

# The Economic Importance & Impact of Oregon's Food & Beverage Manufacturing Industry

Performed For:

**Oregon State University**

Performed By:

**TEconomy Partners, LLC**

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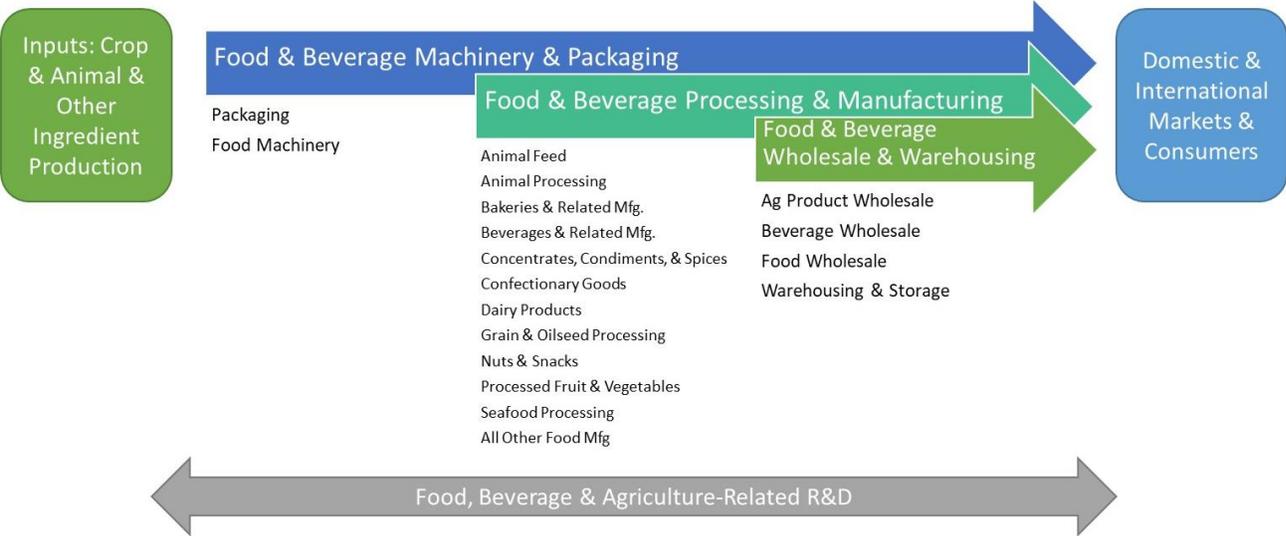
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# Introduction

With deep connections to Oregon’s agricultural heritage and its advanced manufacturing strengths, food and beverage manufacturing is a vital economic driver for the state, yielding a significant economic impact across both urban and rural areas alike. In recent years, the volatility introduced by the COVID pandemic has only highlighted the importance of this economic driver for Oregon. Unprecedented supply chain challenges, new waves of technological advancements, and everchanging consumer preferences for healthier, environmentally conscious, and locally grown foods have provided new opportunities for Oregon’s food and beverage manufacturers, but also unique challenges.

A robust and thriving food and beverage manufacturing industry sector goes well beyond manufacturing activities alone. The entire food and beverage-related “value chain”—the holistic set of value-adding industry activities from research and development of new products and ingredients and other inputs, on through food and beverage processing and manufacturing, into packaging, and through a high-functioning distribution network on to store shelves and home cupboards—is critical to the vibrancy and economic health of the industry. Figure 1 illustrates this complex value chain and highlights the detailed “subsectors” that comprise the food and beverage manufacturing industry.

**Figure 1: The Food and Beverage Manufacturing Value Chain**



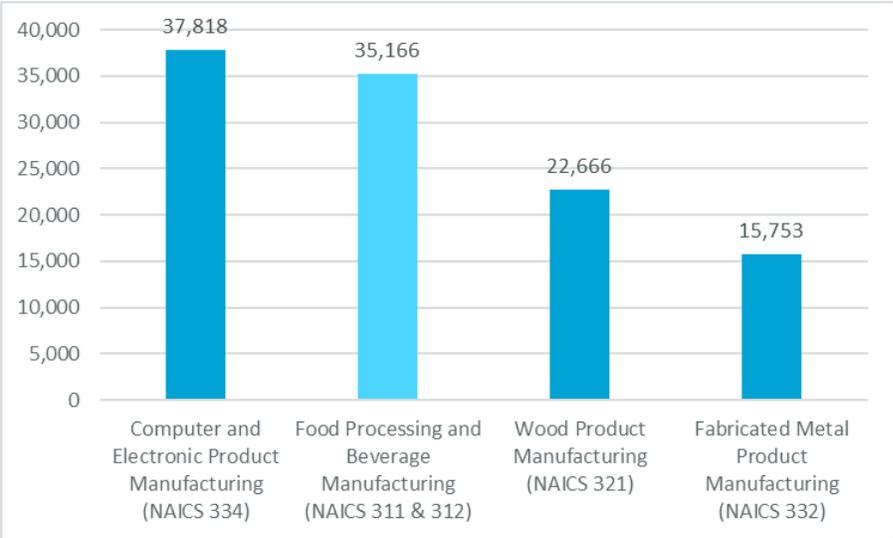
Source: TEconomy Partners, LLC

The following analysis contains a detailed assessment of Oregon’s food and beverage manufacturing industry, including its overall performance and its broader economic impacts. Further, this analysis assesses the workforce and talent needs for the food and beverage industry in Oregon, and reviews innovation-related activities. Taken together, this assessment describes the overall importance of the food and beverage industry to Oregon’s economy and how the growth and development of the industry leads to programmatic opportunities for the proposed Oregon Center of Innovation Excellence for Resilient Food and Beverage Manufacturing.

# Industry Analysis

Every state has some level of food and beverage manufacturing, so why should Oregon direct and focus resources on its continued development? As shown in Figure 2, food and beverage manufacturing employs more than 35,000 workers; second only to the state’s significant computer and electronic product (semiconductor) manufacturing industry.

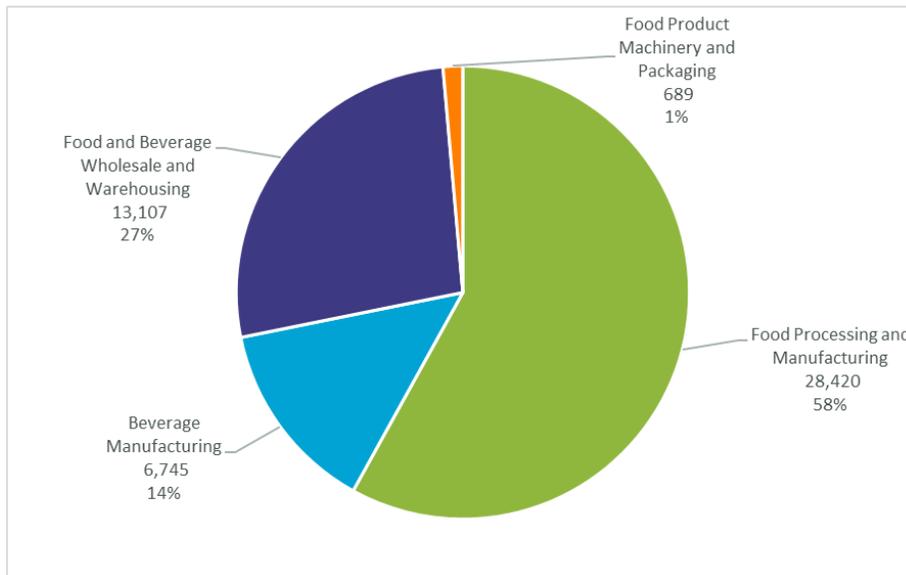
**Figure 2. Oregon’s Principal Manufacturing Industries, 2021 Employment**



Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

Yet even this does not tell the complete Oregon food and beverage “industry” story. Beyond the actual manufacturing of food products and beverages, Oregon has significant employment in food and beverage wholesale distribution that moves food and beverage products to consumers throughout the state, the nation, and to global markets. Additionally, there is a small supporting sector in food product machinery and packaging. Together, Oregon’s food and beverage industry directly employs nearly 49,000 workers across the diverse products and activities of the industry (Figure 3).

**Figure 3. Distribution of Oregon’s Food and Beverage Industry Employment, by Major Sector**



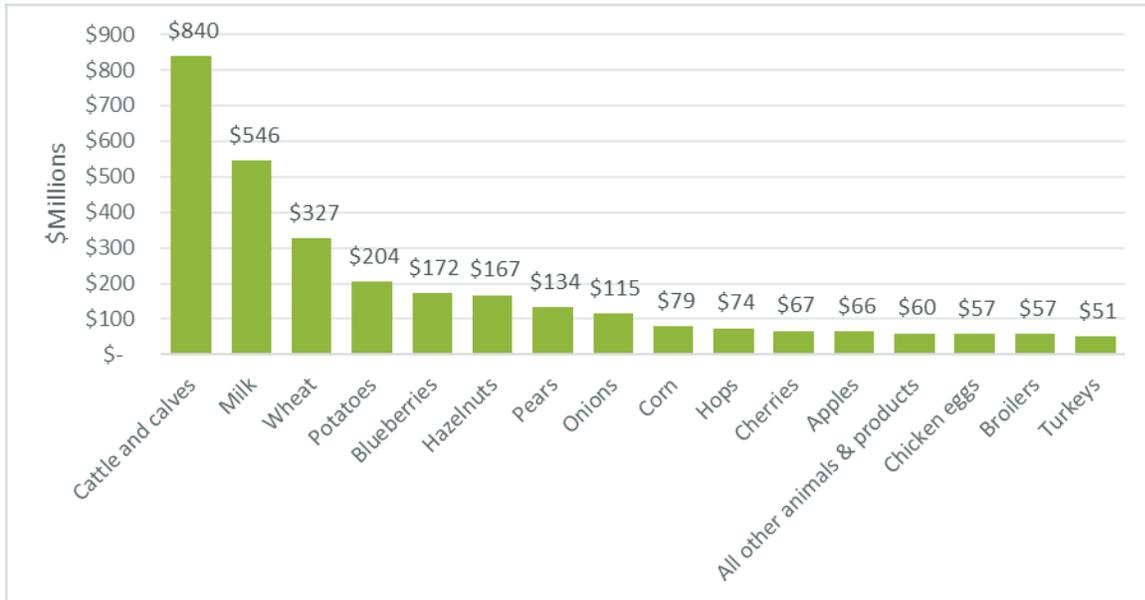
Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3). Note: the major sector, wholesale distribution and warehousing, does not include general line grocery wholesale, which is typically the moving of more generic products and non-food products to retail grocery store chains.

