

# TENNESSEE'S ECONOMY

2021-2022



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## Executive Summary

Tennessee's economy recovered from the pandemic downturn in 2020 by bouncing back to total nonfarm employment in 2021 of 3,106,100 and an average annual unemployment rate of 4.3 percent. Annual average employment in 2021 was still 16,800 below 2019 annual average employment. The 2021 annual average unemployment rate compared was higher than the 3.4 percent annual average rate in 2019, but by June 2022 it had dropped to 3.3 percent. The Tennessee labor force increased by 0.9 percent from 2020 to 2021 to 3,327,966 as the economy continued to recover.

**The Tennessee Economy in 2021** Nonfarm employment in Tennessee increased by 4.2 percent from 2020 to 2021, adding 129,433 jobs over the year (see summary, p. 3). Metropolitan growth was positive for all major metropolitan areas with Memphis, Nashville, Knoxville, and Chattanooga all gaining employment by three percent or more. Employment increased in 78 of the 95 counties. The number of establishments grew by 9.3 percent and nominal total payroll increased by 11.1 percent to 178.5 billion dollars. The average annual median wage (not adjusted for inflation) also increased by 0.7 percent to \$37,700. The average hourly wage for production workers was \$19.32.

The unemployment rate for 2020 was 4.3 percent. In June 2021 the TDLWD job bank, jobs4tn.gov, listed an average of 0.55 unemployed workers for each job opening, making it more difficult for employers to find workers in the economy. Although the unemployment rate for veterans was below the state average, rates for youth and those with disabilities, as well as the poverty rate, were still in the double digits. The projected growth rate for all occupations through 2030 (1.5%) was twice the previous annual rate partly due to more manufacturing in-sourcing and IT and healthcare expansion.

**Statewide Employment 2021** Tennessee's average annual nonfarm employment increased by 3.4 percent from 2020 to 2021, or 101,600 jobs. Goods-producing jobs increased at the rate of 4.5 percent compared to 4.0 percent for private service-providing jobs. Jobs in the government sector decreased by 0.6 percent. In the goods-producing sector, mining, logging, and construction added 6,900 jobs while manufacturing increased by 14,000 jobs. A recovering leisure and hospitality sector added 23,400 jobs, with trade, transportation, and utilities adding an additional 22,200 jobs in the private service-providing industries. The most rapidly growing industry sector was information, at 8.6 percent.

From 2016 to 2021, total employment increased by 4.6 percent. The industry sectors gaining more than 15,000 jobs included transportation, warehousing, and utilities; mining, logging, and construction; financial activities; and professional and business services.

**Labor Force** The annual average unemployment rate for the U.S. in 2012 was 8.0 percent and dropped to 5.3 percent in 2021. Tennessee's annual average unemployment rate in 2012 was 8.0 percent and declined to 4.3 percent in 2021, remaining below the U.S. rate. Tennessee's June 2022 seasonally adjusted unemployment rate declined to 3.3 percent. In 2021, the U.S. labor force participation rate was 61.7 percent, compared to Tennessee's rate of 60.4 percent.

**Tennessee Wages and Income 2021** Among the 22 major occupational groups, median wages increased for 17 of the groups. The four groups experiencing declines in median hourly wages were construction; arts, design, entertainment, sports, and media; legal; and life, physical, and social science. The largest hourly increases were for management (up \$4.17 per hour) and architecture and engineering (up 3.34 per hour). In the LWDAs, Northern Middle and Greater Memphis had median hourly wages slightly higher than the state.







**Tennessee Safety 2020** The total recordable incidence rate for nonfatal occupational illnesses and injuries for all industries in Tennessee per 100 full-time equivalent workers during 2020 was estimated to be 2.8. The total recordable rate for private industry was 2.7 and the total recordable rate for public sector industries was 3.6. The health care and social assistance industry had the highest incidence rate for nonfatal occupational injuries and illnesses in 2020.

**Tennessee Long Term Outlook to 2030** From a base of 3.2 million jobs in 2020, total employment for Tennessee, including agricultural, self-employed, and private household workers, is expected to grow to 3.7 million by 2030, expecting to increase by 1.5 percent annually. The high growth rate includes recovery from the lower employment base in 2020 compared to 2019.

**Detailed Regional Analysis** Summaries of key labor force and economic trends for the West, Middle, and East Regions are included in this section. Detailed discussions include top industries, occupations, industry and occupational growth, top employers posting jobs, top tools and technologies, and the educational pipeline for the area. Each section includes a detailed description of labor force trends as well as updated data on barriers to employment presenting challenges and opportunities in each region. The appendix lists the latest information on occupations in demand in each region.

**Labor Force Shortages** Comparing total jobs posted by occupation in 2021 with the number of active resumes in jobs4tn, top occupational shortages are identified for four groups: jobs requiring postsecondary education through associate degrees; jobs usually requiring a bachelor's degree; high wage jobs requiring only a high school education, and primary and secondary education teachers. There is no centralized system in Tennessee for tracking the number of unfilled teaching positions in the state, hampering the state's ability gauge the extent of the problem. Better data is needed to develop strategies to reduce shortages of critical personnel, including personnel needed for emerging industries like electric vehicle and battery production.

## Tennessee's Economy | 2021

 <p><b>Employment</b></p>	<p><b>Total Nonfarm Employment</b> 2021: 3,185,263 4.2% 2020: 3,055,830 <b>Stronger</b></p>	<p><b>New Jobs</b> 2021: 129,433 2020: -170,215 <b>Stronger</b></p>	<p><b>MSA Employment 2020-2021</b> Memphis: 3.0% Nashville: 5.7% Chattanooga: 3.9% Knoxville: 4.5% <b>Stronger</b></p>
 <p><b>Employers</b></p>	<p><b>Total Number of Establishments</b> 2021: 204,923 9.3% 2020: 187,505 <b>Stronger</b></p>	<p><b>Total Wages</b> 2021: \$178.5 Billion 11.1% 2020: \$160.7 Billion <b>Stronger</b></p>	<p><b>Counties That Increased Employment</b> 2021: 78 2020: 13 <b>Stronger</b></p>
 <p><b>Wages &amp; Income</b></p>	<p><b>Average Annual Wage</b> 2021: \$49,330 3.8% 2020: \$47,530 <b>Stronger</b></p>	<p><b>State Median Wage</b> 2021: \$37,700 0.7% 2020: \$37,442 <b>Stronger</b></p>	<p><b>Average Hourly Wages - Production Workers</b> 2021: \$19.32 2020: \$18.69 <b>Stronger</b></p>
 <p><b>Labor Force &amp; Demographics</b></p>	<p><b>Unemployment Rate</b> 2021: 4.3% -41.9% 2020: 7.4% <b>Stronger</b></p>	<p><b>Labor Force</b> 2021: 3,327,966 0.9% 2020: 3,299,424 <b>Stronger</b></p>	<p><b>Unemployment Rates</b> Veterans, 2021: 3.0% Youth, 2020: 11.4% With Disability, 2020: 11.4% % In Poverty, 2020: 14.6% <b>Stronger</b></p>
 <p><b>Job Outlook</b></p>	<p><b>Ratio of Unemployed to Job Openings</b> June 2021: 0.55 -76.5% June 2020: 2.34 <b>Stronger</b></p>	<p><b>Projected Annual Growth Rate, All Occupations</b> 2020-2030: 1.51% 2018-2028: 0.71% <b>Stronger</b></p>	<p><b>Projected Job Openings</b> 2020-2030: 4,354,329 2018-2028: 4,154,529 <b>Stronger</b></p>
 <p><b>Safety on the Job</b></p>	<p><b>Total Nonfatal Occupational Illnesses and Injuries, All</b> 2020: 2.8 per 100 FTE 2019: 2.9 per 100 FTE <b>Stronger</b></p>	<p><b>Total Nonfatal Occupational Illnesses and Injuries, Public Sector</b> 2020: 3.6 per 100 FTE 2019: 4.0 per 100 FTE <b>Stronger</b></p>	<p><b>Fatal Occupational Injuries</b> 2020: 142 2019: 124 <b>Challenge</b></p>

