

The Economic Impacts of Breweries on Larimer County

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22 December 2011

Introduction

The brewing industry and culture permeates Larimer County, which is home to 10 different breweries. These range from the large-scale operation of Anheuser Busch, to craft industry brewers in national markets (e.g., New Belgium and O'Dells) to 'mom and pop' brewing operations, like Big Beaver Brewing.

Because of recent growth, especially in craft beers, the brewing sector has become an important part of the county economy. This study examines the economic impacts of the brewing industry on Larimer County. The major findings are that:

- In 2010, local breweries supported 938 direct jobs.
- Between 2000-10, employment in the brewing industry grew by almost a quarter (22.1 percent). By comparison, Larimer County employment grew by 6.3 percent during this time.
- After accounting for spinoff impacts, Larimer County's breweries support a total of \$309.9 million in output and 2,488 jobs, while adding \$141.9 million to local payrolls.

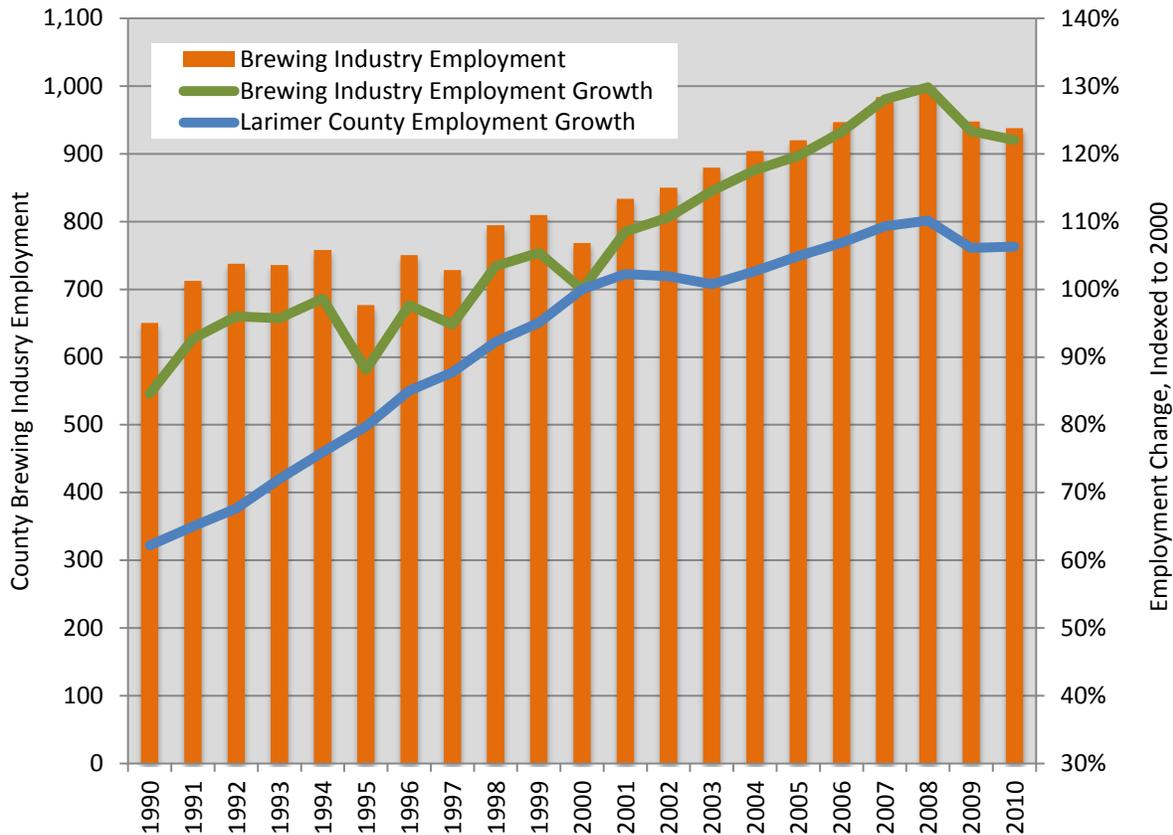
Breweries and the Larimer County Economy

From the local home brewers club—i.e., Liquid Poets—to the plethora of industrial breweries with national supply chains, many aspects of the Larimer County culture are tied to the brewing industry. Over the past decade, local brewing employment growth has outpaced that of the county. The chart below shows historical brewing employment, the employment growth rate of the brewing industry and the county employment growth rate—both are indexed to 2000.

