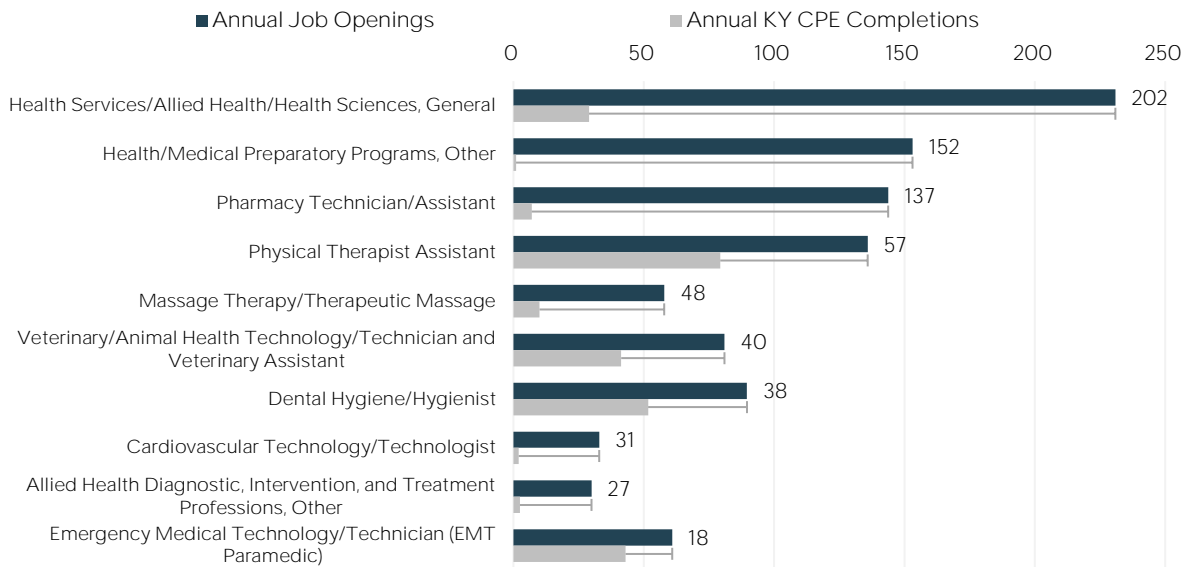
Associate Degree Level Analysis

The largest associate degree level gap, at 202 job openings, is in the Health Services/Allied Health/Health Sciences, General program (Figure 4.9). Within the program, Kentucky's institutions have 29 average annual completions, and the program's occupations have about 231 statewide job openings, which accounts for the large program gap. All the award level's program gaps and surpluses are shown in Table 4.4. Two other programs have a large gap and one program has a large surplus of program completions.

The occupations mapped to the Health Services/Allied Health/Health Sciences, General program are shown in Table 4.5. The occupation driving the demand is nursing assistants, although phlebotomists also comprise many the annual job openings. All the occupations mapped to the program have wages above the state minimum wage and state living wage for one adult with no children. Program expansion is recommended but, considering this is a general program, institutions should also consider how they can prepare students for success in a niche in the labor market and/or progress them along career pathways.¹²

12 As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

Figure 4.9: Kentucky's Top 10 Associate Degree Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Table 4.4: Gaps and Surpluses for Kentucky's Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	231	29	202	--
		<i>Total</i>	231	29	202	\$14.01
51.1199	Health/Medical Preparatory Programs, Other	AIKCU	153	1	152	--
		<i>Total</i>	153	1	152	\$17.22
51.0805	Pharmacy Technician/Assistant	Other	144	7	137	--
		<i>Total</i>	144	7	137	\$13.61
51.0806	Physical Therapist Assistant	KCTCS	136	79	57	--
		<i>Total</i>	136	79	57	\$21.35
51.3501	Massage Therapy/Therapeutic Massage	KCTCS	29	5	24	--
		Other	29	5	24	--
		<i>Total</i>	58	10	48	\$23.09
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	KCTCS	30	15	15	--
		State	51	26	25	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	81	41	40	\$12.94
51.0602	Dental Hygiene/Hygienist	KCTCS	79	45	33	--
		State	11	6	5	--
		<i>Total</i>	90	52	38	\$28.54
51.0901	Cardiovascular Technology/Technologist	Other	33	2	31	--
		<i>Total</i>	33	2	31	\$23.02
51.0999	Allied Health Diagnostic, Intervention, and Treatment Professions, Other	KCTCS	30	3	27	--
		<i>Total</i>	30	3	27	\$24.16
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	40	28	12	--
		State	21	15	6	--
		<i>Total</i>	61	43	18	\$14.55
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	283	268	15	--
		Other	3	3	0	--
		<i>Total</i>	285	271	15	\$15.49
51.0710	Medical Office Technology	Other	8	7	0	--
		<i>Total</i>	8	7	0	\$15.49
51.0905	Nuclear Medical Technology/Technologist	KCTCS	6	6	(0)	--
		<i>Total</i>	6	6	(0)	\$31.00
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	KCTCS	19	20	(0)	--
		<i>Total</i>	19	20	(0)	\$30.13
51.0803	Occupational Therapist Assistant	KCTCS	33	33	(1)	--
		<i>Total</i>	33	33	(1)	\$26.14
51.0713	Medical Insurance Coding Specialist/Coder	Other	6	8	(2)	--
		<i>Total</i>	6	8	(2)	\$15.42
51.0799	Health and Medical Administrative Services	KCTCS	1	4	(2)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	1	4	(2)	\$18.92
51.0701	Health/Health Care Administration/Management	AIKCU	1	4	(2)	--
		<i>Total</i>	1	4	(2)	\$18.92
51.0908	Respiratory Care Therapy/Therapist	KCTCS	101	103	(2)	--
		Other	5	6	(0)	--
		State	6	6	(0)	--
		<i>Total</i>	112	115	(3)	\$23.73
51.1004	Clinical/Medical Laboratory Technician	KCTCS	31	45	(15)	--
		Other	6	10	(3)	--
		<i>Total</i>	37	55	(18)	\$22.88
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	KCTCS	9	16	(7)	--
		State	20	36	(16)	--
		<i>Total</i>	28	52	(23)	\$25.66
51.0801	Medical/Clinical Assistant	AIKCU	1	2	(1)	--
		KCTCS	33	54	(20)	--
		Other	38	61	(23)	--
		<i>Total</i>	73	117	(44)	\$15.04
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	14	38	(24)	--
		Other	11	30	(19)	--
		State	4	10	(7)	--
		<i>Total</i>	29	78	(49)	\$15.98
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	79	124	(45)	--
		Other	16	26	(10)	--
		<i>Total</i>	95	150	(55)	\$25.17
51.0909	Surgical Technology/Technologist	KCTCS	36	97	(60)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		Other	6	17	(10)	--
		<i>Total</i>	<i>43</i>	<i>113</i>	<i>(71)</i>	<i>\$21.21</i>
51.3801	Registered Nursing/Registered Nurse	AIKCU	50	75	(25)	--
		KCTCS	534	806	(272)	--
		Other	247	373	(126)	--
		State	159	241	(81)	--
		<i>Total</i>	<i>989</i>	<i>1,494</i>	<i>(505)</i>	<i>\$30.39</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.5: Occupations Mapped to Kentucky's Associate Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	24,395	25,519	1,124	110	\$12.52
31-9097	Phlebotomists	2,245	2,670	425	52	\$14.50
31-1011	Home Health Aides	3,310	4,818	1,508	23	\$11.31
29-2018	Clinical Laboratory Technologists & Technicians	4,293	4,843	550	20	\$22.88
31-9092	Medical Assistants	9,387	11,176	1,789	18	\$15.04
21-1093	Social & Human Service Assistants	4,866	5,693	827	6	\$13.27
29-2071	Medical Records & Health Information Technicians	3,600	3,937	337	3	\$17.42
HEALTH/MEDICAL PREPARATORY PROGRAMS, OTHER (CIP CODE 51.1199)						
31-9091	Dental Assistants	4,804	5,224	420	122	\$17.02
29-2052	Pharmacy Technicians	8,346	9,284	938	21	\$13.61
29-2061	Licensed Practical & Licensed Vocational Nurses	10,123	10,800	677	4	\$20.23
29-1071	Physician Assistants	1,145	1,465	320	3	\$45.26
29-1141	Registered Nurses	46,239	51,174	4,935	1	\$29.69
29-2041	Emergency Medical Technicians & Paramedics	4,260	4,518	258	1	\$14.55



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
31-1011	Home Health Aides	3,310	4,818	1,508	1	\$11.31
31-2021	Physical Therapist Assistants	1,592	1,841	248	1	\$26.55
11-9111	Medical & Health Services Managers	5,265	6,002	737	0	\$39.95
21-1093	Social & Human Service Assistants	4,866	5,693	827	0	\$13.27
29-2034	Radiologic Technologists	3,798	4,130	332	0	\$24.46
29-1067	Surgeons	214	225	11	0	\$126.96
29-1023	Orthodontists	121	120	(2)	0	\$48.51
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	8,346	9,284	938	144	\$13.61

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.6: Occupations Mapped to Kentucky's Associate Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	184,954	204,694	19,740	924	\$29.69
11-9111	Medical & Health Services Managers	21,059	24,009	2,950	64	\$39.95
29-1151	Nurse Anesthetists	4,605	5,255	649	1	\$76.42
29-1161	Nurse Midwives	457	523	66	0	\$47.56
29-1171	Nurse Practitioners	12,752	15,706	2,954	0	\$46.22

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

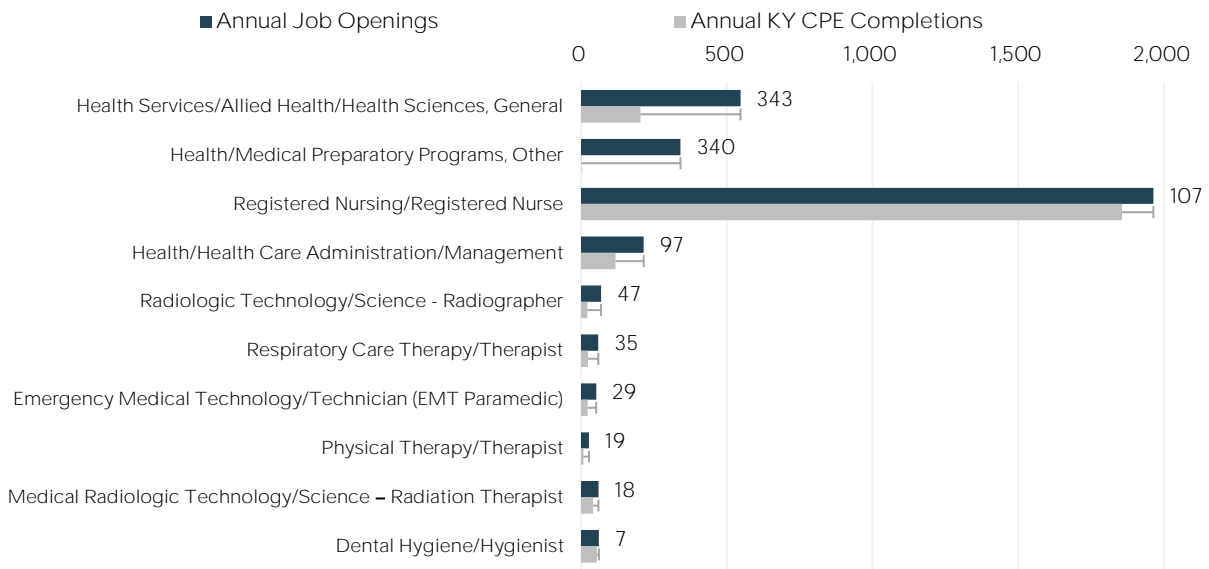
Bachelor's Degree Level Analysis

The largest bachelor's degree level gap, at 343 job openings, is in the Health Services/Allied Health/Health Sciences, General program (Figure 4.10). Within the program, Kentucky's institutions, on average, annually award 204 degrees, and the program's occupations have 547 statewide job openings, which accounts for the large program gap. All the award level's

program gaps and surpluses are shown in Table 4.7. Programs with a large gap or surplus are indicated by the highlighted rows in the table.

One of the programs with a large gap is the Registered Nursing/Registered Nurse program. The state awards 1,856 bachelor’s degrees, primarily from public state universities, yet there are 1,964 average annual job openings at the bachelor’s degree level. While the program is mapped to multiple occupations (Table 4.8), the majority of the job demand stems from registered nurses. Note that this program faced a large surplus at the associate degree level, with completions primarily from KCTCS. Therefore, a program expansion is not recommended at this time. Rather, institutions should incorporate ADN to BSN pathways to help move students with an associate degree into more employment possibilities with a bachelor’s degree.¹³

Figure 4.10: Kentucky’s Top 10 Bachelor’s Degree Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Table 4.7: Gaps and Surpluses for Kentucky’s Bachelor’s Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	State	426	159	267	--
		AIKCU	119	44	75	--

13 As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		Other	3	1	2	--
		<i>Total</i>	<i>547</i>	<i>204</i>	<i>343</i>	<i>\$15.18</i>
51.1199	Health/Medical Preparatory Programs, Other	AIKCU	342	2	340	--
		<i>Total</i>	<i>342</i>	<i>2</i>	<i>340</i>	<i>\$19.83</i>
51.3801	Registered Nursing/Registered Nurse	AIKCU	370	349	20	--
		Other	232	219	13	--
		State	1,363	1,288	75	--
		<i>Total</i>	<i>1,964</i>	<i>1,856</i>	<i>107</i>	<i>\$30.98</i>
51.0701	Health/Health Care Administration/Management	AIKCU	59	32	26	--
		State	149	82	67	--
		Other	7	4	3	--
		<i>Total</i>	<i>215</i>	<i>118</i>	<i>97</i>	<i>\$16.53</i>
51.0911	Radiologic Technology/Science - Radiographer	State	69	21	47	--
		<i>Total</i>	<i>69</i>	<i>21</i>	<i>47</i>	<i>\$24.05</i>
51.0908	Respiratory Care Therapy/Therapist	State	33	13	20	--
		AIKCU	26	11	16	--
		<i>Total</i>	<i>59</i>	<i>24</i>	<i>35</i>	<i>\$23.67</i>
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	State	52	23	29	--
		<i>Total</i>	<i>52</i>	<i>23</i>	<i>29</i>	<i>\$14.55</i>
51.2308	Physical Therapy/Therapist	AIKCU	27	8	19	--
		<i>Total</i>	<i>27</i>	<i>8</i>	<i>19</i>	<i>\$40.72</i>
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	State	54	38	16	--
		AIKCU	6	4	2	--
		<i>Total</i>	<i>60</i>	<i>42</i>	<i>18</i>	<i>\$26.74</i>
51.0602	Dental Hygiene/Hygienist	State	61	55	7	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	61	55	7	\$28.54
51.2305	Music Therapy/Therapist	State	15	9	6	--
		<i>Total</i>	15	9	6	\$40.57
51.3306	Holistic Health	Other	6	1	5	--
		<i>Total</i>	6	1	5	\$26.99
51.1109	Pre-Physical Therapy Studies	AIKCU	3	1	2	--
		<i>Total</i>	3	1	2	\$40.72
51.3818	Nursing Practice	AIKCU	22	21	1	--
		<i>Total</i>	22	21	1	\$30.71
51.3802	Nursing Administration	AIKCU	18	17	1	--
		<i>Total</i>	18	17	1	\$30.58
51.1105	Pre-Nursing Studies	AIKCU	2	3	(0)	--
		<i>Total</i>	2	3	(0)	\$30.14
51.3899	Reg. Nursing/Nursing Admin/Nursing Research/Clinical Nursing, Other	Other	9	9	(0)	--
		AIKCU	17	18	(1)	--
		<i>Total</i>	26	27	(1)	\$29.84
51.1504	Community Health Services/Liaison/Counseling	AIKCU	2	5	(3)	--
		<i>Total</i>	2	5	(3)	\$16.43
51.1501	Substance Abuse/Addiction Counseling	AIKCU	1	2	(1)	--
		Other	1	4	(2)	--
		<i>Total</i>	2	6	(4)	\$15.10
51.0001	Health and Wellness, General	AIKCU	2	7	(5)	--
		<i>Total</i>	2	7	(5)	\$27.41
51.1599	Mental and Social Health Services and Allied Professions, Other	Other	0	1	(1)	--
		State	3	9	(6)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	3	10	(7)	\$15.10
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	1	10	(9)	--
		<i>Total</i>	1	10	(9)	\$37.86
51.0706	Health Information/Medical Records Administration/Administrator	State	8	23	(16)	--
		<i>Total</i>	8	23	(16)	\$23.56
51.2202	Environmental Health	State	5	24	(19)	--
		<i>Total</i>	5	24	(19)	\$28.07
51.2208	Community Health and Preventive Medicine	State	5	30	(25)	--
		<i>Total</i>	5	30	(25)	\$29.60
51.0201	Communication Disorders, General	State	5	32	(27)	--
		<i>Total</i>	5	32	(27)	\$32.20
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	Other	2	5	(2)	--
		AIKCU	2	5	(3)	--
		State	22	50	(28)	--
		<i>Total</i>	27	60	(33)	\$22.88
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	State	80	119	(39)	--
		<i>Total</i>	80	119	(39)	\$12.92
51.2207	Public Health Education and Promotion	State	8	49	(41)	--
		<i>Total</i>	8	49	(41)	\$20.33
51.0913	Athletic Training/Trainer	AIKCU	2	14	(11)	--
		State	6	36	(30)	--
		<i>Total</i>	9	50	(41)	\$17.88
51.2306	Occupational Therapy/Therapist	State	16	70	(54)	--
		<i>Total</i>	16	70	(54)	\$37.81

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2201	Public Health, General (MPH, DPH)	State	32	128	(96)	--
		<i>Total</i>	32	128	(96)	\$27.39
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	AIKCU	1	5	(4)	--
		State	20	117	(98)	--
		<i>Total</i>	21	122	(102)	\$32.20

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.8: Occupations Mapped to Kentucky's Bachelor's Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	73,186	76,558	3,372	214	\$12.52
29-2018	Clinical Laboratory Technologists & Technicians	12,878	14,528	1,651	92	\$22.88
31-9092	Medical Assistants	28,161	33,527	5,366	87	\$15.04
29-2071	Medical Records & Health Information Technicians	10,801	11,812	1,011	49	\$17.42
21-1093	Social & Human Service Assistants	14,599	17,080	2,481	40	\$13.27
31-1011	Home Health Aides	9,930	14,454	4,524	34	\$11.31
31-9097	Phlebotomists	6,735	8,009	1,274	30	\$14.50
HEALTH/MEDICAL PREPARATORY PROGRAMS, OTHER (CIP CODE 51.1199)						
29-2052	Pharmacy Technicians	8,346	9,284	938	160	\$13.61
31-2021	Physical Therapist Assistants	1,592	1,841	248	78	\$26.55
31-9091	Dental Assistants	4,804	5,224	420	43	\$17.02
29-2061	Licensed Practical & Licensed Vocational Nurses	10,123	10,800	677	31	\$20.23
29-1071	Physician Assistants	1,145	1,465	320	22	\$45.26
29-2041	Emergency Medical Technicians & Paramedics	4,260	4,518	258	3	\$14.55
29-2034	Radiologic Technologists	3,798	4,130	332	2	\$24.46



SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	46,239	51,174	4,935	1	\$29.69
11-9111	Medical & Health Services Managers	5,265	6,002	737	0	\$39.95
21-1093	Social & Human Service Assistants	4,866	5,693	827	0	\$13.27
31-1011	Home Health Aides	3,310	4,818	1,508	0	\$11.31
29-1067	Surgeons	214	225	11	0	\$126.96
29-1023	Orthodontists	121	120	(2)	0	\$48.51
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	138,716	153,521	14,805	1,768	\$29.69
11-9111	Medical & Health Services Managers	15,794	18,006	2,212	168	\$39.95
29-1171	Nurse Practitioners	9,564	11,779	2,215	16	\$46.22
29-1151	Nurse Anesthetists	3,454	3,941	487	12	\$76.42
29-1161	Nurse Midwives	343	392	49	1	\$47.56

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.9: Occupations Mapped to Kentucky's Bachelor's Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
AUDIOLOGY/AUDIOLOGIST AND SPEECH-LANGUAGE PATHOLOGY/PATHOLOGIST (CIP CODE 51.0204)						
29-1127	Speech-Language Pathologists	4,188	5,029	841	19	\$32.29
29-1181	Audiologists	372	408	35	1	\$30.72

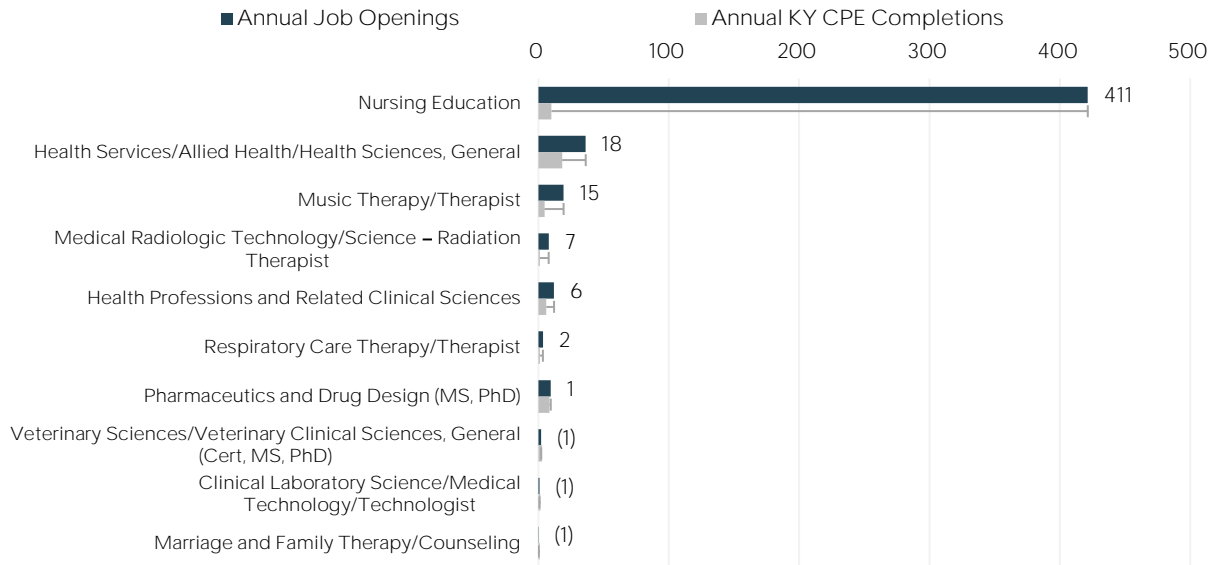
Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master's Degree Level Analysis

The largest master's degree level gap, by far with 411 job openings, is in the Nursing Education program (Figure 4.11). The program maps to two different occupations, as shown in Table 4.11, but job openings for postsecondary teachers account for all but one of the program's total job openings. Therefore, while program expansion could be warranted, institutions should focus on ensuring students are equipped to teach nursing in a

postsecondary setting.¹⁴ Three programs at this award level have a large surplus of program completions (Table 4.9).

Figure 4.11: Kentucky’s Top 10 Master’s Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.10: Gaps and Surpluses for Kentucky’s Master’s Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3817	Nursing Education	Other	379	9	370	--
		AIKCU	42	1	41	--
		<i>Total</i>	<i>421</i>	<i>10</i>	<i>411</i>	<i>\$28.55</i>
51.0000	Health Services/Allied Health/Health Sciences, General	State	21	11	11	--
		AIKCU	15	8	7	--
		<i>Total</i>	<i>36</i>	<i>18</i>	<i>18</i>	<i>\$16.00</i>
51.2305	Music Therapy/Therapist	State	19	5	15	--
		<i>Total</i>	<i>19</i>	<i>5</i>	<i>15</i>	<i>\$40.57</i>
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	State	8	1	7	--

14 As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	8	1	7	\$27.51
51.9999	Health Professions and Related Clinical Sciences	State	12	6	6	--
		<i>Total</i>	12	6	6	\$16.00
51.0908	Respiratory Care Therapy/Therapist	AIKCU	3	1	2	--
		<i>Total</i>	3	1	2	\$23.64
51.2003	Pharmaceutics and Drug Design (MS, PhD)	State	9	9	1	--
		<i>Total</i>	9	9	1	\$60.74
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	2	3	(1)	--
		<i>Total</i>	2	3	(1)	\$37.86
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	AIKCU	1	2	(1)	--
		<i>Total</i>	1	2	(1)	\$22.88
51.1505	Marriage and Family Therapy/Counseling	Other	0	1	(1)	--
		<i>Total</i>	0	1	(1)	\$14.55
51.3899	Reg. Nursing/Nursing Admin/Nursing Research/Clinical Nursing, Other	Other	0	2	(2)	--
		<i>Total</i>	0	2	(2)	\$38.98
51.0511	Prosthodontics/Prosthodontology	State	0	2	(2)	--
		<i>Total</i>	0	2	(2)	\$73.78
51.2210	International Public Health/International Health	State	0	3	(3)	--
		<i>Total</i>	0	3	(3)	\$21.99
51.0509	Pediatric Dentistry/Pedodontics (Cert., MS, PhD)	State	1	4	(3)	--
		<i>Total</i>	1	4	(3)	\$66.00
51.0510	Periodontics/Periodontology	State	0	3	(3)	--
		<i>Total</i>	0	3	(3)	\$71.06
51.0506	Endodontics/Endodontology	State	0	3	(3)	--



CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	0	3	(3)	\$71.06
51.1501	Substance Abuse/Addiction Counseling	AIKCU	4	8	(4)	--
		<i>Total</i>	4	8	(4)	\$17.22
51.3101	Dietetics/Dietitians (RD)	State	5	10	(5)	--
		<i>Total</i>	5	10	(5)	\$27.43
51.0916	Radiation Protection/Health Physics Technician	State	1	6	(5)	--
		<i>Total</i>	1	6	(5)	\$21.29
51.0508	Orthodontics/Orthodontology	State	0	6	(6)	--
		<i>Total</i>	0	6	(6)	\$48.51
51.2202	Environmental Health	State	7	13	(6)	--
		<i>Total</i>	7	13	(6)	\$27.75
51.2211	Health Services Administration	State	3	10	(6)	--
		<i>Total</i>	3	10	(6)	\$23.23
51.1508	Mental Health Counseling/Counselor	Other	1	3	(1)	--
		State	6	12	(6)	--
		<i>Total</i>	8	15	(7)	\$17.22
51.0001	Health and Wellness, General	AIKCU	4	11	(8)	--
		<i>Total</i>	4	11	(8)	\$23.23
51.0702	Health Unit Coordinator/Ward Clerk	State	0	8	(8)	--
		<i>Total</i>	0	8	(8)	\$39.95
51.0501	Dental Clinical Sciences, General (MS, PhD)	State	0	13	(13)	--
		<i>Total</i>	0	13	(13)	\$71.06
51.2706	Health Informatics	State	8	22	(14)	--
		<i>Total</i>	8	22	(14)	\$28.04
51.3803	Adult Health Nurse/Nursing	State	3	16	(14)	--
		<i>Total</i>	3	16	(14)	\$38.98

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0913	Athletic Training/Trainer	Other	0	1	(1)	--
		AIKCU	3	15	(12)	--
		State	3	16	(12)	--
		<i>Total</i>	7	31	(25)	\$19.66
51.2310	Vocational Rehabilitation Counseling/Counselor	State	22	47	(25)	--
		<i>Total</i>	22	47	(25)	\$17.31
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	134	162	(28)	--
		<i>Total</i>	134	162	(28)	\$32.28
51.0701	Health/Health Care Administration/Management	Other	7	15	(8)	--
		State	21	43	(22)	--
		<i>Total</i>	28	59	(30)	\$17.60
51.3810	Psychiatric Mental Health Nurse/Nursing	Other	6	41	(35)	--
		<i>Total</i>	6	41	(35)	\$38.98
51.3822	Women's Health Nurse/Nursing	Other	8	48	(40)	--
		<i>Total</i>	8	48	(40)	\$38.98
51.0912	Physician Assistant	AIKCU	13	25	(12)	--
		Other	19	38	(18)	--
		State	27	53	(26)	--
		<i>Total</i>	59	116	(57)	\$45.26
51.3802	Nursing Administration	Other	1	6	(6)	--
		AIKCU	3	25	(22)	--
		State	4	39	(34)	--
		<i>Total</i>	8	70	(62)	\$33.74
51.2306	Occupational Therapy/Therapist	State	35	72	(38)	--
		AIKCU	35	73	(38)	--
		<i>Total</i>	70	146	(76)	\$37.81

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2201	Public Health, General (MPH, DPH)	Other	0	1	(1)	--
		State	41	120	(79)	--
		<i>Total</i>	<i>41</i>	<i>121</i>	<i>(80)</i>	<i>\$23.28</i>
51.3807	Nurse Midwife/Nursing Midwifery	Other	1	265	(264)	--
		<i>Total</i>	<i>1</i>	<i>265</i>	<i>(264)</i>	<i>\$47.56</i>
51.3805	Family Practice Nurse/Nursing	AIKCU	6	39	(33)	--
		Other	45	284	(239)	--
		<i>Total</i>	<i>51</i>	<i>322</i>	<i>(271)</i>	<i>\$38.98</i>
51.3801	Registered Nursing/Registered Nurse	AIKCU	7	30	(23)	--
		Other	423	1,813	(1,390)	--
		State	51	220	(168)	--
		<i>Total</i>	<i>481</i>	<i>2,063</i>	<i>(1,581)</i>	<i>\$43.62</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.11: Occupations Mapped to Kentucky's Master's Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
NURSING EDUCATION (CIP CODE 51.3817)						
25-1099	Postsecondary Teachers	29,181	29,359	178	421	\$28.54
29-1141	Registered Nurses	92,477	102,347	9,870	1	\$29.69

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.12: Occupations Mapped to Kentucky's Master's Degree Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1171	Nurse Practitioners	9,564	11,779	2,215	183	\$46.22

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	138,716	153,521	14,805	143	\$29.69
11-9111	Medical & Health Services Managers	5,265	6,002	737	82	\$39.95
29-1151	Nurse Anesthetists	3,454	3,941	487	56	\$76.42
11-9111	Medical & Health Services Managers	10,529	12,004	1,475	11	\$39.95
29-1161	Nurse Midwives	343	392	49	6	\$47.56
FAMILY PRACTICE NURSE/NURSING (CIP CODE 51.3805)						
29-1171	Nurse Practitioners	6,376	7,853	1,477	29	\$46.22
29-1141	Registered Nurses	92,477	102,347	9,870	22	\$29.69
NURSE MIDWIFE/NURSING MIDWIFERY (CIP CODE 51.3807)						
29-1161	Nurse Midwives	114	131	16	1	\$47.56

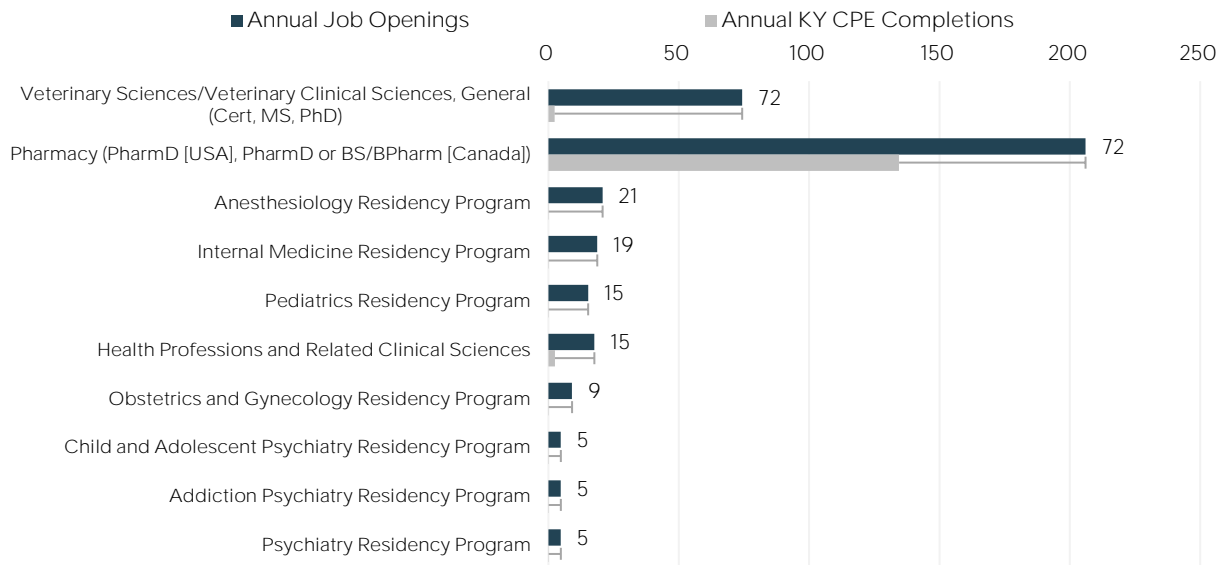
Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

The largest doctoral degree level gap programs are Veterinary Sciences/Veterinary Clinical Sciences, General and Pharmacy, which each have a gap of 72 job openings. Two programs at this award level – Dentistry (DDS, DMD) and Medicine (MD) – have a surplus of program completions, as shown in Table 4.13 and Table 4.15. However, completers of these programs are likely leaving the state to pursue residency or job opportunities elsewhere. Note that no further program development is required at this time.¹⁵

¹⁵ As stated previously, further research must be conducted before making a final determination. Emsi is available to conduct this research; see your Emsi contact for details.

Figure 4.12: Kentucky's Top 10 Doctoral Degree Level Healthcare Programs with a Gap



Source: Emsi program demand gap model.

Table 4.13: Gaps and Surpluses for Kentucky's Doctoral Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	74	2	72	--
		Total	74	2	72	\$37.86
51.2001	Pharmacy (PharmD [USA], PharmD or BS/BPharm [Canada])	State	206	135	72	--
		Total	206	135	72	\$56.79
60.0403	Anesthesiology Residency Program	State	21	0	21	--
		Total	21	0	21	\$133.28
60.0415	Internal Medicine Residency Program	State	19	0	19	--
		Total	19	0	19	\$87.69
60.0425	Pediatrics Residency Program	State	15	0	15	--
		Total	15	0	15	\$76.77
51.9999	Health Professions and Related Clinical Sciences	State	18	3	15	--
		Total	18	3	15	\$14.14
60.0419	Obstetrics and Gynecology Residency Program	State	9	0	9	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	9	0	9	\$126.02
60.0507	Child and Adolescent Psychiatry Residency Program	State	5	0	5	--
		<i>Total</i>	5	0	5	\$100.80
60.0501	Addiction Psychiatry Residency Program	State	5	0	5	--
		<i>Total</i>	5	0	5	\$100.80
60.0428	Psychiatry Residency Program	State	5	0	5	--
		<i>Total</i>	5	0	5	\$100.80
51.2003	Pharmaceutics and Drug Design (MS, PhD)	State	14	11	3	--
		<i>Total</i>	14	11	3	\$60.74
60.0101	Dental/Oral Surgery Specialty	State	3	0	3	--
		<i>Total</i>	3	0	3	\$55.66
60.0106	Pedodontics Specialty	State	1	0	1	--
		<i>Total</i>	1	0	1	\$70.93
60.0199	Dental Residency Program, Other	State	1	0	1	--
		<i>Total</i>	1	0	1	\$71.06
60.0427	Plastic Surgery Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
60.0434	Vascular Surgery Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
60.0432	Thoracic Surgery Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
60.0579	Surgical Critical Care Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
60.0416	Neurological Surgery Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
60.0414	General Surgery Residency Program	State	1	0	1	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	1	0	1	\$126.96
60.0422	Orthopedic Surgery Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$126.96
51.0202	Audiology/Audiologist and Hearing Sciences	State	7	7	0	--
		<i>Total</i>	7	7	0	\$30.72
60.0523	Hematological Pathology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0574	Rheumatology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0543	Neuroradiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0411	Diagnostic Radiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0519	Gastroenterology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0571	Pulmonary Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0430	Radiation Oncology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0418	Nuclear Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0577	Sports Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0421	Ophthalmology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0512	Cytopathology Residency Program	State	0	0	(0)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	0	0	(0)	\$106.93
60.0423	Otolaryngology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0522	Gynecologic Oncology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0499	Medical Residency Programs - General Award of at least 1 but less than 2 academic years, Other	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0525	Hospice and Palliative Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0530	Maternal Fetal Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0426	Physical Medicine and Rehabilitation Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0504	Cardiovascular Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0417	Neurology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0433	Urology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0234	Neurology	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0528	Interventional Cardiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93
60.0404	Child Neurology	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$106.93

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
60.0511	Critical Care Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0412	Emergency Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0508	Clinical Cardiac Electrophysiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0527	Infectious Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0431	Radiologic Physics Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0548	Pain Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0539	Nephrology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0546	Orthopedic Sports Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0538	Neonatal-Perinatal Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0424	Pathology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0533	Medical Physics	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0516	Endocrinology, Diabetes and Metabolism Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$106.93</i>
60.0413	Family Medicine Residency Program	State	0	0	(0)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	0	0	(0)	\$96.00
51.2201	Public Health, General (MPH, DPH)	State	3	3	(0)	--
		<i>Total</i>	3	3	(0)	\$22.27
51.3801	Registered Nursing/Registered Nurse	State	18	19	(2)	--
		<i>Total</i>	18	19	(2)	\$56.63
51.3802	Nursing Administration	State	1	4	(3)	--
		<i>Total</i>	1	4	(3)	\$32.12
51.3808	Nursing Science	State	6	9	(3)	--
		<i>Total</i>	6	9	(3)	\$36.91
51.2314	Rehabilitation Science	State	2	7	(5)	--
		<i>Total</i>	2	7	(5)	\$17.31
51.2306	Occupational Therapy/Therapist	State	6	12	(6)	--
		<i>Total</i>	6	12	(6)	\$37.81
51.3810	Psychiatric Mental Health Nurse/Nursing	State	4	12	(8)	--
		<i>Total</i>	4	12	(8)	\$36.52
51.3805	Family Practice Nurse/Nursing	AIKCU	1	4	(2)	--
		State	4	11	(7)	--
		<i>Total</i>	5	14	(9)	\$36.52
51.3818	Nursing Practice	AIKCU	3	7	(4)	--
		State	42	95	(53)	--
		<i>Total</i>	45	102	(57)	\$37.05
51.1901	Osteopathic Medicine/Osteopathy (DO)	AIKCU	61	119	(58)	--
		<i>Total</i>	61	119	(58)	\$103.87
51.2308	Physical Therapy/Therapist	AIKCU	43	72	(29)	--
		State	57	96	(39)	--
		<i>Total</i>	99	167	(68)	\$40.72

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0401	Dentistry (DDS, DMD)	State	61	177	(116)	--
		<i>Total</i>	<i>61</i>	<i>177</i>	<i>(116)</i>	<i>\$66.00</i>
51.1201	Medicine (MD)	State	145	284	(138)	--
		<i>Total</i>	<i>145</i>	<i>284</i>	<i>(138)</i>	<i>\$103.87</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.14: Occupations Mapped to Kentucky's Doctoral Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
VETERINARY SCIENCES/VETERINARY CLINICAL SCIENCES, GENERAL (CERT, MS, PHD) (CIP CODE 51.2501)						
29-1131	Veterinarians	1,289	1,493	204	74	\$37.86
PHARMACY (PHARMD [USA], PHARMD OR BS/BPHARM [CANADA]) (CIP CODE 51.2001)						
29-1051	Pharmacists	4,923	5,172	249	173	\$60.74
19-1042	Medical Scientists, Except Epidemiologists	706	851	145	24	\$35.02
11-9111	Medical & Health Services Managers	5,265	6,002	737	9	\$39.95

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.15: Occupations Mapped to Kentucky's Doctoral Degree Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
MEDICINE (MD) (CIP CODE 51.1201)						
29-1069	Physicians & Surgeons, All Other	3,466	3,881	415	105	\$106.93
29-1062	Family & General Practitioners	1,397	1,541	144	41	\$96.00
DENTISTRY (DDS, DMD) (CIP CODE 51.0401)						
29-1021	Dentists, General	1,429	1,560	131	61	\$66.00

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

CENTRAL WORKFORCE PLANNING REGION



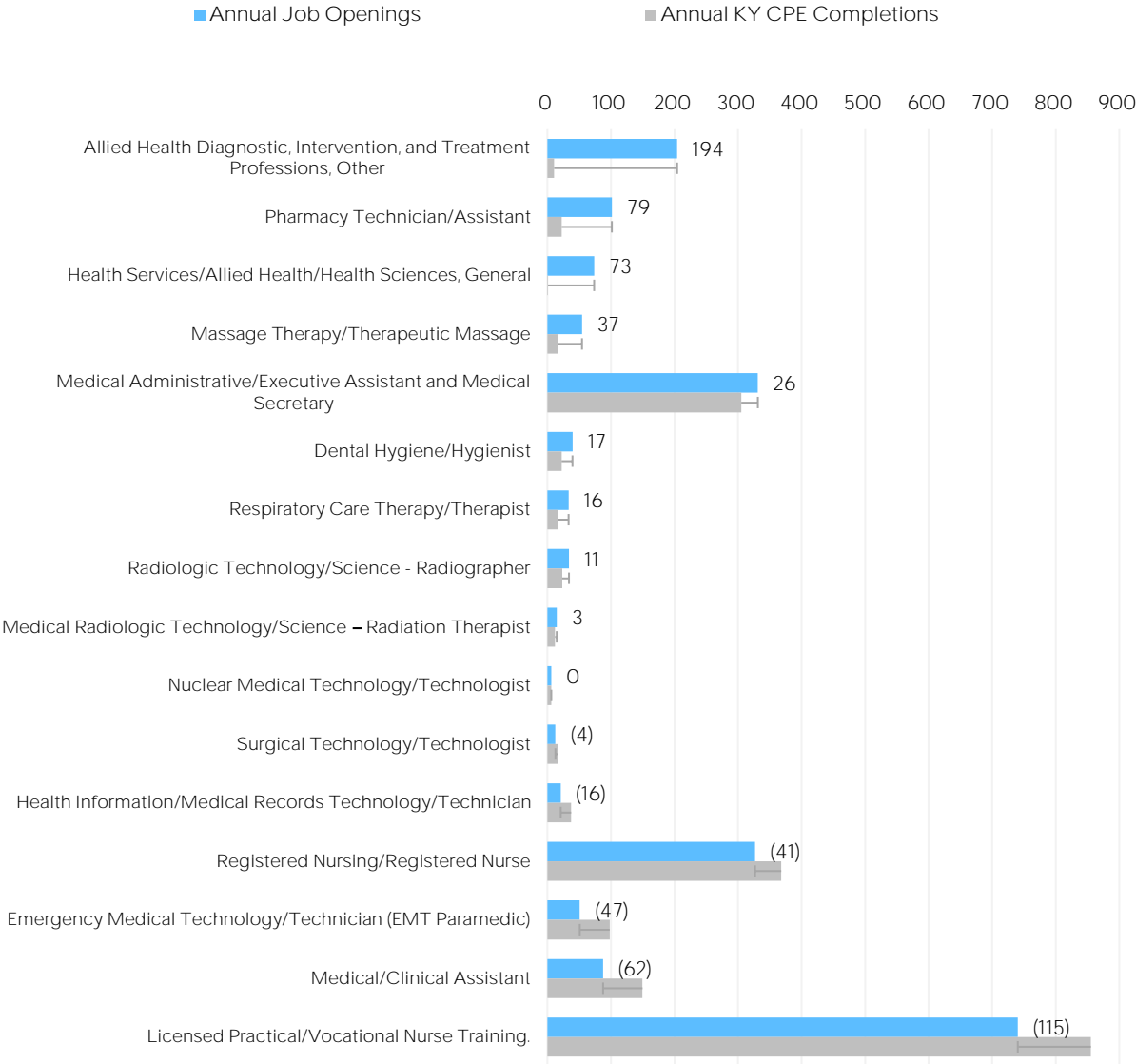
Figure 4.13 and Figure 4.14 display the CERT+ and BACH+ gaps, and Figure 4.15 displays the BACH+ surpluses. The Allied Health Diagnostic, Intervention, & Treatment Professions, Other program (CERT+) and the Health/Medical Preparatory, Other program (BACH+) are areas to consider for expansion, whereas the Medical Administrative/Executive Assistant & Medical Secretary program (CERT+) should maintain its success. Several programs, such as the Medical Radiologic Technology/Science – Radiation Therapist (BACH+) and several of the residency programs, should be carefully considered for continuation and/or for consolidation.

At the individual award levels, KCTCS plays an important role in the Central WPR by providing the region with certificate and associate degree level programs of study. Across both award levels, the largest programs, in terms of completions, are from two programs, both at the certificate level: Licensed Practical/Vocational Nurse Training and Medical Administrative/Executive Assistant & Medical Secretary. However, the greatest healthcare employment opportunities in the Central WPR for the two award levels are for the Allied Health Diagnostic, Intervention, & Treatment Professions, Other program, particularly for nursing assistants. Pharmacy technicians are also in high demand at the certificate level.

A variety of occupations are driving the large bachelor's degree level gaps in the Health/Medical Preparatory, Other program and the Health Services/Allied Health/Health Sciences, General program, such as clinical laboratory technologists & technicians and physical therapy assistants. However, some of the demand is also stemming from occupations for which a bachelor's degree may not be relevant. At the master's degree level, Nursing Education is a large gap. Much of the demand is driven by postsecondary teachers, which as an occupation may not be specific to healthcare, but it does include teaching in health-related fields. The Veterinary Sciences/Veterinary Clinical Sciences, General program, offered by the University of Kentucky, faces the largest gap at the doctoral level.

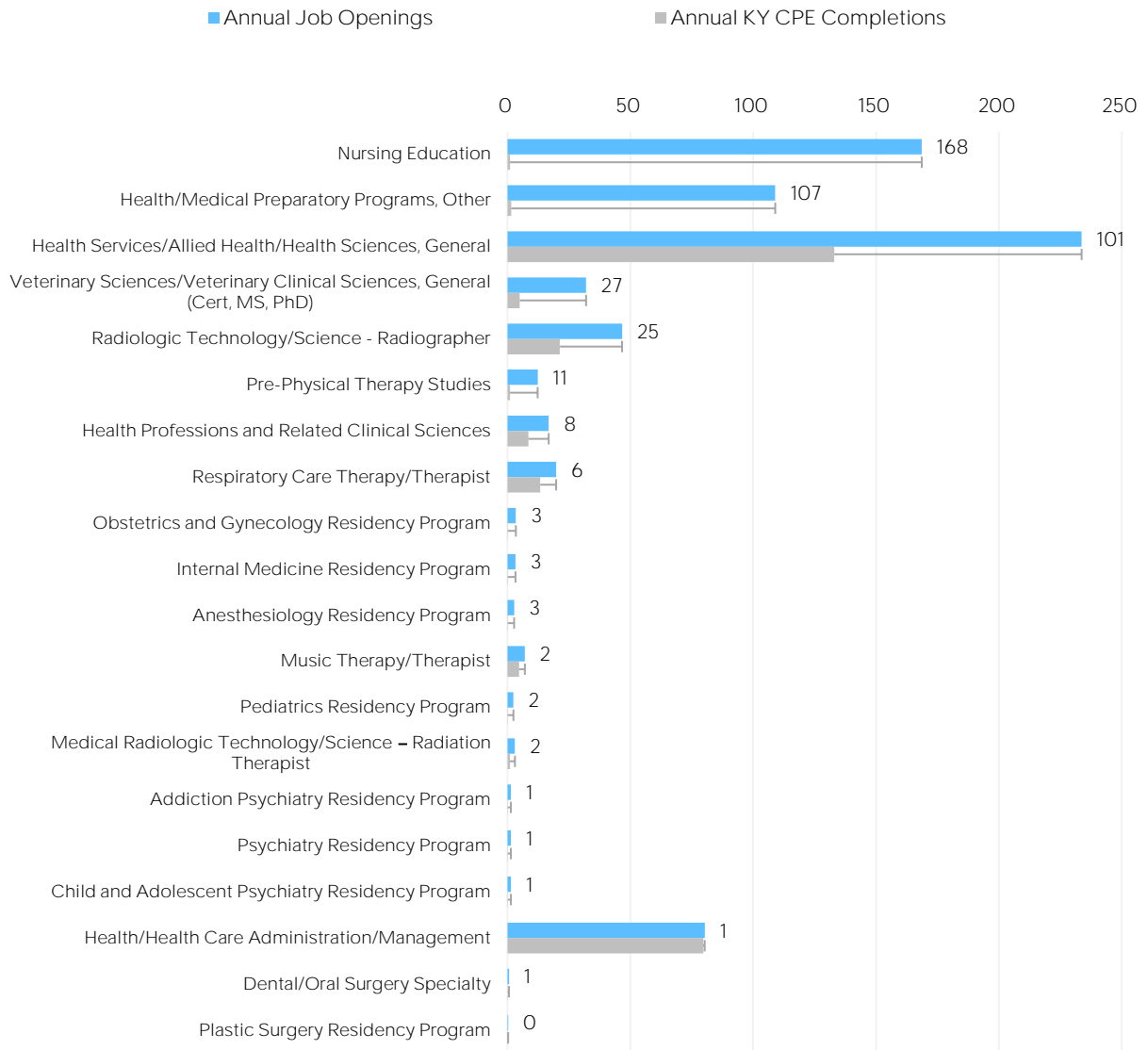
Combined Level Analysis

Figure 4.13: Gaps and Surpluses for the Central WPR’s CERT+ Degree Level Healthcare Programs



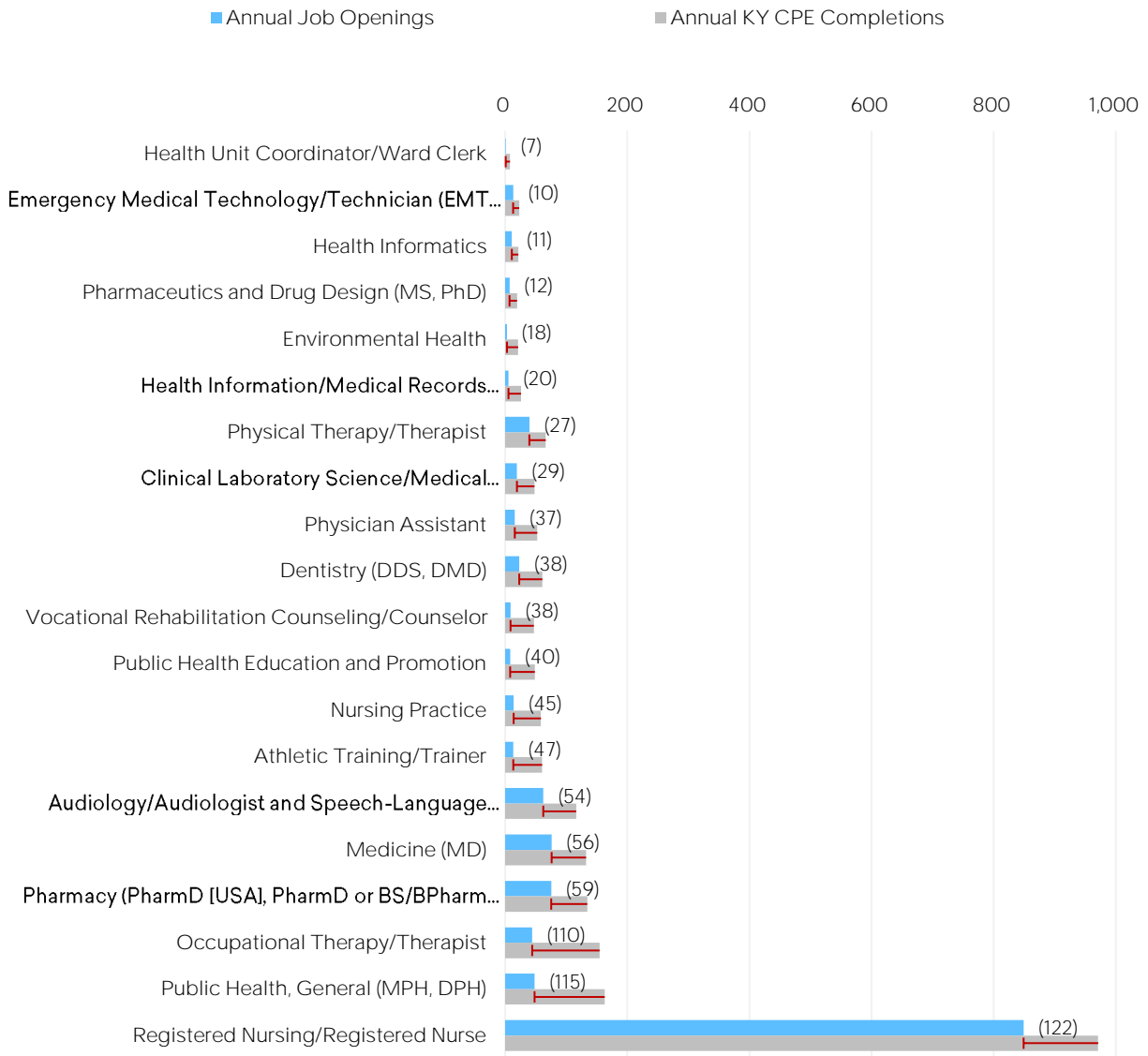
Source: Emsi program demand gap model.