While agricultural production is not the sector of the Oregon economy that is being analyzed for this study, it is important to note that food and beverage manufacturing enables Oregon to create and capture added value from its agricultural production activities. From a total dollar amount basis, Oregon produces significant levels of beef cattle, dairy products, wheat, potatoes, and many other food-related commodities (Figure 4). From a specialization (or LQ<sup>1</sup> of greater than 1.2) perspective, Oregon is a key U.S. producer of a significant number of specialty crops, including hazelnuts, pears, spearmint and peppermint oils, blueberries, green peas, hops, onions, and more (Figure 5). As will be shown, many of the crops and livestock are important components of the state’s food and beverage industry production.

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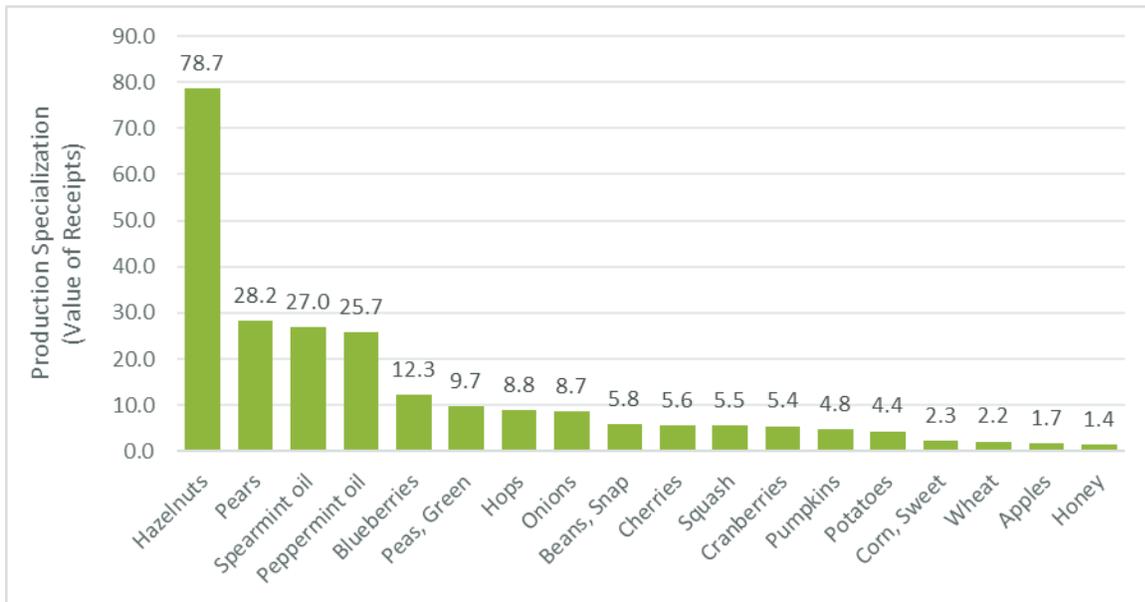
<sup>1</sup> Location quotients (LQs) are a standard measure of the concentration of a particular industry measure in a state or region relative to the nation. Typically, a LQ is the share of total state or regional employment in the particular industry divided by the share of total industry employment in the nation. LQs can also be used to examine concentration with regard to other measures such as output or GSP. An LQ greater than 1.0 for a particular industry indicates that the region has a greater relative concentration, whereas an LQ less than 1.0 signifies a relative underrepresentation. An LQ greater than 1.20 denotes a concentration significantly above the national average. In this analysis, regional specializations are defined by LQs of 1.20 or greater.

**Figure 4. Key Oregon Agricultural Production by Total Receipts, 2021**



Source: TEconomy’s analysis of USDA Economic Research Service, Farm Cash Receipts by State, 2021.

**Figure 5. Key Oregon Agricultural Production by Specialization (LQ), 2021**



Source: TEconomy’s analysis of USDA Economic Research Service, Farm Cash Receipts by State, 2021.

Table 1 provides a performance overview of Oregon’s four major food and beverage industry sectors. Three of the four major sectors are regional employment specializations with location quotients (LQ) above the national average of 1.00, ranging from food and beverage wholesale being 28 percent more concentrated to beverage manufacturing being 77 percent more concentrated. Similarly, these same three major sectors are also considered to be regional specializations with regard to Gross State Product (GSP or value-added output).

All four major sectors (and the industry overall) experienced employment growth from 2014 to 2019 and all four major sectors experienced employment declines during the depths of the pandemic through 2021. Overall, three major sectors – food processing and manufacturing, beverage manufacturing, and food and beverage wholesale and warehousing – employed more workers in 2021 than they did in 2014, even if they have not returned to their pre-pandemic peak. Though a positive sign for the state’s industry, the employment performance of these major sectors is still a concern. Over the 2014 to 2021 period, though growing, only in food beverage wholesale and warehousing did Oregon’s major sector outpace the nation (exceeding national growth by 5.3 percentage points).

**Table 1. Overview of the Oregon Food and Beverage Industry by Major Sector**

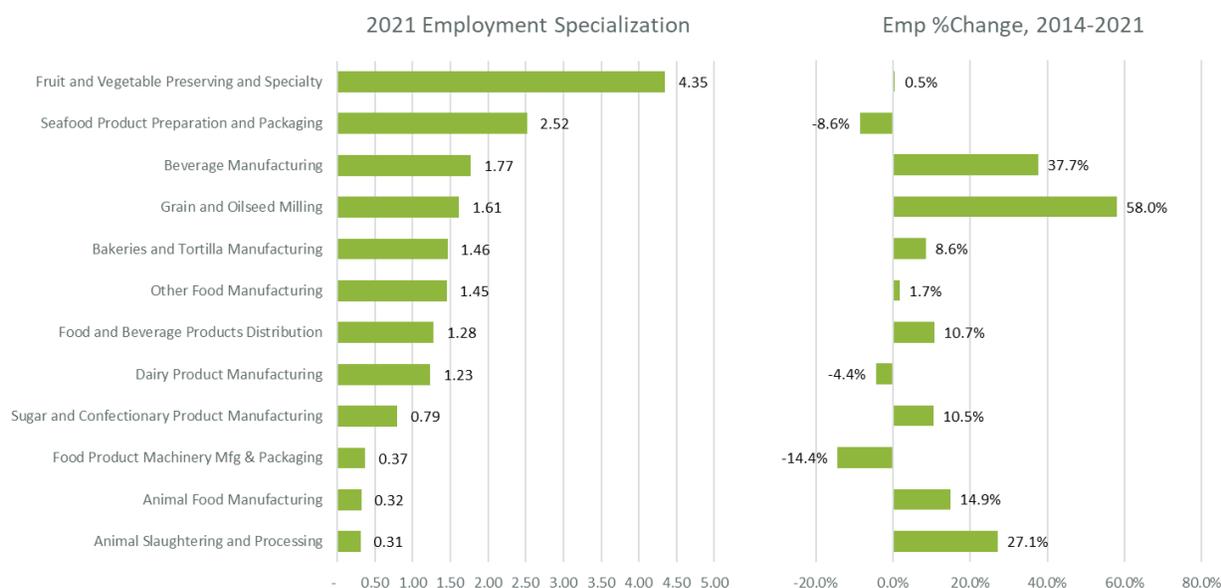
Data Measure	Oregon Food and Beverage – Major Sector				Oregon Food and Beverage Industry, Total
	Food Processing and Manufacturing, Total	Beverage Manufacturing, Total	F&B Wholesale & Warehousing, Total	Food Product Machinery and Packaging, Total	
<b>2021 Metrics</b>					
2021 Employment	28,420	6,745	13,107	689	48,961
2021 Establishments	903	612	718	35	2,269
2021 Average Employment	31.5	11.0	18.3	19.5	21.6
2021 Employment Specialization	1.33	1.77	1.28	0.35	1.31
2021 Average Wages	\$62,350	\$59,335	\$76,249	\$85,828	\$65,986
2021 Productivity	\$124,871	\$194,750	\$136,617	\$149,226	\$137,985
2021 GSP (\$M)	\$3,548.9	\$1,313.6	\$1,790.6	\$102.8	\$6,755.9
2021 GSP Specialization	1.29	1.72	1.28	0.38	1.30
<b>2014 Metrics</b>					
2014 Employment	27,007	4,897	11,838	805	44,548
2014 Establishments	691	378	497	28	1,594
<b>Recent Oregon Jobs Performance</b>					
Emp %Change, 2014-2019	10.7%	45.8%	17.0%	3.4%	16.1%
Emp %Change, 2019-2021	-4.9%	-5.5%	-5.4%	-17.2%	-5.3%
Emp %Change, 2014-2021	5.2%	37.7%	10.7%	-14.4%	9.9%
Total Jobs Change, 2014-2021	1413	1848	1268	-116	4413
Relative Emp %Change, 2014-2019	0.6%	5.4%	7.2%	-5.3%	3.8%
Relative Emp %Change, 2019-2021	-4.6%	-10.5%	-1.4%	-21.9%	-4.7%
Relative Emp %Change, 2014-2021	-4.4%	-9.7%	5.3%	-28.2%	-1.7%
<b>Recent Oregon Economic Performance</b>					
GSP %Change, 2014-2019	28.5%	48.5%	38.9%	13.6%	34.6%
GSP %Change, 2019-2021	18.7%	10.2%	5.1%	-7.5%	12.7%
GSP %Change, 2014-2021	52.5%	63.6%	46.0%	5.1%	51.7%
Relative GSP %Change, 2014-2019	5.6%	20.9%	15.2%	-9.4%	10.8%
Relative GSP %Change, 2019-2021	-3.2%	-8.4%	-1.9%	-24.3%	-4.1%
Relative GSP %Change, 2014-2021	2.7%	12.3%	13.6%	-38.6%	7.1%

Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

From an economic perspective taken from the vantage point of value-added output (or contributions to GSP), the performance of the major sectors, and hence the industry overall, was significantly improved. With the exception of food product machinery and packaging sector’s performance during the pandemic (2019-2021), the performance by the major sectors over the three periods examined was one of very strong economic growth. Though it appears that the pandemic took a somewhat larger toll on Oregon’s Food and Beverage Industry than it did on the nation overall, over the full 2014-2021 period, three major sectors – food processing and manufacturing, beverage manufacturing, and food and beverage wholesale and warehousing – outperformed the nation.

