



FOOD AND BEVERAGE PRODUCTION IN TENNESSEE



Food and Beverage Production in Tennessee

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Contents

Highlights.....3

Overview.....5

Food Industries.....5

Beverage Industries10

Key Industries15

Exports.....21

Healthy Growth23

Trends and Opportunities.....23

Appendix A: Food Industries.....29

Appendix B: Food Employment and Businesses, by County.....30

Appendix C: Beverage Employment and Businesses, by County32

Highlights

Food Industries

- The food cluster in Tennessee includes 42 different industries. These industries play different roles in the production process, from processing and blending raw ingredients to directly manufacturing food products.
- Food industries in Tennessee currently employ 30,723 workers. These industries have experienced significant job growth in recent years. Total employment for these industries has risen 8.3% since 2012.
- In Tennessee, the majority of the food industry involves processing and manufacturing. This sub-cluster accounts for 67.7% of total food-related businesses in Tennessee.
- In 2016, food industries in Tennessee generated more than \$18.3 billion in total sales, of which \$4.5 billion were occurred in the region.
- Tennessee's food industries report strong wages relative to other states in the Southeast. In Tennessee, average earnings per job in these industries are \$62,081 annually, with \$52,036 in salaries and an additional \$10,046 in current supplements. The regional averages for food cluster workers are \$52,617 in earnings, with \$42,981 in salaries and \$9,636 in supplements.
- Average wages in Tennessee's food cluster are stronger than most industries in the state. Tennesseans earn on average \$56,341 per year, with \$46,480 in salaries and \$9,861 in supplements.
- Tennessee is one of the nation's leaders in snack food manufacturing. Industry products include corn chips, popcorn, pretzels and tortilla chips. Currently, this industry employs 2,370 workers in Tennessee, a 35% increase since 2012. Tennessee ranks first among Southeastern states and sixth among all 50 states for industry employment.

Beverage Industries

- Tennessee's beverage industries employ 7,552 workers. Employment in these industries has grown significantly in recent years, increasing 20.1% since 2012. Of the beverage industries, breweries experienced the largest gain in employment in the last five years.
- Of the beverage industries, breweries experienced the largest gain in employment in the last five years. In 2012, there were only 44 employees in this industry in Tennessee, as compared with 463 in 2017. This ten-fold increase in employment was unmatched by any other food or beverages industry in Tennessee.
- Breweries now comprise 26.2% of all beverage businesses in the state, as compared to 10.2% of all beverage businesses several years ago.
- The wineries industry also underwent robust job growth since 2012, increasing total employment by 186.7%.
- The distilleries industry has been growing rapidly in Tennessee in recent years, with the number of distillery locations in the state increasing from 19 to 30 since 2011. The number of Tennesseans employed by the distilleries industry has more than doubled in the last few years. Currently, the industry employs 1,306 Tennesseans.

Cluster Exports

- Tennessee food and beverage companies exported \$1.125 billion in products in 2016, including food products, beverages, livestock, and livestock products.

- In 2016, the top export markets for these products were Canada (\$218 million), France (\$86.5 million), the United Kingdom (\$83.0 million), Germany (\$53.8 million), and Australia (\$45.4 million). These five markets accounted for 43.2% of all exports made by food and beverage companies in the state.

TNECD Projects

- During Governor Haslam's administration, the Tennessee Department of Economic and Community Development has received 90 project commitments from the food and beverage cluster.
- These projects have committed to nearly 9,500 new jobs and \$3.2 billion in capital investment in Tennessee.
- There have been many notable projects from this cluster that have located across the state. Recently, Tyson Foods announced plans to create more than 1,800 new jobs while investing \$400 million in rural Gibson and Obion counties.

Industry Trends and Opportunities

- Food production and processing have undergone rapid changes in recent years, creating unique challenges and opportunities for companies in this cluster.
- Success will depend greatly on businesses' ability to adapt to new trends in four key areas: consumer preferences, industry consolidation, emerging downstream markets, and the trade-weighted index.

Overview

Tennessee has established a reputation as a global leader in the food and beverage sector. Industries in this cluster play different roles in the production process, from processing and blending raw ingredients to directly manufacturing consumer products. Food and beverage industries rely heavily on each other for the inputs needed for production. Each link in the supply chain is vital to creating the products found in restaurants and supermarket aisles.

Businesses in Tennessee produce a number of world-famous food and beverage products, such as Jack Daniel's whiskey, Jimmy Dean sausage, Bush's Baked Beans, M&M's, and Little Debbie Snacks. Tennessee is also home to a growing number of start-up enterprises. Close proximity to natural resources and favorable tax policies make the Volunteer State an attractive location for food production. Tennessee ranks in the top 10 states for several industries in the food cluster, including distilleries, snack food, and confectionery production.

Governor Bill Haslam's administration has fostered growth in the food cluster by attracting significant capital investment to the state. Since 2011, project commitments related to food and beverage industries have resulted in a planned \$2.8 billion in capital investment and almost 8,000 new jobs. Major projects include a \$108.6 million expansion project by Unilever Foods in Tipton County and an \$80.1 million investment by Tyson Foods at its Union City poultry plant. With a strong foundation in place and new projects underway, Tennessee's food cluster remains poised to succeed for many years to come.

Food Industries

Food businesses in Tennessee engage in a variety of activities, from milling and refining to processing and manufacturing. Major products include baked goods, dairy products, packaged fruits and vegetables, soft drinks, candy and chocolate, animal foods, wineries, malt beverages, milling and refining of cereals and oilseeds, coffee and tea, milling and refining of sugar, and distilled spirits.¹ The food sub-cluster includes 40 industries, which can be broken down into several general categories (Appendix A).

Industry Category	NAICS	2017 Employment	Business Locations
Animal Food Manufacturing	3111	387	21
Grain and Oilseed Milling	3112	1,979	21
Sugar and Confectionery Product Manufacturing	3113	2,567	42
Fruit and Vegetable Preserving and Specialty Food Manufacturing	3114	3,962	27
Dairy Product Manufacturing	3115	2,018	20
Animal Slaughtering and Processing	3116	11,112	74
Bakeries and Tortilla Manufacturing	3118	3,485	25
Other Food Manufacturing	3119	4,415	49
Farm Product Raw Material Merchant Wholesalers	4245	797	62

Food industries in Tennessee currently employ 30,723 workers.² The food sub-cluster has experienced a job growth spurt in recent years. Total employment has risen 8.3% since 2012. Most

¹ Institute for Strategy and Competitiveness, Harvard Business School. (2015). *Food Processing and Manufacturing*.

² Industry data related to employment, business locations, average earnings and inputs-outputs were obtained from Economic Modeling Specialists (EMS).

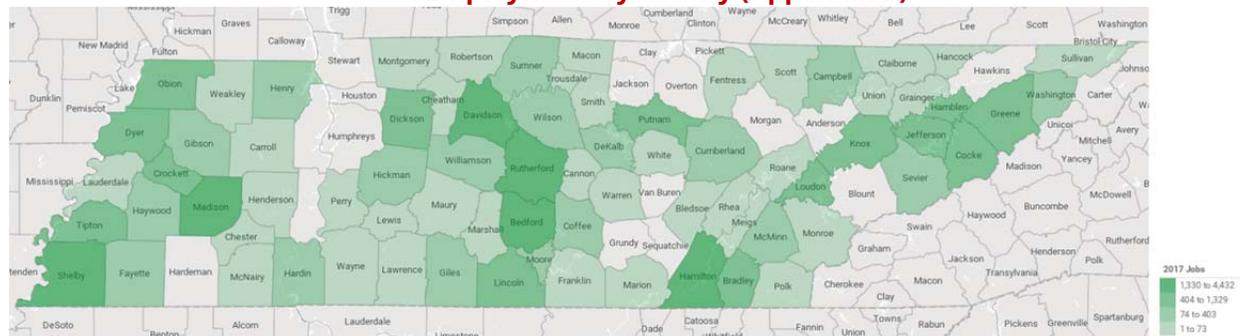
of this change occurred in the food processing and manufacturing sector, in which employment grew at a rate of 12.4%. Employment in the livestock processing sector only grew 2.3%. Food industry employment has been growing at a faster rate in Tennessee than in the overall the US Southeast, which experienced a 4.3% increase in employment during this time-frame.

The biggest gain occurred in perishable prepared food manufacturing. In 2012, this industry employed only 145 employees, as compared with 1,130 in 2017. Other industries that made sizable employment gains were frozen cakes, pies and other pastries manufacturing and roasted nuts and peanut butter manufacturing.

Experts predict that food cluster employment will continue to increase in coming years but at a slower rate. By 2022, food-related industries will employ a projected 31,958 Tennesseans, a 4.0% increase in jobs. Most of this growth will occur in food processing and manufacturing, which is predicted to grow at a rate of 6.2%. Animal slaughtering and processing industries will likely experience little to no changes in employment. The Southeastern food sub-cluster as a whole may experience slower job growth than in previous years. Regional employment is predicted to increase less than 1% in the next five years.

In Tennessee, the majority of food industry involves processing and manufacturing. These industries account for 67.7% of all food-related businesses in Tennessee (231 out of 341 locations). An emphasis on processing and manufacturing is common in the region. Such businesses comprise 70.9% of food-related businesses in the Southeast (2,912 out of 4,107 total locations). Tennessee's food processing and manufacturing operations are more labor-intensive than in neighboring states. On average, a processing and manufacturing facility in Tennessee employs 82 workers, as compared with the regional average of 46 employees per facility. Livestock processing tends to involve fewer workers per business location in Tennessee than in other states.

Food Employment by County (Appendix B)



In 2016, food industries in Tennessee generated more than \$18.3 billion in total sales, of which \$4.5 billion were in-region. Total industry earnings in 2016 exceeded \$1.9 billion. Tennessee businesses purchase many of the inputs they need from other businesses in the region. Food processors and producers in Tennessee spent more than \$4.7 billion on in-region purchases in 2016, accounting for 35.7% of total purchases. The majority of these in-region purchases involved sales between food industries, including crop production, animal production and aquaculture, fats and oils refining and blending, animal slaughtering, poultry processing, and soybean and other oil processing. Other industries that benefitted from in-region purchases were general freight trucking operators, wholesale trade agents and brokers, and corporate, subsidiary and regional managing offices.

