

The Growing Economic Impact
of



Craft Brewing
in Montana

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Executive Summary

This is a study of the economic contribution of Montana craft brewing to Montana's economy. The first study of this nature on the brewing industry was conducted in 2012, based on operating conditions in 2010 and 2011. The current study builds on that work by investigating the trends during 2012 and 2013 and estimating the current economic contribution of the industry. There were 40 breweries operating in the state by the end of 2013, with another 11 breweries in planning. This ranks Montana third in the nation in breweries per 100,000 adults over age 21, according to the Brewers Association.

The survey results from this study indicate rapid growth in Montana's brewing sector. From 2010 to 2013, Montana craft beer production increased by 49 percent, while sales increased by 55 percent and expenditures (vendor purchases) were up by 44 percent. The portion of brewery purchases made in Montana increased more than out-of-state expenditures, going from 39 percent to 49 percent of total expenditures. Montana brewery employment more than doubled from 231 to 486 jobs, and compensation increased 84 percent during the period.

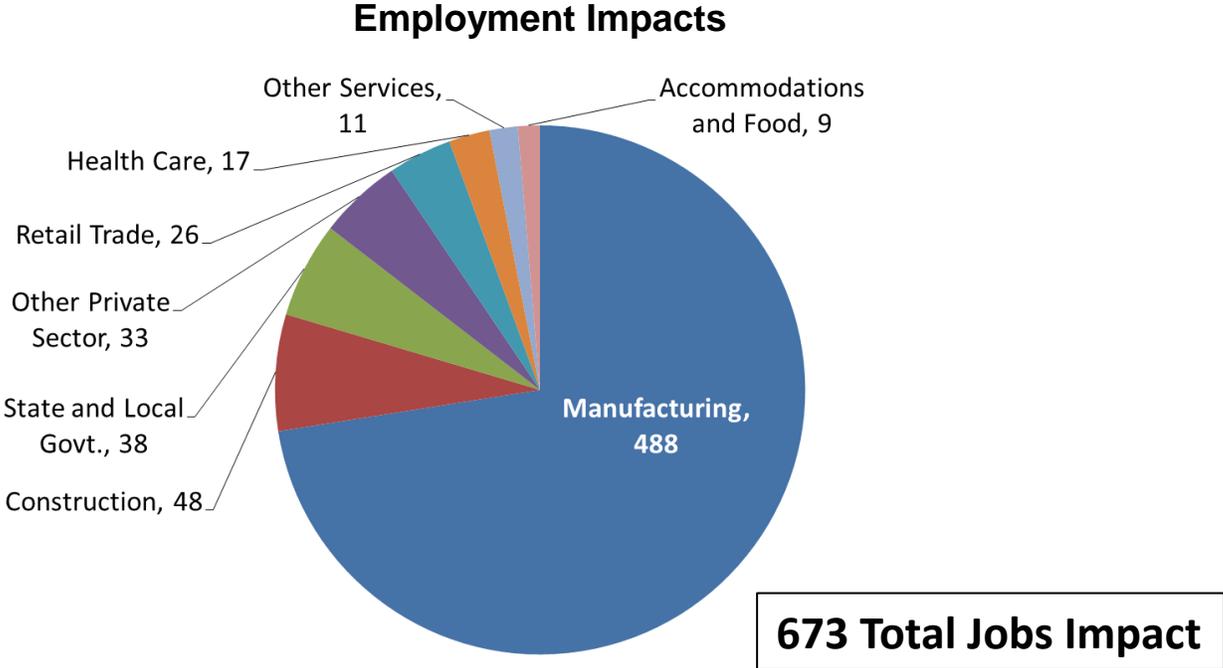
These direct jobs and income flows from Montana's 41 breweries contribute to growth throughout the Montana economy. This study found that because of Montana craft brewing, the state's economy is larger, more prosperous, and more populous. The operations of brewers result in a number of economic benefits in the state. Specifically, we find the following additional economic benefits due to brewer operations:

- 673 additional permanent, year-round jobs exist in the Montana economy;
- more than \$18 million in income is received by Montana households;
- sales from businesses and organizations based in Montana are \$60 million higher, and
- tax and non-tax revenues, not including property taxes, are more than \$4 million higher.