Within the three major sectors, some subsectors provide significant overall context as shown in Figure 6. Additional details for these subsectors can be found below and in Appendix 1.

**Figure 6. Key Subsector of Oregon’s Food and Beverage Industry**



Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

## Food Processing

Key subsectors in terms of total employment include:

***Fruit and vegetable preserving and specialty manufacturing*** with 9,981 workers (6,969 are in frozen food related NAICS codes) and an LQ of 4.35.

- **Data Perspectives:** key large producer(s) within each NAICS driving total employment and average employment up compared to U.S.; most operations appear to be more labor-intensive production; significant specialization for Oregon (over three times more specialized in Oregon compared to US average) but with limited employment growth; every NAICS within subsector is specialized in Oregon.
- **Key Industrial Operations:** North Pacific Cannery & Packers (NORPAC), Baxters NA (contract mfg./co-pack), Lamb Weston, National Frozen Foods, Rainsweet, Smith’s Frozen Foods, TreeTop

(Sabroso); Pacific Coast Producers, Gray & Company (CherryMan), St. Cousair, Inc. (co-pack), Muirhead Canning (Hood Crest).

- **U.S. Market Forecast:** Expected to grow by 7.2 percent from 2021 to 2028.<sup>2</sup>

**Bakeries and tortilla manufacturing** with 5,853 workers (4,402 are in retail and commercial bakeries) and an LQ of 1.46.

- **Data Perspectives:** A key employer across the state. Retail bakeries consist of primarily small operations where job and economic performance has outpaced US over the 2014-2021 period. Commercial bakeries continued to expand. Some large and emerging national/regional operators offset by many smaller than US average operations. As with retail bakeries job and economic performance has outpaced US over the 2014-2021 period.
- **Key Industrial Operations:** Franz, Dave's Killer Bread, Portland French Bakery; Mission Foods, Don Pancho, Portland Specialty Baking, Marsee Baking, St. Honore Boulangerie.
- **U.S. Market Forecast:** Expected to grow by 1.2 percent from 2021 to 2028.

**Other (miscellaneous) food manufacturing** with 4,498 workers and an LQ of 1.45.

- **Data Perspectives:** Consists of a variety of different component NAICS many with market leaders. Overall, a key subsector of Oregon's food and beverage industry.
- **Key Industrial Operations:** Reser's Fine Foods, Kettle Foods, Pacific Coast Fruit Company, Mission Foods (Gruma), Farmer Brothers (Boyd's), Calbee North America.
- **U.S. Market Forecast:** Expected to grow by 4.9 percent from 2021 to 2028.

**Dairy product manufacturing** with 2,504 workers and an LQ of 1.23.

- **Data Perspectives:** Overall subsector slightly specialized. Economic growth with reduced jobs indicates some level of productivity improvements over the 2014-2021 period; Oregon subsector's performance, however, lagged national level subsector performance. Many operators have facilities across multiple NAICS codes.
- **Key Industrial Operations:** Tillamook County Creamery Association, Umpqua Dairy Products.
- **U.S. Market Forecast:** Expected to grow by 10.3 percent from 2021 to 2028.

## Beverage Manufacturing

**Wineries** with 3,491 workers and an LQ of 3.77.

- **Data Perspectives:** Significant specialization at nearly 4 times the U.S. average. A few larger employers, but overall NAICS class had strong employment growth (just under U.S. growth rate) and significant overall economic growth performance outpacing the NAICS class at the national level.
- **Key Industrial Operations:** Willamette Valley Vineyards, King Estate Winery, Lion Nathan.
- **U.S. Market Forecast:** Expected to grow by 7.4 percent from 2021 to 2028.

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<sup>2</sup> U.S. Market Forecasts shown in this section were obtained from IBISWorld. Data are NAICS-based total U.S. revenue forecasts (downloaded February 6, 2023).

**Breweries** with 2,387 workers and an LQ of 1.94.

- **Data Perspectives:** Continued movement, consolidation, and growth in the craft brew market is reflected in employment specialization and job growth combined with declining average size establishments in Oregon. As well as this NAICS class has performed in Oregon it has still been significantly outpaced at the national level in terms of employment and to a much lesser degree economic performance.
- **Key Industrial Operations:** Deschutes Brewery, Rogue Brewery, Widmer Brothers Brewing Company (Craft Brew Alliance), Full Sail Brewing, McKenzie Brewing, Terminal Valley, Pelican Brewing Company.
- **U.S. Market Forecast:** Expected to grow by 10.3 percent from 2021 to 2028.

## Food and Beverage Wholesale and Warehousing

Key NAICS components other (miscellaneous) grocery products wholesale with 4,567 workers, beer and ale wholesale with 2,702 workers, and fresh fruit and vegetable wholesale with 2,028 workers. These latter two components are important as production activities are often housed within these wholesale distribution activities (e.g., brewing; fresh cut produce).

- **Data Perspectives:** Distribution (including refrigerated warehousing) employment account for 27 percent of the entire Oregon Food & Beverage Industry as defined for this analysis. Overall performance growth outpaces the subsector at the national level.
- **Example Operations:** Many of the operations mentioned in other subsectors also have distribution centers in Oregon. Additional operations include: United Salad Co., Del Monte Fresh Produce, Interstate Meat Distributors, KeHE Distributors, Hood River Juice (Ryan's), Bigfoot Beverages, Lieb Foods (cold storage).

# Economic Impact Analysis

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The importance of a state's industry is not only measured by its direct size and performance, but also by the additional economic activity it generates within the state. Measuring the size and character of this additional economic activity is performed through an economic impact analysis of the Oregon Food and Beverage Industry (see textbox for additional information regarding input-output analysis).

## Overview of Input-Output Analysis

Input-output (I-O) analysis models the interrelationships and financial transactions between economic sectors. I-O multipliers are based on the flow of commodities between industries, consumers, and institutions in a state or regional economy. The analysis uses an Oregon state-specific I-O model developed by IMPLAN. The IMPLAN models, used by TEconomy, are the most widely deployed economic impact models in the nation and are based on the U.S. Bureau of Economic Analysis (BEA) national accounts data, supplemented with state-level employment data from the U.S. Bureau of Labor Statistics (BLS) and other economic data from BEA, the U.S. Bureau of the Census, and other federal agencies. The resulting analysis calculates and estimates three types of effects or impacts:

- **Direct Effect:** the specific impact of the direct expenditures of the agbioscience industry companies
- **Indirect Effect:** the impact of national or in-state suppliers to these companies
- **Induced Effect:** the additional economic impact of the spending of employees and suppliers' employees
- **Total Impact:** the sum of the three effects combined.

The I-O analysis effectively models the multiplier effects (also known as "ripple effects") that originate from food and beverage industry company expenditures within the Oregon economy.

The IMPLAN I-O model is used to derive estimates for five impact metrics:

- **Output** (also known as production, sales, or business volume) is the total value of the goods and services produced in the economy.
- **Employment** is the total number of jobs supported and includes the direct employment at industry operations.
- **Labor Income** is the total amount of income, including salaries, wages, and benefits (including both social security and unemployment insurance), received by employees, owners, and others in the related supply chain.
- **Value-Added** is the contribution to growth in gross domestic product (GDP).
- **Government Revenues** includes estimates of revenues generated for local/county, state, and federal governments through the economic activity measured. Negative tax revenue numbers indicate instances when subsidy and other government payments estimates were larger than tax revenues estimates generated by the IMPLAN model.

To perform this analysis, detailed sector level employment estimates (as shown in Table 1 and Appendix Table A1) are used to drive the Oregon model. Table 2 summarizes and Figure 7 illustrates the results of the economic impact analysis of the Oregon Food and Beverage Industry. The nearly 49,000 industry jobs generate and support an additional 72,000 Oregon jobs for a total employment impact of more than 121,000 jobs in the state. For every direct job in the Oregon Food and Beverage industry, another 1.48 jobs are generated and supported throughout the state economy (employment multiplier of 2.48).