Average Wages

Tennessee's food industries report strong wages relative to other states in the region. In Tennessee, average earnings per job in these industries are \$62,081 annually, with \$52,036 in salaries and an additional \$10,046 in current supplements. The regional averages for food cluster workers are \$52,617 in earnings, with \$42,981 in salaries and \$9,636 in supplements.

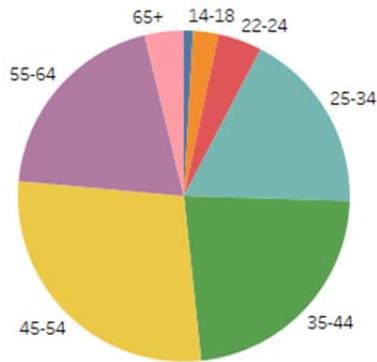
Average wages in Tennessee's food cluster are stronger than most industries in the state. Tennesseans earn on average \$56,341 per year, with \$46,480 in salaries and \$9,861 in supplements. Employees in Tennessee's food sector also earn more than the average worker in the United States. Average wages across the United States are \$56,626, when adjusting for cost-of-living.

SOC	Description	2017 Employment	Median Hourly Earnings
Management Occupations			
11-3051	Industrial Production Managers	258	\$37.90
11-1021	General and Operations Managers	318	\$40.97
Food Preparation and Serving Related Occupations			
35-2021	Food Preparation Workers	162	\$9.42
35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	127	\$8.79
Building and Grounds Cleaning and Maintenance Occupations			
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	275	\$10.42
Sales and Related Occupations			
41-2011	Cashiers	260	\$9.05
41-2031	Retail Salespersons	313	\$10.56
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	243	\$25.45
Office and Administrative Support Occupations			
43-1011	First-Line Supervisors of Office and Administrative Support Workers	131	\$23.70
43-3031	Bookkeeping, Accounting, and Auditing Clerks	168	\$17.34
43-4051	Customer Service Representatives	168	\$14.21
43-5061	Production, Planning, and Expediting Clerks	211	\$22.25
43-5071	Shipping, Receiving, and Traffic Clerks	410	\$14.26
43-5081	Stock Clerks and Order Fillers	301	\$11.24
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	174	\$15.97
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	166	\$14.62
43-9061	Office Clerks, General	245	\$14.26
Farming, Fishing, and Forestry Occupations			
45-2041	Graders and Sorters, Agricultural Products	218	\$12.00
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	122	\$10.43
Installation, Maintenance, and Repair Occupations			
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	179	\$28.49
49-9041	Industrial Machinery Mechanics	734	\$22.34
49-9043	Maintenance Workers, Machinery	272	\$21.87
49-9071	Maintenance and Repair Workers, General	618	\$17.53
Production Occupations			
51-1011	First-Line Supervisors of Production and Operating Workers	989	\$25.22

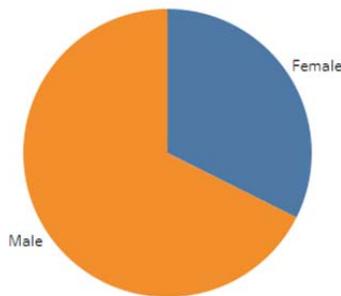
SOC	Description	2017 Employment	Median Hourly Earnings
51-2092	Team Assemblers	590	\$14.51
51-3011	Bakers	511	\$11.13
51-3021	Butchers and Meat Cutters	247	\$13.83
51-3022	Meat, Poultry, and Fish Cutters and Trimmers	1,988	\$10.13
51-3023	Slaughterers and Meat Packers	1,704	\$12.14
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	125	\$16.00
51-3092	Food Batchmakers	3,402	\$14.28
51-3093	Food Cooking Machine Operators and Tenders	233	\$14.98
51-3099	Food Processing Workers, All Other	482	\$12.56
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	141	\$14.27
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	305	\$17.82
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	132	\$16.22
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	719	\$15.77
51-9111	Packaging and Filling Machine Operators and Tenders	2,388	\$14.54
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	252	\$14.62
51-9198	Helpers--Production Workers	1,825	\$11.49
51-9199	Production Workers, All Other	230	\$13.86
Transportation and Material Moving Occupations			
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers	156	\$21.18
53-3031	Driver/Sales Workers	149	\$10.80
53-3032	Heavy and Tractor-Trailer Truck Drivers	429	\$18.96
53-7011	Conveyor Operators and Tenders	185	\$14.54
53-7051	Industrial Truck and Tractor Operators	826	\$14.28
53-7061	Cleaners of Vehicles and Equipment	281	\$10.72
53-7062	Laborers and Freight, Stock, and Material Movers	1,732	\$12.41
53-7063	Machine Feeders and Offbearers	139	\$11.84
53-7064	Packers and Packagers, Hand	1,328	\$10.22

Workforce

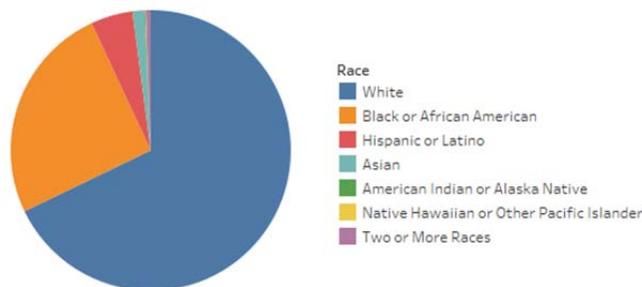
The future of industry in Tennessee depends on training and preparing the next generation of workers. Nearly four-tenths of the labor force in Tennessee is between the ages 45 and 64. In the food cluster, the percentage of older workers is even higher (47.9% in 2017). As these employees begin to retire, businesses will increasingly rely on younger workers to fill in the gaps. Currently, 43.6% of Tennessee workers are between the ages 25-44. In food industries, only 40.7% are in this age group. Workers age 65 and older have begun to enter retirement. 5.1% of Tennessee workers are senior citizens, as compared with 3.8% in food-related businesses.



Employees in Tennessee’s food industries are predominantly male (67.6%). The ratio of male to female workers varies across industries. In the wet corn milling and flour milling industries, more than 85% of employees are males. Male employees outnumber female employees by a similar percentage in the soft drink manufacturing sector. The only industries in Tennessee to have an equal number of male and female employees are cookie and crackers manufacturing and tortilla manufacturing. No food industry in Tennessee employs more females than males.



Most employees in Tennessee’s food cluster are Caucasian. 67.9% of food cluster workers in Tennessee are Caucasian, while 25.2% are African-American. Hispanic or Latino workers comprise less than 5% of cluster employment. Asian employees account for 1.4% of the cluster workforce. Less than 0.6% of workers identify as two or more races. Workers with Pacific Islander or American Indian decent are even less represented (roughly 0.1% for each group).



Beverage Industries

The beverage sub-cluster in Tennessee includes eight different industries: fluid milk manufacturing, coffee and tea manufacturing, soft drink manufacturing, bottled water manufacturing, breweries, wineries, distilleries, and ice manufacturing.

Industry Category	NAICS	2017 Employment	Business Locations
Dairy Product Manufacturing (Fluid Milk)	3115	700	13
Other Food Manufacturing (Coffee and Tea)	3119	1,065	12
Beverage Manufacturing	3121	5,786	166

Tennessee's beverage industries employ 7,552 workers. Employment in these industries has grown significantly in recent years, increasing 20.1% since 2012. Of the beverage industries, breweries experienced the largest gain in employment in the last five years. In 2012, there were only 44 employees in this industry in Tennessee, as compared with 463 in 2017. This ten-fold increase in employment was unmatched by any other food or beverages industry in Tennessee. The wineries industry also underwent robust job growth since 2012, increasing total employment by 186.7%. Distilleries added 109.6% more jobs. Employment in the other industries (fluid milk manufacturing, coffee and tea manufacturing, soft drink manufacturing, and bottled water manufacturing) declined slightly during this time-frame. Job growth in Tennessee's beverage industries lagged slightly behind the regional average. The Southeast's beverage cluster added 26.0% more overall jobs since 2012.

The beverage sub-cluster in Tennessee will likely experience slower job growth in the next few years. Experts predict that by 2022, these industries will have added 5.5% more jobs in Tennessee. Like in years past, breweries, wineries and distilleries will be the driving force behind new job creation. Ice manufacturing will continue to enjoy a steady growth rate of 15.6%. Soft drink manufacturing and bottled water manufacturing will likely lose a small percentage of employment. The main difference from previous years is that fluid milk manufacturing and coffee and tea manufacturing are predicted to reverse their slump and experience minor gains in employment over the next five years. The predicted growth rate in Tennessee's beverage industries is almost identical to the predicted rate of growth across the Southeast region (5.4%).

Currently, Tennessee is home to 191 beverage businesses. The vast majority of these businesses are breweries, wineries, distilleries, and soft drink manufacturers. The overall number of business locations in the beverage sub-cluster increased 117% in recent years, up from 88 locations in 2011. The biggest growth occurred in the breweries industry. The number of breweries in Tennessee increased from nine to 50 during this time-frame. Breweries now comprise 26.2% of all beverage businesses in the state, as compared to 10.2% of all beverage businesses several years ago. The number of wineries also grew substantially, increasing from four to 35. Bottled water manufacturing was the only industry to lose business locations in the last several years.