The Economic Contribution of Craft Brewing in Montana Impacts Summary

Category	Units	Total
Total Employment	Jobs	673
Personal Income	\$ Millions	18.1
Disposable Pers. Income	\$ Millions	15.3
Selected State Revenues	\$ Millions	4.1
Gross Sales	\$ Millions	60.2
Population	People	117

While employment impacts are concentrated in the manufacturing sector – which includes brewing – several other sectors are also supported by the activities of breweries, including construction, state and local government, retail trade, and other private sector industries. The spending of workers employed by breweries and vendor purchases of breweries are the drivers that support additional jobs outside of the manufacturing sector.



The Bureau of Business and Economic Research was commissioned by the Montana Brewers Association to conduct a study on the economic contribution of craft brewing in the state. This project entailed: (i) working with the MBA to gather information on sales, employment, and employee compensation, as well as other operational information for calendar years 2012 and 2013, (ii) using the policy analysis model (REMI) to present an alternative projection of the state economy in which the craft brewing industry’s contributions are absent, and (iii) comparing this projection with the baseline projection to estimate the ultimate impact of the industry. The details of this study are included in this report.

1. Policy Analysis with the REMI Model

Economic impacts occur as events or activities create new expenditures. New spending that is over and above existing expenditures – and does not simply displace spending elsewhere in the region – not only adds to economic activity, but also induces further spending as the recipients of wages, sales, and tax revenues spend a portion of their income in the local economy. Changes in the path of investment, migration, and prices and wages can occur due to new spending as well.

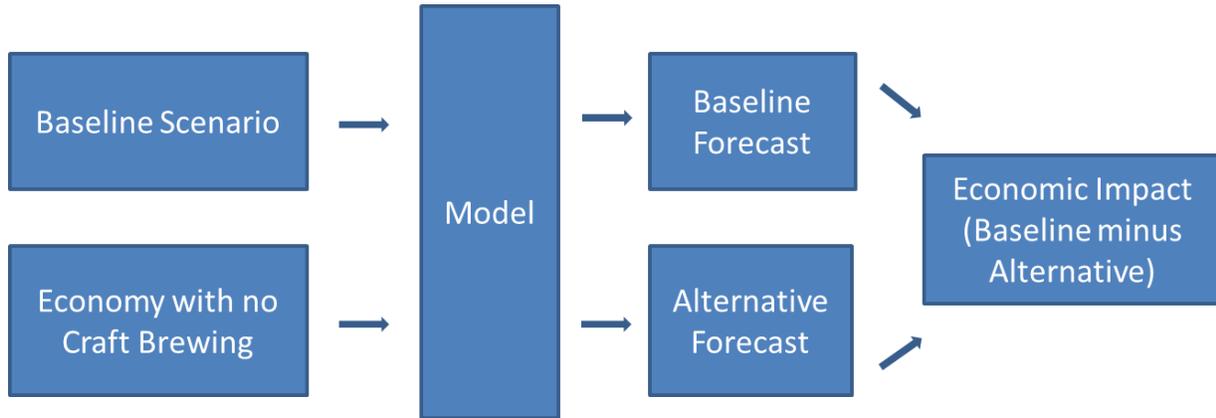
In order to quantify the economic contribution of Montana's craft brewers, this research was designed to answer the question, "What do the activities of craft brewers contribute to the Montana economy?" To begin the analysis, it was necessary to obtain accurate data on the income flows that the industry itself produces. A brief online survey was administered to brewers to quantify the sales, employment, and compensation (including benefits) directly attributable to Montana breweries.

The basic tool used in this study to assess the economic contribution of Montana breweries is an economic model, calibrated to represent the interactions in the Montana economy, leased from Regional Economic Models, Inc. (REMI). The REMI model is one of the best known and most respected analytical tools in the policy analysis arena and has been used for numerous previous studies and peer-reviewed articles in scholarly journals. It is a state-of-the-art econometric forecasting model that incorporates dynamic feedbacks between economic and demographic variables. The REMI model forecasts employment, income, expenditures, and populations for counties and regions based on a model containing over 100 stochastic and dynamic relationships as well as a number of identities. More information on of the underlying approach, design and operation of the model can be found in Treyz (1980 and 1993) and Treyz et al. (1991).