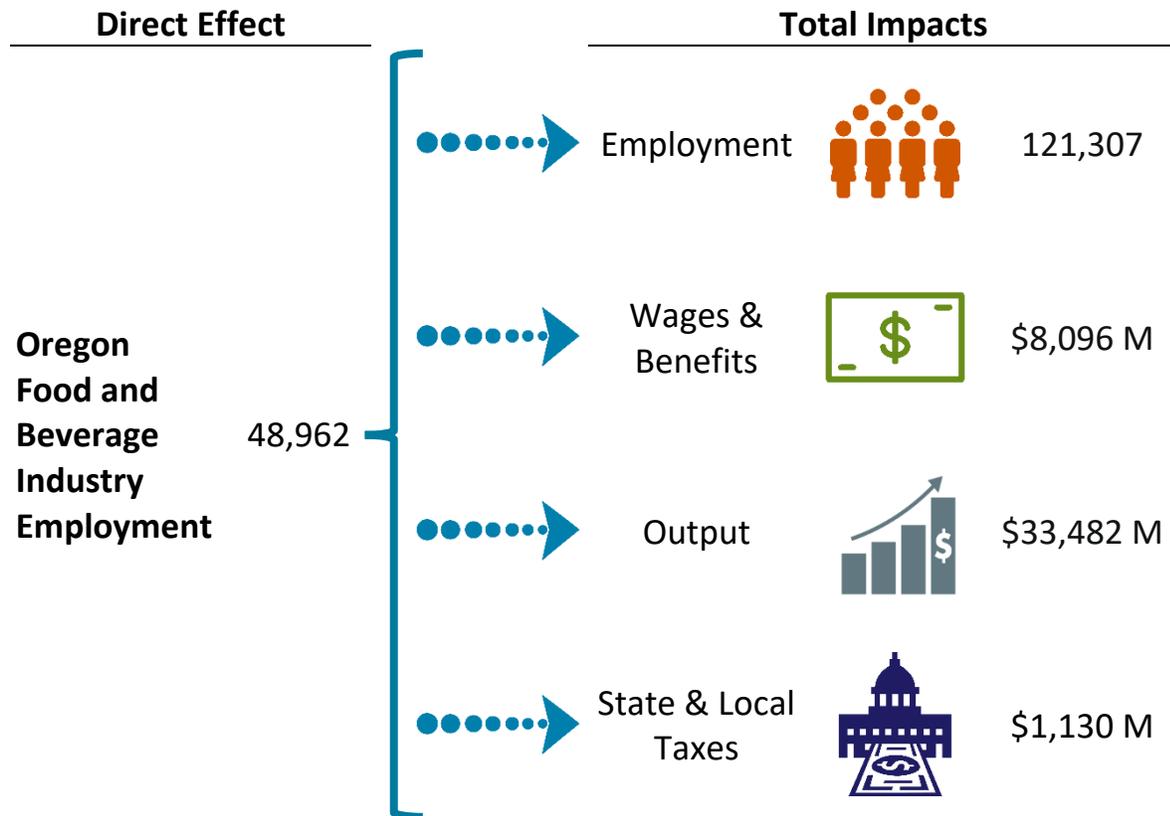
The IMPLAN model estimates that the Food and Beverage Industry directly generated nearly \$20.1 billion in sales (output) in 2021. The purchases made from Oregon suppliers and the spending of worker wages within the state generated nearly \$13.4 billion in additional sales for a total economic impact of \$33.5 billion. Every \$1 of sales of the Oregon Food and Beverage Industry generates an additional \$0.67 in the state economy (output multiplier of 1.67).

**Table 2: 2021 Economic Impact of the Oregon Food and Beverage Industry**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	48,962	\$3,210.41	\$5,741.87	\$20,086.51	\$293.10	\$293.15	\$643.91
Indirect Effect	42,208	\$3,069.64	\$4,163.25	\$8,162.16	\$93.89	\$175.03	\$609.61
Induced Effect	30,137	\$1,815.81	\$3,143.43	\$5,232.84	\$126.90	\$148.25	\$149.27
<b>Total Impact</b>	<b>121,307</b>	<b>\$8,095.87</b>	<b>\$13,048.54</b>	<b>\$33,481.51</b>	<b>\$513.88</b>	<b>\$616.42</b>	<b>\$1,402.78</b>
<i>Multiplier</i>	2.48	2.52	2.27	1.67			

Source: TEconomy’s analysis using IMPLAN 2021 State of Oregon model. Note the direct value added (contribution to GSP) calculations developed within the IMPLAN model are more conservative than those provided by the analysis using data from Lightcast in Table 1.

**Figure 7: Summary of 2021 Economic Impact of the Oregon Food and Beverage Industry**

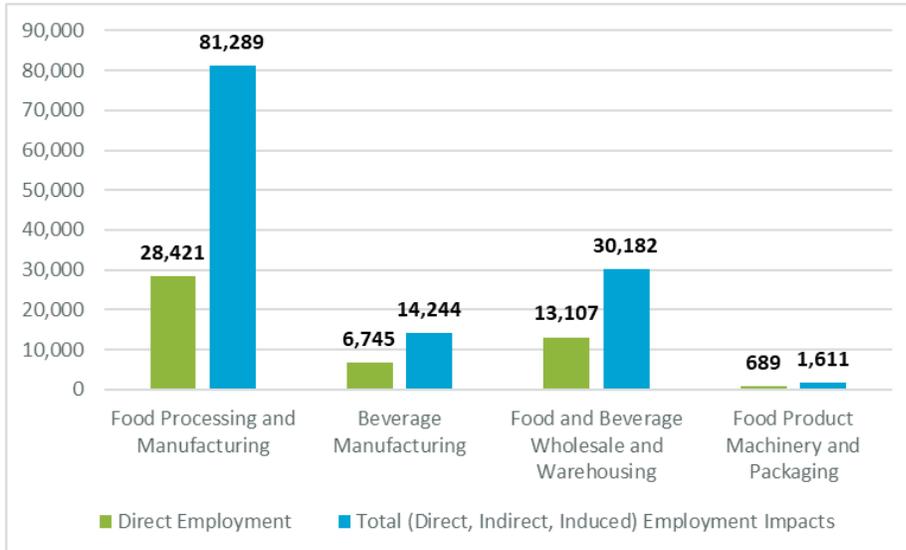


Source: TEconomy’s analysis using IMPLAN 2021 State of Oregon model.

The role of the Oregon Food and Beverage Industry in the state’s economy can also be analyzed based on the level of stand-alone contribution to Oregon’s Gross State Product (GSP) (measured by the amount of Value Added it provides to the economy). After removing the costs of all inputs (including labor), the IMPLAN model estimates that the industry directly generated more than \$5.7 billion toward GSP and generated and supported more than \$13 billion in total GSP in 2021. For every \$1 directly generated by the Food and Beverage Industry, an additional \$1.27 was generated throughout the rest of state’s economy (value added multiplier = 2.27).

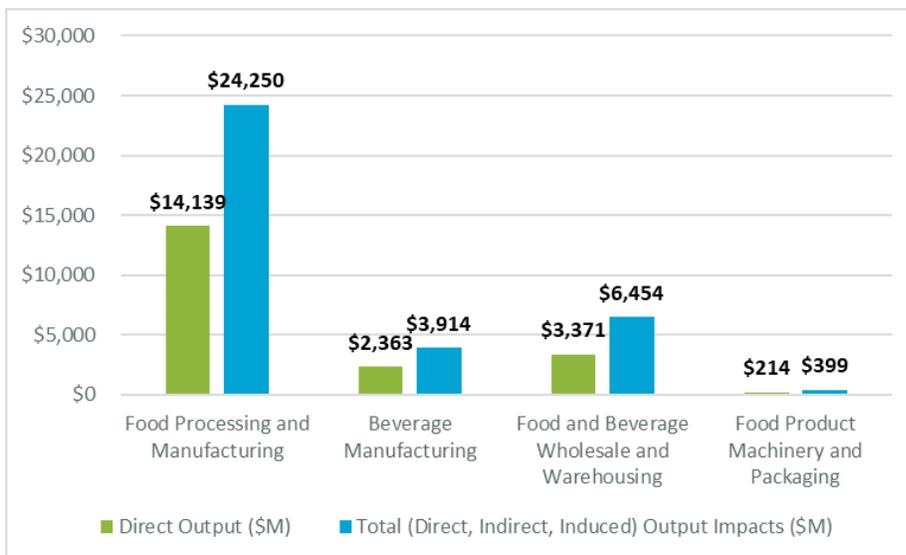
To provide some additional perspective on the role each major sector plays within the state’s economy, Figure 8 shows the direct and total employment impacts and Figure 9 shows the direct and total output impacts of the four major sectors.

**Figure 8. Direct and Total Employment Impacts by Major Sectors**



Source: TEconomy’s analysis using IMPLAN 2021 State of Oregon model.

**Figure 9. Direct and Total Output Impacts by Major Sectors**



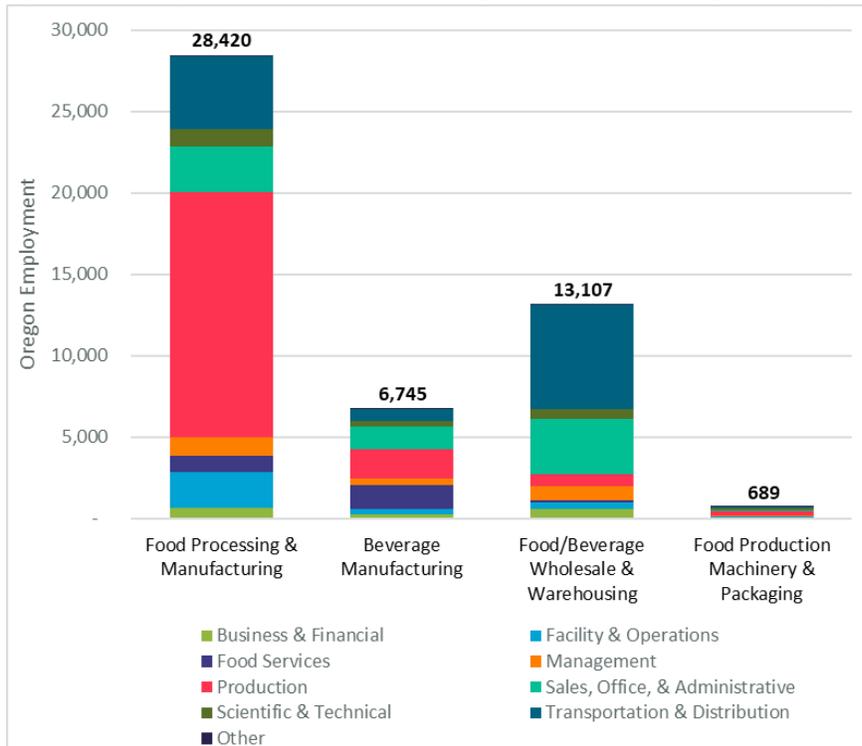
Source: TEconomy’s analysis using IMPLAN 2021 State of Oregon model.

Not surprisingly, given its overall share of the industry, Food Processing and Manufacturing is responsible for the largest total employment and output impacts with an employment multiplier of 2.86 and an output multiplier of 1.72. Detailed impact tables for each of the four major sectors and key subsectors within the Food Processing and Manufacturing and Beverage Manufacturing sectors are provided in Appendix 2.

