



**Academic Supply and
Occupational Demand Report
2021**



Tennessee Higher Education Commission 2020-21

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Executive Summary

This year's Academic Supply and Occupational Demand report incorporates several meaningful changes from prior years' reports. The Tennessee Higher Education Commission (THEC) and Tennessee Department of Labor and Workforce Development (TDLWD) worked to update the way in which we identify "in-demand" occupations found in **Table 4**. THEC and TDLWD made these updates in order to bring greater alignment between this report and the LEAP report produced by Tennessee's Department of Economic and Community Development (ECD).

THEC has also updated the way in which we estimate degrees produced and expected to be produced in the coming year. This new method favors simplicity and factors in an average annual growth rate to estimate degree production for the coming year. These data can be found in Section II, Degrees Produced and Expected.

Tennesseans should take away two things from this report: first, we need to continue to educate and upskill our workforce; second, there are opportunities for Tennesseans of all skill levels and education to participate in the Tennessee economy.

This report:

- **Highlights updates to the methods behind the "in-demand" identification process.**
 - These updates bring our data into 100% alignment with the ECD "in-demand occupation" definition.
- **Provides important caveats about the data created by the ongoing COVID-19 pandemic.**
 - The recession caused by this ongoing pandemic impacted many occupations, including some that appear in the in-demand section of this report.
- **Provides a five-year snapshot of degrees produced by all public, private, and proprietary institutions in Tennessee. These analyses include updates on trends in the academic fields for which credentials have been awarded.**
 - Awards granted in Tennessee have, on average, increased annually over the past five years.
 - Students are changing the types of degrees they are earning. The number of students earning STEM awards is increasing more rapidly, while several other degree offerings, such as English, Philosophy, and Education, have decreased in production.
- **Lists the top 25 occupations that are in-demand within the state, by growth rate.**
- **Lists the top 15 occupations for each region within the state, by growth rate.**
- **Identifies programs for which there are more credentials awarded than jobs calculated to be available, otherwise known as "Oversupplied programs".**
- **Reports the employment rates for programs of study associated with in-demand occupations.**

Introduction

This report is prepared pursuant to Tennessee Code Annotated § 49-7-112(b), which directs the Tennessee Higher Education Commission (THEC) to “produce an annual report regarding state workforce need projections and credential production.”

The 2021 Academic Supply and Occupational Demand report has several notable updates. This year, THEC revamped and revised the Academic Supply and Occupational Demand report to create a product that is more intuitive, well-aligned, specific, and actionable.

This report is the result of a collaboration between THEC, the Tennessee Department of Labor and Workforce Development (TDLWD), and the Department of Economic and Community Development (ECD). The inclusion of ECD among the partners in this report represents over a year of planning and coordinating to create alignment between our respective two reports¹ that measure occupational demand in the state.

THEC, TDLWD, and ECD studied discrepancies in data sources, methods, and units of analysis between the two reports with an eye towards bringing these two reports closer in alignment. In Summer 2020, all three agencies agreed to adopt the same data and methods for studying occupational demand within the state. The 2021 Academic Supply and Occupational Demand report represents the first time in the report’s history that the occupational data listed within are 100% aligned with ECD’s LEAP report. The reimagining of this report brings about greater clarity and purpose to the data within, as well as greater alignment and collaboration between agencies tasked with workforce planning at the statewide level.

We believe this change is both significant and meaningful. Seamless alignment between these reports provides a unified message and clear directions for the future of our state. It changes the way policymakers, workforce planners, and individuals think about, and prepare for, the future.

THEC continues to work with the named partners here, as well as other state agencies, to create relevant data and analysis that Tennesseans can use to plan for the future of our workforce. This work can guide the future of workforce planning at both the state and regional level.

¹ ECD’s LEAP 2020: In-Demand Occupations Report can be found here: <https://tnecd.com/wp-content/uploads/2020/10/2020-LEAP-Report-10-27-2020-1.pdf>

This report is divided into five sections:

- **COVID-19 and Implications for Supply and Demand Analyses** highlights the limitations of supply and demand analyses during the tumultuous economic circumstances created by the ongoing COVID-19 pandemic.
- **Degrees Produced and Expected** presents historical production and a one-year projection of postsecondary credentials to be awarded by public, private, and proprietary institutions in Tennessee through 2021 using data from the Integrated Postsecondary Educational Data System (IPEDS).
- **State Workforce Needs** identifies the top 25 high-demand occupations in terms of projected annual growth in Tennessee through 2028. Additionally, this section lists the top 15 occupations by projected growth through 2026 by region. This section also lists the most oversupplied programs of study in Tennessee, for which there are substantially more postsecondary graduates than job opportunities.
- **Employment Rates for Programs of Study** displays the employment data for students graduating from programs of study that lead to in-demand jobs.
- **Limitations and Conclusions** describes the caveats in these analyses and summarizes the key takeaways of the report.

Data and Methods

Academic Supply Projections

Postsecondary credentials are projected through academic year 2021, based on historical data for 2015-2020. The institutions included in these projections are public, private, and proprietary institutions in Tennessee that award postsecondary certificates, associate's degrees, or bachelor's degrees.² THEC used historical data from Integrated Postsecondary Education Data System (IPEDS).³

Occupational Demand Projections

TDLWD projected occupational demand by Standard Occupation Classification (SOC) code. The U.S. Bureau of Labor Statistics provides information about the education and training required for specific occupations across the state. These education and training requirements reflect what is typically observed for an employee in each occupation, though exceptions exist. Except where otherwise noted, any mention of "in-demand" in this report refers to the 25 highest-demand occupations by average annual growth listed in **Table 5**.

² Only certificates, associate's degrees, and bachelor's degrees are included in the analysis to better align this report with Tennessee's Drive to 55 initiative, which set the goal of increasing Tennessee's educational attainment to 55% by 2025. Degrees awarded show only awards given for first majors.

³ IPEDS is a federal dataset containing information about higher education institutions, including student demographics, program offerings, and completion data. Data are available at <https://nces.ed.gov/ipeds/>

One of the primary data sets used to identify workforce demand is Tennessee’s long-term occupational projections, including expected annual total openings. These data come from the Department of Labor and Workforce Development. The openings consist of those created by growth and by occupational separations. Additional criteria including real-time labor market information from Tennessee’s jobs database were used to present a more comprehensive picture of occupations in demand and their characteristics. More information on the occupational selection process can be found in **Table 4**.

The average annual occupational projections are then compared to the number of people being trained in Tennessee in related programs of study to determine if shortages of workers in certain occupations are expected (**Table 15**). Data for academic program completers come from Tennessee’s State Longitudinal Data System (SLDS).

The relationship between education requirements and occupation is most direct for highly specialized fields, such as those requiring a specific certificate or an advanced degree. Conversely, many fields requiring a bachelor’s are less clearly defined, as those who hold a bachelor’s often have diverse employment opportunities in a variety of fields.

Wage Data by Classification of Instructional Programs (CIP) Code

Wage data by Classification of Instructional Program (CIP) code tables are created using Tennessee’s State Longitudinal Data System (SLDS), also known as P20 Connect. Detailed educational program outcome information within programs of study can be found in the appendix. With increasing concern about degree value, the appendix lists CIP-level wage data for graduates of 100 public, private, and proprietary schools across Tennessee, including the name of each program, its CIP code, and the average wage by program for those earning wages in Tennessee and not enrolled in school. Programs differ widely in the average wages of graduates as they enter the workforce.