Figure 4.14: Top 20 Gaps for the Central WPR's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

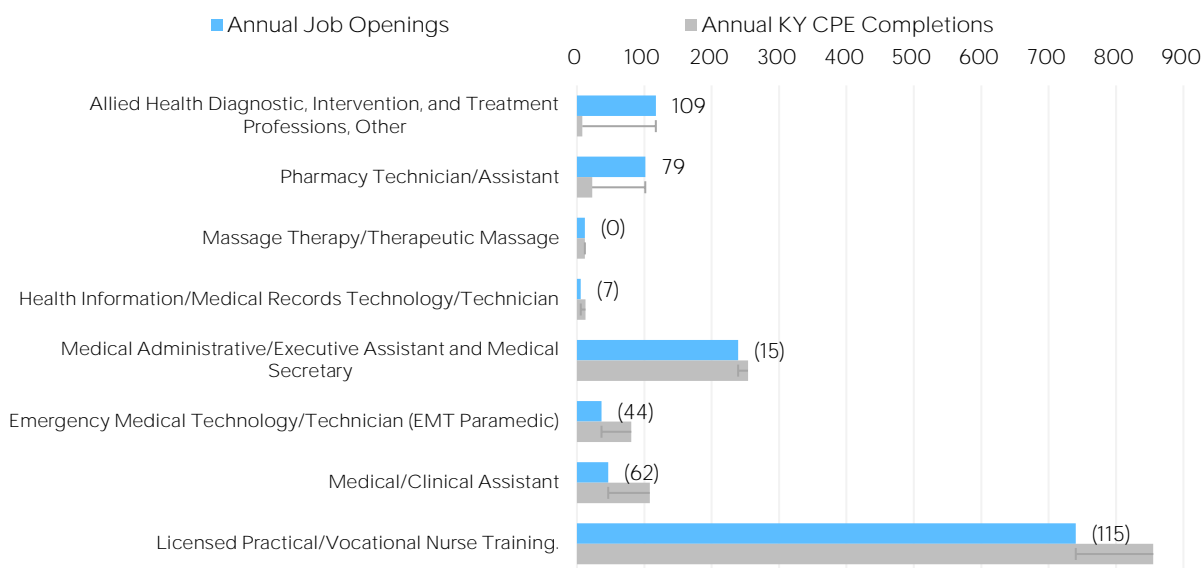
Figure 4.15: Top 20 Surpluses for the Central WPR's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Certificate Level Analysis

Figure 4.16: Gaps and Surpluses for the Central WPR's Certificate Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.16: Gaps and Surpluses for the Central WPR's Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0999	Allied Health Diagnostic, Intervention, and Treatment Professions, Other	KCTCS	117	8	109	--
	<i>Total</i>		<i>117</i>	<i>8</i>	<i>109</i>	<i>\$30.75</i>
51.0805	Pharmacy Technician/Assistant	KCTCS	101	23	79	--
	<i>Total</i>		<i>101</i>	<i>23</i>	<i>79</i>	<i>\$14.32</i>
51.3501	Massage Therapy/Therapeutic Massage	KCTCS	12	12	(0)	--
	<i>Total</i>		<i>12</i>	<i>12</i>	<i>(0)</i>	<i>\$20.44</i>
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	6	13	(7)	--
	<i>Total</i>		<i>6</i>	<i>13</i>	<i>(7)</i>	<i>\$16.05</i>
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	238	252	(15)	--
	Other		1	2	(1)	--
	<i>Total</i>		<i>239</i>	<i>254</i>	<i>(15)</i>	<i>\$15.19</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	36	81	(44)	--
		<i>Total</i>	<i>36</i>	<i>81</i>	<i>(44)</i>	<i>\$15.86</i>
51.0801	Medical/Clinical Assistant	KCTCS	41	95	(54)	--
		Other	6	13	(8)	--
		<i>Total</i>	<i>46</i>	<i>108</i>	<i>(62)</i>	<i>\$14.60</i>
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	716	827	(111)	--
		Other	25	28	(4)	--
		<i>Total</i>	<i>740</i>	<i>855</i>	<i>(115)</i>	<i>\$14.97</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.17: Occupations Mapped to the Central WPR's Certificate Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ALLIED HEALTH DIAGNOSTIC, INTERVENTION, AND TREATMENT PROFESSIONS, OTHER (CIP CODE 51.0999)						
29-1141	Registered Nurses	14,498	16,525	2,027	39	\$30.15
11-9111	Medical & Health Services Managers	1,894	2,202	308	33	\$42.99
29-2055	Surgical Technologists	487	552	65	20	\$22.65
29-1126	Respiratory Therapists	771	941	170	5	\$23.84
29-2032	Diagnostic Medical Sonographers	212	268	57	4	\$32.59
29-2041	Emergency Medical Technicians & Paramedics	1,131	1,163	32	4	\$15.86
31-1014	Nursing Assistants	8,164	8,984	820	4	\$13.36
29-9091	Athletic Trainers	293	331	38	3	\$21.80
31-9092	Medical Assistants	3,049	3,667	618	3	\$14.60
29-1071	Physician Assistants	292	385	93	1	\$44.00
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	2,686	2,923	236	101	\$14.32

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Table 4.18: Occupations Mapped to the Central WPR’s Certificate Level Healthcare Program with a Large Surplus

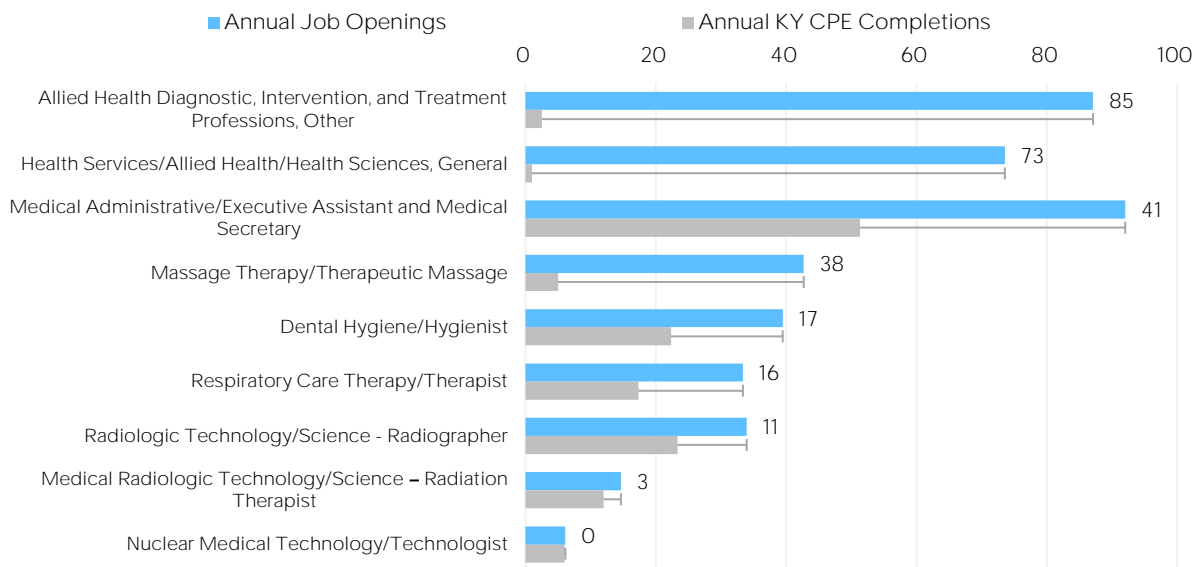
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Licensed Practical/Vocational Nurse Training (CIP Code 51.3901)						
31-1014	Nursing Assistants	16,328	17,968	1,640	474	\$13.36
29-2061	Licensed Practical & Licensed Vocational Nurses	6,288	6,927	639	163	\$21.71
31-1011	Home Health Aides	2,494	3,609	1,115	103	\$11.75

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Associate Degree Level Analysis

Figure 4.17: Gaps for the Central WPR’s Associate Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.19: Gaps and Surpluses for the Central WPR’s Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0999	Allied Health Diagnostic, Intervention, and Treatment Professions, Other	KCTCS	87	3	85	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	87	3	85	\$16.10
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	74	1	73	--
		<i>Total</i>	74	1	73	\$14.40
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	92	51	41	--
		<i>Total</i>	92	51	41	\$15.03
51.3501	Massage Therapy/Therapeutic Massage	KCTCS	43	5	38	--
		<i>Total</i>	43	5	38	\$17.22
51.0602	Dental Hygiene/Hygienist	KCTCS	39	22	17	--
		<i>Total</i>	39	22	17	\$32.03
51.0908	Respiratory Care Therapy/Therapist	KCTCS	33	17	16	--
		<i>Total</i>	33	17	16	\$23.81
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	34	23	11	--
		<i>Total</i>	34	23	11	\$26.86
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	KCTCS	15	12	3	--
		<i>Total</i>	15	12	3	\$27.59
51.0905	Nuclear Medical Technology/Technologist	KCTCS	6	6	0	--
		<i>Total</i>	6	6	0	\$32.55
51.0801	Medical/Clinical Assistant	AIKCU	2	2	(0)	--
		KCTCS	29	29	(0)	--
		Other	11	11	(0)	--
		<i>Total</i>	41	42	(0)	\$14.60
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	5	6	(1)	--
		State	9	11	(2)	--
		<i>Total</i>	14	17	(3)	\$15.86
51.0909	Surgical Technology/Technologist	KCTCS	13	17	(4)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	13	17	(4)	\$22.79
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	7	12	(4)	--
		Other	8	13	(5)	--
		<i>Total</i>	15	25	(9)	\$16.31
51.3801	Registered Nursing/Registered Nurse	AIKCU	38	42	(5)	--
		KCTCS	139	157	(18)	--
		Other	56	63	(7)	--
		State	94	106	(12)	--
		<i>Total</i>	327	368	(41)	\$31.11

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.20: Occupations Mapped to the Central WPR's Associate Degree Level Healthcare Programs with a Large Gap

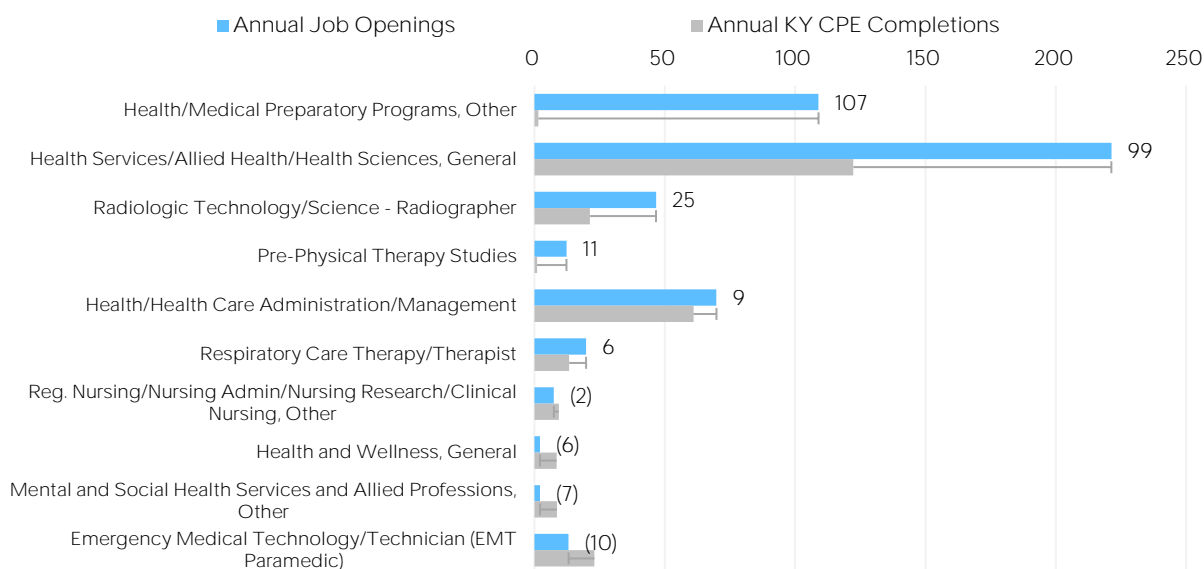
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ALLIED HEALTH DIAGNOSTIC, INTERVENTION, AND TREATMENT PROFESSIONS, OTHER (CIP CODE 51.0999)						
31-1014	Nursing Assistants	8,164	8,984	820	68	\$13.36
29-1126	Respiratory Therapists	771	941	170	5	\$23.84
29-1071	Physician Assistants	292	385	93	2	\$44.00
29-1141	Registered Nurses	14,498	16,525	2,027	2	\$30.15
29-2032	Diagnostic Medical Sonographers	212	268	57	2	\$32.59
29-2041	Emergency Medical Technicians & Paramedics	1,131	1,163	32	2	\$15.86
31-9092	Medical Assistants	3,049	3,667	618	2	\$14.60
29-2055	Surgical Technologists	487	552	65	1	\$22.65
29-9091	Athletic Trainers	293	331	38	1	\$21.80
11-9111	Medical & Health Services Managers	1,894	2,202	308	0	\$42.99
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	8,164	8,984	820	27	\$13.36

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
31-9097	Phlebotomists	825	1,026	201	20	\$14.16
31-1011	Home Health Aides	1,247	1,805	558	17	\$11.75
29-2018	Clinical Laboratory Technologists & Technicians	2,251	2,517	266	8	\$24.62
31-9092	Medical Assistants	3,049	3,667	618	1	\$14.60
21-1093	Social & Human Service Assistants	1,688	1,965	277	0	\$12.89
29-2071	Medical Records & Health Information Technicians	1,280	1,414	133	0	\$19.11

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Bachelor's Degree Level Analysis

Figure 4.18: Gaps and Surpluses for the Central WPR's Top 10 Bachelor's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.21: Gaps and Surpluses for the Central WPR's Bachelor's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1199	Health/Medical Preparatory Programs, Other	AIKCU	109	2	107	--
		<i>Total</i>	<i>109</i>	<i>2</i>	<i>107</i>	<i>\$19.88</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	State	221	122	99	--
		<i>Total</i>	<i>221</i>	<i>122</i>	<i>99</i>	<i>\$16.42</i>
51.0911	Radiologic Technology/Science - Radiographer	State	47	21	25	--
		<i>Total</i>	<i>47</i>	<i>21</i>	<i>25</i>	<i>\$27.24</i>
51.1109	Pre-Physical Therapy Studies	AIKCU	12	1	11	--
		<i>Total</i>	<i>12</i>	<i>1</i>	<i>11</i>	<i>\$39.00</i>
51.0701	Health/Health Care Administration/Management	AIKCU	27	24	3	--
		State	43	37	5	--
		<i>Total</i>	<i>70</i>	<i>61</i>	<i>9</i>	<i>\$16.68</i>
51.0908	Respiratory Care Therapy/Therapist	State	20	13	6	--
		<i>Total</i>	<i>20</i>	<i>13</i>	<i>6</i>	<i>\$23.79</i>
51.3899	Reg. Nursing/Nursing Admin/Nursing Research/Clinical Nursing, Other	Other	7	9	(2)	--
		<i>Total</i>	<i>7</i>	<i>9</i>	<i>(2)</i>	<i>\$30.29</i>
51.0001	Health and Wellness, General	AIKCU	2	9	(6)	--
		<i>Total</i>	<i>2</i>	<i>9</i>	<i>(6)</i>	<i>\$27.68</i>
51.1599	Mental and Social Health Services and Allied Professions, Other	State	2	9	(7)	--
		<i>Total</i>	<i>2</i>	<i>9</i>	<i>(7)</i>	<i>\$14.82</i>
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	State	13	23	(10)	--
		<i>Total</i>	<i>13</i>	<i>23</i>	<i>(10)</i>	<i>\$15.86</i>
51.2202	Environmental Health	State	3	21	(18)	--
		<i>Total</i>	<i>3</i>	<i>21</i>	<i>(18)</i>	<i>\$27.47</i>
51.0706	Health Information/Medical Records Administration/Administrator	State	6	26	(20)	--
		<i>Total</i>	<i>6</i>	<i>26</i>	<i>(20)</i>	<i>\$28.02</i>
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	State	19	48	(29)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	19	48	(29)	\$24.62
51.0913	Athletic Training/Trainer	AIKCU	2	7	(6)	--
		State	8	33	(25)	--
		<i>Total</i>	10	40	(30)	\$17.39
51.2207	Public Health Education and Promotion	State	8	49	(40)	--
		<i>Total</i>	8	49	(40)	\$20.52
51.2306	Occupational Therapy/Therapist	State	8	70	(63)	--
		<i>Total</i>	8	70	(63)	\$36.96
51.2201	Public Health, General (MPH, DPH)	State	21	85	(64)	--
		<i>Total</i>	21	85	(64)	\$27.63
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	10	78	(68)	--
		<i>Total</i>	10	78	(68)	\$31.48
51.3801	Registered Nursing/Registered Nurse	AIKCU	49	55	(6)	--
		Other	13	15	(2)	--
		State	604	682	(78)	--
		<i>Total</i>	665	751	(86)	\$31.75

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.22: Occupations Mapped to the Central WPR's Bachelor's Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH/MEDICAL PREPARATORY PROGRAMS, OTHER (CIP CODE 51.1199)						
29-2052	Pharmacy Technicians	2,686	2,923	236	49	\$14.32
31-2021	Physical Therapist Assistants	399	529	130	23	\$26.13
31-9091	Dental Assistants	1,777	1,984	207	16	\$16.74
29-2061	Licensed Practical & Licensed Vocational Nurses	3,144	3,464	320	10	\$21.71

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1071	Physician Assistants	292	385	93	6	\$44.00
29-2034	Radiologic Technologists	1,292	1,421	129	2	\$26.48
29-1141	Registered Nurses	14,498	16,525	2,027	1	\$30.15
29-2041	Emergency Medical Technicians & Paramedics	1,131	1,163	32	1	\$15.86
11-9111	Medical & Health Services Managers	1,894	2,202	308	0	\$42.99
21-1093	Social & Human Service Assistants	1,688	1,965	277	0	\$12.89
31-1011	Home Health Aides	1,247	1,805	558	0	\$11.75
29-1067	Surgeons	38	44	6	0	\$118.04
29-1023	Orthodontists	23	23	(1)	0	\$47.13
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	8,164	8,984	820	76	\$13.36
29-2018	Clinical Laboratory Technologists & Technicians	2,251	2,517	266	49	\$24.62
31-9092	Medical Assistants	3,049	3,667	618	36	\$14.60
21-1093	Social & Human Service Assistants	1,688	1,965	277	20	\$12.89
29-2071	Medical Records & Health Information Technicians	1,280	1,414	133	16	\$19.11
31-9097	Phlebotomists	825	1,026	201	12	\$14.16
31-1011	Home Health Aides	1,247	1,805	558	11	\$11.75

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.23: Occupations Mapped to the Central WPR's Bachelor's Degree Level Healthcare Program with a Large Surplus

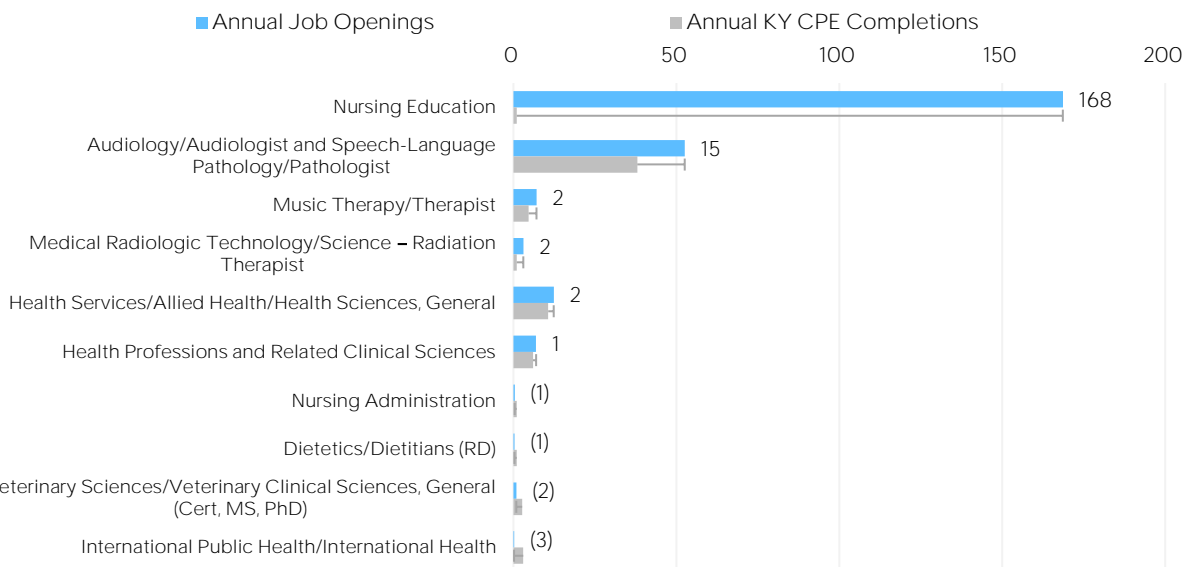
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	43,494	49,576	6,082	595	\$30.15
11-9111	Medical & Health Services Managers	5,681	6,605	923	59	\$42.99
29-1171	Nurse Practitioners	3,401	4,185	784	6	\$45.48
29-1151	Nurse Anesthetists	1,466	1,692	226	5	\$72.83

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1161	Nurse Midwives	40	48	8	0	\$46.88

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master's Degree Level Analysis

Figure 4.19: Gaps and Surpluses for the Central WPR's Top 10 Master's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.24: Gaps and Surpluses for the Central WPR's Master's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3817	Nursing Education	AIKCU	169	1	168	--
	<i>Total</i>		<i>169</i>	<i>1</i>	<i>168</i>	<i>\$30.94</i>
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	53	38	15	--
	<i>Total</i>		<i>53</i>	<i>38</i>	<i>15</i>	<i>\$30.59</i>
51.2305	Music Therapy/Therapist	State	7	5	2	--
	<i>Total</i>		<i>7</i>	<i>5</i>	<i>2</i>	<i>\$43.28</i>
51.0907	Medical Radiologic Technology/Science - Radiation Therapist	State	3	1	2	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	3	1	2	\$29.86
51.0000	Health Services/Allied Health/Health Sciences, General	State	12	11	2	--
		<i>Total</i>	12	11	2	\$17.38
51.9999	Health Professions and Related Clinical Sciences	State	7	6	1	--
		<i>Total</i>	7	6	1	\$17.38
51.3802	Nursing Administration	AIKCU	0	1	(1)	--
		<i>Total</i>	0	1	(1)	\$34.10
51.3101	Dietetics/Dietitians (RD)	State	0	1	(1)	--
		<i>Total</i>	0	1	(1)	\$27.98
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	1	3	(2)	--
		<i>Total</i>	1	3	(2)	\$38.37
51.2210	International Public Health/International Health	State	0	3	(3)	--
		<i>Total</i>	0	3	(3)	\$20.59
51.2211	Health Services Administration	State	1	5	(3)	--
		<i>Total</i>	1	5	(3)	\$29.11
51.0916	Radiation Protection/Health Physics Technician	State	1	6	(5)	--
		<i>Total</i>	1	6	(5)	\$32.11
51.0501	Dental Clinical Sciences, General (MS, PhD)	State	0	5	(5)	--
		<i>Total</i>	0	5	(5)	\$68.52
51.2003	Pharmaceutics and Drug Design (MS, PhD)	State	3	9	(6)	--
		<i>Total</i>	3	9	(6)	\$56.63
51.3803	Adult Health Nurse/Nursing	State	10	16	(6)	--
		<i>Total</i>	10	16	(6)	\$38.97
51.1508	Mental Health Counseling/Counselor	State	6	12	(7)	--
		<i>Total</i>	6	12	(7)	\$17.15

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0702	Health Unit Coordinator/Ward Clerk	State	1	8	(7)	--
		<i>Total</i>	<i>1</i>	<i>8</i>	<i>(7)</i>	<i>\$42.99</i>
51.0701	Health/Health Care Administration/Management	State	10	19	(8)	--
		<i>Total</i>	<i>10</i>	<i>19</i>	<i>(8)</i>	<i>\$20.76</i>
51.2706	Health Informatics	State	11	22	(11)	--
		<i>Total</i>	<i>11</i>	<i>22</i>	<i>(11)</i>	<i>\$33.36</i>
51.0913	Athletic Training/Trainer	AIKCU	1	5	(4)	--
		State	3	16	(13)	--
		<i>Total</i>	<i>4</i>	<i>21</i>	<i>(17)</i>	<i>\$17.86</i>
51.3801	Registered Nursing/Registered Nurse	State	175	200	(25)	--
		<i>Total</i>	<i>175</i>	<i>200</i>	<i>(25)</i>	<i>\$44.20</i>
51.0912	Physician Assistant	State	16	53	(37)	--
		<i>Total</i>	<i>16</i>	<i>53</i>	<i>(37)</i>	<i>\$44.00</i>
51.2310	Vocational Rehabilitation Counseling/Counselor	State	9	47	(38)	--
		<i>Total</i>	<i>9</i>	<i>47</i>	<i>(38)</i>	<i>\$17.37</i>
51.2306	Occupational Therapy/Therapist	State	34	72	(39)	--
		<i>Total</i>	<i>34</i>	<i>72</i>	<i>(39)</i>	<i>\$36.96</i>
51.2201	Public Health, General (MPH, DPH)	State	26	75	(50)	--
		<i>Total</i>	<i>26</i>	<i>75</i>	<i>(50)</i>	<i>\$28.68</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.25: Occupations Mapped to the Central WPR's **Master's Degree** Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
NURSING EDUCATION (CIP CODE 51.3817)						
25-1099	Postsecondary Teachers	5,982	6,138	156	168	\$30.94

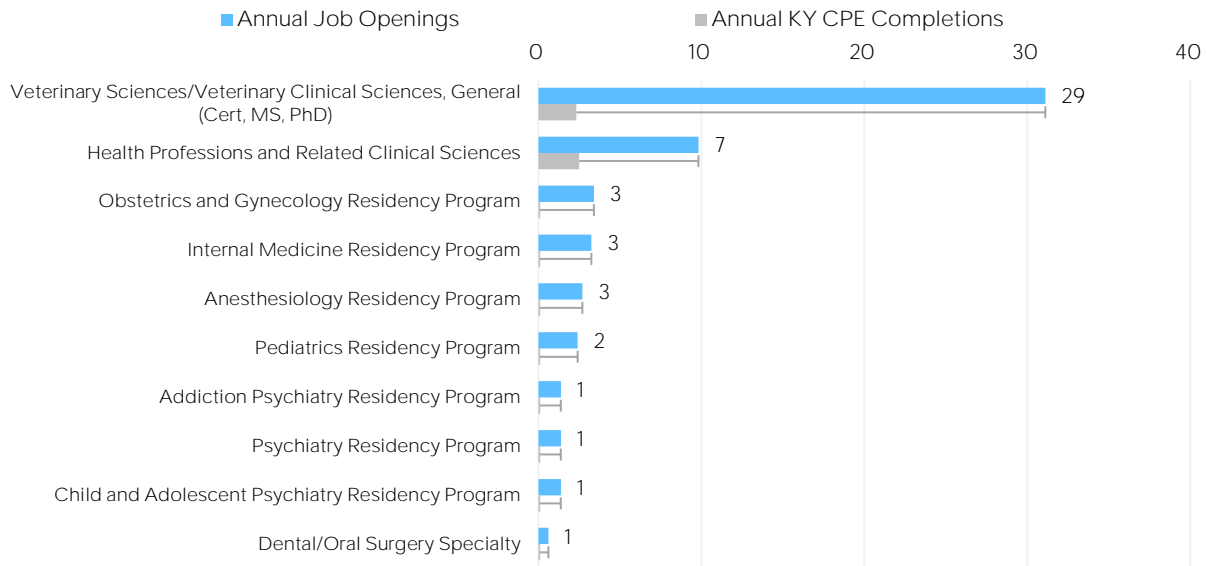


SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	14,498	16,525	2,027	0	\$30.15

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

Figure 4.20: Gaps for the Central WPR’s Doctoral Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.26: Gaps and Surpluses for the Central WPR’s Doctoral Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	31	2	29	--
	<i>Total</i>		<i>31</i>	<i>2</i>	<i>29</i>	<i>\$38.37</i>
51.9999	Health Professions and Related Clinical Sciences	State	10	3	7	--
	<i>Total</i>		<i>10</i>	<i>3</i>	<i>7</i>	<i>\$16.76</i>
60.0419	Obstetrics and Gynecology Residency Program	State	3	0	3	--
	<i>Total</i>		<i>3</i>	<i>0</i>	<i>3</i>	<i>\$114.99</i>
60.0415	Internal Medicine Residency Program	State	3	0	3	--
	<i>Total</i>		<i>3</i>	<i>0</i>	<i>3</i>	<i>\$71.32</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
60.0403	Anesthesiology Residency Program	State	3	0	3	--
		<i>Total</i>	3	0	3	\$111.11
60.0425	Pediatrics Residency Program	State	2	0	2	--
		<i>Total</i>	2	0	2	\$71.77
60.0501	Addiction Psychiatry Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$97.27
60.0428	Psychiatry Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$97.27
60.0507	Child and Adolescent Psychiatry Residency Program	State	1	0	1	--
		<i>Total</i>	1	0	1	\$97.27
60.0101	Dental/Oral Surgery Specialty	State	1	0	1	--
		<i>Total</i>	1	0	1	\$58.03
60.0427	Plastic Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0416	Neurological Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0432	Thoracic Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0434	Vascular Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0422	Orthopedic Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0414	General Surgery Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04
60.0579	Surgical Critical Care Residency Program	State	0	0	0	--
		<i>Total</i>	0	0	0	\$118.04

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
60.0106	Pedodontics Specialty	State	0	0	0	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>\$68.02</i>
60.0199	Dental Residency Program, Other	State	0	0	0	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>\$68.52</i>
60.0519	Gastroenterology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0430	Radiation Oncology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0511	Critical Care Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0577	Sports Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0523	Hematological Pathology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0234	Neurology	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0543	Neuroradiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0404	Child Neurology	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0528	Interventional Cardiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0412	Emergency Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0512	Cytopathology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
60.0527	Infectious Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0522	Gynecologic Oncology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0548	Pain Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0525	Hospice and Palliative Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0546	Orthopedic Sports Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0426	Physical Medicine and Rehabilitation Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0424	Pathology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0417	Neurology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0504	Cardiovascular Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0433	Urology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0574	Rheumatology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0508	Clinical Cardiac Electrophysiology Residency Program	State	0	0	(0)	--
		<i>Total</i>	<i>0</i>	<i>0</i>	<i>(0)</i>	<i>\$102.29</i>
60.0411	Diagnostic Radiology Residency Program	State	0	0	(0)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	0	0	(0)	\$102.29
60.0431	Radiologic Physics Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0571	Pulmonary Disease Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0539	Nephrology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0418	Nuclear Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0538	Neonatal-Perinatal Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0421	Ophthalmology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0533	Medical Physics	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0423	Otolaryngology Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0499	Medical Residency Programs - General Award of at least 1 but less than 2 academic years, Other	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0530	Maternal Fetal Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0516	Endocrinology, Diabetes and Metabolism Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$102.29
60.0413	Family Medicine Residency Program	State	0	0	(0)	--
		<i>Total</i>	0	0	(0)	\$85.15

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2201	Public Health, General (MPH, DPH)	State	1	3	(2)	--
		<i>Total</i>	<i>1</i>	<i>3</i>	<i>(2)</i>	<i>\$21.19</i>
51.3805	Family Practice Nurse/Nursing	State	1	3	(2)	--
		<i>Total</i>	<i>1</i>	<i>3</i>	<i>(2)</i>	<i>\$36.83</i>
51.3802	Nursing Administration	State	1	4	(3)	--
		<i>Total</i>	<i>1</i>	<i>4</i>	<i>(3)</i>	<i>\$32.76</i>
51.3808	Nursing Science	State	3	7	(4)	--
		<i>Total</i>	<i>3</i>	<i>7</i>	<i>(4)</i>	<i>\$34.80</i>
51.3810	Psychiatric Mental Health Nurse/Nursing	State	1	6	(5)	--
		<i>Total</i>	<i>1</i>	<i>6</i>	<i>(5)</i>	<i>\$36.83</i>
51.2314	Rehabilitation Science	State	1	7	(6)	--
		<i>Total</i>	<i>1</i>	<i>7</i>	<i>(6)</i>	<i>\$17.37</i>
51.2003	Pharmaceutics and Drug Design (MS, PhD)	State	4	11	(7)	--
		<i>Total</i>	<i>4</i>	<i>11</i>	<i>(7)</i>	<i>\$56.63</i>
51.2306	Occupational Therapy/Therapist	State	3	12	(9)	--
		<i>Total</i>	<i>3</i>	<i>12</i>	<i>(9)</i>	<i>\$36.96</i>
51.3801	Registered Nursing/Registered Nurse	State	8	19	(11)	--
		<i>Total</i>	<i>8</i>	<i>19</i>	<i>(11)</i>	<i>\$53.31</i>
51.2308	Physical Therapy/Therapist	State	40	67	(27)	--
		<i>Total</i>	<i>40</i>	<i>67</i>	<i>(27)</i>	<i>\$39.00</i>
51.0401	Dentistry (DDS, DMD)	State	23	61	(38)	--
		<i>Total</i>	<i>23</i>	<i>61</i>	<i>(38)</i>	<i>\$65.87</i>
51.3818	Nursing Practice	State	14	59	(45)	--
		<i>Total</i>	<i>14</i>	<i>59</i>	<i>(45)</i>	<i>\$37.61</i>
51.1201	Medicine (MD)	State	76	133	(56)	--
		<i>Total</i>	<i>76</i>	<i>133</i>	<i>(56)</i>	<i>\$97.87</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL CENTRAL COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.2001	Pharmacy (PharmD [USA], PharmD or BS/BPharm [Canada])	State	75	135	(59)	--
		<i>Total</i>	75	135	(59)	\$49.24

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

EAST WORKFORCE PLANNING REGION



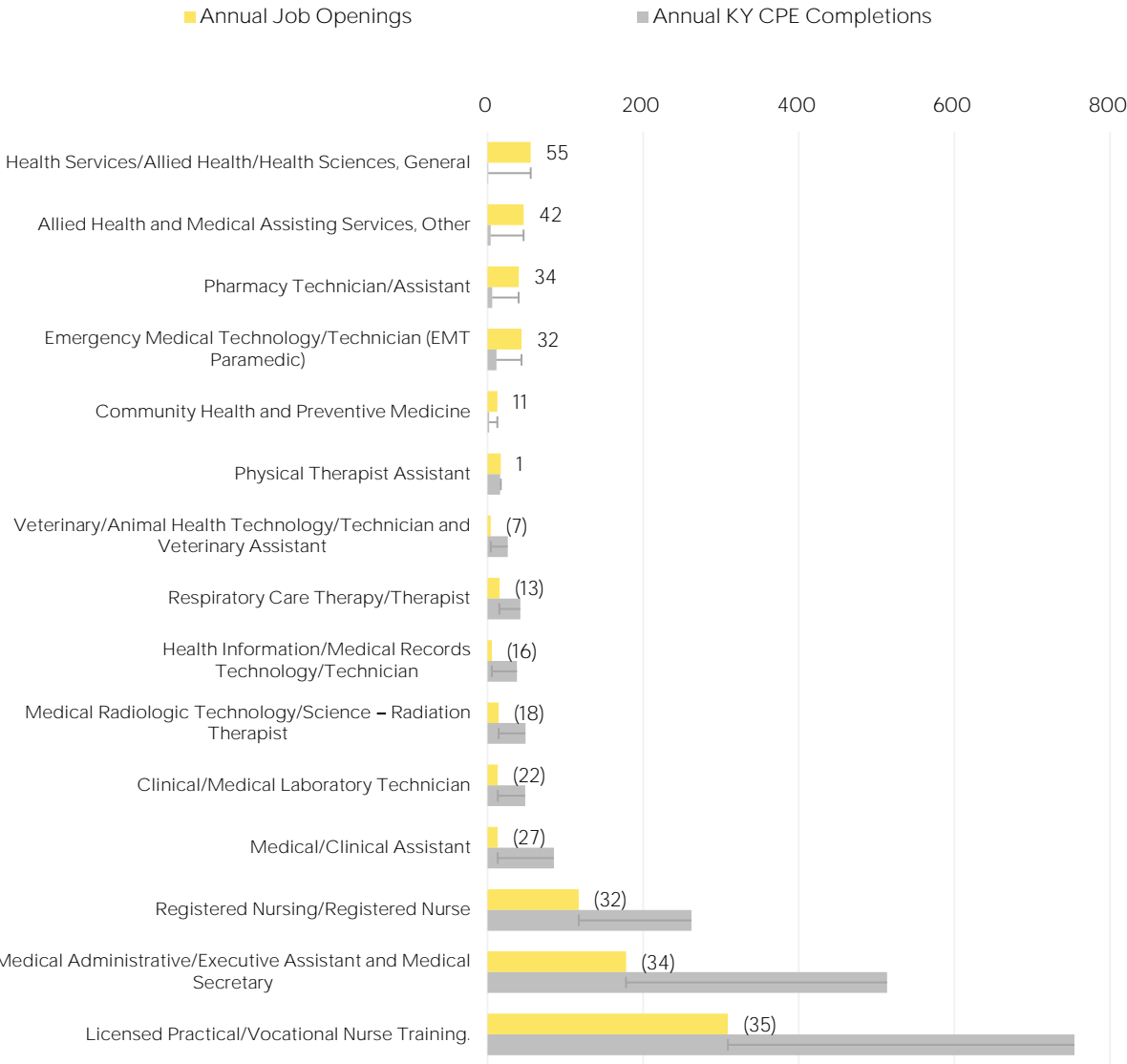
Figure 4.21 and Figure 4.22 display the CERT+ and BACH+ gaps and surpluses. The Allied Health & Medical Assisting Services, Other program (CERT+) is an area to consider, especially as it relates to the Pharmacy Technician program (CERT+), as pharmacy technicians are in large demand in the region across both programs. The Registered Nursing/Registered Nurse program (CERT+ and BACH+) should be carefully considered for whether it is being taught at the appropriate award levels, especially considering the region is facing a large surplus at the CERT+ level and a gap at the BACH+ level.

At the individual award levels, KCTCS again plays an important role in Kentucky's East WPR region by providing almost all the healthcare programs' certificate and associate degree level program completions. The largest programs, in terms of completions at both award levels, are from the certificate level Licensed Practical/Vocational Nurse Training program and the Medical Administrative/Executive Assistant & Medical Secretary program. The greatest employment opportunities for the two award levels are for nursing assistants and registered nurses, although both occupations are already being trained for by programs with a surplus of completers.

The top four gap programs at the bachelor's degree level are all related to nursing. While registered nurses drive the demand across the programs, medical & health services managers are also in demand. The region's master's degree programs are only facing a gap in the Substance Abuse/Addiction Counseling program, particularly for substance abuse, behavioral disorder, & mental health counselors. The Family Practice Nurse/Nursing and Nurse Midwife/Nursing Midwifery programs, along with the doctoral level Osteopathic Medicine Osteopathy (DO) program, are facing large surpluses of completers. There is relatively low demand in the region for the programs, but considering they are niche programs, completers could be finding employment in other areas of Kentucky.

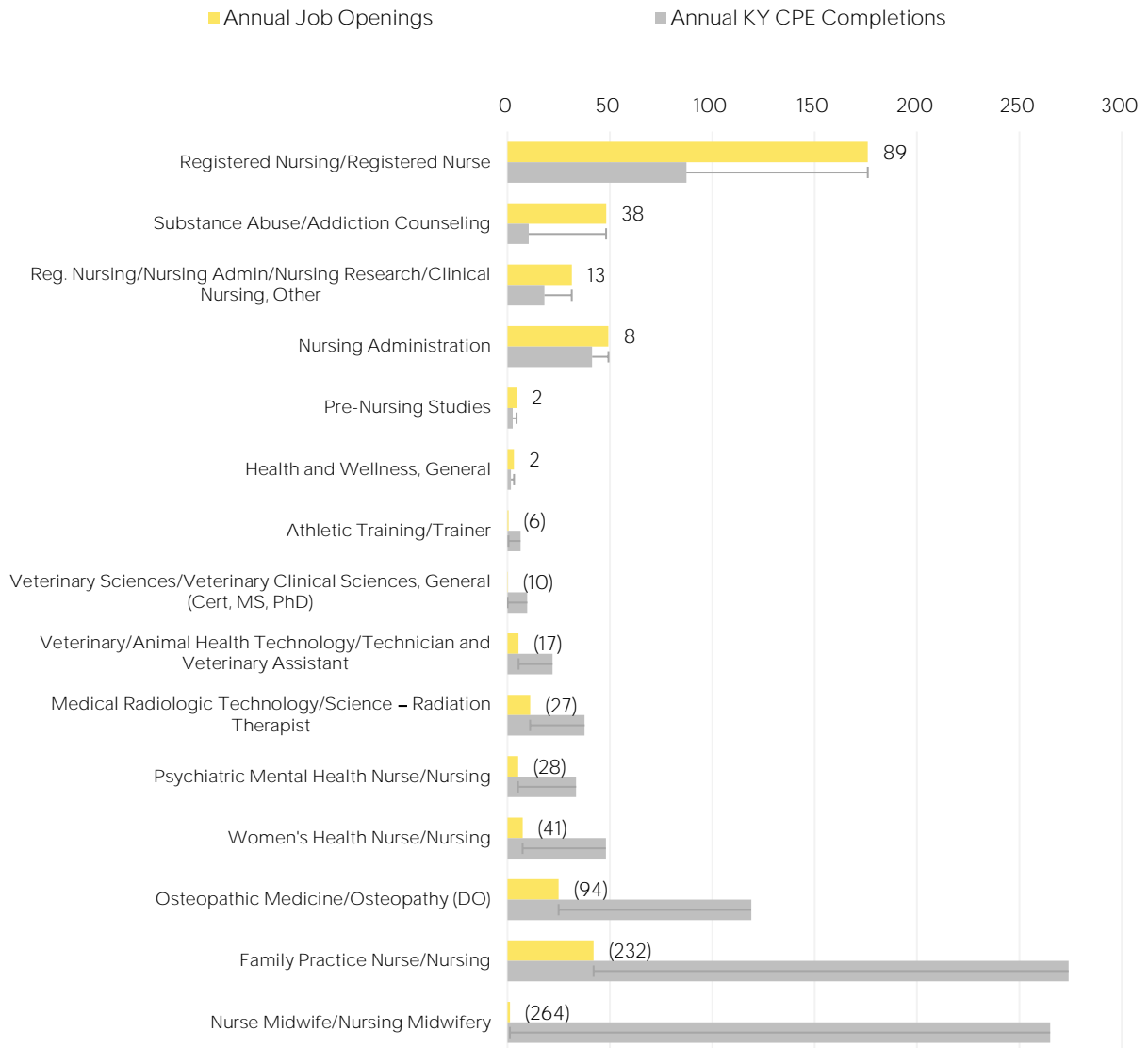
Combined Level Analysis

Figure 4.21: Gaps and Surpluses for the East WPR’s CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

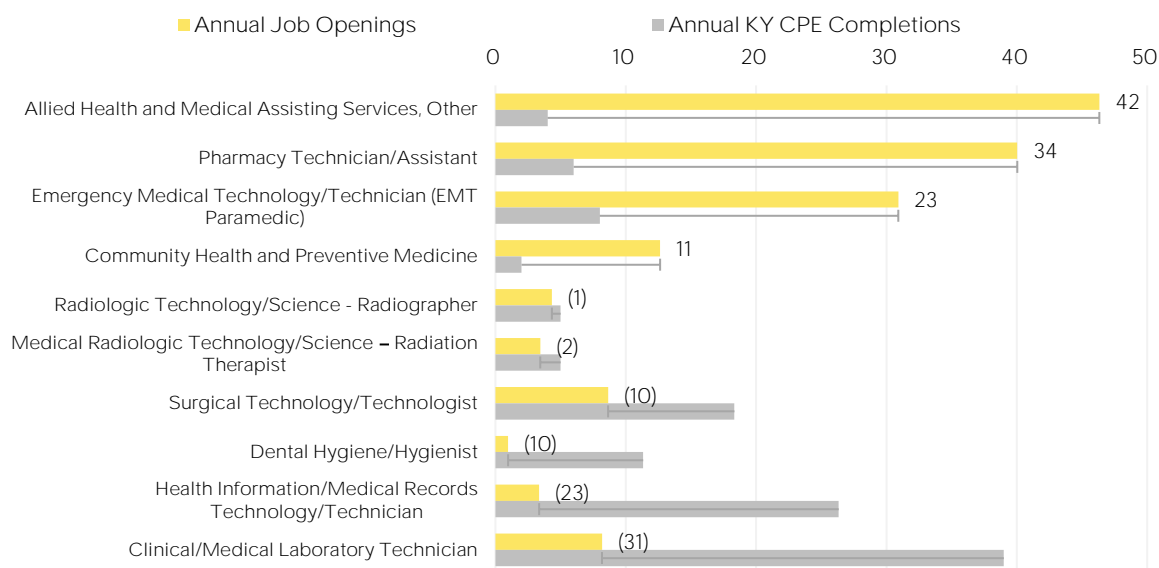
Figure 4.22: Gaps and Surpluses for the East WPR's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Certificate Level Analysis

Figure 4.23: Gaps and Surpluses for the East WPR's Top 10 Certificate Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.27: Gaps and Surpluses for the East WPR's Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0899	Allied Health and Medical Assisting Services, Other	KCTCS	46	4	42	--
	<i>Total</i>		46	4	42	\$16.88
51.0805	Pharmacy Technician/Assistant	KCTCS	40	6	34	--
	<i>Total</i>		40	6	34	\$13.08
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	31	8	23	--
	<i>Total</i>		31	8	23	\$13.90
51.2208	Community Health and Preventive Medicine	KCTCS	13	2	11	--
	<i>Total</i>		13	2	11	\$34.31
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	4	5	(1)	--
	<i>Total</i>		4	5	(1)	\$22.50
51.0907	Medical Radiologic Technology/Science - Radiation Therapist	KCTCS	3	5	(2)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	3	5	(2)	\$23.84
51.0909	Surgical Technology/Technologist	KCTCS	9	18	(10)	--
		<i>Total</i>	9	18	(10)	\$20.18
51.0602	Dental Hygiene/Hygienist	KCTCS	1	11	(10)	--
		<i>Total</i>	1	11	(10)	\$29.87
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	3	26	(23)	--
		<i>Total</i>	3	26	(23)	\$14.05
51.1004	Clinical/Medical Laboratory Technician	KCTCS	8	39	(31)	--
		<i>Total</i>	8	39	(31)	\$21.84
51.0801	Medical/Clinical Assistant	KCTCS	13	85	(72)	--
		<i>Total</i>	13	85	(72)	\$13.58
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	120	413	(293)	--
		<i>Total</i>	120	413	(293)	\$13.77
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	309	754	(445)	--
		<i>Total</i>	309	754	(445)	\$13.06

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.28: Occupations Mapped to the East WPR's Certificate Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ALLIED HEALTH AND MEDICAL ASSISTING SERVICES, OTHER (CIP CODE 51.0899)						
29-2052	Pharmacy Technicians	1,779	1,901	123	27	\$13.08
31-2021	Physical Therapist Assistants	230	260	30	7	\$24.81
29-2056	Veterinary Technologists & Technicians	72	85	13	3	\$12.80
29-2031	Cardiovascular Technologists & Technicians	170	176	6	2	\$20.71
29-1071	Physician Assistants	161	205	43	1	\$46.34

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-2018	Clinical Laboratory Technologists & Technicians	406	456	49	1	\$21.84
29-2032	Diagnostic Medical Sonographers	59	75	17	1	\$32.09
29-2035	Magnetic Resonance Imaging Technologists	44	45	1	1	\$32.58
29-2055	Surgical Technologists	174	177	4	1	\$21.90
29-2099	Health Technologists & Technicians, All Other	100	143	43	1	\$17.35
31-1014	Nursing Assistants	3,474	3,596	122	1	\$11.46
31-2011	Occupational Therapy Assistants	74	87	12	1	\$24.25
31-9092	Medical Assistants	1,232	1,437	205	1	\$13.58
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	1,779	1,901	123	40	\$13.08

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.29: Occupations Mapped to the East WPR's Certificate Level Healthcare Programs with a Large Surplus

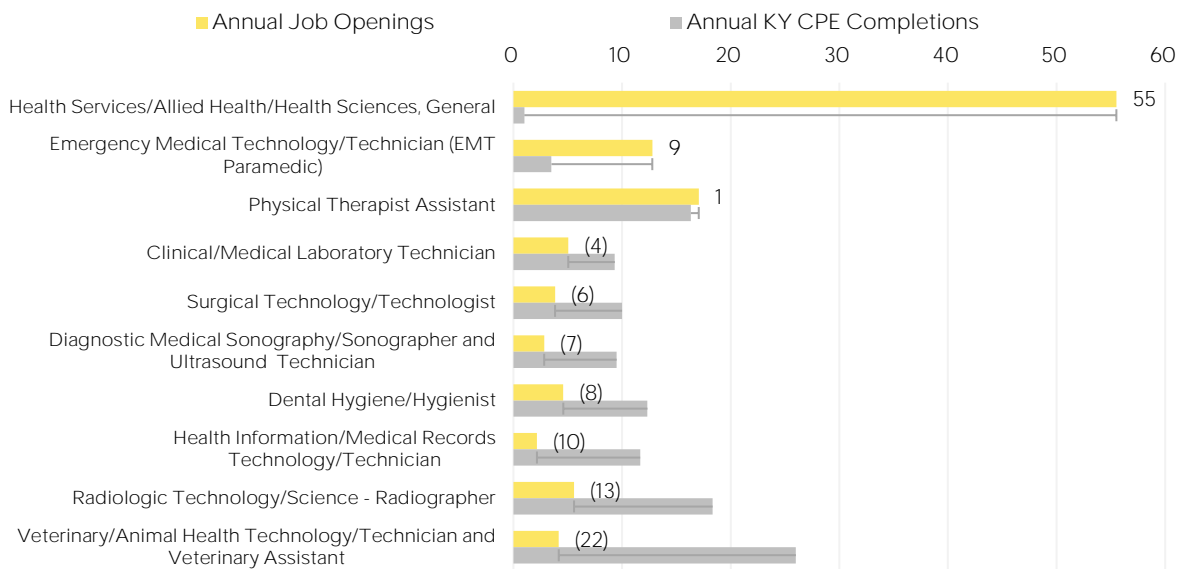
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
31-1014	Nursing Assistants	3,474	3,596	122	189	\$11.46
29-2061	Licensed Practical & Licensed Vocational Nurses	1,595	1,682	87	78	\$17.83
31-1011	Home Health Aides	586	747	161	41	\$11.36
MEDICAL ADMINISTRATIVE/EXECUTIVE ASSISTANT AND MEDICAL SECRETARY (CIP CODE 51.0716)						
31-9092	Medical Assistants	1,232	1,437	205	63	\$13.58
43-6013	Medical Secretaries	852	961	109	39	\$13.39
29-2071	Medical Records & Health Information Technicians	496	534	38	14	\$15.83
31-9094	Medical Transcriptionists	122	107	(16)	4	\$13.07
MEDICAL/CLINICAL ASSISTANT (CIP CODE 51.0801)						
31-9092	Medical Assistants	1,232	1,437	205	13	\$13.58
CLINICAL/MEDICAL LABORATORY TECHNICIAN (CIP CODE 51.1004)						

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-2018	Clinical Laboratory Technologists & Technicians	406	456	49	8	\$21.84

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Associate Degree Level Analysis

Figure 4.24: Gaps and Surpluses for the East WPR's Top 10 Associate Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.30: Gaps and Surpluses for the East WPR's Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	56	1	55	--
	<i>Total</i>		56	1	55	\$11.58
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	13	4	9	--
	<i>Total</i>		13	4	9	\$13.90
51.0806	Physical Therapist Assistant	KCTCS	17	16	1	--
	<i>Total</i>		17	16	1	\$21.00
51.1004	Clinical/Medical Laboratory Technician	KCTCS	5	9	(4)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	5	9	(4)	\$21.84
51.0909	Surgical Technology/Technologist	KCTCS	4	10	(6)	--
		<i>Total</i>	4	10	(6)	\$21.24
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	KCTCS	3	10	(7)	--
		<i>Total</i>	3	10	(7)	\$29.34
51.0602	Dental Hygiene/Hygienist	KCTCS	5	12	(8)	--
		<i>Total</i>	5	12	(8)	\$29.87
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	2	12	(10)	--
		<i>Total</i>	2	12	(10)	\$14.16
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	6	18	(13)	--
		<i>Total</i>	6	18	(13)	\$22.70
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	State	4	26	(22)	--
		<i>Total</i>	4	26	(22)	\$11.10
51.0908	Respiratory Care Therapy/Therapist	KCTCS	13	36	(23)	--
		State	2	6	(4)	--
		<i>Total</i>	15	42	(27)	\$21.79
51.0907	Medical Radiologic Technology/Science - Radiation Therapist	KCTCS	2	8	(6)	--
		State	9	36	(27)	--
		<i>Total</i>	11	44	(33)	\$23.89
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	58	100	(42)	--
		<i>Total</i>	58	100	(42)	\$13.75
51.3801	Registered Nursing/Registered Nurse	AIKCU	13	29	(16)	--
		KCTCS	87	193	(107)	--
		State	18	40	(22)	--
		<i>Total</i>	117	262	(145)	\$28.10

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.31: Occupations Mapped to the East WPR’s Associate Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	3,474	3,596	122	42	\$11.46
31-1011	Home Health Aides	586	747	161	9	\$11.36
31-9097	Phlebotomists	167	186	19	4	\$11.70
29-2018	Clinical Laboratory Technologists & Technicians	406	456	49	1	\$21.84
21-1093	Social & Human Service Assistants	965	1,133	168	0	\$13.83
29-2071	Medical Records & Health Information Technicians	496	534	38	0	\$15.83
31-9092	Medical Assistants	1,232	1,437	205	0	\$13.58

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.32: Occupations Mapped to the East WPR’s Associate Degree Level Healthcare Programs with a Large Surplus

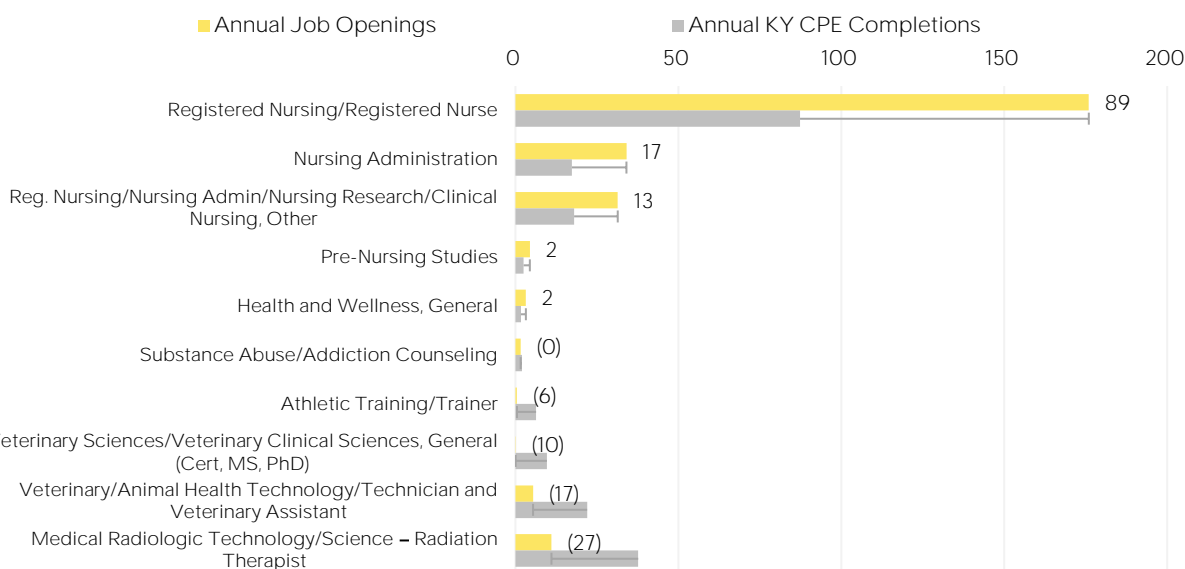
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	16,608	18,009	1,401	109	\$27.45
11-9111	Medical & Health Services Managers	2,008	2,338	330	8	\$35.66
29-1151	Nurse Anesthetists	702	762	59	0	\$77.90
29-1161	Nurse Midwives	54	64	11	0	\$24.55
29-1171	Nurse Practitioners	1,506	1,856	350	0	\$43.43
MEDICAL ADMINISTRATIVE/EXECUTIVE ASSISTANT AND MEDICAL SECRETARY (CIP CODE 51.0716)						
31-9092	Medical Assistants	1,232	1,437	205	37	\$13.58
43-6013	Medical Secretaries	852	961	109	13	\$13.39
29-2071	Medical Records & Health Information Technicians	496	534	38	6	\$15.83
31-9094	Medical Transcriptionists	122	107	(16)	2	\$13.07

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
MEDICAL RADIOLOGIC TECHNOLOGY/SCIENCE – RADIATION THERAPIST (CIP CODE 51.0907)						
29-2034	Radiologic Technologists	1,032	1,103	72	10	\$23.57
29-1124	Radiation Therapists	30	30	1	0	\$36.74
29-2033	Nuclear Medicine Technologists	29	35	7	0	\$27.57

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Bachelor's Degree Level Analysis

Figure 4.25: Gaps and Surpluses for the East WPR's Bachelor's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.33: Gaps and Surpluses for the East WPR's Bachelor's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3801	Registered Nursing/Registered Nurse	AIKCU	39	19	20	--
		State	137	68	69	--
		<i>Total</i>	<i>176</i>	<i>87</i>	<i>89</i>	<i>\$29.26</i>
51.3802	Nursing Administration	AIKCU	34	17	17	--
		<i>Total</i>	<i>34</i>	<i>17</i>	<i>17</i>	<i>\$28.48</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3899	Reg. Nursing/Nursing Admin/Nursing Research/Clinical Nursing, Other	AIKCU	31	18	13	--
		<i>Total</i>	<i>31</i>	<i>18</i>	<i>13</i>	<i>\$27.67</i>
51.1105	Pre-Nursing Studies	AIKCU	4	3	2	--
		<i>Total</i>	<i>4</i>	<i>3</i>	<i>2</i>	<i>\$28.37</i>
51.0001	Health and Wellness, General	AIKCU	3	2	2	--
		<i>Total</i>	<i>3</i>	<i>2</i>	<i>2</i>	<i>\$17.38</i>
51.1501	Substance Abuse/Addiction Counseling	AIKCU	2	2	(0)	--
		<i>Total</i>	<i>2</i>	<i>2</i>	<i>(0)</i>	<i>\$14.45</i>
51.0913	Athletic Training/Trainer	AIKCU	0	6	(6)	--
		<i>Total</i>	<i>0</i>	<i>6</i>	<i>(6)</i>	<i>\$18.22</i>
51.2501	Veterinary Sciences/Veterinary Clinical Sciences, General (Cert, MS, PhD)	State	0	10	(10)	--
		<i>Total</i>	<i>0</i>	<i>10</i>	<i>(10)</i>	<i>\$33.52</i>
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	State	5	22	(17)	--
		<i>Total</i>	<i>5</i>	<i>22</i>	<i>(17)</i>	<i>\$10.83</i>
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	State	11	38	(27)	--
		<i>Total</i>	<i>11</i>	<i>38</i>	<i>(27)</i>	<i>\$24.28</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

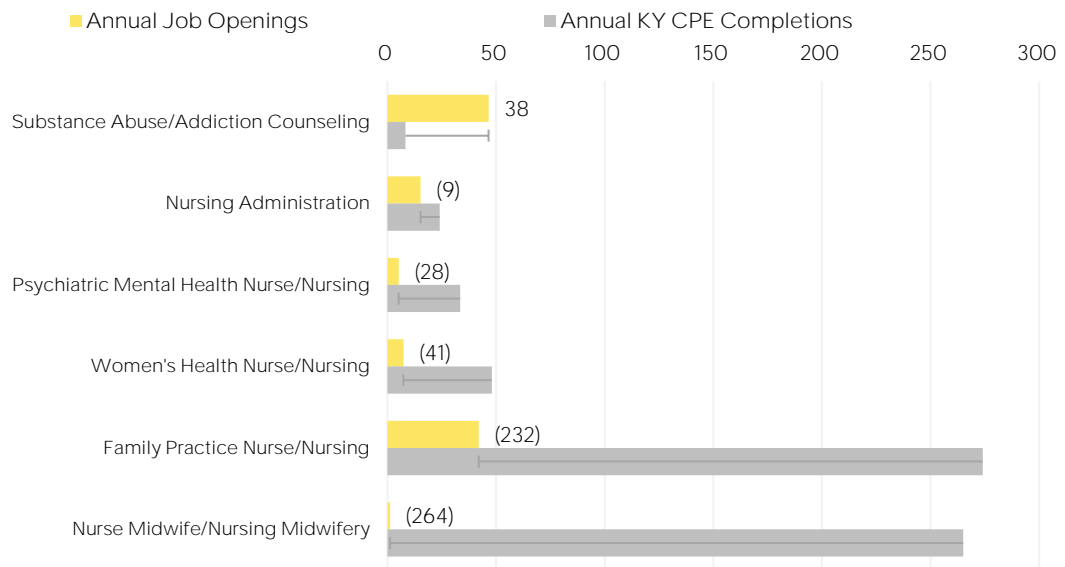
Table 4.34: Occupations Mapped to the East WPR’s Bachelor’s Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	11,072	12,006	934	150	\$27.45
11-9111	Medical & Health Services Managers	1,338	1,558	220	21	\$35.66
29-1151	Nurse Anesthetists	468	508	39	2	\$77.90
29-1171	Nurse Practitioners	1,004	1,237	234	2	\$43.43
29-1161	Nurse Midwives	36	43	7	0	\$24.55

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master’s Degree Level Analysis

Figure 4.26: Gaps and Surpluses for the East WPR’s Master’s Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.35: Gaps and Surpluses for the East WPR’s Master’s Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1501	Substance Abuse/Addiction Counseling	AIKCU	47	8	38	--
<i>Total</i>			47	8	38	\$14.94

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3802	Nursing Administration	AIKCU	15	24	(9)	--
		<i>Total</i>	15	24	(9)	\$34.95
51.3810	Psychiatric Mental Health Nurse/Nursing	Other	5	34	(28)	--
		<i>Total</i>	5	34	(28)	\$37.70
51.3822	Women's Health Nurse/Nursing	Other	7	48	(41)	--
		<i>Total</i>	7	48	(41)	\$37.70
51.3805	Family Practice Nurse/Nursing	Other	42	274	(232)	--
		<i>Total</i>	42	274	(232)	\$37.70
51.3807	Nurse Midwife/Nursing Midwifery	Other	1	265	(264)	--
		<i>Total</i>	1	265	(264)	\$24.55

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.36: Occupations Mapped to the East WPR's Master's Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
SUBSTANCE ABUSE/ADDICTION COUNSELING (CIP CODE 51.1501)						
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	714	954	240	23	\$15.74
21-1093	Social & Human Service Assistants	965	1,133	168	15	\$13.83
21-1023	Mental Health & Substance Abuse Social Workers	360	452	92	9	\$14.70

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

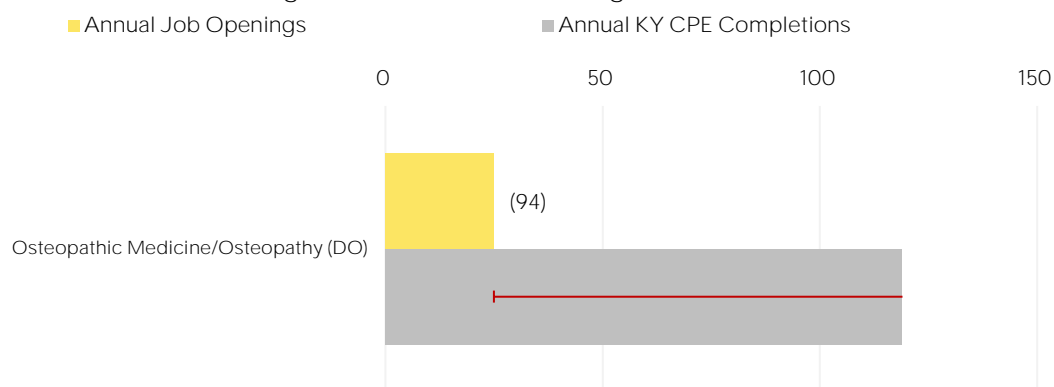
Table 4.37: Occupations Mapped to the East WPR's Master's Degree Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
NURSE MIDWIFE/NURSING MIDWIFERY (CIP CODE 51.3807)						
29-1161	Nurse Midwives	18	21	4	1	\$24.55
FAMILY PRACTICE NURSE/NURSING (CIP CODE 51.3805)						
29-1171	Nurse Practitioners	502	619	117	27	\$43.43
29-1141	Registered Nurses	5,536	6,003	467	15	\$27.45
WOMEN'S HEALTH NURSE/NURSING (CIP CODE 51.3822)						
29-1171	Nurse Practitioners	502	619	117	5	\$43.43
29-1141	Registered Nurses	5,536	6,003	467	3	\$27.45

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

Figure 4.27: East WPR's Doctoral Degree Level Healthcare Program



Source: Emsi program demand gap model.

Table 4.38: East WPR's Doctoral Degree Level Healthcare Program

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL EAST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1901	Osteopathic Medicine/Osteopathy (DO)	AIKCU	25	119	(94)	--
<i>Total</i>			25	119	(94)	\$113.86

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Table 4.39: Occupations Mapped to the East WPR's Doctoral Degree Level Healthcare Program

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
OSTEOPATHIC MEDICINE/OSTEOPATHY (DO) (CIP CODE 51.1901)						
29-1069	Physicians & Surgeons, All Other	442	469	27	17	\$119.54
29-1062	Family & General Practitioners	192	208	16	8	\$101.88

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.



KENTUCKIANA LOCAL WORKFORCE AREA



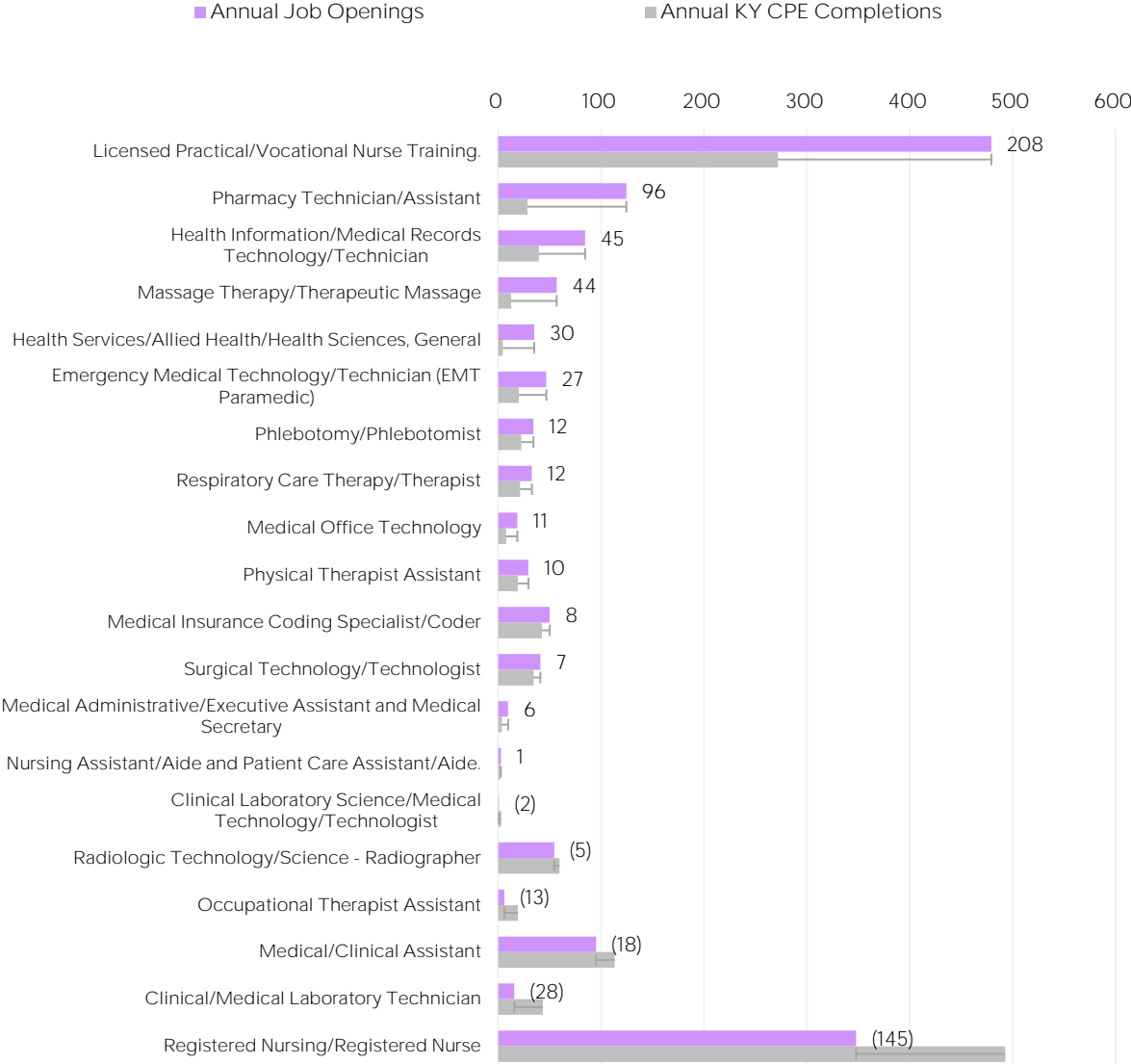
Figure 4.28 through Figure 4.30 display the CERT+ and BACH+ gaps and surpluses. The Licensed Practical/Vocational Nurse Training (CERT+) program is an area to consider for expansion, whereas the Medical Insurance Coding Specialist/Coder and Family Practice Nurse/Nursing programs (CERT+ and BACH+, respectively) should maintain their success. Placement rates for the Dentistry (DDS, DMD) and Medicine (MD) programs (both BACH+) should be considered, as both programs face a large surplus. However, completers may be moving outside the region or even the state for residency programs and/or employment.

In terms of individual award levels, at the certificate level, results show a need for more completers from the region's medical records and medical office programs, and less of a demand for students seeking employment as registered nurses with less than a bachelor's degree. In fact, Kentucky's Licensed Out-of-State Schools (Other) provide the Kentuckiana LWA with the majority of the region's certificate and associate degree Registered Nursing/Registered Nurses program completers. In addition to the Licensed Practical/Vocational Nurse Training program mentioned in the paragraph above, program expansion for the Pharmacy Technician/Assistant program at both the certificate and associate degree award levels is recommended.