# Workforce and Talent Assessment

Each of the four major industry sectors possesses unique employment characteristics. Figure 10 details how, like most manufacturing sectors, Food Processing and Manufacturing is dominated by production workers, accounting for more than half (15,000 workers; 53 percent) of the sector’s workforce. Similar to other distribution-centric industries, food and beverage wholesale and warehousing have significant levels of transportation and distribution employment (16 and 49 percent, respectively). A key challenge and opportunity of the proposed Center of Innovation Excellence will be to train, educate, and upskill employees across key business, technical, operations, and management functions and occupations.

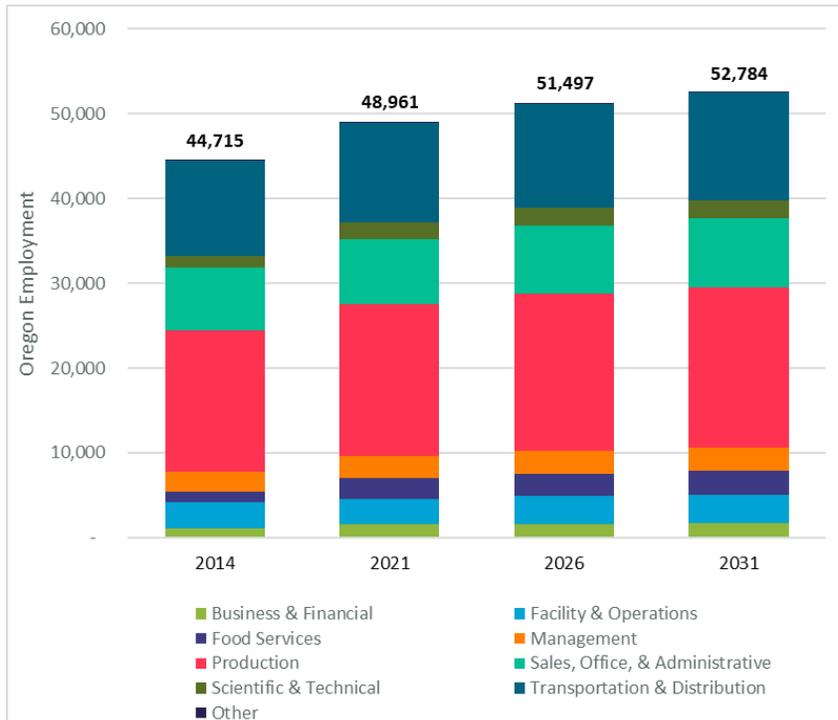
**Figure 10. Occupational Distribution of Oregon Food and Beverage Industry Employment, by Major Sector (2021)**



Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

Figure 11 provides a look at this occupational structure for the overall Oregon Food and Beverage Industry as captured across four time periods – current estimates for 2014 and 2021 and forecasts for 2026 and 2031. This figure provides a number of employment characteristics. First, the graphic shows from an occupational perspective the same level of 2014-2021 growth described in Table 1. Second, a similar growth in employment is forecast for the 2021-2031 period—**the Oregon Food and Beverage Industry is forecast to grow by more than 3,500 workers between 2021 and 2031 or 6.8 percent.** Third, as a *product producing* industry, industry growth typically includes increases in production and transportation-related employment. Fourth, the role of business and technical innovation is likely to become a more important industry driver as employment is forecast to increase across the business, technical, operations, and management functions and occupations.

**Figure 11. Occupational Distribution Within Oregon’s Food and Beverage Industry Employment, Actuals (2014, 2021) and Forecasts (2026, 2031)**



Source: TEconomy’s analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

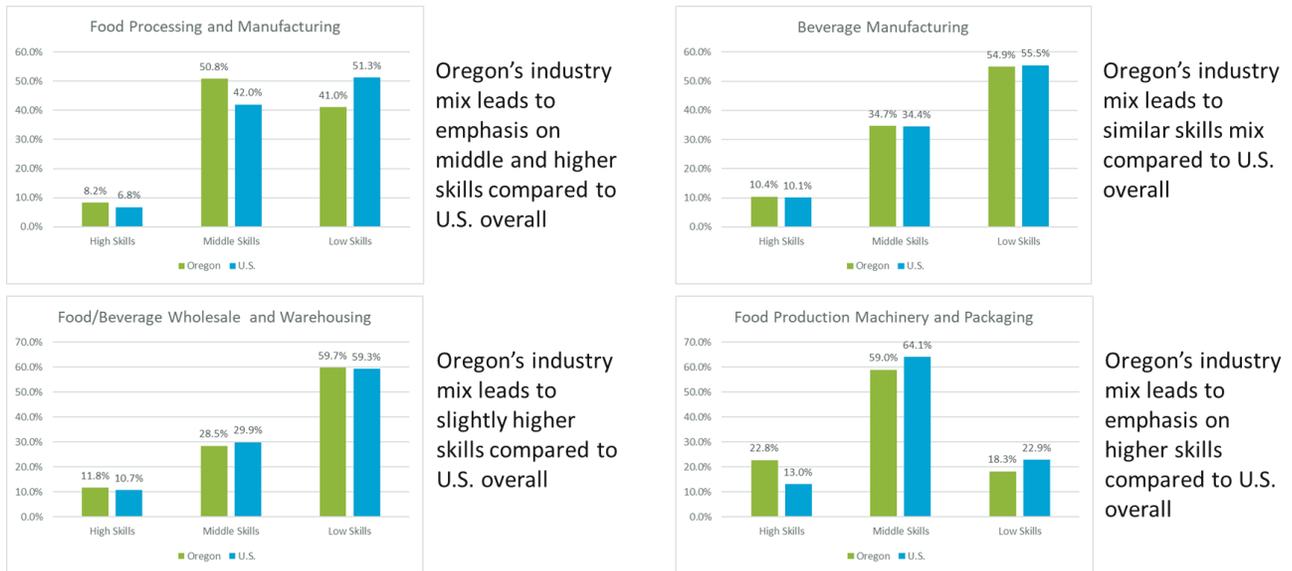
It is important to understand and recognize that the skill mix (see Categorizing Occupational Skills textbox) within these occupational categories vary widely and also reflect the diverse, unique, and productive nature of the Oregon Food and Beverage Industry. Figure 12 provides a high-level profile of the current broad skill mix across each of the four major sectors. The figure shows that for the largest employment sector, food processing and manufacturing, Oregon’s skill mix consists of a higher than national average share of middle skills and high skills.

### Categorizing Occupation Skills

Three broad categories of occupations by typical entry-level/minimum educational and experience requirements:

- **High-Skilled Occupations:** Generally requiring Bachelor’s & higher degrees
- **Middle-Skilled Occupations:** Requiring significant education, experience, and/or training beyond high school but less than a Bachelor’s, includes:
  - High School Diploma + Moderate to Long-Term On-the-job Training
  - High School Diploma + Apprenticeship
  - Postsecondary non-degree award
  - Some College, no degree
  - Associate degree
- **Low-Skilled Occupations:** Generally requiring less than a high school diploma or a diploma and only short-term training, includes:
  - Less than a High School Diploma
  - High School Diploma + Short-term On-the-job Training

**Figure 12. Current Skill Mix Distribution Within Food and Beverage Industry, Oregon and U.S., by Major Sectors**



Source: TEconomy’s analysis of Bureau of Labor Statistics, OES data from Lightcast (Datarun 2022.3).

Figure 12 also shows that for beverage manufacturing and food/beverage wholesale and warehousing, Oregon’s skill mix basically parallels national industry norms. Finally, though a small piece of the overall Food and Beverage Industry, food production machinery and packaging is partially defined by a significantly higher share of high skill positions within the sector.

While understanding the size, occupational structure, and skill mix of the Oregon Food and Beverage Industry is critical in creating and launching programmatic initiatives aimed at growth, productivity, and innovation, it is also a requirement to develop and ensure that the future workforce needed by the industry is available. Table 3 examines the forecast future employment needs and highlights key occupations (those forecast to include 15 or more new jobs) and the minimum skill requirements of these occupations. These key occupations reflect all four major sectors and all three minimum skill requirement levels.

Forecasted sector growth leads to anticipated demand for a wide variety of sales, management, support, and transportation/logistics related workers. Forecasted growth in bakeries directly translates into a significant future demand for bakers. Beyond bakers, other distinct production occupations expected to increase due to overall industry growth include food batchmakers, meat packers, and various types of machine operators. It is important to note that these forecasted occupational growth areas are derived only from forecasted growth in the major sectors and overall industry.

**Table 3. Oregon Food and Beverage Industry Forecast New Jobs (15+) from 2021-2031**

Occupational Description	Minimum Skill Requirements	Total Forecast New Jobs, 2021-2031
Bakers	Middle Skills	273
Sales Representatives, Wholesale and Manufacturing	Middle Skills	202
Laborers and Freight, Stock, and Material Movers, Hand	Low Skills	199
Industrial Machinery Mechanics	Middle Skills	184
Driver/Sales Workers	Low Skills	159
Packaging and Filling Machine Operators and Tenders	Middle Skills	128
Heavy and Tractor-Trailer Truck Drivers	Middle Skills	115
Meat, Poultry, and Fish Cutters and Trimmers	Low Skills	115
Food Batchmakers (incl. batching operators, cheese makers, brewing techs)	Middle Skills	112
Packers and Packagers, Hand	Low Skills	101
First-Line Supervisors of Production and Operating Workers	Low Skills	95
Retail Salespersons	Low Skills	82
Slaughterers and Meat Packers	Low Skills	81
Bartenders	Low Skills	72
General and Operations Managers	High Skills	68
Fast Food and Counter Workers	Low Skills	64
Light Truck Drivers	Low Skills	62
Maintenance and Repair Workers, General	Middle Skills	62
Merchandise Displayers	Low Skills	59
Separating, Filtering, and Clarifying Machine Operators (incl. brewmaster, winemaker)	Middle Skills	52
Industrial Truck and Tractor Operators	Low Skills	52
Cooks, Restaurant	Low Skills	48
Demonstrators and Product Promoters	Low Skills	46
Waiters and Waitresses	Low Skills	43
Logisticians	High Skills	43
Janitors and Cleaners	Low Skills	42
Market Research Analysts and Marketing Specialists	High Skills	39
First-Line Supervisors of Transportation and Material Moving Workers	Low Skills	38
Food Processing Workers, All Other	Low Skills	38
Food Preparation Workers	Low Skills	31
Sales Managers	High Skills	27
Crushing, Grinding, and Polishing Machine Operators	Middle Skills	24
Financial Managers	High Skills	21
Food Cooking Machine Operators and Tenders	Middle Skills	21
Industrial Engineers (incl. production engineers, packaging engineers)	High Skills	20
Industrial Production Managers	High Skills	19
Accountants and Auditors	High Skills	18
Bus and Truck Mechanics and Diesel Engine Specialists	Middle Skills	18
Production, Planning, and Expediting Clerks	Middle Skills	18
First-Line Supervisors of Food Preparation and Serving Workers	Low Skills	18
Maintenance Workers, Machinery	Middle Skills	18
First-Line Supervisors of Non-Retail Sales Workers	Low Skills	18
Butchers and Meat Cutters	Middle Skills	17
Inspectors, Testers, Sorters, Samplers, and Weighers	Middle Skills	17

Source: TEconomy's analysis of Bureau of Labor Statistics, OES data from Lightcast (Datarun 2022.3).