Section One:

COVID-19 and Implications for Supply and Demand Analyses



COVID-19 and Implications for Supply and Demand Analyses

This report highlights occupations that are in demand for Tennessee and the nine local workforce development areas (LWDAs) using three metrics: projected job openings, current job postings, and current hiring patterns. These data measure demand in the average year.

The COVID-19 pandemic has had a tremendous impact on the economy and continues to do so. This section is special to our report this year and highlights areas where the in-demand occupations listed in this report intersect with high levels of unemployment insurance claims in 2020. These claims were made in large part due to business closures arising from the COVID-19 pandemic, as reported by TDLWD.

In March 2020, the Tennessee economy experienced significant changes due to the COVID-19 pandemic. Business closures, related to stay-at-home orders and declines in customers, forced many Tennesseans out of work. Unemployment in Tennessee grew to 15.5 percent in April 2020, up from 3.2 percent in March 2020.⁴ Many of these layoffs, though, were temporary, as cities attempted to keep people home and enforce social distancing through short-term, stay-at-home orders.

Data from the Federal Reserve Bank of St. Louis shows that real personal consumption expenditures (PCE), a measure of consumer spending for items such as a car or groceries, fell 18.1 percent between February and April of 2020.⁵ Even as places have begun to re-open, many consumers have been slow to spend money, and PCE has yet to return to pre-recession levels from February 2020.

The effect of stay-at-home orders and reduced consumer spending was experienced disproportionately across industries. While the unemployment rate improved to 5.3% as of November 2020, it remains notably higher than pre-COVID-19 unemployment rates at 3.2 percent.⁶ Job losses particularly impacted the leisure and hospitality industry.

In-Demand Occupations Affected by COVID-19

Below we highlight occupations that have been disproportionately affected by the COVID-19 pandemic, as seen in TDLWD's unemployment insurance claims data.

Table 1 highlights the occupations that are in-demand at the statewide level, as defined in this report, that also had a high number of unemployment insurance claims for the week ending June 27, 2020.⁷

⁴ Workforce Insights, Research, and Reporting Engine Division, Tennessee Department of Labor and Workforce Development, [2019-2020 Reference Guide: Tennessee Economy](#)

⁵ The Federal Reserve Bank of St. Louis (2020, September 22). *Real Personal Consumption Expenditures*, <https://fred.stlouisfed.org/series/PCEC96>

⁶ Workforce Insights, Research, and Reporting Engine Division, Tennessee Department of Labor and Workforce Development, [2019-2020 Reference Guide: Tennessee Economy](#)

⁷ Ibid.

In-demand occupations that have experienced high numbers of claims include laborers, customer service representatives, heavy- and tractor-trailer drivers, and inspectors.

Table 1: Highest Number of Claims Filed by In-Demand Occupation

Week Including June 27, 2020

SOC Code ⁸	Occupation Title	2020 Employment	Total Claims
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	99,080	8,331
43-4051	Customer Service Representatives	65,420	6,056
53-3032	Heavy and Tractor-Trailer Truck Drivers	72,800	2,929
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	14,650	2,659

Note: Estimated 2020 employment must be >100. Occupations that were not highlighted as in-demand in this report have been removed from the table. Limited to demand occupations as identified at statewide level.

Table 2 displays the in-demand occupations with the highest percent of claims as a percent of estimated 2020 employment. This table highlights occupations that may have lower overall employment than those highlighted in Table 1 but had high claims numbers relative to the occupational size. This applied to only one occupation in our statewide in-demand analysis - Chefs and Head Cooks.

Table 2: Highest Percent of Claims Filed to 2020 Employment for In-Demand Occupations

SOC Code ⁹	Occupation Title	Estimated 2020 Employment	Claims Filed as % of 2020 Employment
35-1011	Chefs and Head Cooks	2,250	82.50%

Notes: Estimated 2020 employment must be >100. This table is limited to occupations highlighted as in-demand at the statewide level in this report. Limited to demand occupations as identified at statewide level.

Future supply and demand reports will encompass data reflecting the COVID-19 period and will address the influence of the pandemic on in-demand analyses. This is important because while the occupations that THEC/TDLWD highlights as in-demand in this report clearly offer viable income options for Tennesseans, some of them are also volatile. The occupations listed in this section clearly met the thresholds to be an in-demand occupation. The data suggested these occupations were growing at above average rates and paying decent wages.

In reality, newer data tells us that people in these occupations experienced high levels of unemployment and disruptions to their livelihoods. We include this section in order to be as transparent as possible with the data we have and to acknowledge areas where our historical data does not quite match reality.

For a more detailed report on the subject, or to see the full tables listed here, please see [Tennessee Department of Labor and Workforce Development's 2019-2020 Reference Guide: Tennessee's Economy](#).

⁸ Standard Occupation Classification

⁹ Standard Occupation Classification

Section Two:

Degrees Produced and Expected



Degrees Produced and Expected

This section explores the degrees produced and expected to be produced by institutions in Tennessee over the 2015-2020 period.

The awards, degrees, and credentials that will help us realize the vision of the Drive to 55¹⁰ are multifaceted and come from many sources. THEC analyzed graduation data from IPEDS to better understand the number of awards produced and types of academic programs Tennesseans are graduating from.

¹⁰ The Drive to 55 is an attainment goal set by Governor Haslam. By 2025, Tennessee hopes to have at least 55% of its adult population (25-64) with a postsecondary credential or workforce-relevant equivalent.

Table 3 below highlights the five-year raw count of undergraduate degrees produced by institutions in the state of Tennessee. These data included all Tennessee institutions reporting to IPEDS.¹¹ Degrees produced are bucketed at the two-digit classification of instructional programs (CIP) level. In addition to the five-year count, the table shows the average annual growth rate over this period and the projected awards for the 2020 school year.¹²

These data show an upward trend in degree production. Overall award production at the sub-baccalaureate level within the state has increased 0.8% annually over the past five years, on average.¹³ This growth is an important factor in Tennessee's pursuit of the Drive to 55.

Just as pivotal as the number of awards are the skills and proficiencies that academic programs are training Tennesseans in. While overall award production continues to trend upward, there are differences within programs. Some programs, like construction, production, and communications, are all growing at rapid rates. Academic programs related to STEM, like architecture, engineering, and computer information sciences, have also grown over the past five years.

Yet not all programs have experienced growth in award production over this five-year time period. Programs experiencing declines in award production include English, philosophy, family and consumer sciences, and education. Many of the programs experiencing declines during this time period are non-STEM related.

The distinction in growth trends between these two general categories may be related to concerted efforts to push for more STEM-related awards.

¹¹ The list of IPEDS reporting institutions included in these data is available in Appendix B.

¹² Estimates shown are calculated by applying the average annual growth rate to the most recent data available.

¹³ Some academic programs, like law, generally require graduate degrees. Given the exclusion of degrees above the baccalaureate level, such programs have low counts in the table below.

