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# Academic Supply and Occupational Demand in Tennessee

**Workforce Needs and Degree Production**

Annual Report  
January 15, 2017



**Tennessee Higher Education Commission**

# TENNESSEE HIGHER EDUCATION COMMISSION

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## EXECUTIVE SUMMARY

- **By 2025, higher education institutions in Tennessee will award many more postsecondary credentials.**
  - More degrees at all levels will be awarded. The most substantial growth will be in associate degrees, followed by bachelor's degrees and certificates.
  - Proprietary institutions will continue to award the largest share of credentials overall because they will award the greatest number of certificates. Public universities are projected to award the greatest number of bachelor's degrees, while community colleges will award the greatest number of associate degrees.
  - Total degree production is expected to increase across all sectors in Tennessee, except at proprietary institutions; a 2.10 percent decrease in this sector is projected between AY 2008 and AY 2025.
  - Tennessee is projected to award 78,656 degrees in 2025, compared to 69,817 in 2014—a 12.66 percent increase in statewide degree production.
- **There is high demand for individuals trained in a variety of careers across the state.**
  - The most in-demand career fields include selling and sales management, administrative support, production, and business and finance. There is a deficit of individuals trained to work in these areas throughout Tennessee.
  - Occupations in these fields require all levels of postsecondary degrees, from certificates through master's or doctoral degrees.
  - Conversely, a number of career paths are oversupplied; more Tennesseans are trained in these areas than there are jobs available. These fields include cosmetology, recreation and attractions, journalism, and visual arts.
- **Many higher education institutions in Tennessee offer academic programs that can meet the workforce needs of these high-demand areas.**
  - Public, private, and proprietary institutions offer degree programs of all levels in areas related to these in-demand fields.
  - Opportunities for postsecondary training in these areas are available across the state and are not limited to specific geographic areas.



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## INTRODUCTION

This report is prepared pursuant to Tennessee Code Annotated § 49-7-112(b) (the “Skills for Jobs Act”),<sup>1</sup> which directs the Tennessee Higher Education Commission (THEC) to:

“...produce an annual report regarding state workforce need projections and credential production.”

This report is the result of collaboration between THEC and the Tennessee Department of Labor and Workforce Development. Using data from 2006-2014, this report presents projections of degrees to be awarded from public, private, and proprietary<sup>2</sup> institutions in Tennessee through the year 2025. These estimates of degree production (i.e., academic supply) are linked to the needs of Tennessee’s workforce (i.e., occupational demand) to indicate whether the output of Tennessee’s higher education system is meeting the needs of employers across the state.

This report is divided into four sections:

- **Expected Awards** presents projections of postsecondary credentials to be awarded by public, private, and proprietary institutions in Tennessee through 2025.
- **Workforce Needs** identifies Tennessee’s most immediate workforce deficits and highlights the 25 most in-demand career fields across the state. This section also lists the 20 most oversupplied programs of study in Tennessee, for which there are substantially more postsecondary graduates than job opportunities.
- **Institutions Offering Programs in High-Demand Areas** lists the public, private, and proprietary institutions across Tennessee that offer degree programs in the 25 high-demand occupational areas.
- **Conclusions, Limitations, and Recommendations** summarizes the key takeaways about Tennessee’s supply of labor and demand in particular career fields, outlines the limitations of supply and demand analyses, and proposes directions for future exploration of these topics.

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<sup>1</sup> See **Appendix A**.

<sup>2</sup> Also known as “for-profit” institutions.



## METHODOLOGY

Projections of academic degree production and workforce demand were developed independently by THEC and the Tennessee Department of Labor and Workforce Development. These projections were then linked to analyze labor supply and workforce demand. The narrative below explains the methodology used to develop these projections and addresses important caveats for using these estimates.

### *Supply projections*

Postsecondary credentials are projected through 2025.<sup>3</sup> **Table 1** presents the types of awards included in these projections. Concentrations and minors are excluded, as these are difficult to link to the education requirements of particular occupations.

**Table 1: Awards included in analysis<sup>4</sup>**

Awards of less than 1 academic year
Awards of at least 1 but less than 2 academic years
Associate degrees
Awards of at least 2 but less than 4 academic years
Bachelor's degrees

Public, private, and proprietary institutions in Tennessee that award postsecondary certificates, associate degrees, or bachelor's degrees comprise the sample for this analysis (number of institutions = 492). These institutions were compiled from THEC, the Tennessee Independent Colleges and Universities Association (TICUA), and the Integrated Postsecondary Education Data System (IPEDS). IPEDS is a federal dataset containing a breadth of information about higher education institutions, including student demographics and program offerings.

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<sup>3</sup> Data for projections of supply were provided by THEC, TICUA, and IPEDS. These projections are based on historical data for the years 2006-2014. Past trends in degree production are significantly related to future growth. If a particular degree shows growth between 2006 and 2014, for example, it is likely that the number of Tennesseans earning that degree will continue to increase in the future. A caveat, however, is that new degree programs in emerging fields may be difficult to project accurately, as historical data about these programs are limited.

<sup>4</sup> Only certificates, associate degrees, and bachelor's degrees—sub-baccalaureate and baccalaureate programs—are included in the analysis to better align this report with Tennessee's Drive to 55 initiative. The Drive to 55 seeks to increase Tennessee's postsecondary educational attainment rate (i.e., the percentage of Tennesseans with a college degree or high-quality certificate) to 55 percent by 2025. For more information on the Drive to 55, see <http://driveto55.org/>.





## *Demand projections*

Projections of workforce demand were estimated by the Tennessee Department of Labor and Workforce Development using the Standard Occupation Classification (SOC) system.<sup>5</sup> The occupational projections have several different components:

- The Department of Labor and Workforce Development surveys employers as part of the national Bureau of Labor Statistics' Occupational Employment Statistics (OES) survey. About 8,000 employers are surveyed each year, with information requested on the occupations of their current employees and their wage ranges. The survey is done by industry, providing current information on the occupational staffing patterns in Tennessee for more than 99% of its industries.
- National long-term industry projections, as well as other national and local variables, are used as input to statistical procedures such as multiple regression to produce long-term industry projections for Tennessee at the detailed industry level.
- The staffing patterns are applied to the detailed industry base year and projections data to provide occupational base year employment and projections. These are adjusted based on national research on long-term occupational trends.
- In addition, openings include self-employed individuals and jobs created when people separate from their jobs due to turnover, deaths, and retirement.

In summary, statistical procedures based on surveys and research done at the national and state level are used to develop the occupational projections, which show annual changes based on long-term trends. The average annual occupational projections are then compared to the number of people being trained in Tennessee in related programs of study to see if shortages of workers in certain occupations are expected.

It is important to note that 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 degree are less clearly defined, as those who hold a bachelor's degree often have diverse employment opportunities in a variety of fields.

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<sup>5</sup> The SOC system and the Bureau of Labor Statistics provide 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 a given occupation; certainly, exceptions exist. For example, an individual who holds a doctoral degree may be employed in a position that requires only a bachelor's degree.



## EXPECTED AWARDS

This section provides projections for the supply of postsecondary credentials to be awarded by public, private, and proprietary institutions in Tennessee. The analysis forecasts various award levels by institutional sector through the year 2025.

For public and proprietary institutions, THEC used historical data from the Student Information System (SIS), the Division of Postsecondary State Authorization (DPSA), and IPEDS from academic year (AY) 2006 through AY 2014 and calculated projections by sector and award level through AY 2025. For private institutions, THEC used historical data from IPEDS and TICUA from AY 2006 through AY 2014 and calculated projections by sector and award level through AY 2025.

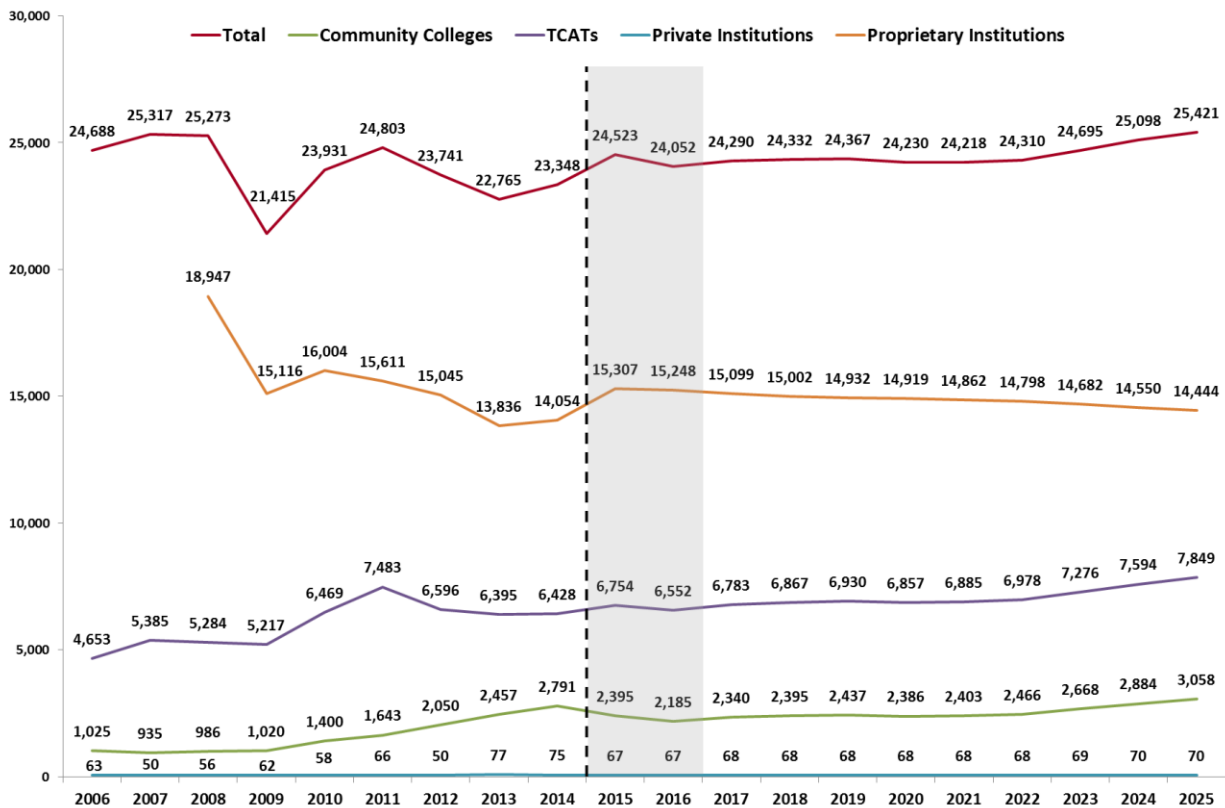
Figures 1 through 5 below show historical data to the left of the dotted line and projections of degree production to the right of the dotted line. Data for AY 2015 and 2016 are projected, not actual degree production (indicated by the gray shaded area).



## Certificates

**Figure 1** shows the projections of certificates to be awarded by public, private, and proprietary institutions included in the sample. During the period of interest (AY 2017 – AY 2025), total certificate production is expected to increase slightly. In 2025, it is estimated that Tennessee will produce 25,421 certificates annually, compared to the 23,348 produced in AY 2014. From AY 2017 – AY 2025, the number of certificates produced by proprietary institutions is expected to decrease, while community colleges and TCATs will continue to increase their total certificate production.

**Figure 1: Certificate production by sector**



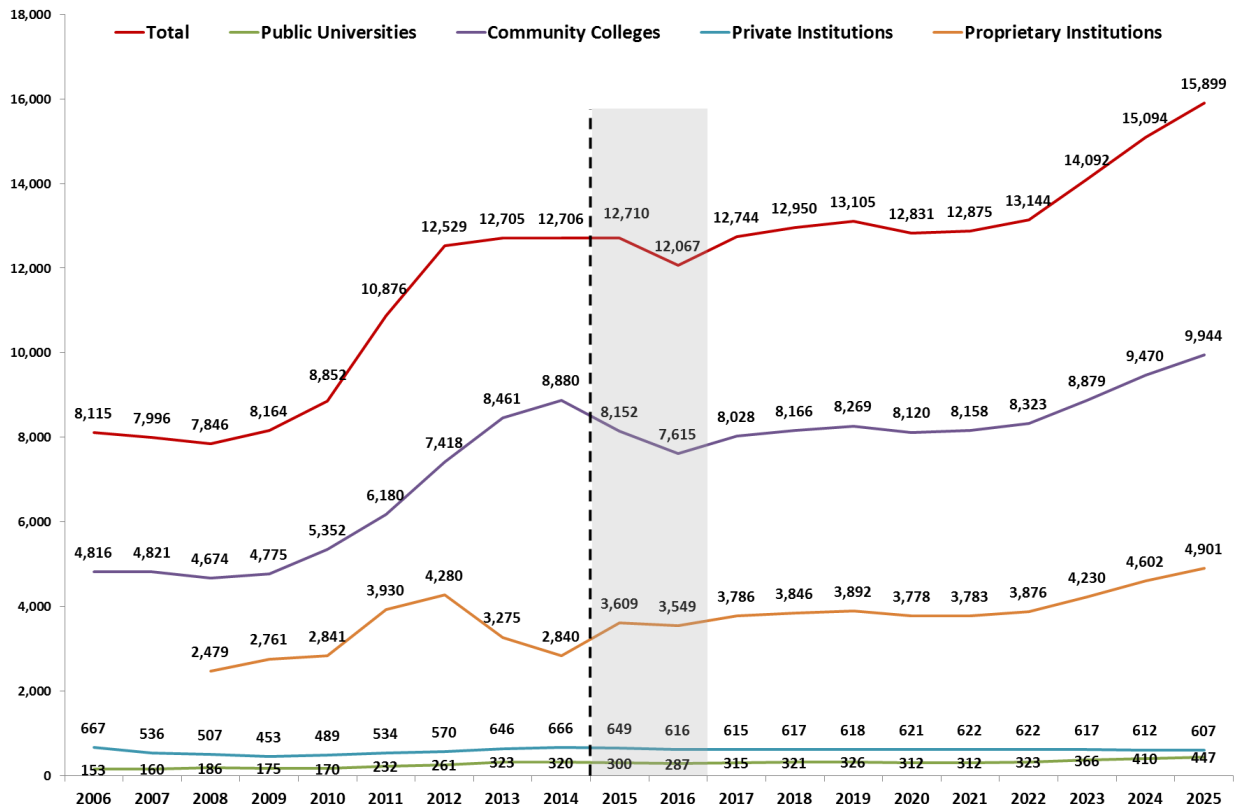
Source: THEC. (2015). *Postsecondary attainment in the decade of decision: The master plan for Tennessee postsecondary education: 2015-2025*. (Appendix E, p. 51). Nashville, TN: Author.



Associate degrees

**Figure 2** displays the projections of associate degrees to be awarded by public, private, and proprietary institutions included in the sample. During the period of interest (AY 2017 – AY 2025), total associate degree production is expected to increase substantially, continuing the historical upward trend. In 2025, it is expected that Tennessee will produce 15,899 associate degrees annually, compared to the 12,706 produced in AY 2014. From AY 2017 – AY 2025, associate degree production is projected to increase substantially in the public and proprietary sectors while remaining relatively flat in the private sector.