Please note, occupations normally associated with restaurants, bars, and retail establishments, such as bartenders, restaurant cooks, waiters/waitresses, and retail salespersons, are included in this food and beverage industry analysis as they are becoming an important part of vertically integrated manufacturing operations that are also selling directly to consumers via on-site retail or restaurant operations (e.g., microbreweries selling food and packaged beer, wineries with restaurants or tasting rooms, etc.).

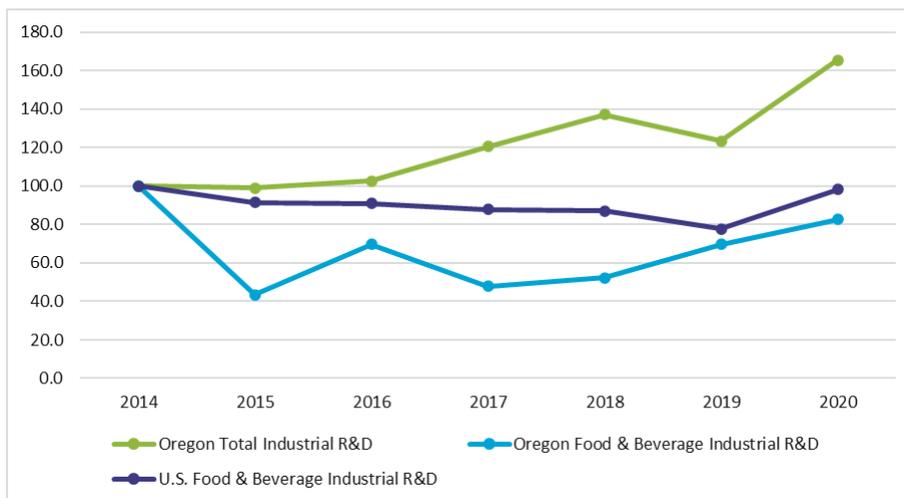
It is also important to note that the numbers presented in Table 3 do not include the numbers of workers across all occupational types that will be needed to replace retirees or others who choose to leave the Oregon Food and Beverage Industry workforce.

## Innovation in Oregon’s Food and Beverage Industry

A key tenet and point of emphasis in the creation of a Center of Innovation Excellence is the need to provide support and assistance to industry in pursuit of innovation-driven growth. The Oregon Food and Beverage Industry can benefit from this type of support.

While not surprising, compared to industries such as computers, semiconductors, biopharmaceuticals, and medical devices, the Oregon Food and Beverage Industry performs lower levels of industrial R&D. Figure 13 shows the recent (2014-2020) expenditure-based performance level of industrially funded and performed research and development across three perspectives. The figure shows that Oregon’s Food and Beverage Industry had a peak level of industrial R&D, approximately \$23 million, in 2014. Since that point the industry has not conducted that level of research again, reaching only \$19 million in 2020 (the most recent data available from NSF). Comparatively, the state’s industry R&D performance is worse over this period than the industry nationally (though the U.S. also had a 2014 peak that it almost reached in 2020).

**Figure 13. Comparative R&D Performance**



Source: TEconomy’s analysis of National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2020 (and predecessor surveys).

However, compared to Oregon’s overall private sector industrial R&D, the food and beverage industry’s performance is seen as lackluster at best. Oregon’s overall industrial R&D increased by more than 65 percent from 2014 to 2020, reaching a total of \$10.2 billion in 2020. **The Oregon Food and Beverage Industry accounted for only 0.19 percent of the state’s total industrial R&D—while directly accounting for 3.04 and 3.17 percent of the state’s employment and GSP, respectively.**

Beyond industry funded and performed R&D, some perspectives on overall levels of innovation and entrepreneurship within the Oregon Food and Beverage Industry can be gained by examining the level of industry-related federally funded Small Business Innovation Research (SBIR) awards and angel/venture capital investments.

While the food and beverage industry are not typically the main focus of the SBIR program, which is more typically used by high technology and life science firms, nevertheless some awards have been made to food and beverage-related firms in Oregon. Five firms received SBIR awards worth a total of \$1.32 million, primarily from the USDA, over the 2014-2021 period. Of this total, however, more than \$756,000 or 57 percent was awarded to Food4All, in Bend, to develop a next-generation e-commerce Local Food Sales Platform that enables rural food producers to transact directly with local wholesale (and retail) buyers—and hence, more geared to agricultural production than food and beverage manufacturing.

Over the 2014-2022 period, more than \$175 million was invested in 76 emerging Oregon Food and Beverage Industry firms. These investments range in size from a total of nearly \$52 million in Laird Superfood, nearly \$20 million to Humm Kombucha, and \$16 million to Neutral to many investments in small deals of \$50,000 or less. Comparatively, food and beverage industry-related venture capital investments account for 8.8 percent of all Oregon venture capital deals, but only 2.5 percent of Oregon’s total venture capital investment amount.

One critical metric from the industry’s overall angel/venture capital investments—of the 26 firms that received at least \$1 million in investments over the 2014-2022 period only one has gone out of business. This seems to indicate that with the right match of company and investor, new firms can be developed and established within Oregon’s Food and Beverage Industry.

**Table 4. Oregon Food and Beverage Industry Venture Capital – Companies, Deals, and Investment, 2014-2022**

Oregon Food & Beverage Industry Major Sector	Companies	Deals	Total \$M
Beverage Manufacturing	33	73	\$97.18
Food Processing and Manufacturing	39	85	\$74.93
Food Production Machinery and Packaging	3	5	\$3.32
<i>Food-Related Consulting</i>	1	1	\$0.08
<b>Food &amp; Beverage Industry Total</b>	<b>76</b>	<b>164</b>	<b>\$175.51</b>

Source: TEconomy’s analysis of Pitchbook venture capital data.

Lastly, it is important to note that among the occupations shown in Table 3, the two occupations most closely aligned with food research, development, and innovation—food scientists and food science technicians—are not among the forecasted key growth occupations. While the Oregon Food and

Beverage Industry employed 256 Food Scientists and 391 Food Science Technicians (including quality assurance technicians) in 2021, the fact that these occupations are not forecasted to grow in the coming years also portends concern over the industry's ability to innovate in the future.

## Summary

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The information presented details the importance of Oregon's Food and Beverage Industry to the state's economy. Directly employing nearly 49,000 workers, the Oregon Food and Beverage Industry is a critical driver of economic activity for the state. The industry is forecasted to grow by more than 3,500 workers by 2031—with a wide range of occupational types and skill requirements providing opportunities for many.

Furthermore, the Oregon Food and Beverage Industry demonstrates strong potential to generate even greater impacts on the state's economy in the future. With an employment multiplier of 2.48, these 3,500 jobs could generate and support more than 8,600 jobs.

From an innovation perspective, the industry is challenged with lower-than-expected levels of industrial R&D. And while a number of emerging food and beverage industry firms are receiving investment capital, the number is still relatively small.

It is within this economic situation and outlook, that the industry could be supported by and benefit from the unique Oregon Center of Innovation Excellence for Resilient Food and Beverage Manufacturing opportunity.