Table 3: Degrees Produced and Expected by Tennessee Institutions, 2015-2020

Program	2015	2016	2017	2018	2019	Compound Annual Growth Rate	2020 Estimated Awards¹⁴
Construction Trades	231	270	337	361	413	15.6%	478
Transportation and Materials Moving	299	403	391	593	441	10.2%	486
Precision Production	908	993	1,080	1,296	1,300	9.4%	1,422
Communications Technologies/Technicians and Support Services	303	342	337	394	415	8.2%	449
Architecture and Related Services	60	55	60	66	78	6.8%	83
Engineering*	1,414	1,573	1,714	1,839	1,769	5.8%	1,871
Computer and Information Sciences and Support Services*	1,262	1,209	1,232	1,471	1,551	5.3%	1,633
Parks Recreation Leisure and Fitness Studies	1,663	1,887	2,001	2,052	2,032	5.1%	2,136
Area Ethnic Cultural Gender and Group Studies	59	70	65	82	72	5.1%	76
Engineering Technologies and Engineering-related Fields*	1,345	1,501	1,575	1,576	1,591	4.3%	1,659
Natural Resources and Conservation*	202	231	250	226	234	3.7%	243
Liberal Arts and Sciences General Studies and Humanities	8,600	9,448	9,802	10,380	9,728	3.1%	10,032
Agriculture Operations and Related Sciences *	631	732	715	713	711	3.0%	733
Communication Journalism and Related Programs	1,431	1,466	1,578	1,553	1,609	3.0%	1,657
Visual and Performing Arts	2,307	2,296	2,379	2,457	2,575	2.8%	2,647
Public Administration and Social Service Professions	675	709	662	751	742	2.4%	760
Legal Professions and Studies	132	151	124	129	140	1.5%	142
Biological and Biomedical Sciences*	1,575	1,535	1,696	1,626	1,652	1.2%	1,672
Personal and Culinary Services	2,009	2,070	2,174	2,000	2,074	0.8%	2,091

¹⁴ While all 2020 degrees have been awarded by the release of this report, data are not yet available for the year in IPEDS, requiring an estimate for 2020 degrees using previous years' growth.

Table 3 Cont'd

Program	2015	2016	2017	2018	2019	Compound Annual Growth Rate	2020 Estimated Awards ¹⁵
Social Sciences	1,911	1,894	1,881	1,870	1,950	0.5%	1,960
Health Professions and Related Programs	12,882	13,307	13,617	13,096	12,680	-0.4%	12,630
Homeland Security Law Enforcement Firefighting and Related Protective Service	1,644	1,696	1,780	1,650	1,617	-0.4%	1,610
Business Management Marketing and Related Support Services	8,294	8,394	8,548	8,266	8,128	-0.5%	8,087
Psychology	1,837	1,884	1,861	1,817	1,789	-0.7%	1,777
Multi/Interdisciplinary Studies	1,440	1,624	1,689	1,437	1,350	-1.6%	1,328
Mechanic and Repair Technologies/Technicians	3,188	3,138	3,348	3,013	2,954	-1.9%	2,898
Foreign Languages Literatures and Linguistics	333	350	336	306	308	-1.9%	302
Theology and Religious Vocations	464	529	469	476	418	-2.6%	407
History	561	531	471	477	484	-3.6%	466
Physical Sciences*	590	536	590	578	508	-3.7%	489
Mathematics and Statistics*	315	307	307	294	266	-4.1%	255
Education	2,326	2,153	2,075	1,937	1,928	-4.6%	1,840
Family and Consumer Sciences/Human Sciences	825	736	728	727	662	-5.4%	627
Philosophy and Religious Studies	199	191	204	188	159	-5.5%	150
English Language and Literature/Letters	900	779	747	743	712	-5.7%	671
Science Technologies/Technicians	88	94	38	29	24	-27.7%	17
Total	62,903	65,084	66,861	66,469	65,064	0.8%	65,616

*Indicates a STEM related field using THEC's definition.

¹⁵ While all 2020 degrees have been awarded by the release of this report, data are not yet available for the year in IPEDS, requiring an estimate for 2020 degrees using previous years' growth.

Section Three:

State Workforce Needs



State Workforce Needs

ECD, in partnership with TDLWD and THEC, created the list of in-demand occupations for the 2021 Supply and Demand report.¹⁶ The agencies applied the following criteria to occupational data to identify occupations that are in demand within the state and each of the Local Workforce Development Areas (LWDAs):

The occupation must meet the following minimum thresholds:

- **Occupational size:** Occupations must employ at least .04% of a region’s total jobs.
- **Occupational wage:** Occupations must have a median annual wage that is at least 80% of the overall median regional wage.

The occupation must be above average in at least TWO out of the following THREE metrics:

- Region's Median Ratio of Job Postings to Employment
- Region's Median Ratio of Hires to Employment
- Region's Median Ratio of Job Openings to Employment

Table 4 below lists the thresholds necessary for inclusion as an in-demand occupation, by region.

Table 4: Thresholds for In Demand Occupations, by Region

		0.04% of Region's Jobs	80% of Region's Median Wage	Region's Median Ratio of Job Postings to Employment	Region's Median Ratio of Hires to Employment	Region's Median Ratio of Job Openings to Employment
Region	Tennessee	1,203	\$28,727	10.7%	12.1%	62.2%
	Greater Memphis	214	\$29,500	14.2%	10.9%	64.5%
	Northwest	32	\$25,543	10.0%	11.5%	50.0%
	Southwest	40	\$26,605	10.0%	12.5%	54.5%
	Northern Middle	401	\$31,010	16.3%	12.4%	62.5%
	Southern Middle	62	\$26,658	11.8%	11.2%	53.4%
	Upper Cumberland	43	\$25,125	9.4%	12.5%	51.4%
	East	206	\$26,843	11.1%	12.5%	52.7%
	Southeast	120	\$27,982	12.5%	12.5%	57.0%
	Northeast	77	\$26,838	8.1%	11.1%	50.0%

¹⁶ ECD’s LEAP report, which uses these same data, can be found here: <https://www.tn.gov/transparenttn/state-financial-overview/open-eecd/openecd/tnecd-performance-metrics/workforce/leap-in-demand-occupations-report.html>.

Table 5 below highlights the top 25 occupations by projected growth over the next decade. Occupations in the list range from the medical professions to software developers and research analysts. The full list of in-demand occupations can be found on the THEC and ECD websites.

The list of educational requirements in the table are also diverse, with typical entry-level educational requirements ranging from high school diplomas to doctoral degrees. Tennesseans of all education and skill levels can find potential career options in the table below.