**Figure 2: Associate degree production by sector**

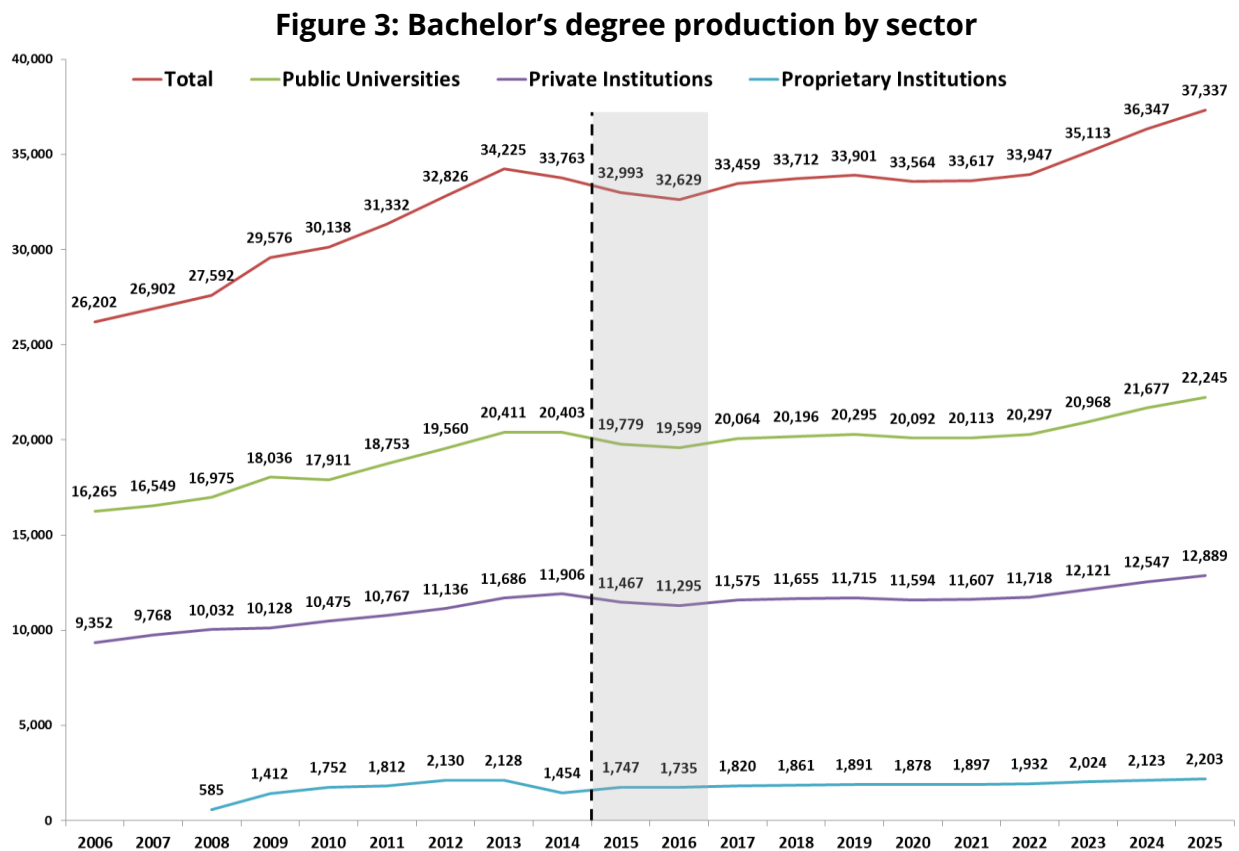


Source: THEC. (2015). *Postsecondary attainment in the decade of decision: The master plan for Tennessee postsecondary education: 2015-2025*. (Appendix D, p. 50). Nashville, TN: Author.



## Bachelor's degrees

**Figure 3** depicts the projections of bachelor's degrees to be awarded by public, private, and proprietary institutions included in the sample. During the period of interest (AY 2017 – AY 2025), total bachelor's degree production is expected to increase steadily, continuing its gradual trend upward. In 2025, it is expected that Tennessee will produce 37,337 bachelor's degrees annually, compared to the 33,763 produced in AY 2014. From AY 2017 – AY 2025, bachelor's degree production is projected to increase across all three sectors: public, private, and proprietary.

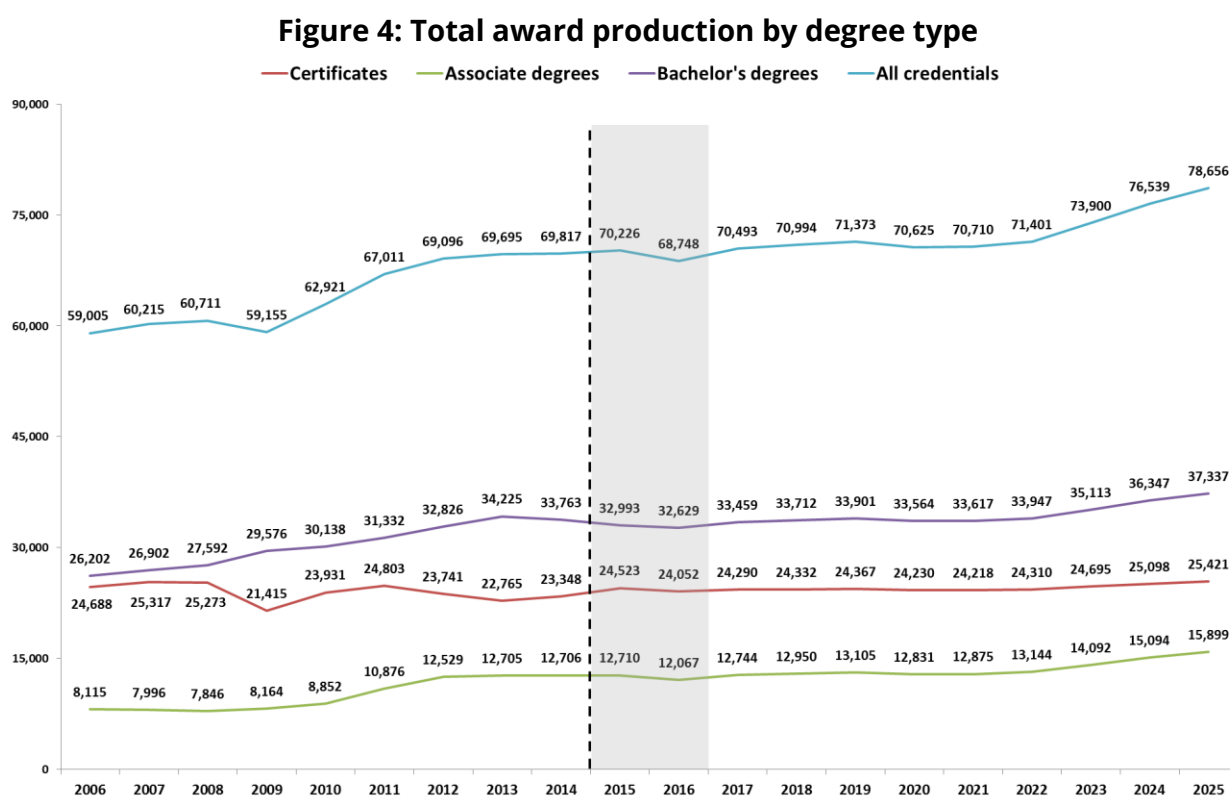


Source: THEC. (2015). *Postsecondary attainment in the decade of decision: The master plan for Tennessee postsecondary education: 2015-2025*. (Appendix C, p. 49). Nashville, TN: Author.



Total awards

**Figure 4** shows the projections of total awards by degree type to be produced by public, private, and proprietary institutions included in the sample. During the period of interest (AY 2017 – AY 2025), total award production is expected to increase, continuing the historical upward trend. All types of credentials—certificates, associate degrees, and bachelor’s degrees—are expected to increase during this time. In 2025, it is estimated that Tennessee will produce 78,656 degrees annually, compared to the 69,817 produced in AY 2014. From AY 2017 – AY 2025, additional growth in award production is needed in order to reach the goal of 55 percent educational attainment. **Figure 5** shows the projections of total awards to be produced by sector.<sup>6</sup>

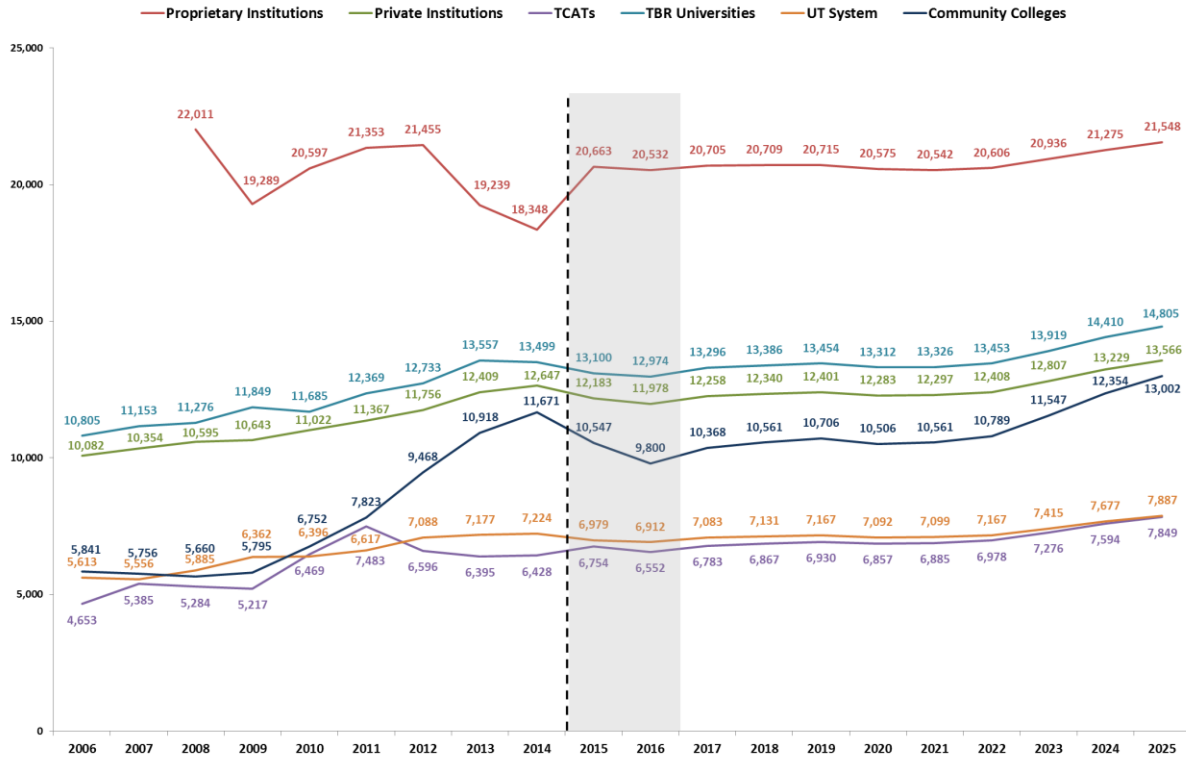


Source: THEC. (2015). *Postsecondary attainment in the decade of decision: The master plan for Tennessee postsecondary education: 2015-2025*. (Appendix B, p. 48). Nashville, TN: Author.

<sup>6</sup> The data for proprietary institutions authorized through DPSA are limited in the early years of this analysis (namely, AY 2006-2010) due to inconsistencies in the method of data collection and fluctuation in the number of institutions entering the state and ceasing operation within the state.



**Figure 5: Total award production by sector**



Source: THEC. (2015). *Postsecondary attainment in the decade of decision: The master plan for Tennessee postsecondary education: 2015-2025*. (Figure 2, p. 13). Nashville, TN: Author.

*Degree production by sector and type*

Tables 2, 3, and 4 display the number of awards produced and projected by public, private, and proprietary higher education institutions in Tennessee. These tables include historical supply data from AY 2008 through AY 2014 and projections of degree production from AY 2015 through AY 2025. **Table 2** shows the number of certificates produced since AY 2008 and those projected through AY 2025. **Table 3** does the same for associate degrees, and **Table 4** does so for bachelor’s degrees. Institutions are classified by type for each degree awarded. For example, since bachelor’s degrees are not awarded at community colleges, two-year institutions are not included in Table 4.

Continuing the historical trend, all award types at public, private, and proprietary institutions are projected to increase through 2025. In terms of percent change from 2008 to 2025, the fastest growth will occur in associate degrees (102.64 percent), followed by bachelor’s degrees (35.32 percent) and certificates (0.59 percent). In absolute numbers, bachelor’s degrees will continue to be the primary award type, followed by certificates, and then associate degrees. **Table 5** shows the total number of award types produced and projected. From 2008 to 2025, total awards in Tennessee are expected to grow by 29.56 percent.



**Table 2: Number of certificates produced and projected**

Institution Type	Number of Awards														
	History				Forecast										
	2008	2010	2012	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Community Colleges	986	1,400	2,050	2,791	2,395	2,185	2,340	2,395	2,437	2,386	2,403	2,466	2,668	2,884	3,058
TCATs	5,284	6,469	6,596	6,428	6,754	6,552	6,783	6,867	6,930	6,857	6,885	6,978	7,276	7,594	7,849
Proprietary Institutions	18,947	16,004	15,045	14,054	15,307	15,248	15,099	15,002	14,932	14,919	14,862	14,798	14,682	14,550	14,444
Private Institutions	56	58	50	75	67	67	68	68	68	68	68	68	69	70	70
Total	25,273	23,931	23,741	23,348	24,523	24,052	24,290	24,332	24,367	24,230	24,218	24,310	24,695	25,098	25,421

Source: THEC, 2015

**Table 3: Number of associate degrees produced and projected**

Institution Type	Number of Awards														
	History				Forecast										
	2008	2010	2012	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Public Universities	186	170	261	320	300	287	315	321	326	312	312	323	366	410	447
Community Colleges	4,674	5,352	7,418	8,880	8,152	7,615	8,028	8,166	8,269	8,120	8,158	8,323	8,879	9,470	9,944
Proprietary Institutions	2,479	2,841	4,280	2,840	3,609	3,549	3,786	3,846	3,892	3,778	3,783	3,876	4,230	4,602	4,901
Private Institutions	507	489	570	666	649	616	615	617	618	621	622	622	617	612	607
Total	7,846	8,852	12,529	12,706	12,710	12,067	12,744	12,950	13,105	12,831	12,875	13,144	14,092	15,094	15,899

Source: THEC, 2015

**Table 4: Number of bachelor's degrees produced and projected**

Institution Type	Number of Awards														
	History				Forecast										
	2008	2010	2012	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Public Universities	16,975	17,911	19,560	20,403	19,779	19,599	20,064	20,196	20,295	20,092	20,113	20,297	20,968	21,677	22,245
Proprietary Institutions	585	1,752	2,130	1,454	1,747	1,735	1,820	1,861	1,891	1,878	1,897	1,932	2,024	2,123	2,203
Private Institutions	10,032	10,475	11,136	11,906	11,467	11,295	11,575	11,655	11,715	11,594	11,607	11,718	12,121	12,547	12,889
Total	27,592	30,138	32,826	33,763	32,993	32,629	33,459	33,712	33,901	33,564	33,617	33,947	35,113	36,347	37,337

Source: THEC, 2015

**Table 5: Total degrees produced and projected**

Award Level	Number of Awards														
	History				Forecast										
	2008	2010	2012	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Certificates	25,273	23,931	23,741	23,348	24,523	24,052	24,290	24,332	24,367	24,230	24,218	24,310	24,695	25,098	25,421
Associate degrees	7,846	8,852	12,529	12,706	12,710	12,067	12,744	12,950	13,105	12,831	12,875	13,144	14,092	15,094	15,899
Bachelor's degrees	27,592	30,138	32,826	33,763	32,993	32,629	33,459	33,712	33,901	33,564	33,617	33,947	35,113	36,347	37,337
Total	60,711	62,921	69,096	69,817	70,226	68,748	70,493	70,994	71,373	70,625	70,710	71,401	73,900	76,539	78,656

Source: THEC, 2015

**Table 6** displays the total degrees produced from AY 2008 to AY 2014 and projected from AY 2015 through AY 2025 by sector and (if applicable) by system. In 2025, it is projected that proprietary institutions will continue to award the largest number of credentials to Tennessee students, albeit at a declining rate. The number of degrees awarded by proprietary institutions in Tennessee is projected to decrease by 2.10 percent from AY 2008 to AY 2025. Conversely, award production in all other sectors is expected to increase: 129.72 percent at community colleges, 48.54 percent at Tennessee Colleges of Applied Technology, 34.02 percent at the University of Tennessee system, 31.30 percent at Tennessee Board of Regents universities, and 28.04 percent at private institutions.