The model used in this study groups the state economy into five regions: Northwest, Southwest, North Central, South Central, and Eastern. It explicitly recognizes trade flows that exist between these regions, as well as between the regions and the rest of the world. Statewide impacts reported here represent the totals for the five regions.

Figure 1 is a graphical depiction of the research design and model used to derive the results of this study. First, a baseline for the economy including the operations of brewers is produced using the model. The model is then used again, with identical inputs – except that in this alternative scenario, the activity associated with brewers is removed from the economy. Thus, the operations of brewers are an economic stimulus that has produced a more robust state economy. This reflects the addition of the production, employment, and expenditures associated with these brewers, and also how the rest of the economy reacts to those changes. The difference between the baseline and alternative scenarios of the economy represents the economic impact of Montana's craft brewers.

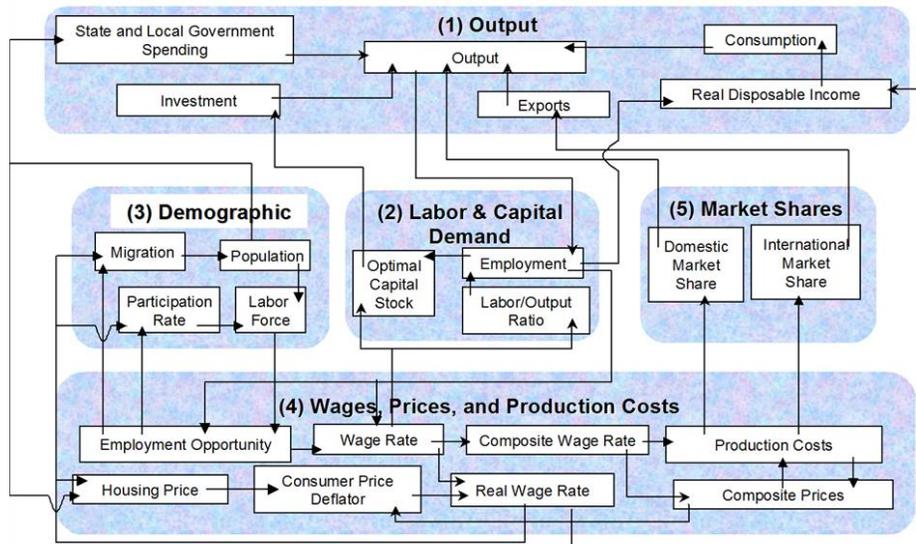
Figure 1.
Policy Analysis with the REMI Model



The model utilizes historical data on production, prices, trade flows, migration, and technological change to calibrate the relationship between five basic blocks of the regional economy as depicted in Figure 2: (1) output (gross sales), (2) labor and capital demand, (3) population and labor force, (4) wages, prices, & production costs, and (5) market shares. The changes in production, labor demand and intermediate demand caused by the operations of Montana craft brewers causes these blocks of the economy to react and adjust to a new equilibrium. As described above, the difference between the baseline and the alternate scenario is the ultimate impact of brewer activities.

Figure 2.

REMI Model Linkages (Excluding Economic Geography Linkages)



The essential philosophy of the model is that regions throughout the country compete for investment, jobs, and people. When events occur in a region, they set off a series of economic events that cause financial flows toward better investment and production opportunities, followed by a flow of workers and households toward employment opportunities and higher wages. The model embodies an 82-sector input-output matrix that describes the technological interdependence of production sectors of the economy, as well as extensive trade and capital flow data to determine the share of each sector's demand that can be met by local production.

2. Survey Findings

This study builds on the information gathered for the first study of the economic contribution of craft brewing in Montana, conducted in 2012. A four-year time series of brewer operations in the state is now available, showing the trends from 2010 through 2013. By the end of 2013, there were 40 breweries in operation in the state. Another 11 breweries were at various stages of the planning process, and several of those responded to the survey questions regarding prior year expenditures and planned capital investments.

The statewide data collected for this analysis showed that in 2013 Montana brewers directly accounted for nearly \$34 million in gross sales, 486 jobs, and \$9.5 million in employee compensation (including benefits). This represents a dramatic increase from brewer operations in 2010, with employment more than doubling while production and employee compensation increased by 49 and 84 percent, respectively, over the period (Table 1).