Table 5: Top 25 High-Demand Occupations by Projected Growth: Tennessee

SOC Code ¹⁷	Description	2019 Jobs	Avg. Annual Growth	Annual Openings	Median Earnings	Typical Entry Level Education
31-9097	Phlebotomists	2,290	4.04%	415	\$30,779	Certificate/Diploma
19-1042	Medical Scientists, Except Epidemiologists	1,310	3.42%	212	\$66,405	Doctoral
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	3,270	3.01%	585	\$36,284	Bachelor's
15-2031	Operations Research Analysts	1,270	3.01%	159	\$63,619	Bachelor's
31-2021	Physical Therapist Assistants	3,290	2.66%	593	\$57,733	Associate's
31-9092	Medical Assistants	15,280	2.48%	2,249	\$32,292	Certificate/Diploma
25-3021	Self-Enrichment Teachers	2,450	2.48%	715	\$34,431	HS Diploma
21-1023	Mental Health and Substance Abuse Social Workers	1,600	2.43%	253	\$36,849	Master's
13-1161	Market Research Analysts and Marketing Specialists	8,970	2.21%	1,328	\$55,406	Bachelor's
27-2022	Coaches and Scouts	4,570	2.18%	1,087	\$32,693	Bachelor's
19-4021	Biological Technicians	1,340	2.17%	182	\$37,168	Bachelor's
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	12,030	2.15%	1,156	\$90,910	Bachelor's
51-9198	Helpers--Production Workers	8,040	2.12%	2,554	\$30,714	HS Diploma
31-9011	Massage Therapists	2,200	2.12%	364	\$41,108	Certificate/Diploma
31-9091	Dental Assistants	5,680	2.11%	913	\$38,122	Certificate/Diploma
27-4011	Audio and Video Technicians	1,320	2.07%	262	\$47,798	Certificate/Diploma
49-2098	Security and Fire Alarm Systems Installers	1,540	2.00%	257	\$47,918	HS Diploma
43-5021	Couriers and Messengers	1,720	1.96%	284	\$30,231	HS Diploma
11-9111	Medical and Health Services Managers	9,820	1.87%	1,207	\$90,693	Bachelor's
33-9091	Crossing Guards and Flaggers	2,320	1.76%	419	\$32,079	N/A
43-4011	Brokerage Clerks	1,270	1.67%	162	\$42,785	HS Diploma

¹⁷ Standard Occupation Classification

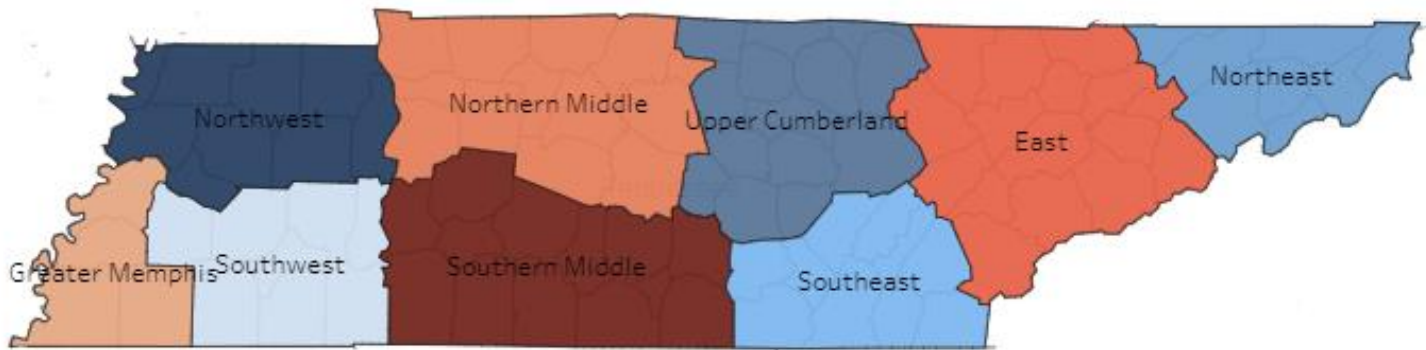
Table 5 Cont'd

SOC Code ¹⁸	Description	2019 Jobs	Avg. Annual Growth	Annual Openings	Median Earnings	Typical Entry Level Education
21-1093	Social and Human Service Assistants	2,890	1.57%	438	\$30,763	HS Diploma
35-1011	Chefs and Head Cooks	1,590	1.54%	337	\$46,643	HS Diploma
13-1121	Meeting, Convention, and Event Planners	1,670	1.51%	298	\$48,191	Bachelor's
11-9051	Food Service Managers	10,520	1.47%	2,253	\$46,213	HS Diploma

Top Growing Occupations by Region

Tennessee is divided into nine economic regions by ECD. These regions represent distinct geographic and economic areas within the state. **Figure 1** displays the counties in each region.

Figure 1: Map of LWDA Regions



Source: ECD, LEAP Report Dashboard

Occupations that are in-demand vary greatly by region. This section lists the top 15 occupations by average annual percent growth, or how quickly an occupation is growing year over year, in each region. Organizing these lists by growth rate allows us to better keep a pulse on changes within a region.¹⁹

Occupations can, and often are, growing at different rates within a region than they are within the state overall. For instance, in

Table 6 below, Software Developers are growing about four percent annually in the Greater Memphis region. This is two percentage points greater than the overall statewide growth rate. The changes in growth rates and growth occupations makes it important to dissect in-demand occupations at the regional level.

¹⁸ Standard Occupation Classification

¹⁹ For the full set of data, please THEC's Academic Supply and Occupational Demand website.

Table 6: Top 15 High-Demand Occupations by Projected Growth: Greater Memphis

SOC Code ²⁰	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	1,660	4.05%	150	\$84,077	Bachelor's
31-9097	Phlebotomists	560	3.28%	90	\$31,110	Certificate/Diploma
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	530	3.17%	205	\$41,559	Bachelor's
25-2011	Preschool Teachers, Except Special Education	840	3.07%	220	\$36,556	Associate's
13-1161	Market Research Analysts and Marketing Specialists	1,230	2.85%	240	\$56,065	Bachelor's
53-7051	Industrial Truck and Tractor Operators	4,040	2.81%	770	\$32,261	N/A
11-3031	Financial Managers	2,470	2.22%	280	\$104,804	Bachelor's
29-2032	Diagnostic Medical Sonographers	230	2.19%	30	\$71,611	Associate's
31-2021	Physical Therapist Assistants	430	2.15%	45	\$54,373	Associate's
11-9111	Medical and Health Services Managers	1,570	2.10%	190	\$99,747	Bachelor's
15-1232	Computer User Support Specialists	1,490	2.07%	220	\$45,575	Some college, no degree
43-4131	Loan Interviewers and Clerks	710	2.02%	90	\$44,441	HS Diploma
41-3011	Advertising Sales Agents	290	1.98%	75	\$49,443	HS Diploma
43-3021	Billing and Posting Clerks	1,650	1.94%	290	\$36,756	HS Diploma
51-9111	Packaging and Filling Machine Operators and Tenders	1,630	1.90%	245	\$29,876	HS Diploma

²⁰ Standard Occupation Classification

Table 7 below shows the top 15 occupations by projected growth for the Northwest region. The top five occupations in the region are dominated by health occupations. The top two growing occupations are physical therapists and physical therapists' assistants.

Table 7: Top 15 High-Demand Occupations by Projected Growth: Northwest

SOC Code ²¹	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
31-2021	Physical Therapist Assistants	130	5.56%	25	\$59,457	Associate's
29-1123	Physical Therapists	170	5.18%	20	\$80,636	Doctoral
11-9111	Medical and Health Services Managers	220	3.78%	40	\$74,299	Bachelor's
17-2141	Mechanical Engineers	70	2.72%	10	\$59,750	Bachelor's
21-1022	Healthcare Social Workers	90	2.69%	10	\$45,218	Master's
47-2211	Sheet Metal Workers	70	2.06%	5	\$39,620	HS Diploma
51-9198	Helpers--Production Workers	290	2.03%	130	\$29,139	HS Diploma
39-1098	First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services	50	2.02%	20	\$34,096	HS Diploma
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	90	1.84%	20	\$47,211	Bachelor's
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,810	1.59%	210	\$40,767	Certificate/Diploma
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	220	1.57%	30	\$49,658	HS Diploma
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	190	1.55%	45	\$40,114	Certificate/Diploma
37-3011	Landscaping and Groundskeeping Workers	390	1.54%	60	\$26,148	N/A
11-9151	Social and Community Service Managers	40	1.32%	10	\$52,800	Bachelor's
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	150	1.29%	35	\$39,631	HS Diploma

²¹ Standard Occupation Classification

Table 8 shows the top growth occupations in the Southwest region. The Southwest region includes large farming areas. Agriculture equipment operator is the fastest growing occupation in the region by a large margin. Other top growing occupations include health information technologists, bus and truck mechanics, and landscapers/groundskeepers.