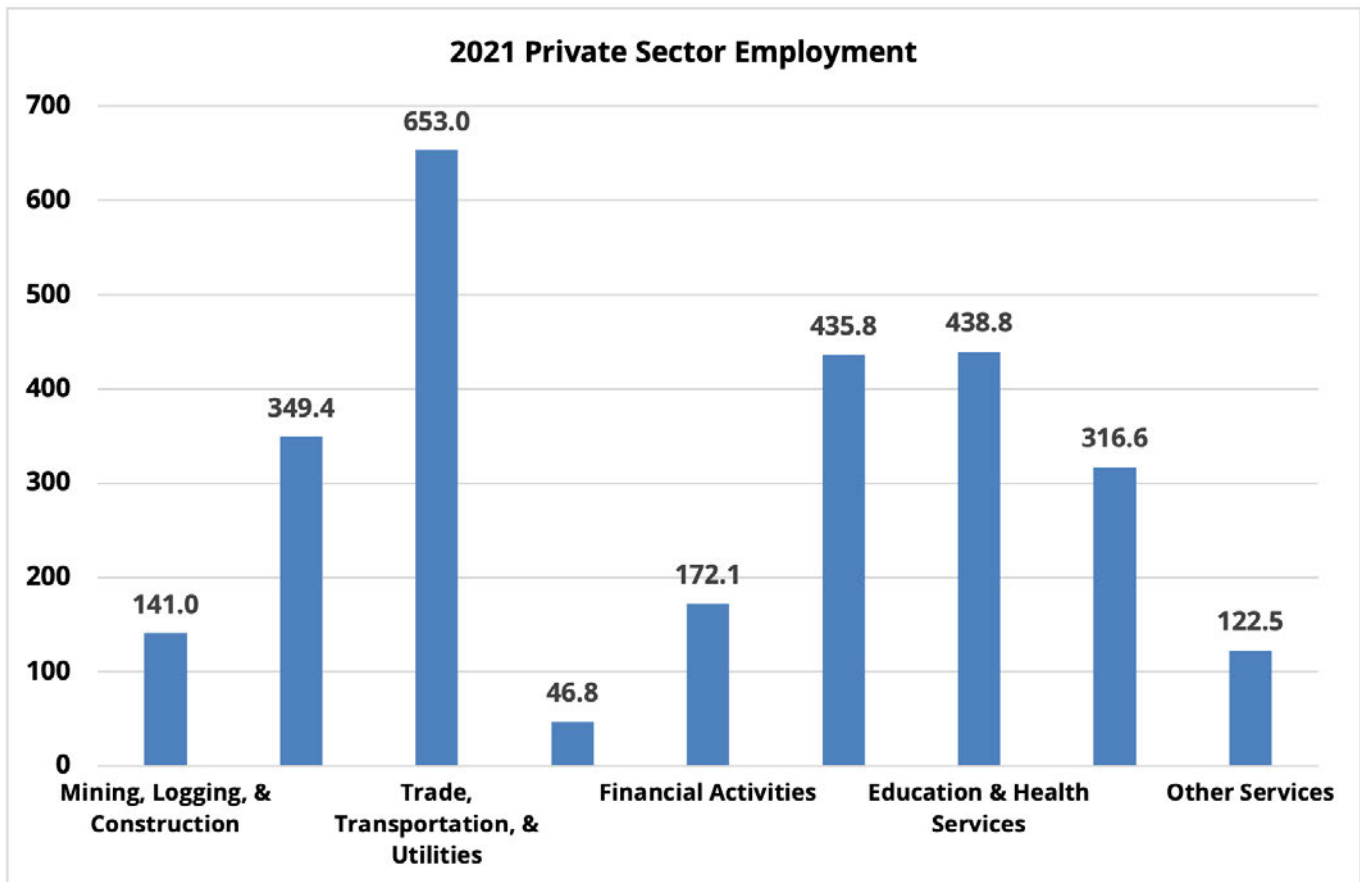


# Tennessee Overview



## Tennessee Employment 2021

Tennessee’s average annual nonfarm employment increased 3.4 percent from 2020 to 2021, adding 101,600 jobs. Goods producing jobs increased at a rate of 4.5 percent compared to 4.0 percent for private service-providing jobs. Jobs in the government sector declined by 0.6 percent. In the goods producing sector, mining, logging, and construction added 6,900 jobs while manufacturing added 14,000 jobs.



Source: TN Department of Labor and Workforce Development, WIR<sup>2</sup>ED Division, Current Employment Statistics (CES).

Figure 1

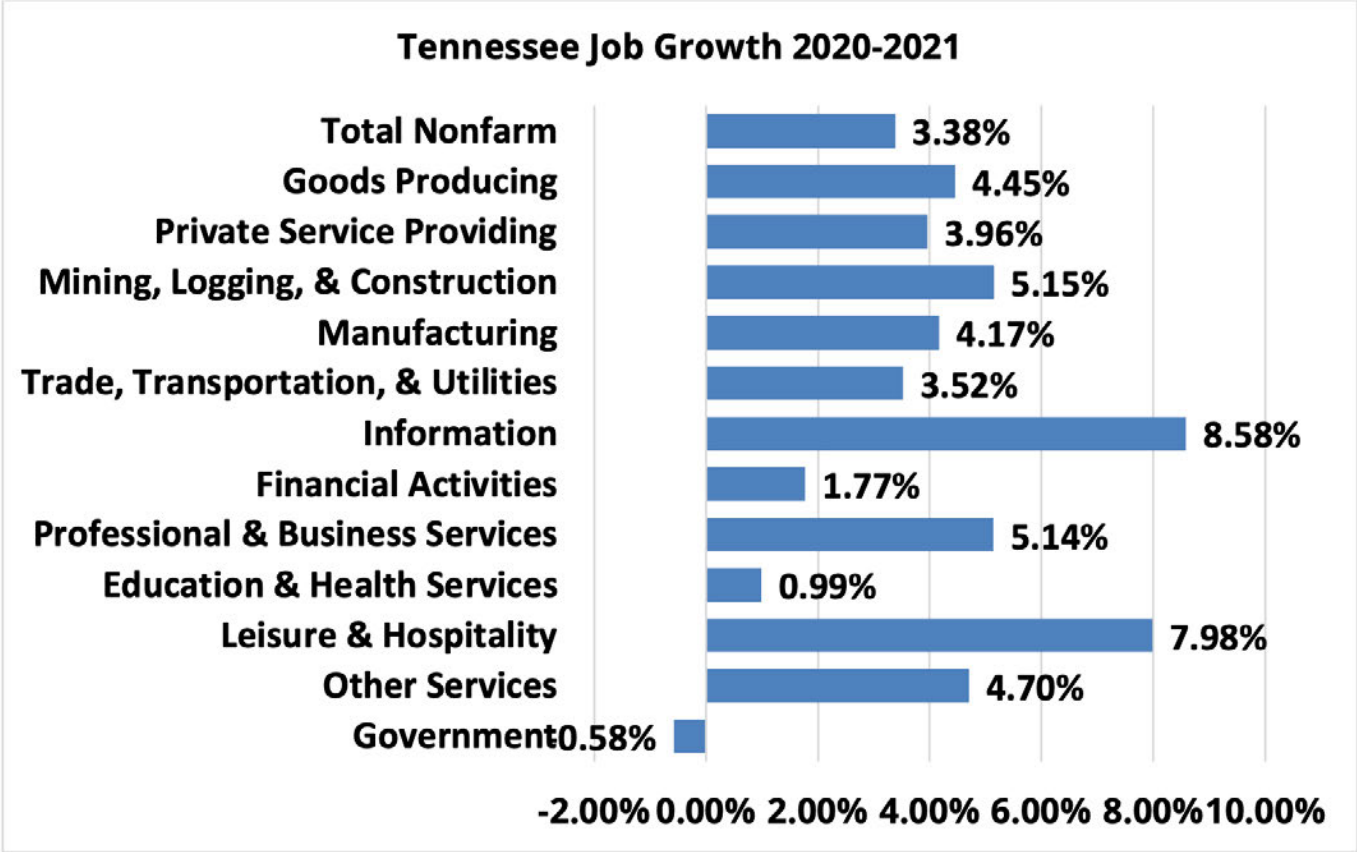
Table 1. Tennessee Industry Employment, 2016-2021

Industry Employment (in thousands)	2016	2020	2021	2020-2021		2016-2021	
<b>Total Nonfarm</b>	2969.1	3004.5	3106.1	101.6	3.4%	137.0	4.6%
<b>Goods Producing</b>	461.0	469.5	490.4	20.9	4.5%	29.4	6.4%
<b>Mining, Logging, &amp; Construction</b>	119.1	134.1	141.0	6.9	5.1%	21.9	18.4%
<b>Manufacturing</b>	341.8	335.4	349.4	14.0	4.2%	7.6	2.2%
<b>Durable Goods Manuf.</b>	219.5	211.1	221.7	10.6	5.0%	2.2	1.0%
<b>Non Durable Goods Manufacturing</b>	122.3	124.4	127.7	3.3	2.7%	5.4	4.4%
<b>Private Service-Providing</b>	2080.1	2102.1	2185.4	83.3	4.0%	105.3	5.1%
<b>Trade, Transportation, &amp; Utilities</b>	615.3	630.8	653.0	22.2	3.5%	37.7	6.1%
<b>Wholesale Trade</b>	116.8	117.8	121.0	3.2	2.7%	4.2	3.6%
<b>Retail Trade</b>	334.0	325.5	333.5	8.0	2.5%	-0.5	-0.1%
<b>Transportation, Warehousing, &amp; Utilities</b>	164.5	187.5	198.5	11.0	5.9%	34.0	20.7%
<b>Information</b>	45.6	43.1	46.8	3.7	8.6%	1.2	2.6%
<b>Financial Activities</b>	156.1	169.1	172.1	3.0	1.8%	16.0	10.2%
<b>Finance &amp; Insurance</b>	118	129.4	131.1	1.7	1.3%	13.1	11.1%
<b>Real Estate, Rental &amp; Leasing</b>	38.1	39.7	41.1	1.4	3.5%	3.0	7.9%
<b>Professional &amp; Business Services</b>	405.1	414.5	435.8	21.3	5.1%	30.7	7.6%
<b>Professional, Scientific &amp; Technical Services</b>	133.2	147.2	158.2	11.0	7.5%	25.0	18.8%
<b>Management of Companies &amp; Enterprises</b>	44.5	50.0	52.1	2.1	4.2%	7.6	17.1%
<b>Admin, Support, Waste Mgt &amp; Remediation Services</b>	227.4	217.3	225.5	8.2	3.8%	-1.9	-0.8%
<b>Education &amp; Health Services</b>	427.8	434.5	438.8	4.3	1.0%	11.0	2.6%
<b>Educational Services</b>	59.3	59.6	61.0	1.4	2.3%	1.7	2.9%
<b>Health Care &amp; Social Assistance</b>	368.5	374.9	377.8	2.9	0.8%	9.3	2.5%
<b>Leisure &amp; Hospitality</b>	319.6	293.2	316.6	23.4	8.0%	-3.0	-0.9%
<b>Arts, Entertainment &amp; Recreation</b>	35.6	33.5	38.2	4.7	14.0%	2.6	7.3%
<b>Accommodation &amp; Food Services</b>	284.0	259.7	278.4	18.7	7.2%	-5.6	-2.0%
<b>Other Services</b>	110.8	117.0	122.5	5.5	4.7%	11.7	10.6%
<b>Government</b>	428.0	432.8	430.3	-2.5	-0.6%	2.3	0.5%
<b>Federal Government</b>	49.2	51.9	51.6	-0.3	-0.6%	2.4	4.9%
<b>State Government</b>	96.5	95.6	93.9	-1.7	-1.8%	-2.6	-2.7%
<b>Local Government</b>	282.3	285.3	284.8	-0.5	-0.2%	2.5	0.9%

Source: TN Department of Labor and Workforce, CES

Among the private service-providing industries, those with the largest job increases were leisure and hospitality which added 23,400 jobs, and trade, transportation, and utilities which added 22,200 jobs. Within the leisure and hospitality sector, accommodation and food services accounted for 18,700 of the added jobs while wholesale trade and retail trade combined to account for 11,200 of the 22,200 jobs added in the trade, transportation, and utilities sector. Professional and business services also experienced a substantial increase of 21,300 jobs from 2020 to 2021, of which 11,000 were in professional, scientific, and technical services.