Between 1990 and 2010, county employment grew faster than brewing employment—local employment grew at 3.6 percent, per annum, over this time. In comparison brewing employment increased annually by 2.2 percent—on average—during these years. In more recent years however, these trends have changed.

Over the last decade (2000-10), county breweries have expanded their employment by a total of 22.1 percent, or 2.2 percent per annum. Larimer County employment grew by 6.3 percent—or 0.6 percent per annum—over these ten years.

Employment growth in the brewing industry has outpaced that of Larimer County, over the last decade



Source: Colorado Department of Labor and Employment Quarterly Census of Employment and Wages

The brewing industry is an important part of the region’s competitive economic base. Location quotients (LQs) are one measure used by analysts to examine the relative importance of an industry. Essentially, it looks at an industry’s share of local employment relative to that industry’s share of national employment. A LQ of 1 means the local industry’s employment share is the same at the national level; a LQ > 1 suggests the industry is more locally concentrated, relative to the nation. According to the Bureau of Labor Statics (BLS), the location quotient for the brewing industry (NAICS¹ 312120) is 38.5.² This indicates that, compared to the US, Larimer County has a tremendous concentration of workers in the brewing industry.

Data

The US Census Bureau defines the industry of NAICS 312120 as Breweries—this is the criterion used to identify ‘breweries’ in this study. We do not use any information on firms that are not

¹ See Appendix C for a further discussion on NAICS codes.
² See Appendix D for detailed information regarding location quotients.

listed in the Breweries industry, but that might brew beer. For example, we include Funkwerks, but not the brewpub Coopersmiths (NAICS 722110—Full Service Restaurants).

Colorado Department of Labor and Employment’s (CDLE) Quarterly Census of Employment and Wages (QCEW) captures firms’ monthly employment and quarterly wage data as they pay unemployment insurance for their employees. This accounts for the vast majority of Colorado jobs, but there are many small firms and sole proprietors that do not pay unemployment insurance and therefore are not captured in the data. Therefore, there are several breweries in Larimer County that do not appear in the QCEW data. See Appendix B for a list of breweries identified.

Methods

We employ the IMPLAN model (www.implan.com) to estimate the multiplier impacts of breweries on the economy of Larimer County.³ IMPLAN is a widely used input-output model that estimates how changes in final demand (i.e. output) ultimately translate into changes in employment (i.e. inputs), as well as associated compensation (wages plus benefits). Drawing on data collected by federal and state government agencies, IMPLAN uses regional industry purchasing patterns to examine how changes in one industry will affect others. The IMPLAN model has been used as the basis for thousands of economic analyses reports throughout the United States.

We use the Larimer County version of IMPLAN to estimate the countywide economic impacts of the brewing industry. Direct impacts are benchmarked to employment and compensation figures from the Colorado Department of Labor and Employment’s (CDLE) QCEW data.

We then use the multipliers from IMPLAN to calculate the spin-off impacts. These impacts are from breweries purchasing from their supply chains and the spending of employees—both brewery and supply chain—as they conduct day-to-day activities (e.g. paying the mortgage, buying groceries, etc.). The total impacts are simply the summation of the direct and spin-off impacts. Summary tables are below and detailed 2-digit NAICS breakdown are in Appendix A.

Our analysis considers four types of impacts: output, value added, employee compensation and employment. *Output* is the broadest measure and is akin to total revenue; however, because breweries pay their suppliers out of their revenue, output tends to overstate the unique impacts of brewers, and can lead to double counting when spin-off effects are considered. To avoid these problems, economists prefer measuring impact with *value added*,⁴ which considers the economic activity directly attributable to breweries. (The process of brewing turns water and hops into beer, adding value to both inputs during this particular state of the production

³ Multipliers quantify the relationship between direct impacts and total impacts. For example, if 100 direct jobs support 50 spinoff jobs, then the multiplier is 1.5 (100 jobs *1.5 = 150 jobs (direct + spinoff)).