The region's high demand for nursing occupations explains the gaps for the region's various nursing programs. However, the current oversupply of nursing across CERT+ programs should be considered before expanding any of the BACH+ nursing programs. The region's Health Services/Allied Health/Health Sciences, General bachelor's degree level program faces the largest gap; however, many of the occupations driving the gap do not necessarily require a bachelor's degree. All the region's master's degree level programs seem to be serving the region well, with no programs facing a large gap or surplus. All the doctoral level programs face a surplus, although only two of the surpluses are large, and as discussed above, completers may be moving outside the region to continue their career path.

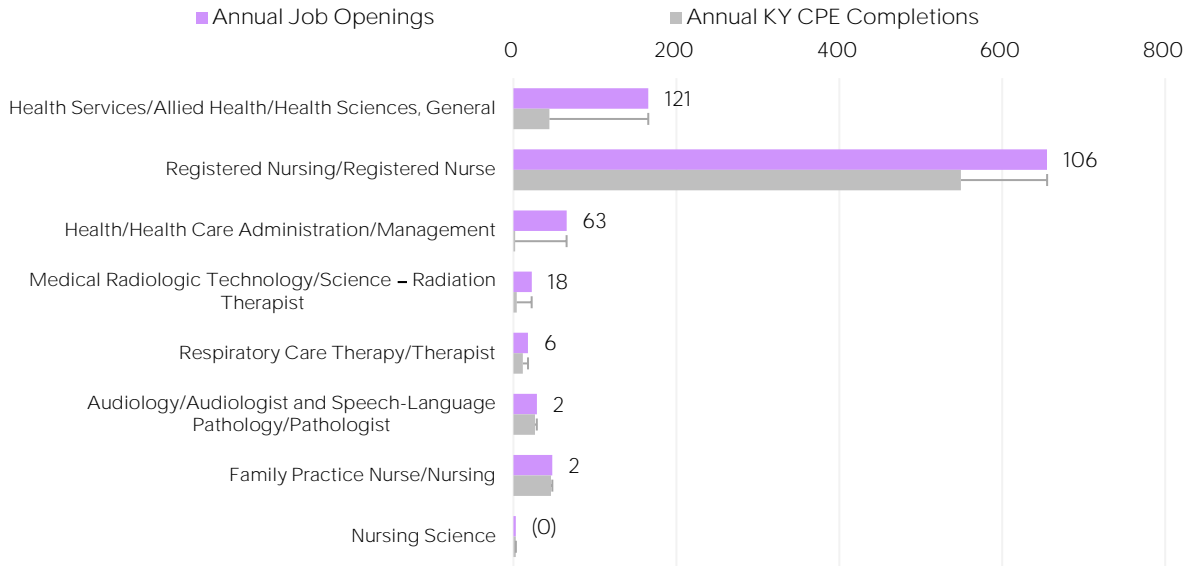
Combined Level Analysis

Figure 4.28: Gaps and Surpluses for the Kentuckiana LWA’s CERT+ Degree Level Healthcare Programs



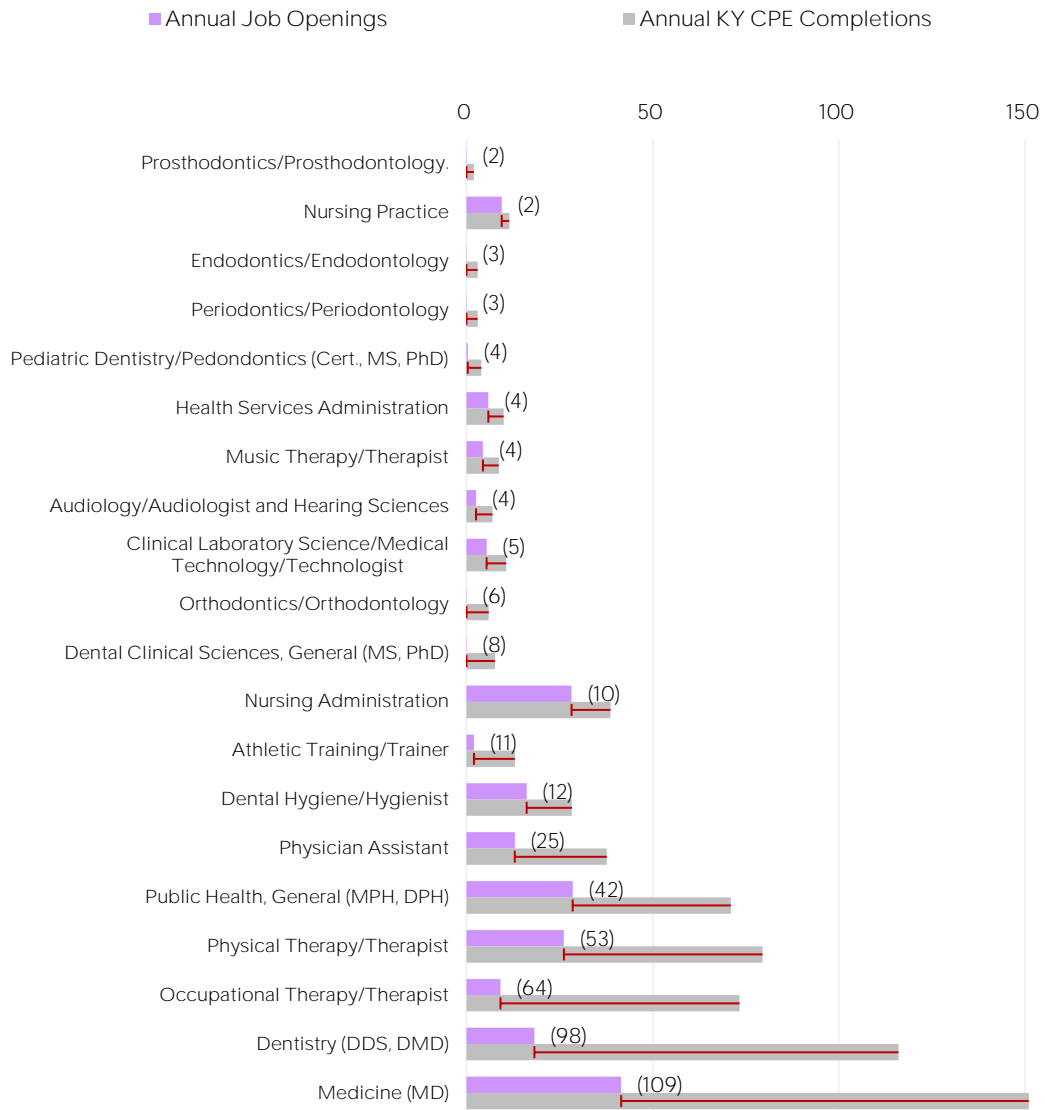
Source: Emsi program demand gap model.

Figure 4.29: Gaps for the Kentuckiana LWA's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

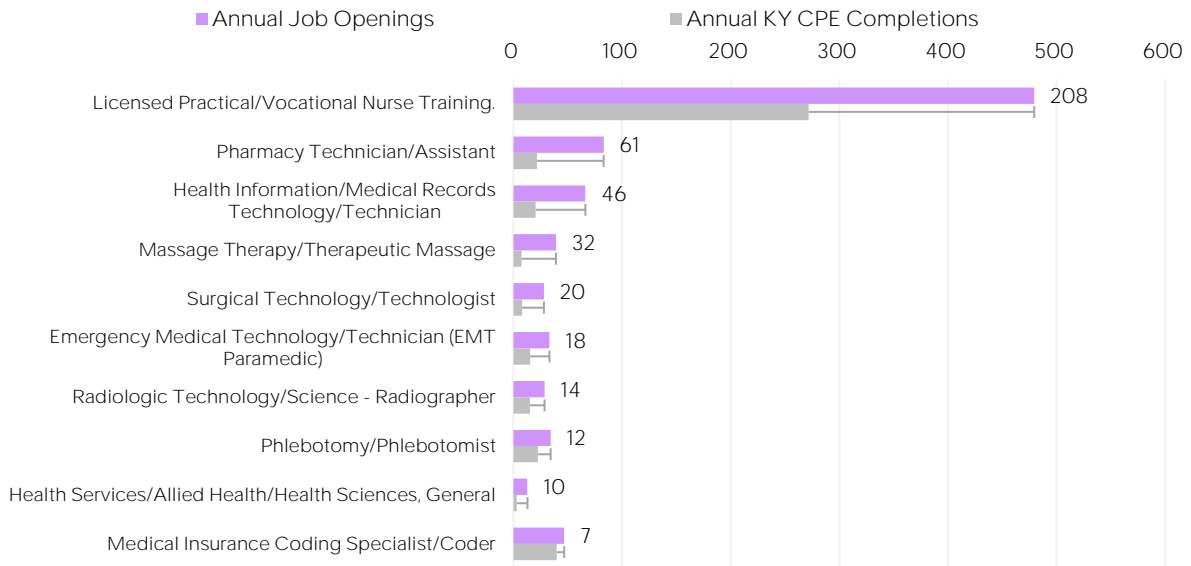
Figure 4.30: Surpluses for the Kentuckiana LWA's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Certificate Level Analysis

Figure 4.31: Top 10 Gaps for the Kentuckiana LWA's Certificate Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.40: Gaps and Surpluses for the Kentuckiana LWA's Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	415	235	180	--
		Other	64	37	28	--
		<i>Total</i>	<i>479</i>	<i>272</i>	<i>208</i>	<i>\$15.09</i>
51.0805	Pharmacy Technician/Assistant	KCTCS	79	21	59	--
		Other	4	1	3	--
		<i>Total</i>	<i>83</i>	<i>22</i>	<i>61</i>	<i>\$13.79</i>
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	66	21	46	--
		<i>Total</i>	<i>66</i>	<i>21</i>	<i>46</i>	<i>\$17.43</i>
51.3501	Massage Therapy/Therapeutic Massage	Other	39	8	32	--
		<i>Total</i>	<i>39</i>	<i>8</i>	<i>32</i>	<i>\$22.80</i>
51.0909	Surgical Technology/Technologist	KCTCS	28	8	20	--
		<i>Total</i>	<i>28</i>	<i>8</i>	<i>20</i>	<i>\$22.09</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	33	16	18	--
		<i>Total</i>	33	16	18	\$14.33
51.0911	Radiologic Technology/Science - Radiographer	Other	29	15	14	--
		<i>Total</i>	29	15	14	\$23.51
51.1009	Phlebotomy/Phlebotomist	Other	34	23	12	--
		<i>Total</i>	34	23	12	\$17.07
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	13	3	10	--
		<i>Total</i>	13	3	10	\$15.79
51.0713	Medical Insurance Coding Specialist/Coder	KCTCS	17	14	2	--
		Other	30	26	4	--
		<i>Total</i>	47	40	7	\$17.25
51.0710	Medical Office Technology	Other	4	1	3	--
		<i>Total</i>	4	1	3	\$17.66
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	4	1	3	--
		<i>Total</i>	4	1	3	\$17.66
51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide.	KCTCS	3	2	1	--
		<i>Total</i>	3	2	1	\$13.05
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	AIKCU	1	3	(2)	--
		<i>Total</i>	1	3	(2)	\$24.53
51.1004	Clinical/Medical Laboratory Technician	KCTCS	6	26	(19)	--
		<i>Total</i>	6	26	(19)	\$24.53
51.0801	Medical/Clinical Assistant	KCTCS	40	52	(12)	--
		Other	28	36	(8)	--
		<i>Total</i>	68	88	(21)	\$17.22
51.3801	Registered Nursing/Registered Nurse	Other	55	113	(58)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	55	113	(58)	\$34.39

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.41: Occupations Mapped to the Kentuckiana LWA's Certificate Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
31-1014	Nursing Assistants	12,013	12,417	404	307	\$13.17
29-2061	Licensed Practical & Licensed Vocational Nurses	5,412	5,615	202	125	\$20.88
31-1011	Home Health Aides	1,269	1,769	499	48	\$12.27
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	3,913	4,601	687	83	\$13.79
HEALTH INFORMATION/MEDICAL RECORDS TECHNOLOGY/TECHNICIAN (CIP CODE 51.0707)						
43-6013	Medical Secretaries	1,862	2,105	242	58	\$17.45
29-2071	Medical Records & Health Information Technicians	1,122	1,217	94	8	\$17.29
MASSAGE THERAPY/THERAPEUTIC MASSAGE (CIP CODE 51.3501)						
31-9011	Massage Therapists	534	632	98	33	\$24.40
31-2022	Physical Therapist Aides	211	218	7	6	\$13.37

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.42: Occupations Mapped to the Kentuckiana LWA's Certificate Level Healthcare Program with a Large Surplus

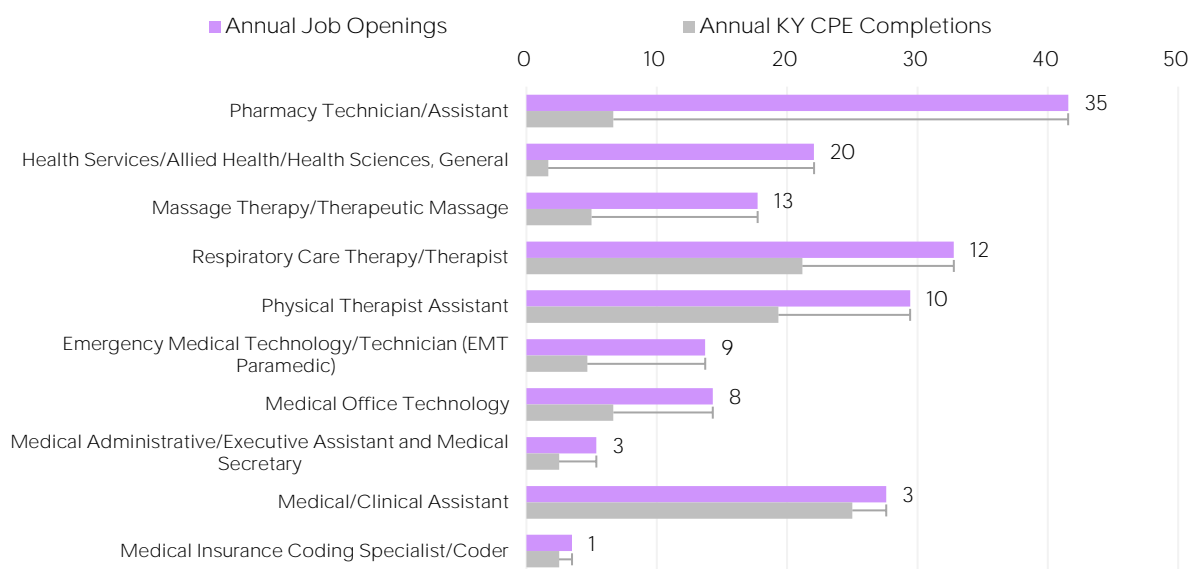
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	14,451	15,891	1,441	36	\$31.47
11-9111	Medical & Health Services Managers	1,048	1,222	174	18	\$39.35
29-1151	Nurse Anesthetists	292	327	35	0	\$91.16
29-1161	Nurse Midwives	45	50	4	0	\$51.71

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1171	Nurse Practitioners	651	788	137	0	\$47.20

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Associate Degree Level Analysis

Figure 4.32: Top 10 Gaps for the Kentuckiana LWA's Associate Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.43: Gaps and Surpluses for the Kentuckiana LWA's Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0805	Pharmacy Technician/Assistant	Other	42	7	35	--
		<i>Total</i>	42	7	35	\$13.79
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	22	2	20	--
		<i>Total</i>	22	2	20	\$15.79
51.3501	Massage Therapy/Therapeutic Massage	Other	18	5	13	--
		<i>Total</i>	18	5	13	\$23.10
51.0908	Respiratory Care Therapy/Therapist	KCTCS	24	16	9	--
		Other	9	6	3	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	33	21	12	\$24.31
51.0806	Physical Therapist Assistant	KCTCS	29	19	10	--
		<i>Total</i>	29	19	10	\$24.98
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	14	5	9	--
		<i>Total</i>	14	5	9	\$14.33
51.0710	Medical Office Technology	Other	14	7	8	--
		<i>Total</i>	14	7	8	\$17.43
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	Other	5	3	3	--
		<i>Total</i>	5	3	3	\$17.43
51.0801	Medical/Clinical Assistant	KCTCS	14	13	1	--
		Other	14	12	1	--
		<i>Total</i>	28	25	3	\$17.22
51.0713	Medical Insurance Coding Specialist/Coder	Other	3	3	1	--
		<i>Total</i>	3	3	1	\$17.24
51.0707	Health Information/Medical Records Technology/Technician	KCTCS	14	14	(1)	--
		Other	4	5	(0)	--
		<i>Total</i>	18	19	(1)	\$17.40
51.1004	Clinical/Medical Laboratory Technician	KCTCS	4	8	(4)	--
		Other	5	10	(5)	--
		<i>Total</i>	9	18	(9)	\$24.53
51.0803	Occupational Therapist Assistant	KCTCS	6	19	(13)	--
		<i>Total</i>	6	19	(13)	\$29.92
51.0909	Surgical Technology/Technologist	KCTCS	7	13	(7)	--
		Other	6	13	(7)	--
		<i>Total</i>	13	26	(13)	\$22.16



CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	11	19	(8)	--
		Other	15	26	(11)	--
		<i>Total</i>	26	45	(19)	\$25.20
51.3801	Registered Nursing/Registered Nurse	KCTCS	86	112	(26)	--
		Other	207	268	(62)	--
		<i>Total</i>	293	380	(87)	\$31.86

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.44: Occupation Mapped to the Kentuckiana LWA's Associate Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
PHARMACY TECHNICIAN/ASSISTANT (CIP CODE 51.0805)						
29-2052	Pharmacy Technicians	1,957	2,300	344	42	\$13.79

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

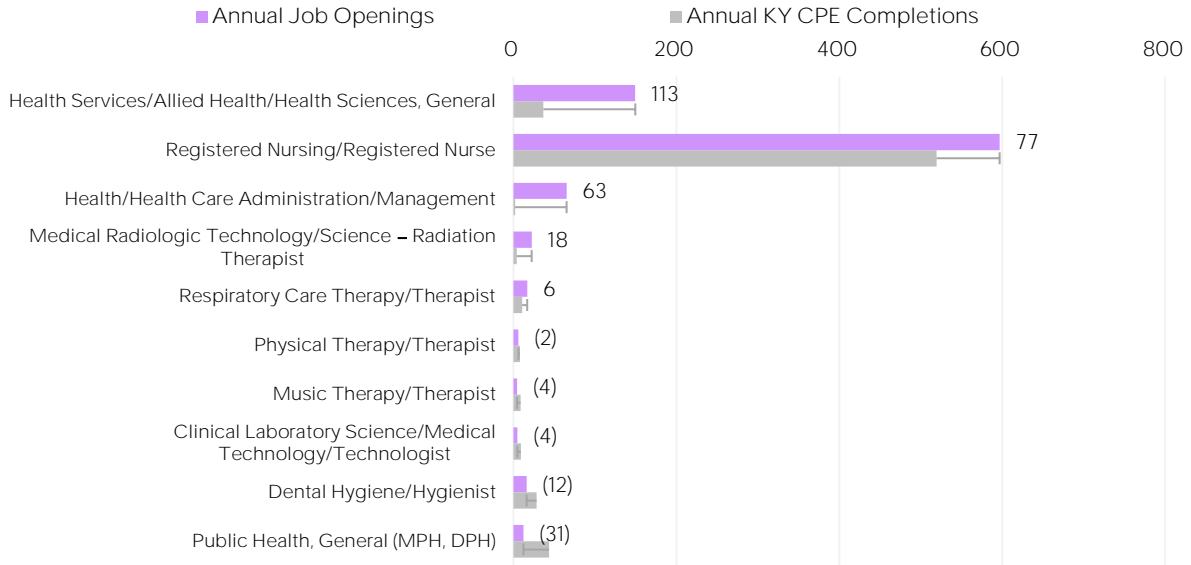
Table 4.45: Occupations Mapped to the Kentuckiana LWA's Associate Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	28,901	31,783	2,881	280	\$31.47
11-9111	Medical & Health Services Managers	2,096	2,444	348	13	\$39.35
29-1151	Nurse Anesthetists	584	655	71	0	\$91.16
29-1161	Nurse Midwives	91	99	8	0	\$51.71
29-1171	Nurse Practitioners	1,303	1,576	273	0	\$47.20

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Bachelor's Degree Level Analysis

Figure 4.33: Gaps and Surpluses for the Kentuckiana LWA's Bachelor's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.46: Gaps and Surpluses for the Kentuckiana LWA's Bachelor's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	AIKCU	150	37	113	--
		Total	150	37	113	\$16.20
51.3801	Registered Nursing/Registered Nurse	AIKCU	240	209	31	--
		Other	82	71	11	--
		State	275	239	36	--
		Total	597	519	77	\$32.33
51.0701	Health/Health Care Administration/Management	AIKCU	65	2	63	--
		Total	65	2	63	\$17.49
51.0907	Medical Radiologic Technology/Science – Radiation Therapist	AIKCU	22	4	18	--
		Total	22	4	18	\$27.13
51.0908	Respiratory Care Therapy/Therapist	AIKCU	17	11	6	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	17	11	6	\$24.28
51.2308	Physical Therapy/Therapist	AIKCU	6	8	(2)	--
		<i>Total</i>	6	8	(2)	\$38.58
51.2305	Music Therapy/Therapist	State	4	9	(4)	--
		<i>Total</i>	4	9	(4)	\$36.30
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	Other	2	5	(2)	--
		AIKCU	2	5	(2)	--
		<i>Total</i>	5	9	(4)	\$24.53
51.0602	Dental Hygiene/Hygienist	State	16	28	(12)	--
		<i>Total</i>	16	28	(12)	\$28.79
51.2201	Public Health, General (MPH, DPH)	State	12	44	(31)	--
		<i>Total</i>	12	44	(31)	\$26.65

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.47: Occupations Mapped to the Kentuckiana LWA's Bachelor's Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	6,007	6,209	202	51	\$13.17
31-9092	Medical Assistants	2,478	2,869	390	25	\$17.22
21-1093	Social & Human Service Assistants	1,103	1,254	151	21	\$15.50
29-2018	Clinical Laboratory Technologists & Technicians	672	808	136	19	\$24.53
29-2071	Medical Records & Health Information Technicians	1,122	1,217	94	17	\$17.29
31-9097	Phlebotomists	682	801	120	9	\$15.59
31-1011	Home Health Aides	635	884	250	8	\$12.27
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	43,352	47,674	4,322	554	\$31.47
11-9111	Medical & Health Services Managers	3,144	3,666	522	37	\$39.35
29-1151	Nurse Anesthetists	876	982	106	3	\$91.16
29-1171	Nurse Practitioners	1,954	2,364	410	3	\$47.20
29-1161	Nurse Midwives	136	149	12	0	\$51.71
HEALTH/HEALTH CARE ADMINISTRATION/MANAGEMENT (CIP CODE 51.0701)						
43-6013	Medical Secretaries	1,862	2,105	242	65	\$17.45
11-9111	Medical & Health Services Managers	1,048	1,222	174	0	\$39.35

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

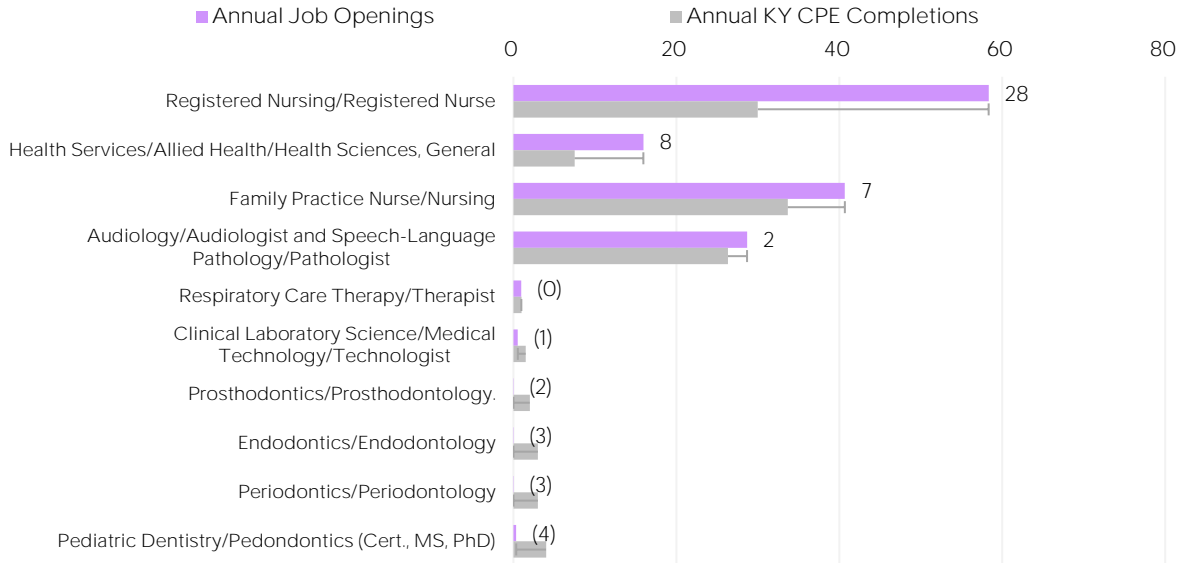
Table 4.48: Occupations Mapped to the Kentuckiana LWA's Bachelor's Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
PUBLIC HEALTH, GENERAL (MPH, DPH) (CIP CODE 51.2201)						
21-1094	Community Health Workers	484	515	31	5	\$18.37
11-9111	Medical & Health Services Managers	1,048	1,222	174	3	\$39.35
21-1022	Healthcare Social Workers	521	589	69	3	\$26.72
21-1091	Health Educators	79	92	14	1	\$26.08
19-1041	Epidemiologists	12	12	(1)	0	\$26.60

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master's Degree Level Analysis

Figure 4.34: Gaps and Surpluses for the Kentuckiana LWA's Top 10 Master's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.49: Gaps and Surpluses for the Kentuckiana LWA's Master's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3801	Registered Nursing/Registered Nurse	AIKCU	58	30	28	--
		<i>Total</i>	<i>58</i>	<i>30</i>	<i>28</i>	<i>\$52.47</i>
51.0000	Health Services/Allied Health/Health Sciences, General	AIKCU	16	8	8	--
		<i>Total</i>	<i>16</i>	<i>8</i>	<i>8</i>	<i>\$16.55</i>
51.3805	Family Practice Nurse/Nursing	AIKCU	41	34	7	--
		<i>Total</i>	<i>41</i>	<i>34</i>	<i>7</i>	<i>\$40.36</i>
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	29	26	2	--
		<i>Total</i>	<i>29</i>	<i>26</i>	<i>2</i>	<i>\$39.54</i>
51.0908	Respiratory Care Therapy/Therapist	AIKCU	1	1	(0)	--
		<i>Total</i>	<i>1</i>	<i>1</i>	<i>(0)</i>	<i>\$24.27</i>

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	AIKCU	1	2	(1)	--
		<i>Total</i>	<i>1</i>	<i>2</i>	<i>(1)</i>	<i>\$24.53</i>
51.0511	Prosthodontics/Prosthodontology.	State	0	2	(2)	--
		<i>Total</i>	<i>0</i>	<i>2</i>	<i>(2)</i>	<i>\$73.78</i>
51.0506	Endodontics/Endodontology	State	0	3	(3)	--
		<i>Total</i>	<i>0</i>	<i>3</i>	<i>(3)</i>	<i>\$74.09</i>
51.0510	Periodontics/Periodontology	State	0	3	(3)	--
		<i>Total</i>	<i>0</i>	<i>3</i>	<i>(3)</i>	<i>\$74.09</i>
51.0509	Pediatric Dentistry/Pedodontics (Cert., MS, PhD)	State	0	4	(4)	--
		<i>Total</i>	<i>0</i>	<i>4</i>	<i>(4)</i>	<i>\$66.33</i>
51.2211	Health Services Administration	State	6	10	(4)	--
		<i>Total</i>	<i>6</i>	<i>10</i>	<i>(4)</i>	<i>\$27.27</i>
51.0508	Orthodontics/Orthodontology	State	0	6	(6)	--
		<i>Total</i>	<i>0</i>	<i>6</i>	<i>(6)</i>	<i>\$60.45</i>
51.0501	Dental Clinical Sciences, General (MS, PhD)	State	0	8	(8)	--
		<i>Total</i>	<i>0</i>	<i>8</i>	<i>(8)</i>	<i>\$74.09</i>
51.3802	Nursing Administration	State	28	39	(10)	--
		<i>Total</i>	<i>28</i>	<i>39</i>	<i>(10)</i>	<i>\$33.68</i>
51.0913	Athletic Training/Trainer	AIKCU	2	13	(11)	--
		<i>Total</i>	<i>2</i>	<i>13</i>	<i>(11)</i>	<i>\$21.82</i>
51.2201	Public Health, General (MPH, DPH)	State	16	27	(11)	--
		<i>Total</i>	<i>16</i>	<i>27</i>	<i>(11)</i>	<i>\$27.26</i>
51.0912	Physician Assistant	Other	13	38	(25)	--
		<i>Total</i>	<i>13</i>	<i>38</i>	<i>(25)</i>	<i>\$44.48</i>
51.2306	Occupational Therapy/Therapist	AIKCU	9	73	(64)	--



CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	9	73	(64)	\$36.01

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.50: Occupations Mapped to the Kentuckiana LWA's Master's Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1171	Nurse Practitioners	651	788	137	20	\$47.20
29-1141	Registered Nurses	14,451	15,891	1,441	16	\$31.47
29-1151	Nurse Anesthetists	292	327	35	13	\$91.16
11-9111	Medical & Health Services Managers	1,048	1,222	174	6	\$39.35
29-1161	Nurse Midwives	45	50	4	2	\$51.71

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

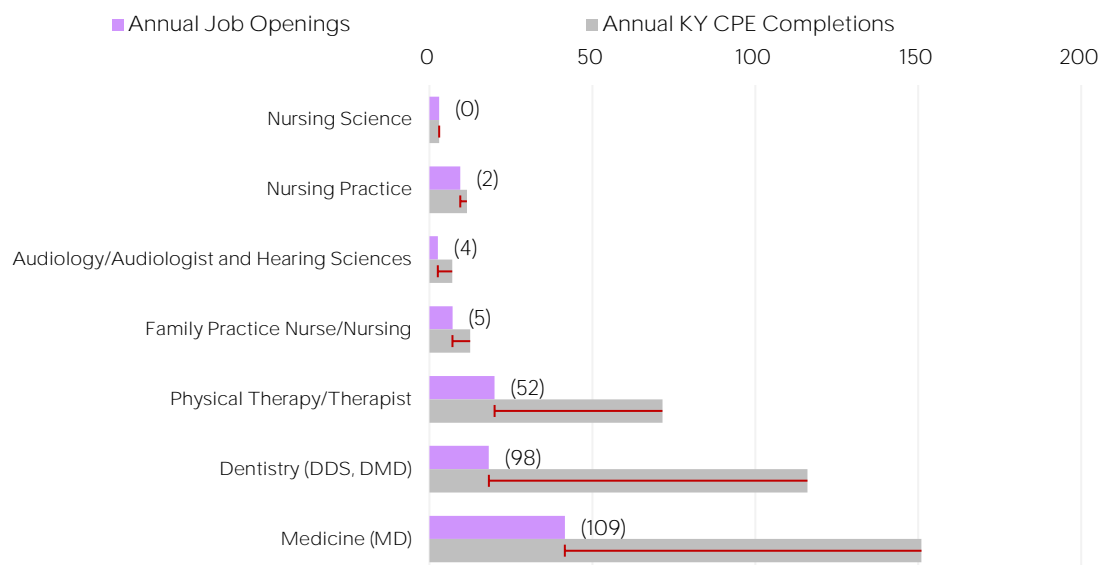
Table 4.51: Occupations Mapped to the Kentuckiana LWA's Master's Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
OCCUPATIONAL THERAPY/THERAPIST (CIP CODE 51.2306)						
29-1122	Occupational Therapists	177	202	25	9	\$36.01

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

Figure 4.35: Surpluses for the Kentuckiana LWA's Doctoral Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.52: Gaps and Surpluses for the Kentuckiana LWA's Doctoral Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3808	Nursing Science	State	3	3	(0)	--
		<i>Total</i>	3	3	(0)	\$39.40
51.3818	Nursing Practice	AIKCU	5	7	(1)	--
		State	4	5	(1)	--
		<i>Total</i>	9	12	(2)	\$37.27
51.0202	Audiology/Audiologist and Hearing Sciences	State	3	7	(4)	--
		<i>Total</i>	3	7	(4)	\$30.29
51.3805	Family Practice Nurse/Nursing	AIKCU	2	4	(2)	--
		State	5	9	(4)	--
		<i>Total</i>	7	13	(5)	\$36.33
51.2308	Physical Therapy/Therapist	AIKCU	20	72	(52)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KENT COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	20	72	(52)	\$38.58
51.0401	Dentistry (DDS, DMD)	State	18	116	(98)	--
		<i>Total</i>	18	116	(98)	\$66.33
51.1201	Medicine (MD)	State	42	151	(109)	--
		<i>Total</i>	42	151	(109)	\$80.63

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.53: Occupations Mapped to the Kentuckiana LWA's Doctoral Degree Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
Medicine (MD) (CIP Code 51.1201)						
29-1069	Physicians & Surgeons, All Other	684	777	94	30	\$75.37
29-1062	Family & General Practitioners	322	346	24	12	\$93.88
Dentistry (DDS, DMD) (CIP Code 51.0401)						
29-1021	Dentists, General	453	497	44	18	\$66.33
Physical Therapy/Therapist (CIP Code 51.2308)						
29-1123	Physical Therapists	689	723	34	20	\$38.58

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.



SOUTH WORKFORCE PLANNING REGION

Figure 4.36 and Figure 4.37 display the CERT+ and BACH+ gaps and surpluses. Only the Health/Medical Preparatory Programs, Other (CERT+) program is recommended for expansion, particularly how the program trains for dental assistants and pharmacy technicians, the occupations driving the demand. The Physical Therapist Assistant and Family Practice Nurse/Nursing programs (CERT+ and BACH+, respectively) should maintain their success. Some programs, such as the Medical Administrative/Executive Assistant & Medical Secretary (CERT+) program, should be carefully considered for continuation and/or for consolidation. In addition, completers' placement upon program success should be

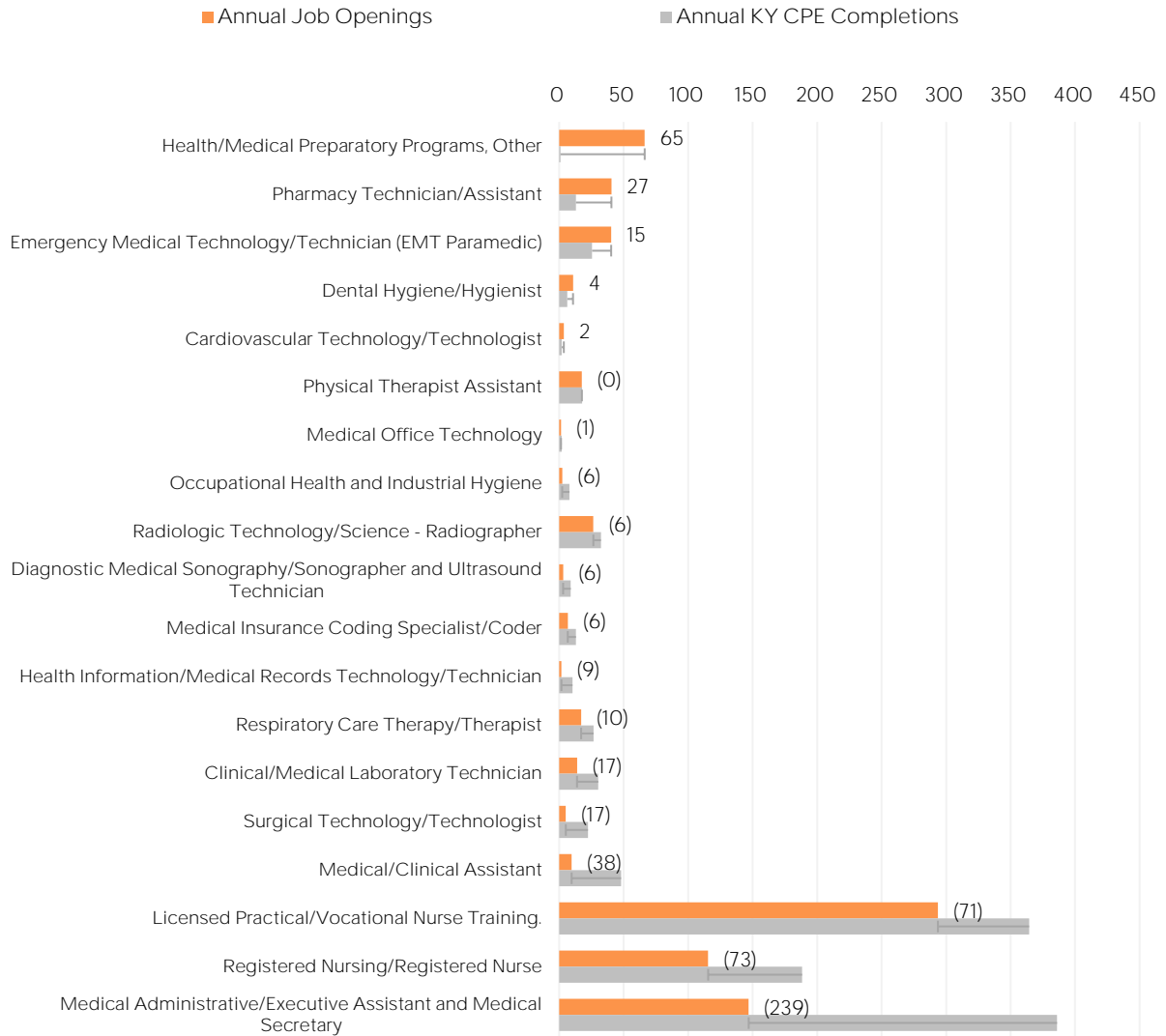
evaluated for the Registered Nursing/Registered Nurse program, as it faces a surplus at both the CERT+ and BACH+ levels in the region.

At the individual award level, between the South WPR's certificate and associate degree award levels, the largest programs by far are the certificate level Medical Administrative/Executive Assistant & Medical Secretary and Licensed Practical/Vocational Nurse Training programs, with over 320 and 360 average annual completions, respectively. However, the region does not have a comparable number of job openings for related occupations. A review of the programs' employment outcomes is recommended.

The region is serving programs well-aligned with the market at the bachelor's, master's, and doctoral degree levels, with no programs facing a large gap or surplus. As in other regions, the South WPR's high demand for registered nurses is the occupation in the most demand across the award levels, although as mentioned above, the Registered Nursing/Registered Nurse program does face an overall surplus across the award levels. With that said, nursing-related programs at the master's and doctoral degree level do generally face a small gap.

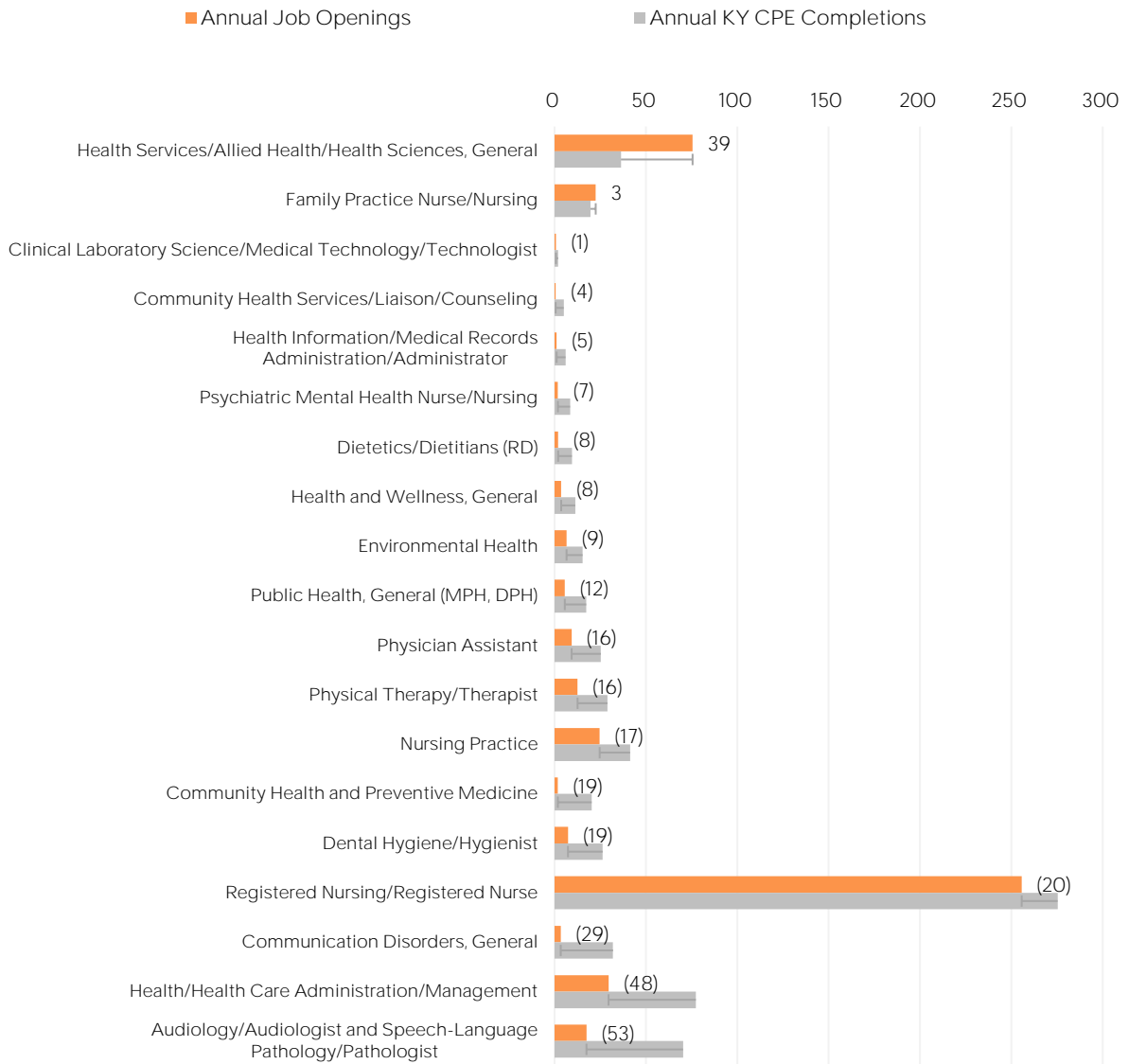
Combined Level Analysis

Figure 4.36: Gaps and Surpluses for the South WPR's CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

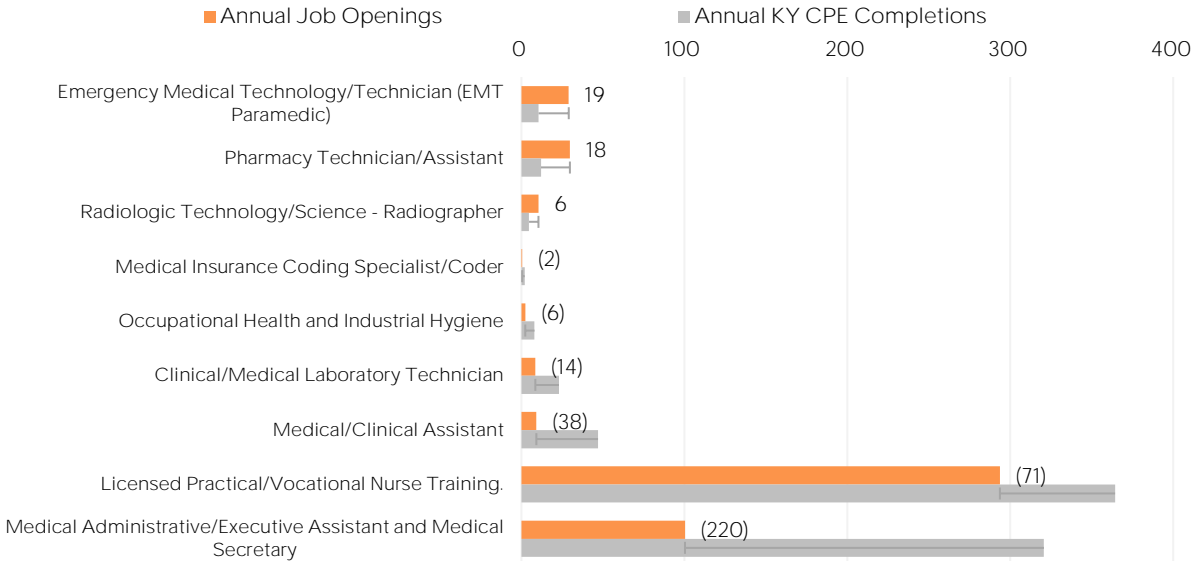
Figure 4.37: Gaps and Surpluses for the South WPR’s BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Certificate Level Analysis

Figure 4.38: Gaps and Surpluses for the South WPR’s Certificate Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.54: Gaps and Surpluses for the South WPR’s Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	29	11	19	--
	<i>Total</i>		<i>29</i>	<i>11</i>	<i>19</i>	<i>\$14.97</i>
51.0805	Pharmacy Technician/Assistant	KCTCS	30	12	18	--
	<i>Total</i>		<i>30</i>	<i>12</i>	<i>18</i>	<i>\$13.57</i>
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	10	5	6	--
	<i>Total</i>		<i>10</i>	<i>5</i>	<i>6</i>	<i>\$23.45</i>
51.0713	Medical Insurance Coding Specialist/Coder	KCTCS	0	2	(2)	--
	<i>Total</i>		<i>0</i>	<i>2</i>	<i>(2)</i>	<i>\$14.48</i>
51.2206	Occupational Health and Industrial Hygiene	State	2	8	(6)	--
	<i>Total</i>		<i>2</i>	<i>8</i>	<i>(6)</i>	<i>\$34.67</i>
51.1004	Clinical/Medical Laboratory Technician	KCTCS	9	23	(14)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	9	23	(14)	\$22.71
51.0801	Medical/Clinical Assistant	KCTCS	9	44	(35)	--
		Other	1	3	(2)	--
		<i>Total</i>	9	47	(38)	\$14.17
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	294	364	(71)	--
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	100	321	(220)	--
		<i>Total</i>	100	321	(220)	\$14.38

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

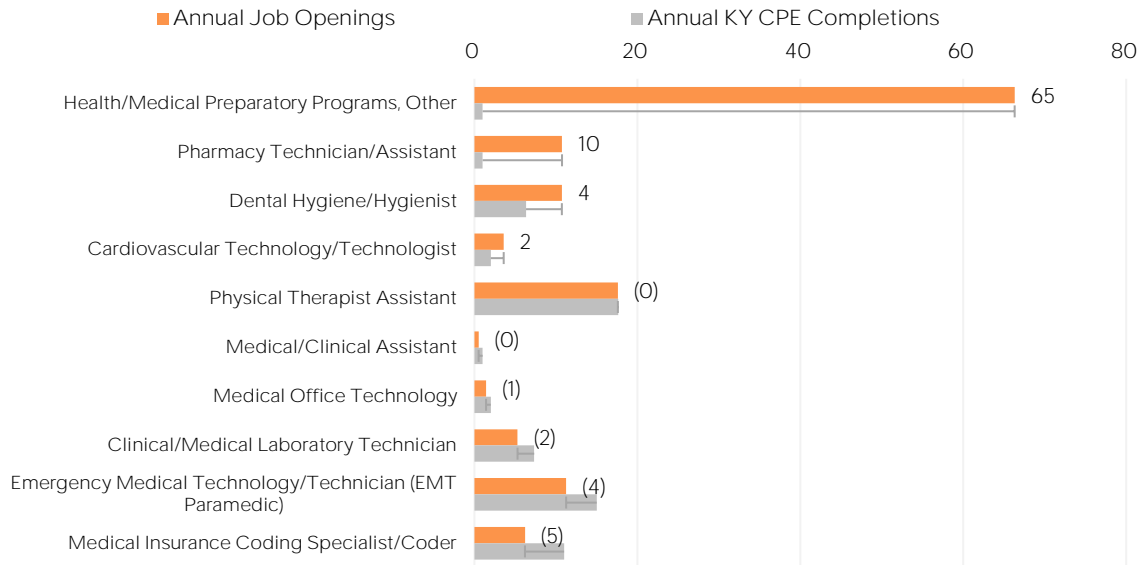
Table 4.55: Occupations Mapped to the South WPR's Certificate Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
MEDICAL ADMINISTRATIVE/EXECUTIVE ASSISTANT AND MEDICAL SECRETARY (CIP CODE 51.0716)						
31-9092	Medical Assistants	1,233	1,536	303	62	\$14.17
43-6013	Medical Secretaries	448	591	143	25	\$13.79
29-2071	Medical Records & Health Information Technicians	293	343	50	10	\$16.53
31-9094	Medical Transcriptionists	53	91	38	4	\$16.31
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
31-1014	Nursing Assistants	3,274	3,405	130	178	\$11.41
29-2061	Licensed Practical & Licensed Vocational Nurses	1,411	1,528	117	72	\$18.87
31-1011	Home Health Aides	455	743	288	43	\$11.89
MEDICAL/CLINICAL ASSISTANT (CIP CODE 51.0801)						
31-9092	Medical Assistants	2,466	3,073	606	9	\$14.17

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Associate Degree Level Analysis

Figure 4.39: Gaps and Surpluses for the South WPR's Top 10 Associate Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.56: Gaps and Surpluses for the South WPR's Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1199	Health/Medical Preparatory Programs, Other	AIKCU	66	1	65	--
		<i>Total</i>	66	1	65	\$16.60
51.0805	Pharmacy Technician/Assistant	Other	11	1	10	--
		<i>Total</i>	11	1	10	\$13.57
51.0602	Dental Hygiene/Hygienist	State	11	6	4	--
		<i>Total</i>	11	6	4	\$29.15
51.0901	Cardiovascular Technology/Technologist	Other	4	2	2	--
		<i>Total</i>	4	2	2	\$25.97
51.0806	Physical Therapist Assistant	KCTCS	18	18	(0)	--
		<i>Total</i>	18	18	(0)	\$20.63
51.0801	Medical/Clinical Assistant	Other	1	1	(0)	--
		<i>Total</i>	1	1	(0)	\$14.17

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0710	Medical Office Technology	Other	1	2	(1)	--
		<i>Total</i>	<i>1</i>	<i>2</i>	<i>(1)</i>	<i>\$14.37</i>
51.1004	Clinical/Medical Laboratory Technician	KCTCS	5	7	(2)	--
		<i>Total</i>	<i>5</i>	<i>7</i>	<i>(2)</i>	<i>\$22.71</i>
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	8	10	(2)	--
		State	4	5	(1)	--
		<i>Total</i>	<i>11</i>	<i>15</i>	<i>(4)</i>	<i>\$14.97</i>
51.0713	Medical Insurance Coding Specialist/Coder	Other	6	11	(5)	--
		<i>Total</i>	<i>6</i>	<i>11</i>	<i>(5)</i>	<i>\$14.38</i>
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	KCTCS	3	9	(6)	--
		<i>Total</i>	<i>3</i>	<i>9</i>	<i>(6)</i>	<i>\$26.65</i>
51.0707	Health Information/Medical Records Technology/Technician	State	2	10	(9)	--
		<i>Total</i>	<i>2</i>	<i>10</i>	<i>(9)</i>	<i>\$14.62</i>
51.0908	Respiratory Care Therapy/Therapist	KCTCS	17	27	(10)	--
		<i>Total</i>	<i>17</i>	<i>27</i>	<i>(10)</i>	<i>\$22.19</i>
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	16	28	(12)	--
		<i>Total</i>	<i>16</i>	<i>28</i>	<i>(12)</i>	<i>\$25.02</i>
51.0909	Surgical Technology/Technologist	KCTCS	5	22	(17)	--
		<i>Total</i>	<i>5</i>	<i>22</i>	<i>(17)</i>	<i>\$19.37</i>
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	47	65	(19)	--
		<i>Total</i>	<i>47</i>	<i>65</i>	<i>(19)</i>	<i>\$14.37</i>
51.3801	Registered Nursing/Registered Nurse	AIKCU	8	14	(5)	--
		KCTCS	49	80	(31)	--
		State	58	94	(36)	--
		<i>Total</i>	<i>116</i>	<i>188</i>	<i>(73)</i>	<i>\$29.19</i>

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.57: Occupations Mapped to the South WPR's Associate Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH/MEDICAL PREPARATORY PROGRAMS, OTHER (CIP CODE 51.1199)						
29-2061	Licensed Practical & Licensed Vocational Nurses	1,411	1,528	117	24	\$18.87
31-9091	Dental Assistants	669	761	92	18	\$16.90
29-2052	Pharmacy Technicians	991	1,174	183	11	\$13.57
31-1011	Home Health Aides	455	743	288	10	\$11.89
29-1071	Physician Assistants	162	222	60	1	\$18.37
29-1141	Registered Nurses	5,176	5,840	665	1	\$28.22
29-2041	Emergency Medical Technicians & Paramedics	763	831	68	1	\$14.97
31-2021	Physical Therapist Assistants	221	258	37	1	\$25.84
11-9111	Medical & Health Services Managers	632	737	105	0	\$42.07
21-1093	Social & Human Service Assistants	455	566	111	0	\$12.89
29-2034	Radiologic Technologists	495	536	40	0	\$24.14
29-1067	Surgeons	17	21	4	0	\$122.05
29-1023	Orthodontists	22	24	2	0	\$99.12

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.58: Occupations Mapped to the South WPR's Associate Degree Level Healthcare Program with a Large Surplus

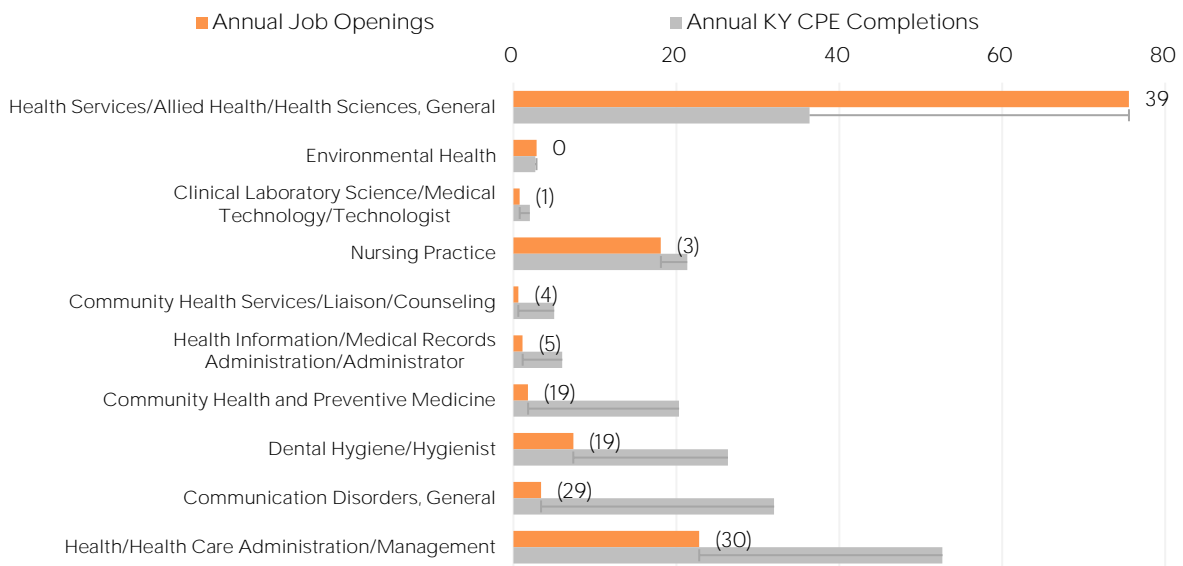
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	15,527	17,520	1,994	107	\$28.22
11-9111	Medical & Health Services Managers	1,895	2,211	316	8	\$42.07
29-1151	Nurse Anesthetists	227	282	56	0	\$53.71
29-1161	Nurse Midwives	95	108	13	0	\$35.77

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1171	Nurse Practitioners	1,130	1,452	322	0	\$45.75

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Bachelor's Degree Level Analysis

Figure 4.40: Gaps and Surpluses for the South WPR's Top 10 Bachelor's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.59: Gaps and Surpluses for the South WPR's Bachelor's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	State	76	36	39	--
		<i>Total</i>	76	36	39	\$14.55
51.2202	Environmental Health	State	3	3	0	--
		<i>Total</i>	3	3	0	\$35.26
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	State	1	2	(1)	--
		<i>Total</i>	1	2	(1)	\$22.71
51.3818	Nursing Practice	AIKCU	18	21	(3)	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	18	21	(3)	\$29.51
51.1504	Community Health Services/Liaison/Counseling	AIKCU	1	5	(4)	--
		<i>Total</i>	1	5	(4)	\$15.56
51.0706	Health Information/Medical Records Administration/Administrator	State	1	6	(5)	--
		<i>Total</i>	1	6	(5)	\$25.93
51.2208	Community Health and Preventive Medicine	State	2	20	(19)	--
		<i>Total</i>	2	20	(19)	\$36.19
51.0602	Dental Hygiene/Hygienist	State	7	26	(19)	--
		<i>Total</i>	7	26	(19)	\$29.15
51.0201	Communication Disorders, General	State	3	32	(29)	--
		<i>Total</i>	3	32	(29)	\$28.48
51.0701	Health/Health Care Administration/Management	AIKCU	3	8	(5)	--
		State	19	45	(25)	--
		<i>Total</i>	23	53	(30)	\$18.33
51.3801	Registered Nursing/Registered Nurse	AIKCU	56	66	(10)	--
		State	162	190	(28)	--
		<i>Total</i>	218	256	(38)	\$29.61

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.60: Occupations Mapped to the South WPR's Bachelor's Degree Level Healthcare Program with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	3,274	3,405	130	29	\$11.41
31-9092	Medical Assistants	1,233	1,536	303	16	\$14.17
29-2018	Clinical Laboratory Technologists & Technicians	408	444	36	14	\$22.71

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
31-1011	Home Health Aides	455	743	288	7	\$11.89
29-2071	Medical Records & Health Information Technicians	293	343	50	4	\$16.53
31-9097	Phlebotomists	242	264	22	3	\$13.20
21-1093	Social & Human Service Assistants	455	566	111	2	\$12.89

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

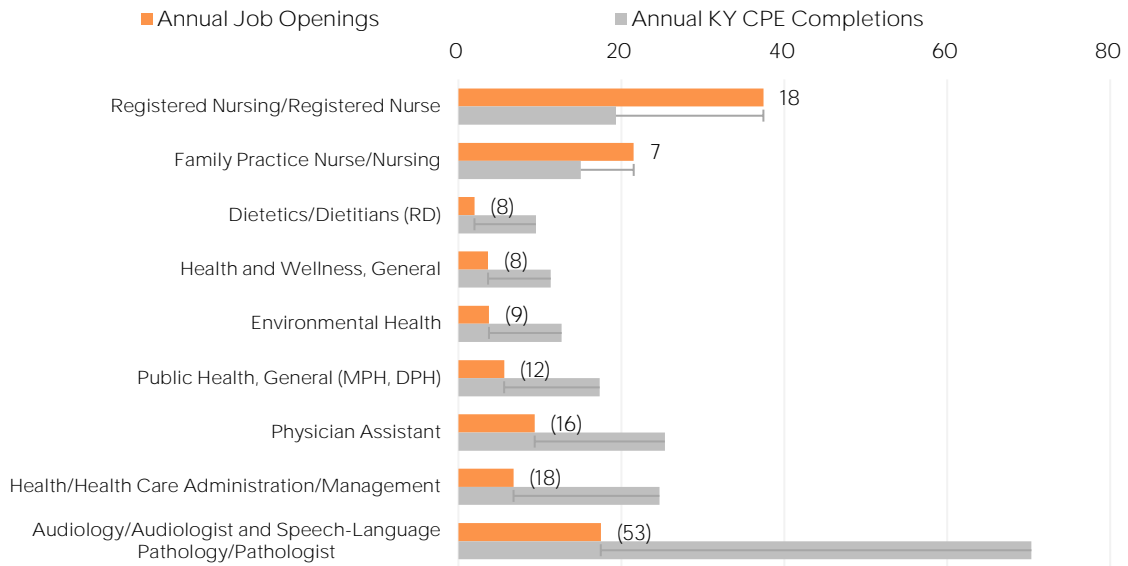
Table 4.61: Occupations Mapped to the South WPR's Bachelor's Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	10,351	11,680	1,329	197	\$28.22
11-9111	Medical & Health Services Managers	1,263	1,474	211	18	\$42.07
29-1171	Nurse Practitioners	753	968	215	2	\$45.75
29-1151	Nurse Anesthetists	151	188	37	1	\$53.71
29-1161	Nurse Midwives	63	72	9	0	\$35.77

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master's Degree Level Analysis

Figure 4.41: Gaps and Surpluses for the South WPR's Master's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.62: Gaps and Surpluses for the South WPR's Master's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3801	Registered Nursing/Registered Nurse	State	37	19	18	--
		<i>Total</i>	37	19	18	\$40.36
51.3805	Family Practice Nurse/Nursing	AIKCU	22	15	7	--
		<i>Total</i>	22	15	7	\$38.35
51.3101	Dietetics/Dietitians (RD)	State	2	10	(8)	--
		<i>Total</i>	2	10	(8)	\$15.73
51.0001	Health and Wellness, General	AIKCU	4	11	(8)	--
		<i>Total</i>	4	11	(8)	\$31.34
51.2202	Environmental Health	State	4	13	(9)	--
		<i>Total</i>	4	13	(9)	\$32.95
51.2201	Public Health, General (MPH, DPH)	State	6	17	(12)	--
		<i>Total</i>	6	17	(12)	\$31.26

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0912	Physician Assistant	AIKCU	9	25	(16)	--
		<i>Total</i>	9	25	(16)	\$18.37
51.0701	Health/Health Care Administration/Management	State	7	25	(18)	--
		<i>Total</i>	7	25	(18)	\$31.95
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	17	70	(53)	--
		<i>Total</i>	17	70	(53)	\$28.52

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

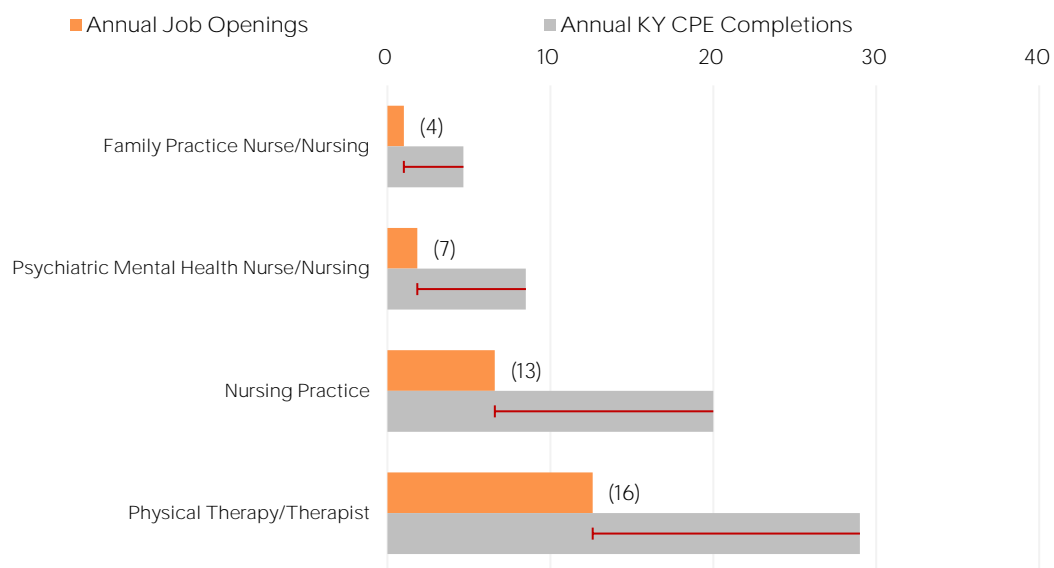
Table 4.63: Occupations Mapped to the South WPR's Master's Degree Level Healthcare Program with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
AUDIOLOGY/AUDIOLOGIST AND SPEECH-LANGUAGE PATHOLOGY/PATHOLOGIST (CIP CODE 51.0204)						
29-1127	Speech-Language Pathologists	278	331	53	17	\$28.52
29-1181	Audiologists	22	25	3	0	\$27.70

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

Figure 4.42: Surpluses for the South WPR’s Doctoral Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.64: Gaps and Surpluses for the South WPR’s Doctoral Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL SOUTH COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3805	Family Practice Nurse/Nursing	State	1	5	(4)	--
		<i>Total</i>	<i>1</i>	<i>5</i>	<i>(4)</i>	<i>\$35.77</i>
51.3810	Psychiatric Mental Health Nurse/Nursing	State	2	9	(7)	--
		<i>Total</i>	<i>2</i>	<i>9</i>	<i>(7)</i>	<i>\$35.77</i>
51.3818	Nursing Practice	State	7	20	(13)	--
		<i>Total</i>	<i>7</i>	<i>20</i>	<i>(13)</i>	<i>\$37.95</i>
51.2308	Physical Therapy/Therapist	State	13	29	(16)	--
		<i>Total</i>	<i>13</i>	<i>29</i>	<i>(16)</i>	<i>\$39.43</i>

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

WEST WORKFORCE PLANNING REGION



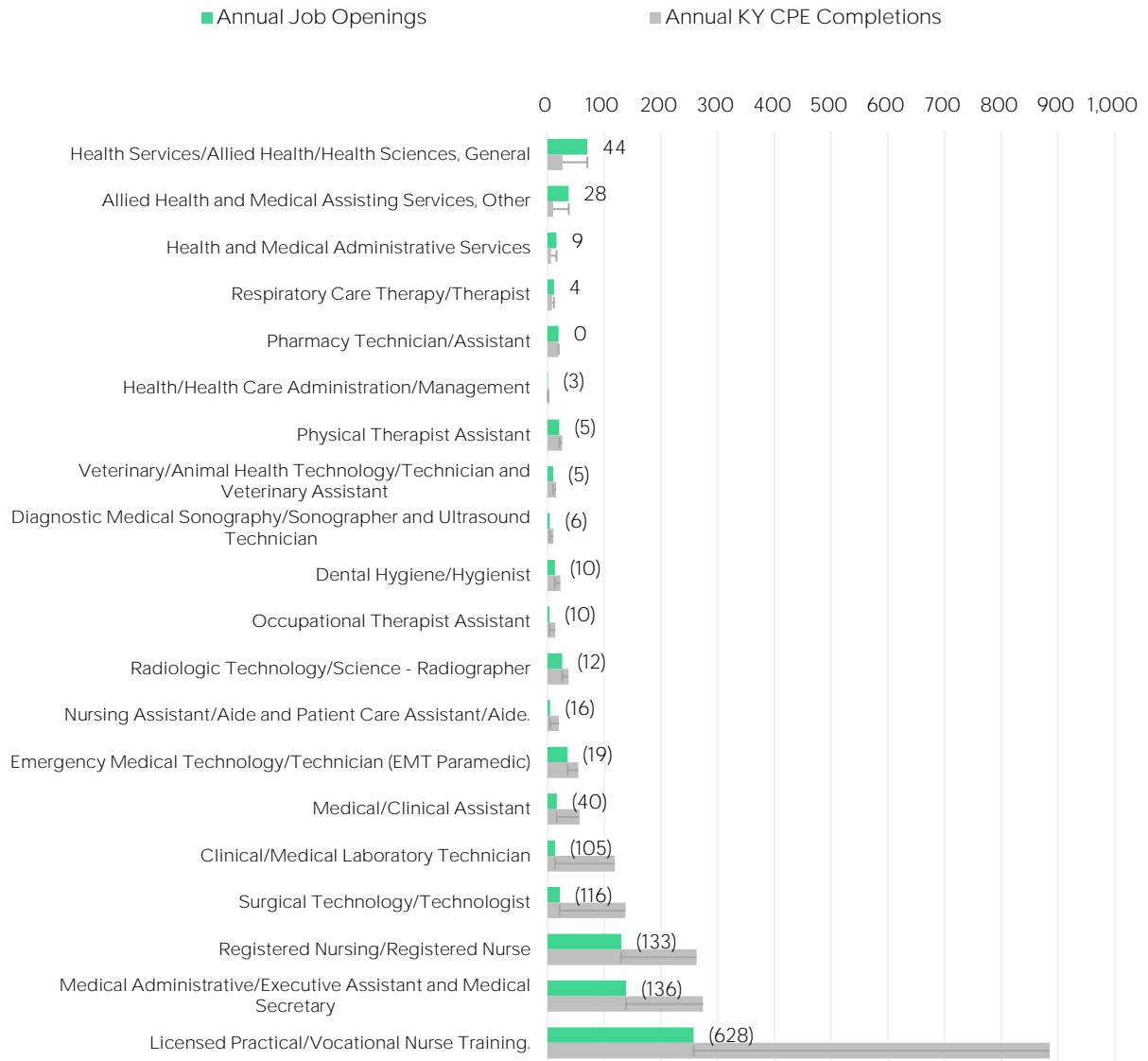
Figure 4.43 and Figure 4.44 display the CERT+ and BACH+ gaps and surpluses. The Registered Nursing/Registered Nurse program appears as an opportunity for expansion at the BACH+ level, even considering the region's CERT+ surplus in the program. The Pharmacy Technician/Assistant and Physical Therapist Assistant programs (CERT+) are recommended for maintaining their success. The region faces a large surplus in several CERT+ programs, such as the Licensed Practical/Vocational Nurse Training and Medical Administrative/Executive Assistant & Medical Secretary programs. These programs should be carefully considered for continuation and/or for consolidation.