Since 2016, Tennessee has added 137,000 jobs, a 4.6 percent increase. Trade, transportation, and utilities led the way adding 37,700 jobs. Of those jobs, 34,000 were added in transportation, warehousing, and utilities, and 4,200 were added in wholesale trade. Other sectors gaining over 15,000 jobs included mining, logging, and construction; financial activities; and professional and business services. Leisure and hospitality experienced a decline of 26,400 jobs from 2016 to 2020.



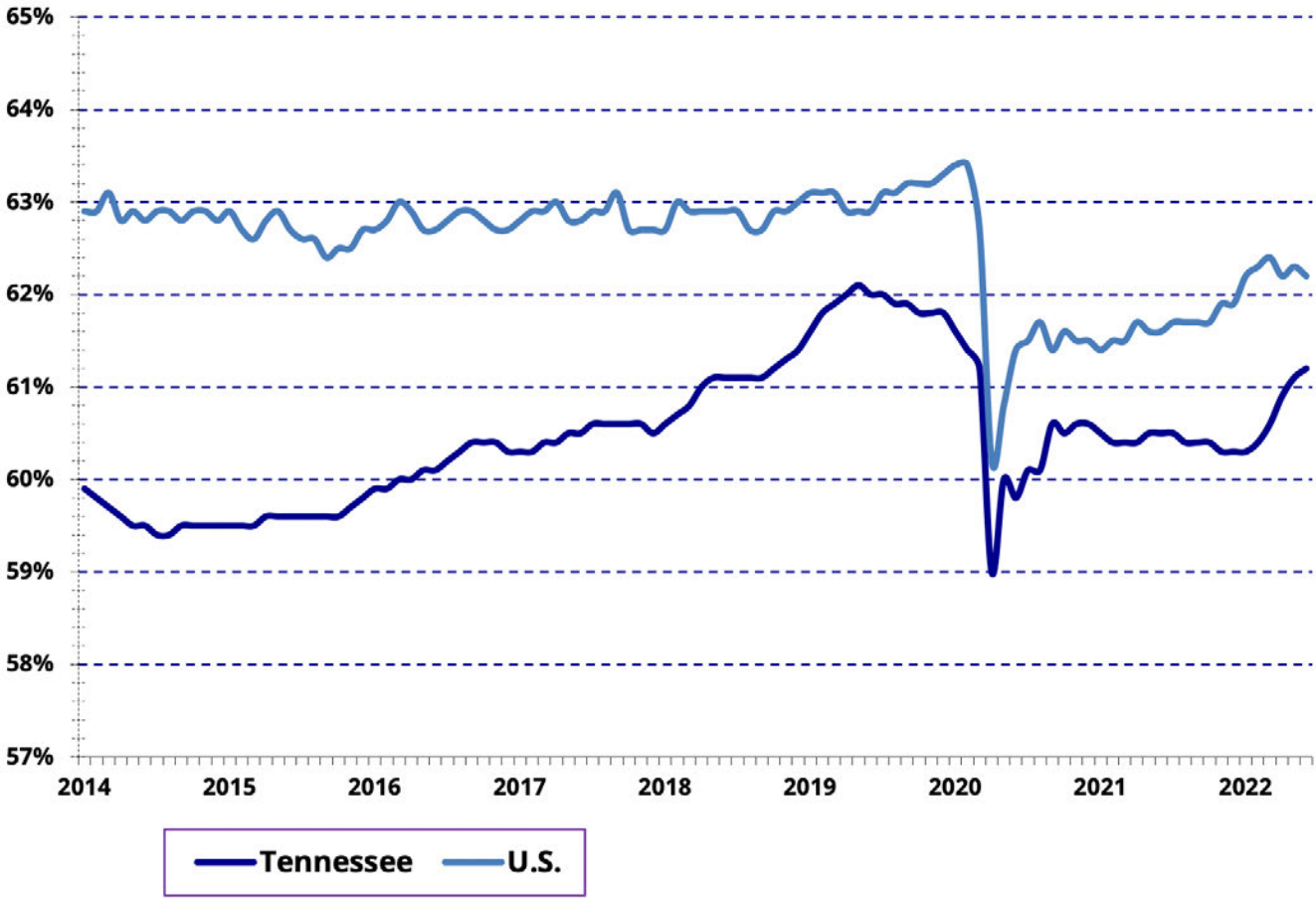
Source: TN Department of Labor and Workforce Development, CES.

Figure 2



### Tennessee Labor Force

Labor Force Participation Rates - US & Tennessee  
January 2014 to June 2022  
(Seasonally Adjusted)



Source: TN Department of Labor and Workforce Development and US Bureau of Labor Statistics

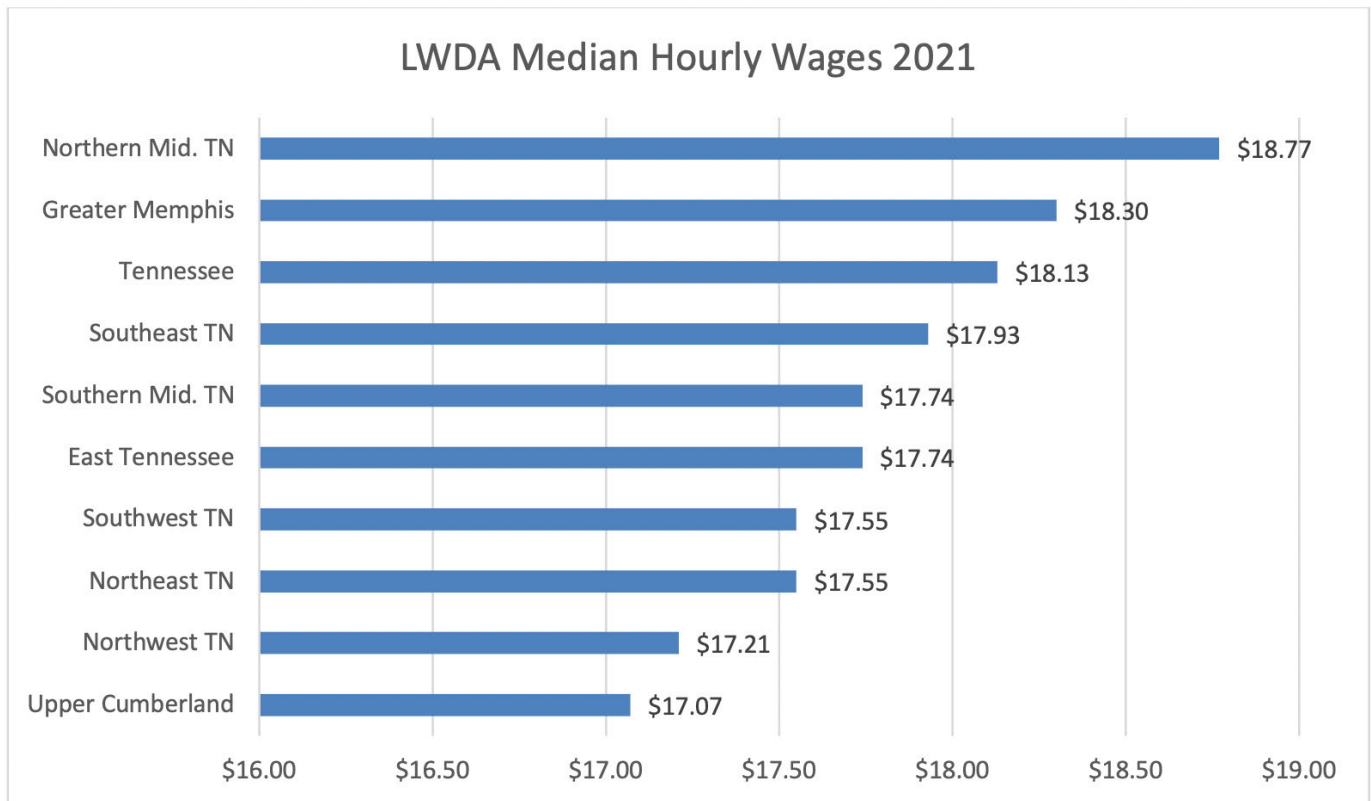
Figure 3

Tennessee’s June 2022 seasonally adjusted unemployment rate was 3.3. This was unchanged from the May revised rate, also at 3.3 percent. Tennessee’s June 2022 unemployment rate of 3.3 percent is down from 4.4 percent in June 2021. The U.S. unemployment rate declined from 5.9 percent in June 2021 to 3.6 percent in June 2021. The U.S. annual average rate for 2021 was 5.3 percent, down from 8.1 percent in 2012.