Beverage Employment by County (Appendix C)



Tennessee’s beverage industries generated more than \$4.6 billion in total sales in 2016. Of these sales, \$1.3 billion were in-region. Total industry earnings in 2016 were approximately \$480.7 million. Beverage manufacturers in Tennessee rely on other businesses in the region for production inputs. Businesses in this sub-cluster spent \$841 million on in-region purchases in 2016, which amounted to 33.9% of total purchases. Like in the food industries, purchases by beverage industries include sales between businesses in the sub-cluster, including distilleries, soft drink manufacturing, and fluid milk manufacturing. One key difference between in-region purchases for these sub-clusters is the degree to which businesses rely on inputs from other industries in the sub-cluster. Sales between food businesses account for 15 out of the 25 most common in-region purchases. Beverage businesses are less dependent on each other and more reliant on industries like glass product manufacturing, metal can manufacturing, plastic bottle manufacturing, engineering services, and aluminum rolling, drawing, and extruding.

Average Wages

Employees in Tennessee’s beverage sub-cluster garnish higher wages than the average Tennessean. Workers in the beverage sub-cluster make on average \$62,953 per year, with \$49,672 in wages and \$13,281 in supplements. Average wages in soft drink manufacturing and ice manufacturing exceed the regional average for these industries. Coffee and tea manufacturers provide stronger wages in Tennessee than the national average, when adjusting for cost of living.

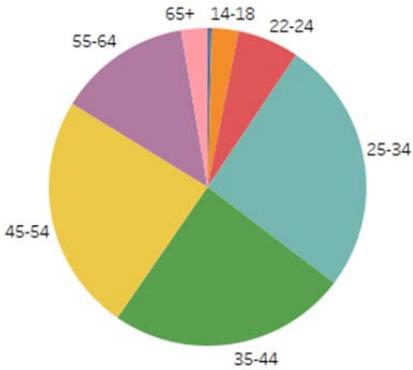
SOC	Description	2017 Employment	Median Hourly Earnings
Management Occupations			
11-2022	Sales Managers	48	\$42.44
11-3051	Industrial Production Managers	79	\$37.90
11-3071	Transportation, Storage, and Distribution Managers	32	\$34.72
11-1021	General and Operations Managers	138	\$40.97
Architecture and Engineer Occupations			
17-2112	Industrial Engineers	36	\$36.93
17-3026	Industrial Engineering Technicians	51	\$20.93
Arts, Design, Entertainment, Sports, and Media Occupations			
27-1026	Merchandise Displayers and Window Trimmers	117	\$13.11
Food Preparation and Serving Related Occupations			
35-2021	Food Preparation Workers	40	\$9.42

SOC	Description	2017 Employment	Median Hourly Earnings
35-3011	Bartenders	70	\$9.07
35-3031	Waiters and Waitresses	133	\$8.78
Building and Grounds Cleaning and Maintenance Occupations			
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	43	\$10.42
Sales and Related Occupations			
41-1011	First-Line Supervisors of Retail Sales Workers	41	\$17.68
41-1012	First-Line Supervisors of Non-Retail Sales Workers	34	\$33.05
41-2011	Cashiers	45	\$9.05
41-2031	Retail Salespersons	274	\$10.56
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	201	\$25.45
41-9011	Demonstrators and Product Promoters	265	\$15.01
Office and Administrative Support Occupations			
43-1011	First-Line Supervisors of Office and Administrative Support Workers	39	\$23.70
43-3031	Bookkeeping, Accounting, and Auditing Clerks	57	\$17.34
43-4051	Customer Service Representatives	69	\$14.21
43-5061	Production, Planning, and Expediting Clerks	42	\$22.25
43-5071	Shipping, Receiving, and Traffic Clerks	73	\$14.26
43-5081	Stock Clerks and Order Fillers	210	\$11.24
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	29	\$15.97
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	72	\$14.62
43-9061	Office Clerks, General	75	\$14.26
Farming, Fishing, and Forestry Occupations			
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	46	\$10.17
Installation, Maintenance, and Repair Occupations			
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	39	\$28.49
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	34	\$20.63
49-9041	Industrial Machinery Mechanics	197	\$22.34
49-9043	Maintenance Workers, Machinery	94	\$21.87
49-9071	Maintenance and Repair Workers, General	125	\$17.53
Production Occupations			
51-1011	First-Line Supervisors of Production and Operating Workers	207	\$25.22
51-2092	Team Assemblers	141	\$14.51
51-3092	Food Batchmakers	394	\$14.28
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	228	\$14.27
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	118	\$17.82
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	165	\$15.77
51-9111	Packaging and Filling Machine Operators and Tenders	921	\$14.54
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and	32	\$14.62

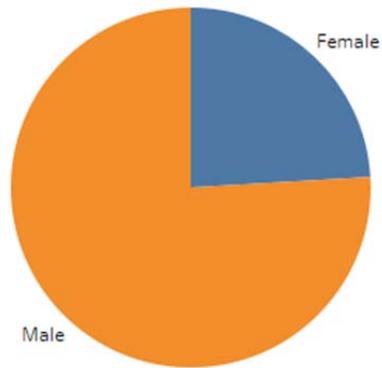
SOC	Description	2017 Employment	Median Hourly Earnings
	Tenders		
51-9198	Helpers--Production Workers	185	\$11.49
51-9199	Production Workers, All Other	55	\$13.86
Transportation and Material Moving Occupations			
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers	43	\$21.18
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	33	\$25.57
53-3031	Driver/Sales Workers	162	\$10.80
53-3032	Heavy and Tractor-Trailer Truck Drivers	231	\$18.96
53-3033	Light Truck or Delivery Services Drivers	93	\$14.58
53-7051	Industrial Truck and Tractor Operators	300	\$14.28
53-7062	Laborers and Freight, Stock, and Material Movers	333	\$12.41
53-7064	Packers and Packagers, Hand	94	\$10.22

Workforce

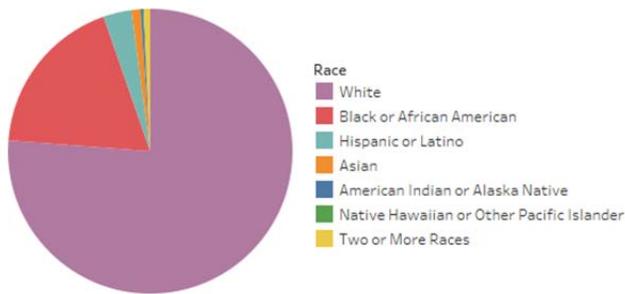
Beverage industries will face less of a challenge than food industries in adapting to demographic changes in the labor force. Currently, 37.7% of employees in Tennessee’s beverage businesses are between the ages 45 and 64, while 50.2% are between the ages 25 and 44. The higher concentration of young workers in the beverage sub-cluster can be attributed to industries like breweries, in which 56.3% of employees are between 25 and 44 and only 32.0% are aged 45 or older.



Gender and race demographics in the beverage sub-cluster resemble those in the food industries. More than three-quarters of employees in Tennessee’s beverage-related businesses are male. Female employees account for 24.1% of total employment.



76.2% of employees in these industries are of Caucasian descent. African-American workers account for 18.5%. Like the food industries, Hispanic or Latino workers comprise less than 5% of total employment. The remaining demographic groups (Asian descent, American Indian, Pacific Islander, and individuals who identify as two or more races) each make up less than 1% of the beverage workforce.

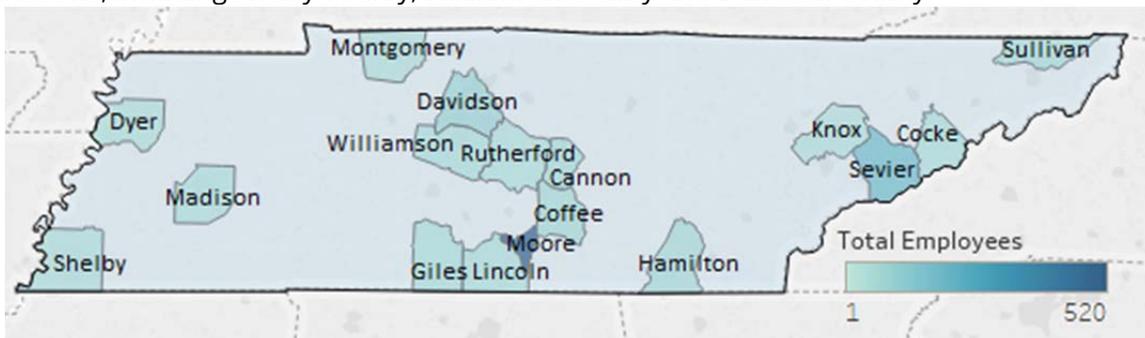


Key Industries

Distilleries

The distilleries industry is perhaps Tennessee's most well-known food and beverage industry, thanks to the worldwide popularity of Jack Daniel's whiskey. The distilleries industry has been growing rapidly in Tennessee in recent years, with the number of distillery businesses in the state increasing from 19 to 30 since 2011. The number of Tennesseans employed by the distilleries industry has more than doubled in the last few years. Currently, the industry employs 1,306 Tennesseans.

Tennessee's distilleries are heavily concentrated in two counties in particular. Moore County, home to Jack Daniel's, employs more than 704 distillery workers. Sevier County has been the driving force behind industry growth in recent years. In 2011, this county had a single distillery with less than 100 employees. By 2016, Sevier County had nine distilleries and 370 total employees. These businesses include the Gatlinburg Barrelhouse, Doc Collier Moonshine Distillery, and Pigeon Forge-based Old Forge Distillery. Tennessee has 12 counties that had zero distilleries in 2011 but now have at least one, including Shelby County, Williamson County and Davidson County.



Tennessee surpasses every state except Kentucky in employment concentration for the distilleries industry. The employment concentration score of 5.0, which indicates distilleries employment is four times more concentrated here than the national average, is the highest score of any food and beverage industry in Tennessee. Moreover, Tennessee ranks second among the states in industry employment, despite only ranking eighth in total number of distilleries. The international success of the Jack Daniel's brand explains why Tennessee's distillery operations are on average larger and more labor-intensive than in other states.