**Table 6: Total degrees produced and projected by sector**

Sector/System	Number of Awards														
	History				Forecast										
	2008	2010	2012	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Community Colleges	5,660	6,752	9,468	11,671	10,547	9,800	10,368	10,561	10,706	10,506	10,561	10,789	11,547	12,354	13,002
TCATs	5,284	6,469	6,596	6,428	6,754	6,552	6,783	6,867	6,930	6,857	6,885	6,978	7,276	7,594	7,849
TBR Universities	11,276	11,685	12,733	13,499	13,100	12,974	13,296	13,386	13,454	13,312	13,326	13,453	13,919	14,410	14,805
UT System	5,885	6,396	7,088	7,224	6,979	6,912	7,083	7,131	7,167	7,092	7,099	7,167	7,415	7,677	7,887
Proprietary Institutions	22,011	20,597	21,455	18,348	20,663	20,532	20,705	20,709	20,715	20,575	20,542	20,606	20,936	21,275	21,548
Private Institutions	10,595	11,022	11,756	12,647	12,183	11,978	12,258	12,340	12,401	12,283	12,297	12,408	12,807	13,229	13,566
Total	60,711	62,921	69,096	69,817	70,226	68,748	70,493	70,994	71,373	70,625	70,710	71,401	73,900	76,539	78,656

Source: THEC, 2015

**Appendix B** presents the total count of certificates/diplomas, associate degrees, and bachelor’s degrees awarded by proprietary institutions operating in Tennessee by program area. Most of these awards are certificates and diplomas, followed by associate degrees. The majority of students earning these credentials specialized in a small number of fields: health professions and related clinical sciences, transportation and materials moving services, mechanic and repair technology, and computer and information sciences and support services.



## WORKFORCE NEEDS

While Tennessee's higher education system is robust, workforce growth across a variety of job categories has outpaced degree production. **Table 7** presents the top 25 postsecondary programs of study for which employment opportunities are growing more rapidly than the supply of educated labor. These programs produce fewer graduates than jobs available, so there is a need for additional Tennesseans to be trained in these areas. This list of programs was compiled by the Tennessee Department of Labor and Workforce Development.<sup>7</sup> These programs are offered at public, private, and proprietary institutions across the state and yield all levels of postsecondary awards.<sup>8</sup> Additional information about the supply of graduates and workforce demand in these areas can be seen in **Appendix C**.

Selling and Sales Management constitutes the largest share of the projected deficit in Tennessee's workforce. Jobs in this field include sales managers, sales representatives, and real estate professionals. Approximately 6,985 jobs are expected to open annually in the sales industry, and it is projected that only 2 individuals will earn a credential in this area. This results in an *annual* deficit of 6,983 jobs without qualified Tennesseans to fill them. However, it is important to note that many jobs in this career area only require on-the-job training or related work experience, not a postsecondary credential. For the management-level jobs that do require a postsecondary credential, often a bachelor's degree in any field (e.g., bachelor's in business administration) fulfills the education requirement.

As the manufacturing industry continues to grow throughout the state, thousands of job opportunities are expected over the next decade. This is the case not only for those trained in Precision Production Pathways, but also for those specializing in Production Operations and Maintenance. It is projected that Tennessee will face an *annual* shortage of 5,008 qualified workers for jobs in the manufacturing industry over the next ten years. Industrial engineers have also been in short supply.

Additionally, those trained in banking and finance, administrative support, and business analysis have many employment opportunities statewide. As Tennessee's economy grows and more industries choose to enter and operate in the state, individuals who earn credentials in these fields will be invaluable resources to both new and existing businesses.

Other areas with significant demand include construction occupations, such as construction managers and supervisors, construction equipment operators, sheet metal workers, and plumbers (see **Appendix C**, section 0.2 Architecture and Construction). There is a need for electricians, although nearly 200 have been trained through apprenticeship

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<sup>7</sup> Please refer to [www.launchmycareertn.org](http://www.launchmycareertn.org) for more information about high-demand occupations, programs that prepare students for these occupations, and employee wages and salaries in Tennessee.

<sup>8</sup> The number of completers in Tables 7 and 8 includes students who completed a program at 109 public, private, and proprietary institutions and 55 public school districts across the state. The full list of institutions and school districts represented in the completion numbers can be found in **Appendix D**.



programs. Tennessee's expanding hotel capacity is creating demand for more lodging managers and convention planners. Nearly 900 openings annually are expected for early childhood and elementary teachers. The rapid pace of technological change continues to create demand for software designers and programmers, especially those with an associate degree or higher. Health occupations with potential shortages include physical therapists, workers in medical imaging, and laboratory technicians.

Conversely, Tennessee has a number of programs that are oversupplied in the workforce. **Table 8** presents the programs that graduate a larger number of students than there are jobs available, leading to a surplus of individuals trained in these areas. These degree programs include diverse fields such as cosmetology, recreation, journalism, and visual arts.



**Table 7: Programs of study with largest projected deficit in workforce preparation<sup>9</sup>**

Program of Study Code	Program of Study	Projected Annual Openings	Number of Completers, AY 2015	Projected Workforce Deficit	Median Salary
14.2000000	Selling and Sales Management	6,985	2	6,983	\$34,589
04.6000000	Administrative and Information Support	7,335	1,618	5,717	\$33,357
13.1000000	Precision Production Pathway	3,685	502	3,183	\$33,287
04.5000000	Communications Development	2,355	163	2,192	\$29,879
13.2200000	Production Operations & Maintenance	2,635	810	1,825	\$41,107
06.3120000	Banking and Finance Support Services	1,580	6	1,574	\$29,982
06.3110000	Banking and Finance	1,660	630	1,030	\$62,936
04.2120000	Accounting Administrative Support	1,715	792	923	\$33,772
02.2700000	All Other Construction	995	118	877	\$38,769
04.4000000	Business Analysis	860	86	774	\$64,644
05.1170000	Elementary Teachers, Except Special Education	1,010	392	618	\$47,983
04.3000000	Human Resources	600	66	534	\$48,897
09.2000000	Lodging Pathway	725	268	457	\$26,651
02.1220000	Technical Design & Preconstruction	410	99	311	\$64,531
05.1140000	Support Services- Adult and Continuing Education	265	2	263	\$29,538
05.2110000	Teacher Training Services- Pre-K-Early Childhood Education	475	224	251	\$33,995
11.3400000	Web/Multimedia Management, Programming	1,570	1,323	247	\$72,387
12.4140000	Fire Fighting	275	34	241	\$42,237
08.2190000	Medical Imaging- Radiography	255	46	209	\$50,698
15.1160000	Industrial Engineering	240	33	207	\$77,847
04.2110000	Accounting	1,460	1,329	131	\$58,766
01.3120000	Veterinary Technology	265	144	121	\$23,897
08.2220000	Medical and Clinical Laboratory Technicians	395	281	114	\$35,776
02.2100000	Construction Pathway - Construction Electrical	795	687	108	\$48,343
08.1170000	Physical Therapy	340	235	105	\$84,767

Source: Tennessee Department of Labor and Workforce Development, Projections to 2024.

<sup>9</sup> The programs of study in this table have occupations with annual average growth rates greater than zero, more than 10 annual openings per year, and a ratio of completers to annual average openings of 1.55 or less. In general, the occupations require more than short-term training. Among the programs of study fitting these criteria, those with the greatest gap between the number of openings and the number of program completers were selected. Other criteria used to select these programs of study included: 1) having 85 or more expected annual openings statewide per year; and 2) average annual wages in 2015 greater than \$21,641, the 25th percentile of the wage distribution in the state.



**Table 8: Programs of study with a projected workforce surplus**

<b>Program of Study</b>	<b>Projected Annual Openings</b>	<b>Number of Completers, AY 2015</b>	<b>Projected Workforce Surplus</b>
Cosmetology and Barbering	370	3,301	2,931
Recreation, Amusements and Attractions Pathway	460	2,037	1,577
Journalism and Broadcasting Pathway	240	1,563	1,323
Visual Arts Pathway - Design Communications	120	1,184	1,064
Security and Protective Services Pathway	355	1,397	1,042
Postsecondary Teachers-English Education	50	1,012	962
Construction Pathway - Construction HVAC/R	225	950	725
Postsecondary Teachers- Teacher Education	75	775	700
Support Services- Instructional Coordinators	35	727	692
Religious Activities and Education	235	865	630
Engineering Technology	80	697	617
Construction Pathway - Construction Carpenters	265	877	612
Web Design & Programming (Less than Associate Degree)	35	634	599
Fine Arts	85	524	439
Mathematics, Actuarial Science	85	490	405
Massage Therapy	60	442	382
Life Sciences	105	483	378
Audio and Video Technologies Pathway	60	433	373
Collision Repair Technology	105	476	371
Chemistry	40	401	361
Source: Tennessee Department of Labor and Workforce Development, Projections to 2024.			



## INSTITUTIONS OFFERING PROGRAMS IN HIGH-DEMAND AREAS

The following section presents the academic programs<sup>10</sup> available at public, private, and proprietary institutions in Tennessee that produce graduates who are employable in the aforementioned high-demand areas. A system identifier<sup>11</sup> and grand division locator are also provided to show the diversity of institutional sector and geographic span of these degree programs.

### a. Selling and Sales Management

Careers in this area include various positions in sales, sales management, merchandising, and real estate. Typical education requirements for these occupations include moderate on-the-job training, postsecondary vocational training, and a Bachelor’s degree.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TICUA	Christian Brothers University	West
TBR	Northeast State Community College	East
TICUA	Southern Adventist University	East
TICUA	Trevecca Nazarene University	Middle

### b. Administrative and Information Support

Careers in this area include administrative assistants, legal and medical secretaries, court clerks, and data entry keyers. Typical education requirements for these occupations include short-term or moderate on-the-job training and postsecondary vocational training.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
Proprietary	Brightwood College-Nashville	Middle
Proprietary	Chattanooga College Medical Dental and Technical Careers	East
TBR	Chattanooga State Community College	East
TBR	Cleveland State Community College	East
Proprietary	Concorde Career College-Memphis	West
Proprietary	Daymar Institute-Clarksville	Middle

<sup>10</sup> These programs were identified by the Tennessee Department of Labor and Workforce Development as providing the necessary degree to enter a respective field and do not include graduate degree programs (e.g., master’s or doctoral degrees). Additional institutions and degree programs may exist that prepare students to enter a respective field of work.

<sup>11</sup> Institutions are identified as part of the Tennessee Board of Regents (TBR), University of Tennessee (UT), or Tennessee Independent Colleges and Universities Association (TICUA) or are listed as Independent (private, not-for-profit) or Proprietary (private, for-profit).



<b>System</b>	<b>Institution</b>	<b>Grand Division</b>
Proprietary	Daymar Institute-Murfreesboro	Middle
Proprietary	Daymar Institute-Nashville	Middle
Proprietary	Genesis Career College-Cookeville	Middle
TBR	Middle Tennessee State University	Middle
Proprietary	Miller-Motte Technical College-Chattanooga	East
Proprietary	Miller-Motte Technical College-Clarksville	Middle
Proprietary	Nashville College of Medical Careers	Middle
TBR	Nashville State Community College	Middle
Proprietary	National College-Nashville	Middle
TBR	Northeast State Community College	East
TBR	Pellissippi State Community College	East
Proprietary	Remington College-Memphis Campus	West
Proprietary	Remington College-Nashville Campus	Middle
TBR	Roane State Community College	East
TICUA	Southern Adventist University	East
TBR	Southwest Tennessee Community College	West
TBR	TCAT Athens	East
TBR	TCAT Covington	West
TBR	TCAT Crossville	East
TBR	TCAT Crump	West
TBR	TCAT Dickson	Middle
TBR	TCAT Elizabethton	East
TBR	TCAT Harriman	East
TBR	TCAT Hartsville	Middle
TBR	TCAT Hohenwald	Middle
TBR	TCAT Jacksboro	East
TBR	TCAT Jackson	West
TBR	TCAT Knoxville	East
TBR	TCAT Livingston	Middle
TBR	TCAT McKenzie	West
TBR	TCAT McMinnville	Middle
TBR	TCAT Memphis	West
TBR	TCAT Morristown	East
TBR	TCAT Murfreesboro	Middle
TBR	TCAT Nashville	Middle
TBR	TCAT Newbern	West
TBR	TCAT Oneida-Huntsville	East
TBR	TCAT Paris	West
TBR	TCAT Pulaski	Middle
TBR	TCAT Ripley	West



System	Institution	Grand Division
TBR	TCAT Shelbyville	Middle
TBR	TCAT Whiteville	West
TBR	Tennessee State University	Middle
UT	The University of Tennessee Health Science Center	West
Proprietary	Vatterott College-Appling Farms	West
Proprietary	Vatterott College-Dividend	West
Proprietary	Virginia College-Knoxville	East
Proprietary	Virginia College-School of Business and Health-Chattanooga	East
TBR	Volunteer State Community College	Middle
TBR	Walters State Community College	East
Proprietary	West Tennessee Business College	West

### c. Precision Production Pathway

Careers in this area include various positions in manufacturing. Typical education requirements for these occupations include moderate on-the-job training, work experience in a related area, and postsecondary vocational training.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Chattanooga State Community College	East
TBR	Cleveland State Community College	East
TBR	Northeast State Community College	East
TBR	TCAT Athens	East
TBR	TCAT Covington	West
TBR	TCAT Crossville	East
TBR	TCAT Crump	West
TBR	TCAT Dickson	Middle
TBR	TCAT Harriman	East
TBR	TCAT Hartsville	Middle
TBR	TCAT Hohenwald	Middle
TBR	TCAT Jacksboro	East
TBR	TCAT Jackson	West
TBR	TCAT Knoxville	East
TBR	TCAT Livingston	Middle
TBR	TCAT McKenzie	West
TBR	TCAT McMinnville	Middle
TBR	TCAT Memphis	West
TBR	TCAT Morristown	East
TBR	TCAT Murfreesboro	Middle





System	Institution	Grand Division
TBR	TCAT Nashville	Middle
TBR	TCAT Newbern	West
TBR	TCAT Oneida-Huntsville	East
TBR	TCAT Paris	West
TBR	TCAT Pulaski	Middle
TBR	TCAT Shelbyville	Middle
TBR	TCAT Whiteville	West
Proprietary	William Moore College of Technology	West

#### d. Communications Development

Careers in this field include corporate communications, public information officers, and marketing coordinators. These positions most often require a bachelor's degree.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TICUA	Belmont University	Middle
TICUA	Carson-Newman University	East
TICUA	Christian Brothers University	West
TICUA	Freed-Hardeman University	West
TICUA	Lee University	East
TICUA	Lipscomb University	Middle
TICUA	Southern Adventist University	East
UT	The University of Tennessee Knoxville	East
TICUA	Trevecca Nazarene University	Middle
TICUA	Union University	West

#### e. Production Operations & Maintenance

Careers in this area include various positions in mechanical, industrial, and electrical maintenance and repair. Typical education requirements for these occupations include moderate to long-term on-the-job training and postsecondary vocational training.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Austin Peay State University	Middle
TBR	Chattanooga State Community College	East
TBR	Columbia State Community College	Middle
TBR	Dyersburg State Community College	West



System	Institution	Grand Division
TBR	Motlow State Community College	Middle
TBR	Pellissippi State Community College	East
TBR	Roane State Community College	East
TBR	Southwest Tennessee Community College	West
TBR	TCAT Athens	East
TBR	TCAT Covington	West
TBR	TCAT Crossville	East
TBR	TCAT Crump	West
TBR	TCAT Dickson	Middle
TBR	TCAT Elizabethton	East
TBR	TCAT Harriman	East
TBR	TCAT Hartsville	Middle
TBR	TCAT Hohenwald	Middle
TBR	TCAT Jackson	West
TBR	TCAT Knoxville	East
TBR	TCAT Livingston	Middle
TBR	TCAT McKenzie	West
TBR	TCAT McMinnville	Middle
TBR	TCAT Memphis	West
TBR	TCAT Morristown	East
TBR	TCAT Murfreesboro	Middle
TBR	TCAT Newbern	West
TBR	TCAT Paris	West
TBR	TCAT Pulaski	Middle
TBR	TCAT Shelbyville	Middle
TBR	TCAT Whiteville	West
Proprietary	University of Phoenix-Tennessee	West/Middle/East
TICUA	Vanderbilt University	Middle
Proprietary	William Moore College of Technology	West

## f. Banking and Finance

Careers in this area include positions such as financial managers, financial analysts, economists, and survey researchers. Undergraduate and graduate degrees in accounting and finance are suitable for this occupation. Additionally, bachelor's and graduate degrees in economics and business, offered by many institutions across the state, can lead to employment in banking and finance.