⁴ At the national level value added is the same as Gross Domestic Product (GDP).

process—this is value-added activity.) We also provide estimates of *employee compensation* (wages plus benefits) and *total employment* (combined full and part-time).

Economic Impacts of Breweries in Larimer County

Larimer County breweries directly generate \$263.1 million in local output—translating into \$106.0 million in value-added activity—and add \$83.2 million to county payrolls. This represents 938 direct jobs with an average compensation per worker of \$88,700. These jobs support and additional 1,550 spin-off jobs, with an average compensation of \$37,900 per worker.

In sum, local breweries support \$309.9 million in county output, which translates into \$178.1 million in value-added activity. This supports a total of 2,488 jobs, adding \$141.9 million to county payrolls.

The impacts of the brewing industry on Larimer County

	Direct	Spin-Off	Total	Multiplier
Output	\$263,063,000	\$46,815,000	\$309,878,000	1.2
Value Added	\$105,960,000	\$72,092,000	\$178,052,000	1.3
Employee Compensation	\$83,223,000	\$58,705,000	\$141,928,000	1.7
Employment	938	1,550	2,488	2.7
Compensation per Worker	\$88,700	\$37,900	\$57,000	

Source: Authors' calculations using data from CDLE QCEW and IMPLAN

Northern Colorado has extensive supply and distribution networks supporting the brewing industry. The employment multiplier for the local brewing industry is 2.7, which means that one position at a brewery supports approximately 1.7 additional regional jobs.

Local breweries have an important impact on the county economy. In 2009, Seven-tenths of one percent (0.7 percent) of county employment was in local breweries, but according to the Bureau of Economic Analysis, these jobs supported 2.3 percent of county output.

Summary

Local brewers contribute \$263.1 million in total output and \$178.1 million in total value-added activities, while supporting 2,488 jobs. The average compensation for all local jobs supported by breweries is \$57,000. For comparison, the compensation for an average Larimer County job in 2010 was \$52,200. The jobs supported by breweries add \$141.9 million to county payrolls.

The brewing industry is an important economic driver in Larimer County—brewers directly support 0.7 percent of county employment, but comprise 2.3 percent of county output.

Regional Economics
INSTITUTE

The Regional Economics Institute (REI) at CSU provides researched based information and analysis to decisions makers across Colorado to help strengthen regional and state economies. The institute partners with nervous entities on campus to promote economic development throughout Colorado.

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The Beverage Business Institute (BBI) at CSU offers regional workshops, certificates, and in the very near future, an MBA concentration in Beverage Business Management. The workshops at BBI consist of interactive sessions and talks from industry experts, officers of organizations from the industry, and faculty members of Colorado State University. The BBI currently offers a certificate in Beverage Business Management with specializations in Brewing Operations Management and Wholesale Distribution Management. Besides “live” class sessions, some of the classes will be offered online.

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The BBI and the City of Fort Collins are currently exploring the possibility of a partnership, possibly taking the form of a brewing cluster. The spirit of this collaboration would be to encourage creative brew masters and sustainable breweries, while maintaining social responsibility. Through a coordination of programs and materials this partnership will also serve to stimulate tourism and yield economic benefits.

Appendix A

The table below details how breweries impact Larimer County's economy, disaggregated over 2-digit NAICS. The brewing industry, shown in **bold**, is the direct effect from the county's breweries. For instance, the table below indicates that Larimer County has 938 jobs in the brewing industry. The effects on every other industry, because of these jobs, are listed in the other lines. As an example, the county's 938 brewing jobs in support an additional 53 jobs in the industry of Finance and Insurance (primarily through employee spending).

Summing across industries, we see breweries indirectly support a total of 1,550 jobs across the county and add \$58.7 million to county payrolls.

The "Total Effects" line includes both direct and spin-off effects from Larimer County breweries, whereas the "Total Spin-Off Effects" line is just that – the secondary impacts from breweries.

Larimer County's brewing industry supports a total of 2,488 county jobs, which contribute \$141.9 million to local payrolls.