Table 8: Top 15 High-Demand Occupations by Projected Growth: Southwest

SOC Code ²²	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
45-2091	Agricultural Equipment Operators	50	5.20%	70	\$36,073	N/A
29-9098	Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers, All Other	50	3.10%	15	\$43,125	Certificate/Diploma
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	260	2.80%	35	\$43,227	HS Diploma
37-3011	Landscaping and Groundskeeping Workers	450	2.75%	120	\$27,084	N/A
31-2021	Physical Therapist Assistants	200	2.69%	40	\$58,409	Associate's
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	70	2.53%	10	\$58,232	HS Diploma
21-1023	Mental Health and Substance Abuse Social Workers	50	2.27%	20	\$38,481	Master's
29-1122	Occupational Therapists	70	2.27%	10	\$88,165	Master's
43-6013	Medical Secretaries and Administrative Assistants	270	2.26%	35	\$28,759	HS Diploma
31-9092	Medical Assistants	450	2.15%	80	\$30,356	Certificate/Diploma
47-2051	Cement Masons and Concrete Finishers	240	2.09%	40	\$33,946	N/A
41-2022	Parts Salespersons	120	1.97%	15	\$33,300	N/A
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	190	1.86%	40	\$32,947	Certificate/Diploma
29-1127	Speech-Language Pathologists	70	1.81%	10	\$64,688	Master's
47-2141	Painters, Construction and Maintenance	90	1.81%	20	\$32,664	N/A

²² Standard Occupation Classification

Table 9 shows the top growth occupations for the Northern Middle region. This region includes Davidson County and Nashville. The occupations on the list largely reflect the growth of the region as a tourist destination and include travel clerks, brokerage clerks, customer service representatives, and marketing specialists.

Table 9: Top 15 High-Demand Occupations by Projected Growth: Northern Middle

SOC Code ²³	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	800	6.47%	135	\$32,643	HS Diploma
41-3011	Advertising Sales Agents	920	5.01%	225	\$40,258	HS Diploma
43-4011	Brokerage Clerks	520	4.43%	90	\$49,999	HS Diploma
15-2031	Operations Research Analysts	690	4.35%	110	\$62,301	Bachelor's
49-9043	Maintenance Workers, Machinery	930	3.87%	245	\$45,526	HS Diploma
31-2021	Physical Therapist Assistants	810	3.64%	130	\$61,147	Associate's
13-1161	Market Research Analysts and Marketing Specialists	4,220	3.61%	505	\$57,907	Bachelor's
13-2052	Personal Financial Advisors	1,260	3.57%	160	\$64,854	Bachelor's
43-4051	Customer Service Representatives	23,570	3.47%	4,385	\$34,525	HS Diploma
13-1151	Training and Development Specialists	2,170	3.32%	305	\$56,288	Bachelor's
31-9011	Massage Therapists	950	3.28%	145	\$43,433	Certificate/Diploma
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	6,010	3.25%	550	\$95,511	Bachelor's
49-3011	Aircraft Mechanics and Service Technicians	540	3.23%	70	\$56,036	Certificate/Diploma
27-4011	Audio and Video Technicians	740	3.11%	185	\$50,698	Certificate/Diploma
11-3131	Training and Development Managers	460	3.06%	80	\$92,047	Bachelor's

²³ Standard Occupation Classification

Table 10 shows the top growth occupations for the Southern Middle region. Top growing occupations in the region are varied, ranging from health occupations like physical therapists and substance abuse counselors, to engineering focused occupations like mechanical engineers and mechanical engineer technicians.

Table 10: Top 15 High-Demand Occupations by Projected Growth: Southern Middle

SOC Code ²⁴	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
17-2141	Mechanical Engineers	270	4.21%	70	\$79,456	Bachelor's
31-2021	Physical Therapist Assistants	100	3.80%	20	\$61,498	Associate's
43-5061	Production, Planning, and Expediting Clerks	350	3.13%	90	\$43,353	HS Diploma
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	170	2.92%	35	\$33,277	Bachelor's
31-9092	Medical Assistants	490	2.86%	100	\$31,903	Certificate/Diploma
17-3027	Mechanical Engineering Technologists and Technicians	70	2.64%	20	\$51,169	Associate's
43-6013	Medical Secretaries and Administrative Assistants	410	2.47%	70	\$30,174	HS Diploma
37-3011	Landscaping and Groundskeeping Workers	590	2.42%	120	\$29,060	N/A
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	250	2.39%	30	\$43,660	HS Diploma
13-1111	Management Analysts	170	2.32%	25	\$78,895	Bachelor's
11-9111	Medical and Health Services Managers	390	2.21%	45	\$78,049	Bachelor's
13-2011	Accountants and Auditors	430	2.09%	60	\$59,818	Bachelor's
31-9091	Dental Assistants	160	2.07%	50	\$34,906	Certificate/Diploma
21-1022	Healthcare Social Workers	160	2.06%	20	\$43,681	Master's
11-9051	Food Service Managers	450	2.04%	80	\$41,604	HS Diploma

²⁴ Standard Occupation Classification

Table 11 displays the top growth occupations for the Upper Cumberland region. Top growing occupations include physical therapist assistants, medical assistants, and software developers.

Table 11: Top 15 High-Demand Occupations by Projected Growth: Upper Cumberland

SOC Code ²⁵	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
31-2021	Physical Therapist Assistants	250	4.04%	30	\$58,577	Associate's
31-9092	Medical Assistants	450	3.35%	70	\$29,181	Certificate/Diploma
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	110	3.31%	10	\$100,021	Bachelor's
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	280	3.05%	40	\$36,849	Certificate/Diploma
47-2152	Plumbers, Pipefitters, and Steamfitters	240	2.94%	25	\$44,198	HS Diploma
25-3021	Self-Enrichment Teachers	60	2.57%	15	\$37,660	HS Diploma
43-9041	Insurance Claims and Policy Processing Clerks	60	2.56%	10	\$29,077	HS Diploma
31-9091	Dental Assistants	130	2.50%	30	\$38,286	Certificate/Diploma
47-2111	Electricians	320	2.40%	40	\$55,506	HS Diploma
11-9141	Property, Real Estate, and Community Association Managers	70	2.38%	15	\$40,053	HS Diploma
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	90	2.26%	20	\$32,531	Bachelor's
43-3021	Billing and Posting Clerks	180	2.14%	35	\$34,186	HS Diploma
13-1051	Cost Estimators	60	2.05%	10	\$69,195	Bachelor's
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining	80	2.04%	25	\$30,691	HS Diploma
41-2022	Parts Salespersons	90	1.88%	25	\$32,018	N/A

²⁵ Standard Occupation Classification

Table 12 presents the top growth occupations for the East region. This region has large growth in substance abuse counselors, cutting and slicing machine setters, maintenance workers, and hairdressers.

