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Contribution of the Craft Beer Industry to Tennessee's Economy

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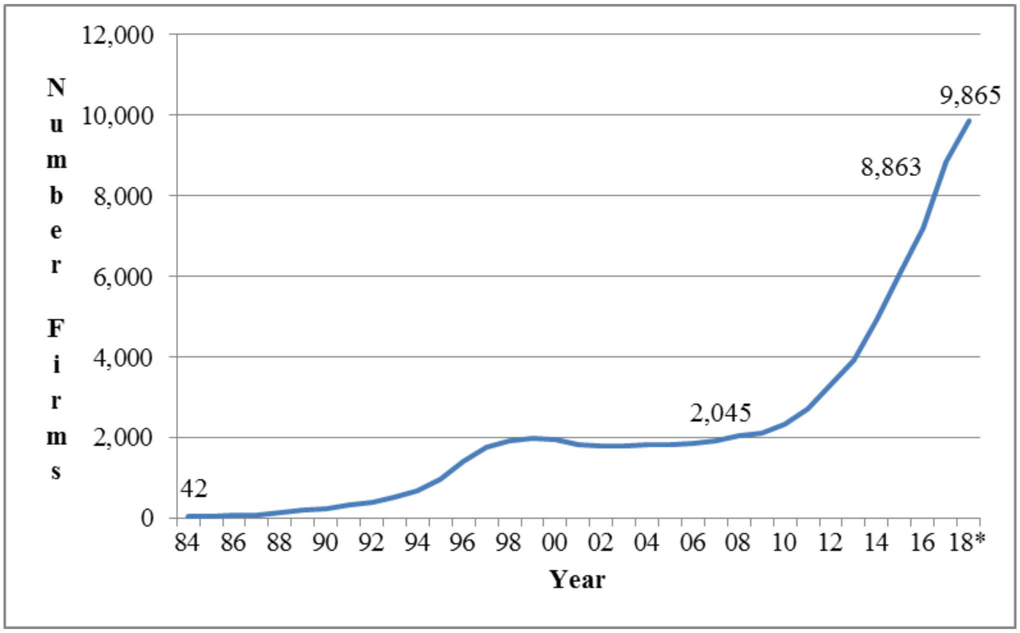
Introduction

Craft beer producers are, by definition, small, with annual production of less than 6 million barrels, and independent, with at least 75 percent ownership by the craft beer producer (Arthur, 2018). Like its counterpart in other states, the Tennessee craft beer industry has experienced strong growth in recent years. Efforts to track the growth of and establish its contribution to the state economy provides useful information for industry personnel, state and local economic development, and state and local government leaders. Provided here are survey-based estimates of that contribution.

This publication includes an examination of the growth in the craft beer industry nationally and in Tennessee. Also presented is a discussion of the use of industry survey data and other sources to estimate industry spending patterns. The growth of the U.S. and Tennessee craft beer industries are also discussed. Results regarding the industry's economic impact on the Tennessee economy based on an input-output model are then examined. Finally, model results are summarized and conclusions drawn.