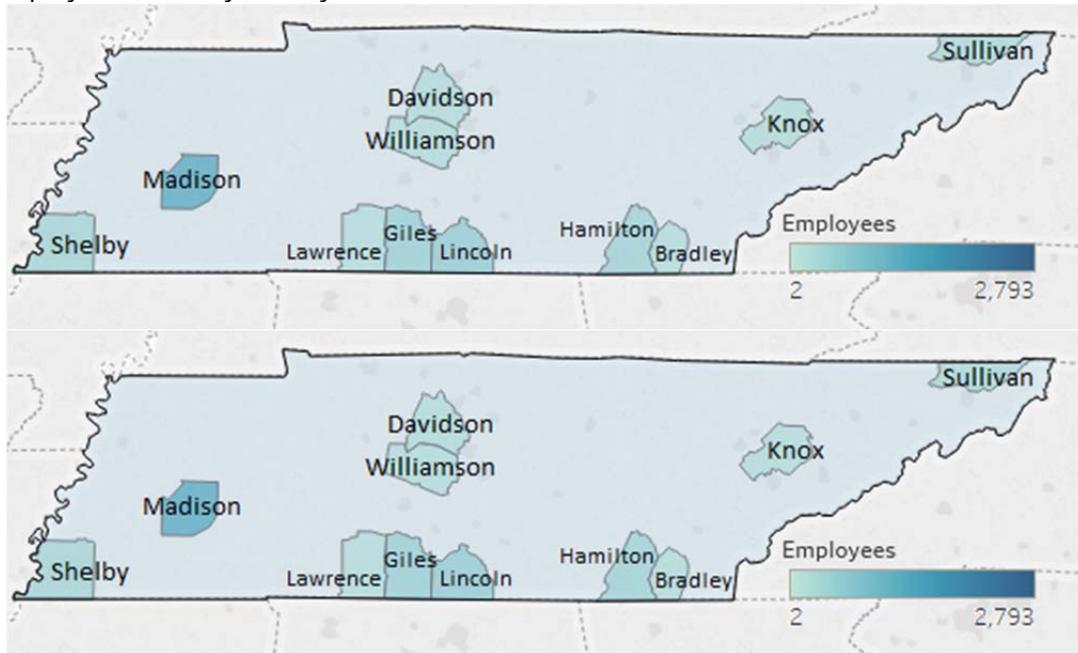
The most common occupations in this industry are packaging and filling machine operators and tenders, retail salespersons, demonstrators and product promoters, laborers and freight movers, and industrial truck and tractor operators. Average wages in the distilleries industry are \$65,844 per year, with \$50,889 in salaries and an additional \$14,955 in supplements. In 2016, Tennessee distilleries generated \$84.6 million in revenue, more than 7% of all revenue from this industry in the United States. Nearly all of the in-region purchases by these businesses were sales between distilleries. Other important purchases came from glass and plastics bottle manufacturers and corporate, subsidiary and regional managing offices.

Snack Food

Tennessee is one of the nation's leaders in snack food manufacturing. Industry products include corn chips, popcorn, pretzels, and tortilla chips. This industry group does not include producers of cookies, crackers, or nut-based snacks. Tennessee has 12 companies that produce these types of snacks. Currently, this industry employs 2,370 workers in Tennessee, a 35% increase

since 2012. Tennessee has more snack food manufacturers than any other state in the Southeast besides Georgia.

More than half of snack food production jobs are located in Madison County due to the Kellogg Company's large operation in Jackson, Tennessee. Industry employment has increased two-fold in Madison County since 2012. Frito-Lay is another major employer in the Tennessee snack food industry. Frito-Lay's Lincoln County and Giles County locations both employ several hundred workers. Shelby County has been an important location for snack food production as well. Auntie Anne's Pretzels, North Mississippi Snack Sales, and Snacks Over America Inc. are the largest snack food employers in Shelby County.



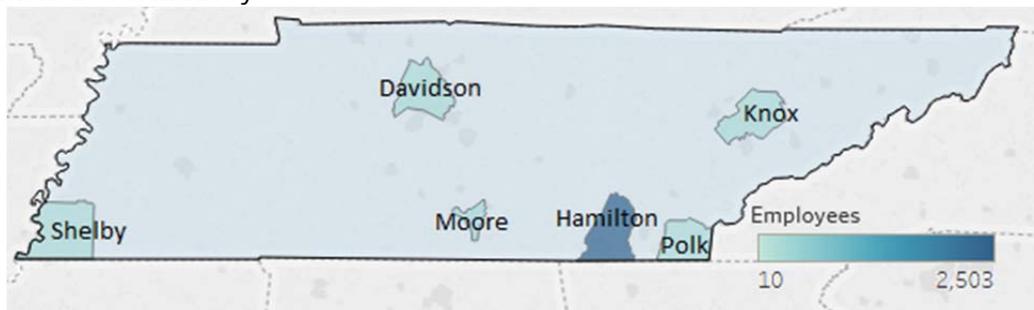
Tennessee's employment concentration for this type of snack food production is 2.82, which ranks highest in the Southeast and the third highest in the nation. Texas and Pennsylvania, the two states to rank higher than Tennessee, have had declining employment concentrations in the last five years, while Tennessee's score has steadily improved.

The top occupations in this industry are food batchmakers, packaging and filling machine operators and tenders, packers and packagers, laborers and freight movers, and production workers. Average wages are \$62,820 per year, with \$52,642 in salaries and \$10,178 in supplements. These wages are slightly higher than the regional average of \$60,726. Snack food production in Tennessee generated \$148.8 million in earnings in 2016. A third of demand was met in-region. Crop producers, plastics bottle manufacturers, and fats and oils refineries and blenders provided many of the inputs used by snack food makers. In-region purchases of crops accounted for 23.1% of all in-region purchases made by this industry.

Cookies and Crackers

Cookie and cracker manufacturing is another industry in which Tennessee excels. Products in this industry grouping also include ice cream cones, graham wafers, and dry bakery products like biscuits. Tennessee currently has 10 businesses in this industry. Total employment has increased 17% in the last several years, increasing from 2,297 in 2012 to 2,685 today. Tennessee ranks first in the Southeast and third nationwide for employment in this industry.

The vast majority of jobs in this industry are located in Hamilton County. McKee Foods, maker of Little Debbie and other popular snacks, employs thousands of workers at their Collegedale facility in Hamilton County. Davidson County is another important location for Tennessee's cookies and crackers industry. Christie Cookie, which staffs more than 40 and generates millions in annual revenue, is headquartered in Nashville. Moore County and Knox County also have substantial employment in this industry.



The employment concentration for Tennessee's cookie and cracker manufacturing is 3.82, which ranks fourth in the nation and the second in the Southeast behind Kentucky. The states with the highest employment concentration for this industry, Kentucky and Utah, experienced a decrease in employment in the last five years.

The top occupations in this industry are food batchmakers, packaging and filling machine operators and tenders, packers and packagers, laborers and freight movers, and general production workers. Average wages are \$72,567 (\$60,810 in salary and \$11,758 in supplements), more than \$15,000 above the average Tennessee wage. Average wages are slightly higher than the regional average for this industry. Workers in the Southeast region make on average \$68,354 per year. In 2016, this industry generated \$196.8 million in earnings, with 47% of demand met in-region. Flour accounted for 60% of the in-region purchases made by this industry. Manufacturers also relied on regional suppliers of fats, oils, rice, and confectionery.

Grain and Oilseed Milling

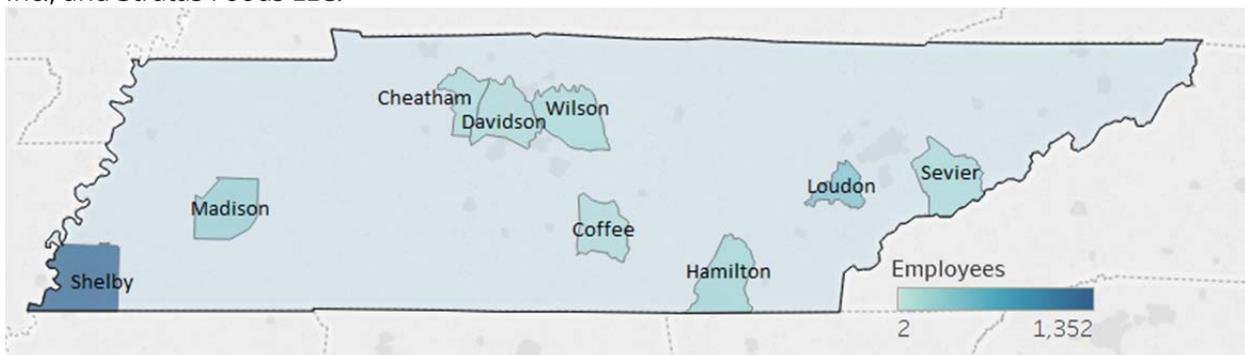
This industry grouping provides key ingredients for many of the products in the food sector, including frozen foods, cookies and crackers, snack foods, pasta and dough mixes, and animal foods. Grain and oilseed milling includes flour milling, rice milling, malt manufacturing, starch and vegetable fats and oils manufacturing, and breakfast cereal manufacturing.

These industries account for a very small percentage of food employment. Currently, Tennessee grain and oilseed businesses employ 1,979 people, with a total of 21 business locations across the state. Employment has decreased slightly in recent years. Flour milling and rice milling were the only industries to add jobs. Flour millers in Tennessee employ 399 people, a 47.1% increase since 2012. Rice millers employ 252 workers, an increase of 41.4%. Fats and oils refining and blending experienced the biggest decline in employment during this time period. Employment in this industry decreased 43.5% since 2012, with 144 Tennesseans currently employed by these businesses. Breakfast cereal manufacturers also downsized in the last five years.

Despite this decline in employment, Tennessee continues to lead in many of these industries. In particular, Tennessee's millers, soybean processors, and cereal manufacturers have set themselves apart from regional and national competitors.