Tennessee’s annual average unemployment rate dropped from 8.0 percent in 2012 to 4.3 percent in 2021. Labor force participation has also declined in Tennessee from 61.7 percent in 2012 to 60.4 percent in 2021. U.S. labor force participation declined from 63.7 percent in 2012 to 61.7 percent in 2021.



### Tennessee Wages 2020-2021

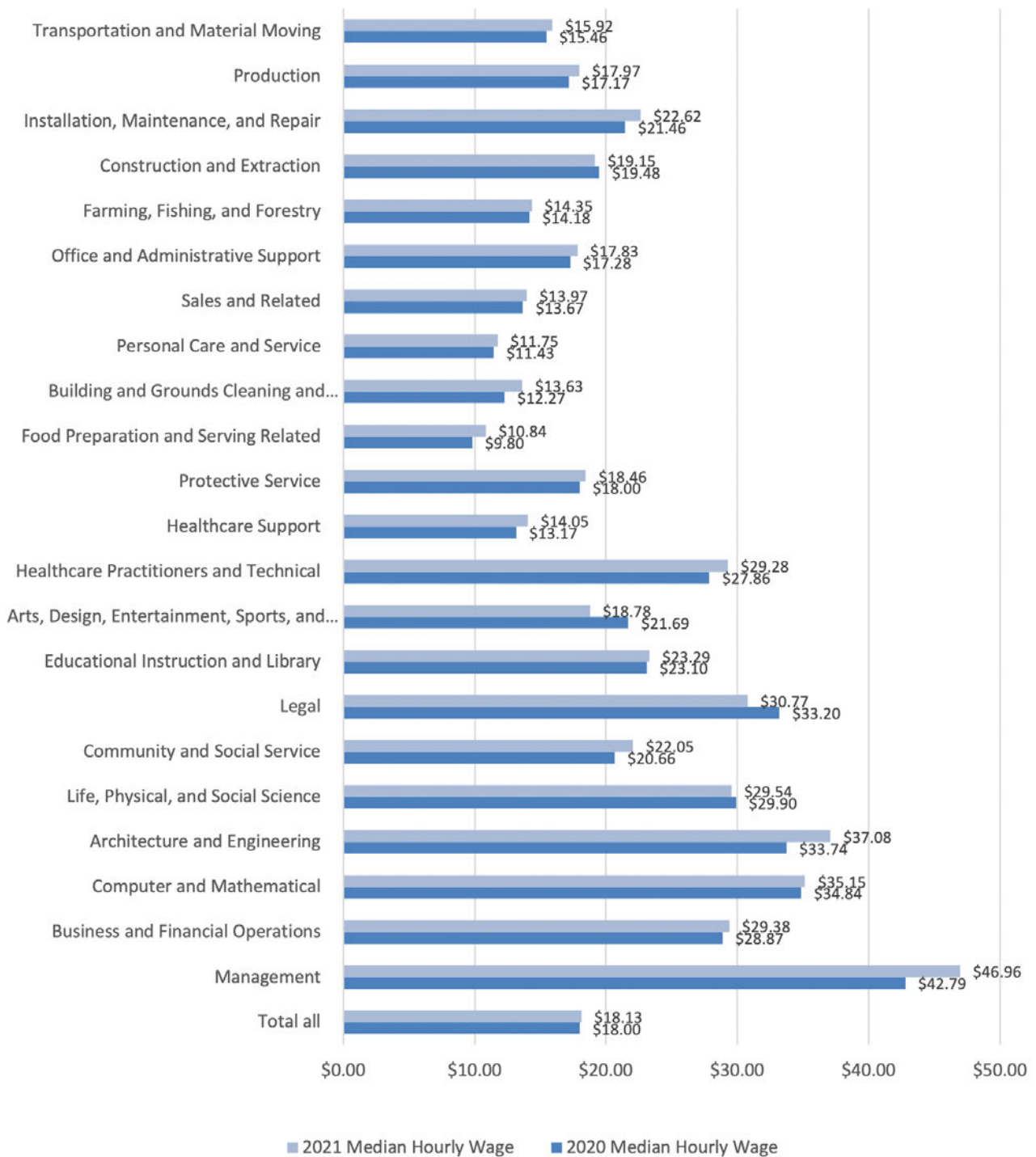


Source: TN Department of Labor and Workforce Development, Occupational Employment and Wages Survey (OEWS) May 2021.

Figure 4

Median hourly wage growth for Tennessee from 2020 to 2021 averaged 0.7 percent. Among the 22 major occupational groups, median wages increased for 17 of the groups. The largest decreases were for arts, design, entertainment, sports, and media occupations subject to decreased performances and events in 2020 and legal occupations. Construction and extraction and life, physical, and social science occupations experienced slight decreases in average pay. The largest hourly increase was in management pay (up \$4.17 per hour to \$46.96), followed by architecture and engineering (up \$3.34 per hour). Healthcare practitioners and technical occupations were up \$1.42 with increased demand during the continuing pandemic. The two LWDAs experiencing median hourly wages greater than the state rate of \$18.13 included Northern Middle (\$18.77) and Greater Memphis (\$18.30).

## Tennessee 2020 to 2021 Major Occupation Group Median Wages



Source: TN Department of Labor and Workforce Development, OEWS, May 2020 and May 2021.

Figure 5

# Tennessee Safety 2020



## Tennessee Occupational Injuries, Illnesses, and Fatalities 2020

The WIR<sup>2</sup>ED Division of the Tennessee Department of Labor and Workforce Development, Labor Research and Statistics Unit, conducts the annual Survey of Occupational Injuries and Illnesses (SOII) from a random sample of public and private sector companies in Tennessee as well as the Census of Fatal Occupational Injuries (CFOI). The data collected from the SOII survey is used to produce the occupational injury and illness rates for industries within the State of Tennessee. It also provides demographic and case characteristic data for work-related injuries and illnesses that result in days away from work or days of job transfer or restriction. The calculated rates represent the number of recordable occupational injuries and illnesses per 100 full-time equivalent employees. The survey is conducted in conjunction with the Bureau of Labor Statistics, U.S. Department of Labor.

Additional information can be found at <https://www.tn.gov/workforce/general-resources/major-publications0/major-publications-redirect/public-reports-redirect/occupational-injuries--illnesses--and-fatalities-statistics.html> or <https://www.bls.gov/iif/oshstate.htm#TN>

## Tennessee Survey of Occupational Injuries and Illnesses (SOII), 2020 Highlights

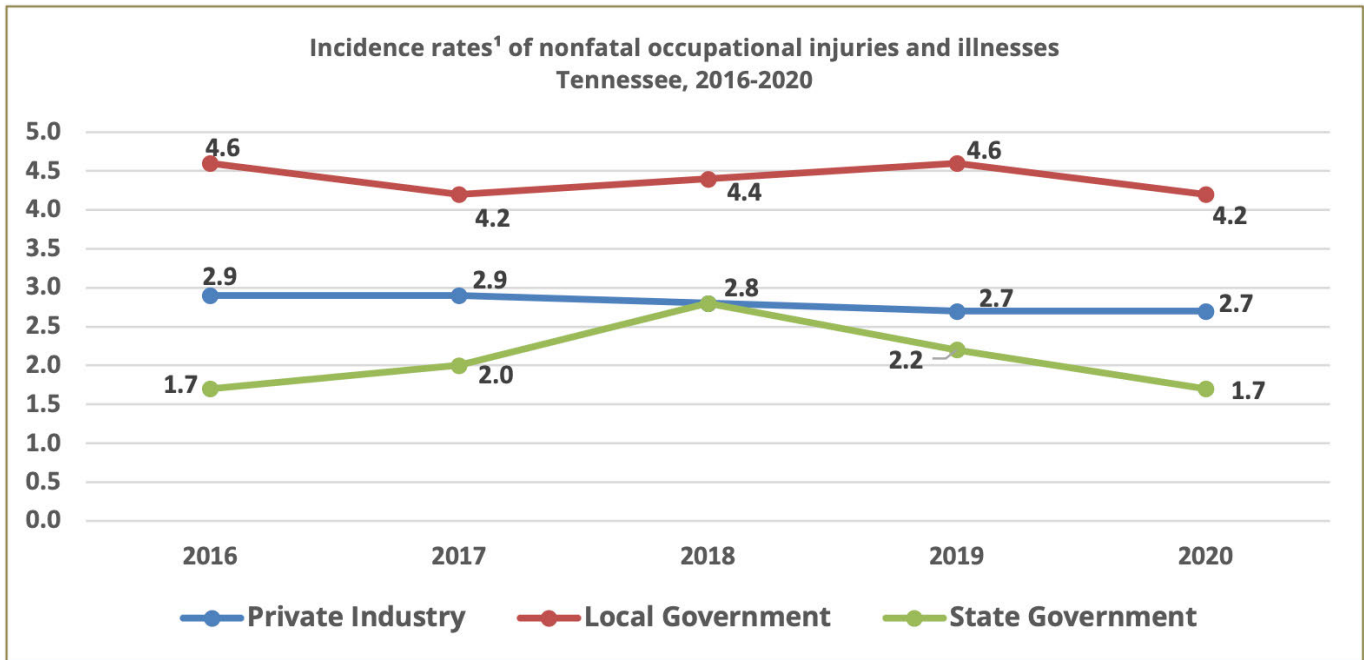
The total recordable incidence rate for all industries in Tennessee per 100 full-time equivalent workers during 2020 was estimated to be 2.8. The total recordable incidence rate for private sector industries was 2.7 and the total recordable rate for the public sector was 3.6. Private industry employers reported 57,500 nonfatal workplace injuries and illnesses in Tennessee in 2020, resulting in an incidence rate of 2.7 cases per 100 full-time equivalent workers.