At the individual award level, KCTCS is the primary provider of completions at the certificate and associate degree levels. The two programs mentioned above as ones to consider for continuation and/or consolidation are by far the largest programs, with 885 and 223 completions, respectively, at the certificate level. While they do face some of the largest demand across all certificate and associate degree programs, supply by far outstrips demand.

At the bachelor's degree level, beyond the Registered Nursing/Registered Nurse program, the Health Services/Allied Health/Health Sciences, General program appears ready for expansion. However, the occupations driving the demand, such as nursing assistants and medical assistants, do not require a bachelor's degree level of education. Therefore, the program is not recommended for expansion at this time. The region only offers one master's degree program and one doctoral program – Audiology/Audiologist & Speech-Language Pathology/Pathologist and Nursing Practice, respectively. Both programs face a small surplus, but no program adjustments are recommended at this time.

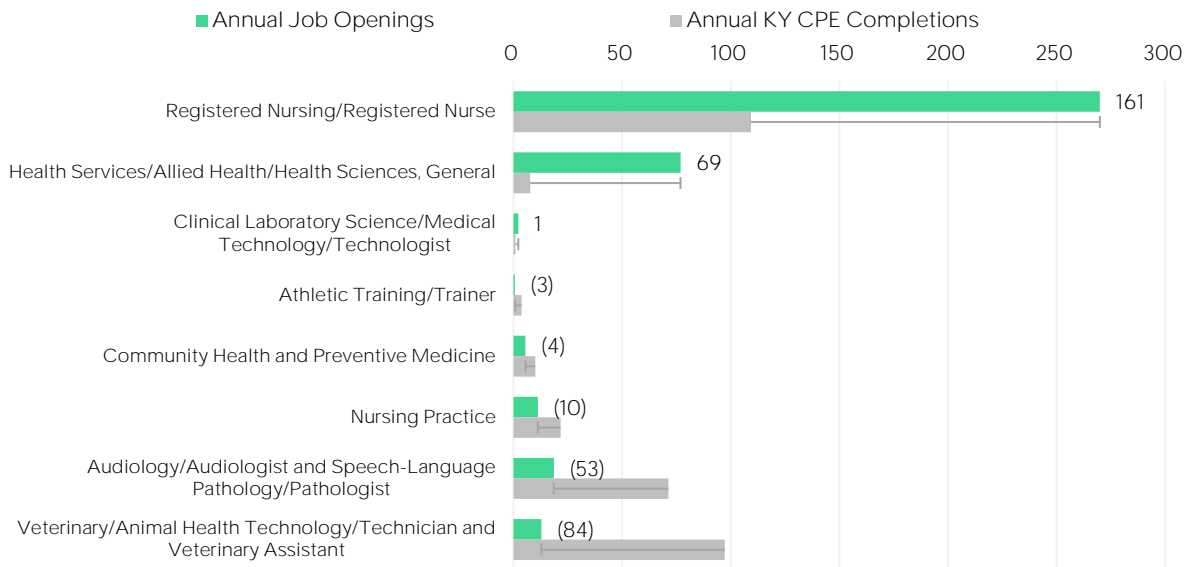
Combined Level Analysis

Figure 4.43: Gaps and Surpluses for the West WPR's CERT+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

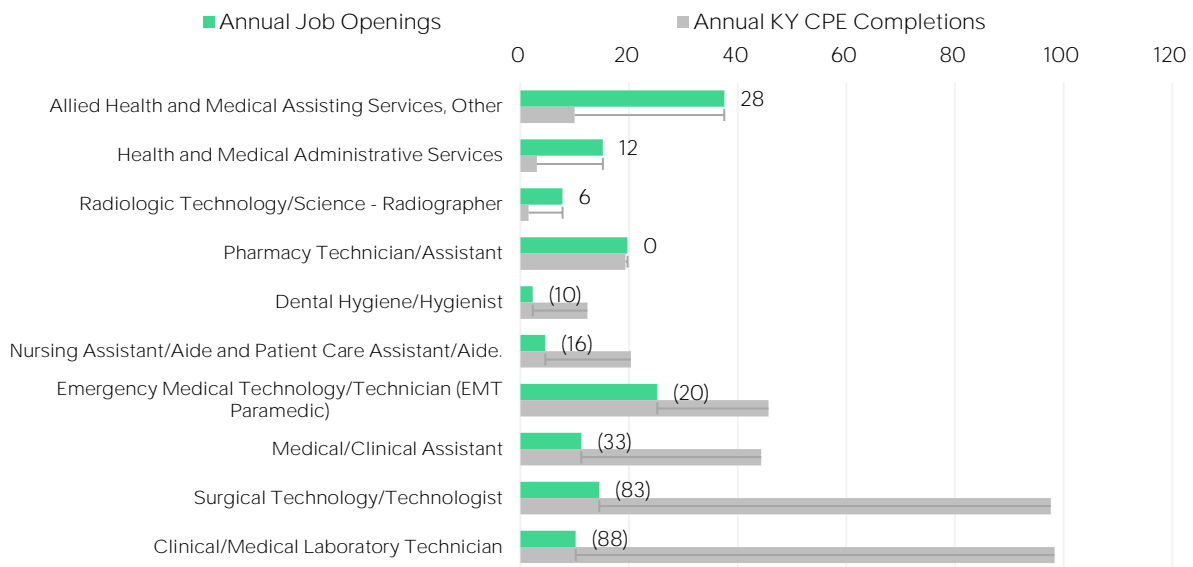
Figure 4.44: Gaps and Surpluses for the West WPR's BACH+ Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Certificate Level Analysis

Figure 4.45: Gaps and Surpluses for the West WPR's Top 10 Certificate Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.65: Gaps and Surpluses for the West WPR's Certificate Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL WEST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0899	Allied Health and Medical Assisting Services, Other	KCTCS	38	10	28	--
	<i>Total</i>		38	10	28	\$18.60
51.0799	Health and Medical Administrative Services	KCTCS	15	3	12	--
	<i>Total</i>		15	3	12	\$36.48
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	8	2	6	--
	<i>Total</i>		8	2	6	\$25.55
51.0805	Pharmacy Technician/Assistant	KCTCS	20	19	0	--
	<i>Total</i>		20	19	0	\$14.53
51.0602	Dental Hygiene/Hygienist	KCTCS	2	12	(10)	--
	<i>Total</i>		2	12	(10)	\$27.83
51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide.	KCTCS	5	20	(16)	--
	<i>Total</i>		5	20	(16)	\$11.64
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	25	46	(20)	--
	<i>Total</i>		25	46	(20)	\$12.08
51.0801	Medical/Clinical Assistant	KCTCS	11	44	(33)	--
	<i>Total</i>		11	44	(33)	\$13.45
51.0909	Surgical Technology/Technologist	KCTCS	15	98	(83)	--
	<i>Total</i>		15	98	(83)	\$20.27
51.1004	Clinical/Medical Laboratory Technician	KCTCS	10	98	(88)	--
	<i>Total</i>		10	98	(88)	\$24.13
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	102	223	(122)	--
	<i>Total</i>		102	223	(122)	\$14.27
51.3901	Licensed Practical/Vocational Nurse Training	KCTCS	257	885	(628)	--
	<i>Total</i>		257	885	(628)	\$13.36

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.66: Occupations Mapped to the West WPR’s Certificate Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
ALLIED HEALTH AND MEDICAL ASSISTING SERVICES, OTHER (CIP CODE 51.0899)						
29-2052	Pharmacy Technicians	851	878	27	10	\$14.53
29-2056	Veterinary Technologists & Technicians	181	224	43	8	\$12.23
31-2021	Physical Therapist Assistants	245	252	7	7	\$25.51
31-9092	Medical Assistants	1,321	1,562	241	3	\$13.45
29-2032	Diagnostic Medical Sonographers	119	142	23	2	\$32.18
31-1014	Nursing Assistants	3,400	3,250	(150)	2	\$11.72
29-1071	Physician Assistants	267	316	49	1	\$52.09
29-2018	Clinical Laboratory Technologists & Technicians	513	568	55	1	\$24.13
29-2031	Cardiovascular Technologists & Technicians	63	74	11	1	\$15.85
29-2055	Surgical Technologists	320	342	22	1	\$19.97
31-2011	Occupational Therapy Assistants	88	99	12	1	\$23.25
29-2035	Magnetic Resonance Imaging Technologists	34	39	5	0	\$33.99
29-2099	Health Technologists & Technicians, All Other	157	179	22	0	\$21.21

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.67: Occupations Mapped to the West WPR’s Certificate Level Healthcare Programs with a Large Surplus

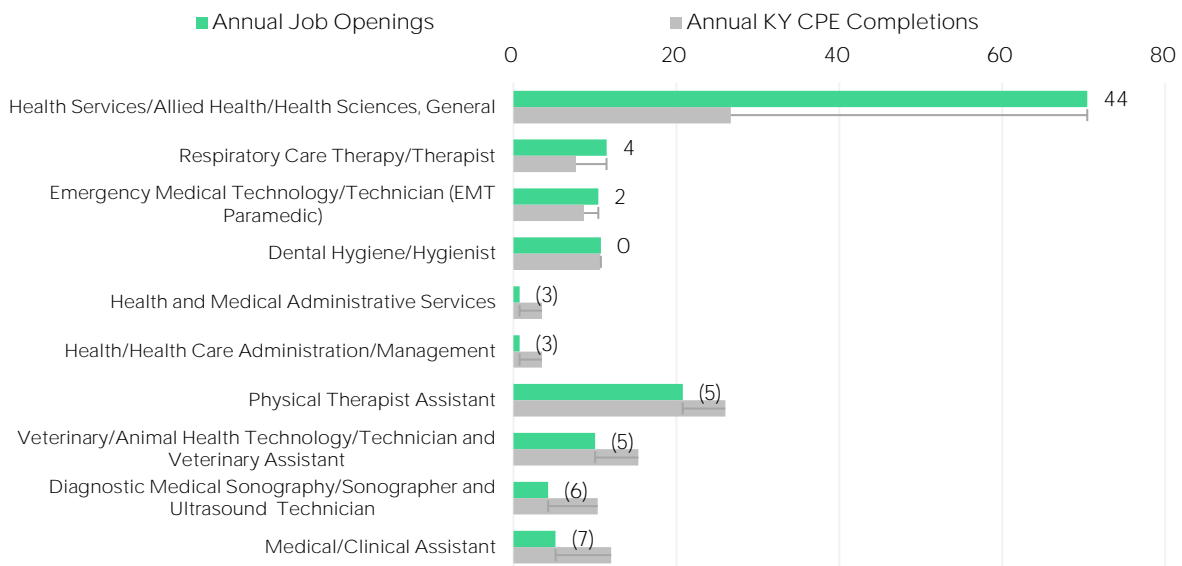
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
LICENSED PRACTICAL/VOCATIONAL NURSE TRAINING (CIP CODE 51.3901)						
31-1014	Nursing Assistants	3,400	3,250	(150)	169	\$11.72
29-2061	Licensed Practical & Licensed Vocational Nurses	1,207	1,244	37	58	\$19.24
31-1011	Home Health Aides	344	543	198	31	\$11.25
MEDICAL ADMINISTRATIVE/EXECUTIVE ASSISTANT AND MEDICAL SECRETARY (CIP CODE 51.0716)						
31-9092	Medical Assistants	1,321	1,562	241	56	\$13.45
43-6013	Medical Secretaries	603	725	122	30	\$14.15

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-2071	Medical Records & Health Information Technicians	361	371	9	10	\$17.86
31-9094	Medical Transcriptionists	155	138	(17)	5	\$16.78
CLINICAL/MEDICAL LABORATORY TECHNICIAN (CIP CODE 51.1004)						
29-2018	Clinical Laboratory Technologists & Technicians	513	568	55	10	\$24.13
SURGICAL TECHNOLOGY/TECHNOLOGIST (CIP CODE 51.0909)						
29-2055	Surgical Technologists	320	342	22	11	\$19.97
29-2099	Health Technologists & Technicians, All Other	157	179	22	4	\$21.21
MEDICAL/CLINICAL ASSISTANT (CIP CODE 51.0801)						
31-9092	Medical Assistants	1,321	1,562	241	11	\$13.45

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Associate Degree Level Analysis

Figure 4.46: Gaps and Surpluses for the West WPR's Top 10 Associate Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.68: Gaps and Surpluses for the West WPR's Associate Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0000	Health Services/Allied Health/Health Sciences, General	KCTCS	70	27	44	--
		<i>Total</i>	70	27	44	\$13.04
51.0908	Respiratory Care Therapy/Therapist	KCTCS	11	8	4	--
		<i>Total</i>	11	8	4	\$23.89
51.0904	Emergency Medical Technology/Technician (EMT Paramedic)	KCTCS	10	9	2	--
		<i>Total</i>	10	9	2	\$12.08
51.0602	Dental Hygiene/Hygienist	KCTCS	11	11	0	--
		<i>Total</i>	11	11	0	\$27.83
51.0799	Health and Medical Administrative Services	KCTCS	1	4	(3)	--
		<i>Total</i>	1	4	(3)	\$18.32
51.0701	Health/Health Care Administration/Management	AIKCU	1	4	(3)	--
		<i>Total</i>	1	4	(3)	\$18.32
51.0806	Physical Therapist Assistant	KCTCS	21	26	(5)	--
		<i>Total</i>	21	26	(5)	\$21.36
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	KCTCS	10	15	(5)	--
		<i>Total</i>	10	15	(5)	\$10.86
51.0910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician	KCTCS	4	10	(6)	--
		<i>Total</i>	4	10	(6)	\$31.51
51.0801	Medical/Clinical Assistant	KCTCS	5	12	(7)	--
		<i>Total</i>	5	12	(7)	\$13.45
51.0803	Occupational Therapist Assistant	KCTCS	4	14	(10)	--
		<i>Total</i>	4	14	(10)	\$23.25
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	KCTCS	37	51	(14)	--
		<i>Total</i>	37	51	(14)	\$14.24

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL KY COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.1004	Clinical/Medical Laboratory Technician	KCTCS	3	20	(17)	--
		<i>Total</i>	3	20	(17)	\$24.13
51.0911	Radiologic Technology/Science - Radiographer	KCTCS	18	36	(18)	--
		<i>Total</i>	18	36	(18)	\$25.45
51.0909	Surgical Technology/Technologist	KCTCS	7	40	(33)	--
		<i>Total</i>	7	40	(33)	\$20.15
51.3801	Registered Nursing/Registered Nurse	KCTCS	130	263	(133)	--
		<i>Total</i>	130	263	(133)	\$29.20

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.69: Occupations Mapped to the West WPR's Associate Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	3,400	3,250	(150)	38	\$11.72
31-9092	Medical Assistants	1,321	1,562	241	11	\$13.45
31-1011	Home Health Aides	344	543	198	7	\$11.25
31-9097	Phlebotomists	281	333	52	6	\$14.60
29-2018	Clinical Laboratory Technologists & Technicians	513	568	55	4	\$24.13
21-1093	Social & Human Service Assistants	611	711	100	2	\$11.63
29-2071	Medical Records & Health Information Technicians	361	371	9	2	\$17.86

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.70: Occupations Mapped to the West WPR's Associate Degree Level Healthcare Programs with a Large Surplus

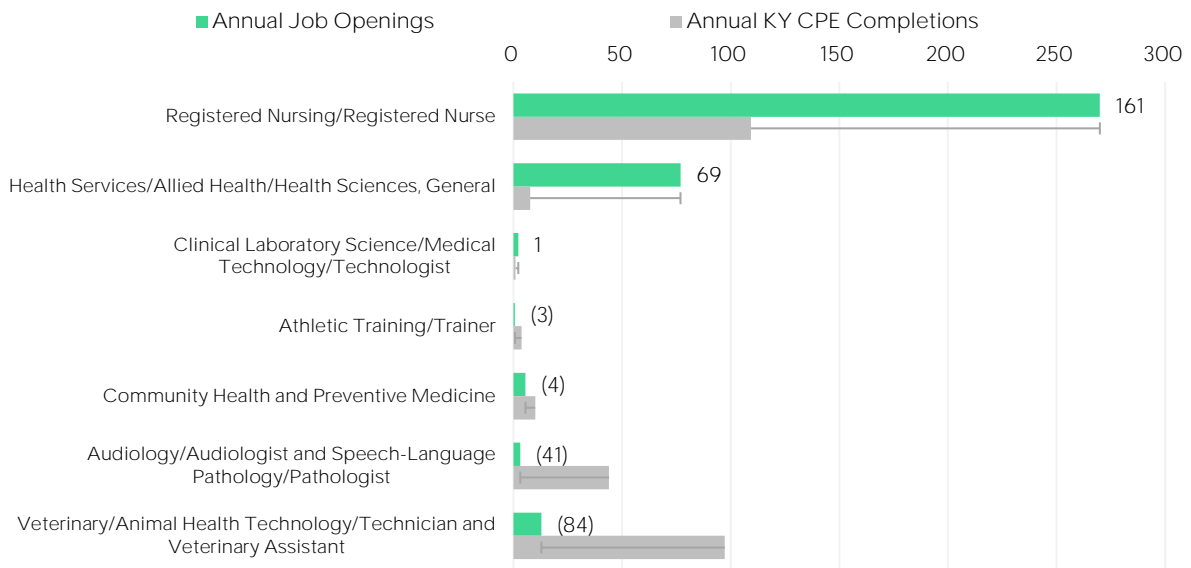
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	6,382	6,653	270	120	\$28.51
11-9111	Medical & Health Services Managers	975	998	22	10	\$37.08
29-1151	Nurse Anesthetists	55	66	11	0	\$98.96
29-1161	Nurse Midwives	6	8	2	0	\$47.67
29-1171	Nurse Practitioners	506	612	106	0	\$46.93
SURGICAL TECHNOLOGY/TECHNOLOGIST (CIP CODE 51.0909)						
29-2055	Surgical Technologists	320	342	22	6	\$19.97
29-2099	Health Technologists & Technicians, All Other	157	179	22	1	\$21.21

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Bachelor's Degree Level Analysis

Figure 4.47: Gaps and Surpluses for the West WPR's Bachelor's Degree Level Healthcare Programs



Source: Emsi program demand gap model.

Table 4.71: Gaps and Surpluses for the West WPR's Bachelor's Degree Level Healthcare Programs

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL WEST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3801	Registered Nursing/Registered Nurse	State	270	109	161	--

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL WEST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
		<i>Total</i>	270	109	161	\$29.78
51.0000	Health Services/Allied Health/Health Sciences, General	AIKCU	77	8	69	--
		<i>Total</i>	77	8	69	\$15.38
51.1005	Clinical Laboratory Science/Medical Technology/Technologist	AIKCU	2	1	1	--
		<i>Total</i>	2	1	1	\$24.13
51.0913	Athletic Training/Trainer	State	1	4	(3)	--
		<i>Total</i>	1	4	(3)	\$16.37
51.2208	Community Health and Preventive Medicine	State	6	10	(4)	--
		<i>Total</i>	6	10	(4)	\$24.79
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	AIKCU	0	5	(5)	--
		State	3	39	(36)	--
		<i>Total</i>	3	44	(41)	\$29.43
51.0808	Veterinary/Animal Health Technology/Technician and Veterinary Assistant	State	13	97	(84)	--
		<i>Total</i>	13	97	(84)	\$10.62

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Table 4.72: Occupations Mapped to the West WPR's Bachelor's Degree Level Healthcare Programs with a Large Gap

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
REGISTERED NURSING/REGISTERED NURSE (CIP CODE 51.3801)						
29-1141	Registered Nurses	6,382	6,653	270	237	\$28.51
11-9111	Medical & Health Services Managers	975	998	22	30	\$37.08
29-1171	Nurse Practitioners	506	612	106	3	\$46.93
29-1151	Nurse Anesthetists	55	66	11	1	\$98.96
29-1161	Nurse Midwives	6	8	2	0	\$47.67

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
HEALTH SERVICES/ALLIED HEALTH/HEALTH SCIENCES, GENERAL (CIP CODE 51.0000)						
31-1014	Nursing Assistants	3,400	3,250	(150)	28	\$11.72
29-2018	Clinical Laboratory Technologists & Technicians	513	568	55	17	\$24.13
31-9092	Medical Assistants	1,321	1,562	241	16	\$13.45
29-2071	Medical Records & Health Information Technicians	361	371	9	5	\$17.86
31-1011	Home Health Aides	344	543	198	5	\$11.25
31-9097	Phlebotomists	281	333	52	4	\$14.60
21-1093	Social & Human Service Assistants	611	711	100	2	\$11.63

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

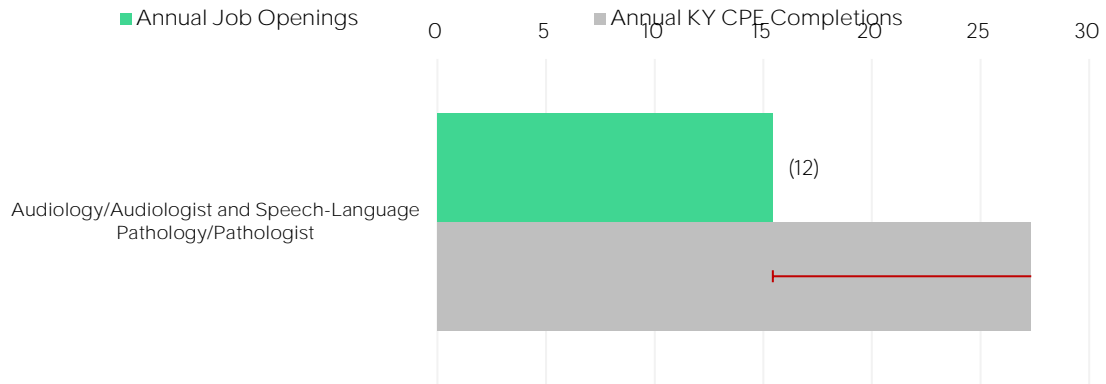
Table 4.73: Occupations Mapped to the West WPR's Bachelor's Degree Level Healthcare Programs with a Large Surplus

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
VETERINARY/ANIMAL HEALTH TECHNOLOGY/TECHNICIAN AND VETERINARY ASSISTANT (CIP CODE 51.0808)						
31-9096	Veterinary Assistants & Laboratory Animal Caretakers	203	249	45	9	\$9.87
29-2056	Veterinary Technologists & Technicians	181	224	43	4	\$12.23
AUDIOLOGY/AUDIOLOGIST AND SPEECH-LANGUAGE PATHOLOGY/PATHOLOGIST (CIP CODE 51.0204)						
29-1127	Speech-Language Pathologists	557	615	57	3	\$30.27
29-1181	Audiologists	96	99	3	0	\$21.88

Numbers may not sum due to rounding.
Source: Emsi program demand gap model.

Master's Degree Level Analysis

Figure 4.48: West WPR's Master's Degree Level Healthcare Program



Source: Emsi program demand gap model.

Table 4.74: West WPR's Master's Degree Level Healthcare Program

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL WEST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist	State	15	27	(12)	--
<i>Total</i>			15	27	(12)	\$30.22

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Table 4.75: Occupations Mapped to West WPR's Master's Degree Level Healthcare Program

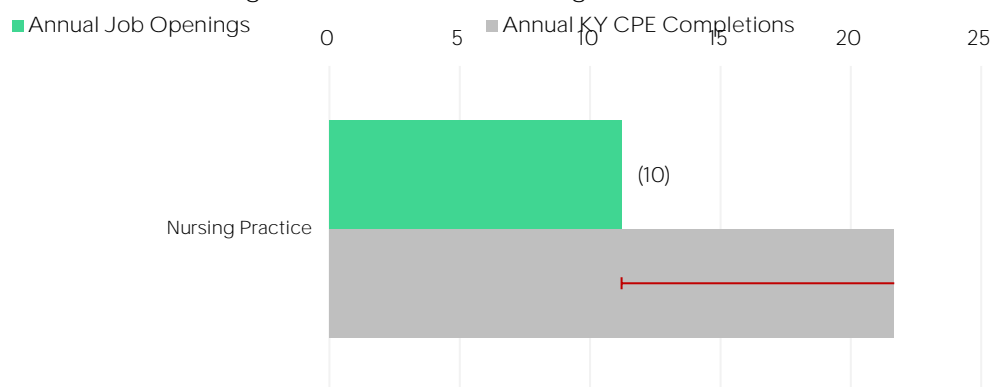
SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
AUDIOLOGY/AUDIOLOGIST AND SPEECH-LANGUAGE PATHOLOGY/PATHOLOGIST (CIP CODE 51.0204)						
29-1127	Speech-Language Pathologists	279	307	29	15	\$30.27
29-1181	Audiologists	48	49	1	0	\$21.88

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Doctoral Degree Level Analysis

Figure 4.49: West WPR's Doctoral Degree Level Healthcare Program



Source: Emsi program demand gap model.

Table 4.76: West WPR's Doctoral Degree Level Healthcare Program

CIP CODE	CIP TITLE	SECTOR	ANNUAL JOB OPENINGS	ANNUAL WEST COMPLETIONS	GAP OR SURPLUS	MEDIAN HOURLY WAGE
51.3818	Nursing Practice	State	11	22	(10)	--
<i>Total</i>			<i>11</i>	<i>22</i>	<i>(10)</i>	<i>\$36.88</i>

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.

Table 4.77: Occupations Mapped to West WPR's Doctoral Degree Level Healthcare Program

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
NURSING PRACTICE (CIP CODE 51.3818)						
29-1141	Registered Nurses	6,382	6,653	270	5	\$28.51
29-1171	Nurse Practitioners	506	612	106	4	\$46.93
11-9111	Medical & Health Services Managers	975	998	22	3	\$37.08

Numbers may not sum due to rounding.

Source: Emsi program demand gap model.



Migration Analysis

PROFILE ANALYTICS

Kentucky support tens of thousands of healthcare jobs, for those with a certificate level of education to those with a doctoral degree. Traditional labor market information (LMI) shows us, for example, how many registered nurses are employed in Kentucky and its WPRs or Kentuckiana LWA (Chapter 2). However, using LMI, it is a challenge to understand more about the people who successfully find jobs as, in this example, registered nurses. Where did these nurses receive their degrees? Did they start working as registered nurses immediately after graduation? For Kentucky's educational institutions, it would also be valuable to know how many healthcare alumni found in-state jobs, or if they left the state, where healthcare alumni are currently working. Furthermore, which companies are employing the state's healthcare workers?

To assist in answering these questions, we use Emsi's Profile Analytics database, which provides access to more than 100 million professional profiles, filterable by education history, specific employers, job titles, industries, skills, and more. The database contains an aggregate set of profiles from the open web, including all the major professional profile sites. The following tables and figures provide more information on Kentucky's healthcare alumni, including the states they are moving to and the companies attracting them.

As shown in Table 5.1, around 56% of alumni from Kentucky's healthcare programs remain in Kentucky. Compared with all the institutions' alumni (56% remaining in-state), it appears as if the same percentage of Kentucky healthcare alumni migrate out of the state compared to all programs' alumni. However, more Kentucky healthcare alumni stay in Kentucky compared to the healthcare alumni of other states in the U.S. who remain in-state (49% remain in-state). In fact, the portion of Kentucky healthcare alumni remaining in-state is comparable to the healthcare alumni in Tennessee (56%) and Indiana (56%), as shown in Table 5.2.

The top states where the Kentucky healthcare alumni move to are Tennessee, Ohio, Florida, Indiana, and Texas (Table 5.3). Table 5.4 displays 2019 wage data across top healthcare occupations in the states to which Kentucky alumni move. Wages in Texas are consistently higher than in Kentucky across the top healthcare occupations, with Kentucky's wages on

the lower end of most of the occupational rankings compared to the other states. The exceptions are the pharmacists occupation and the nursing assistants occupation, which Kentucky ranks second and third, respectively, in terms of wages. Compared to 2009 wages for Kentucky healthcare workers (Table 5.5), wages have for the most part become more competitive compared to other states over the past 10 years. A few of the out-of-state employers of Kentucky healthcare alumni are Children’s Hospital Medical Center, Vanderbilt University, and the Department of Veterans Affairs (Table 5.6). Of course, not all healthcare workers in Kentucky attended a Kentucky institution. As shown in Table 5.7, top institutions providing healthcare talent to Kentucky are Indiana Wesleyan University, University of Cincinnati, and Indiana University Southeast.

Table 5.1: In-State and Out-of-State Migration of Kentucky’s Healthcare Alumni* by Sector, with State Comparison of All Alumni and National Comparison

SECTOR	HEALTHCARE ALUMNI			ALL ALUMNI		
	PROFILES	% IN-STATE	% OUT-OF-STATE	PROFILES	% IN-STATE	% OUT-OF-STATE
State University	15,093	55%	45%	477,491	56%	44%
KCTCS	2,454	62%	38%	67,634	68%	32%
AIKCU	3,056	66%	34%	57,111	65%	35%
Kentucky	22,575	56%	44%	748,030	56%	44%
U.S.	2,100,955	49%	51%	94,180,933	44%	56%

* Based on students completing a healthcare program (CIP code 51) from an educational institution in Kentucky.
Source: Emsi Profile Analytics.

Table 5.2: In-State and Out-of-State Migration of Healthcare Alumni* in Kentucky and Surrounding States, with State Comparison of All Alumni and National Comparison

STATE	HEALTHCARE ALUMNI			ALL ALUMNI		
	PROFILES	% IN-STATE	% OUT-OF-STATE	PROFILES	% IN-STATE	% OUT-OF-STATE
Illinois	82,144	60%	40%	4,092,255	56%	44%
Ohio	79,985	62%	38%	3,058,242	56%	44%
Missouri	49,201	55%	45%	1,613,788	52%	48%
Indiana	41,207	56%	44%	1,629,367	49%	51%
Virginia	39,832	44%	56%	1,875,767	40%	60%
Tennessee	35,875	56%	44%	1,224,767	56%	44%
Kentucky	22,575	56%	44%	748,030	56%	44%
West Virginia	12,395	29%	71%	457,568	22%	78%
U.S.	2,100,955	49%	51%	94,180,933	44%	56%

* Based on students completing a healthcare program (CIP code 51) from an educational institution in the state.
Source: Emsi Profile Analytics.

Table 5.3: Top States Attracting Kentucky Healthcare Alumni by Sector

STATE	PROFILES	% PROFILES	STATE	PROFILES	% PROFILES
STATE UNIVERSITY			KCTCS		
Tennessee	1,009	7%	Tennessee	223	9%
Ohio	768	5%	Indiana	105	4%
Florida	589	4%	Florida	74	3%
Indiana	457	3%	Ohio	63	3%
Texas	415	3%	Wisconsin	58	2%
AIKCU			KY INSTITUTIONS		
Ohio	140	5%	Tennessee	1,323	6%
Indiana	127	4%	Ohio	971	4%
Tennessee	91	3%	Florida	746	3%
Florida	83	3%	Indiana	689	3%
Texas	66	2%	Texas	524	2%

Source: Emsi Profile Analytics.

Table 5.4: Top Occupations of Kentucky Healthcare Alumni with Top State 2019 Salaries

OCCUPATION	2019 MEDIAN ANNUAL WAGE					
	KY	TN	OH	FL	IN	TX
STATE UNIVERSITY						
Registered Nurses (n = 2,785)†	\$61,759	\$60,164	\$64,192	\$64,336	\$62,306	\$71,952
Medical and Health Services Managers (n = 1,096)	\$83,086	\$88,626	\$90,693	\$93,980	\$89,971	\$94,831
Pharmacists (n = 567)	\$126,338	\$125,387	\$121,750	\$122,456	\$123,740	\$128,104
Dentists (n = 515)	\$137,285	\$178,260	\$187,678	\$144,606	\$160,445	\$160,288
Nurse Practitioners (n = 514)	\$96,127	\$94,442	\$100,886	\$96,951	\$102,303	\$108,487
KCTCS						
Registered Nurses (n = 751)	\$61,759	\$60,164	\$64,192	\$64,336	\$62,306	\$71,952
Medical and Health Services Managers (n = 112)	\$83,086	\$88,626	\$90,693	\$93,980	\$89,971	\$94,831
Nursing Assistants (n = 73)	\$26,036	\$25,713	\$27,031	\$25,980	\$26,812	\$25,780
Practical and Vocational Nurses (n = 61)	\$42,073	\$39,543	\$43,247	\$44,093	\$44,604	\$46,377
Medical Assistants (n = 35)	\$31,287	\$31,232	\$31,679	\$32,175	\$32,118	\$31,041

OCCUPATION	2019 MEDIAN ANNUAL WAGE					
	KY	TN	OH	FL	IN	TX
AIKCU						
Registered Nurses (n = 950)	\$61,759	\$60,164	\$64,192	\$64,336	\$62,306	\$71,952
Medical and Health Services Managers (n = 214)	\$83,086	\$88,626	\$90,693	\$93,980	\$89,971	\$94,831
Physical Therapists (n = 163)	\$84,690	\$85,129	\$86,636	\$87,043	\$82,835	\$91,092
Nurse Practitioners (n = 148)	\$96,127	\$94,442	\$100,886	\$96,951	\$102,303	\$108,487
Nursing Assistants (n = 31)	\$26,036	\$25,713	\$27,031	\$25,980	\$26,812	\$25,780
KY INSTITUTIONS						
Registered Nurses (n = 4,486)	\$61,759	\$60,164	\$64,192	\$64,336	\$62,306	\$71,952
Medical and Health Services Managers (n = 1,422)	\$83,086	\$88,626	\$90,693	\$93,980	\$89,971	\$94,831
Nurse Practitioners (n = 691)	\$96,127	\$94,442	\$100,886	\$96,951	\$102,303	\$108,487
Pharmacists (n = 588)	\$126,338	\$125,387	\$121,750	\$122,456	\$123,740	\$128,104
Dentists (n = 515)	\$137,285	\$178,260	\$187,678	\$144,606	\$160,445	\$160,288

* Based on students completing a healthcare program (CIP code 51) from an educational institution in Kentucky.

† The number in parentheses represents the number of healthcare alumni from Kentucky institutions in the U.S.

Source: Emsi Profile Analytics and Employees & Self-Employed 2020.2.

Table 5.5: Top Occupations of Kentucky Healthcare Alumni with Top State 2009 Salaries

OCCUPATION	2009 MEDIAN ANNUAL WAGE					
	KY	TN	OH	FL	IN	TX
KY INSTITUTIONS						
Registered Nurses (n = 4,486)†	\$55,569	\$55,613	\$58,340	\$59,918	\$57,327	\$62,872
Medical and Health Services Managers (n = 1,422)	\$70,885	\$68,131	\$77,170	\$84,546	\$70,058	\$77,685
Nurse Practitioners (n = 691)	\$55,032	\$56,031	\$58,961	\$59,740	\$57,400	\$62,829
Pharmacists (n = 588)	\$110,656	\$114,559	\$105,214	\$107,713	\$105,474	\$112,552
Dentists (n = 515)	\$143,501	\$163,991	146,831	\$131,257	\$156,984	\$147,765

* Based on students completing a healthcare program (CIP code 51) from an educational institution in Kentucky.

† The number in parentheses represents the number of healthcare alumni from Kentucky institutions in the U.S.

Source: Emsi Profile Analytics and Employees & Self-Employed 2020.2.

Table 5.6: Top Out-of-State Employers Attracting Kentucky Healthcare Alumni by Sector

COMPANY	PROFILES	% PROFILES	STATE	PROFILES	% PROFILES
STATE UNIVERSITY			KCTCS		
Children's Hospital Medical Center	69	0.5%	Deaconess Health System, Inc.	12	0.5%
Vanderbilt University	61	0.4%	United States Department of the Army	11	0.4%
Department of Veterans Affairs	37	0.2%	St. Mary's Medical Center	6	0.2%
HCA Holdings, Inc.	35	0.2%	Gateway Medical Group LLC	6	0.2%
United States Department of the Air Force	30	0.2%	UnitedHealth Group Incorporated	5	0.2%
AIKCU			KY INSTITUTIONS		
Norton Healthcare, Inc.	15	0.5%	Children's Hospital Medical Center	78	0.3%
Department of Veterans Affairs	11	0.3%	Vanderbilt University	66	0.3%
Children's Hospital Medical Center	8	0.3%	Department of Veterans Affairs	53	0.2%
Humana Inc.	7	0.2%	HCA Holdings, Inc.	44	0.2%
Baptist Health	7	0.2%	United States Department of the Army	42	0.2%

* Based on students completing a healthcare program (CIP code 51) from an educational institution in Kentucky. Source: Emsi Profile Analytics.

Table 5.7: Top 10 Non-Kentucky Institutions Providing Healthcare Talent to Kentucky

INSTITUTION	PROFILES
Indiana Wesleyan University <i>Registered Nurses (597)</i> <i>Medical and Health Services Managers (197)</i> <i>Nursing Practitioners (60)</i>	964
University of Cincinnati <i>Registered Nurses (229)</i> <i>Medical and Health Services Managers (86)</i> <i>Nursing Practitioners (65)</i>	888
Indiana University Southeast <i>Registered Nurses (201)</i> <i>Medical and Health Services Managers (80)</i> <i>Medical Records and Health Information Technicians (42)</i>	591
University of Phoenix <i>Registered Nurses (174)</i> <i>Medical and Health Services Managers (105)</i> <i>Nursing Assistants (41)</i>	514
Ivy Tech Community College of Indiana <i>Registered Nurses (196)</i> <i>Nursing Assistants (40)</i> <i>Medical Assistants (36)</i>	461



INSTITUTION	PROFILES
Indiana University <i>Registered Nurses (93)</i> <i>Medical and Health Services Managers (82)</i> <i>Optometrists (29)</i>	454
Purdue University <i>Medical and Health Services Managers (55)</i> <i>Pharmacists (55)</i> <i>Registered Nurses (53)</i>	339
University of Southern Indiana <i>Registered Nurses (99)</i> <i>Medical and Health Services Managers (26)</i> <i>Nursing Practitioners (25)</i>	273
Walden University <i>Registered Nurses (116)</i> <i>Medical and Health Services Managers (47)</i> <i>Nursing Practitioners (25)</i>	248
McKendree University <i>Registered Nurses (139)</i> <i>Medical and Health Services Managers (53)</i> <i>Nursing Practitioners (8)</i>	235

* Based on workers employed in a healthcare occupation in Kentucky from a non-Kentucky institution.
Source: Emsi Profile Analytics.

CONSUMER INSIGHTS

The Strada-Gallup Education Consumer Survey is the largest database of education consumer insights in the nation and has collected more than 330,000 responses from people living in the U.S. The survey provides greater insight into people’s perceptions of higher education. With about 10,000 responses recorded each month, the survey’s database represents all demographic groups in the 50 states and the District of Columbia from the 50 largest metropolitan areas. To date, the database captures 4,941 people living in Kentucky.

The following tables and figures provide more information on Kentucky institutions’ alumni, emphasizing their programs of study, highest award levels, and current occupations. In addition, we look at qualitative responses of graduates of Kentucky institutions, which is valuable to the state’s educational providers seeking to improve their programs.

Note that the sample size for healthcare majors in Kentucky was too small for analysis; therefore, this section focuses instead on science, technology, engineering, mathematics, and health (STEMH). STEMH data is available, for the most part, at the associate, bachelor’s, and graduate degree levels.

Education and Employment Information

Table 5.8 provides the distribution of STEMH majors captured in the Consumer Insights data. As displayed, health professions & related majors reflect the most respondents for both associate degrees and bachelor's degrees. At the associate degree level, health professions comprise 68% of the respondents, meaning it is fair to say the subsequent associate degree results primarily reflect health. At the bachelor's degree level, health professions rank first with engineering majors ranking a close second. This information is helpful when interpreting the results of subsequent STEMH tables and figures.

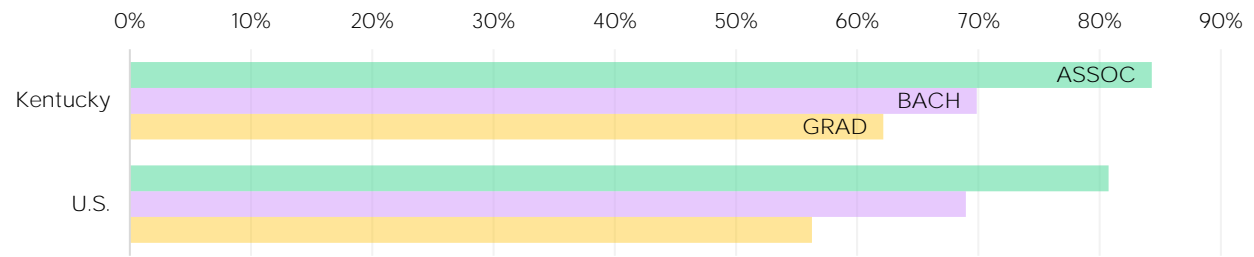
Kentucky STEMH graduates are somewhat more likely to remain in Kentucky than respondents from other states (Figure 5.2). However, Kentucky STEMH bachelor's degree graduates are more likely to leave the state compared to the other award levels, and at a slightly higher rate than STEMH graduates from other states (Figure 5.3).

Table 5.8: Distribution of STEMH Majors in Kentucky and the U.S. by Bachelor's and Associate Degree Award Levels

MAJOR	KY BACH		U.S. BACH		KY ASSOC		U.S. ASSOC	
	FREQ	%	FREQ	%	FREQ	%	FREQ	%
Health Professions & Related	53	18%	3,095	18%	97	68%	4,729	52%
Engineering	38	13%	2,577	15%	--	0%	--	0%
Agriculture & Agriculture Operations	27	9%	922	5%	--	0%	--	0%
Computer & Information Sciences	27	9%	1,827	10%	5	3%	1,208	13%
Security & Protective Services	25	9%	1,033	6%	--	0%	--	0%
Biological & Biomedical Sciences	23	8%	1,910	11%	--	0%	--	0%
Communications Technologies/Technicians	19	6%	664	4%	--	0%	--	0%
Engineering Technologies/Technicians	12	4%	1,016	6%	15	10%	1,379	15%
Science Technologies/Technicians	11	4%	512	3%	--	0%	--	0%
Health-Related Knowledge & Skills	10	4%	379	2%	--	0%	--	0%
Parks, Recreation, Leisure, & Fitness	8	3%	417	2%	--	0%	--	0%
Technology Education/Industrial Arts	7	2%	216	1%	14	10%	1,191	13%
Construction Trades	6	2%	333	2%	--	0%	--	0%
Physical Sciences	6	2%	649	4%	--	0%	--	0%
Mathematics & Statistics	5	2%	587	3%	--	0%	--	0%
Natural Resources & Conservation	5	2%	480	3%	--	0%	--	0%
Architecture & Related Services	4	1%	509	3%	--	0%	--	0%
Mechanic & Repair Technologies/Technician	2	1%	114	1%	13	9%	566	6%
Military Technologies	1	<1%	8	<1%	--	0%	--	0%
Library Science	--	0%	18	<1%	--	0%	--	0%
Precision Production	--	0%	15	<1%	--	0%	--	0%
Transportation & Materials Moving	--	0%	134	1%	--	0%	--	0%
Total	291	100%	17,413	100%	144	100%	9,073	100%

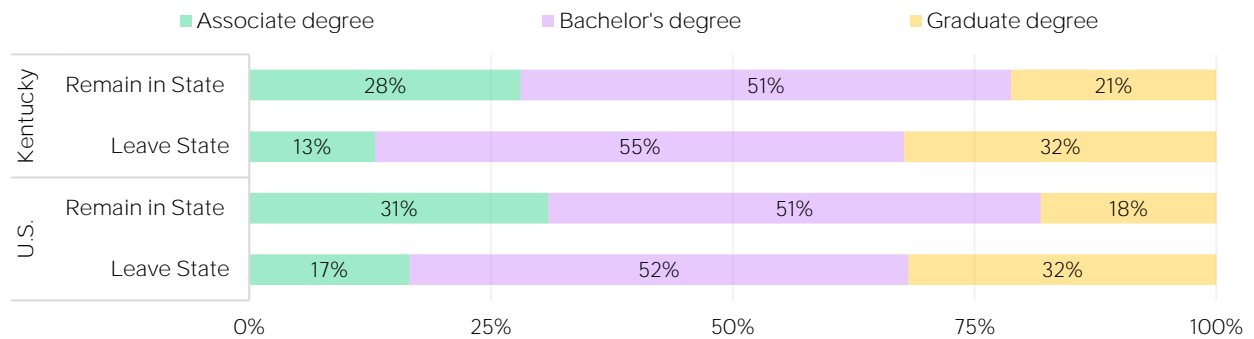
Numbers may not sum due to rounding.
Source: Strada Consumer Insights.

Figure 5.1: STEMH Graduates from Public Institutions in Kentucky and the U.S. Remaining in the State



The Kentucky total is 405. The U.S. total is 24,159.
Source: Strada Consumer Insights.

Figure 5.2: STEMH Graduates by Award Level from Public Institutions in Kentucky Remaining in and Leaving the State with U.S. Comparison



The Kentucky, Remain in State total is 397. The Kentucky, Leave State total is 173. The U.S., Remain in State total is 22,262. The U.S., Leave State total is 10,736.
Source: Strada Consumer Insights.

Table 5.9: Occupation Categories of STEMH Graduates Remaining in and Leaving Kentucky with U.S. Comparison

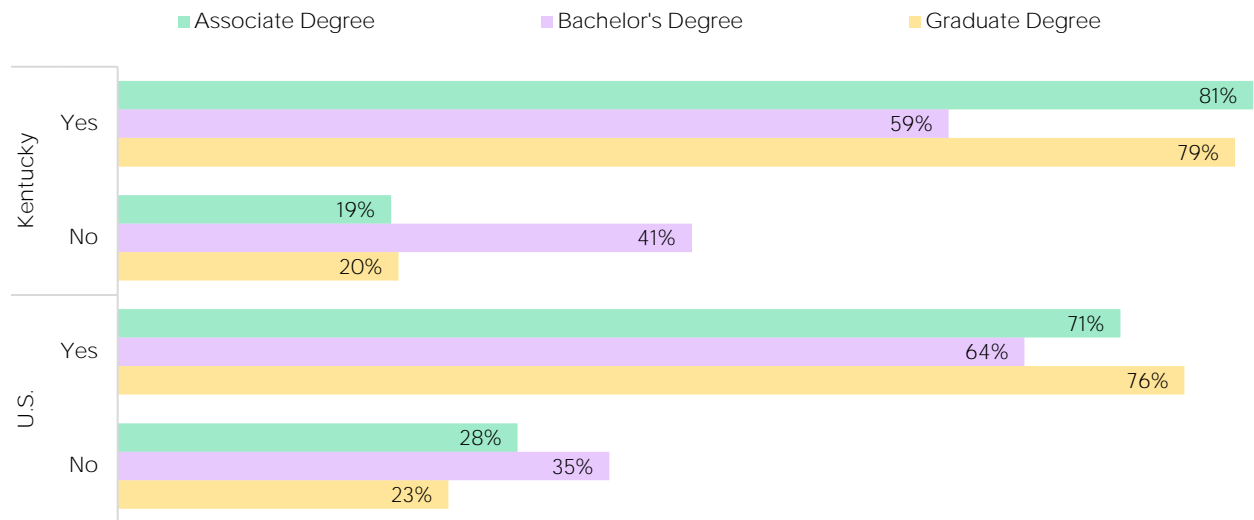
MAJOR	REMAIN IN KY		LEAVE KY		REMAIN IN THE U.S. STATE		LEAVE THE U.S. STATE	
	FREQ	%	FREQ		FREQ	%	FREQ	
Architecture or Engineering	29	9%	13		1,651	9%	1,035	
Arts, Design, Entertainment, & Media	3	1%	-		229	0%	144	
Office & Administrative Support Worker	8	2%	2		530	1%	186	
Community & Social Services	6	2%	-		230	0%	60	
Computer & Mathematical	15	5%	9		1,567	6%	840	
Construction or Mining Worker	11	3%	3		515	2%	162	
Education, Training, & Library	32	10%	9		1,060	6%	583	
Farming, Fishing, or Forestry Worker	6	2%	2		352	1%	166	
Business, Financial, Insurance, Real Estate	11	3%	3		844	2%	443	
Healthcare	83	26%	38		4,670	26%	1,933	
Installation, Maintenance, or Repair Worker	14	4%	-		594	0%	154	
Legal	2	1%	2		111	1%	50	
Life, Physical, & Social Sciences	2	1%	-		395	0%	241	
Manager, Executive, or Official	22	7%	22		1,492	15%	828	
Manufacturing or Production Worker	9	3%	3		451	2%	142	
Military	--	0%	1		52	1%	82	
Sales Worker	8	3%	12		633	8%	331	
Personal Care & Service Worker	5	2%	2		327	1%	104	
Security & Protective Services	10	3%	5		409	4%	141	
Building & Grounds Cleaning & Maintenance Worker	3	1%	2		116	1%	37	
Food Preparation or Service	--	0%	-		191	0%	62	
Small Business Owner	3	1%	1		302	1%	150	
Transportation Worker	7	2%	2		245	1%	134	
Other Job Category	19	6%	9		1,162	6%	652	
Don't Know	1	<1%	0		44	0%	21	
Refused to Answer	4	1%	4		315	2%	139	
Total	313	100%	145		18,489	100%	8,818	

Source: Strada Consumer Insights.

Hindsight Indicators

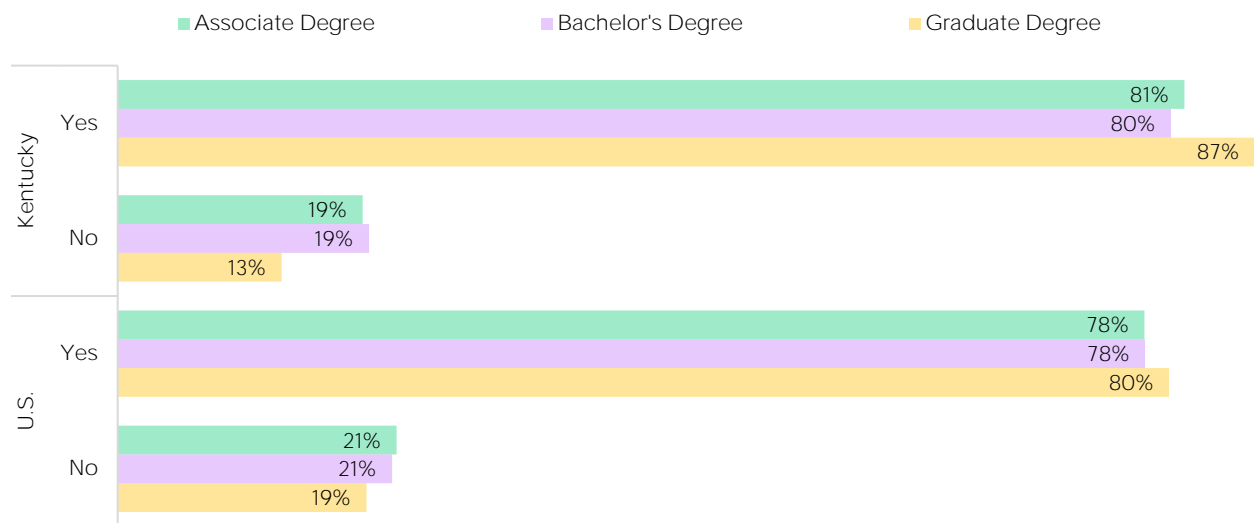
The next two figures provide a reflection of STEMH graduates on whether they would study the same major or attend the same school if provided the choice to do it all over again. Kentucky STEMH graduates at the associate and graduate degree levels said “yes” to studying the same major at a higher rate than graduates from across the U.S., although only 59% of Kentucky bachelor’s degree STEMH graduates said “yes” compared to 64% across the U.S. Similar patterns emerge in Figure 5.4 on whether the respondents would attend the same school, although this time a higher percentage of Kentucky bachelor’s degree STEMH graduates said “yes” compared to STEMH graduates from across the U.S.

Figure 5.3: Response of STEMH Graduates of Public Institutions to “If You Had to Do It All Over Again, Would You Study the Same Major/Course”



Source: Strada Consumer Insights.

Figure 5.4: Response of STEMH Graduates of Public Institutions to "If You Had to Do It All Over Again, Would You Attend the Same School"

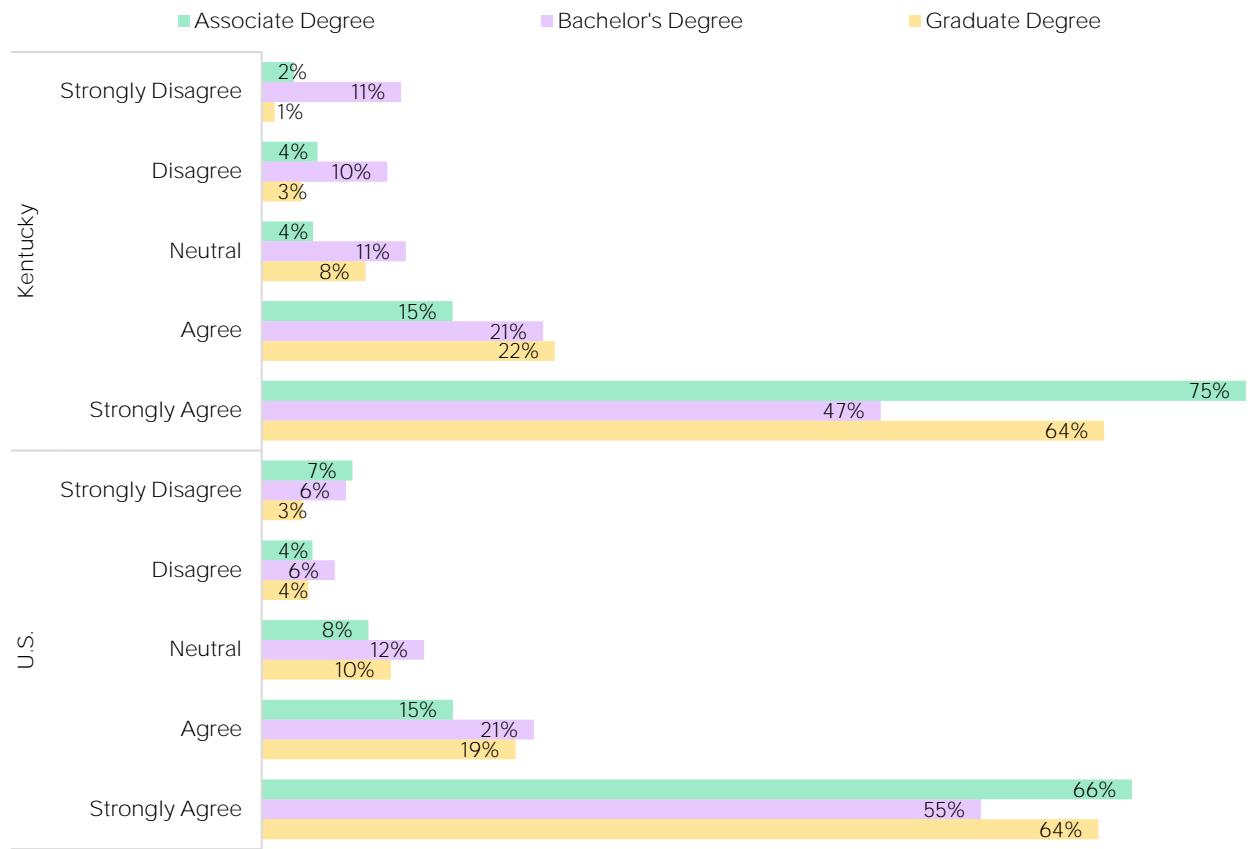


Source: Strada Consumer Insights.