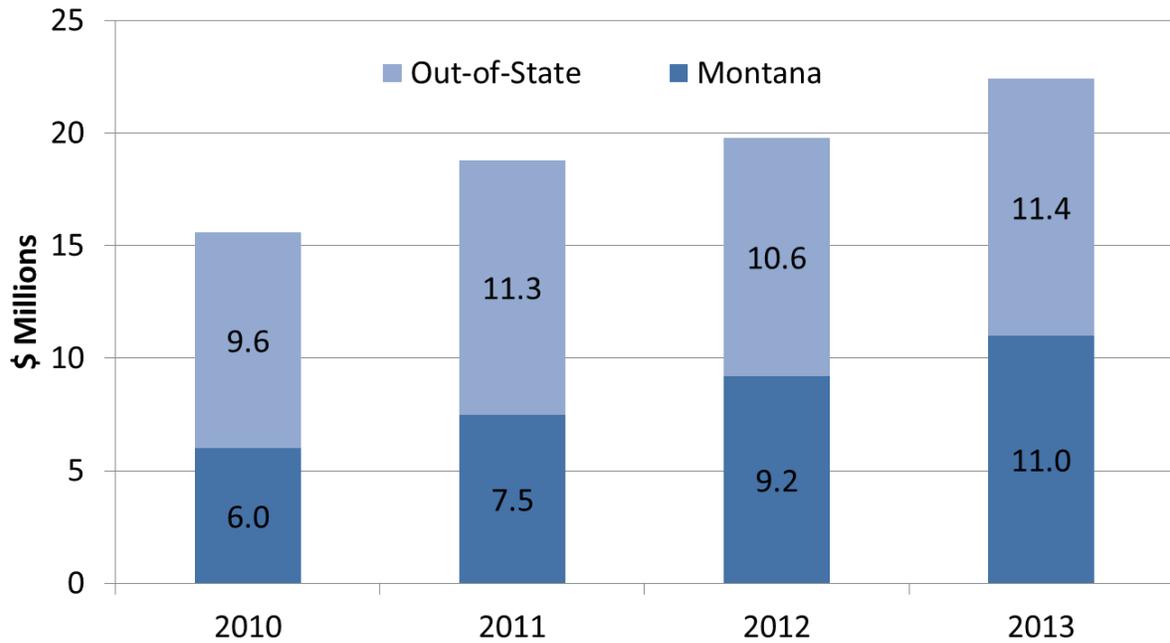
Table 1.
Montana Craft Brewer Operations
Survey Data Summary

Category	2010	2011	2012	2013	2010-2013
					Percent Change
Production (bbl)	87,442	102,925	114,340	130,121	49%
Sales (\$ Millions)	21.8	26.1	29.4	33.9	55%
Employment	231	320	388	486	110%
Compensation (\$ Millions)	5.2	6.4	7.9	9.5	84%
Expenditures (\$ Millions)	15.6	18.8	19.8	22.5	44%