# Appendix 1 – Additional Economic Analysis Detailed Tables

**Table A1. Employment and Wage Trends, Food and Beverage Industry, 2014-2021**

Employment and Wage Trends, Food and Beverage Industry, 2014-2021												
NAICS	Industry/Subsectors	Establishments, 2021	Employment, 2021	Employment Specialization (LQ), 2021	Total Wages, 2021	Average Wages, 2021	Establishments, 2014	Employment, 2014	Employment Growth, 2014-2019	Employment Growth, 2019-2021	Employment Growth, 2014-2021	Average Wage Growth (Nominal), 2014-2021
	<b>Food and Beverage Industry</b>	<b>2,269</b>	<b>48,961</b>	<b>1.31</b>	<b>\$ 3,230,761,811</b>	<b>\$ 65,986</b>	<b>1,594</b>	<b>44,548</b>	<b>16.1%</b>	<b>-5.3%</b>	<b>9.9%</b>	<b>32.2%</b>
311	<b>Food Processing and Manufacturing</b>	<b>903</b>	<b>28,420</b>	<b>1.33</b>	<b>\$ 1,772,016,505</b>	<b>\$ 62,350</b>	<b>691</b>	<b>27,007</b>	<b>10.7%</b>	<b>-4.9%</b>	<b>5.2%</b>	<b>31.8%</b>
3111	Animal Food Manufacturing	34	284	0.32	\$ 25,149,084	\$ 88,423	20	248	7.3%	7.1%	14.9%	48.9%
3112	Grain and Oilseed Milling	18	1,312	1.61	\$ 98,508,584	\$ 75,078	13	830	26.5%	24.9%	58.0%	-1.2%
3113	Sugar and Confectionary Product Manufacturing	74	797	0.79	\$ 37,019,428	\$ 46,473	59	721	20.7%	-8.4%	10.5%	47.2%
3114	Fruit and Vegetable Preserving and Specialty	123	9,981	4.35	\$ 627,149,170	\$ 62,835	107	9,932	12.6%	-10.7%	0.5%	43.0%
3115	Dairy Product Manufacturing	46	2,504	1.23	\$ 188,211,038	\$ 75,164	38	2,618	-9.2%	5.3%	-4.4%	16.6%
3116	Animal Slaughtering and Processing	66	2,108	0.31	\$ 133,646,101	\$ 63,392	63	1,659	21.8%	4.4%	27.1%	37.9%
3117	Seafood Product Preparation and Packaging	35	1,084	2.52	\$ 61,560,173	\$ 56,816	23	1,185	12.9%	-19.1%	-8.6%	54.4%
3118	Bakeries and Tortilla Manufacturing	298	5,853	1.46	\$ 332,400,743	\$ 56,792	237	5,391	8.2%	0.3%	8.6%	23.0%
3119	Other Food Manufacturing	211	4,498	1.45	\$ 268,372,183	\$ 59,667	132	4,423	11.8%	-9.1%	1.7%	30.1%
3121	<b>Beverage Manufacturing</b>	<b>612</b>	<b>6,745</b>	<b>1.77</b>	<b>\$ 400,227,235</b>	<b>\$ 59,335</b>	<b>378</b>	<b>4,897</b>	<b>45.8%</b>	<b>-5.5%</b>	<b>37.7%</b>	<b>25.3%</b>
31211	Soft Drink and Ice Manufacturing	50	582	0.42	\$ 42,232,093	\$ 72,512	29	428	18.6%	14.6%	35.9%	23.4%
31212	Breweries	154	2,387	1.94	\$ 140,367,743	\$ 58,815	78	1,613	65.2%	-10.5%	48.0%	15.7%
31213	Wineries	379	3,491	3.77	\$ 200,691,295	\$ 57,481	254	2,655	38.9%	-5.3%	31.5%	33.0%
31214	Distilleries	30	285	1.00	\$ 16,936,105	\$ 59,461	17	200	39.1%	2.2%	42.2%	21.1%
Misc.	<b>Food and Beverage Products Distribution</b>	<b>718</b>	<b>13,107</b>	<b>1.28</b>	<b>\$ 999,374,549</b>	<b>\$ 76,249</b>	<b>497</b>	<b>11,838</b>	<b>17.0%</b>	<b>-5.4%</b>	<b>10.7%</b>	<b>37.2%</b>
*4244	Food Wholesale Distribution*	565	9,204	1.36	\$ 704,801,367	\$ 76,578	402	8,337	15.8%	-4.7%	10.4%	38.8%
4248	Beverage Wholesale Distribution	132	3,318	1.27	\$ 251,849,031	\$ 75,902	79	2,922	21.8%	-6.8%	13.6%	32.2%
493120	Refrigerated Warehousing and Storage	21	585	0.67	\$ 42,724,151	\$ 73,054	16	580	10.5%	-8.7%	0.9%	38.6%
333241	<b>Food and Beverage Machinery Manufacturing</b>	<b>23</b>	<b>446</b>	<b>1.78</b>	<b>\$ 38,498,095</b>	<b>\$ 86,395</b>	<b>16</b>	<b>491</b>	<b>1.5%</b>	<b>-10.5%</b>	<b>-9.2%</b>	<b>28.6%</b>
Misc.	<b>Food and Beverage Packaging</b>	<b>13</b>	<b>243</b>	<b>0.14</b>	<b>\$ 20,645,428</b>	<b>\$ 84,792</b>	<b>12</b>	<b>315</b>	<b>6.3%</b>	<b>-27.2%</b>	<b>-22.6%</b>	<b>13.1%</b>
327213	Glass Container Manufacturing	2	175	1.06	\$ 15,537,142	\$ 88,884	3	207	-1.0%	-14.5%	-15.4%	14.0%
332431	Metal Can Manufacturing	-	-	0.00	\$ -	\$ -	1	28	178.4%	-100.0%	-100.0%	N/A
326111	Plastics Bag and Pouch Manufacturing	4	28	0.06	\$ 1,595,689	\$ 56,652	4	42	-31.3%	-1.9%	-32.6%	3.6%
326160	Plastics Bottle Manufacturing	4	39	0.08	\$ 3,354,723	\$ 86,427	3	38	-38.2%	67.3%	3.4%	57.0%
326112	Plastics Packaging Film and Sheet Manufacturing	3	2	0.01	\$ 157,874	\$ 92,917	1	1	-100.0%	N/A	146.5%	-48.6%

\*Note: For the purposes of this study Food Wholesale Distribution does not include NAICS 424410 General Line Grocery Merchant Wholesalers which primarily consists of retail grocery chains' own distribution centers.

Source: TEconomy's analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

**Table A2. Industry Value Added (GSP) Trends, 2014-2021**

Industry Value Added (GSP) Trends, 2014-2021													
NAICS	Industry	2014 GSP (Value Added)	2021 GSP (Value Added)	2014 Productivity (VA/Emp)	2021 Productivity (VA/Emp)	2014-2019 GSP (Value Added) Change	2019-2021 GSP (Value Added) Change	2014-2021 GSP (Value Added) Change	2014-2019 Productivity Growth	2019-2021 Productivity Growth	2014-2021 Productivity Growth	2021 Total Sales (Output)	
	<b>Food and Beverage Industry</b>	\$ 4,454,917,564	\$ 6,755,936,969	\$ 100,003	\$ 137,985	34.6%	12.7%	51.7%	16.0%	19.0%	38.0%	\$ 17,648,778,926	
<b>311</b>	<b>Food Processing and Manufacturing</b>	\$ 2,327,486,204	\$ 3,548,884,097	\$ 86,180	\$ 124,871	28.5%	18.7%	52.5%	16.1%	24.8%	44.9%	\$ 11,541,347,873	
3111	Animal Food Manufacturing	\$ 38,448,354	\$ 79,262,514	\$ 155,295	\$ 278,684	48.3%	39.0%	106.2%	38.2%	29.8%	79.5%	\$ 364,893,721	
3112	Grain and Oilseed Milling	\$ 159,209,999	\$ 291,426,884	\$ 191,762	\$ 222,110	40.4%	30.4%	83.0%	11.0%	4.4%	15.8%	\$ 1,229,383,486	
3113	Sugar and Confectionary Product Manufacturing	\$ 47,013,861	\$ 78,768,091	\$ 65,206	\$ 98,882	42.7%	17.4%	67.5%	18.2%	28.3%	51.6%	\$ 243,460,790	
3114	Fruit and Vegetable Preserving and Specialty	\$ 749,245,480	\$ 1,189,279,322	\$ 75,438	\$ 119,155	39.0%	14.2%	58.7%	23.4%	28.0%	58.0%	\$ 3,387,227,269	
3115	Dairy Product Manufacturing	\$ 316,060,790	\$ 394,219,188	\$ 120,726	\$ 157,436	-2.1%	27.4%	24.7%	7.8%	20.9%	30.4%	\$ 1,625,692,141	
3116	Animal Slaughtering and Processing	\$ 126,481,607	\$ 259,384,644	\$ 76,244	\$ 123,033	54.0%	33.1%	105.1%	26.5%	27.6%	61.4%	\$ 1,167,108,172	
3117	Seafood Product Preparation and Packaging	\$ 54,281,313	\$ 73,631,534	\$ 45,797	\$ 67,957	42.4%	-4.7%	35.6%	26.1%	17.7%	48.4%	\$ 261,281,685	
3118	Bakeries and Tortilla Manufacturing	\$ 373,025,560	\$ 509,245,259	\$ 69,191	\$ 87,007	17.7%	16.0%	36.5%	8.8%	15.6%	25.7%	\$ 1,265,411,924	
3119	Other Food Manufacturing	\$ 463,719,240	\$ 673,666,661	\$ 104,837	\$ 149,776	25.2%	16.1%	45.3%	11.9%	27.7%	42.9%	\$ 1,996,888,686	
<b>3121</b>	<b>Beverage Manufacturing</b>	\$ 803,064,565	\$ 1,313,633,856	\$ 163,991	\$ 194,750	48.5%	10.2%	63.6%	1.9%	16.6%	18.8%	\$ 2,793,341,965	
31211	Soft Drink and Ice Manufacturing	\$ 42,892,549	\$ 73,949,320	\$ 100,099	\$ 126,970	35.3%	27.4%	72.4%	14.1%	11.2%	26.8%	\$ 251,064,218	
31212	Breweries	\$ 413,693,429	\$ 672,095,390	\$ 256,461	\$ 281,614	60.4%	1.3%	62.5%	-3.0%	13.1%	9.8%	\$ 1,321,434,140	
31213	Wineries	\$ 242,720,896	\$ 410,034,494	\$ 91,417	\$ 117,441	43.9%	17.4%	68.9%	3.6%	23.9%	28.5%	\$ 961,586,230	
31214	Distilleries	\$ 103,757,691	\$ 157,554,652	\$ 517,881	\$ 553,163	17.3%	29.5%	51.8%	-15.7%	26.7%	6.8%	\$ 259,257,378	
Misc.	<b>Food and Beverage Products Distribution</b>	\$ 1,226,490,929	\$ 1,790,588,414	\$ 103,604	\$ 136,617	38.9%	5.1%	46.0%	18.7%	11.1%	31.9%	\$ 3,094,592,635	
*4244	Food Wholesale Distribution*	\$ 791,267,735	\$ 1,168,383,294	\$ 94,916	\$ 126,946	37.8%	7.1%	47.7%	19.0%	12.4%	33.7%	\$ 2,048,783,449	
4248	Beverage Wholesale Distribution	\$ 398,123,626	\$ 577,512,111	\$ 136,254	\$ 174,050	42.4%	1.9%	45.1%	16.9%	9.2%	27.7%	\$ 957,715,645	
493120	Refrigerated Warehousing and Storage	\$ 37,099,569	\$ 44,693,009	\$ 63,983	\$ 76,420	24.2%	-3.0%	20.5%	12.5%	6.2%	19.4%	\$ 88,093,540	
<b>333241</b>	<b>Food and Beverage Machinery Manufacturing</b>	\$ 51,158,260	\$ 56,127,069	\$ 104,245	\$ 125,956	9.4%	0.3%	9.7%	7.8%	12.1%	20.8%	\$ 117,551,033	
Misc.	<b>Food and Beverage Packaging</b>	\$ 46,717,606	\$ 46,703,533	\$ 148,489	\$ 191,814	18.1%	-15.4%	0.0%	11.1%	16.3%	29.2%	\$ 101,945,420	
327213	Glass Container Manufacturing	\$ 31,910,406	\$ 36,590,303	\$ 154,505	\$ 209,324	21.9%	-5.9%	14.7%	23.1%	10.1%	35.5%	\$ 70,377,031	
332431	Metal Can Manufacturing	\$ 5,851,818	\$ 279,188	\$ 208,554	N/A	78.5%	-97.3%	-95.2%	-35.9%	N/A	N/A	\$ 1,002,205	
326111	Plastics Bag and Pouch Manufacturing	\$ 4,835,711	\$ 3,273,218	\$ 115,657	\$ 116,209	-39.3%	11.5%	-32.3%	-11.6%	13.7%	0.5%	\$ 10,035,222	
326160	Plastics Bottle Manufacturing	\$ 3,729,108	\$ 6,200,393	\$ 99,366	\$ 159,739	-22.5%	114.6%	66.3%	25.3%	28.3%	60.8%	\$ 19,417,102	
326112	Plastics Packaging Film and Sheet Manufacturing	\$ 390,564	\$ 360,431	\$ 566,627	\$ 212,132	-89.4%	770.5%	-7.7%	N/A	N/A	-62.6%	\$ 1,113,860	