Programs leading to careers in this area are available at the following institutions:



System	Institution	Grand Division
TICUA	Belmont University	Middle
TICUA	Carson-Newman University	East
TICUA	Christian Brothers University	West
TBR	East Tennessee State University	East
TICUA	Lipscomb University	Middle
TICUA	Maryville College	East
TBR	Middle Tennessee State University	Middle
TICUA	Rhodes College	West
TICUA	Sewanee-The University of the South	Middle
TICUA	Southern Adventist University	East
Proprietary	Strayer University-Tennessee	West/Middle/East
TBR	Tennessee State University	Middle
TBR	Tennessee Technological University	Middle
UT	The University of Tennessee Chattanooga	East
UT	The University of Tennessee Knoxville	East
UT	The University of Tennessee Martin	West
TICUA	Union University	West
TBR	University of Memphis	West
TICUA	Vanderbilt University	Middle

### g. Accounting Administrative Support Services

Careers in this area include bookkeeping, accounting, auditing, and payroll and medical billing. Entry into these careers typically requires moderate on-the-job training; however, there are many opportunities throughout Tennessee for postsecondary education in this area.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Chattanooga State Community College	East
Proprietary	Daymar Institute-Clarksville	Middle
Proprietary	Daymar Institute-Murfreesboro	Middle
Proprietary	Daymar Institute-Nashville	Middle
Proprietary	Genesis Career College-Cookeville	Middle
TBR	Nashville State Community College	Middle
Proprietary	National College-Nashville	Middle
TBR	Northeast State Community College	East
TBR	Pellissippi State Community College	East
Proprietary	Ross Medical Education Center-Johnson City	East
Proprietary	Ross Medical Education Center-Knoxville	East



System	Institution	Grand Division
TBR	Southwest Tennessee Community College	West
Proprietary	Strayer University-Tennessee	West/Middle/East
Proprietary	West Tennessee Business College	West

#### **h. All Other Construction**

Careers in this area include various positions in construction, such as floor layers, painters, roofers, and highway maintenance workers. Typical education requirements for these occupations include moderate to long-term on-the-job training.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Cleveland State Community College	East
TBR	Southwest Tennessee Community College	West
TBR	TCAT Crossville	East
TBR	TCAT Harriman	East
TBR	TCAT Jackson	West
TBR	TCAT Livingston	Middle
TBR	TCAT Memphis	West
TBR	TCAT Nashville	Middle
TBR	TCAT Pulaski	Middle

#### **i. Business Analysis**

Careers in this area include business operations specialists, and budget, marketing, and management analysts. Many of these careers require a bachelor's or master's degree, which are available at most of Tennessee's public and private universities. However, one institution in the state offers a degree program focused on business analysis.

Programs leading to careers in this area are available at the following institution:

System	Institution	Grand Division
UT	The University of Tennessee Knoxville	East

#### **j. Elementary Teachers, Except Special Education**

Any education program that leads to grade K-6 licensure is included in the Elementary Education career area. A bachelor's degree or higher is required for a career in this field.

Programs leading to careers in this area are available at the following institutions:



System	Institution	Grand Division
TICUA	Aquinas College	Middle
TICUA	Belmont University	Middle
TICUA	Bethel University	West
TICUA	Bryan College-Dayton	East
TICUA	Carson-Newman University	East
TICUA	Christian Brothers University	West
TICUA	Cumberland University	Middle
TBR	East Tennessee State University	East
TICUA	Freed-Hardeman University	West
TICUA	Johnson University	East
TICUA	Lee University	East
TICUA	Lincoln Memorial University	East
TICUA	Lipscomb University	Middle
TICUA	Martin Methodist College	Middle
TBR	Northeast State Community College	East
Proprietary	South College	East
TICUA	Southern Adventist University	East
TBR	Tennessee State University	Middle
TICUA	Tennessee Wesleyan College	East
UT	The University of Tennessee Chattanooga	East
TICUA	Trevecca Nazarene University	Middle
TICUA	Union University	West
TICUA	Vanderbilt University	Middle
TICUA	Welch College	Middle

### k. Human Resources

Careers in this category include human resource specialists and training and development specialists. Those who seek a career in human resource management typically earn a bachelor's or master's degree in business administration. Undergraduate degree programs in Human Resources are available at the institutions listed in the table below. However, bachelor's programs in business administration—some of which offer a specialization in human resources—are available at a variety of institutions across the state. These degrees would also qualify individuals to work in the field of human resources.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
Proprietary	Argosy University-Nashville	Middle
TBR	University of Memphis	West
TICUA	Vanderbilt University	Middle



## I. Lodging Pathway

Individuals working in this field include hotel managers, restaurateurs, hospitality specialists, and event planners. Typical education requirements for these occupations include short-term on-the-job training and work experience in a related occupation.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TICUA	Christian Brothers University	West
Proprietary	L'Ecole Culinaire-Memphis	West
TBR	Pellissippi State Community College	East
TBB	Southwest Tennessee Community College	West
UT	The University of Tennessee Knoxville	East
TBR	University of Memphis	West

## m. Technical Design & Preconstruction

Careers in this area include wood model makers, pattern makers, and production specialists. Work experience in a related occupation or long-term on-the-job training is necessary for employment in production design. Additionally, Tennessee Technological University offers a Bachelor of Fine Arts degree with a concentration in Wood Working, which would prepare Tennesseans for careers in this area.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Cleveland State Community College	East
TBR	Middle Tennessee State University	Middle
TBR	Pellissippi State Community College	East
TBR	Southwest Tennessee Community College	West
Proprietary	Vatterott College-Dividend	West

## n. Support Services – Adult and Continuing Education

Careers in this area include positions such as adult basic education teachers and self-enrichment education teachers. Typically, these occupations require a bachelor's degree and work experience in a related field.

Programs leading to careers in this area are available at the following institutions:



System	Institution	Grand Division
TBR	University of Memphis	West
TICUA	Welch College	Middle

#### **o. Teacher Training Services – Pre-K – Early Childhood Education**

Preschool and Kindergarten teachers are included in the Pre-K/Early Childhood Education career category. Vocational training or a bachelor’s degree is required for a career in this field.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
TICUA	Carson-Newman University	East
TICUA	Christian Brothers University	West
TBR	East Tennessee State University	East
TICUA	Freed-Hardeman University	West
TICUA	Johnson University	East
TICUA	Le Moyne-Owen College	West
TICUA	Lee University	East
TBR	Middle Tennessee State University	Middle
TICUA	Southern Adventist University	East
TBR	Tennessee State University	Middle
TBR	Tennessee Technological University	Middle
TICUA	Tennessee Wesleyan College	East
UT	The University of Tennessee Chattanooga	East
TICUA	Trevecca Nazarene University	Middle
TICUA	Union University	West
TICUA	Vanderbilt University	Middle
TICUA	Welch College	Middle

#### **p. Web/Multimedia Management, Programming**

Careers in this area include software developers, computer programmers, information systems managers, and database administrators. An associate or bachelor’s degree is typically required for a career in this field.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
Proprietary	Argosy University-Nashville	Middle
TBR	Austin Peay State University	Middle



<b>System</b>	<b>Institution</b>	<b>Grand Division</b>
TICUA	Belmont University	Middle
TICUA	Bethel University	West
TICUA	Bryan College-Dayton	East
TICUA	Carson-Newman University	East
TBR	Chattanooga State Community College	East
TICUA	Christian Brothers University	West
TBR	Columbia State Community College	Middle
TICUA	Cumberland University	Middle
Proprietary	Daymar Institute-Clarksville	Middle
Proprietary	Daymar Institute-Murfreesboro	Middle
Proprietary	DeVry University-Tennessee	West/Middle/East
TBR	Dyersburg State Community College	West
TBR	East Tennessee State University	East
TICUA	Fisk University	Middle
Proprietary	Fountainhead College of Technology	East
TICUA	Freed-Hardeman University	West
TBR	Jackson State Community College	West
TICUA	King University	East
TICUA	Lane College	West
TICUA	Le Moyne-Owen College	West
TICUA	Lee University	East
TICUA	Lipscomb University	Middle
TICUA	Maryville College	East
TBR	Middle Tennessee State University	Middle
TICUA	Milligan College	East
TBR	Motlow State Community College	Middle
TBR	Nashville State Community College	Middle
Proprietary	National College-Nashville	Middle
TBR	Northeast State Community College	East
TBR	Pellissippi State Community College	East
TICUA	Rhodes College	West
TICUA	Sewanee-The University of the South	Middle
TICUA	Southern Adventist University	East
TBR	Southwest Tennessee Community College	West
Proprietary	Strayer University-Tennessee	West/Middle/East
TBR	TCAT Crossville	East
TBR	TCAT Jacksboro	East
TBR	TCAT Shelbyville	Middle
TBR	Tennessee State University	Middle
TBR	Tennessee Technological University	Middle





System	Institution	Grand Division
TICUA	Tennessee Wesleyan College	East
UT	The University of Tennessee Chattanooga	East
UT	The University of Tennessee Knoxville	East
UT	The University of Tennessee Martin	West
TICUA	Union University	West
TBR	University of Memphis	West
Proprietary	University of Phoenix-Tennessee	West/Middle/East
TICUA	Vanderbilt University	Middle
TBR	Walters State Community College	East

#### q. Fire Fighting

Careers in this area include fire fighters, fire inspectors, and fire investigators. Education requirements for this line of work typically involve on-the-job training or work experience in a related occupation.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
TBR	Chattanooga State Community College	East
TBR	Southwest Tennessee Community College	West
TBR	Volunteer State Community College	Middle

#### r. Medical Imaging – Radiography

Radiologic technologists and technicians as well as magnetic resonance imaging technologists are included in this career category. These occupations require at least an associate degree.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TICUA	Baptist Memorial College of Health Sciences	West
Proprietary	Concorde Career College-Memphis	West
Proprietary	South College	East



### s. Industrial Engineering

Careers in this field require a minimum of a bachelor's degree in engineering. Several public and private institutions in the state offer degrees in general engineering, but only two institutions in the state offer degrees specifically in industrial engineering.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
TBR	Tennessee Technological University	Middle
UT	The University of Tennessee Knoxville	East

### t. Accounting

Accountants and auditors are included in this career category. A minimum of a bachelor's degree is required for a career in this field.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TICUA	Belmont University	Middle
TICUA	Bethel University	West
TICUA	Carson-Newman University	East
TICUA	Christian Brothers University	West
TICUA	Cumberland University	Middle
Proprietary	DeVry University-Tennessee	West/Middle/East
TBR	East Tennessee State University	East
TICUA	Freed-Hardeman University	West
TICUA	Le Moyne-Owen College	West
TICUA	Lee University	East
TICUA	Lincoln Memorial University	East
TICUA	Lipscomb University	Middle
TICUA	Martin Methodist College	Middle
TICUA	Maryville College	East
TBR	Middle Tennessee State University	Middle
TICUA	Milligan College	East
Proprietary	National College-Nashville	Middle
TICUA	Rhodes College	West
Proprietary	South College	East
TICUA	Southern Adventist University	East
Proprietary	Strayer University-Tennessee	West/Middle/East



System	Institution	Grand Division
TBR	Tennessee State University	Middle
TBR	Tennessee Technological University	Middle
TICUA	Tennessee Wesleyan College	East
UT	The University of Tennessee Chattanooga	East
UT	The University of Tennessee Knoxville	East
UT	The University of Tennessee Martin	West
TICUA	Trevecca Nazarene University	Middle
TICUA	Union University	West
TBR	University of Memphis	West
Proprietary	University of Phoenix-Tennessee	West/Middle/East
TICUA	Vanderbilt University	Middle

#### u. Veterinary Technology

Careers in this area include positions such as veterinary technicians and technologists. Typical education requirements for these occupations include an associate degree and moderate on-the-job training.

Programs leading to careers in this area are available at the following institutions:

System	Institution	Grand Division
TBR	Chattanooga State Community College	East
TBR	Columbia State Community College	Middle
Independent	Hiwassee College	East
TICUA	Lincoln Memorial University	East
TBR	Middle Tennessee State University	Middle
TBR	Tennessee College of Applied Technology-Memphis	West
TBR	Volunteer State Community College	Middle

#### v. Medical and Clinical Laboratory Technicians

Medical and clinical lab technicians can specialize in high-need areas such as phlebotomy, ultrasounds, or general laboratory work. Careers in this category require an associate degree, and specialized training is available at several universities throughout the state.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
Proprietary	Concorde Career College-Memphis	West
Proprietary	Fortis Institute-Cookeville	Middle



System	Institution	Grand Division
Proprietary	Fortis Institute-Nashville	Middle
TBR	Jackson State Community College	West
TBR	Southwest Tennessee Community College	West
TBR	TCAT Murfreesboro	Middle
TBR	Volunteer State Community College	Middle

### w. Construction Pathways – Construction Electrical

Careers in this area include positions such as electricians, elevator installers, and telecommunication line installers. Typical education requirements for these careers include on-the-job training and postsecondary vocational training.

Programs leading to careers in this field are available at the following institutions:

System	Institution	Grand Division
Proprietary	Brightwood College-Nashville	Middle
TBR	Chattanooga State Community College	East
Proprietary	Miller-Motte Technical College-Madison	Middle
TBR	Nashville State Community College	Middle
TBR	Northeast State Community College	East
TBR	Southwest Tennessee Community College	West
TBR	TCAT Athens	East
TBR	TCAT Jackson	West
TBR	TCAT Knoxville	East
TBR	TCAT McMinnville	Middle
TBR	TCAT Morristown	East
TBR	TCAT Nashville	Middle
TBR	TCAT Pulaski	Middle
TBR	TCAT Ripley	West
TBR	TCAT Whiteville	West

### x. Physical Therapy

A career as a physical therapist requires at least a master's degree. Two institutions in the state have undergraduate programs that prepare students specifically for graduate programs in physical therapy.

Programs leading to careers in this field are available at the following institutions:



<b>System</b>	<b>Institution</b>	<b>Grand Division</b>
TICUA	Southern Adventist University	East
UT	The University of Tennessee Chattanooga	East



## CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

### *Conclusions*

Projections of the supply of postsecondary degrees to be awarded indicate that all levels of certificates and degrees will increase through 2025. This growth is particularly dramatic for associate degrees; however, the number of bachelor's degrees and certificates will also increase steadily. THEC will monitor and, if necessary, refine these degree projections as the implementation of the 2015-2025 *Master Plan for Tennessee Postsecondary Education* continues.

Selling and sales management, administrative support, production, and business and finance are career fields in great demand—there are more employment opportunities in these areas than there are skilled workers to fill them. Careers in these fields require all levels of postsecondary credentials, ranging from certificates earned in less than one year to master's or doctoral degrees. Alternatively, certificates and degrees leading to jobs in cosmetology, recreation and attractions, journalism, and visual arts are oversupplied, as the number of trained Tennesseans far exceeds the number of jobs available.

### *Limitations*

Supply and demand analyses are useful for educators, employers, and policymakers at all levels. However, two underlying limitations exist:

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 incorrect for various occupational fields, particularly emerging fields with limited historical data and those fields with high supply-to-demand ratios (oversupplied fields).

Also, the relationship between supply and demand is most direct at the sub-baccalaureate level (certificates and associate degrees) and with specialized programs at the doctoral and professional level. For example, someone with a certificate in automotive repair or a medical specialization in Cardiology is much more likely than someone holding a bachelor's degree in English to hold a job that is *extremely specific* to their field of study. As such, it is more straightforward to link individuals with specialized degrees to specific employment areas. This is not true for those holding more versatile bachelor's and master's degrees, as graduates with these degrees are employable in a number of fields.

### *Recommendations*

Future discussion of degrees awarded and the demand for labor in particular areas would benefit from regional and county-level disaggregation, as opposed to exploring this issue



on a statewide scale. In doing so, educators, employers, and policymakers can better determine the education and workforce needs that are unique to a particular area and can target funds and interventions accordingly.