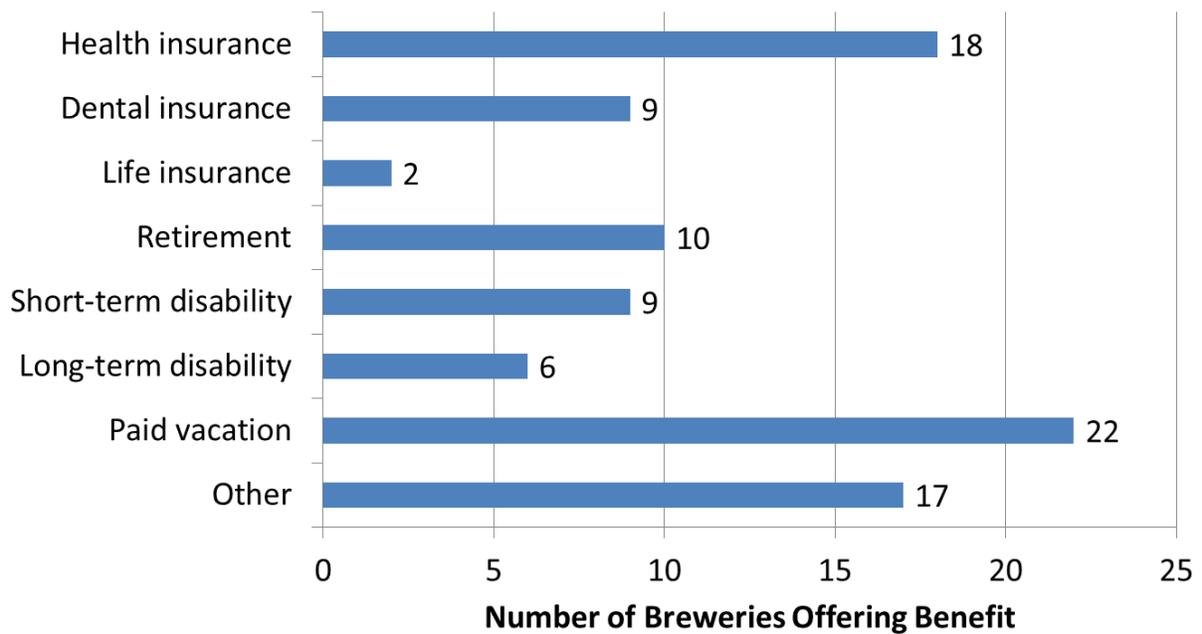
The expenditures of Montana breweries impact other industries in the state, and the data show a trend toward a larger proportion of the brewery vendor purchases being made within the state. In 2010, \$6 million or 38 percent of brewer purchases were from within the state. By 2013, that grew to \$11 million in Montana expenditures, increasing to 49 percent of the total (Figure 3).

Many Montana breweries provide a variety of benefits to employees (Figure 4). Paid vacation and health insurance are the most commonly offered benefits, offered by 22 and 17 Montana breweries, respectively, during 2013. The “Other” benefits offered by 16 breweries include a wide array of perks, from Health Savings Account contributions to discounts on beer and merchandise, holiday bonuses and assistance with education expenses.

**Figure 3.
Montana Brewery Expenditures**



**Figure 4.
Montana Brewery Employee Benefits**



Particularly with a sector that is growing as rapidly as Montana's craft brewing industry, impacts in terms of jobs and output (sales) tend to lag behind the activity generated in the economy. There are significant investments made before a single batch of beer is produced. Furthermore, existing breweries with plans to ramp up production to meet increasing demand also make major capital investments before the associated jobs and output are generated.

In order to get information on upcoming economic impacts of the industry, brewers were asked if they expect to make major capital investments during 2014 and 2015. Thirty-one of the 49 breweries that participated in the survey indicated having major capital investments planned for 2014 and 2015, summing to over \$9 million for those that provided a dollar value. This is a conservative estimate because some breweries indicated expecting a major investment but they did not specify a dollar value. However, the brewers' responses suggest continued growth for the industry in upcoming years.

3. The Economic Impact of Craft Brewing

Without the operations of Montana’s breweries, the state economy would look much different. The financial flows described above would not be present.

The impacts in this section refer to the difference between the baseline economy that includes craft brewing, and the alternative economy with the economic activities of breweries removed. The alternative simulation represents a new “resting point” for the Montana economy without the employment, purchases, and investment induced by brewer operations.

Impacts Summary

This study clearly shows that because of the operations of Montana’s breweries, the Montana economy is larger, more prosperous, and more populous. Taking into account the interactions between industry sectors and geographic regions, Montana’s craft brewers produce several net benefits to the state economy. Brewer operations result in the following ultimate economic impacts in the state:

- 673 jobs, concentrated in the manufacturing sector, but including jobs in a wide range of industries;
- more than \$18 million additional income received by Montana households;
- disposable household income that is more than \$15 million higher;
- sales from businesses and organizations based in Montana that are more than \$60 million higher, and
- Montana tax and non-tax revenues – not including property taxes – that are more than \$4 million higher.