The impacts of the brewing industry on Larimer County

NAICS	Industry	Output /Revenue	Spin-Off Employment	Spin-Off Employee Compensation	Average Annual Employee Compensation	Total Value Added
11	Ag, Forestry, Fish & Hunting	\$634,000	17	\$224,000	\$12,800	\$448,000
21	Mining	\$10,000	0	\$6,000	\$39,700	\$13,000
22	Utilities	\$972,000	10	\$800,000	\$81,400	\$1,694,000
23	Construction	\$246,000	8	\$251,000	\$29,900	\$281,000
31-33	Manufacturing	\$3,401,000	32	\$2,574,000	\$81,600	\$2,550,000
312120	Breweries	\$263,063,000	938	\$83,223,000	\$88,700	\$105,960,000
42	Wholesale Trade	\$4,661,000	110	\$6,454,000	\$58,700	\$7,547,000
44-45	Retail trade	\$2,800,000	211	\$5,343,000	\$25,300	\$5,866,000
48-49	Transportation & Warehousing	\$3,434,000	124	\$4,717,000	\$38,000	\$4,716,000
51	Information	\$1,065,000	17	\$934,000	\$56,200	\$1,284,000
52	Finance & Insurance	\$2,537,000	53	\$2,222,000	\$41,900	\$3,267,000
53	Real Estate & Rental Professional,	\$8,997,000	136	\$1,275,000	\$9,400	\$15,892,000
54	Scientific & Technical Services	\$6,091,000	202	\$11,329,000	\$56,000	\$9,665,000
55	Management of Companies	\$2,114,000	51	\$3,953,000	\$76,800	\$3,093,000
56	Administrative & Waste Services	\$1,695,000	105	\$2,555,000	\$24,400	\$2,630,000
61	Educational Services	\$75,000	7	\$126,000	\$17,900	\$111,000
62	Health & Social Services	\$2,433,000	105	\$4,390,000	\$42,000	\$3,417,000
71	Arts Entertainment & Recreation	\$326,000	28	\$365,000	\$13,000	\$427,000
72	Accommodation & Food Services	\$1,742,000	124	\$2,153,000	\$17,400	\$2,172,000
81	Other Services	\$1,168,000	78	\$1,797,000	\$22,900	\$1,727,000
92	Government	\$2,414,000	131	\$7,237,000	\$55,300	\$5,292,000
Total Effects		\$309,878,000	2,488	\$141,928,000	\$57,000	\$178,052,000
Total Spin-Off Effects		\$46,815,000	1,550	\$58,705,000	\$37,900	\$72,092,000

Source: Authors' calculations using data from CDLE QCEW and IMPLAN

Appendix B: Breweries in Larimer County

Information on the following breweries are captured in this study:

- Anheuser Busch Inc
 - <http://www.anheuser-busch.com/s/>
- Equinox Brewing
 - <http://www.equinoxbrewing.com/>
- Fort Collins Brewery
 - <http://www.fortcollinsbrewery.com/>
- Funkwerks Inc
 - <http://www.funkwerks.com/>
- New Belgium Brewing Co Inc
 - <http://www.newbelgium.com/home.aspx>
- Odell Brewing Co Inc
 - <http://odellbrewing.com/>

We have no information on the following breweries, but they are in Larimer County:

- Big Beaver Brewing Co
 - <http://bigbeaverbrew.com/>
- Crooked Stave
 - <http://www.crookedstave.com/>
- Grimm Brothers Brewhouse
 - <http://www.grimmbrosbrewhouse.com/>
- Pateros Creek Brewing Co
 - <http://www.pateroscreekbrewing.com/>

We recognize the following Larimer County businesses brew beer, but they are identified as a full-service restaurant (NAICS 722110) by their NAICS code:

- Coopersmiths Pub & Brewing
 - <http://coopersmithspub.com/>
- C.B. & Potts
 - <http://www.cbpotts.com/>
- Estes Park Brewery
 - <http://www.epbrewery.net/>
- Rock Bottom Restaurant and Brewery
 - <http://www.rockbottom.com/>

Appendix C: The North American Classification System (NAICS) Codes

NAICS is a basic framework for categorizing establishments and is the basis for regional economic analysis. This system allows us to arrange the economy's multitude of business types into discrete industry classifications. These classifications are numerical and hierarchical, with digits on the left defining major sectors and digits to their right specifying subdivisions. Today, much of the readily available economic data related to employment is based on such classifications.