Finally, data that are newly available to the Department of Labor and Workforce Development include information on employer certification requirements for tens of thousands of job openings currently listed on [jobs4tn.gov](http://jobs4tn.gov). Analysis of these data could better inform higher education institutions about current job requirements and refine program offerings to more closely match employer demand.



**Appendix A: Tennessee Code Annotated § 49-7-112**







# State of Tennessee

## PUBLIC CHAPTER NO. 88

HOUSE BILL NO. 566

By Representatives Love, Hardaway

Substituted for: Senate Bill No. 618

By Senators Tate, Finney, Ford, Bowling, Harper, Norris

AN ACT to amend Tennessee Code Annotated, Title 49, relative to workforce assessment.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Title 49, Chapter 7, Part 1, is amended by adding the following language as a new section:

49-7-1\_\_

(a) This section shall be known and may be cited as the "Skills for Jobs Act".

(b) To the extent practicable within available resources and subject to the availability of data currently collected by and accessible to state agencies, the Tennessee higher education commission, in consultation with the department of labor and any other entity the commission deems appropriate, shall produce an annual report regarding state workforce need projections and credential production. The report shall:

(1) Indicate the state's anticipated workforce needs and the number of degrees, certificates, and other credentials that public and private institutions of higher education, including schools authorized under the Postsecondary Authorization Act, compiled in chapter 7, part 20, expect to issue;

(2) To the extent provided by sources external to the commission, indicate the state's anticipated number of degrees, certificates, and other credentials that high school career and technical programs, apprenticeship programs, and other public or private workforce training programs expect to issue;

(3) Identify any workforce needs, including areas of specialization within a particular vocation, that may not be met by the education, training, and apprenticeship programs; and

(4) Identify institutions, public or private, that may meet projected workforce needs.

(c) The department of labor and workforce development shall provide data on the state's anticipated workforce needs and other information, as requested by the Tennessee higher education commission, that is necessary to produce the report under subsection (b) by October 1, 2013, and by October 1 of each year thereafter.

(d) The commission, by January 15, 2014, and by January 15 of each year thereafter, shall provide a copy of the report to the Education Committees of the House of Representatives and the Senate, the Business and Utilities Committee of the House of Representatives, the Commerce and Labor Committee of the Senate and the Governor. The

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commission shall send the report to the board of regents, the University of Tennessee board of trustees and the Tennessee Independent Colleges and Universities Association. The commission shall work with the department of education to provide the report to the state's public school districts and private elementary, middle, and high schools. The report may be provided electronically.

SECTION 2. This act shall take effect upon becoming a law, the public welfare requiring it.

HOUSE BILL NO. 566

PASSED: MARCH 21, 2013

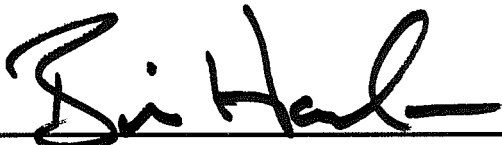


BETH HARWELL, SPEAKER  
HOUSE OF REPRESENTATIVES



RON RAMSEY  
SPEAKER OF THE SENATE

APPROVED this 8<sup>th</sup> day of April 2013



BILL HASLAM, GOVERNOR

## Appendix B: Awards by program and level for proprietary and not-for-profit institutions in Tennessee, FY 2014-15

	All Awards		Certificates and Diplomas		Associate Degrees		Bachelor's Degrees	
	Proprietary	Not-for-Profit	Proprietary	Not-for-Profit	Proprietary	Not-for-Profit	Proprietary	Not-for-Profit
<b>All Programs</b>	<b>15,235</b>	<b>1,302</b>	<b>10,759</b>	<b>869</b>	<b>2,661</b>	<b>153</b>	<b>1,815</b>	<b>280</b>
Administrative and Clerical Support	16	19	8	19	8	-	-	-
Aeronautics and Aviation	217	10	145	-	72	4	-	6
Agriculture Operations and Related Sciences	-	2	-	-	-	2	-	-
Allied Health	5,159	548	3,896	493	971	48	292	7
Bartending and Hospitality	357	-	349	-	3	-	5	-
Business, Management, Marketing and Related Services	802	74	34	-	246	17	522	57
Communications Technologies and Support Services	1	-	-	-	-	-	1	-
Communications, Journalism and Related Fields	13	-	-	-	5	-	8	-
Computer and Information Sciences and Support Services	835	124	320	101	322	21	193	2
Construction Trades	874	38	712	38	162	-	-	-
Counseling/Social Work	-	24	-	-	-	-	-	24
Criminal Justice	227	57	8	-	99	33	120	24
Culinary Services	363	-	134	-	208	-	21	-
Education	133	41	-	15	43	-	90	26
Engineering	117	-	-	-	101	-	16	-
English Language and Literature/Letters	13	-	-	-	-	-	13	-
Family and Consumer Sciences/Human Sciences	1	-	-	-	-	-	1	-
Finance, Accounting and Economics	109	-	-	-	26	-	83	-
History	2	1	-	-	-	-	2	1
Human Resources and Human Sciences	108	10	-	-	35	-	73	10
Law, Legal Services and Legal Studies	55	-	-	-	45	-	10	-
Mechanic and Repair Technology	1,103	40	983	26	120	14	-	-
Medical Billing and Coding	216	52	187	52	29	-	-	-
Multi/Interdisciplinary Studies	13	4	-	-	12	-	1	4
Natural Resources and Research	12	-	-	-	-	-	12	-
Nursing	5	-	-	-	-	-	5	-
Physical Sciences	2	-	-	-	-	-	2	-
Protective Services	18	9	-	9	10	-	8	-
Psychology	203	5	-	-	41	-	162	5
Public Administration and Services	-	1	-	-	-	-	-	1
Science Technologies/Technicians	1	-	-	-	1	-	-	-
Social Sciences	42	5	-	-	-	1	42	4
Theological Studies and Religious Vocations	2	203	-	96	-	7	2	100
Transportation and Materials Moving Services	3,719	20	3,716	20	2	-	1	-
Visual and Performing Arts	470	3	242	-	100	-	128	3
Other	27	12	25	-	-	6	2	6

Source: THEC, 2015



**Appendix C: Supply and demand projections for the 25 highest-demand fields in Tennessee's workforce, prepared by the Tennessee Department of Labor and Workforce Development, 2016<sup>12</sup>**

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<sup>12</sup> Appendix C contains information on the average annual openings expected for occupations in demand and the number of program completers in 2015 who may have been qualified to fill those openings. For the first time, this year's report contains information on the number of completers of registered apprenticeship programs in the state, as well as those who completed programs not currently certified by the Tennessee Higher Education Commission. If there are additional completers, this information appears on the bottom of each program of study report. This additional information should enhance understanding of the supply and demand relationships in these programs of study.



# .1 Agriculture, Food and Natural Resources

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **01.3120000**  
Cluster Title: **Veterinary Technology**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
292056	Veterinary Technologists and Technicians	1,620	2,240	80	3.3	\$29,923.00	Associate degree
*****	*****	1,820	2,120	65	1.5	\$22,958.00	Short-term on-the-job training
392011	Animal Trainers	230	290	15	2.3	\$23,998.00	Moderate-term on-the-job training
392021	Nonfarm Animal Caretakers	3,020	3,730	105	2.1	\$19,873.00	Short-term on-the-job training
<b>Totals:</b>		<b>6,690</b>	<b>8,380</b>	<b>265</b>	<b>2.3</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
010307	Horse Husbandry/Equine Science and Management.			2	6	
510808	Veterinary/Animal Health Technology/Technician and Veterinar	29	81	11		
<b>Totals:</b>		<b>29</b>	<b>81</b>	<b>13</b>	<b>6</b>	

TOTAL SUPPLY: 129  
TOTAL DEMAND: 265  
SUPPLY/DEMAND RATIO: .49

## Additional Supply Data

New Supply/Demand Ratio: 0.54

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>01.3120000</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>
All About Dog Grooming, Certified Master All Breed Professional Groomer (4453- 12)	4	0	0	0	0	0	0	0	
Master Professional All Breed Groomer, Certificate of Completion (933-01)	11	0	0	0	0	0	0	0	

## 0.2 Architecture and Construction

Area  
Tennessee  
Statewide  
1.3

Projection Time (Years) = 10  
Average Occupational Growth Rate =

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**02.1220000**

Cluster Title  
**Technical Design & Preconstruction**

DEMAND DATA		Average					Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	
119021	Construction Managers	11,380	11,890	230	0.4	\$77,057.00	Bachelor's degree
131051	Cost Estimators	1,875	2,183	91	1.5	\$55,804.00	Bachelor's degree
173022	Civil Engineering Technicians	1,170	1,270	35	0.8	\$51,152.00	Associate degree
474011	Construction and Building Inspectors	1,480	1,670	55	1.2	\$46,053.00	Work experience in a related occupation
<b>Totals:</b>		<b>15,905</b>	<b>17,013</b>	<b>411</b>	<b>0.7</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
150101	Architectural Engineering Technology/Technician.	22	6				
150201	Civil Engineering Technology/Technician.	3					
460499	Building/Construction Finishing, Management, and Inspection,		42				
522001	Construction Management.			26			
<b>Totals:</b>		<b>25</b>	<b>48</b>	<b>26</b>			
<b>TOTAL SUPPLY:</b>		<b>99</b>					
<b>TOTAL DEMAND:</b>		<b>411</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.24</b>					

## 0.2 Architecture and Construction

Area  
Tennessee  
Statewide

Projection Time (Years) = 10

Base Year: 2014  
Projected Year  
Employment: 2024

Average Occupational Growth Rate = 1.3

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**02.2100000**

Cluster Title  
**Construction Pathway - Construction Electrical**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
472111	Electricians	12,620	14,260	400	1.2	\$46,059.00	Long-term on-the-job training
473013	Helpers--Electricians	1,780	2,220	70	2.2	\$28,431.00	Short-term on-the-job training
474021	Elevator Installers and Repairers	320	380	10	1.7	\$54,306.00	Long-term on-the-job training
*****	*****	650	630	15	-0.3	\$74,407.00	Post-secondary vocational training
492098	Security and Fire Alarm Systems Installers	1,380	1,660	55	1.9	\$40,337.00	Post-secondary vocational training
499012	Control and Valve Installers and Repairers, Except	760	820	30	0.8	\$45,984.00	Moderate-term on-the-job training
*****	*****	3,330	3,730	155	1.1	\$68,309.00	Long-term on-the-job training
499052	Telecommunications Line Installers and Repairers	1,880	2,000	60	0.6	\$36,233.00	Long-term on-the-job training
<b>Totals:</b>		<b>22,720</b>	<b>25,700</b>	<b>795</b>	<b>1.2</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
460301	Electrical and Power Transmission Installation/Installer, Ge	9					
460302	Electrician.	165	9				
4603AH	Electrical I					54	
4603BH	Residential Electricity II					66	
<b>Totals:</b>		<b>174</b>	<b>9</b>			<b>120</b>	
<b>TOTAL SUPPLY:</b>		<b>303</b>					
<b>TOTAL DEMAND:</b>		<b>795</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.38</b>					

### Additional Supply Data

New Supply/Demand Ratio: 0.86

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>02.2100000</b>	<b>43</b>	<b>123</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>218</b>	<b>384</b>
Cabling Specialist, Certificate of Completion (3024-08)	1	0	0	0	0	0	0		

(continued)



**o.2 Architecture and Construction (continued)**

Cabling Specialist, Certificate of Completion (5700-13)	1	0	0	0	0	0	0	0	
Electrical Fundamentals, Certificate (6706-15)	1	0	0	0	0	0	0	0	
Electrical Lineworker Program, Certificate (1129-02)	40	0	0	0	0	0	0	0	
ELECTRICIAN									184
ELECTRICIAN, MAINTENANCE									1
ELECTRICIAN, POWERHOUSE									2
ELECTRICIAN, SUBSTATION									4
ELEVATOR CONSTRUCTOR MECHANIC									4
LINE ERECTOR									4
LINE INSTALLER-REPAIRER									19
Pre-Apprentice Line worker, Diploma (3016-07)	0	123	0	0	0	0	0	0	

## 0.2 Architecture and Construction

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year: 2024  
Employment:

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: 02.2700000  
Cluster Title: All Other Construction

SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Average Annual		Usual Education Requirements
					Growth (%)	Annual Median Salary	
471011	Supervisors of Construction and Extraction Workers	9,080	10,080	200	1.1	\$52,688.00	Work experience in a related occupation
*****	*****	320	320	5	0.0	\$32,716.00	Moderate-term on-the-job training
472042	Floor Layers, Except Carpet, Wood, and Hard Tiles	260	290	10	1.1	\$36,233.00	Moderate-term on-the-job training
472043	Floor Sanders and Finishers	30	40	2.9	2.9	\$23,698.00	Moderate-term on-the-job training
*****	*****	40	40	4.0	0.0		Long-term on-the-job training
472071	Paving, Surfacing, and Tamping Equipment Operators	1,530	1,730	40	1.2	\$32,976.00	Moderate-term on-the-job training
472072	Pile-Driver Operators	40	50	5.0	2.3		Moderate-term on-the-job training
472073	Operating Engineers and Other Construction Equipme	4,510	4,990	150	1.0	\$36,789.00	Moderate-term on-the-job training
472081	Drywall and Ceiling Tile Installers	1,410	1,450	15	0.3	\$34,910.00	Moderate-term on-the-job training
472082	Tapers	290	290	5	0.0	\$37,237.00	Moderate-term on-the-job training
472121	Glaziers	930	1,000	30	0.7	\$32,445.00	Long-term on-the-job training
472131	Insulation Workers, Floor, Ceiling, and Wall	470	550	15	1.6	\$32,839.00	No category defined
472132	Insulation Workers, Mechanical	370	500	20	3.1	\$37,772.00	No category defined
472141	Painters, Construction and Maintenance	4,420	4,870	110	1.0	\$30,687.00	Moderate-term on-the-job training
472142	Paperhangers	40	40	4.0	0.0	\$25,165.00	Moderate-term on-the-job training
472161	Plasterers and Stucco Masons	400	430	5	0.7	\$34,526.00	Long-term on-the-job training
472171	Reinforcing Iron and Rebar Workers	110	120	5	0.9	\$38,440.00	Long-term on-the-job training
472181	Roofers	2,570	2,560	55	0.0	\$32,618.00	Moderate-term on-the-job training
472211	Sheet Metal Workers	3,900	4,090	95	0.5	\$38,108.00	Moderate-term on-the-job training
472221	Structural Iron and Steel Workers	1,020	1,110	40	0.8	\$40,751.00	Long-term on-the-job training
*****	*****	190	220	5	1.5	\$30,885.00	Moderate-term on-the-job training
474041	Hazardous Materials Removal Workers	1,060	1,000	25	-0.6	\$49,130.00	Moderate-term on-the-job training
474051	Highway Maintenance Workers	3,080	3,320	70	0.8	\$27,754.00	Moderate-term on-the-job training
474071	Septic Tank Servicers and Sewer Pipe Cleaners	450	510	15	1.3	\$32,152.00	Moderate-term on-the-job training
474099	Construction and Related Workers, All Other	400	400	5	0.0	\$37,694.00	No category defined
475021	Earth Drillers, Except Oil and Gas	400	420	15	0.5	\$42,897.00	Moderate-term on-the-job training
499095	Manufactured Building and Mobile Home Installers	250	220	5	-1.3	\$25,507.00	Moderate-term on-the-job training
537021	Crane and Tower Operators	660	780	35	1.7	\$42,513.00	Moderate-term on-the-job training
537031	Dredge Operators	60	50	2.0	-1.8	\$36,650.00	Moderate-term on-the-job training
537032	Excavating and Loading Machine and Dragline Operat	1,280	1,410	20	1.0	\$35,148.00	Moderate-term on-the-job training
<b>Totals:</b>		<b>39,570</b>	<b>42,880</b>	<b>995</b>	<b>0.8</b>		

SUPPLY DATA						
CIP CODE(S)	CIP TITLE(S)	No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
460415	Building Construction Technology.	12				
4604EH						1
469999	Construction Trades, Other.	19	20			
4699CH	Construction Core					33
<b>Totals:</b>		<b>31</b>	<b>20</b>			<b>34</b>