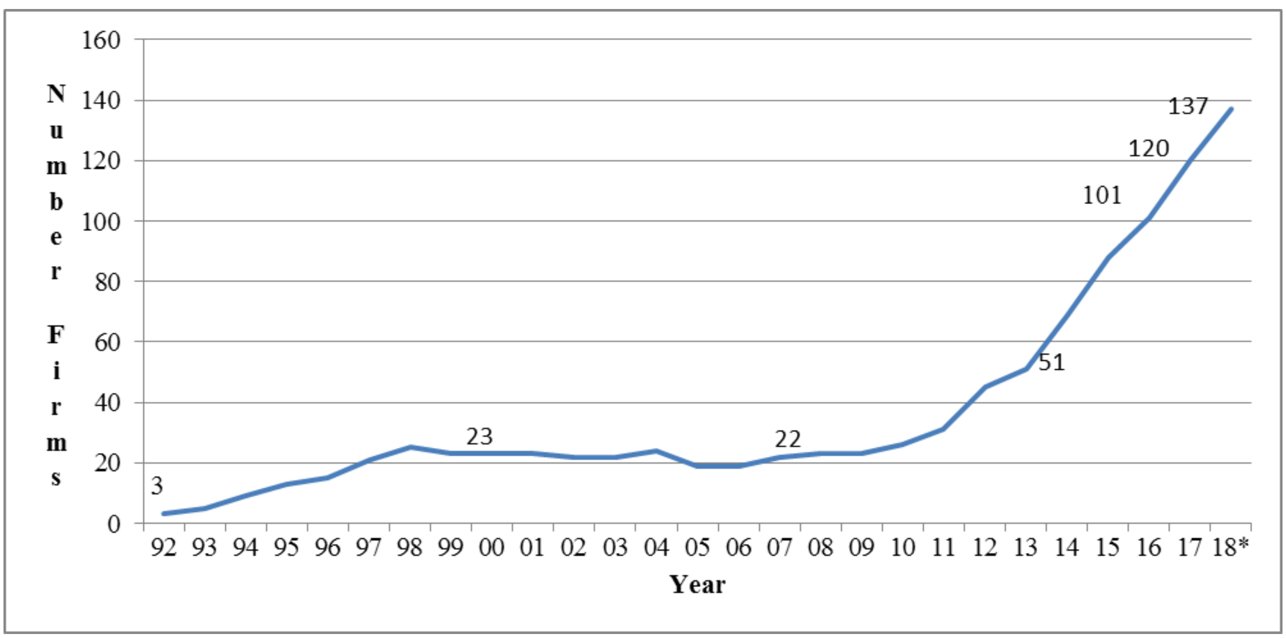
Industry Growth

The craft beer industry has exhibited strong growth nationally as it relates to the number of breweries in operation, as shown in Figure 1. Growth has been especially rapid — exponential — since 2012, an increase from 2,129 breweries to 9,865, as of the third quarter in 2018. Similarly, the Tennessee craft beer industry has experienced a similar growth pattern from 51 in 2014 to 137 establishments in 2018, an increase of 168.6 percent (Figure 2). This growth can also be traced in covered employment, as the number of industry workers has grown from 76 in 2013 to 427 in 2016 (461.8 percent increase) and 788 in 2019 (84.5 percent increase) (Figure 3).



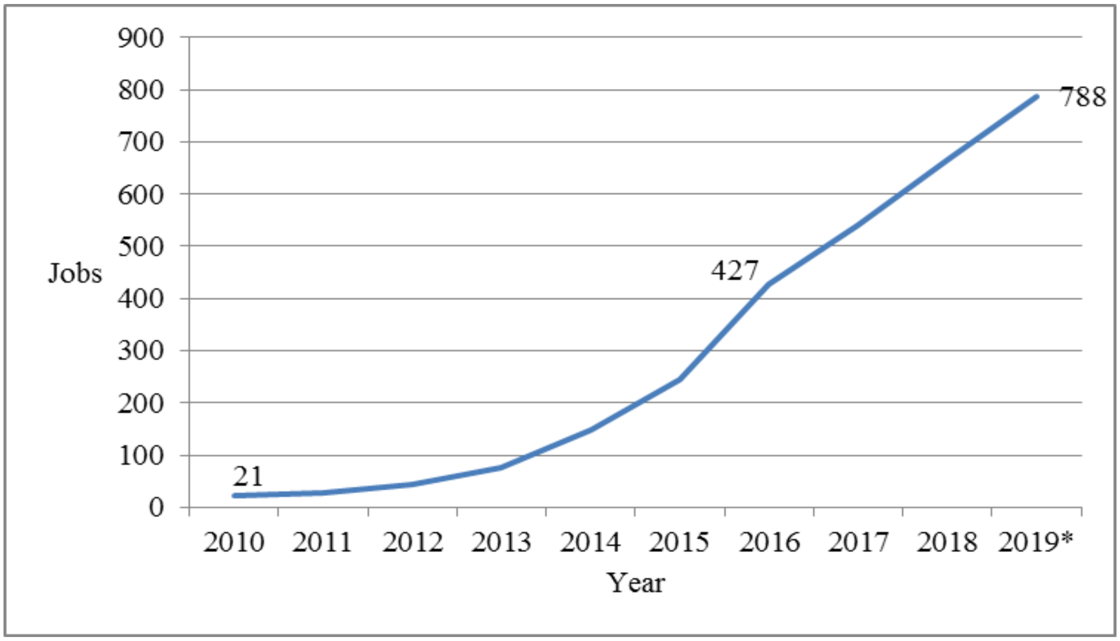
*Third quarter. Source: Alcohol and Tobacco Tax and Trade Bureau, U.S. Dept. of the Treasury. 2019a

Figure 1. Growth in the Number of U.S. Breweries, 1984 Through 2018.