Industry	Employment Concentration (2017)	Total Employment, Regional Rank	Total Employment, National Rank
Wet Corn Milling	1.19	1	6
Soybean and Other Oilseed Processing	2.96	1	6
Rice Milling ³	2.53	4	4
Breakfast Cereal Manufacturing	1.35	2	10

Shelby County is Tennessee’s hub for grain and oilseed milling activities. Nearly 70% of jobs in these industries are located in Shelby County alone. The Kellogg Company’s Memphis cereal plant employs several hundred workers, as does Cargill Inc.’s corn oil production operation in Memphis. (Kellogg also employs a substantial number of workers at its Rossville plant in Fayette County, but these workers produce Eggo waffles, not cereal.) Riviana Foods Inc., Tennessee’s only major rice miller, employs 140 workers in Memphis. Other businesses with sizable employment in Shelby County are Ach Food Companies Inc., Archer-Daniels-Midland Company, Solae LLC, Conagra Brands Inc., and Stratas Foods LLC.



The most common occupations in this industry are food batchmakers, packaging and filling machine operators and tenders, laborers and freight movers, industrial machinery mechanics, and first-line supervisors of production and operating workers. Average wages in this industry are above the average salary in Tennessee. Grain and oilseed milling industries generated a sizable economic impact for Tennessee in 2016. Total earnings were \$202.4 million, with 41.6% of industry demand met in-region. Crop production is an important purchase made by this industry, although only 15.7% of total crop purchases were made in-region. The largest in-region purchases were from industries like rail transportation, wholesale trade agents and brokers, general freight trucking, inland water freight transportation, and industrial machinery and equipment merchant wholesalers.

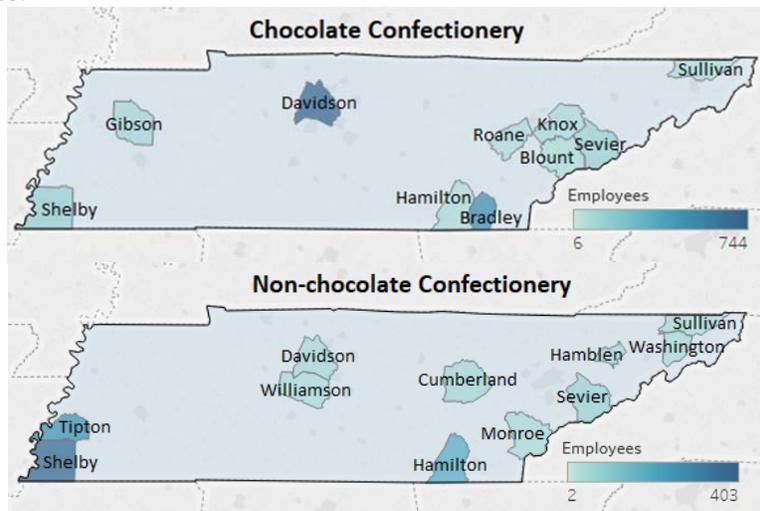
Candy

Tennessee is one of the nation’s most important producers of chocolate confectionery. Industry products include chocolate bars, chocolate coatings and syrups, chocolate-covered granola bars, and powdered cocoa. Tennessee has 16 businesses in this industry and 1,196 total employees. Employment has grown 17% since 2012. Tennessee currently ranks first in the region and sixth nationwide for industry employment. Non-chocolate confectionery manufacturing is also one of Tennessee’s strongest food and beverage industries. This industry produces chewy candy, soft candy, hard candy, gum, breakfast bars, and granola bars. Currently, Tennessee has 14

³ The Southeast is a very important region for milling industries, especially rice milling. Five of the top 10 states for rice milling employment are located in this region. Only 15 states have at least one rice miller.

manufacturers of non-chocolate confectionery. Total employment dropped in recent years (925 employees in 2017), yet Tennessee's status as an industry leader remains unchanged. The state ranks second in the Southeast and eighth in the nation for employment in this industry.

Davidson County has seen the largest increase in employment in the last several years. More than 200 jobs have been added in this area since 2012. Candy producers in Davidson County include Standard Candy Co. and Colts Chocolates. Bradley County is another important location for candy production in Tennessee. Mars Inc. employs almost 700 workers in Bradley County alone. Other counties with large industry presence are Shelby County (Hershey Company), Tipton County (C.G.C. Corporation and Charm LLC), and Hamilton County (Wrigley Manufacturing Co. LLC). Tennessee also has several, smaller-scale candy manufacturers. These businesses are spread out across 16 total counties in the state.



Tennessee has maintained a strong employment concentration for both chocolate and non-chocolate candy manufacturing. The state ranks first in the Southeast and fifth in the nation for non-chocolate confectionery manufacturing. Tennessee also has the highest employment concentration of chocolate candy production of any state in the region and the sixth highest nationwide.

The top occupations for confectionery manufacturing are food batchmakers, packaging and filling machine operators and tenders, packers and packagers, retail salespersons, and laborers and material movers. Average wages are \$65,246 for non-chocolate candy manufacturing and \$57,611 for chocolate candy manufacturing. Tennessee workers in the non-chocolate sector make almost \$10,000 more than the regional average. Wages in chocolate manufacturing are comparable across the region.

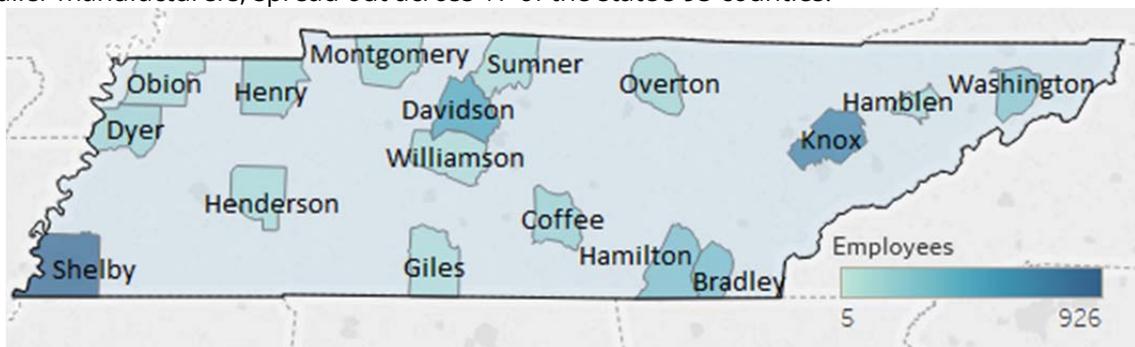
Total earnings for these industries were \$152.4 million in 2016. Chocolate products accounted for nearly two-thirds of these earnings. Industry purchases do not vary greatly based on what type of candy is being produced. Manufacturers of chocolate and non-chocolate confectionery rely on inputs from crop producers, cane sugar manufacturers, fluid milk manufacturers, wet corn millers, beet sugar manufacturers, and corrugated and solid fiber box manufacturers. Sales between candy manufacturers also account for a sizable percentage of these industries' in-region purchases.

Soft Drink

Soft drink manufacturing is one of Tennessee's strongest beverage industries. In addition to soda, industry products include artificially carbonated waters, flavored water, and fruit drinks except juice. Tennessee currently has 35 soft drink manufacturing companies, which employ a total of 3,173 workers. Employment has decreased slightly in recent years, yet Tennessee still ranks first in the

Southeast and second in the nation for employment concentration. The Southeast region, in which 21.7% of the nation's soft drink manufacturers are based, excels in this industry due to the warm environment and densely populated cities. In addition, Southeastern states enjoy close proximity to syrup manufacturers and bottle manufacturers as well as raw materials like sugar.⁴ Tennessee ranks seventh in the nation for most soft drink manufacturers and second only to Florida among the Southeastern states.

Pepsi and Coca-Cola are staples of Tennessee's soft drink enterprise. These companies are the largest industry employer in several counties in Tennessee. Coca-Cola's Shelby County location, which employs more than 500 people, accounts for nearly a third of all soft drink employment in Tennessee. Pepsi has three facilities in Shelby County, which collectively employ several hundred workers. Pepsi's Knoxville location is the biggest contributor to employment in Knox County, which has a total of seven soft drink manufacturers and more than 700 workers. In Davidson County, the third leading county for industry employment, Pepsi and Coca-Cola also have facilities. Hamilton County, ranked fourth, is home to Coca-Cola's Chattanooga location. Tennessee also has several smaller manufacturers, spread out across 17 of the state's 95 counties.