**TOTAL SUPPLY:** 85  
**TOTAL DEMAND:** 995  
**SUPPLY/DEMAND RATIO:** .09

(continued)

o.2 Architecture and Construction *(continued)*

Additional Supply Data

New Supply/Demand Ratio: 0.12

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
02.2700000								33	
CONSTRUCTION CRAFT LABORER								1	
INSULATION WORKER								7	
SHEET METAL WORKER								16	
STRUCTURAL STEEL/IRONWORKER								9	

## 0.4 Business, Management and Administration

Area  
Tennessee  
Statewide  
1.3

Projection Time (Years) = -10  
Average Occupational Growth Rate =

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **04.2110000** Cluster Title: **Accounting**

DEMAND DATA		Average					
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
132011	Accountants and Auditors	22,830	30,660	1,460	3.0	\$58,766.00	Bachelor's degree
<b>Totals:</b>		<b>22,830</b>	<b>30,660</b>	<b>1,460</b>	<b>3.0</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
520301	Accounting.		15	845	363		
520304	Accounting and Finance.			11	29		
520305	Accounting and Business/Management.		8	58			
<b>Totals:</b>			<b>23</b>	<b>914</b>	<b>392</b>		
<b>TOTAL SUPPLY:</b>		<b>1,329</b>					
<b>TOTAL DEMAND:</b>		<b>1,460</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.91</b>					

## 0.4 Business, Management and Administration

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **04.2120000**  
Cluster Title: **Accounting Administrative Support**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
433021	Billing and Posting Clerks	12,490	16,200	600	2.6	\$31,484.00	Short-term on-the-job training
433031	Bookkeeping, Accounting, and Auditing Clerks	33,390	39,400	910	1.7	\$34,472.00	Moderate-term on-the-job training
433051	Payroll and Timekeeping Clerks	4,300	5,290	195	2.1	\$37,543.00	Short-term on-the-job training
*****	*****	210	250	10	1.8		Moderate-term on-the-job training
<b>Totals:</b>		<b>50,390</b>	<b>61,140</b>	<b>1,715</b>	<b>2.0</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
510714	Medical Insurance Specialist/Medical Biller.	30				
520302	Accounting Technology/Technician and Bookkeeping.	96	49			
<b>Totals:</b>		<b>126</b>	<b>49</b>			

TOTAL SUPPLY:	175
TOTAL DEMAND:	1,715
SUPPLY/DEMAND RATIO:	.10

### Additional Supply Data

New Supply/Demand Ratio: 0.46

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>04.2120000</b>	<b>617</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>617</b>
Income Tax Course, Certificate (304-87)	617	0	0	0	0	0	0		617

## 0.4 Business, Management and Administration

Area	Projection Time (Years) = 10	Base Year:	2014	Cluster Grade = A The outlook for this cluster is Excellent. The GROWTH rate is above the average for all occupations across the state. There are more job openings expected annually than there were training completers in a recent year.			
Tennessee	Average Occupational Growth Rate = 1.3	Projected Year					
Statewide		Employment:	2024				
Cluster Code	Cluster Title						
04.3000000	Human Resources						
<b>DEMAND DATA</b>							
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
131071	Human Resources, Training, and Labor Relations Spe	6,580	7,890	250	1.8	\$49,671.00	Bachelor's degree
131075	Labor Relations Specialists	520	500	10	-0.4	\$59,673.00	No category defined
131141	Compensation, Benefits & Job Analysis Specialists	1,390	1,630	50	1.6	\$53,154.00	Bachelor's degree
131151	Training and Development Specialists	4,760	5,840	195	2.1	\$52,245.00	Bachelor's degree
434161	Human Resources Assistants, Except Payroll and Tim	3,170	3,320	95	0.5	\$36,612.00	Short-term on-the-job training
<b>Totals:</b>		<b>16,420</b>	<b>19,180</b>	<b>600</b>	<b>1.6</b>		
<b>SUPPLY DATA</b>							
CIP CODE(S)	CIP TITLE(S)	No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
521003	Organizational Behavior Studies.				66		
<b>Totals:</b>					<b>66</b>		
<b>TOTAL SUPPLY:</b>		<b>66</b>					
<b>TOTAL DEMAND:</b>		<b>600</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.11</b>					

## 0.4 Business, Management and Administration

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
04.4000000

Cluster Title  
Business Analysis

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
131111	Management Analysts	9,540	12,120	405	2.4	\$72,948.00	Work experience, plus bachelor's degree
131199	Business Operations Specialists, All Other	12,720	14,340	335	1.2	\$55,686.00	No category defined
132031	Budget Analysts	800	910	45	1.3	\$61,730.00	Bachelor's degree
152031	Operations Research Analysts	1,190	1,660	75	3.4	\$61,559.00	Master's degree
<b>Totals:</b>		<b>24,250</b>	<b>29,030</b>	<b>860</b>	<b>1.8</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
521302	Business Statistics.			49	37		
<b>Totals:</b>				<b>49</b>	<b>37</b>		
<b>TOTAL SUPPLY:</b>		<b>86</b>					
<b>TOTAL DEMAND:</b>		<b>860</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.10</b>					

## 0.4 Business, Management and Administration

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year: 2024  
Employment:

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**04.5000000**

Cluster Title  
**Communications Development**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
273031	Public Relations Specialists	3,090	3,520	85	1.3	\$50,876.00	Bachelor's degree
434051	Customer Service Representatives	50,340	59,350	2,270	1.7	\$29,093.00	Moderate-term on-the-job training
<b>Totals:</b>		<b>53,430</b>	<b>62,870</b>	<b>2,355</b>	<b>1.6</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
090900	Public Relations, Advertising, and Applied Communication.			32			
090901	Organizational Communication, General.			3			
090902	Public Relations/Image Management.			114			
090999	Public Relations, Advertising, and Applied Communication, Ot			11			
520501	Business/Corporate Communications.			3			
<b>Totals:</b>				<b>163</b>			
<b>TOTAL SUPPLY:</b>				<b>163</b>			
<b>TOTAL DEMAND:</b>				<b>2,355</b>			
<b>SUPPLY/DEMAND RATIO:</b>				<b>.07</b>			



# 0.4 Business, Management and Administration

Area: Tennessee  
 Statewide  
 1.3  
 Projection Time (Years) = 10  
 Average Occupational Growth Rate =

Base Year: 2014  
 Projected Year: 2024  
 Employment:

Cluster Grade = B  
 The outlook for this cluster is Very Good.  
 The growth rate is positive but not above the average for all occupations.  
 There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: 04.6000000  
 Cluster Title: Administrative and Information Support

DEMAND DATA		Average					Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	
*****	*****	120	150	5	2.3	\$62,175.00	Post-secondary vocational training
319094	Medical Transcriptionists	2,540	3,260	120	2.5	\$32,025.00	Post-secondary vocational training
431011	First-Line Supervisors of Office and Administrative	32,820	38,910	1,390	1.7	\$47,520.00	Work experience in a related occupation
432011	Switchboard Operators, Including Answering Service	3,390	3,060	60	-1.0	\$25,977.00	Short-term on-the-job training
*****	*****	180	200	5	1.1	\$29,859.00	Short-term on-the-job training
*****	*****	30	30	0.0	0.0	\$39,184.00	Short-term on-the-job training
*****	*****	10	10	0.0	0.0		Short-term on-the-job training
433061	Procurement Clerks	1,330	1,540	70	1.5	\$37,465.00	Short-term on-the-job training
*****	*****	250	340	15	3.1		Short-term on-the-job training
434031	Court, Municipal, and License Clerks	2,710	3,030	75	1.1	\$32,629.00	Short-term on-the-job training
434071	File Clerks	2,500	2,600	65	0.4	\$25,926.00	Short-term on-the-job training
434151	Order Clerks	5,110	5,160	140	0.1	\$29,637.00	Short-term on-the-job training
434171	Receptionists and Information Clerks	20,190	24,050	930	1.8	\$26,036.00	Short-term on-the-job training
434199	Information and Record Clerks, All Other	2,830	2,740	60	-0.3	\$37,014.00	No category defined
435011	Cargo and Freight Agents	2,280	2,510	85	1.0	\$38,626.00	Moderate-term on-the-job training
*****	*****	4,270	4,960	195	1.6	\$38,509.00	Moderate-term on-the-job training
435051	Postal Service Clerks	1,360	1,260	20	-0.8	\$56,788.00	Short-term on-the-job training
435053	Postal Service Mail Sorters, Processors, and Proce	2,370	2,260	15	-0.5	\$56,751.00	Short-term on-the-job training
436011	Executive Secretaries and Executive Administrative	18,520	19,020	275	0.3	\$43,934.00	Moderate-term on-the-job training
436012	Legal Secretaries	2,110	2,010	25	-0.5	\$36,269.00	Post-secondary vocational training
436013	Medical Secretaries	6,390	8,750	315	3.2	\$28,845.00	Post-secondary vocational training
436014	Secretaries and Administrative Assistants, Except	43,820	50,390	1,185	1.4	\$29,286.00	Moderate-term on-the-job training
439011	Computer Operators	2,650	2,530	25	-0.5	\$39,872.00	Moderate-term on-the-job training
439021	Data Entry Keyers	4,280	3,550	50	-1.9	\$26,538.00	Moderate-term on-the-job training
439022	Word Processors and Typists	630	500	0.0	-2.3	\$34,029.00	Moderate-term on-the-job training
439051	Mail Clerks and Mail Machine Operators, Except Postage	1,720	1,660	40	-0.4	\$27,600.00	Short-term on-the-job training
439061	Office Clerks, General	64,860	71,280	2,005	0.9	\$28,287.00	Short-term on-the-job training
439071	Office Machine Operators, Except Computer	620	620	15	0.0	\$24,866.00	Short-term on-the-job training
439199	Office and Administrative Support Workers, All Others	4,040	4,430	150	0.9	\$32,318.00	No category defined
<b>Totals:</b>		<b>233,930</b>	<b>260,850</b>	<b>7,335</b>	<b>1.1</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
110301	Data Processing and Data Processing Technology/Technician	2	5			
510705	Medical Office Management/Administration		105			
510708	Medical Transcription/Transcriptionist	9				
510710	Medical Office Assistant/Specialist	223	26			
510713	Medical Insurance Coding Specialist/Coder	225	44			
510716	Medical Administrative/Executive Assistant and Medical Secretaries	4	9			
510799	Health and Medical Administrative Services, Other				5	
520204	Office Management and Supervision			18		
520401	Administrative Assistant and Secretarial Service, General	64	112			
520402	Executive Assistant/Executive Secretary	206	9			
520407	Business/Office Automation/Technology/Data Entry	105	62			
520499	Business Operations Support and Secretarial Services, Other	282	2			
<b>Totals:</b>		<b>1,120</b>	<b>374</b>	<b>18</b>	<b>5</b>	
<b>TOTAL SUPPLY:</b>		<b>1,517</b>				
<b>TOTAL DEMAND:</b>		<b>7,335</b>				
<b>SUPPLY/DEMAND RATIO:</b>		<b>.21</b>				

(continued)

0.4 Business, Management and Administration *(continued)*

Additional Supply Data

New Supply/Demand Ratio: 0.22

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>04.6000000</b>	<b>93</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>101</b>
Desktop Support Specialist, Certificate of Completion (3032-10)	15	0	0	0	0	0	0		
Medical Administrative Assistant/Clinical Medical Assistant, Certificate of Completion (626-10)	45	0	0	0	0	0	0		
Medical Administrative Assistant/Electronic Health Records Specialist, Certificate of Completion (624-08)	7	0	0	0	0	0	0		
Medical Billing & Coding Specialist, Certificate (623-08)	20	0	0	0	0	0	0		
Medical Billing Specialist, Certificate of Completion (784-05)	5	0	0	0	0	0	0		
Medical Transcription and Editing, Diploma (798-99)	0	1	0	0	0	0	0		
Office Administration, Diploma (1339-08)	0	1	0	0	0	0	0		
Office Management, Associates of Biblical Studies (4301-07)	0	0	6	0	0	0	0		
Personal Productivity Club (12 months), Certificate of Completion (770-01)	1	0	0	0	0	0	0		

## 0.5 Education and Training

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**05.1140000**

Cluster Title  
**Support Services- Adult and Continuing Education**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
253011	Adult Basic and Secondary Education and Literacy T	1,070	1,160	25	0.8	\$46,890.00	Bachelor's degree
253021	Self-Enrichment Education Teachers	3,130	3,620	105	1.5	\$25,406.00	Work experience in a related occupation
253099	Teachers and Instructors, All Other	4,430	5,020	135	1.3		No category defined
<b>Totals:</b>		<b>8,630</b>	<b>9,800</b>	<b>265</b>	<b>1.3</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
131502	Adult Literacy Tutor/Instructor.			2			
<b>Totals:</b>				<b>2</b>			
<b>TOTAL SUPPLY:</b>		<b>2</b>					
<b>TOTAL DEMAND:</b>		<b>265</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.01</b>					

## 0.5 Education and Training

Area  
Tennessee  
Statewide

Projection Time (Years) = 10

Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year: 2024  
Employment:

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**05.1170000**

Cluster Title  
**Elementary Teachers, Except Special Education**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
252021	Elementary School Teachers, Except Special Educati	27,650	31,670	1,010	1.4	\$47,983.00	Bachelor's degree
Totals:		27,650	31,670	<b>1,010</b>	1.4		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
131202	Elementary Education and Teaching.			274	118		
Totals:				<b>274</b>	<b>118</b>		
TOTAL SUPPLY:		<b>392</b>					
TOTAL DEMAND:		<b>1,010</b>					
SUPPLY/DEMAND RATIO:		<b>.39</b>					

## 0.5 Education and Training

Area  
Tennessee  
Statewide

Projection Time (Years) = 10

Base Year: 2014  
Projected Year  
Employment: 2024

Average Occupational Growth Rate = 1.3

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code	Cluster Title
05.2110000	Teacher Training Services- Pre-K-Early Childhood Education

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
252011	Preschool Teachers, Except Special Education	8,620	8,960	275	0.4	\$23,841.00	Bachelor's degree
252012	Kindergarten Teachers, Except Special Education	4,750	5,430	200	1.3	\$47,956.00	Bachelor's degree
<b>Totals:</b>		<b>13,370</b>	<b>14,390</b>	<b>475</b>	<b>0.7</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
131210	Early Childhood Education and Teaching.		2	198	24	
<b>Totals:</b>			<b>2</b>	<b>198</b>	<b>24</b>	

TOTAL SUPPLY:	224
TOTAL DEMAND:	475
SUPPLY/DEMAND RATIO:	.47

## 0.6 Finance

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
**06.3110000**

Cluster Title  
**Banking and Finance**

DEMAND DATA		Average Annual					Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Openings	Annual Growth (%)	Annual Median Salary	
113031	Financial Managers	12,590	14,900	465	1.7	\$88,280.00	Work experience, plus bachelor's degree
131031	Claims Adjusters, Examiners, and Investigators	4,400	4,800	140	0.9	\$58,539.00	Long-term on-the-job training
131032	Insurance Appraisers, Auto Damage	200	200	5	0.0	\$66,016.00	Long-term on-the-job training
131131	Fundraisers	770	980	35	2.4	\$44,387.00	No category defined
131161	Market Research Analysts & Marketing Specialists	2,940	4,125	158	3.4	\$49,988.00	Bachelor's degree
132041	Credit Analysts	1,510	1,830	70	1.9	\$58,866.00	Bachelor's degree
132051	Financial Analysts	2,600	3,440	145	2.8	\$69,559.00	Bachelor's degree
132053	Insurance Underwriters	1,530	1,500	40	-0.2	\$65,339.00	Bachelor's degree
132071	Credit Counselors	420	530	20	2.4	\$39,200.00	Bachelor's degree
132072	Loan Officers	5,800	6,380	165	1.0	\$55,294.00	Bachelor's degree
132099	Financial Specialists, All Other	1,840	1,910	25	0.4	\$56,639.00	Bachelor's degree
193011	Economists	70	80	5	1.3	\$81,216.00	Bachelor's degree
193022	Survey Researchers	260	320	10	2.1	\$70,544.00	Bachelor's degree
251011	Business Teachers, Postsecondary	2,070	2,500	75	1.9	\$64,592.00	Doctor's degree
251063	Economics Teachers, Postsecondary	240	290	10	1.9	\$75,812.00	Doctor's degree
413021	Insurance Sales Agents	8,290	9,240	290	1.1	\$43,089.00	Bachelor's degree
<b>Totals:</b>		<b>45,530</b>	<b>53,025</b>	<b>1,658</b>	<b>1.5</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
010103	Agricultural Economics.				7	
450601	Economics, General.			432	23	
450604	Development Economics and International Development.			1	38	
450605	International Economics.			4		
450699	Economics, Other.			9		
520601	Business/Managerial Economics.			109	6	
520803	Banking and Financial Support Services.				1	
<b>Totals:</b>				<b>555</b>	<b>75</b>	