Table 12: Top 15 High-Demand Occupations by Projected Growth: East

SOC Code ²⁶	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	610	4.23%	140	\$32,542	Bachelor's
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	300	3.39%	50	\$35,162	HS Diploma
49-9043	Maintenance Workers, Machinery	530	2.92%	140	\$43,984	HS Diploma
39-5012	Hairdressers, Hairstylists, and Cosmetologists	1,350	2.81%	310	\$27,514	Certificate/Diploma
31-2021	Physical Therapist Assistants	510	2.73%	95	\$55,897	Associate's
31-9011	Massage Therapists	400	2.53%	40	\$38,145	Certificate/Diploma
41-9022	Real Estate Sales Agents	250	2.53%	65	\$45,084	HS Diploma
21-1013	Marriage and Family Therapists	250	2.47%	25	\$35,150	Master's
39-1098	First-Line Supervisors of Personal Service and Entertainment and Recreation Workers, Except Gambling Services	490	2.40%	120	\$33,218	HS Diploma
11-9051	Food Service Managers	2,570	2.21%	425	\$47,911	HS Diploma
35-1011	Chefs and Head Cooks	360	2.17%	160	\$49,927	HS Diploma
27-1024	Graphic Designers	490	2.12%	70	\$40,028	Bachelor's
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,230	2.12%	215	\$38,313	Certificate/Diploma
53-3052	Bus Drivers, Transit and Intercity	390	2.12%	80	\$31,067	HS Diploma
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	4,240	2.10%	625	\$31,865	HS Diploma

²⁶ Standard Occupation Classification

Table 13 shows the top growth occupations for the Southeast region. Top growth occupations include massage therapists, phlebotomists, software developers, and cargo and freight agents.

Table 13: Top 15 High-Demand Occupations by Projected Growth: Southeast

SOC Code ²⁷	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
31-9011	Massage Therapists	260	3.94%	40	\$40,643	Certificate/Diploma
31-9097	Phlebotomists	240	3.94%	35	\$29,789	Certificate/Diploma
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	980	3.86%	125	\$92,458	Bachelor's
43-5011	Cargo and Freight Agents	140	3.84%	10	\$40,173	HS Diploma
15-1257	Web Developers and Digital Interface Designers	160	3.82%	30	\$71,947	Associate's
29-2056	Veterinary Technologists and Technicians	140	3.54%	20	\$29,293	Associate's
15-1212	Information Security Analysts	150	3.50%	30	\$90,685	Bachelor's
31-2021	Physical Therapist Assistants	500	3.48%	60	\$56,993	Associate's
31-2011	Occupational Therapy Assistants	140	3.19%	20	\$63,900	Associate's
53-3032	Heavy and Tractor-Trailer Truck Drivers	8,070	3.18%	1,385	\$43,597	Certificate/Diploma
51-4071	Foundry Mold and Coremakers	160	3.16%	25	\$29,552	HS Diploma
31-9092	Medical Assistants	1,930	2.90%	265	\$30,913	Certificate/Diploma
29-2010	Clinical Laboratory Technologists and Technicians	590	2.77%	110	\$50,080	Bachelor's
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	210	2.66%	30	\$34,960	Bachelor's
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	700	2.48%	100	\$42,911	HS Diploma

²⁷ Standard Occupation Classification

Table 14 displays the top growth occupations for the Northeast region. In-demand growth occupations within the region include software developers, substance abuse counselors, and roofers.

Table 14: Top 15 High-Demand Occupations by Projected Growth: Northeast

SOC Code ²⁸	Description	2019 Jobs	Avg. Annual Percent Change	Annual Openings	Median Earnings	Typical Entry Level Education
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	380	3.96%	50	\$83,412	Bachelor's
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	150	3.42%	35	\$35,050	Bachelor's
47-2181	Roofers	90	2.83%	20	\$29,302	N/A
13-2052	Personal Financial Advisors	90	2.76%	20	\$72,024	Bachelor's
21-1023	Mental Health and Substance Abuse Social Workers	100	2.54%	20	\$30,860	Master's
31-9091	Dental Assistants	380	2.40%	70	\$36,244	Certificate/Diploma
13-1161	Market Research Analysts and Marketing Specialists	680	2.20%	40	\$47,527	Bachelor's
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	280	2.09%	50	\$38,599	Certificate/Diploma
47-2152	Plumbers, Pipefitters, and Steamfitters	380	1.99%	90	\$40,232	HS Diploma
13-2082	Tax Preparers	80	1.86%	15	\$33,675	HS Diploma
47-3013	Helpers--Electricians	130	1.73%	35	\$29,151	HS Diploma
25-3021	Self-Enrichment Teachers	100	1.73%	30	\$28,396	HS Diploma
11-9141	Property, Real Estate, and Community Association Managers	130	1.71%	30	\$52,022	HS Diploma
47-2061	Construction Laborers	1,110	1.70%	195	\$29,544	N/A
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	190	1.68%	25	\$47,822	HS Diploma

As evidenced by these tables, Tennessee's nine LWDA regions each have distinct economies that comprise different occupations. Analyzing these regions individually allows us the opportunity to better understand that our statewide workforce planning initiatives must be built with robust consideration of regional strengths and weaknesses.

²⁸ Standard Occupation Classification

Oversupplied Programs

TDLWD calculates the programs of study that are most oversupplied in the state by analyzing the number of credentials awarded in a program compared to the number of openings the state has for related occupations. **Table 15** below highlights the programs that are most over-supplied.

Table 15: Oversupplied Programs

Program of Study Code ²⁹	Program of Study Title	Annual Average Openings	Ratio of Concentrators ³⁰ and Awards to Openings
01.4000000	Power Structural and Technical Systems Pathway	68	12.46
03.1000000	Audio and Video Technologies Pathway	340	3.12
05.1130000	Support Services- Interpreters/Translators	122	3.69
05.1230000	Postsecondary Teachers- Teacher Education	101	7.94
08.1280000	Optometry	36	3.67
08.1360000	Radiation Therapy	28	5.93
08.1410000	Exercise Physiology	16	6.50
08.4140000	Dietitian Assistance	76	8.51
11.3100000	Interactive Media	27	9.96
15.1120000	Chemical Engineering	56	4.61
15.1220000	Biomedical Engineering	47	3.45

Source: TN Department of Labor and Workforce Development, WIR²ED Division, TN Employment Projections to 2028; TN Department of Education, CTE Division, 2018-2019; IPEDS, 2018-2019

²⁹ Programs of study listed in the table consist of multiple CIP codes.

³⁰ Concentrators refers to a student who completes three or more courses within a career and technical education program of study.

Section Four:

Employment Rates for Programs of Study



Table 16 provides employment rates for graduates in programs of study corresponding to the occupations in demand in **Table 5**.

This table includes the number of graduates or concentrators in each program of study at the typical education entry level of education. Included are the number of graduates from programs related to the occupation listed as well as employment rates for those graduates.³¹

These results exclude individuals who were enrolled at another educational institution in Tennessee within two quarters of graduation. For outcomes by specific educational programs within the programs of study, see the related table in the appendix.