Value Indicators

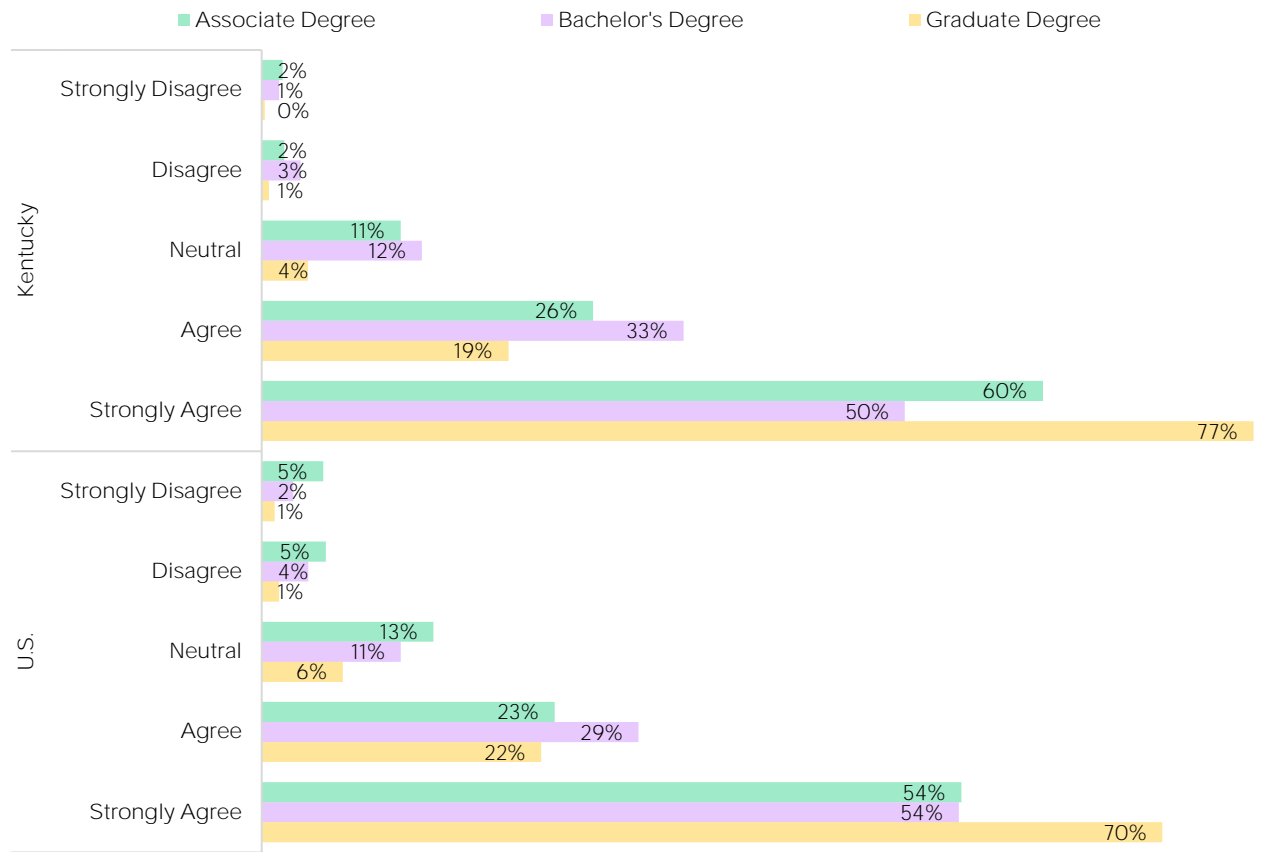
The next several figures provide inference on how respondents rate the value of their Kentucky education, again compared against graduates from across the U.S. In general, Kentucky STEMH associate and graduate degree respondents “strongly agreed” more than respondents from across the U.S., whereas a smaller percentage of Kentucky STEMH bachelor’s degree graduates “strongly agreed” compared to national respondents. This indicates that Kentucky STEMH bachelor’s degree graduates may not have valued their education – namely in terms of worth the cost and creating an attractive candidate – as much as both Kentucky alumni at different award levels and non-Kentucky alumni in general. Bachelor’s and graduate degree STEMH graduates do not really feel the need for further education to advance their career, whereas it is an almost even split for associate degree graduates (Figure 5.9).

Figure 5.5: Response of STEMH Graduates of Public Institutions to "Your Highest Level of Education was Worth the Cost"



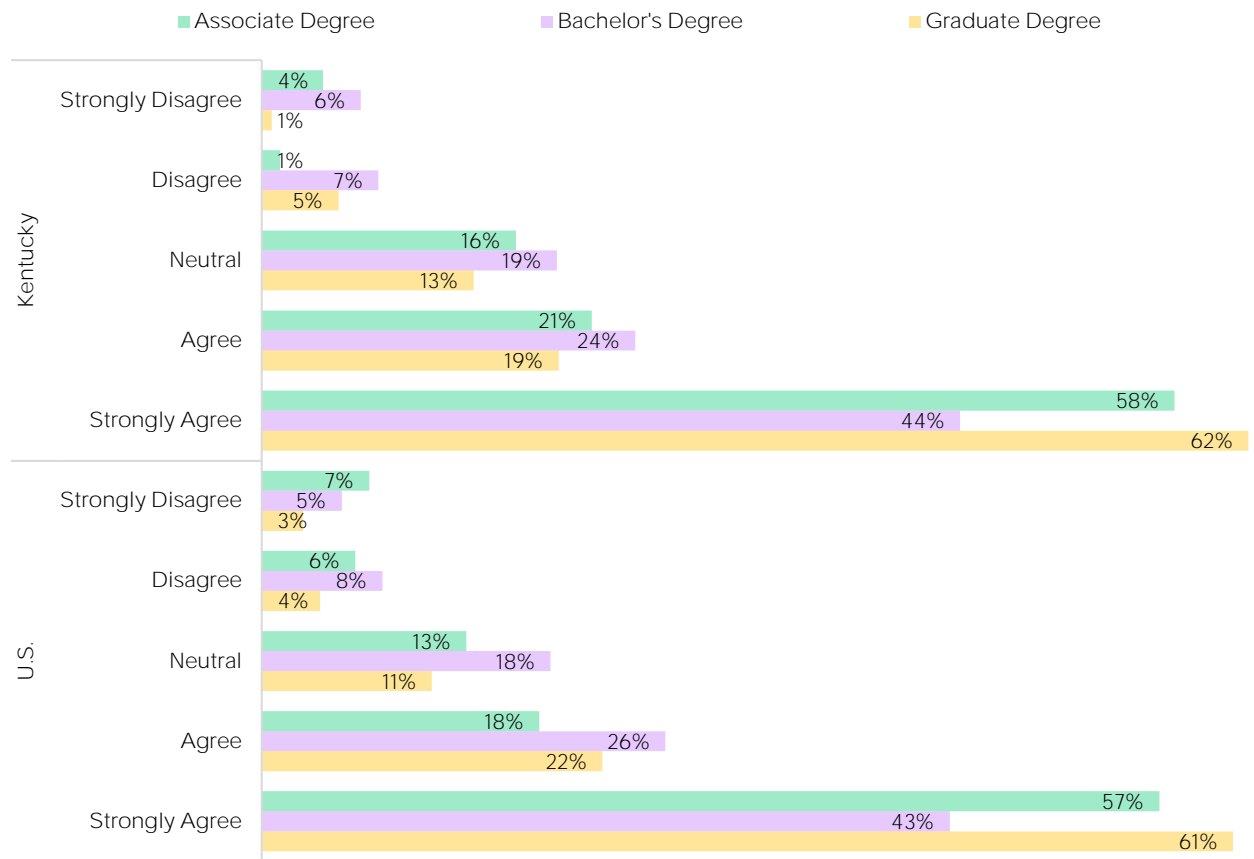
Source: Strada Consumer Insights.

Figure 5.6: Response of STEMH Graduates of Public Institutions to "Educational Experiences Make You an Attractive Candidate to Potential Employers"



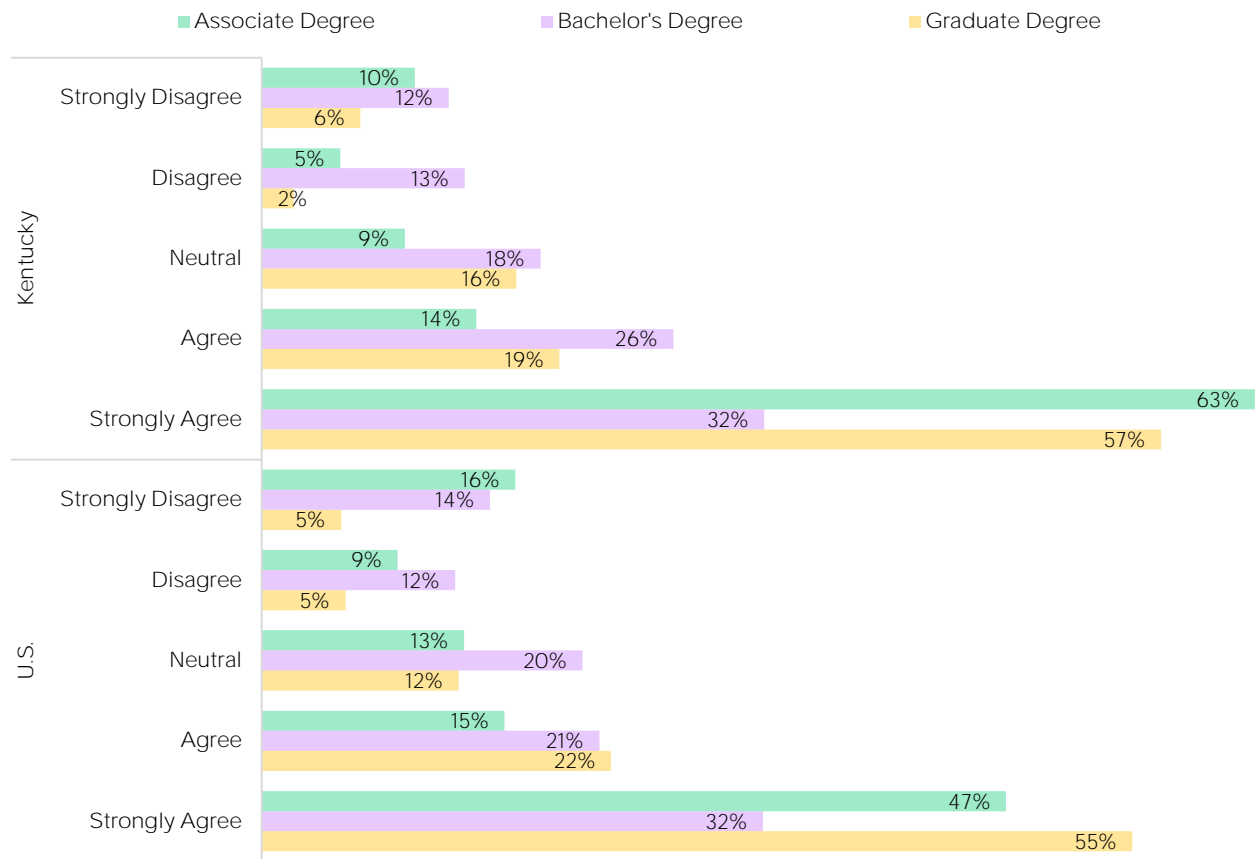
Source: Strada Consumer Insights.

Figure 5.7: Response of STEMH Graduates of Public Institutions to "Learned Important Skills in Your Education That You Use in Your Day to Day Life"



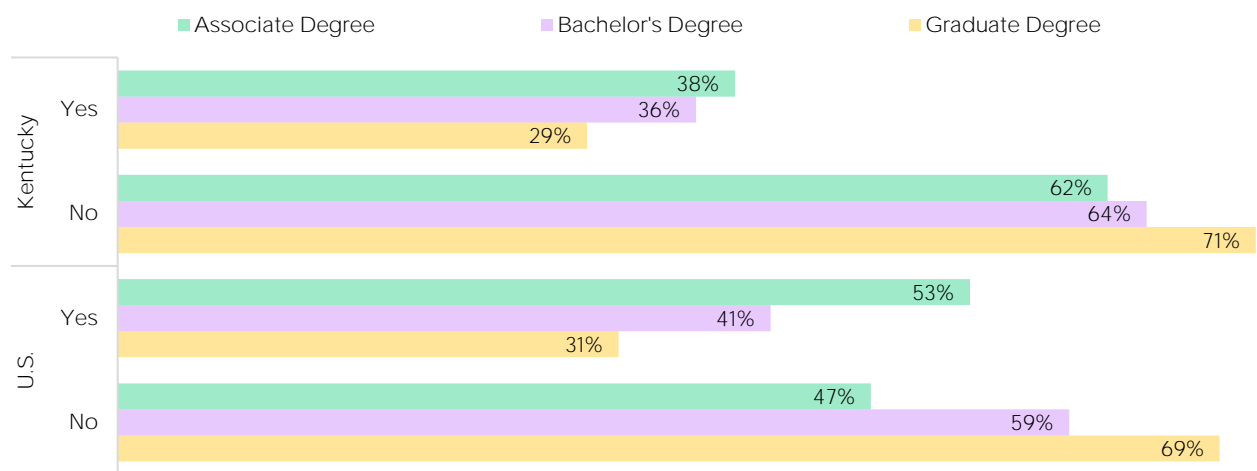
Source: Strada Consumer Insights.

Figure 5.8: Response of STEMH Graduates of Public Institutions to "The Courses You Took During Your Education are Directly Relevant to What You Do at Work"



Source: Strada Consumer Insights.

Figure 5.9: Response of STEMH Graduates of Public Institutions to "Do You Feel As If You Need to Obtain Additional Education In Order to Advance in Your Career"

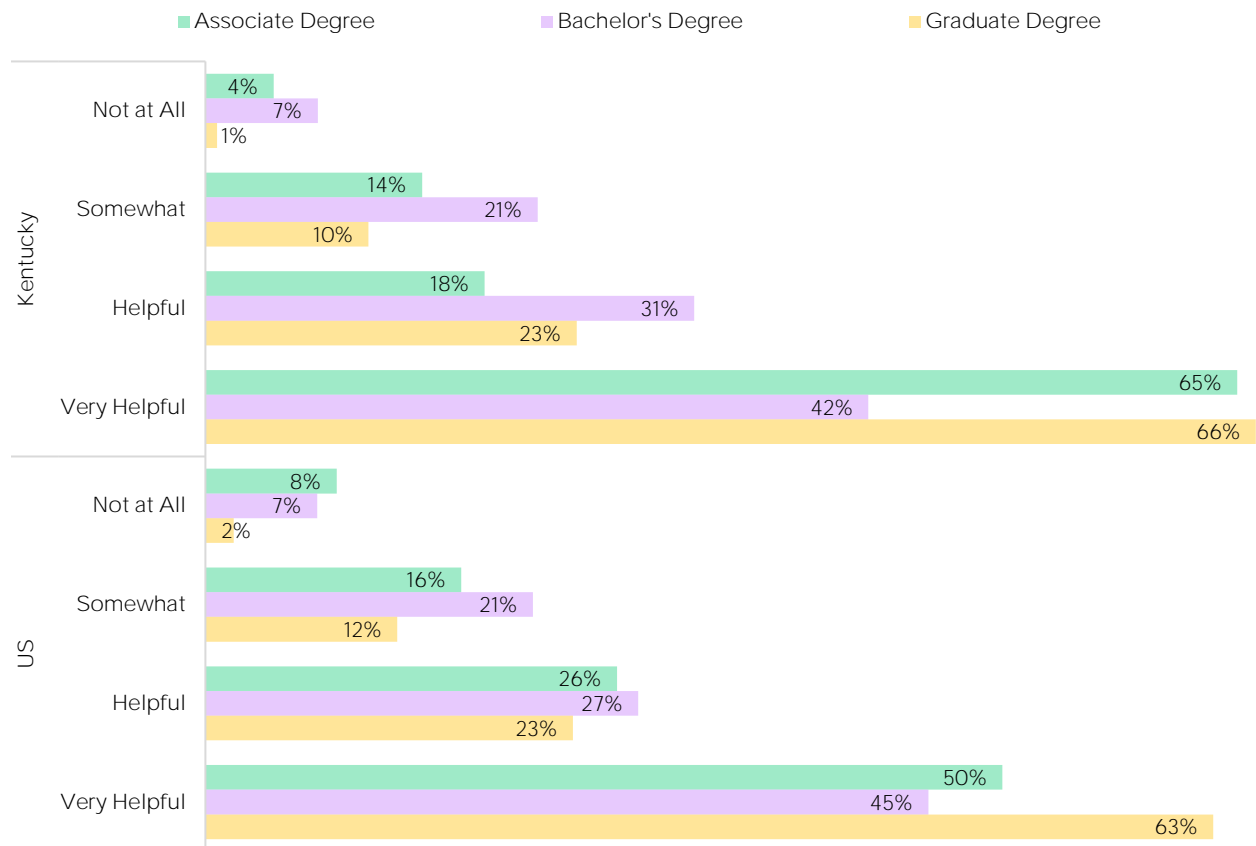


Source: Strada Consumer Insights.

Helpful Elements

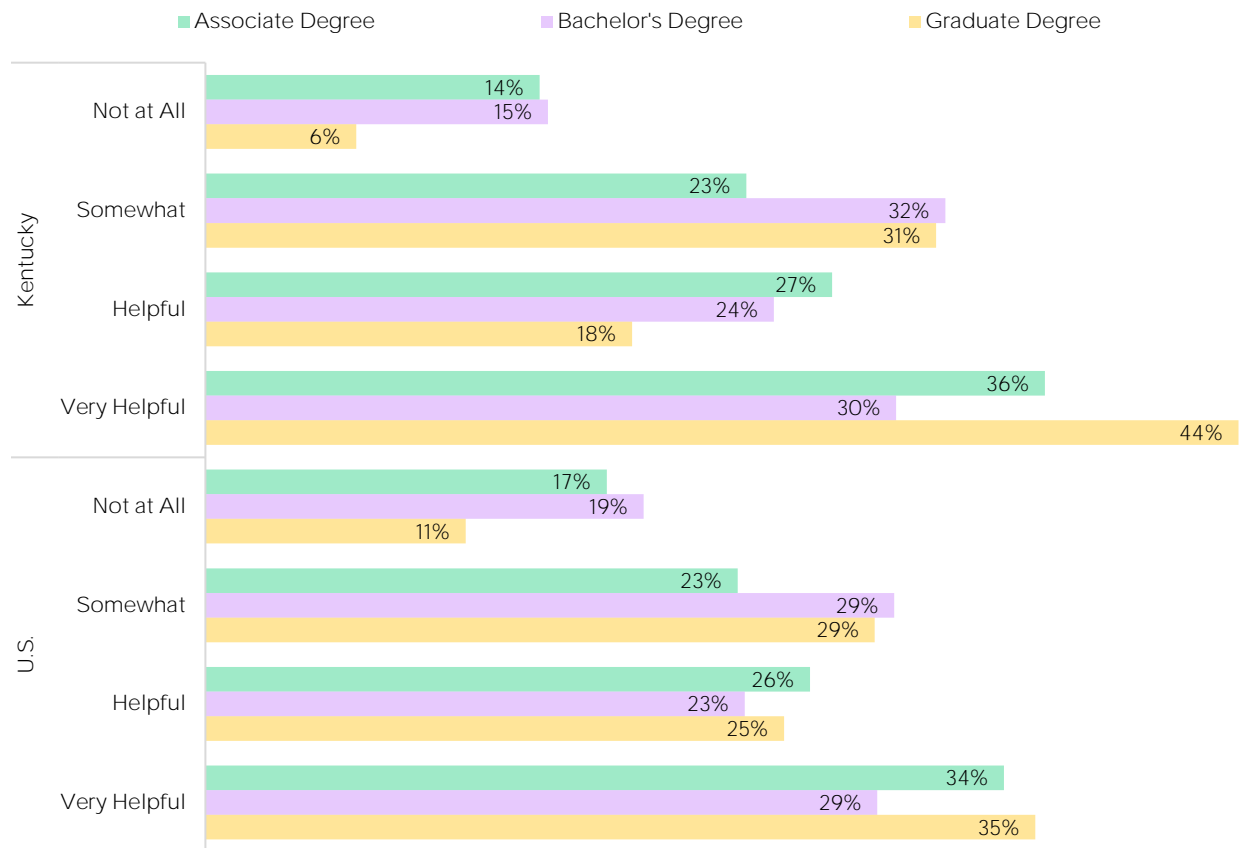
Similar trends as we saw under the Value Indicators subsection appear in this subsection, with Kentucky STEMH bachelor's degree respondents again being generally more conservative in their responses. However, Kentucky STEMH associate and graduate degree graduates generally outperform the U.S. comparison when it comes to finding the Kentucky institutions helpful in various aspects of their career. For example, 65% of Kentucky STEMH associate degree graduates found their major/field of study to be very helpful in their career, compared to only 50% at the national level (Figure 5.10). Similarly, for the Kentucky STEMH graduate degree respondents, 44% said the people they met had been very helpful in their career, compared to 35% at the national level (Figure 5.11).

Figure 5.10: Response of STEMH Graduates of Public Institutions to "How Helpful Has Your Major/Field of Study Been to You So Far in Your Career"



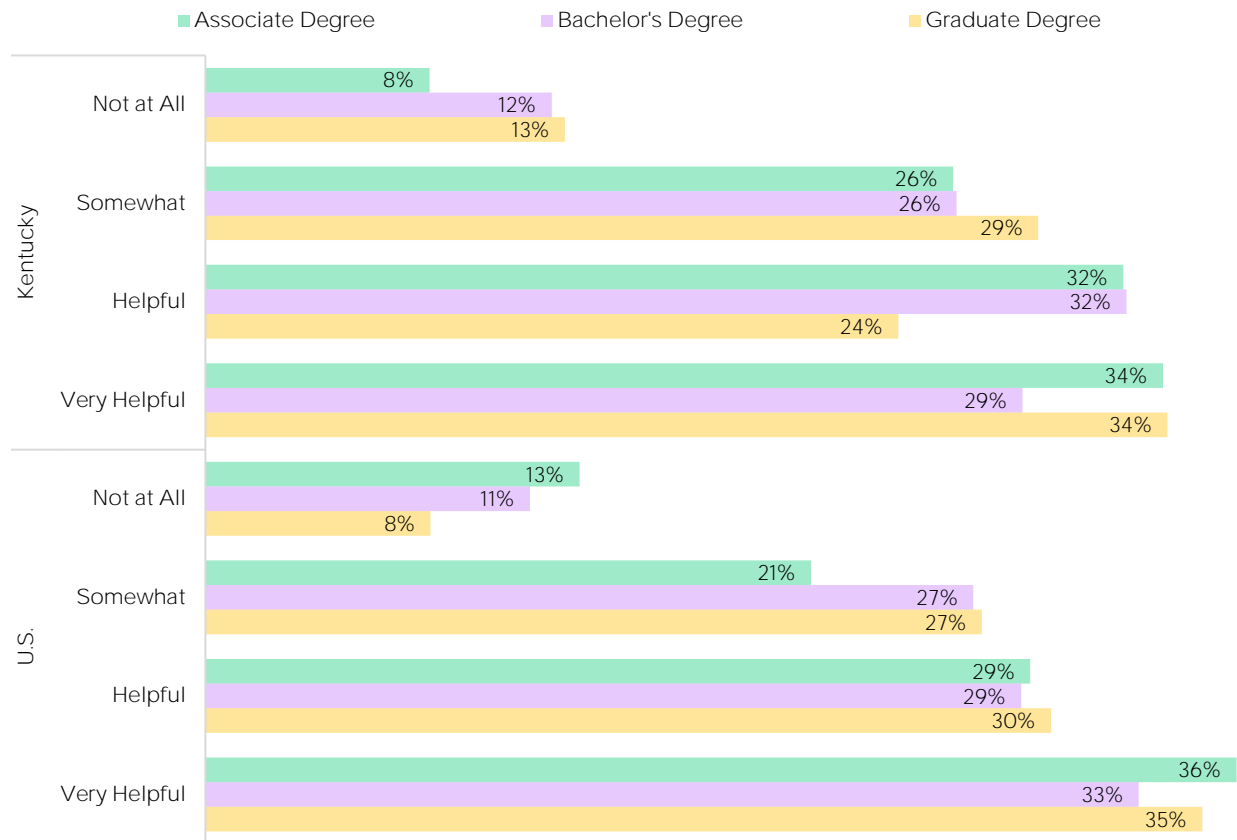
Source: Strada Consumer Insights.

Figure 5.11: Response of STEMH Graduates of Public Institutions to "How Helpful Have the People You Met Been to You So Far in Your Career"



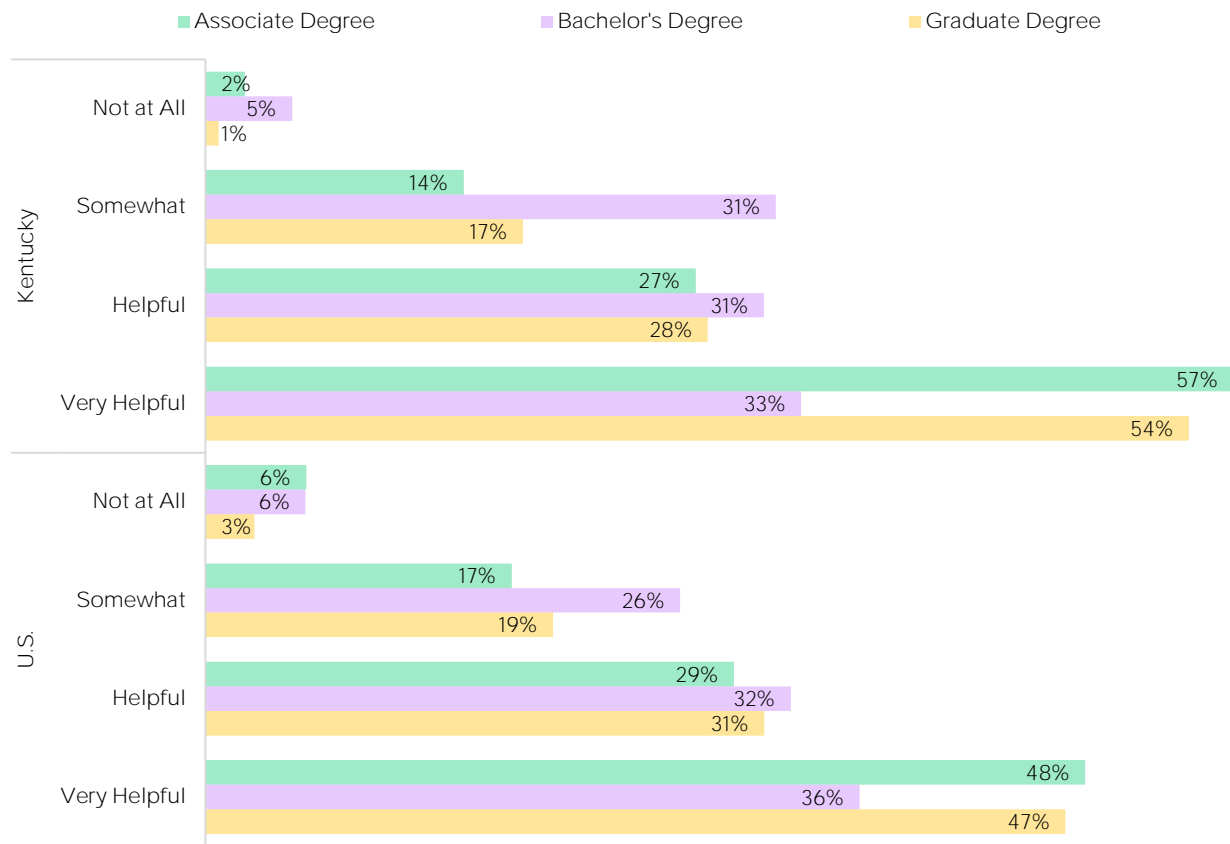
Source: Strada Consumer Insights.

Figure 5.12: Response of STEMH Graduates of Public Institutions to "How Helpful Has the Reputation of the School or Program Been to You So Far in Your Career"



Source: Strada Consumer Insights.

Figure 5.13: Response of STEMH Graduates of Public Institutions to "How Helpful Have the Courses You Took Been to You So Far in Your Career"



Source: Strada Consumer Insights.

Motivation Indicators

The next four tables identify the top motivations for why STEMH majors in Kentucky and across the U.S. pursued their degree and chose a school. As displayed in Table 5.10, the top motivation for pursuing a degree across all Kentucky STEMH award levels was to get a good job/make money. Kentucky associate degree STEMH graduates also seem to prefer when the school offers specific programs, and those from a Kentucky graduate degree STEMH program often choose the degree to advance their career. Table 5.12, on the other hand, demonstrates the top motivator for Kentucky STEMH graduates to choose their school is due to a close location. Other top motivators on school choice are good reputation of school and the school offers specific programs.

Table 5.10: Motivation for Pursuing a Degree as Reported by STEMH Majors in Kentucky

RESPONSE	ASSOC		BACH		GRAD	
	FREQ	%	FREQ	%	FREQ	%
Get good job/make money/better pay	30	25%	81	33%	42	30%
School offered specific programs they wanted	28	23%	32	13%	18	13%
Advance knowledge/like to learn	25	21%	28	12%	15	10%
Advance career	10	9%	27	11%	34	24%
Family influence/first to graduate	4	3%	14	6%	3	2%
Other (list)	4	3%	14	6%	2	2%
What I wanted to do/bored/something to do	6	5%	13	5%	4	3%
What is expected/thing to do	--	0%	13	5%	3	2%
Price - it was affordable	4	4%	8	3%	6	5%
Received a scholarship/financial aid	--	0%	4	2%	5	3%
Friends/family go there	--	0%	2	1%	--	0%
Good reputation of school or program	--	0%	2	1%	3	2%
Received a recommendation from a friend	--	0%	2	1%	--	0%
School was a good fit for the respondent	--	0%	2	1%	1	0%
Convenience (general, non-specific)	--	0%	1	0%	--	0%
Don't know	--	0%	1	0%	--	0%
Liked the athletics or other extracurriculars	--	0%	1	1%	--	0%
Change in career	2	2%	--	0%	3	2%
Location (close to home, in the same town)	1	1%	--	0%	--	0%
Location (general)	2	1%	--	0%	--	0%
School offered online options/night classes	6	5%	--	0%	2	1%
Total	123	100%	245	100%	142	100%

Numbers may not sum due to rounding.
Source: Strada Consumer Insights.

Table 5.11: Motivation for Pursuing a Degree as Reported by STEMH Majors in the U.S.

RESPONSE	ASSOC		BACH		GRAD	
	FREQ	%	FREQ	%	FREQ	%
Get good job/make money/better pay	2,200	29%	4,901	34%	1,897	25%
School offered specific programs they wanted	1,350	18%	1,873	13%	1,631	22%
Advance knowledge/like to learn	1,056	14%	1,829	13%	956	13%

RESPONSE	ASSOC		BACH		GRAD	
	FREQ	%	FREQ	%	FREQ	%
Advance career	643	8%	1,659	11%	1,446	19%
What is expected/thing to do	192	3%	1,322	9%	77	1%
Family influence/first to graduate	213	3%	827	6%	104	1%
Other (list)	393	5%	681	5%	366	5%
What I wanted to do/bored/something to do	235	3%	473	3%	275	4%
Price - it was affordable	382	5%	263	2%	160	2%
Received a scholarship/financial aid	114	2%	145	1%	104	1%
Change in career	201	3%	120	1%	174	2%
Received a recommendation from a friend	46	1%	92	1%	35	<1%
Don't know	37	<1%	54	<1%	18	<1%
Good reputation of school or program	27	<1%	53	<1%	27	<1%
Friends/family go there	12	<1%	45	<1%	12	<1%
Liked the athletics or other extracurriculars	10	<1%	46	<1%	2	<1%
School was a good fit for the respondent	19	<1%	34	<1%	62	1%
No reason	31	<1%	27	<1%	8	<1%
Convenience (general, non-specific)	34	<1%	21	<1%	6	<1%
School offered online options/night classes	253	3%	20	<1%	19	<1%
Applied/acceptance/recruited	17	<1%	17	<1%	11	<1%
Location (far from home, out of state)	2	<1%	16	<1%	1	<1%
Location (close to home, in the same town)	43	1%	10	<1%	10	<1%
Location (general)	10	<1%	11	<1%	15	<1%
To avoid being drafted	4	<1%	10	<1%	1	<1%
Didn't like college/quit college early	41	1%	8	<1%	4	<1%
Refused to answer	7	<1%	5	<1%	8	<1%
Liked size of school	4	<1%	5	<1%	--	0%
Liked the students/faculty/staff at the school	1	<1%	3	<1%	5	<1%
Liked the mission of the school	2	<1%	1	<1%	13	<1%
Total	7,581	100%	14,572	100%	7,446	100%

Numbers may not sum due to rounding.
Source: Strada Consumer Insights.

Table 5.12: Motivation for Choosing a Particular School as Reported by STEMH Majors in Kentucky

RESPONSE	ASSOC		BACH		GRAD	
	FREQ	%	FREQ	%	FREQ	%
Location (close to home, in the same town)	50	40%	71	29%	25	18%
Good reputation of school or program	6	5%	26	11%	20	14%
Received a scholarship/financial aid	3	2%	23	9%	9	7%
School offered specific programs they wanted	12	10%	22	9%	26	18%
Location (general)	9	8%	20	8%	11	8%
Price - it was affordable	9	8%	15	6%	8	6%
Other (list)	4	3%	13	5%	1	1%
Get good job/make money/better pay	4	3%	11	4%	3	2%
School was a good fit for the respondent	--	0%	7	3%	9	7%
Friends/family go there	--	0%	7	3%	3	2%
Convenience (general, non-specific)	10	8%	6	2%	3	2%
Liked the athletics or other extracurriculars	--	0%	5	2%	--	0%
Location (far from home, out of state)	--	0%	4	2%	2	1%
Family influence/first to graduate	1	1%	3	1%	--	0%
Don't know	--	0%	3	1%	--	0%
What I wanted to do/bored/something to do	--	0%	2	1%	--	0%
School offered online options/night classes	3	2%	2	1%	--	0%
Advance knowledge/like to learn	6	5%	2	1%	6	4%
Liked size of school	--	0%	1	1%	--	0%
No reason	--	0%	1	<1%	1	1%
Received a recommendation from a friend	2	1%	1	<1%	3	2%
Liked the students/faculty/staff at the school	--	0%	--	0%	2	2%
Applied/acceptance/recruited	--	0%	--	0%	3	2%
Advance career	3	2%	--	0%	5	3%
Change in career	1	1%	--	0%	--	0%
Total	123	100%	245	100%	142	100%

Numbers may not sum due to rounding.
Source: Strada Consumer Insights.

Table 5.13: Motivation for Choosing a Particular School as Reported by STEMH Majors in the U.S.

RESPONSE	ASSOC		BACH		GRAD	
	FREQ	%	FREQ	%	FREQ	%
Location (close to home, in the same town)	2,185	29%	2,932	20%	970	13%
Good reputation of school or program	510	7%	2,107	14%	1,351	18%
School offered specific programs they wanted	943	12%	1,790	12%	1,034	14%
Price - it was affordable	671	9%	1,378	9%	532	7%
Location (general)	692	9%	1,215	8%	551	7%
Received a scholarship/financial aid	179	2%	739	5%	516	7%
Other (list)	339	4%	687	5%	346	5%
School was a good fit for the respondent	91	1%	518	4%	323	4%
Friends/family go there	71	1%	463	3%	99	1%
Convenience (general, non-specific)	325	4%	402	3%	235	3%
Get good job/make money/better pay	393	5%	396	3%	264	4%
Advance knowledge/like to learn	356	5%	369	3%	205	3%
Applied/acceptance/recruited	89	1%	266	2%	242	3%
Family influence/first to graduate	74	1%	212	1%	42	1%
School offered online options/night classes	133	2%	194	1%	152	2%
Liked the athletics or other extracurriculars	20	<1%	151	1%	28	<1%
Advance career	194	3%	141	1%	186	3%
Received a recommendation from a friend	123	2%	132	1%	82	1%
Location (far from home, out of state)	5	<1%	83	1%	17	<1%
What I wanted to do/bored/something to do	50	1%	79	1%	43	1%
Liked size of school	12	<1%	77	1%	17	<1%
What is expected/thing to do	42	1%	71	<1%	30	<1%
Don't know	11	<1%	46	<1%	14	<1%
Change in career	50	1%	32	<1%	22	<1%
Liked the students/faculty/staff at the school	9	<1%	32	<1%	116	2%
No reason	6	<1%	27	<1%	7	<1%
Liked the mission of the school	2	<1%	17	<1%	12	<1%
Refused to answer	3	<1%	15	<1%	8	<1%
To avoid being drafted	1	<1%	1	<1%	1	<1%
Didn't like college/quit college early	2	<1%	1	<1%	1	<1%
Total	7,581	100%	14,572	100%	7,446	100%

Source: Strada Consumer Insights.

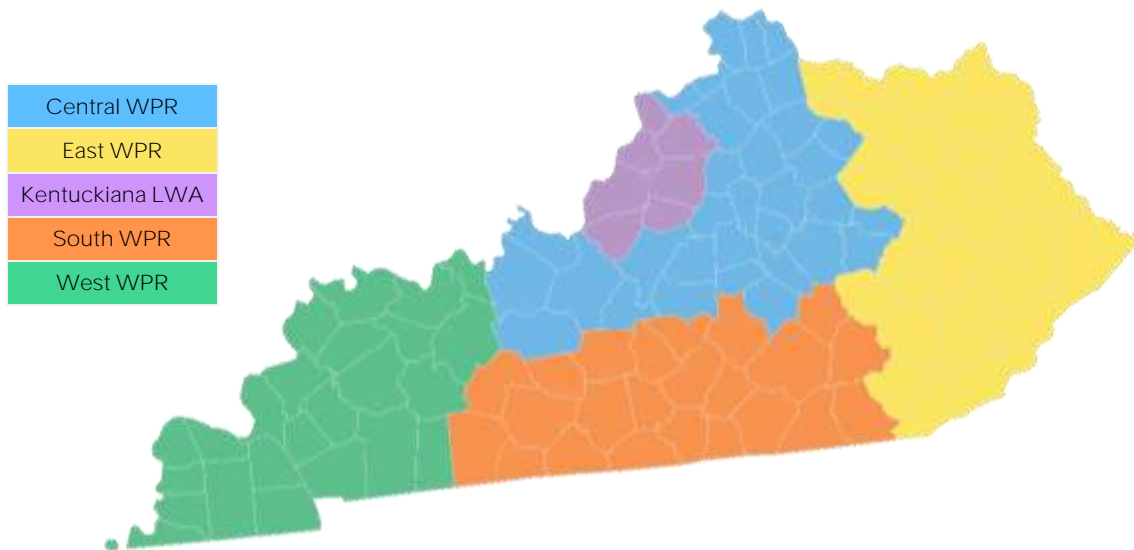


Environmental Scan

The environmental scan provides key information on the economic and social structure of Kentucky and its Workforce Planning Regions (WPRs). The counties included in the Central, East, South, and West WPRs are determined by the Kentucky Center for Education & Workforce Statistics and provided by the Council (Figure 6.1).¹⁶ In addition, data for the city of Louisville and its surrounding counties, which comprise the Kentuckiana Local Workforce Area (LWA), are shown separate from the Central WPR. Identifying the economic conditions of Kentucky and its five workforce regions is an important task for several reasons. The data:

- Help the Council understand where the state’s colleges and universities should logically target their efforts with regards to program development;
- Reveal whether there are industries that may be overlooked as a result of recent economic growth;

Figure 6.1: Kentucky’s WPRs and the Kentuckiana LWA



Source: Regions provided by the Council.

16 Source: https://kystats.ky.gov/Reports/ShowReports?ReportId=Map_LWAWIB&publishDate=20170401.

- Identify the top occupations within driving industries; and
- Give the Council a deeper understanding of state and regional population characteristics and the socioeconomic background of current and future postsecondary students.

To these ends, this chapter provides an overview of total jobs and jobs within state and regional industries, unemployed workers in Kentucky, statewide and regional commuting patterns, population demographics and socioeconomic indicators of the state, and the highest educational attainments of state and regional adult residents. Tables and figures present data at the state level and, in some cases, for the county, regional, and national levels.

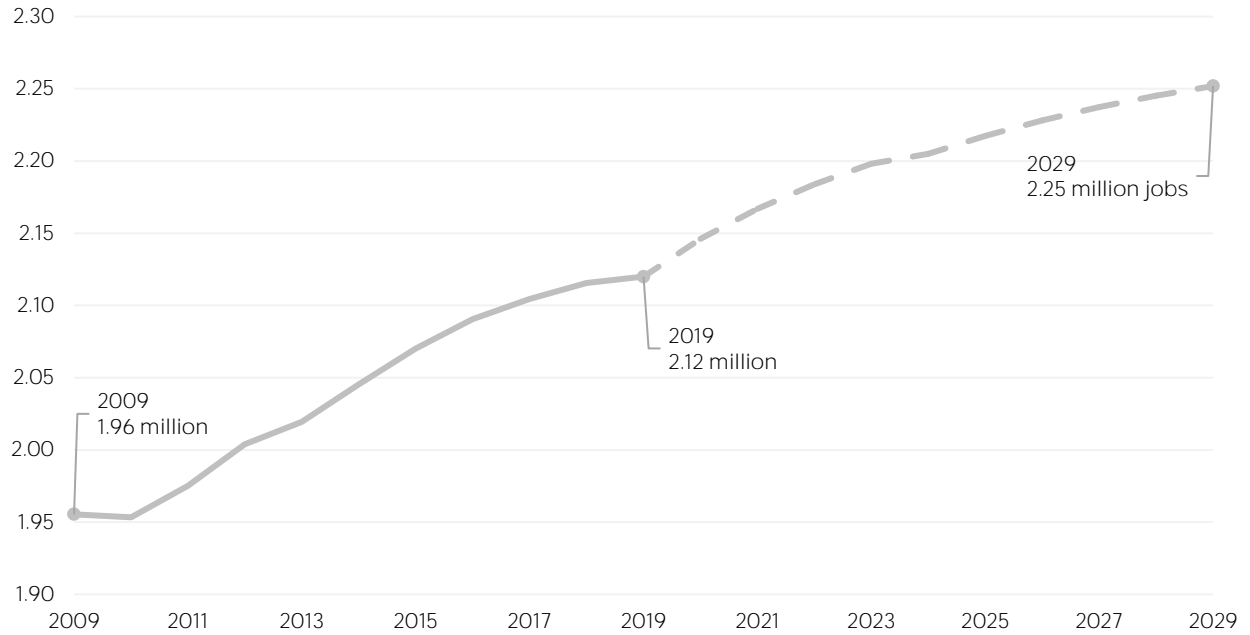
TOTAL JOBS

Job counts and the changes in jobs over time provide insight into Kentucky as an attractive region for job seekers, employers, and economic developers. Figure 6.2 shows statewide jobs from 2009 to 2029. In addition, Figures 6.3 and 6.4 present data on jobs in Kentucky for the same time period but highlight the state's job change, using 2009 as a base year and showing year-over-year job change, respectively. As shown in Figure 6.2, Kentucky supported 2.0 million jobs in 2009. By 2019, that number increased to 2.1 million jobs, for an 8.4% job growth. Kentucky is projected to add another 131,960 jobs by 2029, for a 6.2% job growth.

Figure 6.3 displays the historical and projected job change, by percent, for the state and the U.S. between 2009 and 2029, with 2009 serving as the base year. Kentucky's job declines in the years following the 2008 Recession were similar to that of the U.S. But after 2013, the state's job growth was less than that of the U.S. Using Emsi's job projections, job growth from 2009 to 2029 in Kentucky and the U.S. is expected to be 15.2% and 22.8%, respectively.

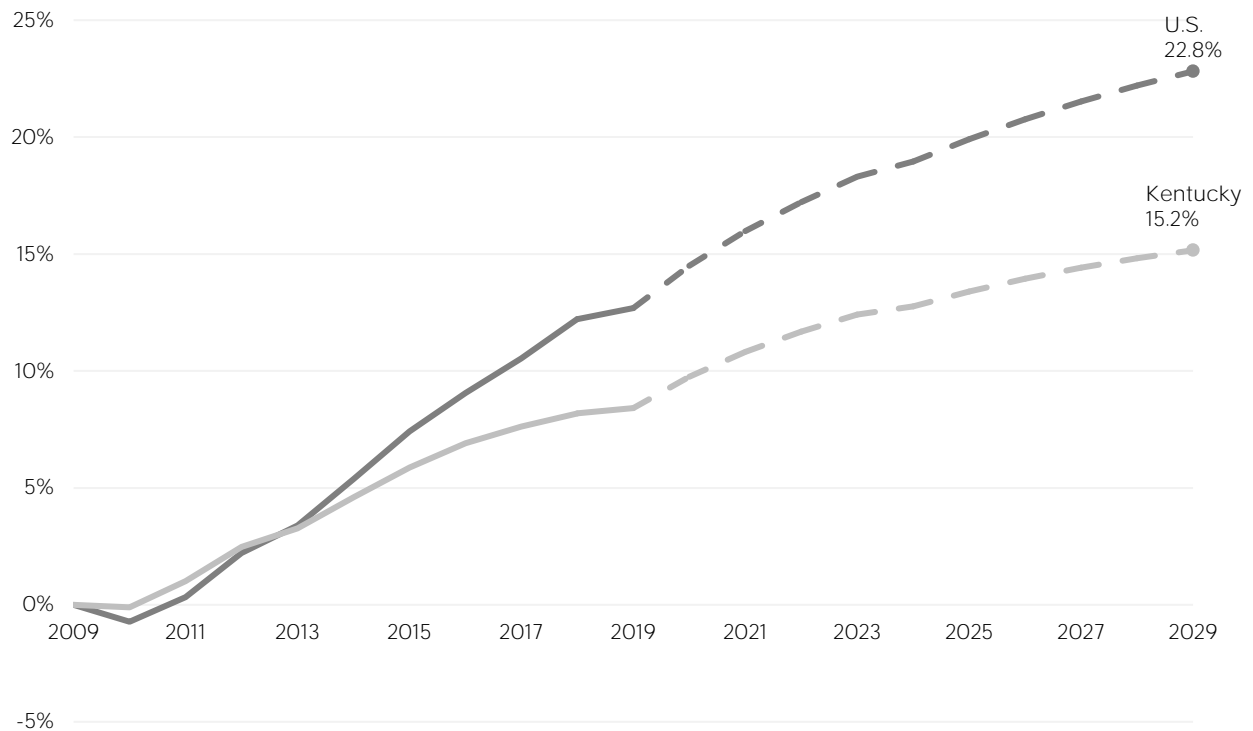
The regions' year-over-year job changes follow similar patterns (Figure 6.4). With the 2008 Recession, jobs decreased by about four percent, but year-over-year job change has remained positive since 2010 in Kentucky and the U.S. Jobs in the state are projected to increase by 1.2% between 2019 and 2020, and jobs in the U.S. are projected to increase by 1.6%. Figures 6.5, 6.6, and 6.7 show job changes for the Central, East, South, and West WPRs, as well as the Kentuckiana LWA.

Figure 6.2: Historical and Projected Jobs (in millions) in Kentucky, 2009 to 2029



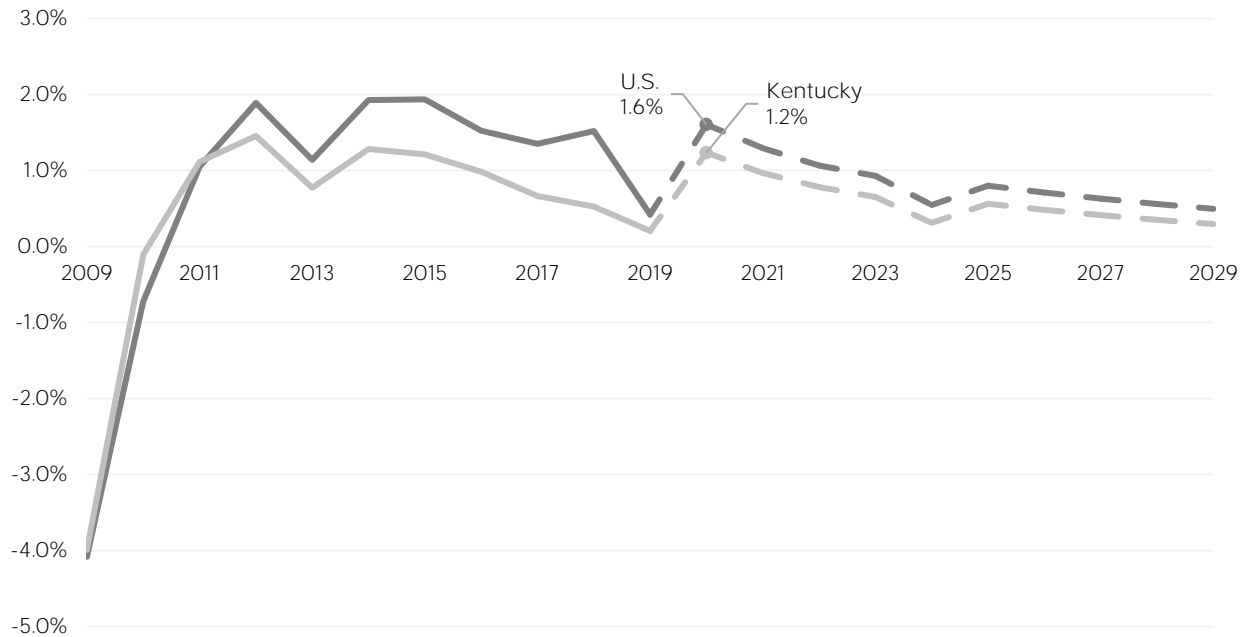
Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.3: Percent Job Change in Kentucky and the U.S., 2009 to 2029



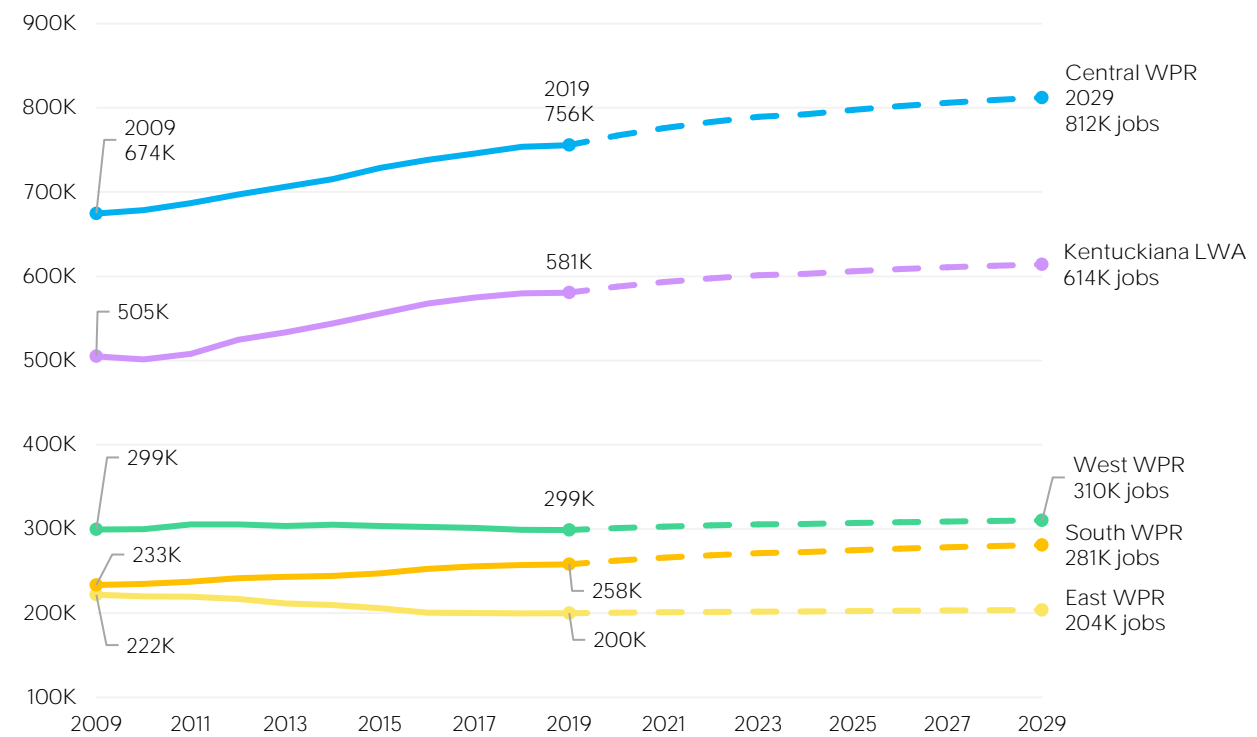
Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.4: Annual Percent Job Change in Kentucky and the U.S., 2009 to 2029



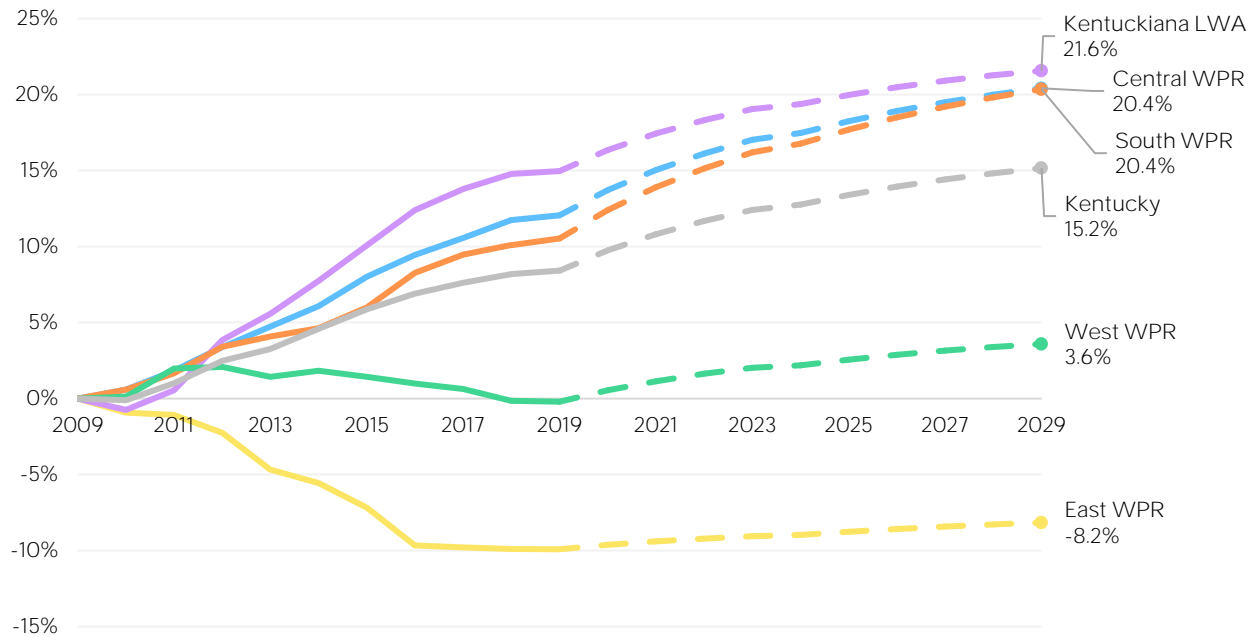
Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.5: Historical and Projected Jobs in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



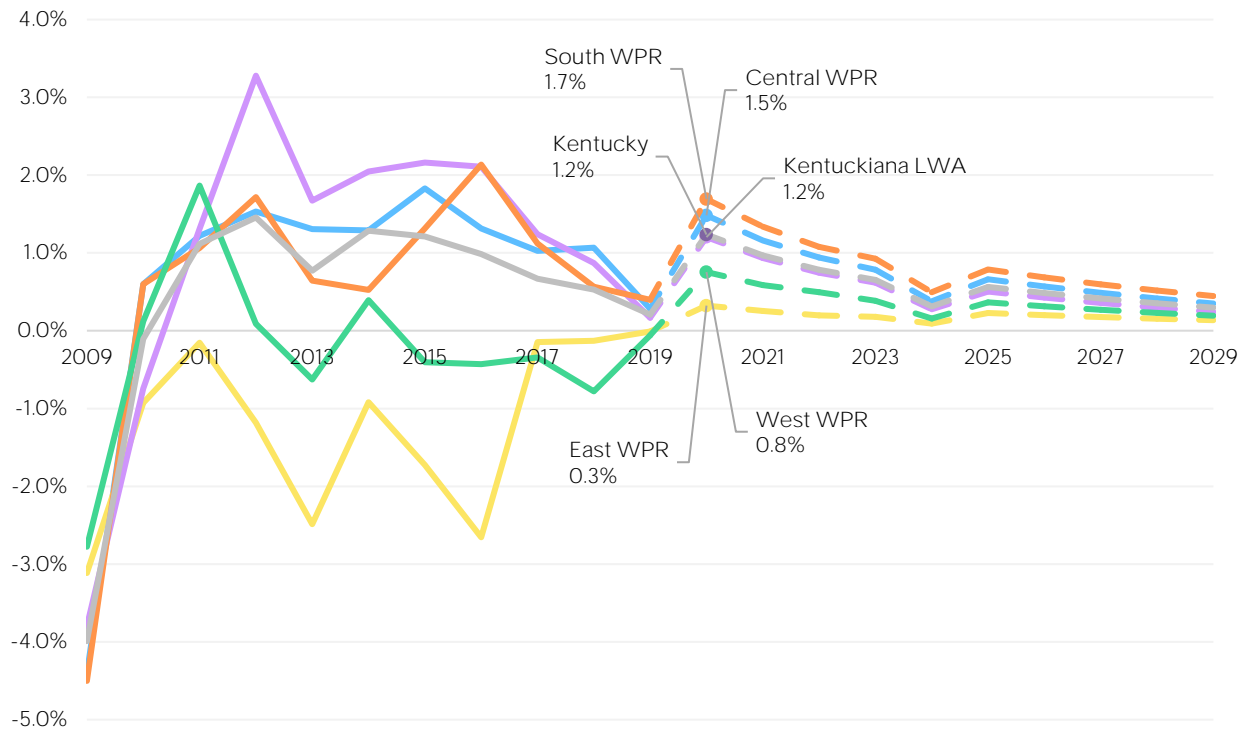
Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.6: Percent Job Change in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.7: Annual Percent Job Change in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi Employees & Self-Employed 2019.4.

INDUSTRY COMPOSITION

Evaluating current and future employment by the industries supporting jobs in the state provides information on its economic diversity. Understanding the mix of industries present in Kentucky is also important for drawing connections to the occupations and companies that are in-demand. By extension, students are likely to find employment in the largest industries.