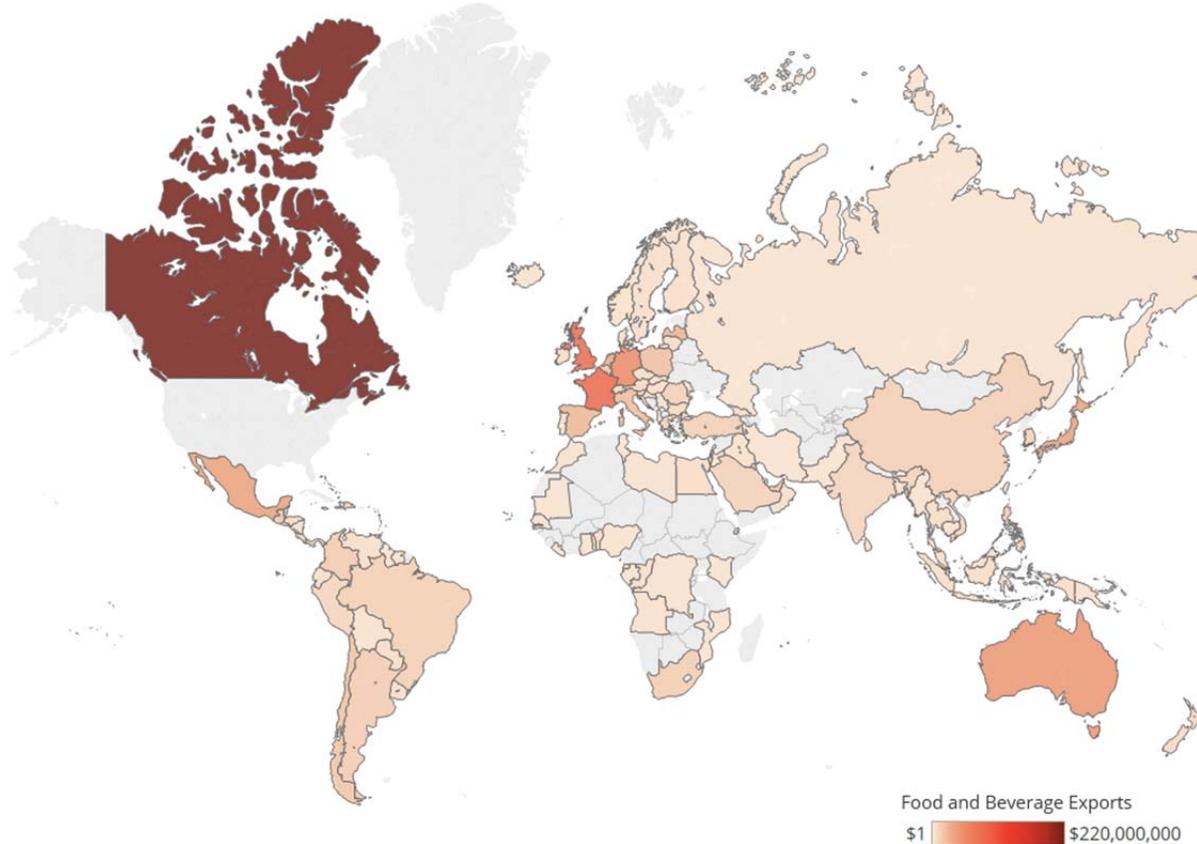
In this industry, the most common occupations are packaging and filling machine operators and tenders, retail salespersons, demonstrators and product promoters, laborers and freight movers, and industrial truck and tractor operators. Average wages are \$69,370 per year (\$53,615 in salary and \$15,756 in supplements), which is \$13,000 above Tennessee's average wages. Soft drink manufacturing is a profitable industry for Tennessee. In 2016, businesses in the state generated \$224.2 million in total earnings, with 59% of demand met in-region. Key inputs obtained through in-region purchases are plastic bottles, aluminum sheets, plates and foils, and other aluminum products. Other regional businesses on which Tennessee companies rely are brokerage firms and trade agents, lessors of nonfinancial assets, and corporate, subsidiary and regional managing offices. Sales between soft drink manufacturers account for a significant percentage of in-region purchases as well.

⁴ Change Lab Solutions. (2012). *Breaking down the chain: A guide to the soft drink industry*. [http://www.changelabsolutions.org/sites/default/files/ChangeLab-Beverage_Industry_Report-FINAL_\(CLS-20120530\)_201109.pdf](http://www.changelabsolutions.org/sites/default/files/ChangeLab-Beverage_Industry_Report-FINAL_(CLS-20120530)_201109.pdf)

Exports

Exports provide a major source of revenue for Tennessee's industries. More than 6,000 Tennessee small- and medium-sized businesses export their products, including those in the food and beverages cluster. Companies rely on exports to sustain and grow market potential for their products.

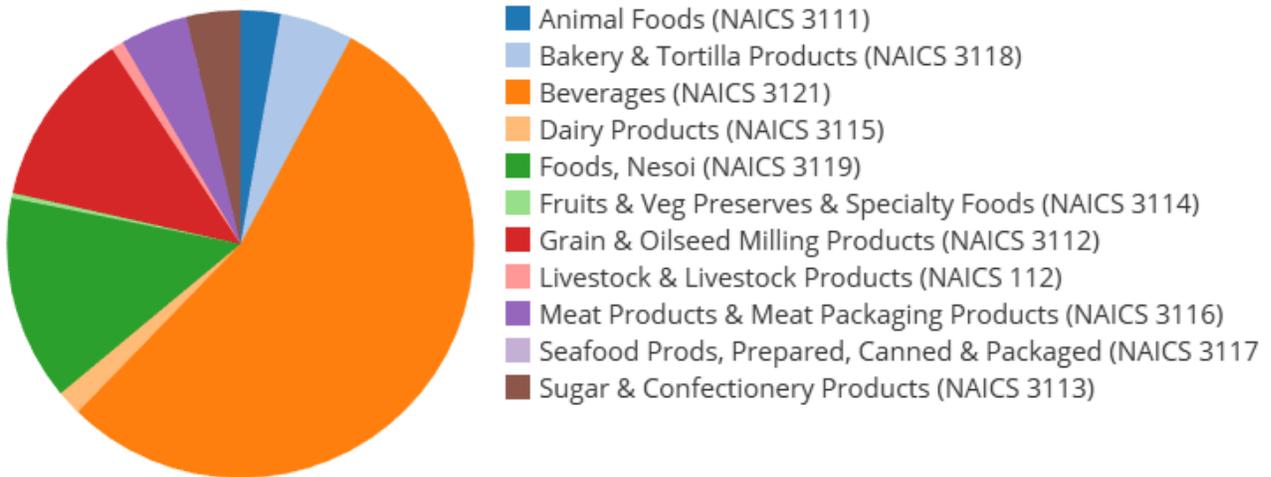
Tennessee Food and Beverage Export Markets



Tennessee food and beverage companies exported \$1.125 billion in products in 2016, including food products, beverages, livestock, and livestock products. In 2016, the top export markets for these products were Canada (\$218 million), France (\$86.5 million), the United Kingdom (\$83.0 million), Germany (\$53.8 million), and Australia (\$45.4 million). These five markets accounted for 43.2% of all exports made by food and beverage companies in the state.⁵

⁵ U.S. Census Bureau, USA Trade Online. Accessed 11/15/2017.

Tennessee Food and Beverage Exports (2016)



Tennessee ranked third in the nation for beverage exports in 2016, thanks to world-renowned brands like Jack Daniel's and George Dickel. Beverage makers in Tennessee exported \$612.2 million in products last year, accounting for 54.4% of all exports in the food and beverages cluster. Whiskey remains Tennessee's most important export. 96.3% of beverage exports were whiskey products. Tennessee exported more than twice as much whiskey as any other state. In 2016, the top export markets for Tennessee-made whiskeys were France (\$84.6 million), the United Kingdom (\$80.6 million), Germany (\$52.7 million), Australia (\$30.9 million), and Japan (\$27.0 million).

The Other Food Manufacturing sector is another major exporter of Tennessee products, providing for \$159 million in exports in 2016. This sector encompasses miscellaneous industries that do not belong to any other sector, such as snack food manufacturing, coffee and tea manufacturing, flavoring syrup and concentrate manufacturing, and seasoning and dressing manufacturing. Tennessee's major employers in this sector are Pringles Manufacturing, Frito-Lays, Green Mountain Coffee Roasters, Leclerc Foods, and Harry's Fresh Foods.

Tennessee exports of grain and oilseed milling products totaled \$137 million in 2016. Major markets included Canada (\$38.2 million), Guatemala (\$10.9 million), Mexico (\$9.6 million), the Philippines (\$9.2 million), and the Netherlands (\$7.9 million). The main industries in this sector are flour milling and malt manufacturing, starch and vegetable fats and oils manufacturing, and breakfast cereal manufacturing. Kellogg's, Stratas Foods, and ACH Food Companies are just a few of the major companies operating in this sector across the state.

The other sectors in the food and beverage cluster exported products for a combined \$216 million in 2016. These sectors include Bakery and Tortilla Products (\$57.2 million), Meat Products and Meat Packaging Products (\$52.4 million), Sugar and Confectionery Products (\$42.0 million), Animal Foods (\$31.0 million), Dairy Products (\$19.5 million), Livestock and Livestock Products (\$9.8 million), Fruits and Vegetables Preserves and Specialty Foods (\$4.0 million), and Prepared, Canned and Packaged Seafood Products (\$0.056 million).⁶

⁶ U.S. Census Bureau, USA Trade Online. Accessed 11/15/2017.

Healthy Growth

During Governor Haslam's administration, the Tennessee Department of Economic and Community Development has received 90 project commitments from the food and beverage cluster. These projects have committed to nearly 9,500 new jobs and \$3.2 billion in capital investment in Tennessee. There have been many notable projects from this cluster that have located across the state. Recently, Tyson Foods announced plans to create more than 1,800 new jobs while investing \$400 million in rural Gibson and Obion counties.

Company	New Job Commitments	Capital Investment (\$)	County	Date
Tyson Foods Inc.	1,500	320,000,000	Recruitment	November 2017
Blues City Brewery, LLC.	500	41,000,000	Recruitment	April 2011
Unilever Best Foods	428	108,640,000	Expansion	September 2013
Tyson Foods, Inc.	330	80,115,000	Expansion	August 2017
Green Mountain Coffee Roasters, Inc.	312	5,130,000	Expansion	June 2012
Armada Nutrition LLC	310	2,050,000	Recruitment	October 2016
Harry's Fresh Foods	302	34,300,000	Recruitment	April 2016
Pure Foods Inc., C/O C2C Food Group Inc.	273	32,717,000	Recruitment	March 2015
Tyson Fresh Meats, Inc.	219	11,650,000	Expansion	August 2013
Great Lakes Cheese Company, Inc.	204	100,000,000	Recruitment	October 2013

Source: TNECD

Trends and Opportunities

Food production and processing have undergone rapid changes in recent years, creating unique challenges and opportunities for companies in this cluster. Success will depend greatly on businesses' ability to adapt to new trends in four key areas: consumer preferences, industry consolidation, emerging downstream markets, and the trade-weighted index.⁷

Consumer Preferences

Industry demand has shifted due to new consumer food and beverage preferences. Consumers are increasingly valuing nutritional quality over price when selecting a product. The United States Department of Agriculture estimates that the healthiness of U.S. diets has increased 0.2% in 2017 and will continue to improve in coming years.⁸

This transition towards healthier eating will require many industries in the food cluster to adapt their product line to keep up with changes in demand. Companies that offer products with high sodium, fat or carbohydrate content will experience a decrease in demand for their traditional product portfolio.⁹ For example, consumers are purchasing more frozen yogurt and low-calorie biscuits than in previous years, whereas sales for potato chips have declined. To re-attract these customers, snack food producers are relying on products like baked vegetable chips and high-protein ingredients like nuts, seeds and soy. Producers of frozen food have also made changes to

⁷ Unless otherwise referenced, data related to food trends comes from IBISWorld Industry Reports.