In 2019, recordable illnesses made up 4.8 percent of all private sector recordable injuries and illness cases in Tennessee. In 2020, recordable illnesses made up 19 percent of all recordable cases. This was mainly due to an increase in the number of respiratory illnesses which increased from an estimated 400 in 2019 to 9000 in 2020. Two sectors, with 42 percent of the private industry employment, accounted for 55 percent of the occupational injuries and illnesses: education and health services and trade, transportation and utilities.

- There were an estimated 27,300 occupational injuries and illnesses in Tennessee including all ownerships in 2020 that resulted in lost days away from work.
- 50.7% of the occupational injuries and illnesses in Tennessee involving days away from work were sustained by men, while 49.3% were sustained by women.
- 23% of the occupational injuries and illnesses in Tennessee involving days away from work were the result of a sprain, strain or tear to a ligament or tendon.

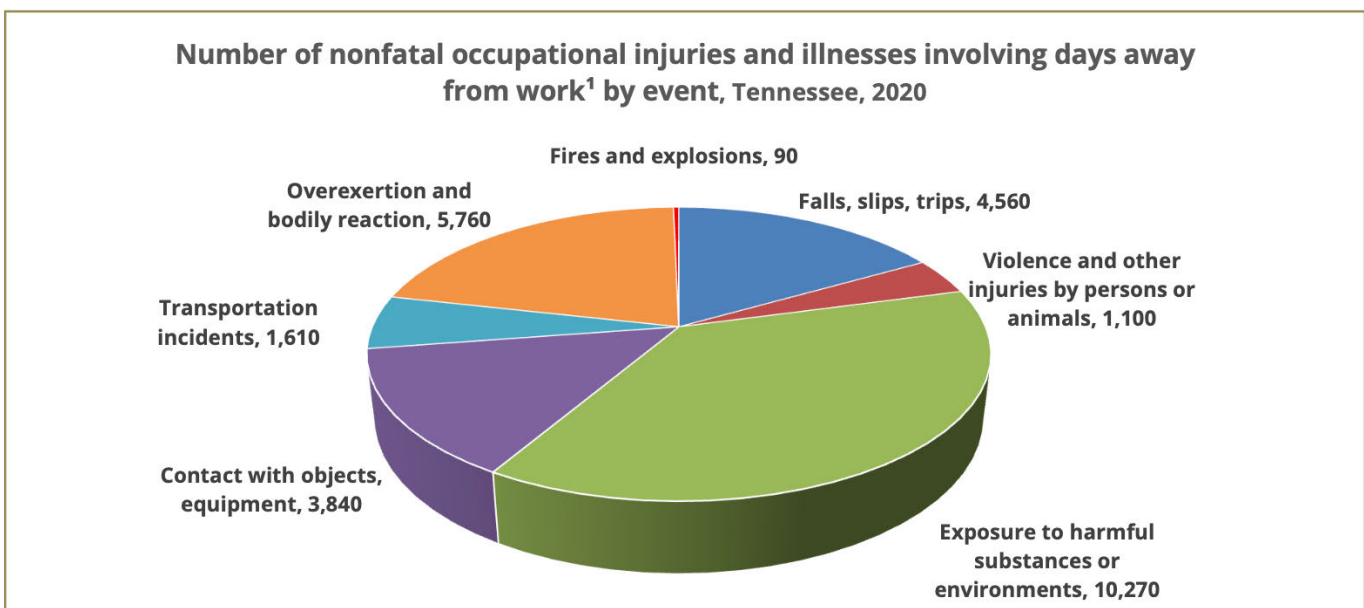


## Workplace Injuries and Illnesses - Tennessee, 2020



<sup>1</sup> Incidence rates represent the number of recordable occupational injuries and illnesses per 100 full-time equivalent workers. Source: US Department of Labor, Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, Tennessee Department of Labor & Workforce Development, Wired, November 2021.

Figure 6



<sup>1</sup> Days-away-from-work cases include those that result in days away from work with or without job transfer or restriction. Source: US Department of Labor, Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses Tennessee Department of Labor & Workforce Development, Wired, November 2021.

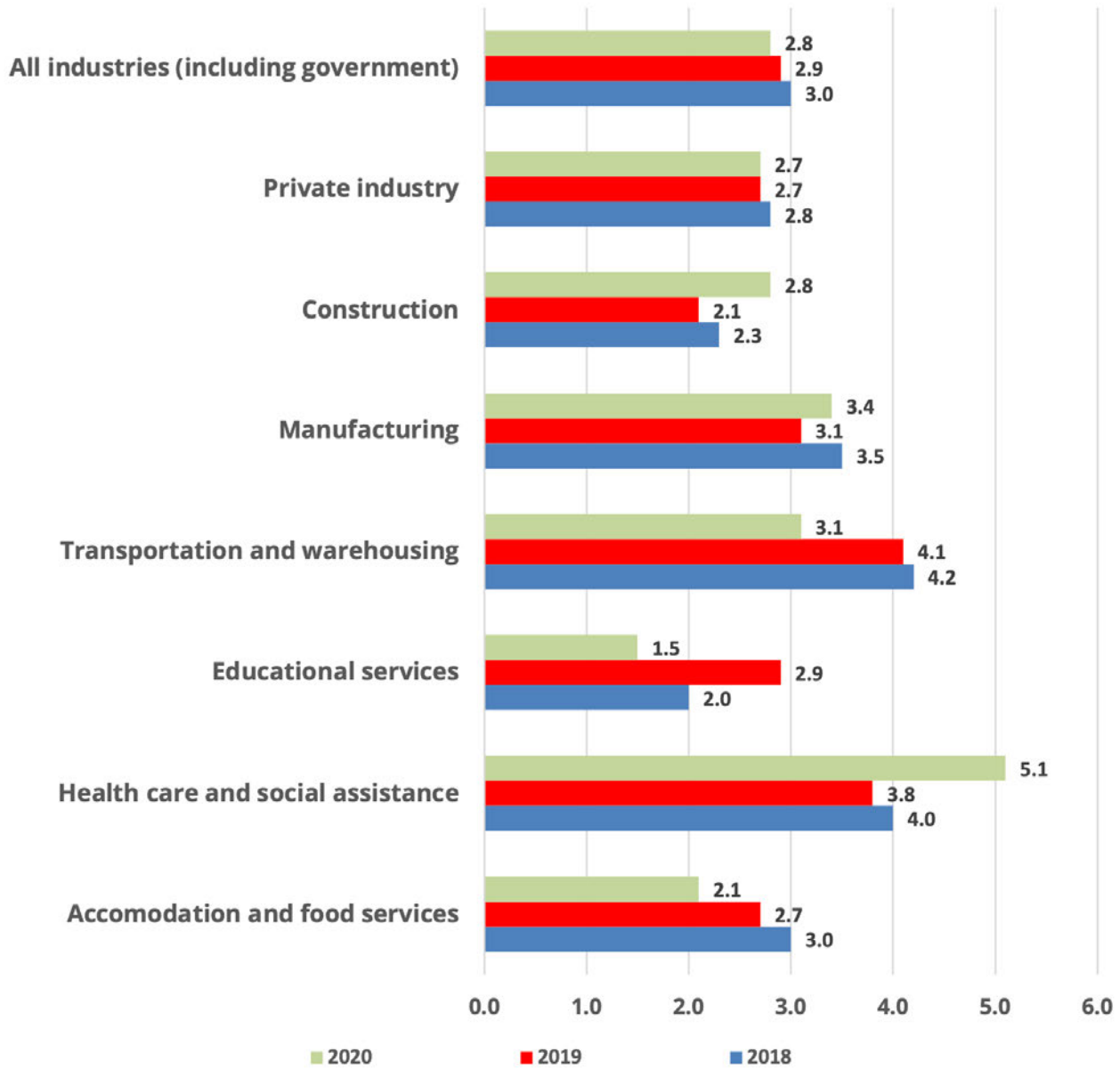
Figure 7

**Table 2. Number of nonfatal occupational injuries and illnesses involving days away from work<sup>1</sup> by occupational groups**  
all ownerships, Tennessee, 2019-2020

Occupation	2019	2020
All Occupations	18,360	27,300
Management occupations	360	970
Education, instruction, and library occupations	470	360
Elementary school teachers, except special education	230	110
Healthcare practitioners and technical occupations	1,080	4,450
Registered nurses	270	1,530
Emergency medical technicians and paramedics	180	420
Licensed practical nurses	190	1,130
Healthcare support occupations	1,220	2,910
Nursing assistants	500	2,250
Personal care aides	250	230
Protective service occupations	1,010	1,910
Police and sheriff's patrol officers	390	560
Firefighters	210	460
Correctional officers and jailers	100	320
Security guards	110	140
Food preparation and serving related occupations	1,060	1,410
Fast food and counter workers	260	400
Food preparation workers	180	250
Cooks, institution and cafeteria	80	80
Cooks, restaurant	140	170
Building and grounds cleaning and maintenance occupations	890	1,150
Maids and housekeeping cleaners	160	280
Landscaping and groundskeeping workers	260	510
Sales and related occupations	1,190	1,100
Retail salespersons	430	530
First-line supervisors of retail salespersons	450	240
Office and administrative support occupations	740	910
Construction and extraction occupations	1,230	1,300
Construction laborers	290	270
Installation, maintenance, and repair occupations	1,460	1,610
Maintenance and repair workers, general	400	540
Production occupations	1,900	3,140
Team assemblers	270	220
Meat, poultry, and fish cutters and trimmers	20	460
Transportation and material moving occupations	4,930	5,120
Heavy and tractor-trailer truck drivers	1,570	1,320
Light truck or delivery services drivers	410	420
Laborers and freight, stock and material moving workers, hand	1,710	1,570
Stockers and order fillers	440	670

<sup>1</sup> Days-away-from-work cases include those that result in days away from work with or without job transfer or restriction. Source: US Dept of Labor, Bureau of Labor Statistics, TN Dept of Labor & Workforce Development, November 2021. Tennessee Department of Labor & Workforce Development, Wired, November 2021.