NAICS divides the economy into 20 major sectors and recognizes 1,170 industries. Five of the 20 sectors are largely goods producing and 15 are entirely services-producing industries. The NAICS system is hierarchical and identifies sectors and industries therein with from 2 to 6 digits: the more digits, the more specific the industry identification.

New NAICS code structure

NAICS Code	Industry
11	Agriculture, Forestry, and Fishing
21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Service (except public administration)
92	Public Administration

Typically, in comparative discussions of industries the NAICS codes can be used as 2, 3, 4, 5, and 6 digit codes. Discussions about manufacturing in general use the 2 digit manufacturing codes (31-33) but discussions about particular types of manufacturing use the 3-digit sub-sector codes.

Here are a couple of examples:

<i>Example #1</i>			<i>Example #2</i>	
<i>NAICS Level</i>	<i>NAICS Code</i>	<i>Description</i>	<i>NAICS Code</i>	<i>Description</i>
Sector	31-33	Manufacturing	42	Wholesale trade
Subsector	334	Computer and electronic product manufacturing	423	Merchant wholesalers, durable goods
Industry group	3346	Manufacturing and reproduction of magnetic and optical media	4231	Motor vehicle and parts merchant wholesalers
Industry	33461	Manufacturing and reproduction of magnetic and optical media	42311	Motor vehicle merchant wholesalers
U.S. Industry	334611	Reproduction of software	42312	New motor vehicle parts merchant wholesalers

A Few Caveats

When using Industrial Classifications, there are a few important factors to keep in mind.

First, individual establishments are assigned an industry according to their primary economic activity. Thus, if a business produces goods that fall under two or more industries, the business is classified according to its major output.

Second, employment figures represent an industry and not an occupation. Thus, industry data does not provide a clear picture of the types of work in which employees are engaged. For example, many companies carry out some of their business services internally. Such services show up in the industry employment statistics for the whole business. For example, an accountant at a steel mill would be counted in the employment statistics for the steel industry (NAICS 3311) rather than the business service industry (NAICS 5412). However, if the steel mill hired an accounting firm to do their books, this employee would show up in NAICS 5412.

Finally, for confidentiality reasons, data is often not made publicly available when it will identify individual businesses. While county data is usually available at very aggregated NAICS levels, confidentiality concerns often arise at more detailed levels of analysis. This is especially true in smaller economic regions, such as rural counties.

More information on the NAICS system is available at: www.census.gov/epcd/www/naics.html

Appendix D: Location Quotients (LQs)

In a nutshell, the location quotient helps identify those local industries that are producing more than is needed for local use and selling outside the region (exporting) and those that are not meeting local needs and are a source of consumption leakage (importing). Often times, the location quotient reinforces what you already know about your local economy, but just as often, it uncovers things you did not know, or, at least, changes your perceptions. The real strength of the tool is that it is a simple, yet effective educational resource.

Calculating a location quotient is a straightforward process, and, in practice, most often uses employment data that is widely available (This analysis is most informative when using as disaggregated employment data as you can find for your region (NAICS 3- or 4-digit). The basic formula for the location quotient is:

$$LQ = \frac{\text{Percent of Local Employment}_{\text{Industry } i}}{\text{Percent of National Employment}_{\text{Industry } i}} = \frac{\frac{\text{Local Employment}_{\text{Industry } i}}{\text{Total Local Employment}}}{\frac{\text{National Employment}_{\text{Industry } i}}{\text{Total National Employment}}}$$

Simply put, the location quotient identifies how local industries stack up with national averages.

In practice, location quotients are often used to identify regionally competitive industries. An exporting industry is one where the industry not only meets the local demand for its products, but also produces enough so as to sell outside of the region. An importing industry is one where local production levels are insufficient to meet local demand.

When interpreting the data, a location quotient greater than 1.0 indicates that the economy is self-sufficient, and may even be exporting the good or service of that particular industry. (As a rule-of-thumb, a location quotient greater than 1.25 almost certainly identifies exporting industries.) On the other hand, a location quotient less than 1.0 suggests that the region tends to import the good or service. (The applicable rule-of-thumb is that a location quotient less than 0.75 indicates an importing industry.)