⁸ Healthy Eating Index projections are calculated by comparing dietary data from the National Health and Nutrition Examination Survey (NHANES) with dietary recommendations from organizations like the United States Department of Agriculture, the American Heart Association and Harvard Medical School.

⁹ Taparia, H., & Koch, P. (2015). A seismic shift in how people eat. *New York Times*.

their product lines by using fewer preservatives and adding more vitamin-rich ingredients like spinach, kale and quinoa. Negative perceptions of animal-derived fats have also impacted this cluster, especially the margarine and cooking oil processing industry. A growing number of consumers are transitioning away to plant-based oils and other low-trans-fat options, cutting into revenues for key industry products like high-fat buttery spreads. The meat, beef and poultry processing industry faces new challenges as consumers switch to alternative sources of protein or vegetarianism to avoid the health risks of red meat.¹⁰

In addition, the trend towards healthier diets has cut into revenue for sugary goods, due to growing awareness of the link between excess sugar consumption and conditions like diabetes and obesity.¹¹ This decrease in sugar consumption has led to product adjustments across the entire cluster. Chocolate producers are offering more reduced-sugar, reduced-calorie options and adding nutrients like peanuts and cranberries to their products. Cookie manufacturers are producing thinner, healthier versions of their best-selling cookies. Candy producers are focusing on products like sugar-free gums and high-fiber, high-protein granola bars. Analysts predict that over the next five years, chewy candy will outperform all other products in this sector, and new products like organically-made candy will capture a greater share of revenue than ever before.

Some industries in the food cluster will benefit from these shifts in consumer behavior without having to re-invent their core product line. The rice milling industry, for example, has grown its revenue due to the “gluten-free” trend. Consumers are shying away from wheat and other gluten-rich foods, which has increased the per capita consumption of rice. Similarly, businesses that produce tea, fresh juice, or bottled water provide consumers with an alternative to soft drinks. Other industries will benefit from growing nutritional awareness without offering a direct substitute product. Snack manufacturers will experience greater demand due to research about the positive health benefits of snacking throughout the day.¹² The dairy industry will continue to grow its revenue from yogurt, which Americans are now purchasing 400% more often than 30 years ago.

Healthier eating practices will provide indirect benefits to some industries in the food cluster. For example, per capita consumption of salad is increasing, which creates more revenue for producers of salad dressing. Sugar producers and processors will also indirectly benefit from improved nutrition. Soda manufacturers are now moving away from the use of sweeteners, which means using traditional sugar as a replacement for high-fructose corn syrup.

Another factor influencing the shift in consumer preferences is an increase in per capita disposable income. As the economy continues to recover, Americans will have more disposable income, which will allow households to expand their purchase options. Per capita disposable income is predicted to increase 2.9% per year until 2023, nearly double the recent growth rate. Most industries stand to benefit from rising disposable income. Consumers will purchase more non-essential goods like candy and begin upgrading to premium-priced versions of products they already buy. For example, animal food producers will enjoy greater demand for dog and cat food made with fresh, nutrient-dense ingredients. Businesses increase profitability by selling these items at a higher price than their traditional products. Consumers will be willing to spend more on non-essential goods as well. Chocolate producers will sell a greater volume of organic dark chocolates and chocolate truffles as disposable income rises.

¹⁰ Funk, C., & Kennedy, B. (2016). The new food fights: U.S. public divides over food science. *Pew Research Center*.

¹¹ Katz, M. (2015). Americans are finally eating less. *New York Times*.

¹² Produce for Better Health Foundation. (2015). State of the plate: 2015 study on America's consumption of fruit and vegetables. https://pbhfoundation.org/pdfs/about/res/pbh_res/State_of_the_Plate_2015_WEB_Bookmarked.pdf

Economic recovery also poses challenges to U.S. food and beverage companies. Consumers may elect to use their extra income on premium foreign-made items. The preference for high-quality imports is perhaps most evident in the distilleries industry. Americans tend to purchase alcohol from the country in which the spirit originated. Jamaican rums, Russian vodkas and London gins sell very well in the U.S. despite being more expensive than domestically-made brands. This preference for authenticity works in Tennessee's favor. Since Tennessee is considered a primary birthplace of American bourbon, customers have shown an interest in buying Tennessee-made products. Whiskey accounts for more than 50% of craft spirit revenue, creating a huge opportunity for local companies.

Moreover, a recovery in consumer confidence has led to Americans eating out more often, benefitting industries with downstream sales to food and drinking establishments. Increased demand for the food service industry translates into greater revenue for soda manufacturers, dairy producers, and wholesale bread makers. (Experts anticipate an annual 2.8% decline in soda industry revenues in coming years, despite increased demand from restaurants.) The frozen food industry will also benefit because fast food establishments are switching from fresh to frozen ingredients to save on distribution costs. For consumers who still primarily eat at home, time pressures are an important concern in meal preparation. The most successful businesses will offer products that appeal to busy, on-the-go Americans. Frozen meals, soups, and canned fruits and vegetables will generate consistent revenue, as will the sauces and seasonings intended to complement these products.

Lower unemployment rates also impact consumers' food and beverage purchases. More Americans will be rushing from home to work, which results in less cereal consumption and increased sales of breakfast sandwiches at fast food chains. Cold brew coffee will continue to grow in popularity as well. Consumers with rising income and decreasing leisure time place a greater value on time than money, known as the "time poverty" effect. The importance of time to American consumers is evident in the explosive growth of energy drink consumption, sales of which have increased by double-digits in the last five years alone.

Another change in consumer behavior is greater preference for ethically-produced products. Consumers are purchasing more fair-trade, sustainably-made products than in previous years. Coffee producer Keurig Green Mountain has achieved exponential revenue growth in part by marketing itself as socially- and environmentally- responsible. Concerns over animal cruelty have also impacted the food cluster. Producers of mayonnaise have responded to outrage over poultry conditions by utilizing cage-free eggs or using olive oil substitutes. Bias against genetically-modified organisms and preservatives has led to greater demand for pasture-fed livestock, undercutting revenues for the animal food production industry.¹³

The aging of the U.S. population has shifted consumer preferences as well. The Baby Boomers are nearing retirement, making the elderly population a key consumer demographic. These consumers often purchase dairy products rich with calcium and omega-3 to help prevent osteoporosis. Older Americans also consume more tea than younger age groups and purchase high-end premium and super-premium alcohol. Industries in the food cluster can focus on older consumers to offset decreased demand in other areas. For example, candy producers are experiencing less demand from children consumers, due to greater concern over child obesity as

¹³ Funk, C., & Kennedy, B. (2016). The new food fights: U.S. public divides over food science. *Pew Research Center*.

well as a declining birth rate in the United States.¹⁴ Targeting older consumers with products like granola bars will help this industry maintain revenue growth.

Industry Consolidation

A key trend across the food cluster has been the consolidation of industry. Large companies are acquiring small producers to decrease input costs and maximize revenue. For example, the top four candy producers in the United States generate approximately 80% of the industry's total revenue. The top four chocolate producers account for more than 50% of industry revenue. A lesser degree of market concentration exists in the cookie, cracker and pasta production industry, in which the top four producers generate nearly 40% of revenue per year. The largest players in these industries engage in mergers and acquisitions nearly every year to acquire the most popular products and stay on top of market trends.

This transition towards economies of scale has put large companies at an advantage over their smaller competitors. By acquiring more links in the production chain, businesses can shield themselves from volatility in input prices and pass increased costs onto consumers. A major factor behind price volatility is unpredictable weather, which can result in poor harvests and reduced livestock numbers. Industries that rely on inputs from very specific parts of the world are most sensitive to adverse weather. For example, West Africa produces 70% of the world's cocoa. Droughts in this region greatly impact chocolate makers in the United States, which has motivated producers to begin exploring supply in Indonesia and the Ivory Coast to decrease dependence on West African markets. Crop disease and pests, which can destroy more than four-fifths of a harvest, also result in significant volatility to input prices. In 2014, the price of coffee soared only to fall sharply in less than a year due to coffee rust disease. An outbreak of porcine epidemic diarrhea virus hurt the meat processing industry, which compounded the impact this industry has felt from increased white meat consumption and fluctuating feed prices.

When companies are able to pass costs downstream, the rise in input prices presents an opportunity rather than a challenge. Experts predict that the price of oilseed and soybeans will rise in the next five years. Since Tennessee is a leader in both these industries, local companies will be able to use volatility to their advantage. There are, however, instances in which the volatility of prices happens too quickly and sharply for companies to capitalize effectively. The profit squeeze phenomenon occurs when producers purchase inputs when the price is high and sell their goods when the price has fallen. Big companies have devised several strategies for dealing with volatility, including securing up-front contracts with sellers, purchasing futures as a safeguard against falling prices, and using price slides as an opportunity to sell their products at a reduced rate and develop a strong customer following. Making upfront sacrifices in revenue by temporarily lowering the price of products is not possible for the smallest producers.

Brand recognition is a key factor that makes large producers better suited to withstand volatility. Producers of potato chips, soft drinks, and candy bars tend to have loyal customers who stay true to their preferred brand despite changes in price. Companies maintain this loyalty by investing heavily in advertising. The more nonessential the item is, the less likely consumption will keep pace with rising costs unless companies market themselves effectively. The ability to pass costs downstream does not exist in every industry. Cereal manufacturers, for example, struggle to pass increased prices of wheat, coarse grains, and corn onto the consumer due to the increasing number of substitutes to cereal as a breakfast option.

¹⁴ Katz, M. (2015). Americans are finally eating less. *New York Times*.