**Incidence rates of nonfatal occupational injuries and illnesses involving days away from work<sup>1</sup>**  
 By all ownerships, Tennessee 2018-2020



<sup>1</sup> Days away from work cases include those that result in days away with or without job transfer or restriction. Source: US Department of Labor, Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, Tennessee Department of Labor & Workforce Development, Wir<sup>2</sup>ed, November 2021.

Figure 8

## Tennessee Census of Fatal Occupational Injuries and Illnesses (CFOI), 2020

There were 142 fatal work-related injuries in Tennessee during 2020, an increase of 14% over the 124 recorded in 2019. Highlights:

- There were 123 fatal work-related injuries to wage and salary workers and 19 to self-employed persons.
- There were 123 fatal work injuries to men and 19 fatal work injuries to women.
- There were 96 fatal work injuries to White (non-Hispanic) workers, 23 to Hispanic or Latino workers, and 19 to Black or African-American (non-Hispanic) workers.
- The greatest number of fatal occupational injuries occurred to workers in the major occupational group of transportation and material moving workers with 47 fatalities.
- 42% of the fatal occupational injuries in Tennessee in 2020 occurred on a street, highway or interstate.

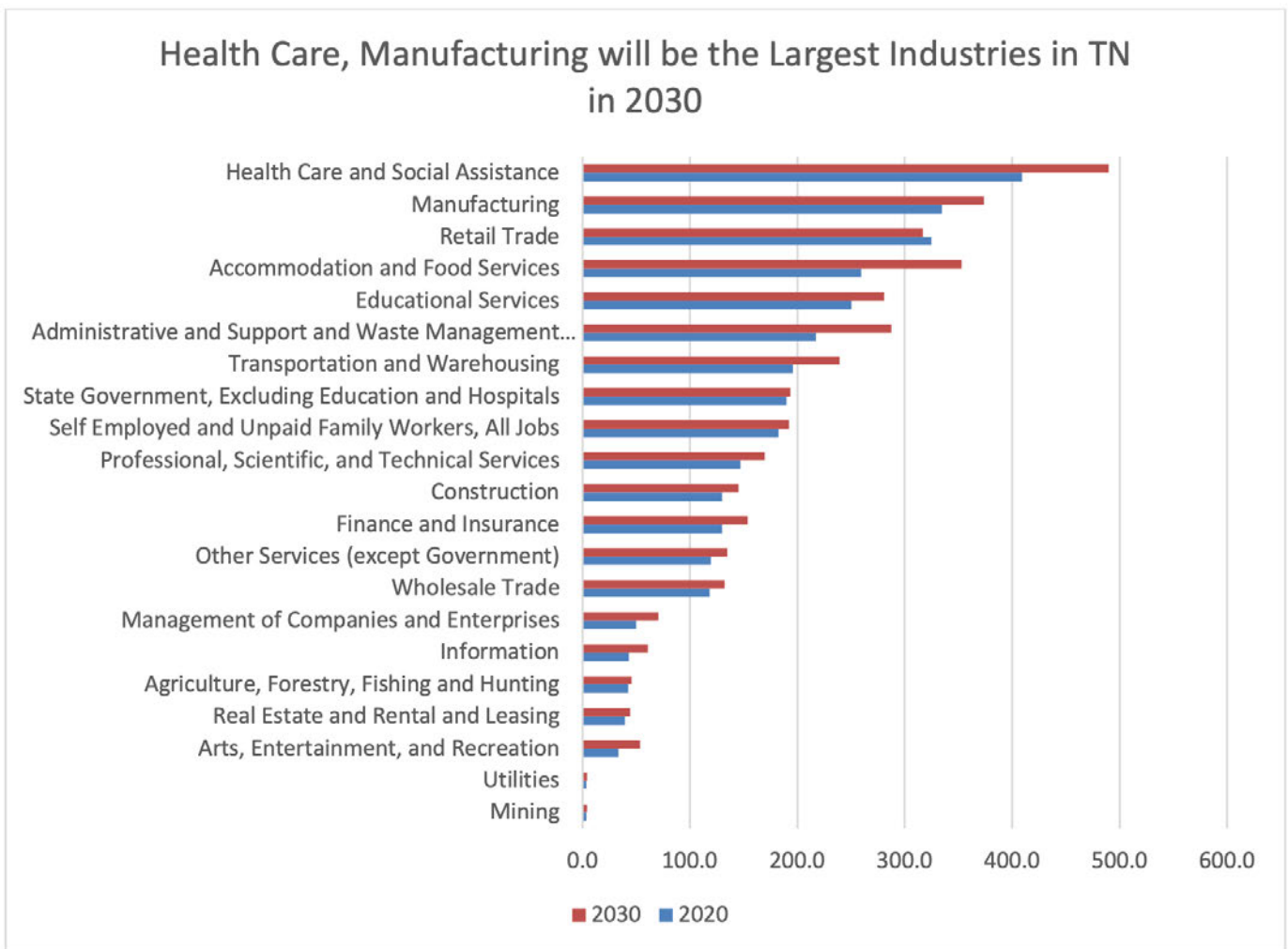
Table 3

Table 3: Event or Exposure	2020	2019	2018	2017
Transportation Incidents	57	58	42	47
Violence and other injuries by persons or animals	29	17	23	20
Contact with objects and equipment	16	18	24	18
Falls, slips, trips	20	16	19	21
Exposure to harmful substances or environments	20	--	10	12
Fires and explosions	--	--	4	--
Yearly Totals	142	124	122	128

Note: Totals for minor categories may not sum to totals. Dashes indicate no data or data that do not meet publication criteria. Source: US Department of Labor, Bureau of Labor Statistics, Census of Occupational Injuries, Tennessee Department of Labor & Workforce Development, Wir<sup>2</sup>ed, November 2021.



## Tennessee Long Term Job Outlook to 2030



Source: TN Department of Labor and Workforce Development, WIR<sup>2</sup>ED Division, Tennessee Long-Term Industry Projections 2020-2030.

Figure 9

From a base of 3.2 million jobs in 2020, total employment for Tennessee, including agricultural, self-employed, and private household workers, is expected to grow to 3.7 million by 2030. Expected to increase by 1.5 percent annually, as it recovers from lower employment in the base year of 2020 due to the pandemic, Tennessee’s economy in the long run is expected to continue expansion in eleven of twelve major

industry sectors, with only retail trade expected to decline in employment. The goods-producing industries are expected to expand by 1.1 percent annually and create an estimated 57,573 jobs over the 10- year period.

Starting from 2020 base year employment, arts, entertainment, and recreation is expected to be the fastest-growing industry, as it recovers from pandemic employment losses. Due to recovery from 2020, accommodation and food services is projected to be the fourth most rapidly growing industry. Industries which lost more than 10,000 employees from the first quarter of 2019 to 2020 included:

- Accommodation and food services- 48,660
- Manufacturing- 20,800
- Arts, entertainment, and recreation- 11, 340
- Administration and support and waste management- 10,040

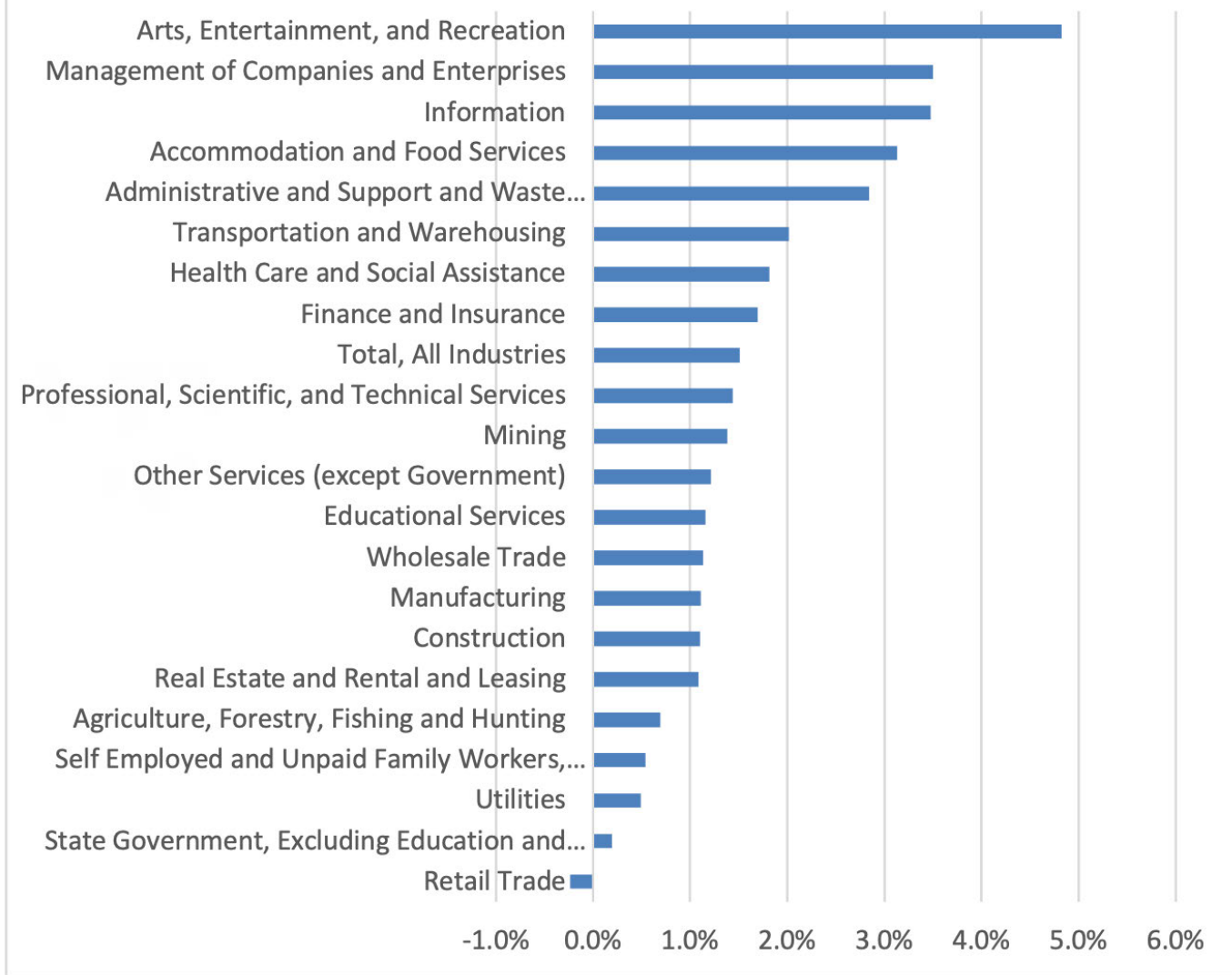
Other rapidly growing sectors will include management of companies and enterprises and information, with tech companies planning to locate more employees in Tennessee.