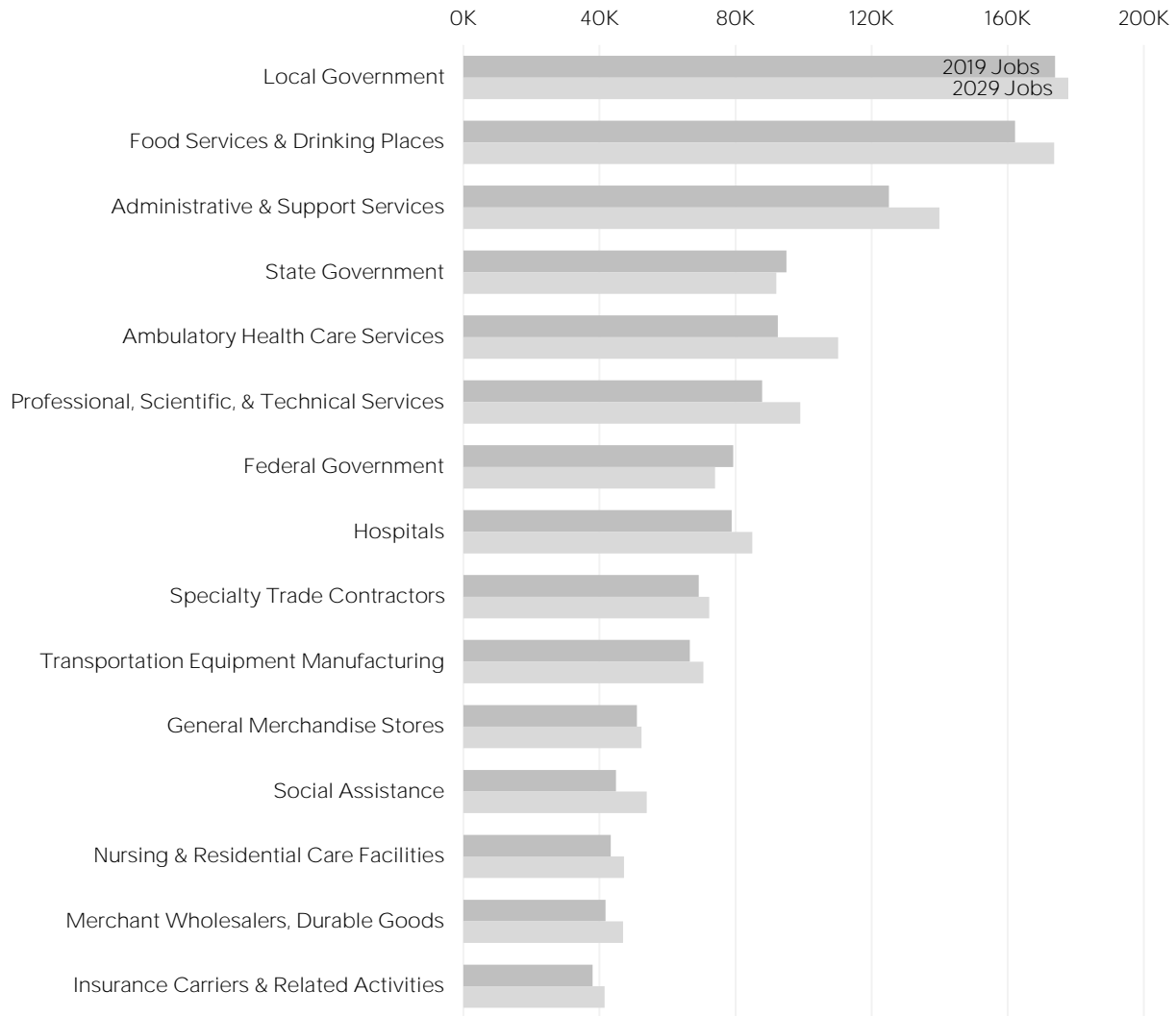
For the analysis in this section, Emsi has aggregated jobs by industries using the North American Industry Classification System (NAICS), and the industries are reported at the three-digit NAICS code level, referred to as industry subsectors. In Emsi data, all establishments in the main NAICS hierarchy (i.e. non-government industries) are private sector only. For example, jobs in Ambulatory Health Care Services and Educational Services are not associated with the local, state, or federal governments. Public sector jobs, such as public-school teachers and city firefighters, are in Local Government, whereas college professors and forest firefighters are commonly employed by State Government. Finally, jobs for mail carriers and transportation security screeners are almost exclusively employed by Federal Government.

Largest Employers

As stated in the previous section, Kentucky supported 2.1 million jobs in 2019, and by 2029, the state is projected to add 131,960 new jobs, for a 6.2% job increase. Figure 6.8 presents the 15 largest industry subsectors in the state, by their 2019 job counts, and also shows the industry subsectors' projected change over the next decade.

As shown, the Local Government industry subsector supported the most jobs in Kentucky in 2019 (173,860 jobs), and it is expected to remain the top regional employer. Food Services & Drinking Places and Administrative & Support Services were the next largest in terms of jobs, supporting 162,150 and 125,070 jobs in 2019, respectively. As for growth, Ambulatory Health Care Services is projected to add the most jobs of the top 15 industry subsectors, with a 10-year increase of 19.3% or 17,810 new jobs.

Figure 6.8: Jobs in Kentucky's Top 15 Industry Subsectors, 2019 and 2029

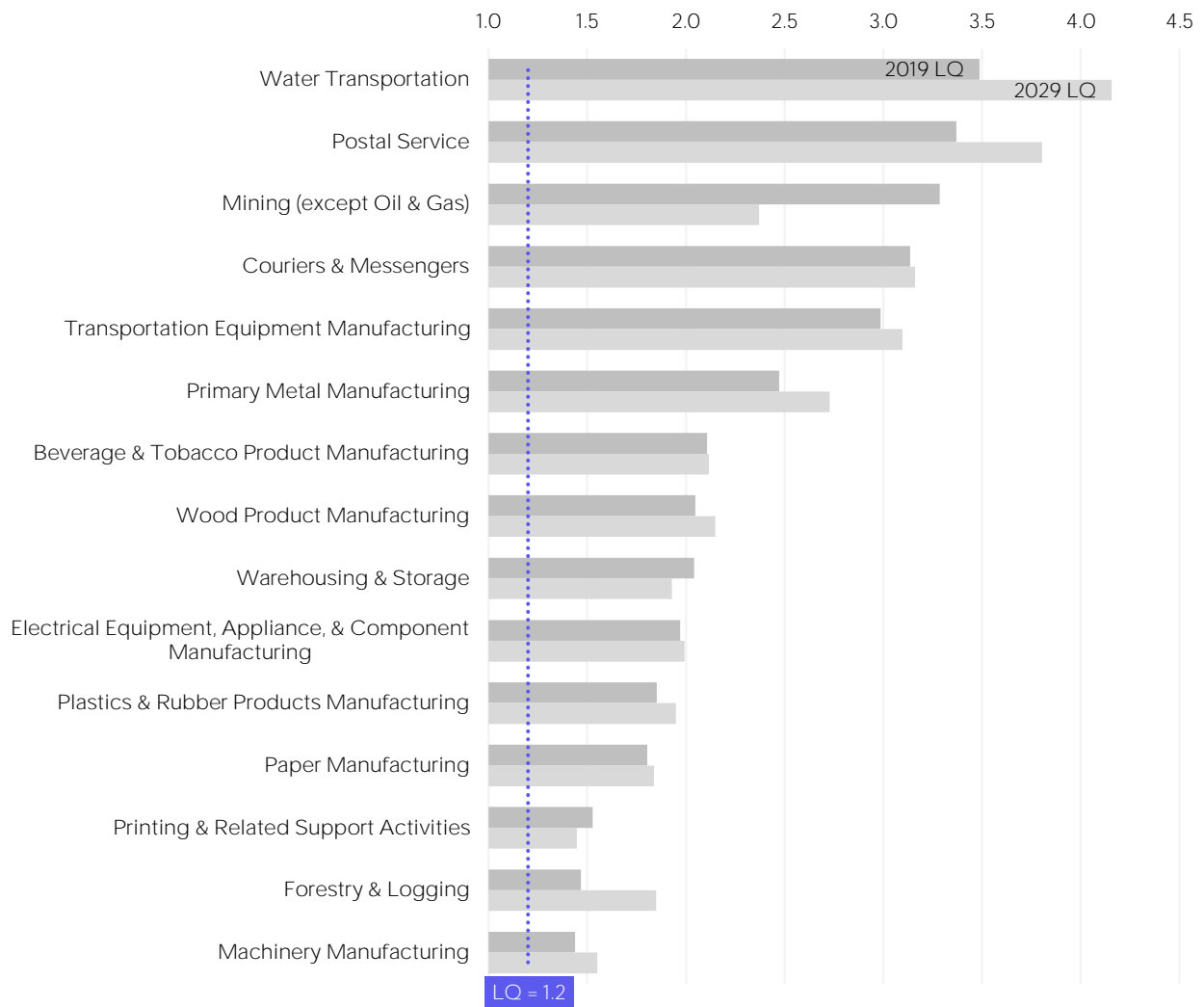


Source: Employees & Self-Employed 2019.4.

Employment Concentration

The employment concentration of the state's industry subsectors is measured by a location quotient (LQ). LQs are used to assess competitiveness by comparing the concentration of employment in an industry in Kentucky against the employment concentration for that same industry in the U.S. An LQ equal to 1.0 means that the percentage of total employment comprised by an industry in the state matches the percentage of total employment of that industry in the nation. An LQ greater than 1.0 means that the industry has a greater employment share relative to that of the U.S. High LQs, which are typically greater than 1.2, are an indication that Kentucky has a comparative advantage or specialization in an industry.

Figure 6.9: Employment Concentrations (LQs) of Kentucky's Top 15 Industry Subsectors, 2019 and 2029



Source: Employees & Self-Employed 2019.4.

Figure 6.9 shows the industry subsectors in Kentucky with the 15 highest LQs. The top-ranked industry subsectors are Water Transportation, with an LQ of 3.5 in 2019, followed by Postal Service, with an LQ of 3.4 in 2019. The two industry subsectors are expected to increase in employment concentration between 2019 and 2029 and will maintain their high employment concentrations in the state, with 2029 LQs about four times the U.S. share of jobs in those industry subsectors. As for 10-year growth, Forestry & Logging is projected to have the largest percent increase in LQ among the top 15 industry subsectors in the figure (25.9%) and will have a statewide LQ of 1.8. On the other hand, three industry subsectors are expected to drop in LQ between 2019 and 2029. The industry subsector with the largest percent decline is Mining (except Oil & Gas), with a 27.9% decrease from an LQ of 3.3 to an

LQ of 2.4. Despite the declines, all the state's top 15 industry subsectors will remain above the 1.2 high-LQ threshold, as indicated by the dotted line in the figure.

Highest Earners

Industry earnings are defined as total wages, salaries, supplements (such as additional employee benefits), and proprietor income. Workers in various industry subsectors see different average wages, so identifying Kentucky's top industries by their earnings is another method of evaluating an industry's strength. Table 6.1 shows the state's top 15 industry subsectors in descending order of 2018 earnings, as well as additional jobs data.

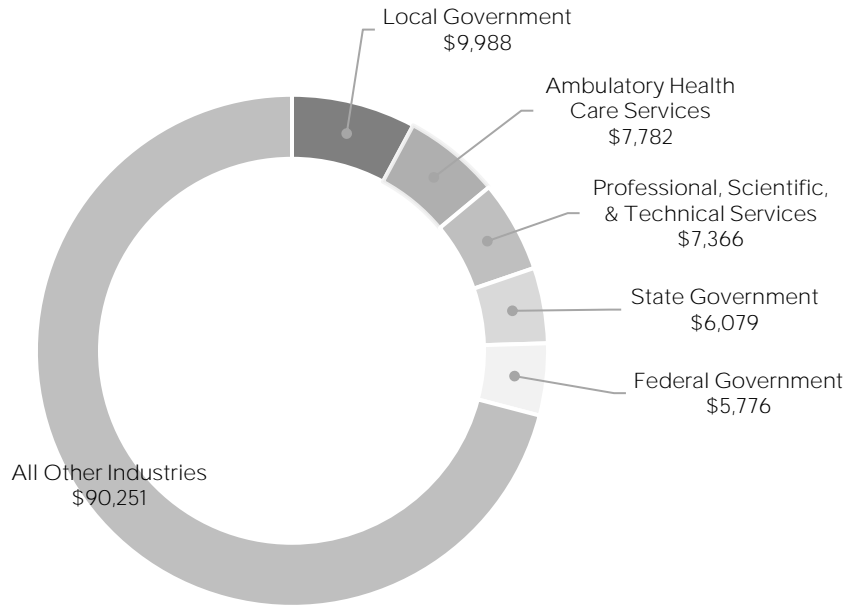
Local Government had the highest earnings in Kentucky (\$10.0 billion), which accounted for eight percent of the state's total earnings (\$127.2 billion). The next largest industry subsectors were Ambulatory Health Care Services, bringing in six percent of Kentucky's total earnings, followed by Professional, Scientific, & Technical Services, also with six percent of the state's total earnings. It could be argued that no one industry subsector accounted for a relatively large share of statewide earnings, as illustrated in Figure 6.10, an indication of Kentucky's economic diversity.

Table 6.1: Industry Subsector Earnings in Kentucky

NAICS TITLE	2018 EARNINGS (MILLIONS)	% EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
Local Government	\$9,988	7.8%	173,860	177,817	3,957	2.3%
Ambulatory Health Care Services	\$7,782	6.1%	92,379	110,188	17,809	19.3%
Professional, Scientific, & Technical Services	\$7,366	5.8%	87,830	98,981	11,151	12.7%
State Government	\$6,079	4.8%	94,986	91,941	(3,045)	(3.2%)
Federal Government	\$5,776	4.5%	79,291	73,976	(5,315)	(6.7%)
Hospitals	\$5,239	4.1%	78,811	84,936	6,125	7.8%
Transportation Equipment Manufacturing	\$5,221	4.1%	66,566	70,543	3,977	6.0%
Administrative & Support Services	\$4,906	3.9%	125,066	139,854	14,788	11.8%
Specialty Trade Contractors	\$4,246	3.3%	69,206	72,249	3,043	4.4%
Insurance Carriers & Related Activities	\$3,677	2.9%	37,937	41,548	3,611	9.5%
Merchant Wholesalers, Durable Goods	\$3,334	2.6%	41,775	46,890	5,115	12.2%
Food Services & Drinking Places	\$3,242	2.5%	162,154	173,635	11,481	7.1%
Real Estate	\$2,749	2.2%	17,753	18,808	1,055	5.9%
Management of Companies & Enterprises	\$2,620	2.1%	19,997	19,762	(235)	(1.2%)
Credit Intermediation & Related Activities	\$2,442	1.9%	33,971	35,050	1,079	3.2%
Couriers & Messengers	\$2,291	1.5%	31,799	35,223	3,424	10.8%
Merchant Wholesalers, Nondurable Goods	\$2,163	3.3%	29,967	30,790	823	2.7%
Truck Transportation	\$2,038	1.2%	27,217	28,725	1,508	5.5%
Food Manufacturing	\$1,733	1.6%	28,538	29,831	1,293	4.5%
Securities, Commodity Contracts, & Other Financial Investments & Related Activities	\$1,684	0.9%	7,773	9,477	1,704	21.9%
Nursing & Residential Care Facilities	\$1,666	0.9%	43,288	47,246	3,958	9.1%
Machinery Manufacturing	\$1,537	1.2%	21,019	22,464	1,445	6.9%
Fabricated Metal Product Manufacturing	\$1,518	1.2%	22,361	24,330	1,969	8.8%
Motor Vehicle & Parts Dealers	\$1,515	1.2%	28,566	30,695	2,129	7.5%
Warehousing & Storage	\$1,510	0.9%	30,793	35,859	5,066	16.5%
All Other Industries	\$34,992	27.4%	667,043	701,083	34,039	5.1%
Total	\$127,241	100.0%	2,119,945	2,251,900	131,954	6.2%

Source: Employees & Self-Employed 2019.4.

Figure 6.10: Kentucky's Top Five Industry Subsectors by Earnings (millions)



Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.11: Regional Earnings of Kentucky's Top Five Industry Subsectors



Source: Employees & Self-Employed 2019.4.

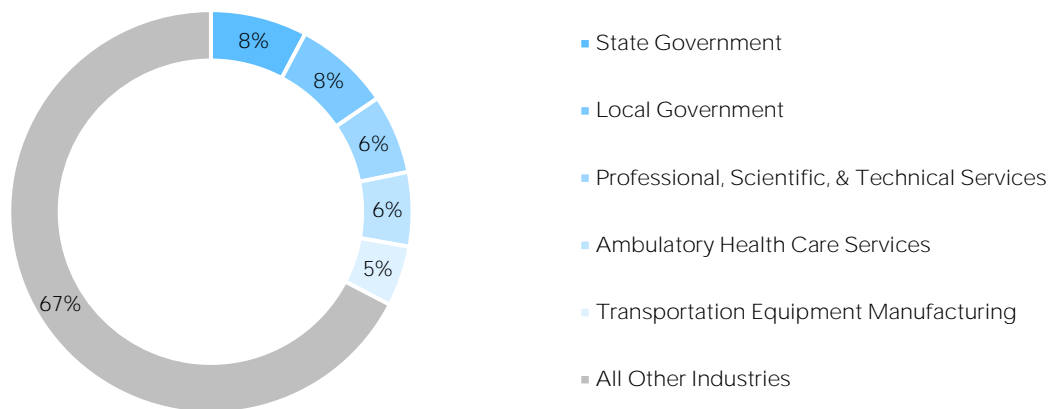


Table 6.2: Industry Subsector Earnings in the Central WPR

NAICS TITLE	2018 EARNINGS (MILLIONS)	% 2018 EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
State Government	\$3,585	7.8%	51,307	51,484	177	0.3%
Local Government	\$3,574	7.7%	60,515	63,550	3,035	5.0%
Professional, Scientific, & Technical Services	\$2,936	6.3%	33,035	38,036	5,001	15.1%
Ambulatory Health Care Services	\$2,755	6.0%	30,230	37,237	7,007	23.2%
Transportation Equipment Manufacturing	\$2,244	4.9%	27,528	28,167	639	2.3%
Federal Government	\$2,085	4.5%	25,131	20,910	(4,221)	-16.8%
Administrative & Support Services	\$1,876	4.1%	44,764	48,231	3,467	7.7%
Specialty Trade Contractors	\$1,526	3.3%	24,529	26,350	1,821	7.4%
Food Services & Drinking Places	\$1,252	2.7%	62,513	68,337	5,824	9.3%
Hospitals	\$1,248	2.7%	20,531	22,199	1,668	8.1%
Merchant Wholesalers, Durable Goods	\$1,235	2.7%	14,952	17,693	2,741	18.3%
Management of Companies & Enterprises	\$1,087	2.4%	7,783	6,959	(824)	-10.6%
Real Estate	\$1,070	2.3%	6,700	7,277	577	8.6%
Credit Intermediation & Related Activities	\$859	1.9%	11,581	12,039	458	4.0%
Machinery Manufacturing	\$814	1.8%	10,009	10,323	314	3.1%
All Other Industries	\$18,106	39.1%	324,668	353,337	28,670	8.8%
Total	\$46,254	100.0%	755,776	812,131	56,354	7.5%

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.12: Top Five Industry Subsectors by Percent Earnings in the Central WPR



Source: Employees & Self-Employed 2019.4.

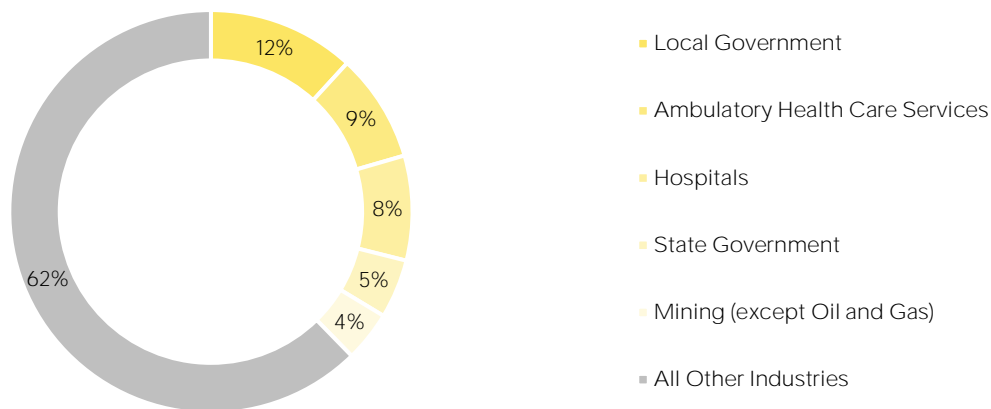


Table 6.3: Industry Subsector Earnings in the East WPR

NAICS TITLE	2018 EARNINGS (\$ MILLIONS)	% 2018 EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
Local Government	\$1,234	11.8%	26,182	25,447	(735)	(2.8%)
Ambulatory Health Care Services	\$908	8.7%	12,590	14,650	2,060	16.4%
Hospitals	\$878	8.4%	12,742	13,435	693	5.4%
State Government	\$494	4.7%	10,206	9,553	(653)	(6.4%)
Mining (except Oil & Gas)	\$423	4.0%	4,323	2,427	(1,896)	(43.9%)
Professional, Scientific, & Technical Services	\$390	3.7%	5,360	5,387	27	0.5%
Administrative & Support Services	\$289	2.8%	6,897	7,804	907	13.2%
Federal Government	\$288	2.8%	4,514	4,060	(454)	(10.1%)
Specialty Trade Contractors	\$286	2.7%	5,510	5,513	3	0.1%
Food Services & Drinking Places	\$266	2.5%	15,188	15,830	642	4.2%
Nursing & Residential Care Facilities	\$227	2.2%	6,409	6,907	498	7.8%
Credit Intermediation & Related Activities	\$211	2.0%	3,723	3,404	(319)	(8.6%)
General Merchandise Stores	\$207	2.0%	7,234	7,087	(147)	(2.0%)
Petroleum & Coal Products Manufacturing	\$185	1.8%	904	1,084	180	19.9%
Food Manufacturing	\$165	1.6%	2,947	2,825	(122)	(4.1%)
All Other Industries	\$3,995	38.2%	75,124	78,338	3,218	4.3%
Total	\$10,445	100.0%	199,855	203,753	3,902	2.0%

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.13: Top Five Industry Subsectors by Percent Earnings in the East WPR



Source: Employees & Self-Employed 2019.4.

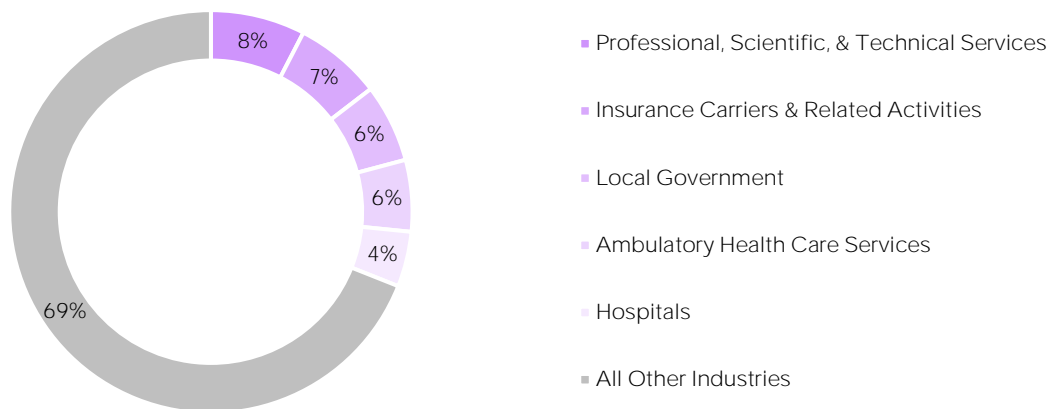


Table 6.4: Industry Subsector Earnings in the Kentuckiana LWA

NAICS TITLE	2018 EARNINGS (\$ MILLIONS)	% 2018 EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
Professional, Scientific, & Technical Services	\$3,059	7.6%	31,540	34,866	3,326	10.5%
Insurance Carriers & Related Activities	\$2,817	7.0%	25,585	28,462	2,877	11.2%
Local Government	\$2,531	6.3%	35,563	37,423	1,860	5.2%
Ambulatory Health Care Services	\$2,317	5.7%	25,478	28,644	3,166	12.4%
Hospitals	\$1,785	4.4%	23,896	26,293	2,397	10.0%
Couriers & Messengers	\$1,737	4.3%	20,304	20,756	452	2.2%
Transportation Equipment Manufacturing	\$1,709	4.2%	19,335	21,058	1,723	8.9%
Administrative & Support Services	\$1,690	4.2%	39,461	42,445	2,984	7.6%
Specialty Trade Contractors	\$1,439	3.6%	20,284	21,324	1,040	5.1%
Merchant Wholesalers, Durable Goods	\$1,430	3.5%	15,186	16,117	931	6.1%
Management of Companies & Enterprises	\$1,187	2.9%	7,991	8,642	651	8.1%
State Government	\$1,102	2.7%	15,431	14,198	(1,233)	-8.0%
Real Estate	\$1,045	2.6%	6,238	6,224	(14)	-0.2%
Food Services & Drinking Places	\$1,004	2.5%	43,681	46,093	2,412	5.5%
Federal Government	\$822	2.0%	10,469	10,769	300	2.9%
All Other Industries	\$14,651	36.3%	240,195	250,631	10,437	4.3%
Total	\$40,325	100.0%	580,636	613,946	33,309	5.7%

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.14: Top Five Industry Subsectors by Percent Earnings in the Kentuckiana LWA



Source: Employees & Self-Employed 2019.4.

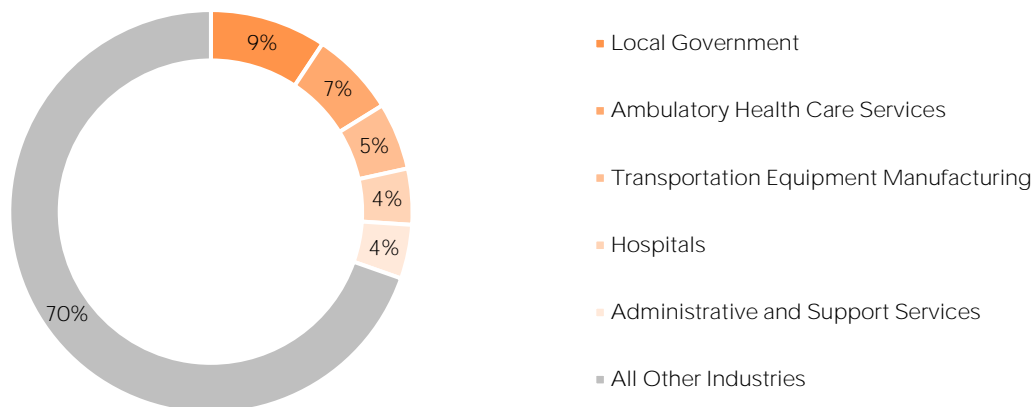


Table 6.5: Industry Subsector Earnings in the South WPR

NAICS TITLE	2018 EARNINGS (\$ MILLIONS)	% 2018 EARNINGS	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE
Local Government	\$1,243	9.3%	25,063	25,389	326	1.3%
Ambulatory Health Care Services	\$909	6.8%	11,801	14,530	2,729	23.1%
Transportation Equipment Manufacturing	\$717	5.4%	10,921	11,892	971	8.9%
Hospitals	\$598	4.5%	10,681	11,847	1,166	10.9%
Administrative & Support Services	\$577	4.3%	15,590	19,858	4,268	27.4%
Specialty Trade Contractors	\$449	3.4%	8,327	8,822	495	5.9%
State Government	\$442	3.3%	8,574	8,010	(564)	-6.6%
Professional, Scientific, & Technical Services	\$392	2.9%	6,142	7,020	878	14.3%
Food Services & Drinking Places	\$361	2.7%	20,107	22,122	2,015	10.0%
Truck Transportation	\$351	2.6%	4,107	4,428	321	7.8%
Food Manufacturing	\$292	2.2%	5,170	5,447	277	5.4%
Fabricated Metal Product Manufacturing	\$282	2.1%	4,581	5,730	1,149	25.1%
Animal Production & Aquaculture	\$250	1.9%	580	565	(15)	-2.6%
Plastics & Rubber Products Manufacturing	\$250	1.9%	4,285	4,633	348	8.1%
Real Estate	\$245	1.8%	1,615	1,728	113	7.0%
All Other Industries	\$5,958	44.7%	120,424	128,866	8,438	7.0%
Total	\$13,315	100.0%	257,968	280,887	22,915	8.9%

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.15: Top Five Industry Subsectors by Percent Earnings in the South WPR



Numbers may not sum due to rounding. Source: Employees & Self-Employed 2019.4.

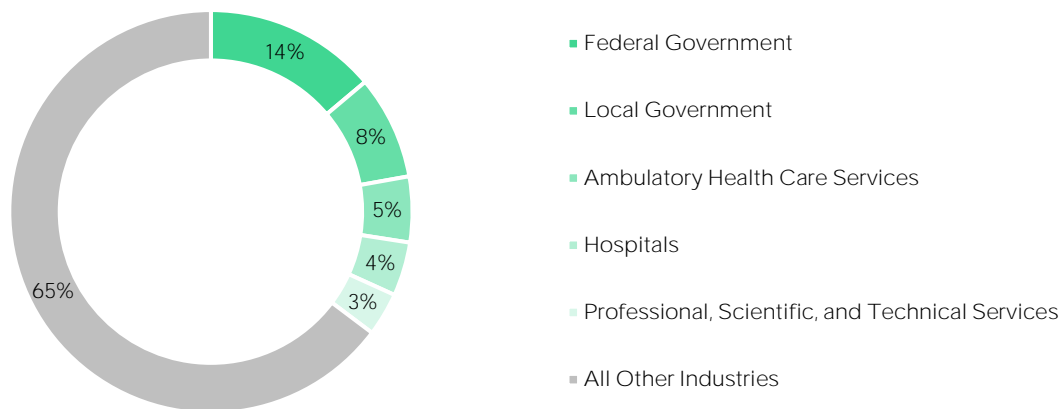


Table 6.6: Industry Subsector Earnings in the West WPR

NAICS TITLE	2018 EARNINGS (\$ MILLIONS)	% 2018 EARNINGS	2019 JOBS	2020 JOBS	JOB CHANGE	% JOB CHANGE
Federal Government	\$2,343	13.9%	34,431	33,321	(1,110)	(3.2%)
Local Government	\$1,406	8.3%	26,418	25,757	(661)	(2.5%)
Ambulatory Health Care Services	\$892	5.3%	11,228	13,537	2,309	20.6%
Hospitals	\$730	4.3%	10,943	11,140	197	1.8%
Professional, Scientific, & Technical Services	\$589	3.5%	7,661	8,756	1,095	14.3%
Specialty Trade Contractors	\$546	3.2%	9,090	9,063	(27)	(0.3%)
Food Manufacturing	\$488	2.9%	8,732	9,418	686	7.9%
Administrative & Support Services	\$475	2.8%	12,907	15,125	2,218	17.2%
Primary Metal Manufacturing	\$461	2.7%	4,745	4,541	(204)	(4.3%)
State Government	\$455	2.7%	9,444	8,676	(768)	(8.1%)
Transportation Equipment Manufacturing	\$434	2.6%	6,483	6,683	200	3.1%
Credit Intermediation & Related Activities	\$385	2.3%	5,853	6,712	859	14.7%
Food Services & Drinking Places	\$359	2.1%	20,312	20,964	652	3.2%
Chemical Manufacturing	\$339	2.0%	3,074	3,074	0	0.0%
Merchant Wholesalers, Durable Goods	\$298	1.8%	4,205	4,474	269	6.4%
All Other Industries	\$6,702	39.7%	123,175	128,827	5,652	4.6%
Total	\$16,902	100.0%	298,700	310,067	11,367	3.8%

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2019.4.

Figure 6.16: Top Five Industry Subsectors by Percent Earnings in the West WPR



Numbers may not sum due to rounding. Source: Employees & Self-Employed 2019.4.

Industry Diversity

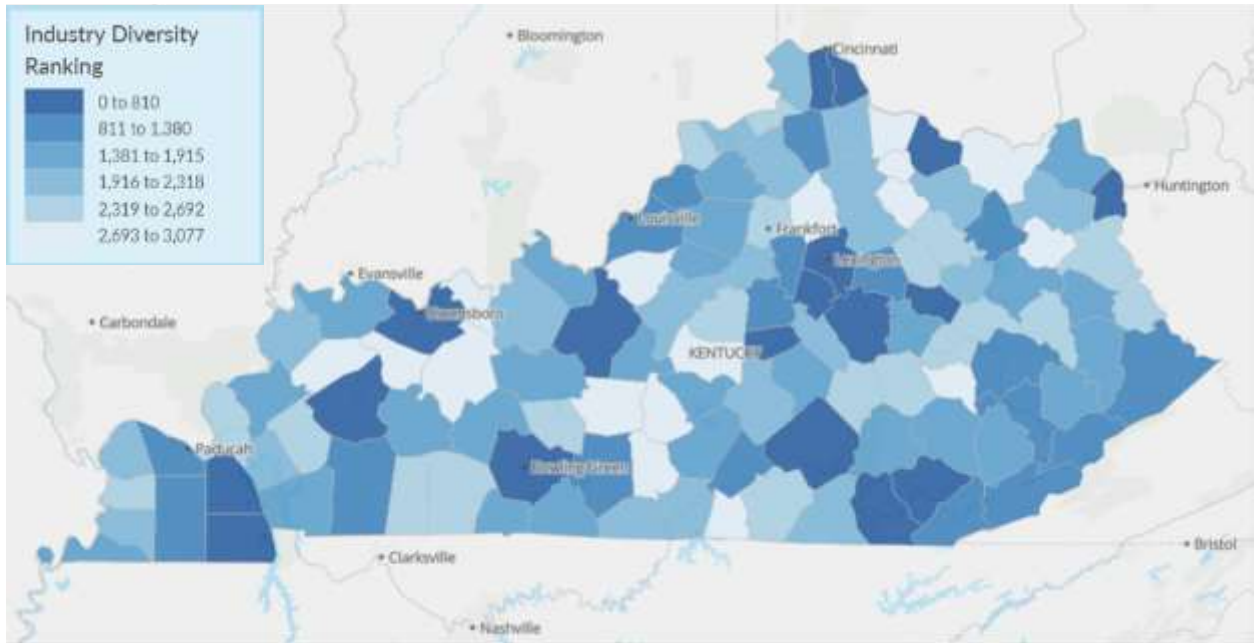
Emsi's definition of economic diversity and its ranking methodology come from C2ER.¹⁷ These measures help quantify how jobs are distributed across groups of industries in Kentucky, compared to a typical region in the U.S. A region with high diversity can signal economic stability and more easily withstand economic pressures, whereas a region with low diversity can signal economic instability. Unlike the previous sections, in which industries are classified by their NAICS codes, industries in this section are grouped into clusters that are broadly similar on factors such as business inputs, outputs, and the technological or skill requirements necessary to perform the work customary to the industries. Grouping industries according to function can help to:

- Broadly characterize the economic roles an industry plays in its region;
- Provide insight into the economic relationships and similarities a place has with other regions;
- Identify factors that make regions comparatively better fits for certain economic activities; and
- Speak to the broader economic and demographic forces that are likely to impact a region's economic prospects.

As shown in Table 6.7, Kentucky has an industry diversity ranking of 35, which is in the 33rd percentile among the 50 states and the District of Columbia. Several counties in the state have high percentile ranks, as indicated by the choropleth map in Figure 6.17. Hancock County is among the least diverse counties in the U.S. (Table 6.8). Industry diversity means that regional employment is distributed more evenly between the 12 industry clusters compared to a typical MSA in the U.S. The table also identifies the largest industry cluster in each county and the state. In Kentucky, the Distributive Services industry cluster accounts for the greatest share of total employment. The cluster is comprised of Utilities (NAICS 22); Wholesale Trade (NAICS 42); Transportation & Warehousing (NAICS 48-49); Wired Telecommunication Carriers (NAICS 517110); Satellite Telecommunications (NAICS 517410); and Data Processing, Hosting, & Related Services (NAICS 518).

17 C2ER refers to the Council for Community & Economic Research.

Figure 6.17: Kentucky Counties by Industry Diversity Rankings



Source: Employees & Self-Employed 2019.4.

Table 6.7: Industry Diversity Rankings of the 10 Most Diverse Counties in Kentucky

COUNTY	INDUSTRY DIVERSITY RANK	INDUSTRY DIVERSITY PERCENTILE	LARGEST INDUSTRY CLUSTER	% JOBS IN INDUSTRY CLUSTER	TYPICAL % JOBS IN INDUSTRY CLUSTER
Fayette County	76	97.6%	Healthcare	8.4%	5.0%
Warren County	102	96.8%	Capital-Intensive Manufacturing	13.0%	5.3%
Boyle County	145	95.4%	Capital-Intensive Manufacturing	9.6%	5.3%
Knox County	190	94.0%	Capital-Intensive Manufacturing	10.5%	5.3%
Kenton County	212	93.3%	Healthcare	8.1%	5.0%
Madison County	237	92.5%	Higher Education	11.4%	3.3%
Hardin County	291	90.8%	Government	10.7%	3.2%
Mason County	295	90.6%	Capital-Intensive Manufacturing	8.9%	5.3%
Boyd County	312	90.1%	Healthcare	10.8%	5.0%
Campbell County	378	88.0%	Higher Education	7.2%	3.3%
Kentucky	35	33.3%	Distributive Services	10.0%	8.3%

Source: Employees & Self-Employed 2019.4.

Table 6.8: Industry Diversity Rankings of the 10 Least Diverse Counties in Kentucky

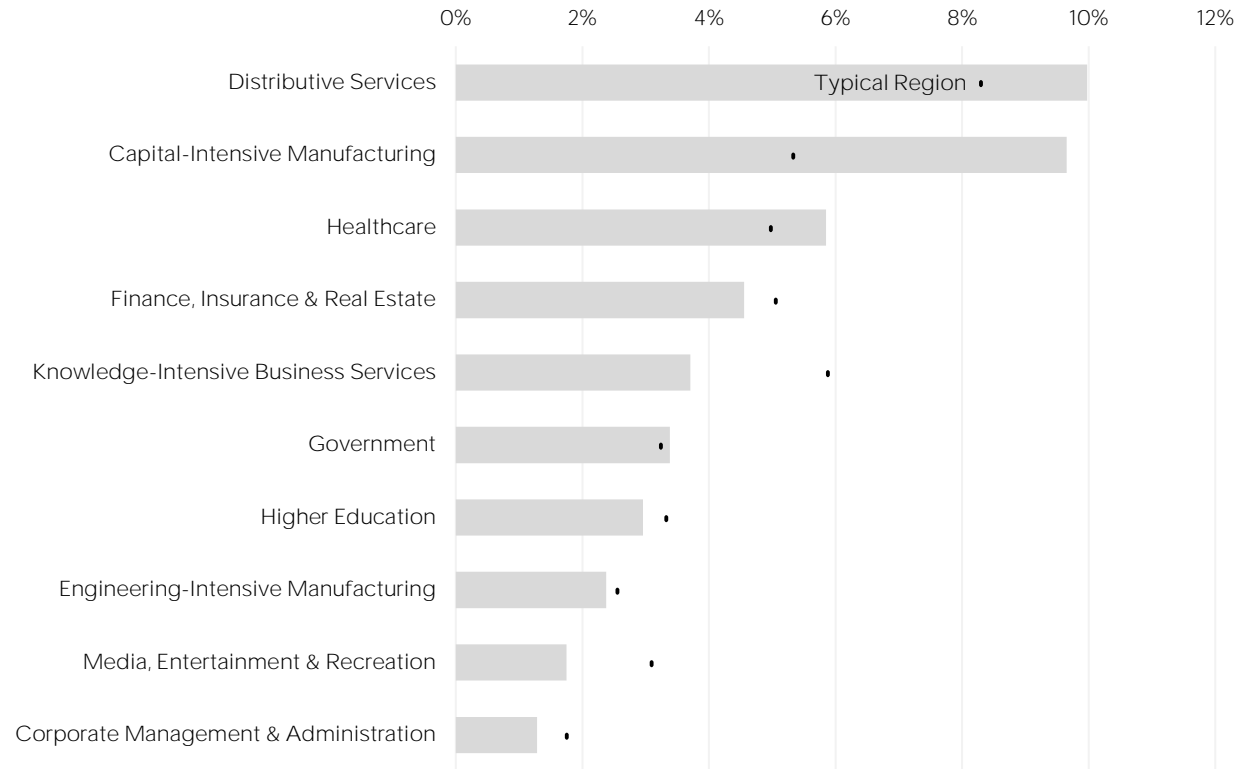
COUNTY	INDUSTRY DIVERSITY RANK	INDUSTRY DIVERSITY PERCENTILE	LARGEST INDUSTRY CLUSTER	% JOBS IN INDUSTRY CLUSTER	TYPICAL % JOBS IN INDUSTRY CLUSTER
Hancock County	3,077	2.1%	Capital-Intensive Manufacturing	61.8%	5.3%
Robertson County	2,980	5.2%	Healthcare	19.3%	5.0%
Elliott County	2,965	5.6%	Government	29.5%	3.2%
Hart County	2,905	7.5%	Capital-Intensive Manufacturing	43.8%	5.3%
McLean County	2,887	8.1%	Agriculture & Natural Resource Extraction	28.8%	1.6%
Bullitt County	2,860	9.0%	Distributive Services	32.8%	8.3%
Nicholas County	2,832	9.9%	Healthcare	7.9%	5.0%
Scott County	2,821	10.2%	Capital-Intensive Manufacturing	37.3%	5.3%
Green County	2,816	10.4%	Healthcare	14.8%	5.0%
Marion County	2,755	12.3%	Capital-Intensive Manufacturing	41.1%	5.3%
Kentucky	35	33.3%	Distributive Services	10.0%	8.3%

Source: Employees & Self-Employed 2019.4.

Furthermore, Figure 6.18 shows the employment shares of the 11 functional industry clusters in Kentucky, with a dot representing the industry cluster's typical share of employment in the

U.S. In an effort to focus on the economic base of the region, non-functional industries or industries that often serve local populations, such as retail, trade, personal services, doctor's offices, local government, and construction, are excluded from the diversity analysis. Distributive Services employs the largest share of people in the region (10.0%), followed by jobs in Capital-Intensive Manufacturing (9.7%). A typical region in the U.S. employs 8.2% and 5.3% of its people in the two industry clusters, respectively.

Figure 6.18: Industry Diversity of Kentucky by Industry Cluster with Comparison to a Typical Region



Source: Employees & Self-Employed 2019.4.

OCCUPATIONS OF REGIONAL RESIDENTS

This section combines occupational data with employment information on Kentucky residents. Essentially, the data identify the occupational groups that the state's programs should be targeting based upon the jobs of its residents. The final results, which appear in Tables 6.9 and 6.10, show which occupational groups are undersupplied or oversupplied by the state's residents, respectively. As for the source of the data, the number of jobs within an occupation is based on Emsi's industry data and staffing patterns, and Emsi uses data from LEHD Origin-Destination Employment Statistics (LODES) to determine how many Kentucky residents are employed in the state's occupations. Specifically, the LODES originate from

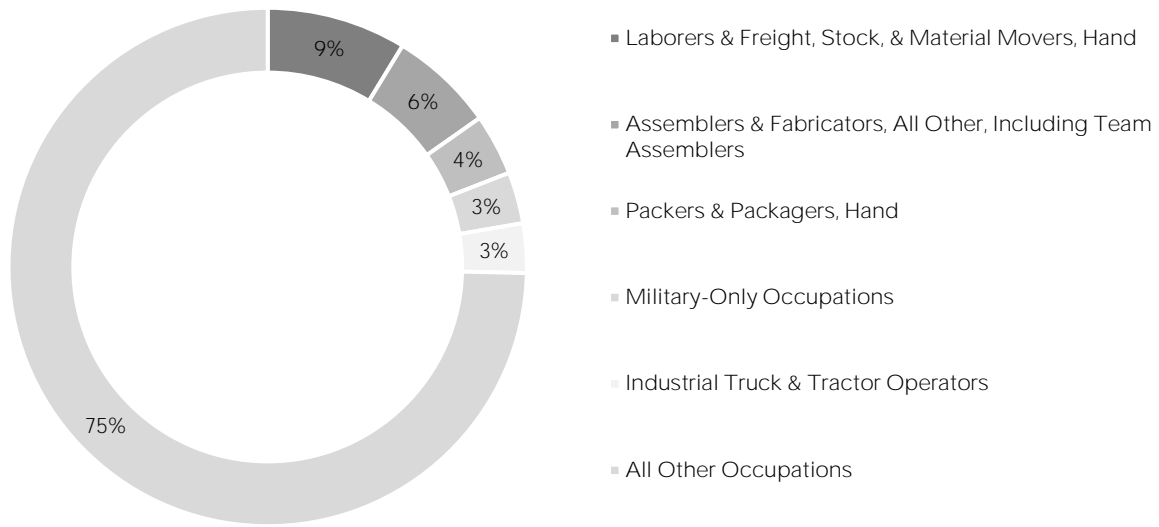
Origin and Destination (OD) data, Regional Area Characteristics (RAC), and Workforce Area Characteristics (WAC).

Table 6.9: Top 15 Occupations by Net In-Commuters for Jobs in Kentucky

SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
53-7062	Laborers & Freight, Stock, & Material Movers, Hand	2,753	57,955	60,708	65,859	5,151
51-2098	Assemblers & Fabricators, All Other, Including Team Assemblers	2,064	57,485	59,549	56,635	(2,914)
53-7064	Packers & Packers, Hand	1,210	13,638	14,848	15,897	1,049
55-9999	Military-Only Occupations	1,015	21,363	22,378	21,371	(1,007)
53-7051	Industrial Truck & Tractor Operators	974	13,024	13,998	15,309	1,311
53-3033	Light Truck or Delivery Services Drivers	761	16,145	16,906	19,044	2,138
51-9111	Packaging & Filling Machine Operators & Tenders	572	9,591	10,163	10,580	417
35-2014	Cooks, Restaurant	448	19,767	20,215	21,700	1,485
49-3011	Aircraft Mechanics & Service Technicians	436	3,782	4,218	4,403	185
43-5081	Stock Clerks & Order Fillers	364	30,079	30,443	32,030	1,587
53-1048	First-line Supervisors of Transportation & Material Moving Workers, Except Aircraft Cargo Handling Supervisors	320	7,349	7,669	8,404	735
53-2011	Airline Pilots, Copilots, & Flight Engineers	301	3,126	3,427	2,758	(669)
43-4171	Receptionists & Information Clerks	272	17,091	17,363	18,523	1,160
43-5011	Cargo & Freight Agents	269	2,798	3,067	3,450	383
45-2092	Farmworkers & Laborers, Crop, Nursery, & Greenhouse	260	5,513	5,773	6,354	581

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.19: Top Five Occupations by Net In-Commuters for Jobs in Kentucky



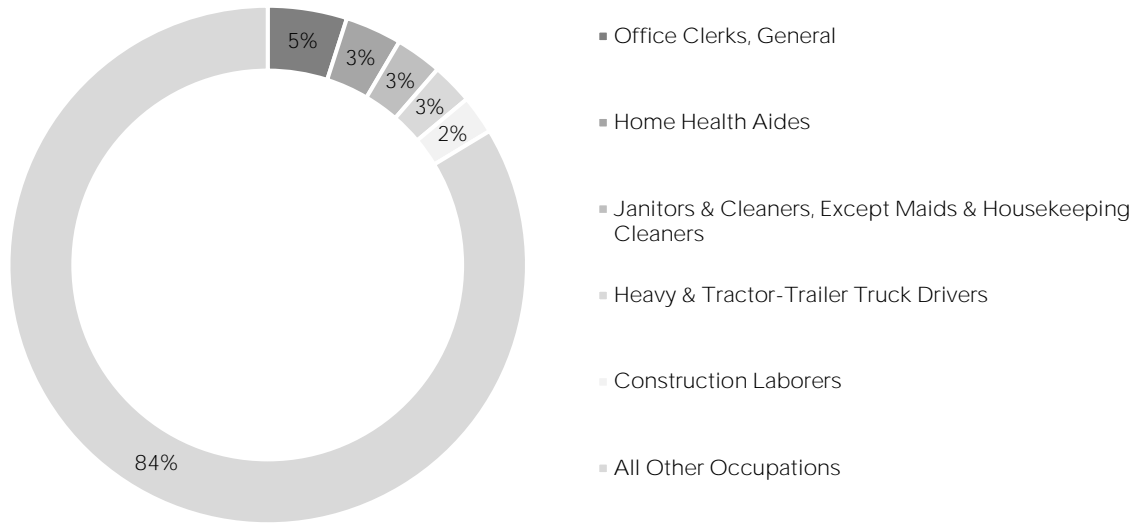
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.10: Top 15 Occupations by Net Out-Commuters for Jobs in Kentucky

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
43-9061	Office Clerks, General	(763)	42,291	41,528	41,732	204
31-1011	Home Health Aides	(545)	4,145	3,600	5,104	1,504
37-2011	Janitors & Cleaners, Except Maids & Housekeeping Cleaners	(447)	31,527	31,080	34,445	3,365
53-3032	Heavy & Tractor-Trailer Truck Drivers	(396)	29,849	29,453	32,057	2,604
47-2061	Construction Laborers	(372)	16,998	16,626	17,968	1,342
29-2061	Licensed Practical & Licensed Vocational Nurses	(365)	10,445	10,080	10,632	552
47-2073	Operating Engineers & Other Construction Equipment Operators	(335)	5,755	5,420	5,663	243
43-6014	Secretaries & Administrative Assistants, Except Legal, Medical, & Executive	(334)	30,383	30,049	29,049	(1,000)
35-3022	Counter Attendants, Cafeteria, Food Concession, & Coffee Shop	(287)	2,918	2,631	2,938	307
15-1121	Computer Systems Analysts	(280)	4,917	4,637	5,066	429
41-3021	Insurance Sales Agents	(278)	10,462	10,184	10,956	772
25-9041	Teacher Assistants	(271)	17,392	17,121	17,950	829
51-4072	Molding, Coremaking, & Casting Machine Setters, Operators, & Tenders, Metal & Plastic	(265)	3,431	3,166	3,109	(57)
13-1199	Business Operations Specialists, All Other	(261)	10,316	10,055	10,935	880
13-1161	Market Research Analysts & Marketing Specialists	(246)	5,325	5,079	6,335	1,256

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.20: Top Five Occupations by Net Out-Commuters for Jobs in Kentucky



Source: Emsi Employees & Self-Employed 2019.4.

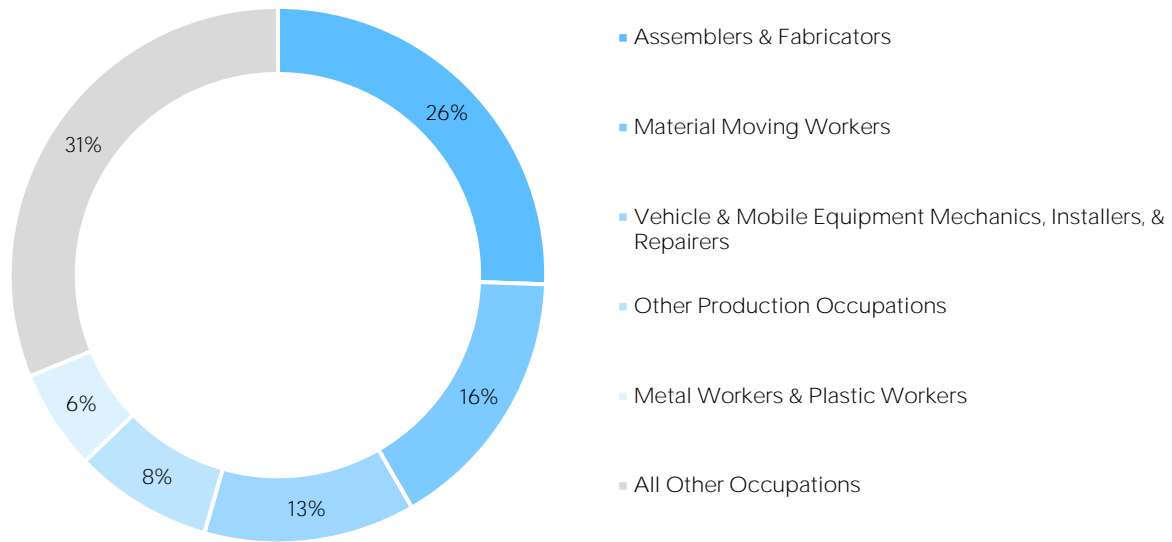
Table 6.11: Top 15 Occupational Groups by Net In-Commuters for Jobs in the Central WPR



SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
51-2000	Assemblers & Fabricators	1,325	27,245	28,570	26,017	(2,553)
53-7000	Material Moving Workers	837	34,752	35,589	40,417	4,828
49-3000	Vehicle & Mobile Equipment Mechanics, Installers, & Repairers	661	10,204	10,865	11,814	949
51-9000	Other Production Occupations	434	17,848	18,282	19,119	837
51-4000	Metal Workers & Plastic Workers	314	14,683	14,997	15,695	698
45-2000	Agricultural Workers	265	4,804	5,069	5,221	152
47-5000	Extraction Workers	165	620	785	821	36
25-9000	Other Education, Training, & Library Occupations	155	9,295	9,450	9,860	410
53-2000	Air Transportation Workers	125	1,835	1,960	1,048	(912)
11-9000	Other Management Occupations	117	17,866	17,983	18,491	508
51-6000	Textile, Apparel, & Furnishings Workers	85	3,061	3,146	3,195	49
47-3000	Helpers, Construction Trades	85	1,024	1,109	1,245	136
25-4000	Librarians, Curators, & Archivists	83	1,666	1,749	1,854	105
39-7000	Tour & Travel Guides	63	371	434	551	117
53-6000	Other Transportation Workers	61	1,933	1,994	2,191	197

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.21: Top Five Occupational Groups by Net In-Commuters for Jobs in the Central WPR



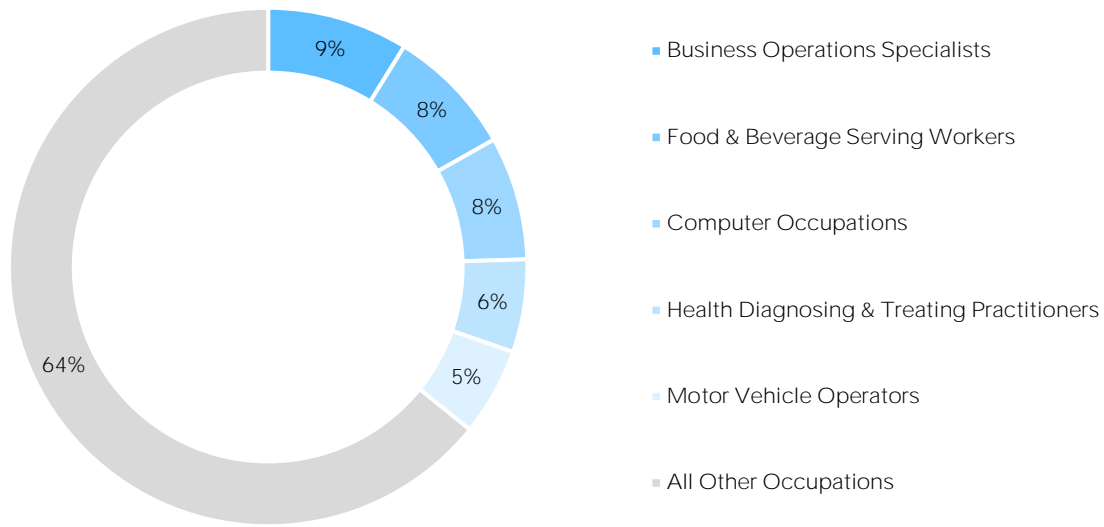
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.12: Top 15 Occupational Groups by Net Out-Commuters for Jobs in the Central WPR

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
13-1000	Business Operations Specialists	(1,998)	20,621	18,623	20,386	1,763
35-3000	Food & Beverage Serving Workers	(1,823)	41,413	39,590	43,836	4,246
15-1100	Computer Occupations	(1,751)	13,533	11,782	12,821	1,039
29-1000	Health Diagnosing & Treating Practitioners	(1,315)	26,976	25,661	29,548	3,887
53-3000	Motor Vehicle Operators	(1,246)	21,878	20,632	23,416	2,784
43-9000	Other Office & Administrative Support Workers	(1,005)	20,095	19,090	19,309	219
43-3000	Financial Clerks	(894)	14,697	13,803	14,479	676
33-9000	Other Protective Service Workers	(775)	6,100	5,325	5,814	489
41-3000	Sales Representatives, Services	(676)	9,207	8,531	9,379	848
13-2000	Financial Specialists	(666)	12,997	12,331	13,121	790
35-9000	Other Food Preparation & Serving Related Workers	(663)	4,735	4,072	4,439	367
11-3000	Operations Specialties Managers	(642)	8,643	8,001	8,813	812
37-2000	Building Cleaning & Pest Control Workers	(540)	17,991	17,451	19,483	2,032
43-5000	Material Recording, Scheduling, Dispatching, & Distributing Workers	(503)	22,230	21,727	23,640	1,913


Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.22: Top Five Occupational Groups by Net Out-Commuters for Jobs in the Central WPR



Source: Emsi Employees & Self-Employed 2019.4.

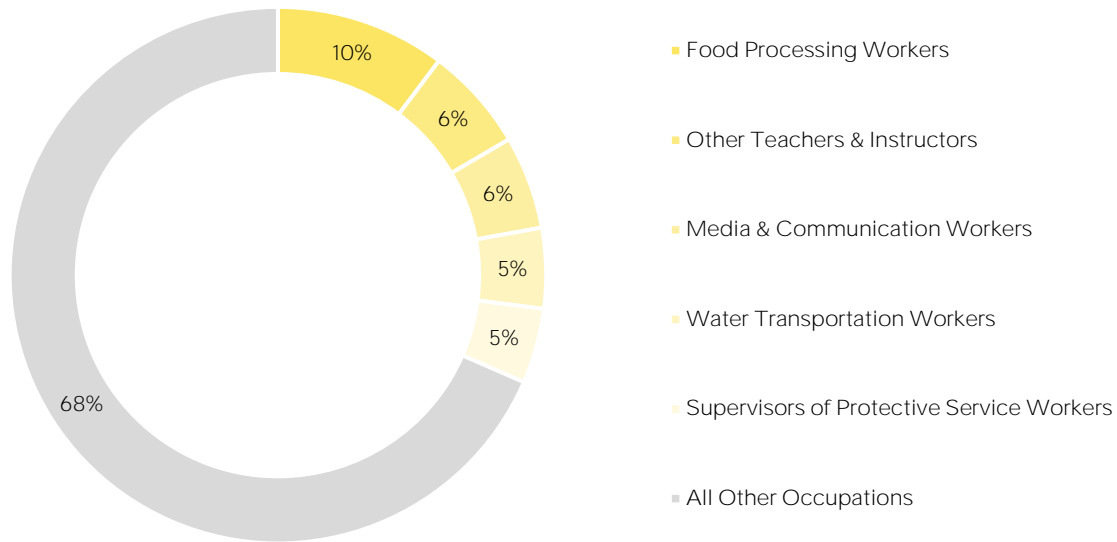
Table 6.13: Top 15 Occupational Groups by Net In-Commuters for Jobs in the East WPR



SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	JOBS	CHANGE
51-3000	Food Processing Workers	186	1,289	1,475	1,482	7
25-3000	Other Teachers & Instructors	114	1,088	1,202	1,209	7
27-3000	Media & Communication Workers	102	359	461	488	27
53-5000	Water Transportation Workers	88	109	197	243	46
33-1000	Supervisors of Protective Service Workers	82	367	449	435	(14)
19-1000	Life Scientists	75	173	248	244	(4)
23-2000	Legal Support Workers	70	352	422	416	(6)
39-3000	Entertainment Attendants & Related Workers	67	265	332	373	41
27-4000	Media & Communication Equipment Workers	66	122	188	188	0
17-3000	Drafters, Engineering Technicians, & Mapping Technicians	66	702	768	736	(32)
39-4000	Funeral Service Workers	64	267	331	333	2
19-4000	Life, Physical, & Social Science Technicians	64	137	201	200	(1)
23-1000	Lawyers, Judges, & Related Workers	58	874	932	924	(8)
41-9000	Other Sales & Related Workers	54	704	758	770	12
53-6000	Other Transportation Workers	54	254	308	312	4

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.23: Top Five Occupational Groups by Net In-Commuters for Jobs in the East WPR



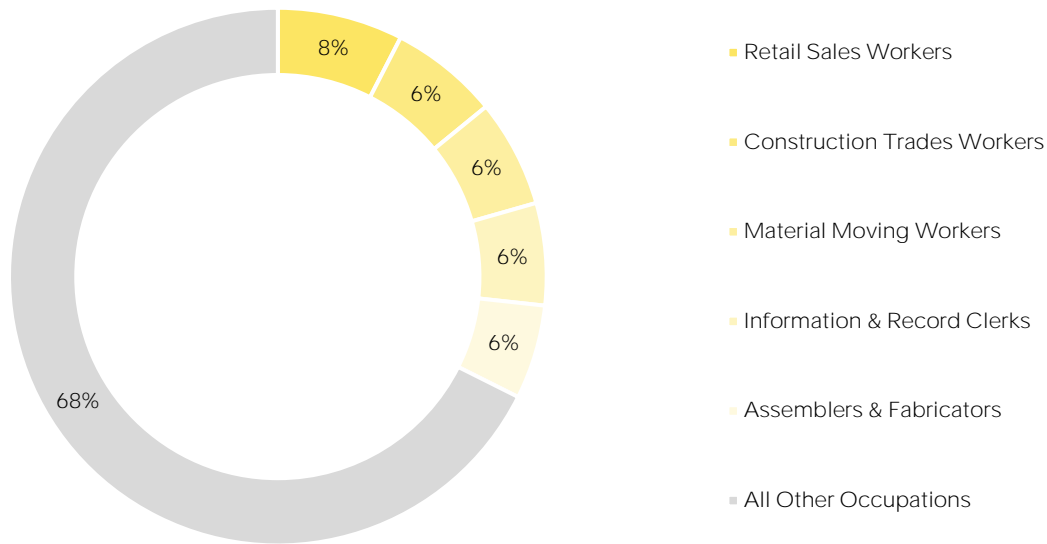
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.14: Top 15 Occupational Groups by Net Out-Commuters for Jobs in the East WPR

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
41-2000	Retail Sales Workers	(1,788)	15,676	13,888	13,604	(284)
47-2000	Construction Trades Workers	(1,550)	9,636	8,086	8,052	(34)
53-7000	Material Moving Workers	(1,533)	7,617	6,084	6,082	(2)
43-4000	Information & Record Clerks	(1,455)	7,379	5,924	6,025	101
51-2000	Assemblers & Fabricators	(1,341)	3,949	2,608	2,531	(77)
43-9000	Other Office & Administrative Support Workers	(1,003)	5,269	4,266	4,135	(131)
53-3000	Motor Vehicle Operators	(979)	7,713	6,734	6,504	(230)
35-3000	Food & Beverage Serving Workers	(906)	11,455	10,549	11,118	569
43-5000	Material Recording, Scheduling, Dispatching, & Distributing Workers	(848)	5,756	4,908	4,726	(182)
55-9000	Military-only occupations	(819)	1,771	952	939	(13)
43-6000	Secretaries & Administrative Assistants	(730)	5,355	4,625	4,399	(226)
39-9000	Other Personal Care & Service Workers	(694)	6,349	5,655	6,827	1,172
29-1000	Health Diagnosing & Treating Practitioners	(666)	10,624	9,958	10,963	1,005
51-9000	Other Production Occupations	(650)	3,610	2,960	3,096	136
49-9000	Other Installation, Maintenance, & Repair Occupations	(645)	5,622	4,977	4,924	(53)

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.24: Top Five Occupational Groups by Net Out-Commuters for Jobs in the East WPR



Source: Emsi Employees & Self-Employed 2019.4.