*Third quarter. Source: Alcohol and Tobacco Tax and Trade Bureau, U.S. Dept. of the Treasury. 2019a

Figure 2. Growth in the Number of Tennessee Breweries, 1984 Through 2018.



*First quarter. Source: Quarterly Covered Employment and Wages, U.S. Department of Labor. 2019.

Figure 3. Growth in Covered Employment in Tennessee Breweries, 2010 Through 2019.

Tennessee Beer Industry Spending Patterns

Estimation

A survey was conducted in 2018 of 74 Tennessee breweries regarding their production practices. For purposes of this analysis, key questions concerned use of agricultural inputs from Tennessee and from out-of-state sources (specifically hops and malted barley), level of sales, and level of employment (Best, 2019). Survey responses were received from 34 breweries (a response rate of 47 percent). Other data sources used to estimate coefficients included a recent (August 2019) price sheet for malted barley (Missouri Malt Supply Brewers Supply Group, 2019); recent hop purchase prices as published by the USA Hop Growers of America (2019); state and federal beer tax rates published by the U.S. Treasury (2019b); utility costs, cleaning chemicals and yeast costs from ProBrewer (2017); wet hop prices published for Virginia (Siegle and Scoggins, 2018); facility rental costs provided by smart asset value (Geier, 2019); and bottling costs and other miscellaneous costs based on IMPLAN (2015) model data. Labor costs were estimated based on per-worker-pay as reported in the most recently available QCEW data (2019) for Tennessee breweries. Earnings before interest, taxes, depreciation and amortization (EBITDA) results, including profits, were consistent with values for the craft beer industry (MOSSADAMS, 2018).

Spending Patterns

Production costs provided in **Table 1** indicate that labor was the largest cost item at 33.2 percent of total revenue, followed by malted barley at 15.3 percent, state taxes at 12.3 percent, and metal cans and kegs at 11.6 percent. The variety and use of hops play an important role in the nature of beer, such as level of bitterness and aromatic quality. However, hops make up a relatively small share of the brewery budget at only 3.4 percent from dried hops (primarily in pellet form) and 0.1 percent for wet hops. Profits (return to owner-operator) were estimated at 5 percent of total revenue.

Economic Impact Results

Spending patterns were translated into the impact scenario used in our IMPLAN-based state input-output model 2017. Results of the economic impact by industry categories are provided in **Table 2** and **Figure 4**. The total impact of the industry on the state economy was estimated at $21.971 million, with a multiplier of 1.52 (the $21.971 million divided by the $14.4 million in direct brewery sales). Total impact on employment was 189 jobs, with an employment multiplier of 1.35 (the 189 divided by the 140 direct jobs in the industry). Impact on labor income (employee compensation plus net returns to owner operators) was $7.250 million, while the impact on gross state product was $12.568 million or $89,771 per 140 direct workers and $66,497 per direct and spinoff workers (189). The industry directly and indirectly generated

Table 1. Major Budget Items by Percent of Total Revenue, Tennessee Craft Brewers.