In the previous projections to 2028, manufacturing employment was forecast to have zero growth and create fewer than 500 jobs over the decade. However, with Tennessee's new efforts to manufacture electric vehicles and batteries, expand charging stations across the state, and other initiatives, manufacturing is projected to create nearly 39,000 jobs over the decade, and construction to create nearly 15,000. With the location of additional tech firms, the information industry could create nearly 18,000 jobs.

The services-providing sector is expected to expand at an annual growth rate of 1.7 percent. Other fast-growing services industries will include administrative and support and waste management and remediation and transportation and warehousing. Health care and social assistance will be one of the fastest-growing industries but is also expected to provide the second largest number of new jobs (80,570), over the ten-year period. Educational services will continue to grow at about one percent annually.

With the expansion of e-commerce and changes in work organization, the number of self-employed and unpaid family workers is expected to grow at a slightly lower rate than the average for all employment (0.5 percent annually).

## Most Rapid Annual Average Growth Rates of Industries in TN from 2020 to 2030



Source: TN Department of Labor and Workforce Development, WIR<sup>2</sup>ED Division, Tennessee Long-Term Industry Projections 2020-2030.

Figure 10

The occupational groups expected to add the most new jobs from 2020 to 2030 are listed in the following table, sorted by 2020-2030 occupational change. More than 520,000 “new” jobs are expected to be created in Tennessee in the next ten years, although some are jobs returning after the pandemic. The largest number of new jobs by occupational group is for food preparation and serving related jobs, as many of these jobs are being restored after 2020; similarly, some of the office and administrative support and production jobs are returning after 2020 losses.

Other top job-creating groups which did not suffer in the pandemic but will continue their growth include management and transportation and material moving. Healthcare practitioners and technical occupations are the fourth largest group, with healthcare support expected to create almost 27,000 jobs. Business and financial occupations also are forecast to expand. The top five occupational groups with the highest median salaries in 2020 included management, architecture and engineering, computer and mathematical, legal, and life, physical, and social science occupations, followed closely by business and financial and healthcare practitioners. Three of the top five highest-earning categories are STEM (Science, Technology, Engineering, and Math)- related occupations, pointing out the importance of technical education in the current economy.

**Table 4: Occupational Projections by Major Occupational Group in Tennessee for 2020-2030**

Major Occupation Group Title	2020 Estimated Employment	2030 Projected Employment	2020-2030 Employment Change	2021 Median Annual Wage
Total, All Occupations	3,224,955	3,745,851	520,896	37,700
Food Preparation and Serving Related	251,366	329,892	78,526	22,541
Transportation and Material Moving	352,512	419,226	66,714	33,115
Management	224,440	268,889	44,449	97,684
Healthcare Practitioners and Technical	205,862	243,156	37,294	60,893
Office and Administrative Support	439,244	472,219	32,975	37,077
Production	262,097	293,972	31,875	37,373
Business and Financial Operations	154,353	185,077	30,724	61,113
Healthcare Support	105,782	132,775	26,993	29,216
Building and Grounds Cleaning and Maintenance	101,162	127,230	26,068	28,347
Computer and Mathematical	67,851	89,693	21,842	73,122
Installation, Maintenance, and Repair	129,506	148,530	19,024	47,041
Education, Training, and Library	163,999	182,506	18,507	48,453
Personal Care and Service	71,276	87,598	16,322	24,444
Construction and Extraction	117,148	132,510	15,362	39,830
Arts, Design, Entertainment, Sports, and Media	45,994	56,202	10,208	39,063
Sales and Related	294,636	304,804	10,168	29,053
Protective Service	67,953	76,721	8,768	38,407
Community and Social Service	55,789	63,752	7,963	45,866
Architecture and Engineering	43,767	51,715	7,948	77,132
Legal	17,867	21,980	4,113	64,000
Life, Physical, and Social Science	22,902	26,136	3,234	61,441
Farming, Fishing, and Forestry	29,449	31,268	1,819	29,842

Source: TN Dept of Labor and Workforce, WIR<sup>2</sup>ED Division, OEWS, 2021 and 2020-2030 Long Term Projections





Source: TN Department of Labor and Workforce Development, WIR<sup>2</sup>ED Division, Tennessee Long-Term Occupational Projections 2020-2030.

Figure 11

Job openings consist of new jobs as well as jobs created by workers transferring out of job classes or exiting the labor force altogether. For most occupational groups, the number of jobs created by transfers and exits far outweighs the number of new jobs and could be 75 percent or more of the job openings. Top occupational groups expected to have the most job openings in 2020-2030 include food preparation and serving occupations (as pandemic-related jobs return), transportation and material-moving jobs, office and administrative support (as pandemic jobs return and also as some job classes expand, sales jobs (with many part-time and high turnover occupations), and production occupations (due to pandemic recovery and development of new technologies and insourcing). The total number of job openings during 2020-2030 is projected to be 4,354,329.

## Significant Occupational Shortages (SOS)

A key feature of the current economy is concerns by employers in Tennessee about the shortage of workers to fill available jobs. Having enough workers allows employers to maintain productivity and make plans to expand as the economy grows. Tennessee Department of Labor and Workforce Development's web site, jobs4tn.gov, in July 2022 listed 2.4 job openings for every unemployed person in the state. This is a fifty percent increase in the rate from July 2021 of 1.6 jobs for every unemployed worker.

Labor force shortages range across skill levels, from occupations requiring no formal education to those requiring bachelor's degrees or more. Some occupations for which few jobs are posted on jobs4tn.gov also need more employees applying for and accepting jobs, but methods to track those shortages are not even available. The tables below use data from jobs4tn to highlight some of the more critical candidate shortages at different educational levels.

The three tables below compare the number of job openings listed in jobs4tn.gov for 2021 by occupation with the number of active resumes on the system for that year. Not all employers post open jobs, nor do all individuals looking for jobs post resumes, but the data do provide a snapshot of areas which appear to have sizable labor force imbalances, and which need a greater supply of workers. Table 5 shows the top 15 occupations in Tennessee by supply gap which require more than a high school diploma but less than a bachelor's degree. Eleven of these are skilled occupations in healthcare, ranging from registered and licensed practical nurses to respiratory therapists and MRI technologists. Most of these occupations require associate degrees. The healthcare system is recovering from severe stresses experienced by its workforce during the pandemic, lack of rural hospital expansion, and increasing demands from an aging population and low-income families without health insurance.

Other shortage occupations include computer support specialists which are in greater demand due to more at-home use of computers by employees and students, truck drivers needed as e-commerce and warehousing has expanded during and after the pandemic, HVAC mechanics, and electrical and electronic technicians. Low entry-level wages for several occupations may be making recruitment more difficult. Reasons for the shortages of truck drivers include high turnover (as much as 90 percent for some employers), low job quality, and low pay, especially for independent operators who are responsible for their own expenses such as truck leasing, gas, insurance, and maintenance costs. <sup>1</sup>

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<sup>1</sup> [FACT SHEET: The Biden Administration's Unprecedented Actions to Expand and Improve Trucking Jobs - The White House](#)

Table 5: Top Supply Gaps - Postsecondary Education through Associate Degrees

Occupation Title	Education Level	Sum of Job Openings 2021	Sum of Resumes 2021	Openings Minus Resumes- Supply Gap	Entry Level Annual Wage 2021
Registered Nurses	AA	73,013	402	72,611	51,067
Licensed Practical and Licensed Vocational Nurses	PS	14,032	335	13,697	35,135
Heavy and Tractor-Trailer Truck Drivers	PS	11,775	788	10,987	34,338
Surgical Technologists	PS	3,714	43	3,671	35,241
Radiologic Technologists	AA	2,908	55	2,853	40,528
Respiratory Therapists	AA	2,671	26	2,645	44,724
Computer User Support Specialists	SC	2,904	459	2,445	33,492
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	PS	2,681	255	2,426	32,593
Diagnostic Medical Sonographers	AA	1,424	21	1,403	53,358
Physical Therapist Assistants	AA	1,008	70	938	44,705
Dental Hygienists	AA	859	27	832	49,582
Nuclear Medicine Technologists	AA	559	1	558	59,624
Magnetic Resonance Imaging Technologists	AA	513	3	510	52,628
Electrical and Electronics Engineering Technicians	AA	607	127	480	41,105
Occupational Therapy Assistants	AA	503	25	478	45,400

Key: AA Associate's degree; SC Some College, no degree; PS Postsecondary non-degree award

Sources: Jobs4tn.gov job openings posted and active resumes 2021; OEWS 2021 entry level wages

Table 6 displays the top 15 occupations with labor supply shortages which usually require only a high school diploma or the equivalent and for which entry level wages are twenty percent above the 2021 median entry level wage in the state. Executive secretaries and executive administrative assistants were in especially short supply. Other occupations with notable shortages included production and construction supervisors as well as transportation and energy industry workers, as these industries expand in the state.