Greater revenues from consolidation will allow industries to research and develop new types of technology to improve the production process, furthering their advantage over small producers. Increased resources also enable companies to hire management teams to study market trends and analyze their strongest performing products. To overcome this competitive divide, smaller companies will need to develop savvy business strategies of their own. One such method is to capitalize on niche markets. In the tea industry, for example, consumers have expressed greater demand for a variety of flavor combinations, strengths, and sweeteners. This fragmentation of consumer preferences allows local tea makers to quickly jump into the market with unique product offerings sold at a premium rate. Other industries experiencing increased demand for locally-made artisanal products are canned fruit and vegetables, bread, chocolate, and alcoholic spirits. Moreover, some companies and producers are now banding together to achieve the economies of scale characteristic of larger companies. Milk farmers, for example, form cooperatives to strengthen their negotiating power, which ensures better prices on inputs, steady downstream demand, and increased capital for technological upgrades. Without these cooperatives, individual farmers would find themselves unable to compete.

Emerging Downstream Markets

In recent years, mass merchandisers and retail stores have replaced wholesalers as the primary buyer of food products. Many companies now sell directly to these merchandisers, bypassing wholesalers altogether. Tootsie Roll, Campbell and Kraft Heinz generate between 20-25% of their annual revenue from direct sales to Walmart alone. Moreover, these mass merchandisers are beginning to replace local grocery stores as the primary venue for consumers' food purchases. Stores like Target and Walmart now have full service groceries.

To thrive in a supply chain now dominated by superstores, food producers and processors must develop good relationships with these national chains and focus less on traditional buyers like neighborhood grocery stores. Unless a business can supply superstores with inventory for all their locations, it will be difficult to win these contracts. Establishing relationships with merchandisers are also essential to securing optimal shelf space, which can have a major impact on consumers' decisions on what to buy.¹⁵

Other disruptions to this cluster's traditional supply chain include the growing importance of food trucks, fast food establishments, convenience stores, drug and discount stores, and shopping mall kiosks as major downstream markets. More types of products have made their way into these shopping venues, and consumers are buying goods from such places at a greater volume than before. Moreover, businesses that have lost revenue due to changing consumer behavior may find opportunities to introduce their products to customers in innovative new ways. For example, more and more people are buying their tea and coffee in shops rather than making it at home. Producers of these types of drinks should strive to have pre-packaged versions of their products available in these shops in addition to supermarkets. Lastly, a small number of industries will experience demand from completely new types of buyers. Sugar cane processors can compensate for decreased candy consumption by increasing sales to ethanol producers. Since sugarcane byproducts and similar food extracts can be used as inputs in the creation of ethanol, the growth of the alternative energy sector will create opportunities for some food processors in the coming years.

¹⁵ Rivlin, G. (2016). Supermarket shelves for sale. *Center for Science in the Public Interest*. https://cspinet.org/sites/default/files/attachment/Rigged%20report_0.pdf

Trade-weighted Index

The trade-weighted index (TWI) measures the relative value of currencies across the globe. TWI measurements help predict the advantage or disadvantage that domestic producers will face relative to foreign competitors. As the dollar continues to appreciate, American products will be less competitively priced both at home and abroad. Experts believe that the value of the dollar will continue to rise for several reasons, including U.S. economic growth outpacing other major economies, higher interest rates, and an easing of interest rates in European and Japanese central banks. The TWI will impact nearly all industries in the food cluster and precipitate changes in strategy for most.

More companies in this cluster will move production overseas to take advantage of foreign currencies, in addition to cheaper labor and fewer regulations. Companies that remain in the U.S. will rely on strong brand recognition to out-perform foreign competitors. However, in industries with intense product competition, consumers show less brand loyalty overall due to the number of comparable, less expensive substitutes. The one exception to this trend is the tea industry, which has enjoyed strong competition as well as export growth in recent years.

The U.S. government has stepped in to protect some industries from the effects of the rising dollar. For example, tariff rate quotas and an import control agreement made between U.S. and Mexico during President Obama's administration keep domestic sugar producers from being driven out of business by importers. For producers that are not shielded by protectionist policies, a key strategy will be capitalizing on niche markets in which higher-quality selections do not compete with cheaper imported goods. Niche food products, like ones with gluten-free, organic ingredients or meals produced using fair-trade inputs, will appeal to consumers interested in premium quality more than price, undercutting the business model of many importers. In particular, craft soda producers have used public disinclination towards mass-produced goods to attract a steady following of consumers willing to pay a premium for locally-made soda with unique flavor combinations.

To succeed in export markets, U.S. companies will need to tap into new and growing international markets. Emerging economies with growing middle classes will be key markets for food and vegetable processors, cookie and cracker manufacturers, and animal food producers. Demand for American-made chocolate and candy is growing in South Korea and the Philippines. Producers should focus on these areas, in addition to countries with high population growth, a large demographic of children, and rising incomes. Another industry that will find opportunities in the export market is dry, evaporated, and condensed milk production, an industry in which Tennessee excels. The non-perishable nature of these products allows producers to ship their goods to remote areas of the globe without losing inventory to spoil.

Appendix A: Food Industries

<i>Animal Food Manufacturing</i>	Dog and Cat Food Manufacturing Other Animal Food Manufacturing
<i>Grain and Oilseed Milling</i>	Flour Milling Rice Milling Malt Manufacturing Wet Corn Milling Soybean and Other Oilseed Processing Fats and Oils Refining and Blending Breakfast Cereal Manufacturing
<i>Sugar and Confectionery Product Manufacturing</i>	Beet Sugar Manufacturing Cane Sugar Manufacturing Non-chocolate Confectionery Manufacturing Chocolate and Confectionery Manufacturing from Cacao Beans Confectionery Manufacturing from Purchased Chocolate
<i>Fruit and Vegetable Preserving and Specialty Food Manufacturing</i>	Frozen Fruit, Juice, and Vegetable Manufacturing Frozen Specialty Food Manufacturing Fruit and Vegetable Canning Specialty Canning Dried and Dehydrated Food Manufacturing
<i>Dairy Product Manufacturing</i>	Creamery Butter Manufacturing Cheese Manufacturing Dry, Condensed, and Evaporated Dairy Product Manufacturing Ice Cream and Frozen Dessert Manufacturing
<i>Animal Slaughtering and Processing</i>	Animal (except Poultry) Slaughtering Meat Processed from Carcasses Rendering and Meat Byproduct Processing Poultry Processing
<i>Bakeries and Tortilla Manufacturing</i>	Frozen Cakes, Pies, and Other Pastries Manufacturing Cookie and Cracker Manufacturing Dry Pasta, Dough, and Flour Mixes Manufacturing from Purchased Flour Tortilla Manufacturing
<i>Other Food Manufacturing</i>	Roasted Nuts and Peanut Butter Manufacturing Other Snack Food Manufacturing Flavoring Syrup and Concentrate Manufacturing Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing Spice and Extract Manufacturing Perishable Prepared Food Manufacturing All Other Miscellaneous Food Manufacturing
<i>Farm Product Raw Material Merchant Wholesalers</i>	Grain and Field Bean Merchant Wholesalers Livestock Merchant Wholesalers

Appendix B: Food Employment and Businesses, by County

County	2017 Jobs	Business Locations
Hamilton	4,432	17
Davidson	3,561	47
Shelby	3,244	40
Bedford	2,336	7
Madison	1,651	4
Rutherford	1,514	7
Obion	990	5
Tipton	979	7
Putnam	916	7
Knox	887	10
Dyer	885	4
Bradley	800	7
Hamblen	723	6
Crockett	709	3
Jefferson	621	3
Loudon	572	3
Lincoln	482	3
Cocke	454	3
Dickson	438	3
Greene	411	4
Giles	361	2
McMinn	325	3
Fayette	316	2
Sevier	300	13
Wilson	257	8
Campbell	249	1
Gibson	187	6
Hickman	184	2
Henry	178	6
Sumner	178	3
Cumberland	159	5
Williamson	159	12
Haywood	112	1
Coffee	99	5
Hardin	94	3
Washington	92	3
Moore	86	1
DeKalb	74	3
Monroe	70	4
Claiborne	62	2
Macon	56	2
Robertson	51	2
Lauderdale	46	1
Marshall	44	3
Franklin	42	3
Weakley	41	5

County	2017 Jobs	Business Locations
Sullivan	35	4
Lewis	30	2
Marion	23	3
Warren	22	3
Smith	16	1
Henderson	15	2
Scott	15	1
White	<10	1
Montgomery	<10	2
Cheatham	<10	2
Grainger	<10	1
Maury	<10	2
Polk	<10	1
Roane	<10	2
Lawrence	<10	3
Chester	<10	1
Trousdale	<10	1
Wayne	<10	1
Hancock	<10	0
Bledsoe	<10	1
Fentress	<10	1
Union	<10	1
Pickett	<10	1
Rhea	<10	1
McNairy	<10	1
Carroll	<10	0
Cannon	<10	1
Meigs	<10	1
Perry	<10	1

Appendix C: Beverage Employment and Businesses, by County

County	2017 Jobs	Business Locations
Knox	1,529	24
Shelby	1,175	19
Davidson	861	32
Moore	705	3
Sevier	532	18
Bradley	330	5
Hamilton	330	8
Haywood	314	1
Coffee	304	4
Washington	233	9
Rutherford	224	3
Montgomery	143	1
Blount	120	3
Greene	105	1
Williamson	95	8
Dyer	76	2
Henry	72	3
Polk	66	1
Wilson	66	1
Overton	55	1
Putnam	38	2
Hamblen	37	1
Lincoln	25	2
Lewis	20	3
Sullivan	15	3
Cheatham	10	1
McMinn	<10	1
Sumner	<10	2
Johnson	<10	1
White	<10	1
Cumberland	<10	2
Cocke	<10	2
Cannon	<10	1
Hickman	<10	1
Giles	<10	1
Fentress	<10	1
Pickett	<10	1
Gibson	<10	1
Union	<10	1
Perry	<10	1
Wayne	<10	1
Robertson	<10	1
Maury	<10	1
Jefferson	<10	1
Loudon	<10	1
Madison	<10	1
Monroe	<10	1