Spending Category	Costs as Percent of Revenue
Labor	33.2%
Malted barley	15.3%
State tax	12.3%
Metal cans-kegs	11.6%
Facility rent	5.3%
Debt service	5.2%
Profit	5.0%
Dry hops	3.4%
Yeast	2.1%
Wet hops	0.1%
All other	6.5%

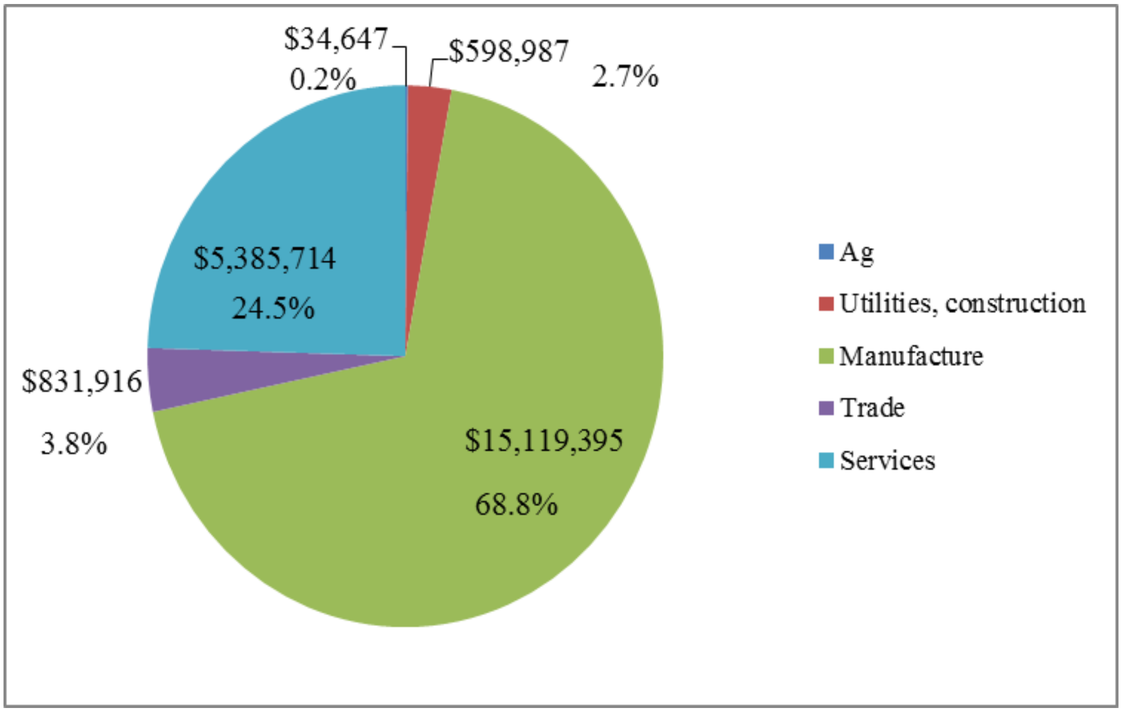


Figure 4. Economic Impact of the Tennessee Craft Beer Industry on Output in the Tennessee Economy by Major Category.

Table 2. Economic Impact of the Tennessee Craft Brewing Industry on Selected Sectors of the Tennessee Economy.