Table 16: Employment Rates for the Academic Programs for the Top 25 Occupations

SOC Code ³²	Description	Number of Awards	% Employed
31-9097	Phlebotomists	48	83.3%
19-1042	Medical Scientists, Except Epidemiologists	70	28.6%
21-1018	Substance Abuse, Behavioral Disorder, and Mental Health Counselors	30	63.3%
15-2031	Operations Research Analysts	100	46.0%
31-2021	Physical Therapist Assistants	136	79.4%
31-9092	Medical Assistants	160	71.9%
25-3021	Self-Enrichment Teachers	N/A	N/A
21-1023	Mental Health and Substance Abuse Social Workers	478	68.6%
13-1161	Market Research Analysts and Marketing Specialists	633	66.7%
27-2022	Coaches and Scouts	1564	63.3%
19-4021	Biological Technicians	N/A	N/A
15-1256	Software Developers and Software Quality Assurance Analysts and Testers	794	55.2%
51-9198	Helpers--Production Workers	105	51.4%
31-9011	Massage Therapists	32	65.6%
31-9091	Dental Assistants	101	87.1%
27-4011	Audio and Video Technicians	18	50.0%
49-2098	Security and Fire Alarm Systems Installers	183	80.3%
43-5021	Couriers and Messengers	N/A	N/A

³¹ Data are only available for those who work for employers reporting wages in Tennessee.

³² Standard Occupation Classification

Table 16 Cont'd

SOC Code³³	Description	Number of Awards	% Employed
11-9111	Medical and Health Services Managers	105	51.4%
33-9091	Crossing Guards and Flaggers	35	57.1%
43-4011	Brokerage Clerks	37	54.0%
21-1093	Social and Human Service Assistants	264	62.1%
35-1011	Chefs and Head Cooks	358	55.3%
13-1121	Meeting, Convention, and Event Planners	35	57.1%
11-9051	Food Service Managers	358	55.3%

Sources: TN OES 2019; TN Employment Projections 2018-28; IPEDS; TN CTE; TN P-20 Follow-up Data

Tennessee Providers for In-Demand Occupations

THEC and TDLWD worked diligently to update the Academic Supply and Occupational Demand report to make it more usable. In this spirit, the agencies are no longer publishing the list of institutions offering academic programs corresponding to in-demand occupations in the body of this report. Instead, this information now lives in an interactive dashboard here: [Tennessee Providers for In-Demand Occupations Dashboard](#).^{34,35} This change will allow readers of the report to interact with the data in ways that best suit their needs.

Tennessee Providers for Demand Occupations will be useful for workforce professionals including counselors in government and nonprofit social service agencies, educational and workforce program planners and board members, and individuals seeking employment and training programs. This tool may also be useful to current and prospective Tennessee businesses looking to evaluate workforce pipelines, reskill or upskill their employees, or plan recruiting strategies.

³³ Standard Occupation Classification

³⁴ Readable link for those accessing the report in paper form:

https://public.tableau.com/views/TennesseeProvidersforDemandOccupations/TennesseeProvidersforDemandOccupations?:language=en&:display_count=y&publish=yes&:origin=viz_share_link

³⁵ Sources: Occupational Demand - OES 2019 and TN and LWDA Projections - TN Dept of Labor and Workforce Development (TDLWD) and TN Dept of Economic and Community Development (TNECD); Training providers - jobs4tn.gov (TDLWD), including data from IPEDS, TN Department of Education (TDOE) CTE concentrators, and apprenticeship completers for 2019.

The link allows individuals to select Tennessee or one of the nine Local Workforce Development Areas (LWDAs). From here, individuals can select from among the demand occupations listed, by occupation code (SOC) or occupational title.

The display includes educational program or apprenticeship providers offering programs related to the demand occupation. It also includes the program provider, region, county, classification of instructional program title (CIP), type of academic award, and number of program completers in 2019. Data file downloads are available in a variety of formats and include the URLs for the program providers.

Selecting the region “Tennessee” and demand level “TN Top 25” will display only the providers of academic programs corresponding to the top 25 demand occupations in the state as identified in the 2021 Academic Supply and Occupational Demand report.

To make a new selection, choose Reset Filters. Information on demand occupations and program providers will be updated annually. More detailed information on occupations and training programs can be found on jobs4tn.gov in the labor market information, occupation and education profile sections, and in the education and training provider data.

Section Five:

Limitations and Conclusions



Limitations

Supply and demand analyses are useful for educators, employers, and policymakers, but there are two underlying limitations.

First, supply and demand analyses rely on historical data and assumptions about future economic conditions, as well as industry expansion or contraction. For this reason, projections are sometimes inaccurate for certain occupations, particularly emerging fields with limited historical data and those fields with high supply-to-demand ratios (i.e., oversupplied fields). This year's economic jolt created by the COVID-19 pandemic uniquely highlights one of the ways in which historical data can sometimes be ill-equipped to speak to current and future circumstances.

Second, the relationship between supply and demand is most direct at the sub-baccalaureate level and with specialized programs at the doctoral and professional level. For example, a person with a certificate in automotive repair or a medical specialization in cardiology is more likely to hold a job specific to their field of study than a person with a bachelor's in English. As such, it is more straightforward to link individuals with specialized degrees to specific occupations. This is not as true for those with versatile bachelor's and master's, as graduates with these degrees can be employable in many fields.

Conclusions

Credential production has, on average, continued to grow over the past five years. Moreover, the nature of the credentials produced by public, private, and proprietary institutions within the state has trended towards STEM credentials and away from non-STEM credentials. The continued growth in degrees and the transition to greater production of STEM degrees both align with Tennessee's goals as a state.

This year's report represents years of work to bring methods and definitions of "in-demand" into alignment. For the first time in the report's history, the occupational demand lists shown within the report align 100% with the lists released by ECD earlier this year. THEC will consult with TDLWD, ECD, and other state agencies moving forward to solicit feedback and support necessary to maintain the reports effectiveness and impact in subsequent years.

Tennessee's top growing occupations represent a wide range of industries and careers. They also require a large variety of academic credentials in order to be career ready. This report highlights that the employment opportunities available to Tennesseans vary largely by region. Regional demand tables in this report help us better understand what these differences are and prepare us to participate in workforce planning conversations in a more nuanced manner.

Tennesseans should take away two things from this report: first, we need to continue to educate and upskill our workforce; second, there are opportunities for Tennesseans of all skill levels and education to participate in the Tennessee economy.

Appendices



Appendix A: Wage Data by CIP Code and Degree Level

The tables below are limited to CIP codes with at least 5 graduates employed from that CIP and at that degree level. Wage data displays wages earned 2 quarters after certificate or degree receipt.