**TOTAL SUPPLY:** 630  
**TOTAL DEMAND:** 1,658  
**SUPPLY/DEMAND RATIO:** .38

## o.6 Finance

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year: 2024  
Employment:

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **06.3120000**  
Cluster Title: **Banking and Finance Support Services**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
433011	Bill and Account Collectors	15,710	19,790	850	2.3	\$31,529.00	Short-term on-the-job training
433071	Tellers	10,210	10,060	475	-0.1	\$24,883.00	Short-term on-the-job training
*****	*****	490	550	20	1.2	\$37,111.00	No category defined
434041	Credit Authorizers, Checkers, and Clerks	780	820	10	0.5	\$33,499.00	Short-term on-the-job training
*****	*****	4,530	5,050	80	1.1	\$35,049.00	Short-term on-the-job training
434141	New Accounts Clerks	1,300	1,210	35	-0.7	\$31,243.00	Work experience in a related occupation
439041	Insurance Claims and Policy Processing Clerks	2,680	3,050	110	1.3	\$34,346.00	Moderate-term on-the-job training
<b>Totals:</b>		<b>35,700</b>	<b>40,530</b>	<b>1,580</b>	<b>1.3</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
	There is no supply data available.						
<b>Totals:</b>							
<b>TOTAL SUPPLY:</b>		<b>0</b>					
<b>TOTAL DEMAND:</b>		<b>1,580</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.00</b>					

### Additional Supply Data

New Supply/Demand Ratio: 0.00

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>06.3120000</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>6</b>
Clinical Medical Assistant/Billing & Coding Specialist, Certificate (625-10)	6	0	0	0	0	0	0		

# o.8 Health Science

Area  
Tennessee  
Statewide  
1.3

Projection Time (Years) = 10  
Average Occupational Growth Rate =

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: 08.1170000  
Cluster Title: Physical Therapy

		Average					
DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
291123	Physical Therapists	4,700	6,920	340	3.9	\$84,767.00	Master's degree
<b>Totals:</b>		<b>4,700</b>	<b>6,920</b>	<b>340</b>	<b>3.9</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
CIP CODE(S)	CIP TITLE(S)						
512308	Physical Therapy/Therapist.		14	24	197		
<b>Totals:</b>			<b>14</b>	<b>24</b>	<b>197</b>		
<b>TOTAL SUPPLY:</b>		<b>235</b>					
<b>TOTAL DEMAND:</b>		<b>340</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.69</b>					



# o.8 Health Science

Area  
Tennessee  
Statewide  
1.3

Projection Time (Years) = -10  
Average Occupational Growth Rate =

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **08.2190000** Cluster Title: **Medical Imaging- Radiography**

DEMAND DATA		Average					
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
292034	Radiologic Technologists and Technicians	5,680	7,080	220	2.2	\$49,636.00	Associate degree
292035	Magnetic Resonance Imaging Technologists	850	1,090	35	2.5	\$57,372.00	Associate degree
<b>Totals:</b>		<b>6,530</b>	<b>8,170</b>	<b>255</b>	<b>2.3</b>		
SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
510911	Radiologic Technology/Science - Radiographer.		26	20			
<b>Totals:</b>			<b>26</b>	<b>20</b>			
TOTAL SUPPLY:		<b>46</b>					
TOTAL DEMAND:		<b>255</b>					
SUPPLY/DEMAND RATIO:		<b>.18</b>					

# o.8 Health Science

Area  
Tennessee  
Statewide  
1.3

Projection Time (Years) = 10  
Average Occupational Growth Rate =

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = A  
The outlook for this cluster is Excellent.  
The GROWTH rate is above the average for all occupations across the state.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **08.2220000** Cluster Title: **Medical and Clinical Laboratory Technicians**

DEMAND DATA		Average					
SOC CODE(S)	SOC TITLES(S)	Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
292012	Medical and Clinical Laboratory Technicians	6,570	8,790	395	3.0	\$35,776.00	Associate degree
<b>Totals:</b>		<b>6,570</b>	<b>8,790</b>	<b>395</b>	<b>3.0</b>		
SUPPLY DATA		No of Certs	No of Associates	No of Bach.	No of Grads	No of Sec. Com.	
511001	Blood Bank Technology Specialist.	22					
511004	Clinical/Medical Laboratory Technician.		57				
<b>Totals:</b>		<b>22</b>	<b>57</b>				
<b>TOTAL SUPPLY:</b>		<b>79</b>					
<b>TOTAL DEMAND:</b>		<b>395</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.20</b>					

## Additional Supply Data

New Supply/Demand Ratio: 0.71

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>08.2220000</b>	<b>202</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>202</b>
Certified Phlebotomy Technician, Certificate of Completion (2439-09)	54	0	0	0	0	0	0	0	
Pharmacy Technician, Certificate (4933-12)	1	0	0	0	0	0	0	0	
Phlebotomy Technician, Certificate (4623-11)	71	0	0	0	0	0	0	0	
Phlebotomy Technician, Certificate (620-97)	4	0	0	0	0	0	0	0	
Phlebotomy, Certificate of Completion (6160-14)	72	0	0	0	0	0	0	0	

## 0.9 Hospitality and Tourism

Area  
Tennessee  
Statewide

Projection Time (Years) = 10

Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year: 2024  
Employment:

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: **09.2000000**  
Cluster Title: **Lodging Pathway**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
119081	Lodging Managers	1,580	1,570	50	-0.1	\$47,460.00	Work experience in a related occupation
131121	Meeting, Convention, and Event Planners	1,210	1,620	60	3.0	\$36,975.00	Bachelor's degree
371011	First-Line Supervisors of Housekeeping and Janitor	4,500	5,040	160	1.1	\$29,081.00	Work experience in a related occupation
391021	First-Line Supervisors of Personal Service Workers	4,160	4,620	125	1.1	\$29,729.00	Work experience in a related occupation
396011	Baggage Porters and Bellhops	460	470	15	0.2	\$19,378.00	Short-term on-the-job training
396012	Concierges	410	490	20	1.8	\$22,355.00	Work experience in a related occupation
434081	Hotel, Motel, and Resort Desk Clerks	5,190	5,740	300	1.0	\$19,189.00	Short-term on-the-job training
<b>Totals:</b>		<b>17,510</b>	<b>19,550</b>	<b>730</b>	<b>1.1</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
520901	Hospitality Administration/Management, General.			2		
520904	Hotel/Motel Administration/Management.	21	15	96		
520905	Restaurant/Food Services Management.		132			
<b>Totals:</b>		<b>21</b>	<b>147</b>	<b>98</b>		

TOTAL SUPPLY:	266
TOTAL DEMAND:	730
SUPPLY/DEMAND RATIO:	.36

### Additional Supply Data

New Supply/Demand Ratio: 0.37

CLUSTER CODES/ Titles	Program	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
09.2000000		2	0	0	0	0	0	0		2
Professional Household Manager, Certificate of Completion (6182-14)		2	0	0	0	0	0	0		

# 11.0 Information Technology

Cluster Grade = A  
 The outlook for this cluster is Excellent.  
 The GROWTH rate is above the average for all occupations across the state.  
 There are more job openings expected annually than there were training completers in a recent year.

Area  
 Tennessee  
 Statewide  
 1.3

Projection Time (Years) = 10  
 Average Occupational Growth Rate =

Base Year: 2014  
 Projected Year  
 Employment: 2024

Cluster Code	Cluster Title
11.3400000	Web/Multimedia Management, Programming

Average

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
113021	Computer and Information Systems Managers	5,460	6,710	200	2.1	\$99,099.00	Work experience, plus bachelor's degree
151111	Computer and Information Research Scientists	470	500	10	0.6	\$86,405.00	Master's degree
151121	Computer Systems Analysts	9,440	12,370	440	2.7	\$73,522.00	Associate degree
151131	Computer Programmers	5,320	6,120	220	1.4	\$70,270.00	Bachelor's degree
151132	Software Developers, Applications	4,840	6,160	195	2.4	\$81,704.00	Bachelor's degree
151133	Software Developers, Systems Software	2,610	3,320	105	2.4	\$83,366.00	Bachelor's degree
151141	Database Administrators	1,710	2,090	70	2.0	\$81,849.00	Bachelor's degree
151151	Computer Support Specialists	7,430	9,360	310	2.3	\$43,421.00	Associate degree
251021	Computer Science Teachers, Postsecondary	600	700	20	1.6	\$63,921.00	Master's degree
<b>Totals:</b>		<b>37,880</b>	<b>47,330</b>	<b>1,570</b>	<b>2.3</b>		

SUPPLY DATA

CIP CODE(S)	CIP TITLE(S)	No of Certs	No of Assoc.	No of Bach.	No of Grads	No of Sec. Com.
110101	Computer and Information Sciences, General.		217	187	12	
110103	Information Technology.		56	72	45	
110199	Computer and Information Sciences, Other.			1		
110201	Computer Programming/Programmer, General.		4	8		
110401	Information Science/Studies.		10	12	7	
110501	Computer Systems Analysis/Analyst.			9		
110701	Computer Science.			353	62	
111004	Web/Multimedia Management and Webmaster.			2		
111006	Computer Support Specialist.		2			
111099	Computer/Information Technology Services Administration			40	4	
119999	Computer and Information Sciences and Support Services, Other		5	1		
151202	Computer Technology/Computer Systems Technology.		26			
512706	Medical Informatics.				8	
521201	Management Information Systems, General.		11	162	5	
<b>Totals:</b>			<b>331</b>	<b>847</b>	<b>143</b>	

<b>TOTAL SUPPLY:</b>	<b>1,321</b>
<b>TOTAL DEMAND:</b>	<b>1,570</b>
<b>SUPPLY/DEMAND RATIO:</b>	<b>.84</b>

*(continued)*

## 11.0 Information Technology *(continued)*

Additional Supply Data

New Supply/Demand Ratio: 0.84

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>11.340000</b>	0	0	0	2	0	0	0		2
Management & Computer Science, Bachelor of Science in Liberal Studies, Management & Computer Science (629-97)	0	0	0	2	0	0	0		

## 12.0 Public Safety, Corrections and Security

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code  
12.4140000

Cluster Title  
Fire Fighting

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
331021	First-Line Supervisors of Fire Fighting and Preven	1,370	1,520	75	1.0	\$52,185.00	Work experience in a related occupation
332011	Firefighters	4,760	5,310	185	1.1	\$37,934.00	Long-term on-the-job training
332021	Fire Inspectors and Investigators	240	270	10	1.2	\$51,756.00	Post-secondary vocational training
332022	Forest Fire Inspectors and Prevention Specialists	160	180	5	1.2	\$33,194.00	Bachelor's degree
<b>Totals:</b>		<b>6,530</b>	<b>7,280</b>	<b>275</b>	<b>1.1</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
430203	Fire Science/Fire-fighting.	14	20			
<b>Totals:</b>		<b>14</b>	<b>20</b>			

TOTAL SUPPLY:	34
TOTAL DEMAND:	275
SUPPLY/DEMAND RATIO:	.12

# 13.0 Manufacturing

Area	Projection Time (Years) = 10	Base Year: 2014	Cluster Grade - A				
Tennessee	Average Occupational Growth Rate = 1.3	Projected Year: 2024	The outlook for this cluster is Excellent.				
Statewide		Employment:	The GROWTH rate is above the average for all occupations across the state.				
Cluster Code	Cluster Title		There are more job openings expected annually than there were training completers in a recent year.				
13-1000000	Precision Production Pathway						
<b>DEMAND DATA</b>							
SOC CODE(S)	SOC TITLE(S)	Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
499069	Precision Instrument and Equipment Repairers, All	570	670	25	1.6	\$53,045.00	Long-term on-the-job training
511011	First-Line Supervisors of Production and Operating	16,400	17,340	325	0.6	\$50,962.00	Work experience in a related occupation
512041	Structural Metal Fabricators and Fitters	2,110	2,210	95	0.5	\$31,926.00	Moderate-term on-the-job training
512091	Fiberglass Laminators and Fabricators	1,080	1,190	30	1.0	\$29,732.00	Moderate-term on-the-job training
512092	Team Assemblers	44,270	55,700	1,845	2.3	\$29,100.00	Moderate-term on-the-job training
513021	Butchers and Meat Cutters	2,750	3,100	105	1.2	\$28,457.00	Long-term on-the-job training
514011	Computer-Controlled Machine Tool Operators, Metal	2,810	3,720	170	2.8	\$36,192.00	Long-term on-the-job training
514012	Computer Numerically Controlled Machine Tool Progr	500	660	30	2.8	\$47,757.00	Long-term on-the-job training
514021	Engraving and Drawing Machine Setters, Operators,	2,630	2,670	55	0.2	\$29,488.00	Moderate-term on-the-job training
514022	Forging Machine Setters, Operators, and Tenders, M	680	720	20	0.6	\$29,723.00	Moderate-term on-the-job training
514023	Rolling Machine Setters, Operators, and Tenders, M	960	850	20	-1.2	\$37,156.00	Moderate-term on-the-job training
514032	Drilling and Boring Machine Tool Setters, Operator	510	430	10	-1.7	\$34,118.00	Moderate-term on-the-job training
514033	Grinding, Lapping, Polishing, and Buffing Machine	1,660	1,630	35	-0.2	\$34,207.00	Moderate-term on-the-job training
514034	Lathe and Turning Machine Tool Setters, Operators,	750	740	15	-0.1	\$36,640.00	Moderate-term on-the-job training
514035	Milling and Planing Machine Setters, Operators, an	610	630	15	0.3	\$33,857.00	Moderate-term on-the-job training
514041	Machinists	8,470	9,960	345	1.6	\$38,131.00	Long-term on-the-job training
514051	Metal-Refining Furnace Operators and Tenders	820	840	10	0.2	\$41,857.00	Moderate-term on-the-job training
514061	Model Makers, Metal and Plastic	60	60	0	0.0		Moderate-term on-the-job training
514062	Patternmakers, Metal and Plastic	60	80	5	2.9	\$42,600.00	Moderate-term on-the-job training
514081	Multiple Machine Tool Setters, Operators, and Tend	2,900	3,110	75	0.7	\$29,415.00	Moderate-term on-the-job training
514111	Tool and Die Makers	2,430	2,780	50	1.4	\$46,179.00	Long-term on-the-job training
514191	Heat Treating Equipment Setters, Operators, and Te	470	470	10	0.0	\$33,362.00	Moderate-term on-the-job training
514192	Layout Workers, Metal and Plastic	210	270	10	2.5	\$38,438.00	Moderate-term on-the-job training
514194	Tool Grinders, Filers, and Sharpeners	130	130	10	0.0	\$31,105.00	Moderate-term on-the-job training
514199	Metal Workers and Plastic Workers, All Other	210	250	5	1.8	\$27,264.00	Moderate-term on-the-job training
516061	Textile Bleaching and Dyeing Machine Operators and	410	320	5	-2.4	\$28,616.00	Moderate-term on-the-job training
*****	*****	60	60	0	0.0		Long-term on-the-job training
516093	Upholsterers	1,280	1,250	35	-0.2	\$24,448.00	Long-term on-the-job training
517011	Cabinetmakers and Bench Carpenters	1,640	1,560	15	-0.5	\$28,660.00	Long-term on-the-job training
517021	Furniture Finishers	110	110	0	0.0	\$24,895.00	Long-term on-the-job training
517041	Sawing Machine Setters, Operators, and Tenders, Wo	1,260	1,400	50	1.1	\$25,050.00	Moderate-term on-the-job training
517042	Woodworking Machine Setters, Operators, and Tender	1,860	1,960	20	0.5	\$23,464.00	Moderate-term on-the-job training
517099	Woodworkers, All Other	840	890	30	0.6	\$23,156.00	Moderate-term on-the-job training
*****	*****	80	80	0	0.0	\$64,683.00	Long-term on-the-job training
518013	Power Plant Operators	520	490	15	-0.6	\$79,617.00	Long-term on-the-job training
518021	Stationary Engineers and Boiler Operators	680	710	25	0.4	\$55,362.00	Long-term on-the-job training
519022	Grinding and Polishing Workers, Hand	820	910	30	1.0	\$26,759.00	Moderate-term on-the-job training
519071	Jewelers and Precious Stone and Metal Workers	300	270	5	-1.0	\$36,962.00	Post-secondary vocational training
519082	Medical Appliance Technicians	140	160	5	1.3	\$31,547.00	Long-term on-the-job training
519083	Ophthalmic Laboratory Technicians	950	1,160	55	2.0	\$27,908.00	Moderate-term on-the-job training
519122	Painters, Transportation Equipment	1,020	1,130	30	1.0	\$36,379.00	Moderate-term on-the-job training
519194	Etchers and Engravers	130	130	5	0.0	\$31,222.00	Long-term on-the-job training
*****	*****	1,630	1,620	55	-0.1	\$27,717.00	Moderate-term on-the-job training
<b>Totals:</b>		<b>107,780</b>	<b>124,420</b>	<b>3,685</b>	<b>1.4</b>		
<b>SUPPLY DATA</b>							
CIP CODE(S)	CIP TITLE(S)	No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom	
410301	Chemical Technology/Technician.	8					
410303	Chemical Process Technology	23					
480501	Machine Tool Technology/Machinist.	108	61				
480503	Machine Shop Technology/Assistant.	57	101				
480507	Tool and Die Technology/Technician.	14					
480510	Computer Numerically Controlled (CNC) Machinist Technology/CNC M	7					
480511	Metal Fabricator.	18					
4805AH	Principles of Machining and Manufacturing					31	
4805CH	Manufacturing Applications					25	
4805IH						9	
4805KH						17	
<b>Totals:</b>		<b>235</b>	<b>162</b>			<b>82</b>	
<b>TOTAL SUPPLY:</b>		<b>479</b>					
<b>TOTAL DEMAND:</b>		<b>3,685</b>					
<b>SUPPLY/DEMAND RATIO:</b>		<b>.13</b>					