Table 2.
The Economic Contribution of Craft Brewing in Montana
Impacts Summary

Category	Units	Total
Total Employment	Jobs	673
Personal Income	\$ Millions	18.1
Disposable Pers. Income	\$ Millions	15.3
Selected State Revenues	\$ Millions	4.1
Gross Sales	\$ Millions	60.2
Population	People	117

Employment Impacts

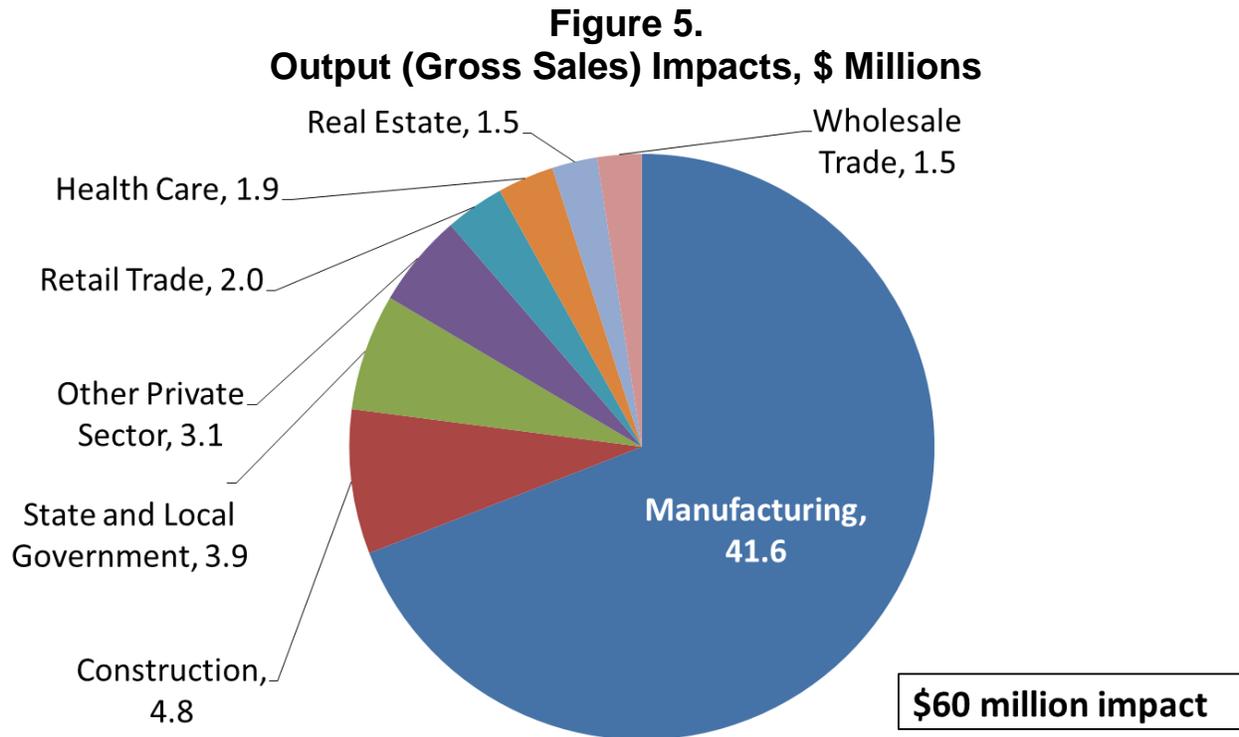
While employment impacts from brewer operations are concentrated in the manufacturing sector, which includes craft brewing, several other sectors are also supported by the activities of Montana’s brewers, including construction, state and local government, and retail trade (Table 3). The spending of workers employed by breweries, as well as the vendor purchases of breweries, are the drivers that support additional jobs outside of the manufacturing sector.

Table 3.
Employment Impacts

Industry	Impact
Construction	48
Manufacturing	488
Retail Trade	26
Health Care and Social Assistance	17
Accommodation and Food Services	9
Other Services, except Public Administration	12
Other Private Sector	34
State Government and Local Government	39
TOTAL	673

Gross Sales Impacts

The operations of Montana brewers have a positive effect on gross sales of businesses not only in the manufacturing sector, but across a broad range of other sectors of the Montana economy as well (Figure 5).



With brewing falling under the major industry heading of manufacturing, Montana's manufacturing sector has the largest output gain of \$41.6 million due to craft brewer operations. Furthermore, the sales of all kinds of Montana entities benefit from an economy including craft brewing, notably construction, as well as state and local government, retail trade and health care.