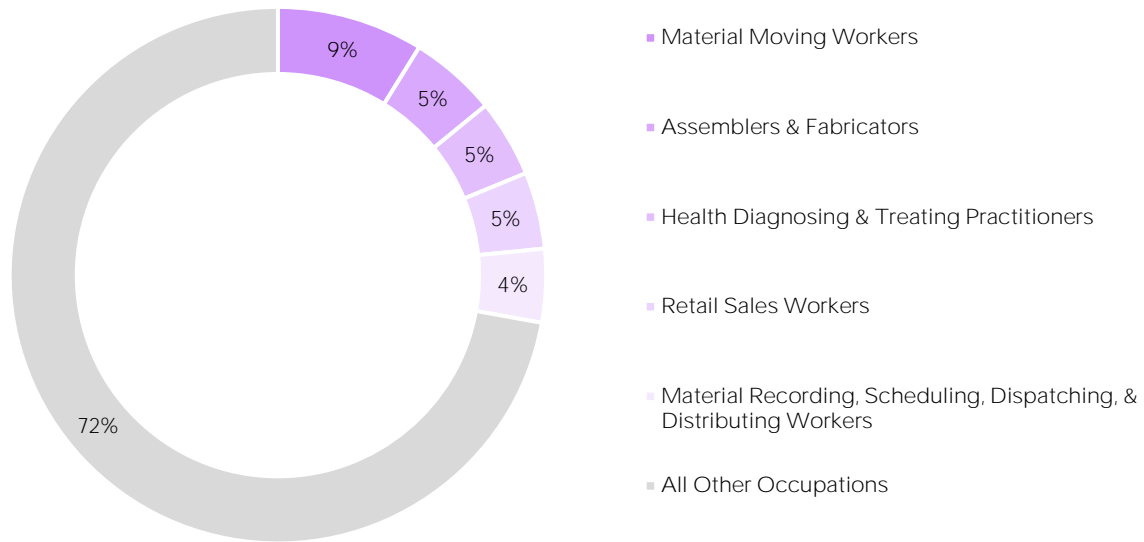
Table 6.15: Top 15 Occupational Groups by Net In-Commuters for Jobs in the Kentuckiana LWA



SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
53-7000	Material Moving Workers	5,611	27,601	33,212	35,418	2,206
51-2000	Assemblers & Fabricators	3,343	14,964	18,307	18,462	155
29-1000	Health Diagnosing & Treating Practitioners	2,978	19,988	22,966	25,575	2,609
41-2000	Retail Sales Workers	2,940	26,146	29,086	29,458	372
43-5000	Material Recording, Scheduling, Dispatching, & Distributing Workers	2,813	15,607	18,420	19,039	619
35-3000	Food & Beverage Serving Workers	2,789	24,697	27,486	29,481	1,995
43-4000	Information & Record Clerks	2,772	23,227	25,999	26,945	946
13-1000	Business Operations Specialists	2,493	16,325	18,818	20,504	1,686
47-2000	Construction Trades Workers	2,118	15,354	17,472	18,191	719
15-1100	Computer Occupations	1,997	12,679	14,676	16,692	2,016
53-3000	Motor Vehicle Operators	1,901	17,572	19,473	20,795	1,322
49-9000	Other Installation, Maintenance, & Repair Occupations	1,578	11,584	13,162	13,986	824
43-9000	Other Office & Administrative Support Workers	1,509	14,639	16,148	16,312	164
11-1000	Top Executives	1,493	9,630	11,123	11,753	630
51-9000	Other Production Occupations	1,443	10,883	12,326	12,141	(185)

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.25: Top Five Occupational Groups by Net In-Commuters for Jobs in the Kentuckiana LWA



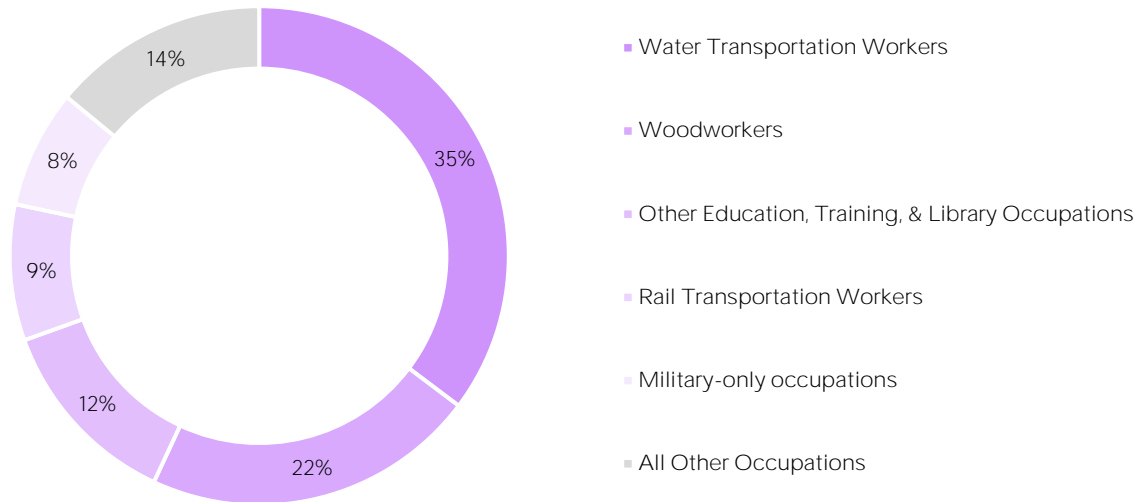
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.16: Top 15 Occupational Groups by Net Out-Commuters for Jobs in the Kentuckiana LWA

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
53-5000	Water Transportation Workers	(244)	619	375	369	(6)
51-7000	Woodworkers	(150)	529	379	412	33
25-9000	Other Education, Training, & Library Occupations	(87)	3,858	3,771	4,020	249
53-4000	Rail Transportation Workers	(61)	361	300	292	(8)
55-9000	Military-only occupations	(53)	1,745	1,692	1,822	130
39-4000	Funeral Service Workers	(30)	201	171	196	25
39-7000	Tour & Travel Guides	(22)	99	77	93	16
29-9000	Other Healthcare Practitioners & Technical Occupations	(21)	459	438	496	58
25-4000	Librarians, Curators, & Archivists	(20)	463	443	478	35
43-2000	Communications Equipment Operators	(4)	302	298	270	(28)

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.26: Top Five Occupational Groups by Net Out-Commuters for Jobs in the Kentuckiana LWA



Source: Emsi Employees & Self-Employed 2019.4.

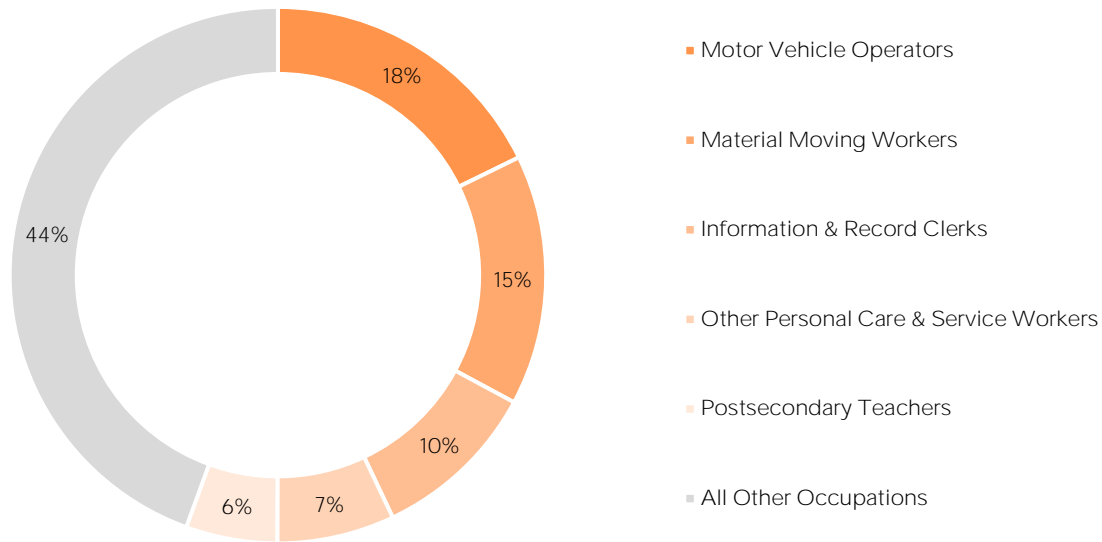
Table 6.17: Top 15 Occupational Groups by Net In-Commuters for Jobs in the South WPR



SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
53-3000	Motor Vehicle Operators	454	9,666	10,120	10,863	743
53-7000	Material Moving Workers	386	12,550	12,936	13,363	427
43-4000	Information & Record Clerks	258	10,052	10,310	12,176	1,866
39-9000	Other Personal Care & Service Workers	181	7,653	7,834	9,568	1,734
25-1000	Postsecondary Teachers	141	2,266	2,407	2,494	87
53-1000	Supervisors of Transportation & Material Moving Workers	139	1,109	1,248	1,271	23
53-6000	Other Transportation Workers	105	545	650	739	89
45-2000	Agricultural Workers	93	1,604	1,697	1,880	183
49-3000	Vehicle & Mobile Equipment Mechanics, Installers, & Repairers	85	3,614	3,699	4,111	412
27-3000	Media & Communication Workers	62	633	695	737	42
43-3000	Financial Clerks	59	5,148	5,207	5,599	392
27-4000	Media & Communication Equipment Workers	47	221	268	289	21
43-2000	Communications Equipment Operators	43	241	284	292	8
47-5000	Extraction Workers	38	202	240	231	(9)
23-2000	Legal Support Workers	38	321	359	403	44

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.27: Top Five Occupational Groups by Net In-Commuters for Jobs in the South WPR



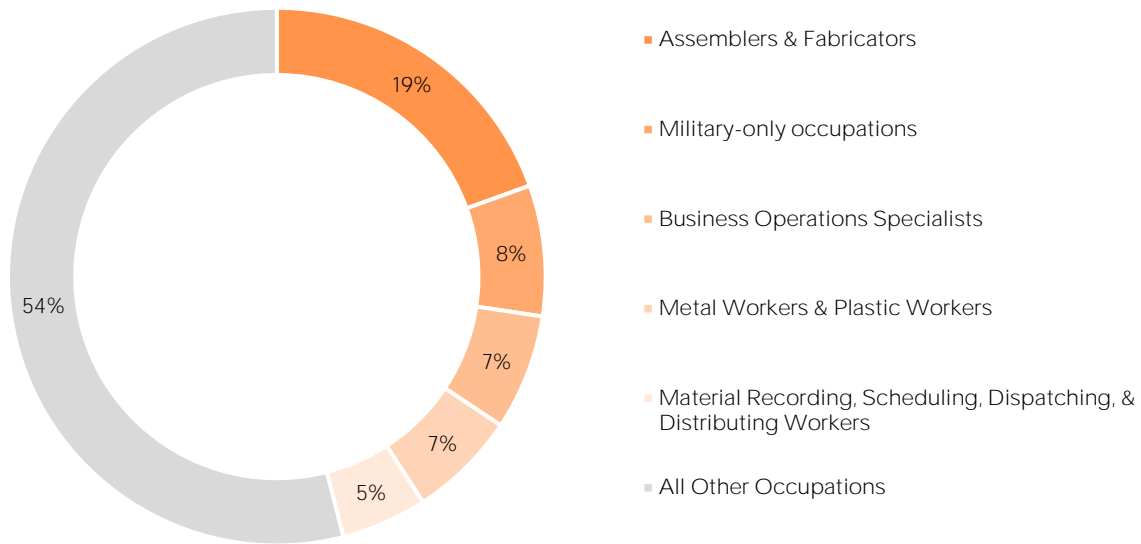
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.18: Top 15 Occupational Groups by Net Out-Commuters for Jobs in the South WPR

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
51-2000	Assemblers & Fabricators	(1,227)	8,537	7,310	7,106	(204)
55-9000	Military-only occupations	(495)	1,460	965	1,029	64
13-1000	Business Operations Specialists	(438)	4,247	3,809	4,480	671
51-4000	Metal Workers & Plastic Workers	(410)	7,727	7,317	8,138	821
43-5000	Material Recording, Scheduling, Dispatching, & Distributing Workers	(325)	7,226	6,901	7,202	301
35-3000	Food & Beverage Serving Workers	(266)	12,989	12,723	14,196	1,473
41-4000	Sales Representatives, Wholesale & Manufacturing	(206)	1,973	1,767	2,062	295
43-6000	Secretaries & Administrative Assistants	(189)	5,001	4,812	4,864	52
11-1000	Top Executives	(183)	3,888	3,705	4,152	447
11-3000	Operations Specialties Managers	(164)	2,079	1,915	2,211	296
25-2000	Preschool, Primary, Secondary, & Special Education School Teachers	(154)	7,869	7,715	7,917	202
15-1100	Computer Occupations	(154)	2,413	2,259	2,661	402
51-1000	Supervisors of Production Workers	(136)	2,050	1,914	2,112	198
33-3000	Law Enforcement Workers	(135)	2,149	2,014	2,005	(9)
17-2000	Engineers	(125)	1,805	1,680	1,969	289

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.28: Top Five Occupational Groups by Net Out-Commuters for Jobs in the South WPR



Source: Emsi Employees & Self-Employed 2019.4.

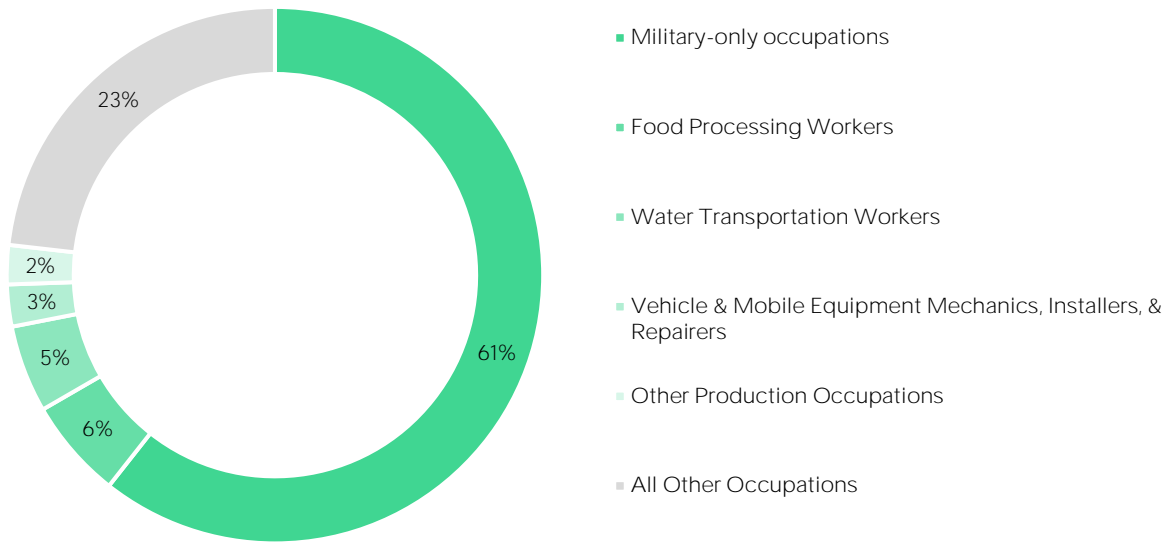
Table 6.19: Top 15 Occupational Groups by Net In-Commuters for Jobs in the West WPR



SOC CODE	SOC TITLE	2019 NET IN-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
55-9000	Military-only occupations	2,543	12,109	14,652	14,773	121
51-3000	Food Processing Workers	253	3,218	3,471	3,700	229
53-5000	Water Transportation Workers	221	2,067	2,288	2,915	627
49-3000	Vehicle & Mobile Equipment Mechanics, Installers, & Repairers	106	5,289	5,395	5,452	57
51-9000	Other Production Occupations	99	8,296	8,395	8,599	204
53-2000	Air Transportation Workers	95	1,171	1,266	1,254	(12)
33-3000	Law Enforcement Workers	91	3,343	3,434	3,233	(201)
53-3000	Motor Vehicle Operators	89	9,213	9,302	9,776	474
41-9000	Other Sales & Related Workers	87	999	1,086	1,136	50
43-3000	Financial Clerks	84	6,044	6,128	6,275	147
25-3000	Other Teachers & Instructors	44	1,693	1,737	1,817	80
47-3000	Helpers, Construction Trades	44	290	334	339	5
51-7000	Woodworkers	44	831	875	889	14
45-2000	Agricultural Workers	43	2,528	2,571	2,905	334
19-1000	Life Scientists	41	246	287	307	20

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.29: Top Five Occupational Groups by Net In-Commuters for Jobs in the West WPR



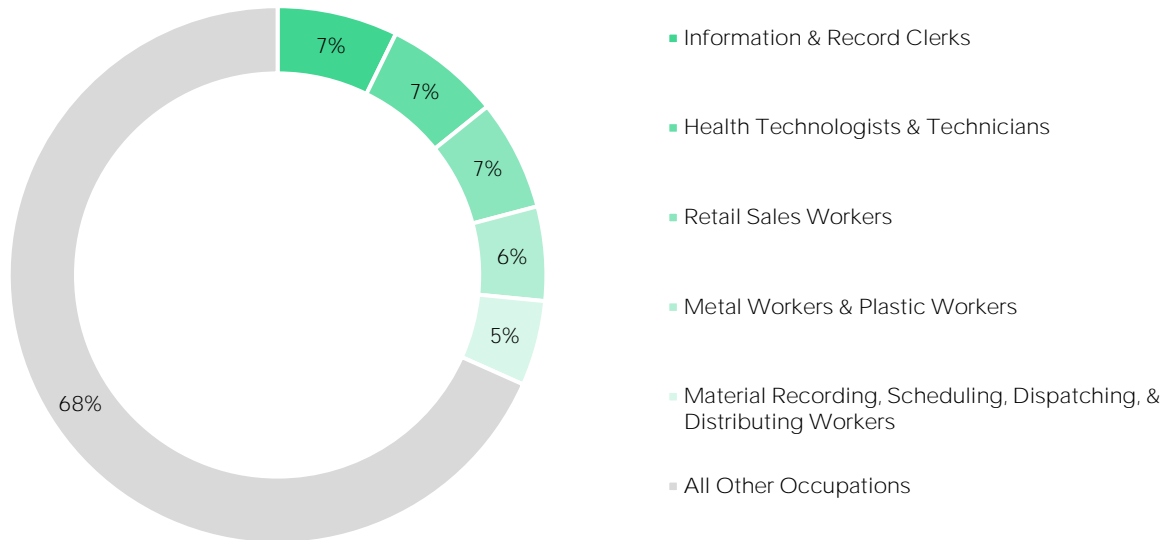
Source: Emsi Employees & Self-Employed 2019.4.

Table 6.20: Top 15 Occupational Groups by Net Out-Commuters for Jobs in Kentucky's West WPR

SOC CODE	SOC TITLE	2019 NET OUT-COMMUTERS	2019 RESIDENT WORKERS	2019 JOBS	2029 JOBS	JOB CHANGE
43-4000	Information & Record Clerks	(556)	8,897	8,341	8,877	536
29-2000	Health Technologists & Technicians	(534)	6,175	5,641	6,008	367
41-2000	Retail Sales Workers	(510)	16,887	16,377	16,705	328
51-4000	Metal Workers & Plastic Workers	(434)	6,527	6,093	6,367	274
43-5000	Material Recording, Scheduling, Dispatching, & Distributing Workers	(392)	7,454	7,062	7,245	183
29-1000	Health Diagnosing & Treating Practitioners	(343)	11,476	11,133	11,755	622
35-3000	Food & Beverage Serving Workers	(331)	14,854	14,523	15,114	591
51-2000	Assemblers & Fabricators	(310)	6,802	6,492	6,193	(299)
41-3000	Sales Representatives, Services	(309)	2,290	1,981	2,273	292
11-1000	Top Executives	(261)	4,541	4,280	4,606	326
35-2000	Cooks & Food Preparation Workers	(248)	6,085	5,837	5,840	3
43-6000	Secretaries & Administrative Assistants	(231)	5,496	5,265	5,079	(186)
31-1000	Nursing, Psychiatric, & Home Health Aides	(225)	4,331	4,106	4,128	22
15-1100	Computer Occupations	(207)	2,754	2,547	3,007	460
13-1000	Business Operations Specialists	(206)	5,731	5,525	5,997	472

Source: Emsi Employees & Self-Employed 2019.4.

Figure 6.30: Top Five Occupational Groups by Net Out-Commuters for Jobs in Kentucky's West WPR



Source: Emsi Employees & Self-Employed 2019.4.

UNEMPLOYMENT

Unemployment data identify areas in which skills may not match with the state's current employment opportunities or where colleges and universities could provide appropriate training programs best suited to transitioning unemployed workers into in-demand occupations. The tables and figures in this section present total monthly unemployment in Kentucky as the number of people unemployed by two-digit industry sectors and by two-digit occupational groups.¹⁸

Emsi industry- and occupation-specific unemployment estimates are derived from several federal sources. They are Characteristics of the Insured Unemployed (CIU) at the Department of Labor, Employment, & Training Administration; Local Area Unemployment Statistics (LAUS) from the Bureau of Labor Statistics (BLS); and the Current Population Survey (CPS) at the Census. Emsi final industry and occupation data, as well as state-specific data, are also used. The numbers and percentages reflect monthly estimates (July 2019) and follow the same methodology as federal statistical agencies. The unemployment rate is not provided because it is difficult to accurately determine the size of the labor force in an

¹⁸ Industry data reported elsewhere in the analysis are at the three-digit NAICS code level, referred to as industry subsectors. Occupation data reported elsewhere are also at a more detailed level, simply referred to as occupations at the six-digit SOC code level.

industry or occupation every month. In this section, rather than the unemployment rate, the percent of all unemployed workers in Kentucky and U.S. are provided.

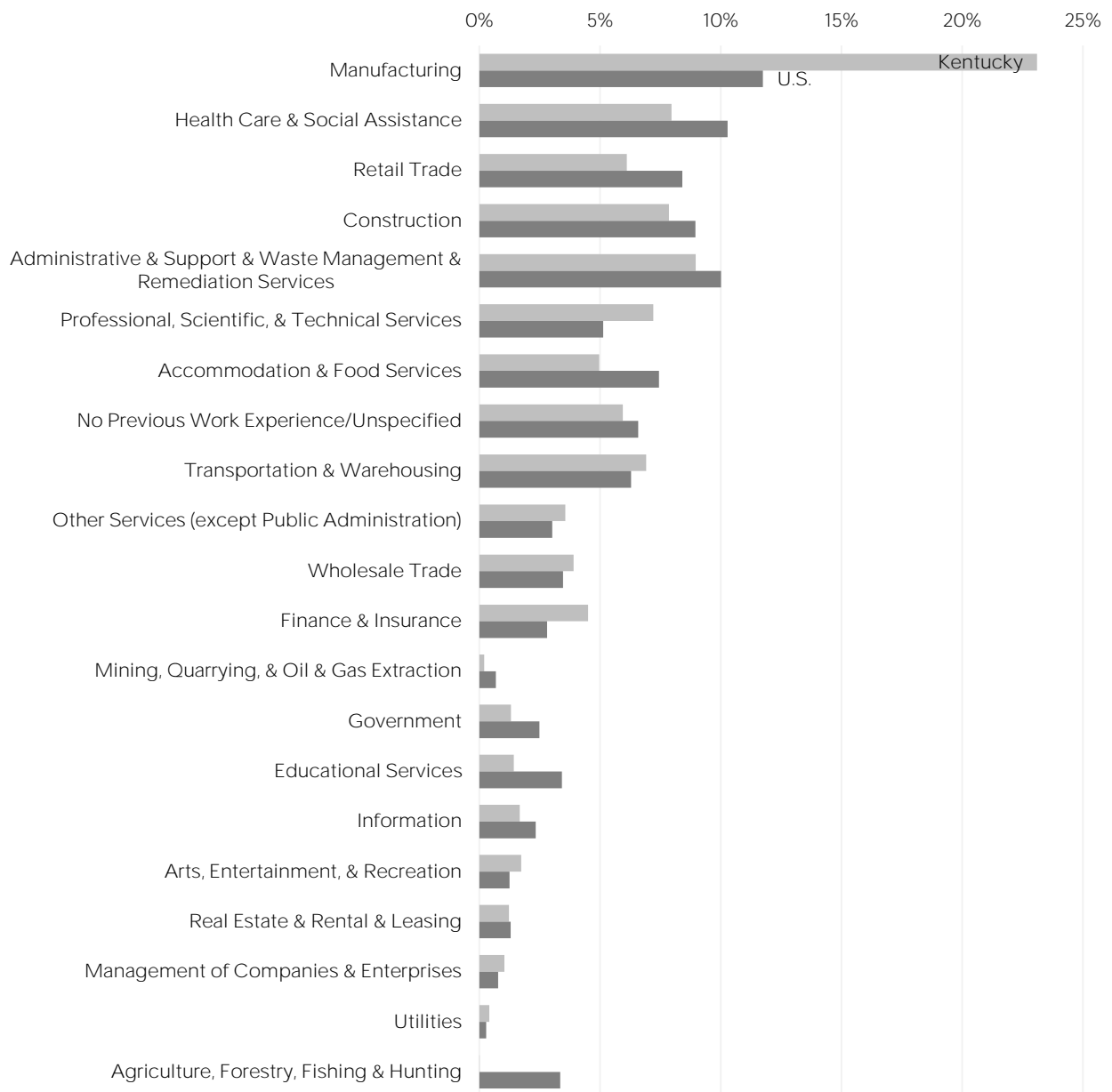
Table 6.21: Monthly Unemployed Workers by Industry Sector in Kentucky with National Comparison

NAICS CODE	NAICS TITLE	KY UNEMPLOYED	KY % UNEMPLOYED	U.S. % UNEMPLOYED
31	Manufacturing	28,997	23.1%	11.7%
62	Health Care & Social Assistance	10,131	8.0%	10.3%
44	Retail Trade	8,376	6.1%	8.4%
23	Construction	8,055	7.9%	9.0%
56	Administrative & Support & Waste Management & Remediation Services	7,702	9.0%	10.0%
54	Professional, Scientific, & Technical Services	5,821	7.2%	5.1%
72	Accommodation & Food Services	5,797	5.0%	7.4%
99	No Previous Work Experience/Unspecified	5,231	5.9%	6.6%
48	Transportation & Warehousing	4,404	6.9%	6.3%
81	Other Services (except Public Administration)	3,385	3.6%	3.0%
42	Wholesale Trade	3,358	3.9%	3.5%
52	Finance & Insurance	2,978	4.5%	2.8%
21	Mining, Quarrying, & Oil & Gas Extraction	2,618	0.2%	0.7%
90	Government	2,413	1.3%	2.5%
61	Educational Services	1,880	1.4%	3.4%
51	Information	1,494	1.7%	2.3%
71	Arts, Entertainment, & Recreation	1,422	1.7%	1.3%
53	Real Estate & Rental & Leasing	1,090	1.2%	1.3%
55	Management of Companies & Enterprises	746	1.0%	0.8%
22	Utilities	545	0.4%	0.3%
11	Agriculture, Forestry, Fishing & Hunting	61	<0.1%	3.4%

Source: Emsi Total Unemployment (July 2019).



Figure 6.31: Monthly Unemployed Workers by Industry Sector in Kentucky with National Comparison



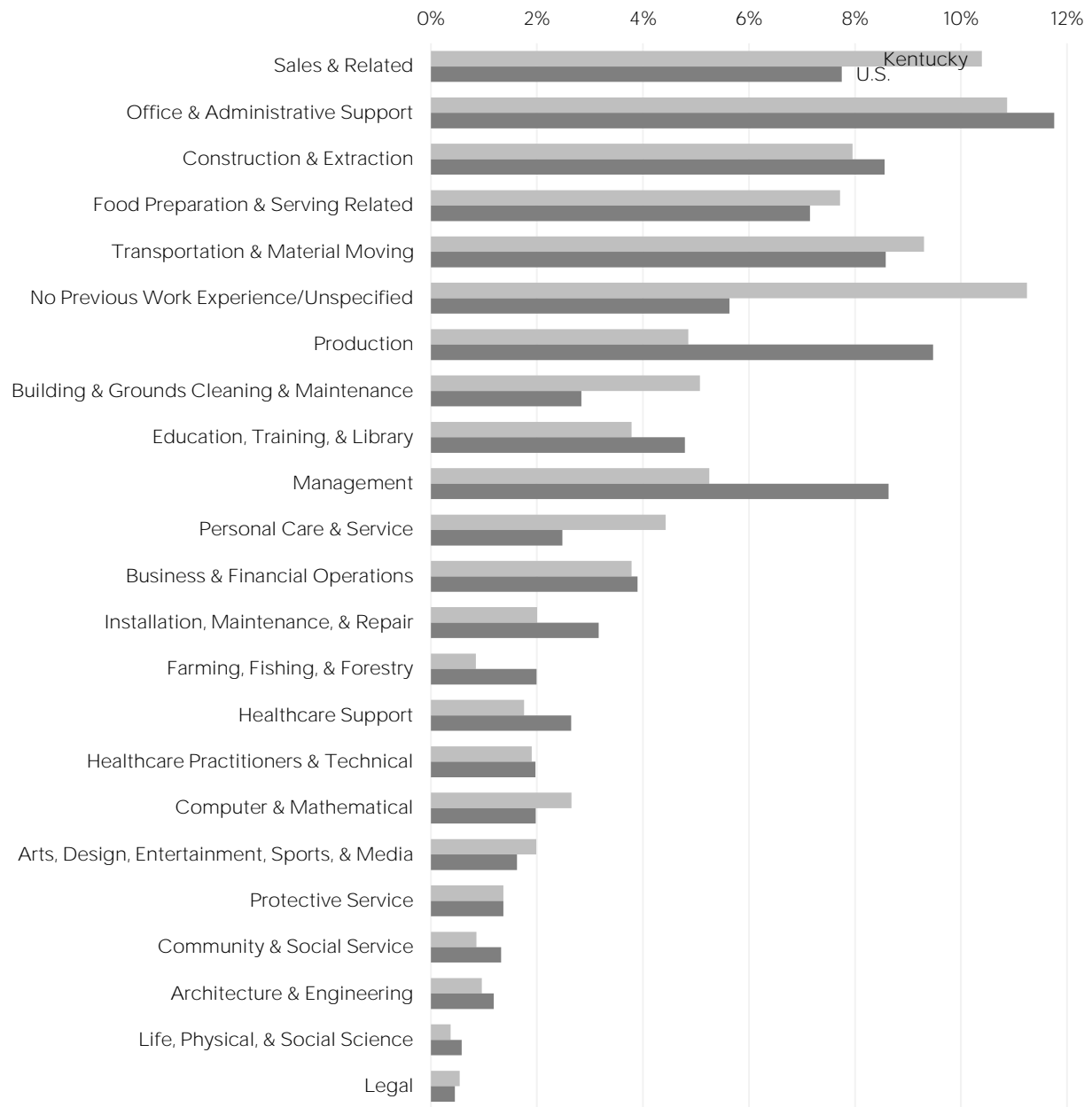
Source: Emsi Total Unemployment (July 2019).

Table 6.22: Monthly Unemployed Workers by Occupational Group in Kentucky with National Comparison

SOC CODE	SOC TITLE	KY UNEMPLOYED	KY % UNEMPLOYED	U.S. % UNEMPLOYED
41-0000	Sales & Related	11,360	10.4%	7.7%
43-0000	Office & Administrative Support	11,134	10.9%	11.8%
47-0000	Construction & Extraction	9,608	8.0%	8.6%
35-0000	Food Preparation & Serving Related	9,076	7.7%	7.1%
53-0000	Transportation & Material Moving	8,574	9.3%	8.6%
99-0000	No Previous Work Experience/Unspecified	8,412	11.2%	5.6%
51-0000	Production	6,244	4.9%	9.5%
37-0000	Building & Grounds Cleaning & Maintenance	5,901	5.1%	2.8%
25-0000	Education, Training, & Library	5,580	3.8%	4.8%
11-0000	Management	5,458	5.3%	8.6%
39-0000	Personal Care & Service	4,591	4.4%	2.5%
13-0000	Business & Financial Operations	3,075	3.8%	3.9%
49-0000	Installation, Maintenance, & Repair	2,349	2.0%	3.2%
45-0000	Farming, Fishing, & Forestry	2,336	0.9%	2.0%
31-0000	Healthcare Support	2,266	1.8%	2.6%
29-0000	Healthcare Practitioners & Technical	2,263	1.9%	2.0%
15-0000	Computer & Mathematical	1,690	2.7%	2.0%
27-0000	Arts, Design, Entertainment, Sports, & Media	1,683	2.0%	1.6%
33-0000	Protective Service	1,573	1.4%	1.4%
21-0000	Community & Social Service	1,129	0.9%	1.3%
17-0000	Architecture & Engineering	934	1.0%	1.2%
19-0000	Life, Physical, & Social Science	516	0.4%	0.6%
23-0000	Legal	515	0.5%	0.5%

Source: Emsi Total Unemployment (July 2019).

Figure 6.32: Unemployed Workers by Occupational Group in Kentucky with National Comparison



Source: Emsi Total Unemployment (July 2019).

POPULATION DEMOGRAPHICS

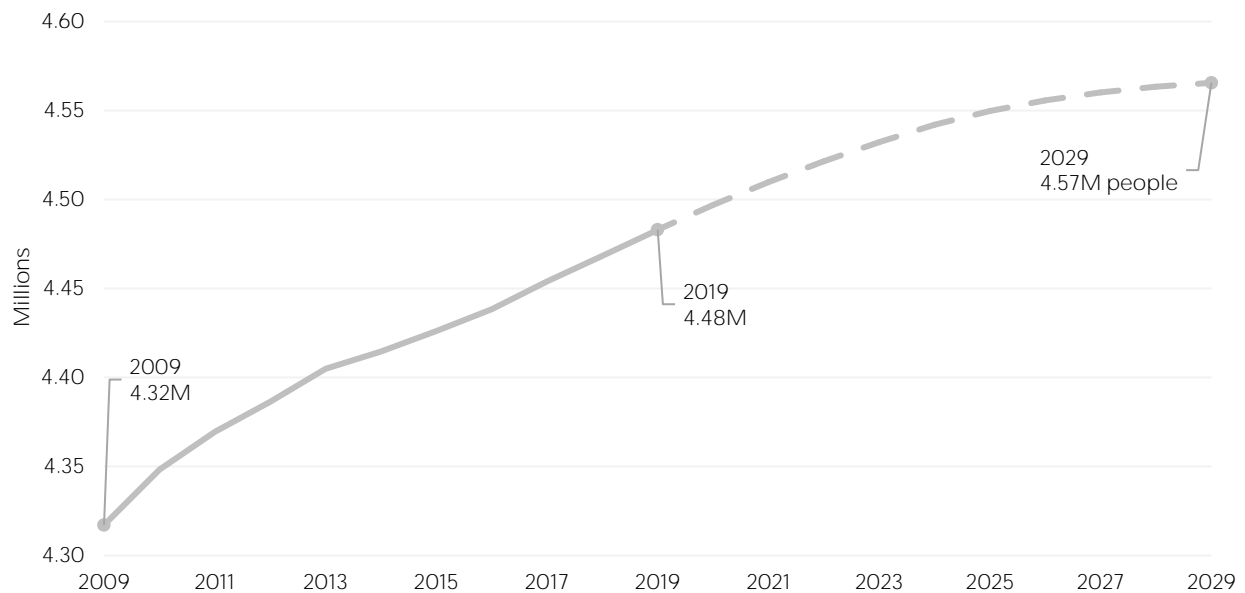
Population demographics can also be used to anticipate the future demands of a regional labor market. For example, it is important to know if employers are adding new jobs because they need more workers or if there is a significant need for workers to fill vacancies left by

retirees and those changing careers. Emsi's job openings reflect both job growth and replacement needs.

In this section, population data for the regions, state, and U.S. are shown, as well as race/ethnicity data for people 25 years and above living in Kentucky. The data are based on Emsi's demographic data and publicly available sources from state and federal agencies, including annual population estimates and population projections from the U.S. Census Bureau and birth and mortality rates from the U.S. Health Department. Demographic information relies on the annual results of the American Community Survey.

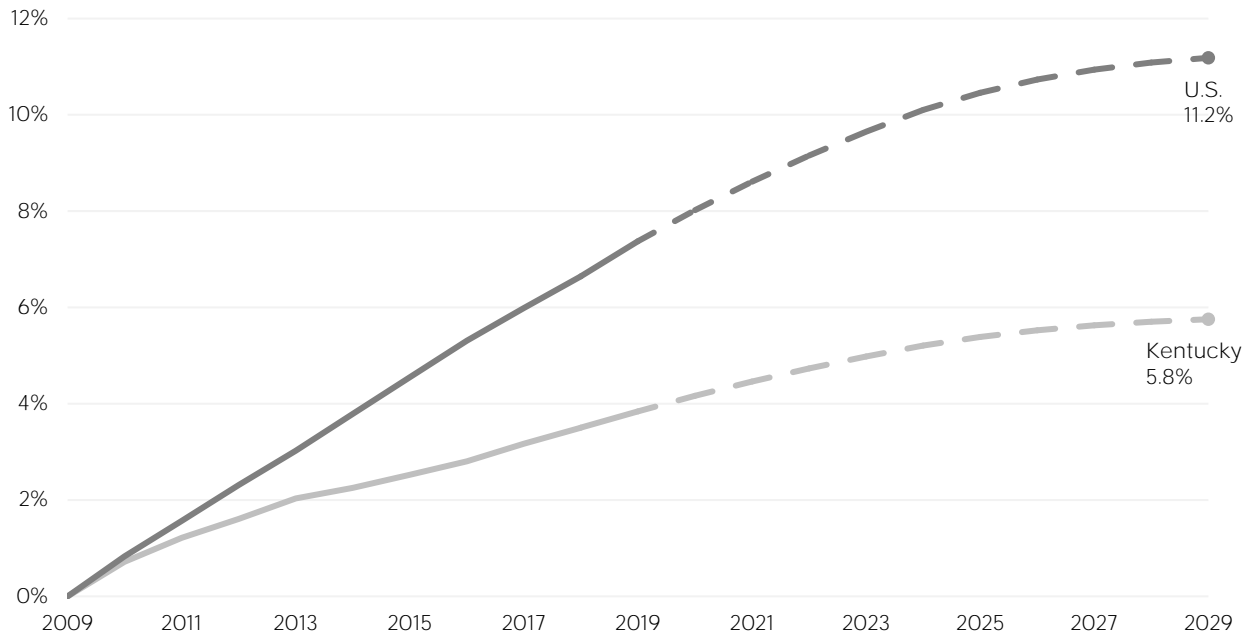
Historical and projected changes in the state population are presented in the following figures. In 2009, 4.3 million people lived in Kentucky, and 4.6 million people are projected to live in the state by 2029 (Figure 6.33). Using 2009 as the base year, this reflects a 5.8% growth rate (Figure 6.34). The U.S. population is projected to increase by 11.2% over the same 20-year period. Figure 6.35 shows the year-over-year changes in population, by percent, for the state and U.S., with projected growth rates for each of 0.3% and 0.6% from 2019 to 2020, respectively. Figures 6.36 through 6.38 display similar information, but for the Kentucky's WPRs and the Kentuckiana LWA.

Figure 6.33: Historical and Projected Population (millions) in Kentucky, 2009 to 2029



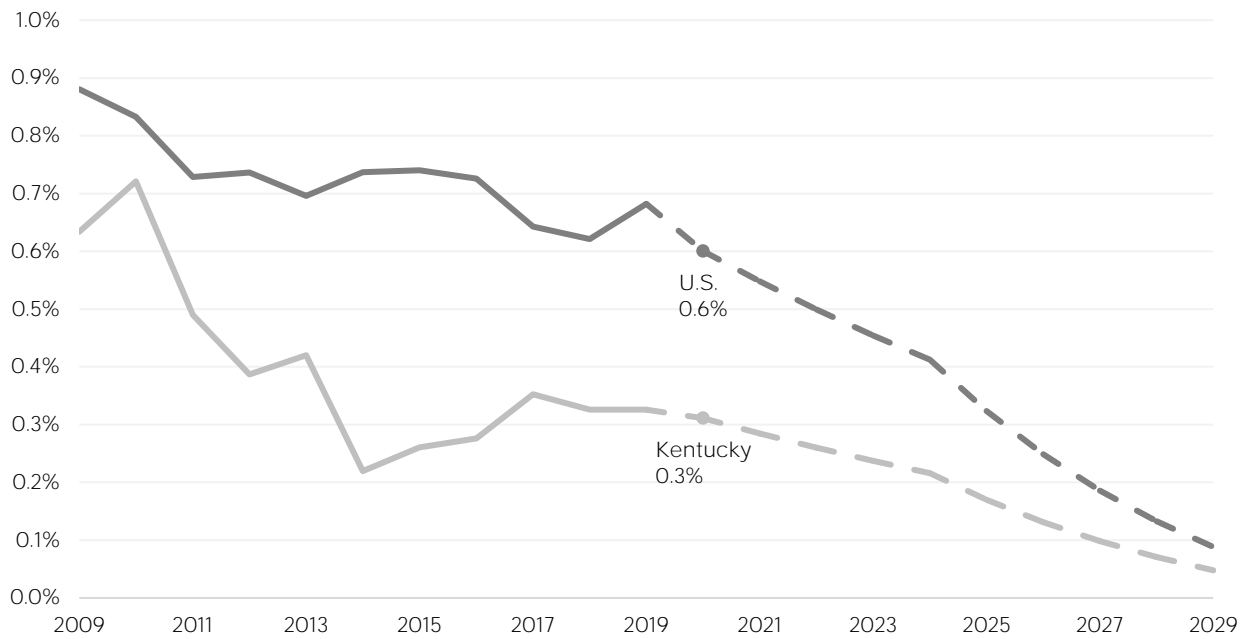
Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 6.34: Percent Population Change in Kentucky and the U.S., 2009 to 2029



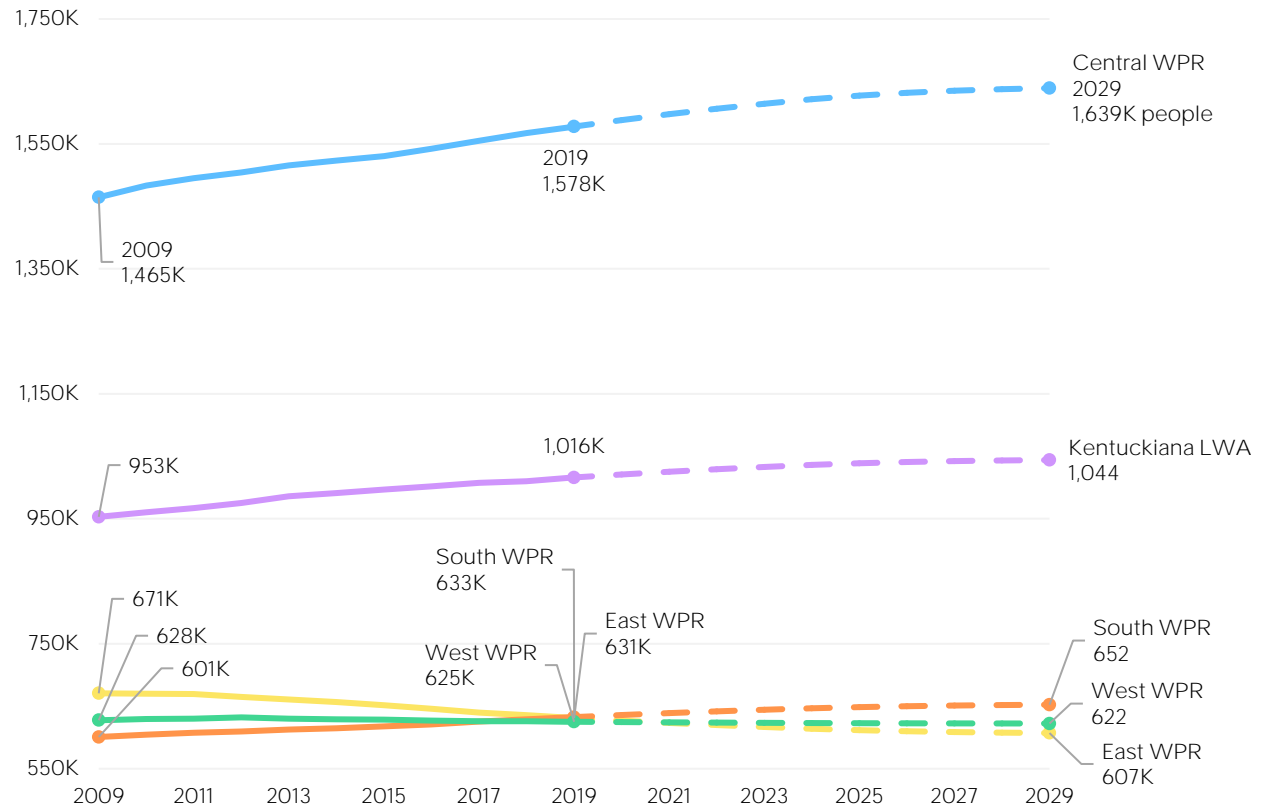
Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 6.35: Annual Percent Population Change in Kentucky and the U.S., 2009 to 2029



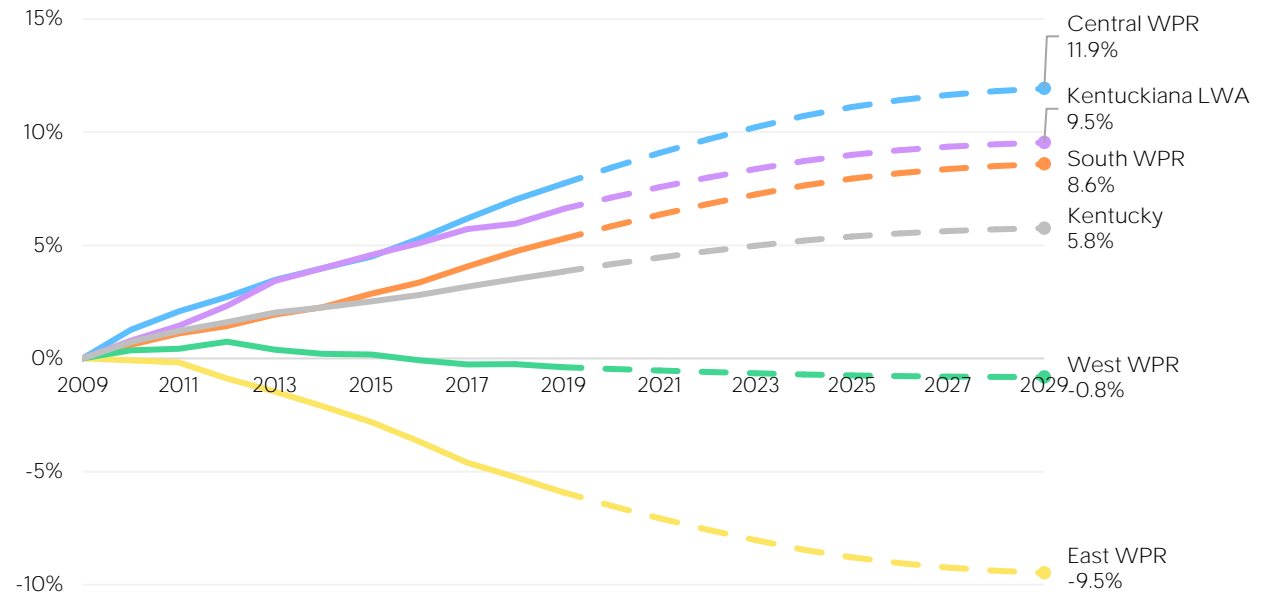
Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 6.36: Historical and Projected Population (millions) in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



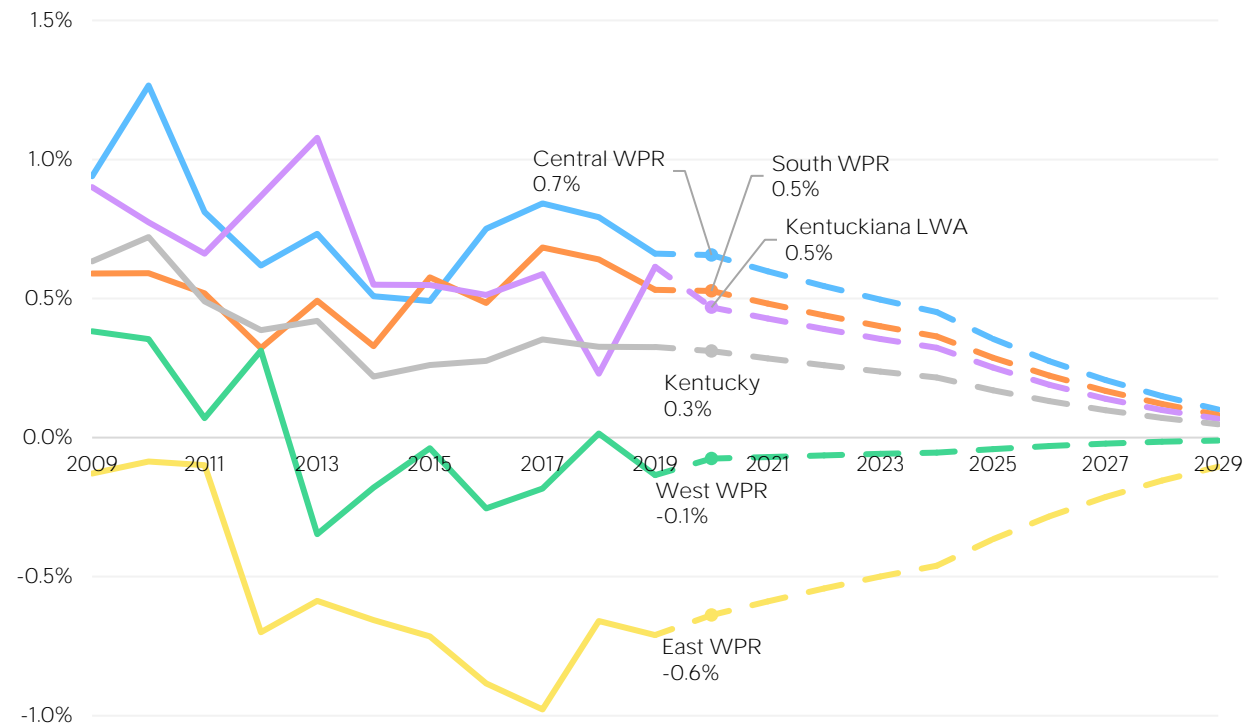
Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 6.37: Percent Population Change in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

Figure 6.38: Annual Percent Population Change in Kentucky's WPRs and the Kentuckiana LWA, 2009 to 2029



Source: Emsi demographics data, U.S. Census Bureau, U.S. Health Department.

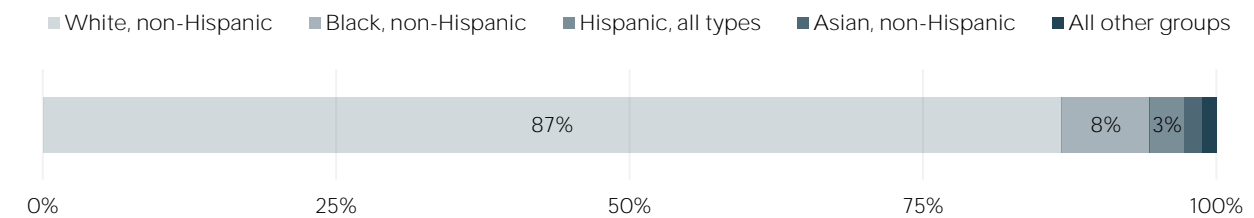
Table 6.23 and Figure 6.39 present additional data on the state’s population, emphasizing people 25 years and above, referred to as adults, by the Census’ seven major race and ethnic groups. As shown in the table, 3.1 million adults lived in Kentucky in 2019. About 87% of the region’s adults were White, non-Hispanic. Eight percent were Black, non-Hispanic; three percent were Hispanic, all types; and two percent of the region’s adults were Asian, non-Hispanic, the next largest groups.

Table 6.23: Adults in Kentucky by Major Race and Ethnic Group

GROUP	ADULTS	% ADULTS
White, non-Hispanic	2,653,667	86.8%
Black, non-Hispanic	230,592	7.5%
Hispanic, all types	88,456	2.9%
Asian, non-Hispanic	46,854	1.5%
Two or more races, non-Hispanic	28,691	0.9%
American Indian or Alaskan Native, non-Hispanic	7,053	0.2%
Native Hawaiian or Pacific Islander, non-Hispanic	1,718	0.1%
Total	3,057,032	100.0%

Source: Emsi demographics data, U.S. Census Bureau, American Community Survey.

Figure 6.39: Adults in Kentucky by Major Race and Ethnic Group



Source: Emsi demographics data, U.S. Census Bureau, American Community Survey.

EDUCATIONAL ATTAINMENT

Educational attainment data are useful for targeting specific population groups with less than or greater than average education levels. The population and educational attainment numbers in this section are based on Emsi’s demographic data and publicly available sources from state and federal agencies. Sources include annual population estimates and population projections from the U.S. Census Bureau and birth and mortality rates from the U.S. Health Department. In addition, demographic information relies on the annual results of the American Community Survey. Educational attainment data cover the population in

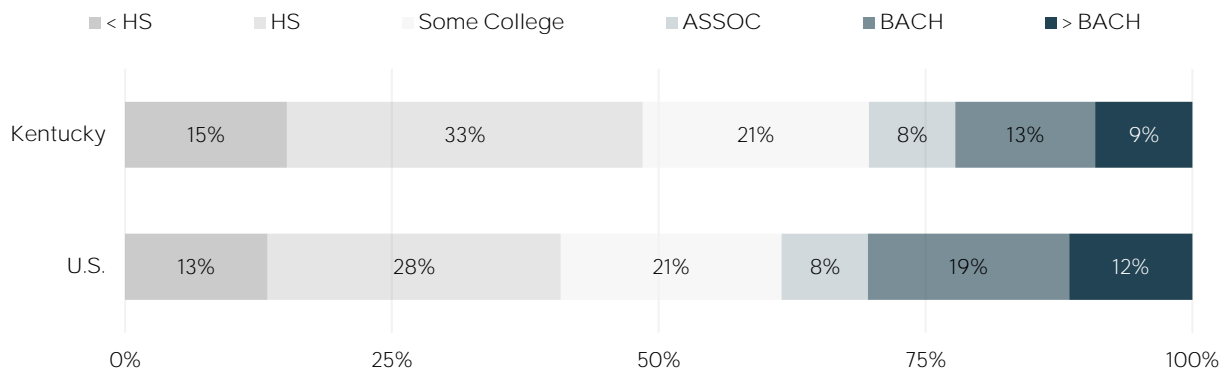
Kentucky 25 years and above, referred to as adults, and indicate the highest award level achieved.

Demographic information is presented by gender and the major race and ethnic groups, and educational attainment data are broken out according to the following award categories:

- Less than a high school diploma (<HS);
- High school diploma or equivalent (HS);
- Some college;¹⁹
- Associate degree (Assoc);
- Bachelor’s degree (Bach);
- Greater than a bachelor’s degree (>Bach).

Figure 6.40 displays the highest educational attainments of Kentucky’s adults, without reference to gender and the major race and ethnic groups. National data is also presented for context. In the state, 48% of adults have a high school diploma or less, which is more than the national average (41%). Out of all the award categories in the figure, the people who are most likely to seek education and training from postsecondary institutions are those in the “Less than High School Diploma,” “High School Diploma,” and “Some College” categories. Together, these categories total 69% of the state’s adults.

Figure 6.40: Highest Educational Attainments of Adults in Kentucky and the U.S.

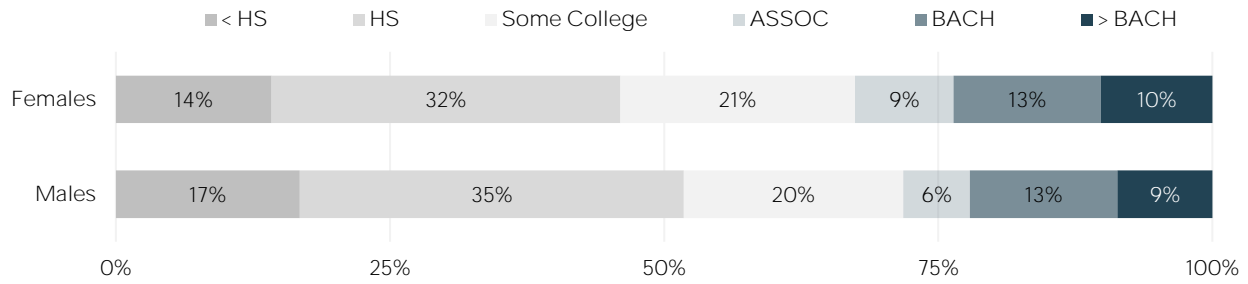


Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

19 The “Some College” category includes individuals who attended college but did not successfully obtain a degree and individuals who have received a postsecondary vocational award or professional certification but did not receive an associate or bachelor’s degree. Based on data limitations, it can be considered a proxy for those who have achieved a certificate. While some entities do estimate certificate attainment, such as the Lumina Foundation, we have not included it separately so as to be consistent amongst Emsi data sources.

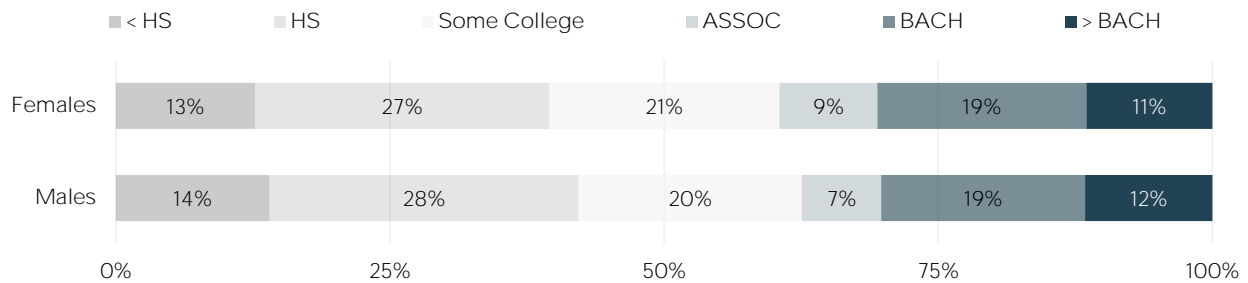
Figure 6.41: Highest Educational Attainments of Adults in Kentucky by Gender



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Figure 6.42: Highest Educational Attainments of Adults in the U.S. by Gender



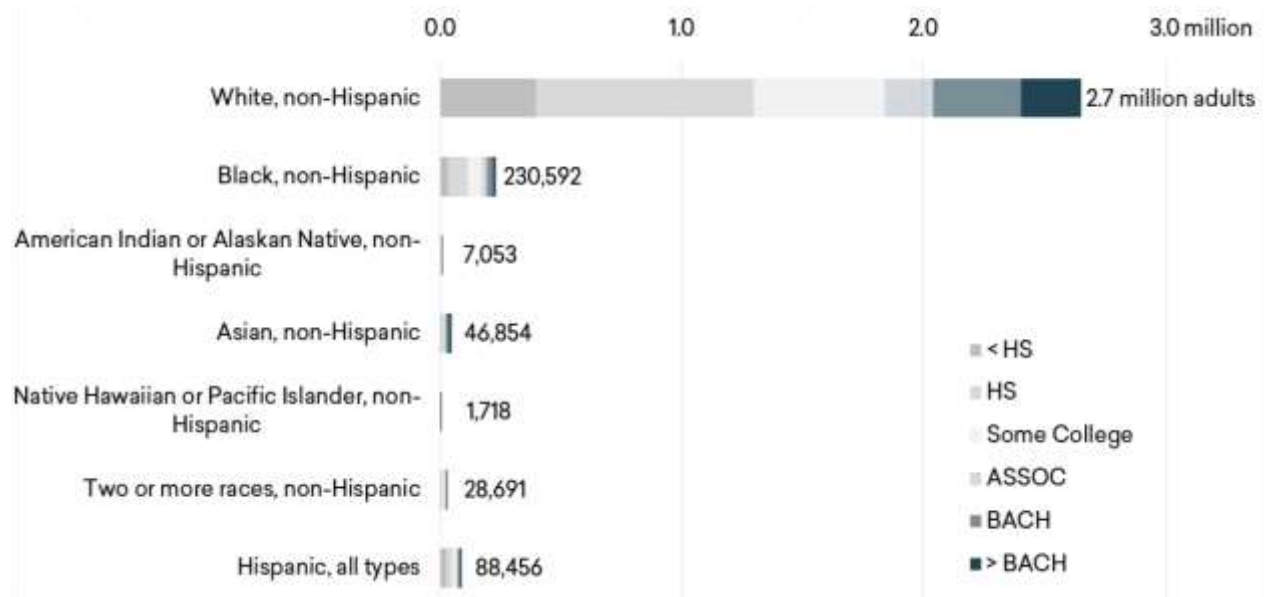
Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Between female and male adults in Kentucky, there is little variation in the distribution of their award categories. Twenty-one percent of the state’s female adults and 20% of the state’s male adults have some college education but no degree. Thirteen percent of both female and male adults in the state have a bachelor’s degree as their highest award level. This information appears in Figure 6.41. Figure 6.42 also shows educational attainment by gender, but for the U.S., where both males and females hold higher levels of education than Kentucky.