(continued)

13.0 Manufacturing (continued)

Additional Supply Data

New Supply/Demand Ratio: 0.14

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>13.1000000</b>								23	23
MACHINIST								1	
MAINTENANCE MACHINIST								2	
METAL FABRICATOR								2	
POWER-PLANT OPERATOR								5	
STATIONARY ENGINEER								3	
TOOL AND DIE MAKER								10	



# 13.0 Manufacturing

Area: Tennessee  
 Statewide: 1.3  
 Projection Time (Years) = 10  
 Average Occupational Growth Rate =

Base Year: 2014  
 Projected Year: 2024  
 Employment:

Cluster Grade = B  
 The outlook for this cluster is Very Good.  
 The growth rate is positive but not above the average for all occupations.  
 There are more job openings expected annually than there were training completers in a recent year.

Cluster Code: 13.2200000  
 Cluster Title: Prod. Design, Ops, and Maint. Path -- Operations & Maint.

**Average**

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
131023	Purchasing Agents, exc. Wholesale, Retail & Farm.	4,510	4,980	130	1.0	\$50,716.00	Bachelor's degree
472011	Boilermakers	540	510	25	-0.6	\$60,615.00	Long-term on-the-job training
491011	First-Line Supervisors of Mechanics, Installers, a	8,980	9,850	330	0.9	\$56,445.00	Work experience in a related occupation
499011	Mechanical Door Repairers	420	500	20	1.8	\$33,977.00	Moderate-term on-the-job training
499031	Home Appliance Repairers	840	920	35	0.9	\$29,621.00	Long-term on-the-job training
499041	Industrial Machinery Mechanics	6,900	8,110	320	1.6	\$48,808.00	Long-term on-the-job training
499043	Maintenance Workers, Machinery	2,860	3,360	85	1.6	\$44,482.00	Long-term on-the-job training
499044	Millwrights	950	1,090	30	1.4	\$47,453.00	Long-term on-the-job training
*****	*****	10	10		0.0		Moderate-term on-the-job training
499062	Medical Equipment Repairers	1,030	1,370	65	2.9	\$41,956.00	Moderate-term on-the-job training
*****	*****	240	270	10	1.2	\$35,097.00	Long-term on-the-job training
*****	*****	20	20		0.0		Long-term on-the-job training
499071	Maintenance and Repair Workers, General	29,630	33,180	925	1.1	\$36,292.00	Post-secondary vocational training
*****	*****	490	530	10	0.8	\$29,410.00	Moderate-term on-the-job training
499094	Locksmiths and Safe Repairers	470	560	25	1.8	\$33,020.00	Moderate-term on-the-job training
512022	Electrical and Electronic Equipment Assemblers	3,130	3,290	55	0.5	\$26,906.00	Short-term on-the-job training
512023	Electromechanical Equipment Assemblers	520	600	15	1.4	\$34,717.00	Short-term on-the-job training
516063	Textile Knitting and Weaving Machine Setters, Oper	450	380	5	-1.7	\$27,500.00	Long-term on-the-job training
516064	Textile Winding, Twisting, and Drawing Out Machine	1,130	970	20	-1.5	\$24,737.00	Moderate-term on-the-job training
516091	Extruding and Forming Machine Setters, Operators,	610	590	10	-0.3	\$38,498.00	Moderate-term on-the-job training
518091	Chemical Plant and System Operators	1,570	1,440	60	-0.9	\$50,319.00	Long-term on-the-job training
519011	Chemical Equipment Operators and Tenders	1,780	1,720	60	-0.3	\$43,681.00	Moderate-term on-the-job training
519061	Inspectors, Testers, Sorters, Samplers, and Weigh	11,870	13,330	405	1.2	\$31,662.00	Moderate-term on-the-job training
<b>Totals:</b>		<b>78,950</b>	<b>87,580</b>	<b>2,640</b>	<b>1.0</b>		

**SUPPLY DATA**

CIP CODE(S)	CIP TITLE(S)	No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
150403	Electromechanical Technology/Electromechanical Engineering T	116	10			
150499	Electromechanical and Instrumentation and Maintenance Techno	21				
1504AH						1
1506BH						32
470000	Mechanics and Repairers, General.	12				
470303	Industrial Mechanics and Maintenance Technology.	414	57			
470399	Heavy/Industrial Equipment Maintenance Technologies, Other.	11	13			
479999	Mechanic and Repair Technologies/Technicians, Other.	2				
520205	Operations Management and Supervision.	39		1	38	
<b>Totals:</b>		<b>615</b>	<b>80</b>	<b>1</b>	<b>38</b>	<b>33</b>

**TOTAL SUPPLY:** 767  
**TOTAL DEMAND:** 2,640  
**SUPPLY/DEMAND RATIO:** .29

(continued)

13.0 Manufacturing (continued)

Additional Supply Data

New Supply/Demand Ratio: 0.31

CLUSTER CODES/ Program Titles	Sum of Certificates	Sum of Diplomas	Sum of Associates	Sum of Bachelors	Sum of Masters	Sum of Graduate Certificates	Sum of Doctorates	Count of Apprentices	Total Completers for Cluster
<b>13.2200000</b>								<b>43</b>	<b>43</b>
CHEMICAL OPERATOR III								19	
MAINTENANCE MECHANIC (Any Industry)								3	
MAINTENANCE REPAIRER, INDUSTRIAL								7	
METAL PLATER								1	
MILLWRIGHT								13	

# 14.0 Marketing, Sales and Service

Area  
Tennessee  
Statewide

Projection Time (Years) = 10  
Average Occupational Growth Rate = 1.3

Base Year: 2014  
Projected Year  
Employment: 2024

Cluster Grade = B  
The outlook for this cluster is Very Good.  
The growth rate is positive but not above the average for all occupations.  
There are more job openings expected annually than there were training completers in a recent year.

Cluster Code	Cluster Title
14.2000000	Selling and Sales Management

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
112022	Sales Managers	7,800	8,920	280	1.4	\$86,762.00	Work experience, plus bachelor's degree
132021	Appraisers and Assessors of Real Estate	1,540	1,760	35	1.3	\$47,339.00	Post-secondary vocational training
271023	Floral Designers	1,200	1,210	35	0.1	\$23,795.00	Moderate-term on-the-job training
271026	Merchandise Displayers and Window Trimmers	1,500	1,720	60	1.4	\$28,483.00	Moderate-term on-the-job training
411011	First-Line Supervisors of Retail Sales Workers	36,690	38,680	995	0.5	\$36,536.00	Work experience in a related occupation
411012	First-Line Supervisors of Non-Retail Sales Workers	9,320	9,600	145	0.3	\$72,113.00	Work experience in a related occupation
*****	*****	85,520	93,060	3,680	0.8	\$21,250.00	Short-term on-the-job training
413011	Advertising Sales Agents	1,930	1,940	60	0.1	\$37,298.00	Moderate-term on-the-job training
413099	Sales Representatives, Services, All Other	12,090	14,220	545	1.6	\$42,218.00	No category defined
414011	Sales Representatives, Wholesale and Manufacturing	10,550	11,560	305	0.9	\$67,956.00	Moderate-term on-the-job training
414012	Sales Representatives, Wholesale and Manufacturing	24,990	27,620	750	1.0	\$50,921.00	Moderate-term on-the-job training
*****	*****	10	10		0.0		Moderate-term on-the-job training
419021	Real Estate Brokers	970	1,130	25	1.5	\$40,903.00	Work experience in a related occupation
419022	Real Estate Sales Agents	2,180	2,460	50	1.2	\$29,916.00	Post-secondary vocational training
*****	*****	830	860	15	0.4	\$83,316.00	Bachelor's degree
<b>Totals:</b>		<b>197,120</b>	<b>214,750</b>	<b>6,980</b>	<b>0.9</b>		

SUPPLY DATA		No of Certs	No of Assoc	No of Bach	No of Grads	No of SecCom
CIP CODE(S)	CIP TITLE(S)					
521801	Sales, Distribution, and Marketing Operations, General.			1		
521804	Selling Skills and Sales Operations.	1				
<b>Totals:</b>		<b>1</b>		<b>1</b>		
<b>TOTAL SUPPLY:</b>		<b>2</b>				
<b>TOTAL DEMAND:</b>		<b>6,980</b>				
<b>SUPPLY/DEMAND RATIO:</b>		<b>.00</b>				

# 15.0 Science, Technology, Engineering and Mathematics

Area: Tennessee  
 Statewide  
 Cluster Code: 15.1160000  
 Cluster Title: Industrial Engineering  
 Projection Time (Years) = 10  
 Average Occupational Growth Rate = 1.3  
 Base Year: 2014  
 Projected Year: 2024  
 Employment:

Cluster Grade = A  
 The outlook for this cluster is Excellent.  
 The GROWTH rate is above the average for all occupations across the state.  
 There are more job openings expected annually than there were training completers in a recent year.

DEMAND DATA		Estimated Employment	Projected Employment	Average Annual Openings	Average Annual Growth (%)	Annual Median Salary	Usual Education Requirements
SOC CODE(S)	SOC TITLES(S)						
172112	Industrial Engineers	5,200	6,070	240	1.6	\$77,847.00	Bachelor's degree
<b>Totals:</b>		<b>5,200</b>	<b>6,070</b>	<b>240</b>	<b>1.6</b>		

SUPPLY DATA		No of Certs	No of Assoc.	No of Bach.	No of Grads	No of Sec. Com.
CIP CODE(S)	CIP TITLE(S)					
143501	Industrial Engineering			19	14	
<b>Totals:</b>				<b>19</b>	<b>14</b>	

TOTAL SUPPLY:	33
TOTAL DEMAND:	240
SUPPLY/DEMAND RATIO:	.14

## Appendix D: Institutions and school districts included in completion numbers

Alvin C. York Institute	Jackson State Community College	Sullivan County Schools
Anderson County Schools	Jackson-Madison County Schools	TCAT Athens
Aquinas College	Jefferson County Schools	TCAT Covington
Argosy University-Nashville	Johnson County Schools	TCAT Crossville
Austin Peay State University	Johnson University	TCAT Crump
Baptist Memorial College of Health Sciences	King University	TCAT Dickson
Belmont University	Kingsport City Schools	TCAT Elizabethton
Benton County Schools	Knox County Schools	TCAT Harriman
Bethel University	Lane College	TCAT Hartsville
Blount County Schools	Lawrence County Schools	TCAT Hohenwald
Brightwood College-Nashville	Le Moyne-Owen College	TCAT Jacksboro
Bristol City Schools	L'Ecole Culinaire-Memphis	TCAT Jackson
Bryan College-Dayton	Lee University	TCAT Knoxville
Campbell County Schools	Lewis County Schools	TCAT Livingston
Carson-Newman University	Lincoln Memorial University	TCAT McKenzie
Carter County Schools	Lipscomb University	TCAT McMinnville
Chattanooga College Medical Dental and Technical Careers	Loudon County Schools	TCAT Memphis
Chattanooga State Community College	Macon County Schools	TCAT Morristown
Christian Brothers University	Marshall County Schools	TCAT Murfreesboro
Claiborne County Schools	Martin Methodist College	TCAT Nashville
Cleveland State Community College	Maryville College	TCAT Newbern
Cocke County Schools	Maury County Schools	TCAT Oneida-Huntsville
Coffee County Schools	McMinn County Schools	TCAT Paris
Columbia State Community College	Memphis City Schools	TCAT Pulaski
Concorde Career College-Memphis	Metro Nashville Public Schools	TCAT Ripley
Crockett County Schools	Middle Tennessee State University	TCAT Shelbyville
Cumberland University	Milan Special Schools	TCAT Whiteville
Daymar Institute-Clarksville	Miller-Motte Technical College-Chattanooga	Tennessee State University
Daymar Institute-Murfreesboro	Miller-Motte Technical College-Clarksville	Tennessee Technological University
Daymar Institute-Nashville	Miller-Motte Technical College-Madison	Tennessee Wesleyan College
Decatur County Schools	Milligan College	The University of Tennessee Chattanooga
DeKalb County Schools	Monroe County Schools	The University of Tennessee Health Science Center



DeVry University-Tennessee	Morgan County Schools	The University of Tennessee Knoxville
Dyer County Schools	Motlow State Community College	The University of Tennessee Martin
Dyersburg State Community College	Nashville College of Medical Careers	Tipton County Schools
East Tennessee State University	Nashville State Community College	Trevecca Nazarene University
Fisk University	National College-Nashville	Tullahoma City Schools
Fortis Institute-Cookeville	Northeast State Community College	Union University
Fortis Institute-Nashville	Pellissippi State Community College	University of Memphis
Fountainhead College of Technology	Putnam County Schools	University of Phoenix-Tennessee
Franklin County Schools	Remington College-Memphis Campus	Vanderbilt University
Freed-Hardeman University	Remington College-Nashville Campus	Vatterott College-Applying Farms
Genesis Career College-Cookeville	Rhea County Schools	Vatterott College-Dividend
Gibson County Schools	Rhodes College	Virginia College-Knoxville
Giles County Schools	Roane County Schools	Virginia College-School of Business and Health-Chattanooga
Greene County Schools	Roane State Community College	Volunteer State Community College
Hamblen County Schools	Ross Medical Education Center-Johnson City	Walters State Community College
Hamilton County Schools	Ross Medical Education Center-Knoxville	Warren County Schools
Hancock County Schools	Sevier County Schools	Washington County School
Hawkins County Schools	Sewanee-The University of the South	Wayne County Schools
Haywood County Schools	Shelby County Schools	Weakley County Schools
Hiwassee College	South College	Welch College
Humboldt City Schools	Southern Adventist University	West Tennessee Business College
Huntingdon SSD	Southwest Tennessee Community College	William Moore College of Technology
Jackson County Schools	Strayer University-Tennessee	