IMPLAN Sector, Number, Title		Output	Jobs	Labor Income	Gross Regional Product
108	Breweries	$14,427,444	140.0	$4,787,067	$4,787,729
440	Real estate	$1,139,605	5.7	$190,709	$830,243
501	Full-service restaurants	$115,460	2.3	$55,979	$61,891
502	Limited-service restaurants	$183,404	2.2	$45,460	$101,222
10	All other crop farming	$19,884	1.9	$1,766	$7,574
482	Hospitals	$369,885	1.9	$274,556	$231,409
464	Employment services	$91,915	1.3	$42,208	$65,948
475	Offices of physicians	$194,243	1.2	$134,602	$132,610
405	Retail-General merchandise stores	$94,616	1.2	$37,803	$59,740
400	Retail-Food and beverage stores	$79,672	1.1	$37,317	$51,673
395	Wholesale trade	$263,163	1.1	$88,082	$180,596
433	Monetary authorities, depository credit intermediation	$218,510	0.9	$76,025	$114,271
503	All other food and drinking places	$40,712	0.9	$29,074	$26,185
468	Services to buildings	$42,019	0.9	$23,209	$27,675
447	Legal services	$130,904	0.8	$54,942	$89,059
407	Retail-Nonstore retailers	$97,881	0.7	$16,998	$49,188
509	Personal care services	$26,991	0.7	$18,954	$18,971
483	Nursing and community care facilities	$52,578	0.7	$29,822	$32,832
436	Other financial investment activities	$109,201	0.6	$16,258	$23,865
485	Individual and family services	$20,915	0.6	$16,864	$14,235
411	Truck transportation	$101,773	0.6	$39,790	$47,929
448	Accounting, tax prep., bookkeeping, payroll services	$72,598	0.6	$47,990	$61,237
512	Other personal services	$18,862	0.6	$13,685	$12,630
396	Retail - Motor vehicle and parts dealers	$88,300	0.5	$35,871	$64,777
487	Child day care services	$20,581	0.5	$10,861	$12,779
480	Home health care services	$42,688	0.5	$40,096	$36,970
473	All colleges, universities, professional schools	$43,637	0.5	$24,606	$26,148
403	Retail-Clothing and clothing accessories stores	$41,124	0.5	$13,163	$23,588
62	Maintenance-repair-construction, nonresidential bldg.	$72,669	0.5	$30,808	$34,045
477	Offices of other health practitioners	$55,976	0.5	$40,384	$45,367
474	Other educational services	$17,361	0.5	$10,585	$11,388
406	Retail-Miscellaneous store retailers	$21,768	0.4	$12,547	$14,820
504	Automotive repair-maintenance, except car washes	$49,893	0.4	$26,009	$35,144
438	Insurance agencies, brokerages, and related activities	$83,660	0.4	$28,170	$44,908
476	Offices of dentists	$55,741	0.4	$30,603	$40,148
469	Landscape and horticultural services	$24,951	0.4	$12,654	$15,372
399	Retail-Building material, garden, supplies stores	$44,649	0.4	$17,842	$27,793
434	Nondepository credit intermediation, related activities	$59,982	0.4	$27,150	$29,779
478	Outpatient care centers	$57,290	0.4	$26,843	$31,054
401	Retail-Health and personal care stores	$35,007	0.4	$16,454	$22,269
51	Water, sewage and other systems	$128,136	0.4	$63,229	$97,959
441	Owner-occupied dwellings	$619,284	0.0	$0	$404,937
	All Other Sectors	$2,495,729	12	$703,221	$1,108,659
	Total	**$21,970,659**	**189**	**$7,250,255**	**$9,156,614**

Note: Output is value of sales, labor income is employee compensation plus net returns to proprietors, Gross Regional Product is returns to capital and labor.

$0.691 million in federal tax revenues and $2.153 million in state and local tax revenues. As shown in **Figure 5**, output impacts were concentrated in manufacturing at $15.119 million (68.8 percent of the total impact) and services at $5.386 million (24.5 percent). Very little impact was experienced by Tennessee agriculture ($34,647) because of the natural production advantages of producing hops and malting barley in other states. However, all other crop farming did rank fifth in employment with 1.9 jobs. Other sectors with relatively large levels of employment included real estate at 5.7 jobs, and full-service (2.3 jobs) and limited-service (2.2 jobs) restaurants. In terms of labor income, hospitals had relatively large impacts at $274,556, followed by real estate at $190,709, offices of physicians at $134,602, and wholesale trade at $88,082. In terms of gross regional product, real estate had an impact of $830,243, followed by owner-occupied dwellings at $404,937, hospitals at $231,409, and wholesale trade at $180,596. Finally, in terms of output, real estate had an impact of $1,139,605, followed by owner-occupied dwellings at $619,284, hospitals at $369,885, and wholesale trade at $263,163. Impacts for hospitals, physicians and owner-dwellings reflected household spending by craft brewery industry workers, while impacts on real estate and wholesale trade were due to both spending by the brewery industry and spending by brewery industry workers and other businesses.

Summary and Conclusions

Akin to its counterpart in other states, the Tennessee craft beer industry has experienced strong growth in recent years. The analysis provides survey-based estimates regarding the contribution of the Tennessee craft beer industry to the state economy. While the industry makes a significant contribution to state and, by inference, local economies, the impact on Tennessee agriculture is muted because of the natural production advantages of producing hops and malting barley in other states. However, the impact on the manufacturing and service sectors in Tennessee is pronounced.

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