Table A 1: Top 10 Income Earners by CIP Code, Certificates

CIP Code	CIP Title	Number of Awards	Employed %	Estimated Annual Wage
320111	Workforce Development and Training.	128	96.88%	\$64,970
151001	Construction Engineering Technology/Technician.	21	100.00%	\$58,973
510907	Medical Radiologic Technology/Science - Radiation Therapist.	19	57.89%	\$56,794
150612	Industrial Technology/Technician.	16	81.25%	\$55,041
150000	Engineering Technology, General.	58	82.76%	\$54,348
430203	Fire Science/Firefighting.	16	81.25%	\$53,760
150403	Electromechanical Technology/Electromechanical Engineering Technology.	55	56.36%	\$52,808
510920	Magnetic Resonance Imaging (MRI) Technology/Technician.	21	66.67%	\$52,566
510910	Diagnostic Medical Sonography/Sonographer and Ultrasound Technician.	29	96.55%	\$52,454
480503	Machine Shop Technology/Assistant.	6	100.00%	\$50,898

Source: TN Dept of Labor and Workforce Development, WIR2ED Div.; P-20 Longitudinal Database, 2018-19

Table A 2: Top 10 Income Earners by CIP Code, Associate's

CIP Code	CIP Title	Number of Awards	Employed %	Estimated Annual Wage
510904	Emergency Medical Technology/Technician (EMT Paramedic).	33	96.97%	\$60,942
470303	Industrial Mechanics and Maintenance Technology.	10	100.00%	\$54,738
150613	Manufacturing Engineering Technology/Technician.	14	100.00%	\$54,546
320111	Workforce Development and Training.	6	83.33%	\$52,940
150614	Welding Engineering Technology/Technician.	16	75.00%	\$52,785
513801	Registered Nursing/Registered Nurse.	776	88.02%	\$50,809
430203	Fire Science/Firefighting.	28	89.29%	\$48,926
150000	Engineering Technology, General.	187	78.61%	\$48,852
520299	Business Administration, Management and Operations, Other.	12	83.33%	\$46,902
510908	Respiratory Care Therapy/Therapist.	63	96.83%	\$45,562

Source: TN Dept of Labor and Workforce Development, WIR²ED Div.; P-20 Longitudinal Database, 2018-19

Table A 3: Top 10 Income Earners by CIP Code, Bachelor's

CIP Code	CIP Title	Number of Awards	Employed %	Estimated Annual Wage
513818	Nursing Practice.	13	69.2%	\$92,641
430302	Crisis/Emergency/Disaster Management.	20	65.0%	\$82,933
440401	Public Administration.	56	91.1%	\$81,302
513805	Family Practice Nurse/Nursing.	15	60.0%	\$74,646
130499	Educational Administration and Supervision, Other.	14	92.9%	\$72,249
521301	Management Science.	19	84.2%	\$64,724
522001	Construction Management.	42	64.3%	\$64,275
131299	Teacher Education and Professional Development, Specific Levels and Methods, Other.	37	83.8%	\$62,777
111005	Information Technology Project Management.	8	62.5%	\$62,047
141001	Electrical and Electronics Engineering	183	47.5%	\$62,045

Source: TN Dept of Labor and Workforce Development, WIR²ED Div.; P-20 Longitudinal Database, 2018-19

Appendix B: Institutions Included in IPEDS Degree Production Data (

Table 3)

Allied Health Careers Institute	Huntington University of Health Sciences
American Baptist College	Hussian College-Daymar College Clarksville
Arnolds Beauty School	Hussian College-Daymar College Murfreesboro
Austin Peay State University	Hussian College-Daymar College Nashville
Austin's Beauty College Inc	Image Maker Beauty Institute
Baptist Memorial College of Health Sciences	Jackson State Community College
Belmont University	Jenny Lea Academy of Cosmetology
Bethel University	John A Gupton College
Bryan College-Dayton	Johnson University
Career Beauty College	King University
Carson-Newman University	Lane College
Chattanooga College Medical Dental and Technical Careers	Le Moyne-Owen College
Chattanooga State Community College	Lee University
Christian Brothers University	Lincoln College of Technology-Nashville
Cleveland State Community College	Lincoln Memorial University
Columbia State Community College	Lipscomb University
Concorde Career College-Memphis	Love Beauty School Inc
Cumberland University	Martin Methodist College
DeVry University-Tennessee	Maryville College
Dyersburg State Community College	Massage Institute of Memphis
East Tennessee State University	Master's Barber & Styling College
EduMed Partners	Meharry Medical College
Elite College of Cosmetology	Memphis College of Art
Empire Beauty School-E Memphis	Memphis Institute of Barbering
Empire Beauty School-Jackson	Memphis Theological Seminary
Empire Beauty School-Nashville	Meridian Institute of Surgical Assisting
Empire Beauty School-S Memphis	Mid-South Christian College
Fisk University	Middle Tennessee School of Anesthesia Inc
Fortis Institute-Cookeville	Middle Tennessee State University
Fortis Institute-Cookeville	Milligan College
Fortis Institute-Nashville	Mind Body Institute
Franklin Academy	Motlow State Community College
Franklin Hair Academy School of Cosmetology	Mr Wayne's School of Unisex Hair Design
Freed-Hardeman University	Nashville College of Medical Careers
Genesis Career College-Cookeville	Nashville Film Institute
Genesis Career College-Lebanon	Nashville State Community College
Gould's Academy	National College-Nashville
Gould's Academy	North Central Institute
Health-Tech Institute of Memphis	Northeast State Community College
Hiwassee College	Nossi College of Art
	Omega Graduate School

Paul Mitchell the School-Knoxville	TCAT-Oneida-Huntsville
Paul Mitchell the School-Memphis	TCAT-Paris
Paul Mitchell the School-Murfreesboro	TCAT-Pulaski
Pellissippi State Community College	TCAT-Ripley
Pentecostal Theological Seminary	TCAT-Shelbyville
Platt College-Miller-Motte Technical-Chattanooga	TCAT-Whiteville
Queen City College	Tennessee School of Beauty of Knoxville Inc
Remington College-Memphis Campus	Tennessee State University
Remington College-Nashville Campus	Tennessee Technological University
Rhodes College	Tennessee Wesleyan University
Richmont Graduate University	The Hair Academy LLC
Roane State Community College	The Salon Professional Academy-Nashville
Ross Medical Education Center-Johnson City	The University of Tennessee Health Science Center
Ross Medical Education Center-Knoxville	The University of Tennessee System Office
SAE Institute of Technology-Nashville	The University of Tennessee-Chattanooga
Sandra Academy of Salon Services Inc	The University of Tennessee-Knoxville
Shear Perfection Academy of Cosmetology	The University of Tennessee-Martin
South College	The University of the South
Southern Adventist University	Trevecca Nazarene University
Southern College of Optometry	Tusculum University
Southwest Tennessee Community College	Union University
Strayer University-Tennessee	University of Memphis
Tennessee Board of Regents	University of Phoenix-Tennessee
Tennessee Career Institute	Vanderbilt University
TCAT Nashville	Vibe Barber College
TCAT-Athens	Visible Music College
TCAT-Covington	Volunteer State Community College
TCAT-Crossville	Walters State Community College
TCAT-Crump	Watkins College of Art Design & Film
TCAT-Dickson	Welch College
TCAT-Elizabethton	William Moore College of Technology
TCAT-Harriman	Williamson Christian College
TCAT-Hartsville	
TCAT-Hohenwald	
TCAT-Jacksboro	
TCAT-Jackson	
TCAT-Knoxville	
TCAT-Livingston	
TCAT-McKenzie	
TCAT-McMinnville	
TCAT-Memphis	
TCAT-Morristown	
TCAT-Murfreesboro	
TCAT-Newbern	