Figures 6.43 through 6.46 display the highest educational attainments of Kentucky’s adults and U.S. adults by their major race and ethnic groups, in absolute and relative values, respectively. As shown in Figure 6.45, Asian, non-Hispanic adults have the highest percentage of adults with a postsecondary education (68%) among all the groups. However, the group accounts for a relatively small portion of the state’s adults, as shown in Figure 6.43. Fifty-one percent of adults in the White, non-Hispanic group, the largest of the groups, have a postsecondary education. Across all groups, these data suggest that there are many opportunities to increase the educational attainments of the state’s adults, whether such actions involve outreach to local high schools or supporting community college students who plan to transfer into a bachelor’s degree level program.

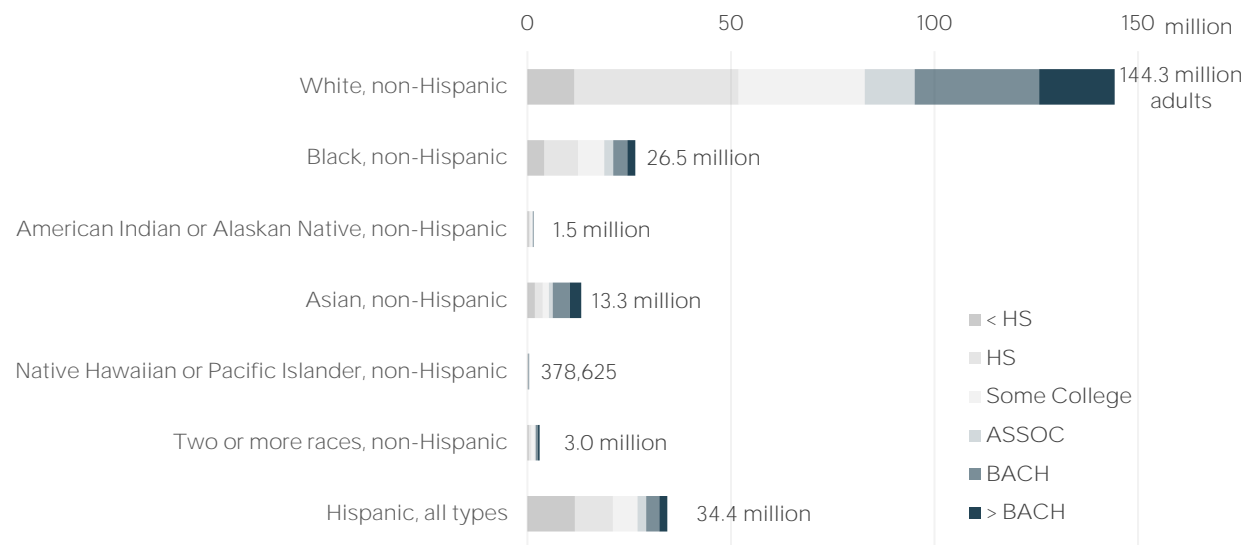
Figure 6.43: Highest Educational Attainments of Adults in Kentucky by Major Race and Ethnic Group



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

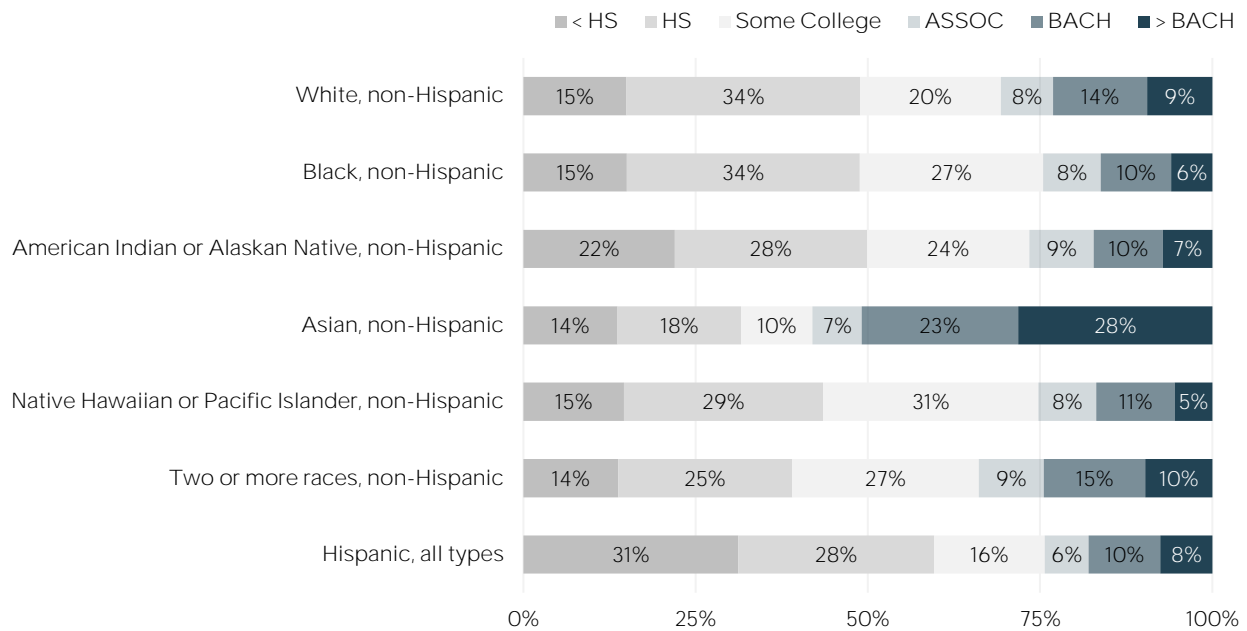
Figure 6.44: Highest Educational Attainments of Adults in the U.S. by Major Race and Ethnic Group



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

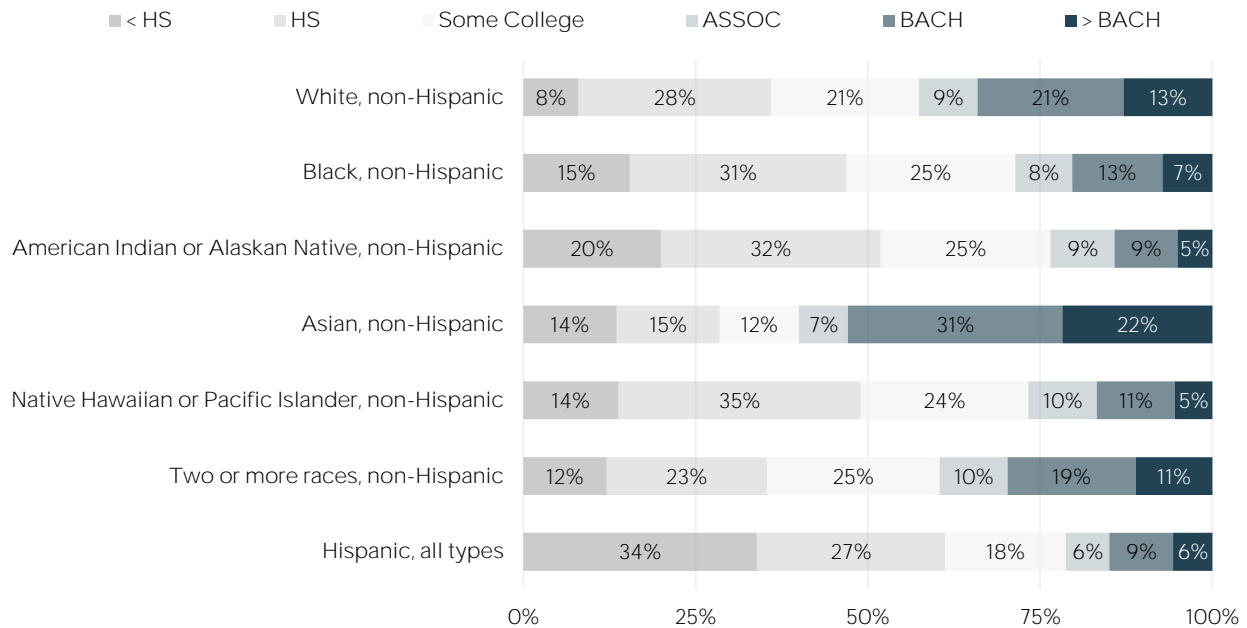
Figure 6.45: Highest Educational Attainments of Adults in Kentucky by Major Race and Ethnic Group



Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

Figure 6.46: Highest Educational Attainments of Adults in the U.S. by Major Race and Ethnic Group



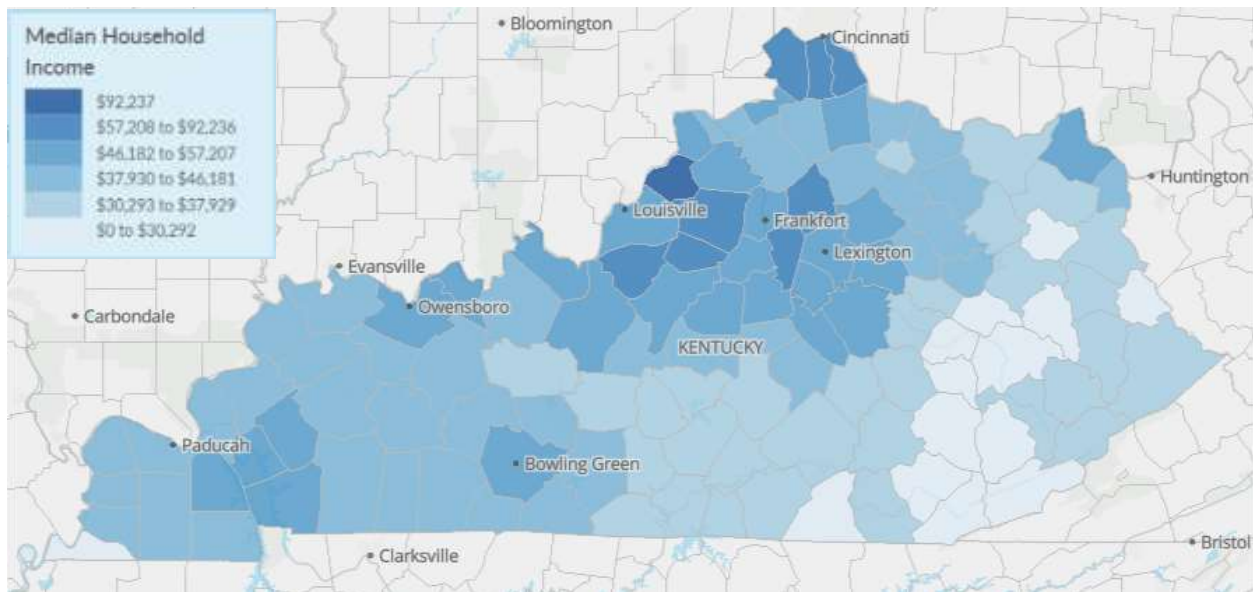
Numbers may not sum due to rounding.

Source: Emsi demographics data and U.S. Census Bureau, American Community Survey.

SOCIOECONOMIC INDICATORS

The data in this section show several of the region's socioeconomic indicators. Household income, reported as a median annual value, includes the income of all individuals in a household, 15 years and over, whether they are related to the householder or not. Per capita income is calculated as the mean income for every person in the county divided by the aggregate income of the total population. Finally, data on poverty are also presented in this section. The percentages represent the share of people below the federal poverty income threshold, which varies by family size and composition. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. Detailed rates on children, who are under 18 years, and seniors, who are over 65 years, are also shown. The data come directly from American Community Survey five-year estimates.

Figure 6.47: Median Household Incomes of Counties in Kentucky



Source: Emsi demographics data, U.S. Census Bureau.

The counties comprising Kentucky are shown in Figure 6.47, and Tables 6.24 and 6.25 highlights their socioeconomic differences, with the former table displaying the counties with highest median household incomes and the latter table displaying the counties with the lowest. Median household income, per capita income, and poverty levels are shown in the table, in descending order of the counties' median household incomes. Oldham County has the highest median household income (\$92,237), and McCreary County the lowest (\$19,264). For perspective, the median household income of Kentucky is \$46,535. McCreary County also has a considerably higher poverty rate in comparison to the state.

Table 6.24: Income, Unemployment, and Poverty Characteristics for Kentucky Counties with the 15 Highest Median Household Incomes

FIPS CODE	COUNTY	MEDIAN HOUSEHOLD INCOME	PERCENTILE RANK IN KY	PER CAPITA INCOME	% POVERTY*		
					FAMILIES	CHILDREN	SENIORS
21185	Oldham	\$92,237	100%	\$38,063	4.0%	7.2%	3.7%
21015	Boone	\$72,731	99%	\$33,553	6.0%	10.6%	5.2%
21215	Spencer	\$68,916	98%	\$30,779	7.3%	8.3%	9.6%
21209	Scott	\$65,598	97%	\$30,702	8.6%	16.1%	7.1%
21211	Shelby	\$63,171	97%	\$30,240	8.4%	17.1%	7.2%
21239	Woodford	\$60,604	96%	\$31,208	10.3%	28.1%	5.2%
21029	Bullitt	\$59,917	95%	\$26,643	7.5%	12.7%	9.3%
21117	Kenton	\$58,674	94%	\$30,195	9.9%	19.5%	8.0%
21037	Campbell	\$57,208	93%	\$31,065	9.5%	19.2%	12.2%
21113	Jessamine	\$55,450	92%	\$28,195	14.9%	26.5%	6.6%
21179	Nelson	\$55,182	92%	\$28,156	8.0%	14.2%	9.7%
21163	Meade	\$53,732	91%	\$25,119	9.7%	16.7%	10.1%
21073	Franklin	\$53,539	90%	\$28,001	9.6%	19.4%	5.0%
21067	Fayette	\$53,013	89%	\$31,653	12.1%	22.9%	8.0%
21111	Jefferson	\$52,237	88%	\$31,039	10.5%	22.0%	8.2%
Kentucky		\$46,535	--	\$25,888	13.8%	24.7%	11.1%

* Children are under 18 years and seniors are over 65 years. Poverty rate reflects the percentage of people whose income was below the poverty level within the 12 months preceding the data collection period.

Source: American Community Survey five-year estimates from the U.S. Census Bureau data API.



Table 6.25: Income, Unemployment, and Poverty Characteristics for Kentucky Counties with the 15 Lowest Median Household Incomes

FIPS CODE	COUNTY	MEDIAN HOUSEHOLD INCOME	PERCENTILE RANK IN KY	PER CAPITA INCOME	% POVERTY*		
					FAMILIES	CHILDREN	SENIORS
21147	McCreary	\$19,264	0%	\$11,492	36.7%	49.5%	19.8%
21237	Wolfe	\$21,999	1%	\$13,533	33.0%	45.3%	19.3%
21189	Owsley	\$22,736	2%	\$16,582	31.4%	34.9%	31.7%
21129	Lee	\$23,297	3%	\$16,489	30.4%	43.8%	22.1%
21013	Bell	\$23,558	3%	\$14,754	31.9%	49.3%	20.9%
21095	Harlan	\$24,451	4%	\$15,457	32.3%	44.5%	21.5%
21051	Clay	\$24,596	5%	\$15,388	34.5%	52.2%	29.4%
21025	Breathitt	\$25,861	6%	\$16,875	28.5%	48.3%	16.3%
21121	Knox	\$26,061	7%	\$15,869	29.5%	45.1%	22.1%
21131	Leslie	\$27,861	8%	\$15,112	26.7%	37.2%	28.5%
21075	Fulton	\$28,274	8%	\$18,111	20.8%	37.0%	14.1%
21063	Elliott	\$29,043	9%	\$13,436	28.6%	45.5%	29.6%
21159	Martin	\$29,239	10%	\$14,914	27.0%	33.7%	14.8%
21153	Magoffin	\$29,578	11%	\$17,279	25.3%	37.4%	22.9%
21133	Letcher	\$30,293	12%	\$18,085	26.3%	42.6%	13.8%
Kentucky		\$46,535	--	\$25,888	13.8%	24.7%	11.1%

* Children are under 18 years and seniors are over 65 years. Poverty rate reflects the percentage of people whose income was below the poverty level within the 12 months preceding the data collection period.

Source: American Community Survey five-year estimates from the U.S. Census Bureau data API.

APPENDIX 1: **Glossary of Terms**

Gap represents a deficit, or when there are more job openings in a particular occupation than there are completions from higher education institutions in the county, region, state, etc. If left unaddressed, a gap may lead to missed opportunities for economic growth and put stress on local businesses to find the necessary talent elsewhere. Significant gaps translate into higher human resources costs and decreased efficiencies in the economic system. They also provide an opportunity for educational institutions to develop new programs and/or strengthen their current programs.

Industry Jobs Emsi industry data have various sources depending on the class of worker. Emsi primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns. Non-QCEW employee data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, Bureau of Economic Analysis (BEA) State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey (ACS), and Railroad Retirement Board statistics. Self-Employed class of worker data are primarily based on the ACS, Nonemployer Statistics, and BEA State and Local Personal Income Reports. The Extended Proprietor class of worker is not included in the analysis. Projections for QCEW and non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

IPEDS The Integrated Postsecondary Education Data System (IPEDS) aggregates interrelated surveys conducted annually by the U.S. Department of Education's National Center for Education Statistics (NCES). IPEDS gathers information from every educational institution in the U.S. that participates in the federal student financial aid programs authorized by Title IV of the Higher Education Act of 1965. These educational institutions include research universities, state colleges and universities, private religious and liberal arts colleges, for-profit institutions, community and technical colleges, non-degree-granting institutions such as beauty colleges, and others.

Job Openings Job openings are a combination of job growth, which occurs when an employer experiences greater demand for its products and hires new employees to increase production, and replacement needs, which occurs when employees leave the workforce or change occupations. Throughout the program demand gap analysis, they represent the average number of projected openings between 2019 and 2029. Job openings are calculated for each occupation mapped to a program and are de-duplicated across programs mapped to the same occupation using Emsi's weighting methodology. For each award level, the number of openings is reported for that educational level and one education level below it.

Location Quotient (LQ) A comparative statistic used to calculate the relative employment concentration of an industry or occupation against the employment of the industry in a larger geographic region (i.e. a region's LQ relative to the U.S.). Industries with a higher location quotient (usually greater than 1.2) indicate that the smaller geographic region has a comparative advantage or specialization in the production of that good or service or has a high degree of specialization within its workforce.

NAICS The North American Industry Classification System (NAICS) organizes North American business establishments to better collect, analyze, and publish statistical data related to the business economy. NAICS is intended to classify an establishment's activity regardless of its ownership (public or private sector) or legal form of organization (proprietorship, partnership, corporation, for-profit, nonprofit, etc.). However, due to the realities of available data, Emsi treats establishments with public and private sector ownership differently. In Emsi data, all establishments in the main NAICS hierarchy are private sector only. Jobs in Educational Services and Ambulatory Health Care Service, for example, are not associated with local, state, or federal government jobs. Jobs for public school teachers and city firefighters are in Local Government, whereas college professors and forest firefighters are commonly employed by State Government. Mail carriers and transportation security screeners are examples of jobs in Federal Government. Thus, Emsi does not use the standard NAICS classification, which is similar to Current Employment Statistics (CES), Occupational Employment Statistics (OES), and BEA data sources.

Program Completions For the program demand gap analysis, program completions are the average number of students, over a three-year period, who receive an award or degree for a program of study, as reported to the Council data portal. An average over three years is used to control for upward or downward spikes in completions in any one year.

SOC The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of about 775 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form about 450 broad occupations, about 95 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together. There are a few minor differences between Emsi and standard SOC codes. Primarily, Emsi does not use detailed SOC codes for military occupations due to lack of good data and aggregates the occupations into one code, 55-9999. And, Emsi uses a single aggregate code (25-1099) for all postsecondary teachers due to lack of solid data and to remain consistent with the NIOEM, which uses a similar code. Emsi currently uses the OES's SOC 2017.

Surplus Represents an oversupply, or when there are more completers from regional educational institutions than there are job openings in a particular occupation. If left unaddressed, significant surpluses may lead to higher unemployment rates or higher attrition rates—the institution could be educating a workforce that is leaving the region after program completion because of a lack of job opportunities. In the tables, values in parentheses represent a surplus.

APPENDIX 2: **Emsi Data**

LABOR MARKET INFORMATION

Traditional labor market information (LMI) helps us to identify those occupations with good jobs and projected growth in the coming decade. This provides a robust, market-driven foundation upon which to build out programmatic recommendations. Emsi's data then allows us to map these occupations back to programs that train for them, and to extrapolate other occupational outcomes for potential graduates. Emsi data are used to calculate the projected number of annual job openings from 2019 to 2029. These projections account for openings due to job growth and openings due to replacement needs, such as when an employee retires or leaves the position. To capture a complete picture of industry employment, Emsi gathers and integrates economic, labor market, demographic, and educational data from over 40 government and private-sector sources. In doing so, Emsi creates a comprehensive and current database that includes both published data and detailed estimates, with full coverage of the U.S.

More specifically, Emsi combines covered employment data from the Quarterly Census of Employment and Wages (QCEW-produced by the Department of Labor) with total employment data in Regional Economic Information System (REIS-published by the BEA). The data are augmented with County Business Patterns (CBP) and Non-Employer Statistics (NES) published by the Census Bureau. Job projections are based on the latest-available Emsi industry data, 15-year past local trends in each industry, growth rates in statewide and, where available, sub-state area industry projections published by individual state agencies and, in part, growth rates in national projections from the Bureau of Labor Statistics (BLS).

Through this combination of data sources, Emsi is able to fill gaps in individual sources (such as suppressions), yielding a composite database that leverages the strengths of all its sources. Finally, Emsi's database is updated quarterly, providing the most up-to-date integrated information possible.

PROFILE ANALYTICS

LMI shows us, for example, how many registered nurses are employed in Kentucky. However, using LMI, it is a challenge to understand more about the people who successfully find jobs as, in this example, registered nurses. Where do they receive their degrees? Are registered

nurses employed by certain types of companies? What kinds of skills do registered nurses have? For the Council and the educational institutions the Council supports, it is important to understand healthcare occupations beyond their job counts.

To assist in answering these questions, Emsi turns to Profile Analytics. The dataset contains more than 100 million profiles of distinct individuals in the U.S. workforce. Each profile contains information unique to each individual, such as job title, company, skills, and education information. Emsi's Profile Analytics dataset is gathered from publicly available information on the web, third-party resume databases and job boards, the recruiting industry, opt-in data from employers and applicant tracking systems, sales and marketing databases, and various consumer/identity databases. Machine learning algorithms are used to deduplicate profiles and enrich the raw data contained in each profile – job titles and company names are standardized, skills are extracted, and education information is standardized. The final result is a set of profiles that includes individual-level data, filterable in a variety of ways, in much more detail.

APPENDIX 3: Occupational Data

Table A3.26: Jobs, Annual Job Openings, and Median Hourly Wages of Healthcare Occupations in Kentucky, 2019 to 2029

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-1141	Registered Nurses	46,239	51,174	4,935	11%	3,148	\$29.69
31-1014	Nursing Assistants	24,395	25,519	1,124	5%	2,973	\$12.52
29-2061	Licensed Practical & Licensed Vocational Nurses	10,123	10,800	677	7%	879	\$20.23
31-9092	Medical Assistants	9,387	11,176	1,789	19%	1,320	\$15.04
29-2052	Pharmacy Technicians	8,346	9,284	938	11%	821	\$13.61
11-9111	Medical & Health Services Managers	5,265	6,002	737	14%	527	\$39.95
29-1051	Pharmacists	4,923	5,172	249	5%	264	\$60.74
31-9091	Dental Assistants	4,804	5,224	420	9%	616	\$17.02
29-2018	Clinical Laboratory Technologists & Technicians	4,293	4,843	550	13%	386	\$22.88
29-2041	Emergency Medical Technicians & Paramedics	4,260	4,518	258	6%	333	\$14.55
21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	4,257	5,217	960	23%	590	\$18.59
29-2034	Radiologic Technologists	3,798	4,130	332	9%	258	\$24.46
29-2071	Medical Records & Health Information Technicians	3,600	3,937	337	9%	280	\$17.42
29-1069	Physicians & Surgeons, All Other	3,466	3,881	415	12%	155	\$106.93
31-1011	Home Health Aides	3,310	4,818	1,508	46%	608	\$11.31
29-1171	Nurse Practitioners	3,188	3,926	738	23%	264	\$46.22
29-1123	Physical Therapists	2,591	3,048	457	18%	168	\$40.72
29-1126	Respiratory Therapists	2,477	2,933	456	18%	192	\$23.79
31-9097	Phlebotomists	2,245	2,670	425	19%	305	\$14.50
29-2021	Dental Hygienists	2,197	2,456	259	12%	186	\$28.54
29-1127	Speech-Language Pathologists	2,094	2,514	420	20%	165	\$32.29
31-9096	Veterinary Assistants & Laboratory Animal Caretakers	2,028	2,373	345	17%	393	\$11.93
29-2055	Surgical Technologists	1,768	1,922	154	9%	170	\$21.01
21-1022	Healthcare Social Workers	1,741	2,043	302	17%	217	\$24.72
29-2099	Health Technologists & Technicians, All Other	1,708	1,977	269	16%	153	\$21.90
31-9011	Massage Therapists	1,649	2,054	405	25%	257	\$24.40

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
31-2021	Physical Therapist Assistants	1,592	1,841	249	16%	242	\$26.55
29-9011	Occupational Health & Safety Specialists	1,508	1,562	54	4%	97	\$30.62
29-1021	Dentists, General	1,429	1,560	131	9%	62	\$66.00
29-1062	Family & General Practitioners	1,397	1,541	144	10%	61	\$96.00
29-1131	Veterinarians	1,289	1,493	204	16%	77	\$37.86
29-1122	Occupational Therapists	1,237	1,474	237	19%	101	\$37.81
19-3031	Clinical, Counseling, & School Psychologists	1,204	1,405	201	17%	113	\$28.77
29-1151	Nurse Anesthetists	1,151	1,314	163	14%	79	\$76.42
29-1071	Physician Assistants	1,145	1,465	320	28%	107	\$45.26
29-2056	Veterinary Technologists & Technicians	1,133	1,385	252	22%	129	\$15.08
29-2031	Cardiovascular Technologists & Technicians	1,083	1,177	94	9%	73	\$22.57
31-2022	Physical Therapist Aides	979	1,132	153	16%	149	\$11.90
21-1023	Mental Health & Substance Abuse Social Workers	931	1,229	298	32%	137	\$16.58
31-9094	Medical Transcriptionists	846	882	36	4%	130	\$16.93
21-1015	Rehabilitation Counselors	815	997	182	22%	113	\$17.31
29-1031	Dietitians & Nutritionists	797	903	106	13%	65	\$27.85
21-1029	Social Workers, All Other	771	835	64	8%	88	\$30.30
29-2032	Diagnostic Medical Sonographers	756	925	169	22%	63	\$30.90
19-1042	Medical Scientists, Except Epidemiologists	706	851	145	21%	85	\$35.02
29-1011	Chiropractors	694	767	73	11%	31	\$31.25
29-1061	Anesthesiologists	596	605	9	2%	22	\$133.28
21-1091	Health Educators	582	641	59	10%	77	\$21.99
29-9091	Athletic Trainers	547	611	64	12%	39	\$22.20
29-1041	Optometrists	541	600	59	11%	26	\$48.32
29-1129	Therapists, All Other	535	635	100	19%	42	\$40.57
29-1063	Internists, General	520	538	18	3%	19	\$87.69
29-9099	Healthcare Practitioners & Technical Workers, All Other	488	529	41	8%	34	\$23.14
31-2011	Occupational Therapy Assistants	474	606	132	28%	72	\$26.14
19-3039	Psychologists, All Other	469	506	37	8%	40	\$41.70
29-1065	Pediatricians, General	438	448	10	2%	16	\$76.77

SOC CODE	SOC TITLE	2019 JOBS	2029 JOBS	JOB CHANGE	% JOB CHANGE	ANNUAL JOB OPENINGS	MEDIAN HOURLY WAGE
29-2035	Magnetic Resonance Imaging Technologists	367	422	55	15%	28	\$33.41
29-1199	Health Diagnosing & Treating Practitioners, All Other	354	414	60	17%	25	\$26.99
21-1019	Counselors, All Other	338	418	80	24%	47	\$26.79
29-2051	Dietetic Technicians	332	363	31	9%	33	\$14.40
29-2057	Ophthalmic Medical Technicians	324	416	92	28%	39	\$15.58
29-2033	Nuclear Medicine Technologists	323	344	21	7%	22	\$33.25
21-1013	Marriage & Family Therapists	318	449	131	41%	53	\$18.92
29-1124	Radiation Therapists	287	315	28	10%	18	\$39.87
29-1064	Obstetricians & Gynecologists	265	267	2	1%	9	\$126.02
29-1066	Psychiatrists	240	304	64	27%	15	\$100.80
29-1067	Surgeons	214	225	11	5%	9	\$126.96
29-1181	Audiologists	186	204	18	10%	10	\$30.72
29-1125	Recreational Therapists	183	203	20	11%	12	\$20.94
29-1128	Exercise Physiologists	141	149	8	6%	9	\$21.01
29-2054	Respiratory Therapy Technicians	128	70	-58	-45%	8	\$19.46
29-1023	Orthodontists	121	120	-1	-1%	5	\$48.51
29-1161	Nurse Midwives	114	131	17	15%	8	\$47.56
29-1081	Podiatrists	111	134	23	21%	9	\$46.24
29-1022	Oral & Maxillofacial Surgeons	84	81	-3	-4%	3	\$55.66
29-1029	Dentists, All Other Specialists	82	75	-7	-9%	3	\$71.06
Total		195,317	219,170	23,853	12.2%	18,384	--

Numbers may not sum due to rounding.
Source: Employees & Self-Employed 2020.1.

APPENDIX 4: Program to Occupation Map

Table A4.1 displays the crosswalk between healthcare programs (by CIP codes) and healthcare occupations (by SOC codes) that Emsi used to complete the program demand gap analysis. Also listed are the adjustment factors which are applied to the annual job openings for each occupation in each program, described in Appendix 5, for the statewide analysis.

Table A4.1: Healthcare Program to Occupation Map with Employment Adjustment Factors

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Health Services/Allied Health/Health Sciences, General (CIP 51.0000)	21-1093	Social & Human Service Assistants	27	9	39	10	1
	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-1011	Home Health Aides	45	10	7	1	0
	31-1014	Nursing Assistants	45	10	7	1	0
	31-9092	Medical Assistants	45	22	9	1	0
	31-9097	Phlebotomists	51	17	10	1	0
Health & Wellness, General (CIP 51.0001)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	21-1022	Healthcare Social Workers	9	4	51	30	1
	21-1091	Health Educators	23	9	40	17	1
	21-1094	Community Health Workers	23	9	40	17	1
Communication Sciences & Disorders, General (CIP 51.0201)	29-1127	Speech-Language Pathologists	1	1	15	81	2
	29-1181	Audiologists	4	4	14	4	73
Audiology/Audiologist (CIP 51.0202)	29-1181	Audiologists	4	4	14	4	73
Audiology/Audiologist & Speech-Language Pathology/Pathologist (CIP 51.0204)	29-1127	Speech-Language Pathologists	1	1	15	81	2
	29-1181	Audiologists	4	4	14	4	73
Dentistry (CIP 51.0401)	29-1021	Dentists, General	0	0	1	2	98
Dental Clinical Sciences, General (CIP 51.0501)	29-1029	Dentists, All Other Specialists	0	0	1	2	98
Endodontics/Endodontology (CIP 51.0506)	29-1029	Dentists, All Other Specialists	0	0	1	2	98

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Orthodontics/Orthodontology (CIP 51.0508)	29-1023	Orthodontists	0	0	1	2	98
Pediatric Dentistry/Pedodontics (CIP 51.0509)	29-1021	Dentists, General	0	0	1	2	98
Periodontics/Periodontology (CIP 51.0510)	29-1029	Dentists, All Other Specialists	0	0	1	2	98
Prosthodontics/Prosthodontology (CIP 51.0511)	29-1024	Prosthodontists	0	0	1	2	98
Dental Hygiene/Hygienist (CIP 51.0602)	29-2021	Dental Hygienists	10	48	33	1	1
Health/Health Care Administration/Management (CIP 51.0701)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	43-6013	Medical Secretaries	36	13	26	3	0
Hospital & Health Care Facilities Administration/Management (CIP 51.0702)	11-9111	Medical & Health Services Managers	17	12	38	20	3
Health Information/Medical Records Administration/Administrator (CIP 51.0706)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
Health Information/Medical Records Technology/Technician (CIP 51.0707)	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	43-6013	Medical Secretaries	36	13	26	3	0
Medical Office Assistant/Specialist (CIP 51.0710)	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-9092	Medical Assistants	45	22	9	1	0
	31-9094	Medical Transcriptionists	27	15	42	4	1
	43-6013	Medical Secretaries	36	13	26	3	0
Medical Insurance Coding Specialist/Coder (CIP 51.0713)	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-9092	Medical Assistants	45	22	9	1	0
Medical Insurance Specialist/Medical Biller (CIP 51.0714)	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-9094	Medical Transcriptionists	27	15	42	4	1
	43-6013	Medical Secretaries	36	13	26	3	0

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Medical Administrative/Executive Assistant & Medical Secretary (CIP 51.0716)	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-9092	Medical Assistants	45	22	9	1	0
	31-9094	Medical Transcriptionists	27	15	42	4	1
	43-6013	Medical Secretaries	36	13	26	3	0
Health & Medical Administrative Services, Other (CIP 51.0799)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	43-6013	Medical Secretaries	36	13	26	3	0
Medical/Clinical Assistant (CIP 51.0801)	31-9092	Medical Assistants	45	22	9	1	0
Occupational Therapist Assistant (CIP 51.0803)	31-2011	Occupational Therapy Assistants	8	72	15	2	0
Pharmacy Technician/Assistant (CIP 51.0805)	29-2052	Pharmacy Technicians	40	20	19	1	1
Physical Therapy Technician/Assistant (CIP 51.0806)	31-2021	Physical Therapist Assistants	20	37	32	2	1
	31-2022	Physical Therapist Aides	20	37	32	2	1
Veterinary/Animal Health Technology/Technician & Veterinary Assistant (CIP 51.0808)	29-2056	Veterinary Technologists & Technicians	40	20	19	1	1
	31-9096	Veterinary Assistants & Laboratory Animal Caretakers	36	14	21	1	0
Allied Health & Medical Assisting Services, Other (CIP 51.0899)	29-1071	Physician Assistants	4	9	21	55	9
	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
	29-2031	Cardiovascular Technologists & Technicians	19	42	29	2	1
	29-2032	Diagnostic Medical Sonographers	19	42	29	2	1
	29-2035	Magnetic Resonance Imaging Technologists	19	42	29	2	1
	29-2052	Pharmacy Technicians	40	20	19	1	1
	29-2055	Surgical Technologists	40	20	19	1	1
	29-2056	Veterinary Technologists & Technicians	40	20	19	1	1
	29-2099	Health Technologists & Technicians, All Other	39	17	25	4	1



CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
	31-1014	Nursing Assistants	45	10	7	1	0
	31-2011	Occupational Therapy Assistants	8	72	15	2	0
	31-2021	Physical Therapist Assistants	20	37	32	2	1
	31-9092	Medical Assistants	45	22	9	1	0
Cardiovascular Technology/Technologist (CIP 51.0901)	29-2031	Cardiovascular Technologists & Technicians	19	42	29	2	1
	29-2032	Diagnostic Medical Sonographers	19	42	29	2	1
Emergency Medical Technology/Technician (EMT Paramedic) (CIP 51.0904)	29-2041	Emergency Medical Technicians & Paramedics	48	20	17	1	0
Nuclear Medical Technology/Technologist (CIP 51.0905)	29-2032	Diagnostic Medical Sonographers	19	42	29	2	1
	29-2033	Nuclear Medicine Technologists	19	42	29	2	1
Medical Radiologic Technology/Science - Radiation Therapist (CIP 51.0907)	29-1124	Radiation Therapists	8	25	55	7	3
	29-2033	Nuclear Medicine Technologists	19	42	29	2	1
	29-2034	Radiologic Technologists	19	42	29	2	1
Respiratory Care Therapy/Therapist (CIP 51.0908)	29-1126	Respiratory Therapists	7	59	30	2	1
	29-2054	Respiratory Therapy Technicians	40	20	19	1	1
Surgical Technology/Technologist (CIP 51.0909)	29-2055	Surgical Technologists	40	20	19	1	1
	29-2099	Health Technologists & Technicians, All Other	39	17	25	4	1
Diagnostic Medical Sonography/Sonographer & Ultrasound Technician (CIP 51.0910)	29-2032	Diagnostic Medical Sonographers	19	42	29	2	1
	29-2099	Health Technologists & Technicians, All Other	39	17	25	4	1
Radiologic Technology/Science - Radiographer (CIP 51.0911)	29-1124	Radiation Therapists	8	25	55	7	3
	29-2033	Nuclear Medicine Technologists	19	42	29	2	1
	29-2034	Radiologic Technologists	19	42	29	2	1



CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
	29-2099	Health Technologists & Technicians, All Other	39	17	25	4	1
Physician Assistant (CIP 51.0912)	29-1071	Physician Assistants	4	9	21	55	9
Athletic Training/Trainer (CIP 51.0913)	29-9091	Athletic Trainers	17	5	43	23	1
	39-9031	Fitness Trainers & Aerobics Instructors	35	8	31	4	0
Radiation Protection/Health Physics Technician (CIP 51.0916)	19-4051	Nuclear Technicians	25	10	35	5	1
	29-9012	Occupational Health & Safety Technicians	17	5	43	23	1
Allied Health Diagnostic, Intervention, and Treatment Professions, Other (CIP 51.0999)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	29-1071	Physician Assistants	4	9	21	55	9
	29-1126	Respiratory Therapists	7	59	30	2	1
	29-1141	Registered Nurses	4	29	58	6	1
	29-2032	Diagnostic Medical Sonographers	19	42	29	2	1
	29-2041	Emergency Medical Technicians & Paramedics	48	20	17	1	0
	29-2055	Surgical Technologists	40	20	19	1	1
	29-9091	Athletic Trainers	17	5	43	23	1
	31-1014	Nursing Assistants	45	10	7	1	0
	31-9092	Medical Assistants	45	22	9	1	0
Clinical/Medical Laboratory Technician (CIP 51.1004)	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
Clinical Laboratory Science/Medical Technology/Technologist (CIP 51.1005)	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
Phlebotomy Technician/Phlebotomist (CIP 51.1009)	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
	31-9097	Phlebotomists	51	17	10	1	0
Pre-Nursing Studies (CIP 51.1105)	29-1141	Registered Nurses	4	29	58	6	1
	29-1151	Nurse Anesthetists	1	1	15	71	11
	29-1171	Nurse Practitioners	0	0	6	84	9
Pre-Physical Therapy Studies (CIP 51.1109)	29-1123	Physical Therapists	2	4	18	15	59



CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Health/Medical Preparatory Programs, Other (CIP 51.1199)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	21-1093	Social & Human Service Assistants	27	9	39	10	1
	29-1023	Orthodontists	0	0	1	2	98
	29-1067	Surgeons	0	0	1	2	97
	29-1071	Physician Assistants	4	9	21	55	9
	29-1141	Registered Nurses	4	29	58	6	1
	29-2034	Radiologic Technologists	19	42	29	2	1
	29-2041	Emergency Medical Technicians & Paramedics	48	20	17	1	0
	29-2052	Pharmacy Technicians	40	20	19	1	1
	29-2061	Licensed Practical & Licensed Vocational Nurses	57	19	3	0	0
	31-1011	Home Health Aides	45	10	7	1	0
	31-2021	Physical Therapist Assistants	20	37	32	2	1
	31-9091	Dental Assistants	45	20	7	1	1
	Medicine (CIP 51.1201)	29-1062	Family & General Practitioners	0	0	1	2
29-1069		Physicians & Surgeons, All Other	0	0	1	2	97
Substance Abuse/Addiction Counseling (CIP 51.1501)	21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	15	5	34	36	2
	21-1023	Mental Health & Substance Abuse Social Workers	9	4	51	30	1
	21-1093	Social & Human Service Assistants	27	9	39	10	1
Community Health Services/Liaison/Counseling (CIP 51.1504)	21-1022	Healthcare Social Workers	9	4	51	30	1
	21-1091	Health Educators	23	9	40	17	1
	21-1093	Social & Human Service Assistants	27	9	39	10	1
	21-1094	Community Health Workers	23	9	40	17	1
Marriage & Family Therapy/Counseling (CIP 51.1505)	21-1013	Marriage & Family Therapists	15	5	34	36	2
	21-1093	Social & Human Service Assistants	27	9	39	10	1
Mental Health Counseling/Counselor (CIP 51.1508)	21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	15	5	34	36	2

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
	21-1023	Mental Health & Substance Abuse Social Workers	9	4	51	30	1
	21-1093	Social & Human Service Assistants	27	9	39	10	1
Mental & Social Health Services & Allied Professions, Other (CIP 51.1599)	21-1018	Substance Abuse, Behavioral Disorder, & Mental Health Counselors	15	5	34	36	2
	21-1023	Mental Health & Substance Abuse Social Workers	9	4	51	30	1
	21-1093	Social & Human Service Assistants	27	9	39	10	1
Osteopathic Medicine/Osteopathy (CIP 51.1901)	29-1062	Family & General Practitioners	0	0	1	2	97
	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Pharmacy (CIP 51.2001)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	19-1042	Medical Scientists, Except Epidemiologists	1	1	19	32	46
	29-1051	Pharmacists	7	2	17	4	71
Pharmaceuticals & Drug Design (CIP 51.2003)	29-1051	Pharmacists	7	2	17	4	71
Public Health, General (CIP 51.2201)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	19-1041	Epidemiologists	1	1	19	32	46
	21-1022	Healthcare Social Workers	9	4	51	30	1
	21-1091	Health Educators	23	9	40	17	1
	21-1094	Community Health Workers	23	9	40	17	1
Environmental Health (CIP 51.2202)	19-1041	Epidemiologists	1	1	19	32	46
	19-2041	Environmental Scientists & Specialists, Including Health	2	1	64	28	4
	29-9011	Occupational Health & Safety Specialists	17	5	43	23	1
Occupational Health & Industrial Hygiene (CIP 51.2206)	29-9011	Occupational Health & Safety Specialists	17	5	43	23	1
	29-9012	Occupational Health & Safety Technicians	17	5	43	23	1
Public Health Education & Promotion (CIP 51.2207)	21-1022	Healthcare Social Workers	9	4	51	30	1
	21-1091	Health Educators	23	9	40	17	1
	21-1094	Community Health Workers	23	9	40	17	1
Community Health & Preventive Medicine (CIP 51.2208)	11-9111	Medical & Health Services Managers	17	12	38	20	3

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
51.2208)							
	21-1094	Community Health Workers	23	9	40	17	1
International Public Health/International Health (CIP 51.2210)	21-1091	Health Educators	23	9	40	17	1
Health Services Administration (CIP 51.2211)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	21-1022	Healthcare Social Workers	9	4	51	30	1
	21-1091	Health Educators	23	9	40	17	1
	21-1094	Community Health Workers	23	9	40	17	1
Music Therapy/Therapist (CIP 51.2305)	29-1129	Therapists, All Other	6	6	35	46	4
Occupational Therapy/Therapist (CIP 51.2306)	29-1122	Occupational Therapists	1	6	16	69	6
Physical Therapy/Therapist (CIP 51.2308)	29-1123	Physical Therapists	2	4	18	15	59
Vocational Rehabilitation Counseling/Counselor (CIP 51.2310)	21-1015	Rehabilitation Counselors	15	5	34	36	2
Rehabilitation Science (CIP 51.2314)	21-1015	Rehabilitation Counselors	15	5	34	36	2
Veterinary Sciences/Veterinary Clinical Sciences, General (CIP 51.2501)	29-1131	Veterinarians	0	0	1	3	96
Medical Informatics (CIP 51.2706)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	15-1111	Computer & Information Research Scientists	6	0	45	26	17
	15-1121	Computer Systems Analysts	10	5	59	21	2
	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
Dietetics/Dietitian (CIP 51.3101)	29-1031	Dietitians & Nutritionists	10	4	42	23	6
	29-2051	Dietetic Technicians	40	20	19	1	1
Holistic Health (CIP 51.3306)	29-1199	Health Diagnosing & Treating Practitioners, All Other	11	7	26	34	17
Massage Therapy/Therapeutic Massage (CIP 51.3501)	31-2022	Physical Therapist Aides	20	37	32	2	1
	31-9011	Massage Therapists	43	20	15	1	1
Registered Nursing/Registered Nurse (CIP 51.3801)	11-9111	Medical & Health Services Managers	17	12	38	20	3



CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
	29-1141	Registered Nurses	4	29	58	6	1
	29-1151	Nurse Anesthetists	1	1	15	71	11
	29-1161	Nurse Midwives	0	0	6	84	9
	29-1171	Nurse Practitioners	0	0	6	84	9
Nursing Administration (CIP 51.3802)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	29-1141	Registered Nurses	4	29	58	6	1
Adult Health Nurse/Nursing (CIP 51.3803)	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9
Family Practice Nurse/Nursing (CIP 51.3805)	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9
Nurse Midwife/Nursing Midwifery (CIP 51.3807)	29-1161	Nurse Midwives	0	0	6	84	9
Nursing Science (CIP 51.3808)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	19-1042	Medical Scientists, Except Epidemiologists	1	1	19	32	46
	29-1141	Registered Nurses	4	29	58	6	1
	29-1161	Nurse Midwives	0	0	6	84	9
	29-1171	Nurse Practitioners	0	0	6	84	9
Psychiatric/Mental Health Nurse/Nursing (CIP 51.3810)	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9
Nursing Education (CIP 51.3817)	25-1099	Postsecondary Teachers	11	2	36	32	17
	29-1141	Registered Nurses	4	29	58	6	1
Nursing Practice (CIP 51.3818)	11-9111	Medical & Health Services Managers	17	12	38	20	3
	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9
Women's Health Nurse/Nursing (CIP 51.3822)	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9
Registered Nursing, Nursing Administration, Nursing Research & Clinical Nursing, Other (CIP 51.3899)	29-1141	Registered Nurses	4	29	58	6	1
	29-1171	Nurse Practitioners	0	0	6	84	9



CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Licensed Practical/Vocational Nurse Training (CIP 51.3901)	29-2061	Licensed Practical & Licensed Vocational Nurses	57	19	3	0	0
	31-1011	Home Health Aides	45	10	7	1	0
	31-1014	Nursing Assistants	45	10	7	1	0
Nursing Assistant/Aide & Patient Care Assistant/Aide (CIP 51.3902)	31-1011	Home Health Aides	45	10	7	1	0
	31-1014	Nursing Assistants	45	10	7	1	0
Health Professions & Related Clinical Sciences, Other (CIP 51.9999)	21-1093	Social & Human Service Assistants	27	9	39	10	1
	29-2018	Clinical Laboratory Technologists & Technicians	25	15	43	5	1
	29-2071	Medical Records & Health Information Technicians	40	18	20	2	1
	31-1011	Home Health Aides	45	10	7	1	0
	31-1014	Nursing Assistants	45	10	7	1	0
	31-9092	Medical Assistants	45	22	9	1	0
	31-9097	Phlebotomists	51	17	10	1	0
Oral & Maxillofacial Surgery Residency Program (CIP 60.0101)	29-1022	Oral & Maxillofacial Surgeons	0	0	1	2	98
Pediatric Dentistry Residency Program (CIP 60.0106)	29-1021	Dentists, General	0	0	1	2	98
	29-1029	Dentists, All Other Specialists	0	0	1	2	98
Dental Residency Program, Other (CIP 60.0199)	29-1029	Dentists, All Other Specialists	0	0	1	2	98
Neurology (CIP 60.0234)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Anesthesiology Residency Program (CIP 60.0403)	29-1061	Anesthesiologists	0	0	1	2	97
Child Neurology Residency Program (CIP 60.0404)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Diagnostic Radiology Residency Program (CIP 60.0411)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Emergency Medicine Residency Program (CIP 60.0412)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Family Medicine Residency Program (CIP 60.0413)	29-1062	Family & General Practitioners	0	0	1	2	97
General Surgery Residency Program (CIP 60.0414)	29-1067	Surgeons	0	0	1	2	97
Internal Medicine Residency	29-1063	Internists, General	0	0	1	2	97

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Program (CIP 60.0415)							
Neurological Surgery Residency Program (CIP 60.0416)	29-1067	Surgeons	0	0	1	2	97
Neurology Residency Program (CIP 60.0417)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Nuclear Medicine Residency Program (CIP 60.0418)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Obstetrics & Gynecology Residency Program (CIP 60.0419)	29-1064	Obstetricians & Gynecologists	0	0	1	2	97
Ophthalmology Residency Program (CIP 60.0421)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Orthopedic Surgery Residency Program (CIP 60.0422)	29-1067	Surgeons	0	0	1	2	97
Otolaryngology Residency Program (CIP 60.0423)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Pathology Residency Program (CIP 60.0424)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Pediatrics Residency Program (CIP 60.0425)	29-1065	Pediatricians, General	0	0	1	2	97
Physical Medicine & Rehabilitation Residency Program (CIP 60.0426)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Plastic Surgery Residency Program (CIP 60.0427)	29-1067	Surgeons	0	0	1	2	97
Psychiatry Residency Program (CIP 60.0428)	29-1066	Psychiatrists	0	0	1	2	97
Radiation Oncology Residency Program (CIP 60.0430)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Radiologic Physics Residency Program (CIP 60.0431)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Thoracic Surgery Residency Program (CIP 60.0432)	29-1067	Surgeons	0	0	1	2	97
Urology Residency Program (CIP 60.0433)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Vascular Surgery Residency Program (CIP 60.0434)	29-1067	Surgeons	0	0	1	2	97
Medical Residency Programs - General Certificates, Other (CIP 60.0499)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Addiction Psychiatry Residency Program (CIP 60.0501)	29-1066	Psychiatrists	0	0	1	2	97
Cardiovascular Disease Residency Program (CIP 60.0504)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Child & Adolescent Psychiatry Residency Program (CIP 60.0507)	29-1066	Psychiatrists	0	0	1	2	97
Clinical Cardiac Electrophysiology Residency Program (CIP 60.0508)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Critical Care Medicine Residency Program (CIP 60.0511)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Cytopathology Residency Program (CIP 60.0512)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Endocrinology, Diabetes & Metabolism Residency Program (CIP 60.0516)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Gastroenterology Residency Program (CIP 60.0519)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Gynecologic Oncology Residency Program (CIP 60.0522)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Hematological Pathology Residency Program (CIP 60.0523)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Hospice & Palliative Medicine Residency Program (CIP 60.0525)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Infectious Disease Residency Program (CIP 60.0527)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Interventional Cardiology Residency Program (CIP 60.0528)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Maternal & Fetal Medicine Residency Program (CIP 60.0530)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Medical Nuclear Physics Residency Program (CIP 60.0533)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Neonatal-Perinatal Medicine Residency Program (CIP 60.0538)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Nephrology Residency Program (CIP 60.0539)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Neuroradiology Residency Program (CIP 60.0543)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Orthopedic Sports Medicine Residency Program (CIP 60.0546)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Pain Medicine Residency Program (CIP 60.0548)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Pulmonary Disease Residency Program (CIP 60.0571)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97

CIP TITLE & CODE	SOC CODE	SOC TITLE	% WORKFORCE WITH EDUCATION LEVEL AND ONE LEVEL BELOW				
			CERT	ASSOC	BACH	MAST	PHD
Rheumatology Residency Program (CIP 60.0574)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Sports Medicine Residency Program (CIP 60.0577)	29-1069	Physicians & Surgeons, All Other	0	0	1	2	97
Surgical Critical Care Residency Program (CIP 60.0579)	29-1067	Surgeons	0	0	1	2	97

Source: Emsi program demand gap model.

APPENDIX 5: Methodology

This appendix focuses on describing and understanding the methodology used in the program demand gap analysis. This requires data on both occupation demand (e.g., annual job openings) and education supply (e.g., number of postsecondary degree completions). These are then compared through an education “gap” analysis to determine whether an education program is potentially producing a surplus or shortage of workforce talent relative to the number of job openings. In this way, it is possible to see how the institution’s current programs are satisfying the region’s workforce needs.

SUPPLY AND DEMAND MODEL

Emsi builds a model using demand-side data (average annual projected job openings) and supply-side data (postsecondary education output) to compare workforce demand with education supply. The purpose of this analysis is to find the difference or “gap” between the annual job openings for an occupation and the number of people completing postsecondary degrees for that occupation, whether at LSC or at another postsecondary institution in the region, making it possible to identify talent shortages or surpluses.

The first step involves the link between annual job openings for a SOC code and the number of completions for an education program, defined by its CIP code. The BLS provides information on the occupations that completers of specific CIP codes are more likely to enter. Specific connections have been refined through previous engagements with postsecondary institutions and state departments of labor. Some programs have direct occupational ties. For example, a physical therapist assistant is a specific occupation that requires specialized postsecondary training. In this case, one CIP code (Physical Therapy Technician/Assistant) maps to only one SOC code (physical therapist assistants). This provides an easy comparison of annual job openings for physical therapist assistants to the number of people completing the relevant program to see whether a talent shortage or surplus exists.

Unfortunately, this one-to-one mapping of a CIP code to a SOC code is not always the case. More often than not, an educational program maps to multiple occupations and an occupation maps to multiple educational programs at multiple award levels. For this reason, Emsi has pioneered a method of de-duplicating job openings, such that the potential sources of demand are not double represented for any occupation. The details of this process are outlined in this chapter, under “De-duplication of Annual Openings.”

OCCUPATION DEMAND

Educational Level Adjustments

To capture occupation demand, Emsi uses a proprietary employment dataset that reflects total employment. Emsi uses the QCEW data source, which measures employment covered by unemployment insurance (UI). According to the BLS, “employment covered by these UI programs represents about 97% of all wage and salary civilian employment in the country.” Through a proprietary process, Emsi removes BLS local area employment suppressions to yield the best employment data available at local levels, using Emsi’s Employees & Self-Employed 2019.3 datarun.

In the datarun, Emsi calculates the number of regional job openings for the occupations that require different levels of education for entry-level positions.²⁰ The BLS also provides educational attainment data of current workers, ages 16 years to 34 years, for each SOC code, broken out by their highest level of education attained. The data are presented as the percentage of workers in the SOC code with educational attainment ranging from less than a high school diploma to a doctoral degree level of education. Using these data, Emsi adjusts the annual job opening estimates for each SOC code to only incorporate the percentage of workers that correspond with LSC’s program offerings.

For example, as shown in Table A4.1, three occupations are mapped to Accounting: accountants, auditors, and budget analysts. Among accountants, the majority of job openings (80%) are available to program completers with a master’s degree or bachelor’s degree level of education, less so for auditors. The weighted average of job openings, in the last row of the table, is calculated for each program and at each award level where LSC has produced completions over the past three years. Not accounting for these dynamics in educational attainments would bias the programs’ demands by over-counting potential job opportunities for the completers.²¹

20 See Appendix 2 for a description of the sources and processes of Emsi data.

21 Given the changing dynamics and need for more education in the existing workforce (i.e., skills-biased technology change in many occupations and industry sectors), this assumption is considered conservative.

Table A5.1: Example of Educational Level Adjustments for a Program

PROGRAM	OCCUPATION	ASSOC AND ONE LEVEL BELOW	BACH AND ONE LEVEL BELOW	MAST AND ONE LEVEL BELOW	PHD AND ONE LEVEL BELOW
Accounting	Accountant	10%	65%	80%	25%
	Auditor	5%	70%	75%	20%
	Budget analyst	15%	70%	80%	30%
Weighted average		10%	68%	78%	25%

De-Duplication of Annual Openings

Most programs are designed to train people for multiple occupational types, many of which are simultaneously linked with other educational programs. This presents a complexity when comparing supply and demand for any one program. For instance, the Accounting program is mapped to three different occupations: accountants, auditors, and budget analysts. If we focus on one of the occupations for this list—accountants—it is also mapped to three different educational programs, for example, Business, Medical Office Administration, and Commerce.

To ensure that double counting does not occur, it is necessary to either realign the program groupings to eliminate the mapping of occupations to multiple programs or to determine what proportion of job openings should be compared with program completions. Emsi takes the second approach in this analysis, which has the advantage of maintaining program titles and descriptions in roughly the same format of the completion data originally delivered to Emsi. Emsi also uses a formula that favors programs with the largest completions, attributing a greater proportion of job openings to programs with a large number of completions by award level. This method utilizes the assumption that the higher output programs are likely feeding a higher degree of demand in Kentucky.²² Appendix 4 contains the detailed mapping of each CIP code to all relevant occupations, by their six-digit SOC codes. A result of de-duplication is that in a region where a unique program, Commercial & Advertising Art for example, is larger than Graphic Design, it is assumed that completers of the Commercial & Advertising Art program will be offered a proportional, therefore larger number of job openings than students from the Graphic Design program.

Emsi also provides an alternative program demand gap analysis, which does not de-duplicate the average number of projected annual job openings based on the size of each

22 Note this adjustment is performed on a program-by-program basis without consideration of individual colleges or training providers. Therefore, a single program offered at one large institution has no advantage over a group of similar programs offered at several smaller educational providers given that the aggregate output of the smaller schools is near the output of the single larger school.

program. Rather, the total number of job openings available for completers at each award level for each program is provided without further modification. Due to this modification, these numbers have not been de-duplicated, unlike the job openings shown in Chapter 3. As a result, job openings overstate the occupational demand for all postsecondary program completers. While these figures have not been provided in this analysis, they are available upon request.

APPENDIX 6: Living Wage

As shown in the following table, the living wage is the hourly rate that an individual must earn to support his or her family as a sole income provider working full-time or 2,080 hours annually. Part-time is defined as less than 35 hours per week of work. State minimum wage rates are the same for all individuals, regardless of the number of dependents in the household. Values are reported per adult in the household. The poverty rate is typically reported as gross annual income and has been adjusted to an hourly wage rate.

Table A6.1: Living Wage Calculations for Kentucky

ADULTS IN HOUSEHOLD	CHILDREN IN HOUSEHOLD	LIVING WAGE	POVERTY WAGE	MINIMUM WAGE
One adult	1 Adult	\$10.82	\$5.84	\$7.25
	1 Adult 1 Child	\$22.68	\$7.91	\$7.25
	1 Adult 2 Children	\$28.10	\$9.99	\$7.25
	1 Adult 3 Children	\$35.84	\$12.07	\$7.25
Two adults, one working	2 Adults (1 Working)	\$17.52	\$7.91	\$7.25
	2 Adults (1 Working) 1 Child	\$21.35	\$9.99	\$7.25
	2 Adults (1 Working) 2 Children	\$23.92	\$12.07	\$7.25
	2 Adults (1 Working) 3 Children	\$26.54	\$14.14	\$7.25
Two adults, one working part-time	2 Adults	\$8.76	\$3.96	\$7.25
Two adults	2 Adults 1 Child	\$12.48	\$5.00	\$7.25
	2 Adults 2 Children	\$15.39	\$6.03	\$7.25
	2 Adults 3 Children	\$18.32	\$7.07	\$7.25
	1 Adult	\$10.82	\$5.84	\$7.25

Source: Dr. Amy K. Glasmeier and the Massachusetts Institute of Technology, <http://livingwage.mit.edu>. Minimum wage provided by the U.S. Department of Labor.

APPENDIX 7: Institutions by Sector and Region

The following table shows the institutions included in each of the sectors and regions for the healthcare sector analysis.

Table A7.1: Institutions by Sector and Region

INSTITUTION NAME	SECTOR	REGION
Alice Lloyd College	AIKCU	East
American National University	Other	State only
Asbury University	AIKCU	Central
Ashford University	Other	State only
Ashland Community & Technical College	KCTCS	East
Beckfield College	Other	Central
Bellarmine University	AIKCU	Kentuckiana
Berea College	AIKCU	Central
Big Sandy Community & Technical College	KCTCS	East
Bluegrass Community & Technical College	KCTCS	Central
Brescia University	AIKCU	West
Campbellsville University	AIKCU	South
Cincinnati State Technical & Community College	Other	State only
DeVry University	Other	State only
Eastern Kentucky University	State	Central
Elizabethtown Community & Technical College	KCTCS	Central
Frontier Nursing University	Other	East
Galen College of Nursing	Other	Kentuckiana
Gateway Community & Technical College	KCTCS	Central
Georgetown College	AIKCU	Central
Hazard Community & Technical College	KCTCS	East
Henderson Community College	KCTCS	West
Hopkinsville Community College	KCTCS	West
Hussian College	Other	South
Indiana Wesleyan University	Other	State only
Jefferson Community & Technical College	KCTCS	Kentuckiana
Kentucky Christian University	AIKCU	East

INSTITUTION NAME	SECTOR	REGION
Kentucky State University	State	Central
Kentucky Wesleyan College	AIKCU	West
Lincoln Memorial University	Other	State only
Lindsey Wilson College	AIKCU	South
Madisonville Community College	KCTCS	West
Maysville Community & Technical College	KCTCS	East
McKendree University - Elizabethtown	Other	Central
Midway University	AIKCU	Central
Morehead State University	State	East
Murray State University	State	West
Northern Kentucky University	State	Central
Owensboro Community & Technical College	KCTCS	West
Somerset Community College	KCTCS	South
South University	Other	State only
Southcentral Kentucky Community & Technical College	KCTCS	South
Southeast Ky Community & Technical College	KCTCS	East
Spalding University	AIKCU	Kentuckiana
Sullivan University	Other	Kentuckiana
Thomas More University	AIKCU	Central
Union College	AIKCU	East
University of Kentucky	State	Central
University of Louisville	State	Kentuckiana
University of Pikeville	AIKCU	East
University of the Cumberlands	AIKCU	South
Walden University - Online	Other	State only
Webster University - Louisville	Other	State only
West Ky Community & Technical College	KCTCS	West
Western Kentucky University	State	South

Source: Emsi and <http://cpe.ky.gov/campuses/out-of-state.html#>