Table 6: Top Supply Gaps - High School, High Wage

Occupation Title	Education Level	Sum of Job Openings 2021	Sum of Resumes 2021	Openings Minus Resumes	Entry Level Annual Wage 2021
Executive Secretaries and Executive Administrative Assistants	HS	6,527	966	5,561	40,026
First-Line Supervisors of Production and Operating Workers	HS	4,936	835	4,101	40,666
Transportation, Storage, and Distribution Managers	HS	2,235	438	1,797	56,602
First-Line Supervisors of Mechanics, Installers, and Repairers	HS	1,429	172	1,257	43,117
Postal Service Clerks	HS	953	45	908	43,414
Claims Adjusters, Examiners, and Investigators	HS	576	141	435	43,553
Power Distributors and Dispatchers	HS	389	7	382	54,070
Chemical Plant and System Operators	HS	286	40	246	41,443
Commercial Pilots	HS	243	7	236	58,353
Postal Service Mail Carriers	HS	264	49	215	39,568
Electrical Power-Line Installers and Repairers	HS	231	35	196	43,563
First-Line Supervisors of Construction Trades and Extraction Workers	HS	355	206	149	43,263
Precision Instrument and Equipment Repairers, All Other	HS	105	4	101	39,620
Power Plant Operators	HS	111	18	93	64,867
First-Line Supervisors of Correctional Officers	HS	103	22	81	46,052

Key: HS High school or equivalent.

Sources: Jobs4tn.gov job openings posted and active resumes 2021; OEWS 2021 entry level wages =>\$39,074.

Table 7 lists the top 15 occupations with critical shortages of candidates which require a bachelor's degree. Two occupations are vital in information technology- computer programmers and systems analysts- both of which have high growth rates and together had a gap of more than 7,500 job openings compared to the number of available candidates. With the need to fulfill companies' internal technology requirements plus the expected location of Oracle in Tennessee within the next decade, more information technology professionals must be developed here. Seven occupations are in management and financial and business services, including medical and health services managers. Two engineering occupations are central to the expansion of production industries in the state, including electrical vehicle and battery manufacturing, and civil engineering vital to the construction industry.

Table 7: Top Supply Gaps: Bachelor's Degree Occupations

Occupation Title	Education Level	Sum of Job Openings 2021	Sum of Resumes 2021	Openings Minus Resumes	Entry Level Annual Wage 2021
General and Operations Managers	BA	8,450	1,236	7,214	53,892
Computer Programmers	BA	4,747	77	4,670	53,336
Accountants and Auditors	BA	5,239	834	4,405	46,920
Human Resources Specialists	BA	3,682	506	3,176	35,942
Computer Systems Analysts	BA	3,107	220	2,887	54,294
Medical and Health Services Managers	BA	3,152	327	2,825	63,480
Sales Managers	BA	4,394	1,805	2,589	69,008
Management Analysts	BA	2,323	150	2,173	54,045
Financial Managers	BA	2,415	270	2,145	73,483
Producers and Directors	BA	2,260	431	1,829	39,264
Mechanical Engineers	BA	1,944	179	1,765	63,144
Industrial Engineers	BA	1,662	111	1,551	61,295
Marketing Managers	BA	1,797	379	1,418	67,541
Electrical Engineers	BA	1,364	41	1,323	69,449
Civil Engineers	BA	1,180	50	1,130	60,963

Source: jobs4tn.gov job openings posted and active resumes 2021; OEWS 2021.

## Unknown Numbers of Teacher Vacancies

Although posted job openings and resumes on jobs4tn.gov provide some information on the magnitude of the gap in labor supply for some occupations, they are not helpful in identifying the number of openings for elementary and secondary teachers in the state. According to the TDLWD long term job projections to 2030, there are an expected 5,523 job openings annually for the teaching occupations listed in Table 8. However, only 917 job openings were posted in jobs4tn.gov in 2021, representing only 16.6 percent of the expected openings. Most openings are posted on local school district sites and are not aggregated in a timely manner on any state web sites, therefore not making it possible to know the number of teacher vacancies that need to be filled. This adds to the difficulty of trying to recruit students into these occupations, at a time when teacher shortages are increasing<sup>2</sup> and education is one of our most essential public services. A centralized inventory of the number of teacher vacancies by area and subject matter at the state level is especially necessary so the healthy operation of our public schools can be supported.

<sup>2</sup> Katie Nixon and Nicole Young (January 26, 2022). Staffing shortage closes schools. *Ashland City Times*, p. 1A.

## Opportunities to Reduce Labor Shortages and Increase Equity in Employment

Some potential solutions to alleviate labor shortages in key occupations include:

- Increasing labor force participation rates by lowering barriers to employment

Significant barriers to employment and the numbers of individuals affected are listed in each of the regional sections of this report. Extensive efforts to reduce these barriers are underway in all workforce areas of the state. Efforts to increase the employment status, income, and credential attainment of targeted populations can be aided by aligning this work to areas of labor market shortages. Some local initiatives to promote alignment include promoting Black degree attainment in high demand fields include peer education and network development in information technology<sup>3</sup> and mentoring programs for nursing occupations in local high schools with health care professionals.<sup>4</sup>

- Integrated employment and training programs such as apprenticeships

Tennessee has a strong focus on increasing apprenticeships, with 1135 completing them in 2021. To begin to meet Tennessee's teacher shortages, Tennessee was the first to develop registered teacher apprenticeship programs across the state, in partnership with the U.S. Department of Education and the U.S. Department of Labor. The first was begun with the Clarksville- Montgomery County School system and Austin Peay University.<sup>5</sup> The U.S Department of Labor is increasing registered apprenticeships for heavy and tractor- trailer truck drivers, including other efforts to reduce shortages such as recruiting more veterans into the field, improving job quality, and reducing licensing times.

- Incentives targeted to specific shortage areas

Vanderbilt University instituted a new program to help registered nurses pay off their student loans.<sup>6</sup> The federal government provides loan forgiveness programs for targeted public service jobs.

- Aligning education with labor shortage occupations

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<sup>3</sup> Seyna Clark (June 19, 2022). Software experts push to diversify pipeline into technology jobs. *Tennessean*, p. 1D.

<sup>4</sup> Matt Batcheldor (August 26, 2022). Collaboration brings nursing education to Metro Schools. *VUMC Reporter*, p. 1.

<sup>5</sup> Meghan Mangrum (January 17, 2022). TN leads efforts to add more teachers. *Tennessean*, p. 1A.

<sup>6</sup> Matt Batcheldor (April 29, 2022). VUMC debuts new loan repayment benefit for nurses. *VUMC Reporter*, p. 1A.

The Tennessee Higher Education Commission may adjust its funding formula to provide additional funds to colleges for students majoring in high demand academic areas.<sup>7</sup>

- An extensive list of strategies for reducing critical labor shortages could also include better recruitment practices, appealing to younger workers, strong career services, improved job quality and salaries, additional certifications, clearer career pathways, connecting curriculum more directly to jobs, access to supportive services such as childcare so individuals can get and retain jobs, and a supportive labor climate. But until better data is available on the extent of critical labor shortages it will be challenging to design strategies to reduce them. The data provided in this report is a start in that direction.

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<sup>7</sup>Rebecca Wright (January 16, 2022). College funds may target high-need fields. *Tennessean*, p. 3A.

**Table 8: Elementary and Secondary Teachers Have Few Jobs and Resumes Posted**

Occupation Title	2020 Employment	2030 Projected Employment	Annual Total Openings	Sum of Job Openings	Sum of Resumes	Openings Minus Resumes	Entry Annual Wage
Elementary School Teachers, Except Special Education	29,372	30,763	2,267	469	149	320	43,360
Secondary School Teachers, Except Special and Career/Technical Education	19,316	20,325	1,431	279	85	194	44,268
Middle School Teachers, Except Special and Career/Technical Education	12,426	13,026	961	144	39	105	43,083
Career/Technical Education Teachers, Middle Sch.	124	129	9			0	51,404
Special Education Teachers, Kindergarten and Elementary School	3,874	4,062	306			0	45,137
Special Education Teachers, All Other	484	582	48			0	36,012
Special Education Teachers, Secondary Sch.	3,033	3,211	244	10	16	-6	45,837
Special Education Teachers, Middle Sch.	1,212	1,269	95	6	23	-17	45,037
Career/Technical Education Teachers, Secondary Sch.	2,217	2,320	162	9	41	-32	45,030
<b>Total</b>			<b>5,523</b>		<b>917</b>		

Sources: TN Department of Labor and Workforce Development, WIR<sup>2</sup>ED Division, Tennessee Occupational Projections 2020-2030; OEWS 2021; jobs4tn.gov posted job openings and active resumes 2021.