Compensation Impacts

Wages and salaries paid to Montana workers are higher by \$13.6 million per year in an economy with craft brewers compared to one without, and when benefits are added to that, the additional compensation is more than \$19 million annually. By adding in income of proprietors and the self-employed, that figure adds up to an impact of more than \$22.5 million supported by the operations of Montana brewers. The additional jobs supported by the brewing sector have average earnings of \$33,390 per job.

Table 4.
Compensation Impacts

Category	Units	Impact
Wages and Salaries	\$ Millions	13.6
Compensation	\$ Millions	19.2
Earnings	\$ Millions	22.5
Earnings per Job	\$ Dollars	33,390

Population Impacts

An economy with craft brewing presents job opportunities that can be expected to attract new Montana residents and a net increase in population. These population impacts can either be due to workers coming from outside of Montana's borders seeking economic opportunities, or by Montana retaining residents due to the larger economy afforded by a scenario "with" versus "without" brewing.

Table 5.
Population Impacts

Age Cohort	Population Increase
Ages 0-14	29
Ages 15-24	24
Ages 25-64	64
TOTAL	117

The population impact is mainly in the working age group of 25-64 with an increase of 64 people. Additionally, the activities of brewers have a population impact of 24 people ages 15-24, and another 28 that are age 14 or younger (Table 5). New Montana residents attributable to the craft brewing sector tend to be in the younger age cohorts. Workers migrating for job opportunities are often younger, and these workers often bring children with them, or have children after relocating.

State Revenue Impacts

Montana craft brewers clearly have an impact on governments as well as other business sectors. The larger and more populous economy due to brewer operations generates a larger tax base. Table 6 includes some of the additional state revenues that are generated in a Montana economy that includes the operations of brewers.

Table 6.
Selected State Revenue Impacts, \$ Millions

Category	Impact
Intergovernmental Revenue	0.3
License Taxes	0.2
Individual Income Tax	0.9
Corporate Income Tax	0.2
Other Taxes	1.2
Current Charges	0.4
Insurance Trust Revenue	0.9
TOTAL	4.1

4. Summary and Conclusion

The purpose of this study was to evaluate the economic impact of Montana's craft brewers. The Bureau of Business and Economic Research (BBER) of the University of Montana School of Business Administration was commissioned by the Montana Brewers Association (MBA) to undertake this task, which is the second such study done at the request of the MBA (Sorenson et al. 2012).

The survey results from this study indicate rapid growth in Montana's brewing sector. By the end of 2013 there were 40 breweries operating in the state, and Montana ranked third in number of breweries per 100,000 adults over age 21, according to the Brewers Association. From 2010 to 2013, Montana craft beer production increased by 49 percent, while sales increased by 55 percent and expenditures (vendor purchases) were up by 44 percent. The portion of brewery purchases made in Montana increased more than out-of-state expenditures, going from 39 percent to 49 percent of total expenditures. Montana brewery employment more than doubled from 231 to 486 jobs, and compensation increased 84 percent during the period.

We found that the activities of Montana brewers have created a more prosperous Montana economy with more gross sales, jobs, and compensation than a Montana economy without these firms, which continues the trend identified in the 2012 study of the brewing sector. Brewing operations cause direct and indirect impacts through paying wages and salaries and by stimulating increased purchases between vendors. The value added to their products as they move through the supply chain from brewers to wholesalers and retailers further stimulates the economy. Finally, induced effects are generated by the new jobs and personal income gains attributable to brewer operations, leading to more goods and services being purchased from all kinds of businesses throughout the state.

Our study approach was to look at two scenarios of the Montana economy – one scenario that includes the operations of craft brewers, and another scenario that removes these activities through the use of an economic impact modeling software package. By looking at the difference in the two economic scenarios, we identified the ultimate economic impacts due to Montana craft brewer operations in terms of jobs, population, and income flows to individuals, business, and state government.

The results of this study highlight the growing importance of the brewing sector in the Montana economy. In terms of jobs, income, sales, and revenue generation, the economic impacts of this sector are evident across industries and among regions of the state.

5. References

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