\*Note: For the purposes of this study Food Wholesale Distribution does not include NAICS 424410 General Line Grocery Merchant Wholesalers which primarily consists of retail grocery chains' own distribution centers.

Source: TEconomy's analysis of Bureau of Labor Statistics, QCEW data from Lightcast (Datarun 2022.3).

## Appendix 2 – Additional Economic Impact Analysis

### Detailed Tables – Major Sectors and Key Components

Source for all tables: TEconomy's analysis using IMPLAN 2021 State of Oregon model.

**Table A3: Oregon Food and Beverage Industry – Food Processing and Manufacturing, Total**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	28,421	\$1,723.21	\$3,204.12	\$14,139.00	\$56.83	\$115.14	\$389.69
Indirect Effect	33,722	\$2,439.36	\$3,298.35	\$6,762.93	\$62.99	\$133.96	\$483.71
Induced Effect	19,147	\$1,158.16	\$2,000.71	\$3,347.84	\$81.13	\$94.77	\$95.21
<b>Total Effect</b>	<b>81,289</b>	<b>\$5,320.73</b>	<b>\$8,503.17</b>	<b>\$24,249.76</b>	<b>\$200.94</b>	<b>\$343.87</b>	<b>\$968.61</b>
<i>Multiplier</i>	<i>2.86</i>	<i>3.09</i>	<i>2.65</i>	<i>1.72</i>			

**Table A4: Oregon Food and Beverage Industry – Beverage Manufacturing, Total**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	6,745	\$382.76	\$802.65	\$2,363.13	\$91.46	\$61.07	\$59.09
Indirect Effect	4,276	\$326.87	\$502.61	\$984.65	\$18.99	\$24.16	\$64.25
Induced Effect	3,222	\$194.92	\$336.57	\$565.90	\$13.70	\$16.00	\$16.02
<b>Total Effect</b>	<b>14,244</b>	<b>\$904.55</b>	<b>\$1,641.83</b>	<b>\$3,913.69</b>	<b>\$124.14</b>	<b>\$101.23</b>	<b>\$139.36</b>
<i>Multiplier</i>	<i>2.11</i>	<i>2.36</i>	<i>2.05</i>	<i>1.66</i>			

**Table A5: Oregon Food and Beverage Industry – Food and Beverage Wholesale and Warehousing, Total**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	13,107	\$1,054.34	\$1,668.79	\$3,370.64	\$142.68	\$113.73	\$184.92
Indirect Effect	9,295	\$701.09	\$989.48	\$1,726.89	\$27.60	\$45.40	\$140.58
Induced Effect	7,779	\$467.14	\$810.31	\$1,356.37	\$32.83	\$38.35	\$38.40
<b>Total Effect</b>	<b>30,182</b>	<b>\$2,222.57</b>	<b>\$3,468.58</b>	<b>\$6,453.91</b>	<b>\$203.11</b>	<b>\$197.48</b>	<b>\$363.90</b>
<i>Multiplier</i>	<i>2.30</i>	<i>2.11</i>	<i>2.08</i>	<i>1.91</i>			

**Table A6: Oregon Food and Beverage Industry – Food Product Machinery and Packaging, Total**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	689	\$50.10	\$66.31	\$213.73	\$2.13	\$3.20	\$10.21
Indirect Effect	495	\$44.85	\$62.55	\$110.14	\$2.06	\$3.01	\$8.91
Induced Effect	427	\$25.84	\$44.62	\$75.14	\$1.82	\$2.12	\$2.12
<b>Total Effect</b>	<b>1,611</b>	<b>\$120.79</b>	<b>\$173.48</b>	<b>\$399.01</b>	<b>\$6.00</b>	<b>\$8.33</b>	<b>\$21.25</b>
<i>Multiplier</i>	<i>2.34</i>	<i>2.41</i>	<i>2.62</i>	<i>1.87</i>			

*Sector Detail for Food Processing and Manufacturing and Beverage Manufacturing*

**Table A7: Oregon Food and Beverage Industry – Food Processing - Animal Food Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	284	\$23.04	\$49.77	\$287.06	\$4.66	\$3.32	\$3.97
Indirect Effect	418	\$33.53	\$43.77	\$102.07	(\$1.01)	\$1.12	\$7.32
Induced Effect	256	\$15.48	\$26.74	\$45.02	\$1.09	\$1.27	\$1.27
<b>Total Effect</b>	<b>958</b>	<b>\$72.05</b>	<b>\$120.27</b>	<b>\$434.15</b>	<b>\$4.74</b>	<b>\$5.72</b>	<b>\$12.57</b>
<i>Multiplier</i>	<i>3.37</i>	<i>3.13</i>	<i>2.42</i>	<i>1.51</i>			

**Table A8: Oregon Food and Beverage Industry – Food Processing - Grain and Oilseed Milling**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	1,312	\$92.44	\$211.40	\$1,342.68	\$4.95	\$7.51	\$21.63
Indirect Effect	2,529	\$207.85	\$254.49	\$580.65	(\$20.64)	\$0.40	\$49.83
Induced Effect	1,370	\$82.79	\$142.98	\$240.67	\$5.82	\$6.80	\$6.81
<b>Total Effect</b>	<b>5,210</b>	<b>\$383.08</b>	<b>\$608.87</b>	<b>\$2,163.99</b>	<b>(\$9.87)</b>	<b>\$14.71</b>	<b>\$78.27</b>
<i>Multiplier</i>	<i>3.97</i>	<i>4.14</i>	<i>2.88</i>	<i>1.61</i>			

**Table A9: Oregon Food and Beverage Industry – Food Processing – Sugar/Confectionary Product Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	797	\$37.31	\$64.14	\$329.44	\$1.21	\$2.42	\$8.25
Indirect Effect	715	\$55.72	\$80.57	\$158.89	\$2.94	\$3.94	\$11.00
Induced Effect	419	\$25.35	\$43.78	\$73.73	\$1.78	\$2.08	\$2.08
<b>Total Effect</b>	<b>1,930</b>	<b>\$118.38</b>	<b>\$188.49</b>	<b>\$562.06</b>	<b>\$5.94</b>	<b>\$8.44</b>	<b>\$21.33</b>
<i>Multiplier</i>	2.42	3.17	2.94	1.71			

**Table A10: Oregon Food and Beverage Industry – Food Processing – Fruit and Vegetable Preserving and Specialty**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	9,981	\$618.00	\$1,314.72	\$5,151.85	\$18.01	\$42.42	\$146.69
Indirect Effect	11,086	\$848.91	\$1,164.16	\$2,276.42	\$25.84	\$47.64	\$170.12
Induced Effect	6,815	\$412.19	\$711.84	\$1,197.32	\$28.98	\$33.85	\$33.88
<b>Total Effect</b>	<b>27,881</b>	<b>\$1,879.10</b>	<b>\$3,190.73</b>	<b>\$8,625.59</b>	<b>\$72.82</b>	<b>\$123.91</b>	<b>\$350.69</b>
<i>Multiplier</i>	2.79	3.04	2.43	1.67			

**Table A11: Oregon Food and Beverage Industry – Food Processing – Dairy Product Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	2,504	\$181.73	\$312.99	\$1,922.23	\$7.20	\$12.34	\$39.75
Indirect Effect	4,475	\$350.55	\$492.51	\$1,268.43	\$17.58	\$23.76	\$66.90
Induced Effect	2,453	\$148.32	\$256.17	\$430.89	\$10.43	\$12.18	\$12.19
<b>Total Effect</b>	<b>9,432</b>	<b>\$680.59</b>	<b>\$1,061.66</b>	<b>\$3,621.56</b>	<b>\$35.20</b>	<b>\$48.28</b>	<b>\$118.84</b>
<i>Multiplier</i>	3.77	3.75	3.39	1.88			

**Table A12: Oregon Food and Beverage Industry – Food Processing – Animal Slaughtering and Processing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	2,108	\$129.61	\$134.05	\$1,051.31	\$3.98	\$7.14	\$25.56
Indirect Effect	3,250	\$239.62	\$318.81	\$701.26	\$11.48	\$16.34	\$41.85
Induced Effect	1,711	\$103.33	\$178.54	\$300.34	\$7.27	\$8.49	\$8.50
<b>Total Effect</b>	<b>7,069</b>	<b>\$472.56</b>	<b>\$631.40</b>	<b>\$2,052.91</b>	<b>\$22.73</b>	<b>\$31.97</b>	<b>\$75.91</b>
<i>Multiplier</i>	3.35	3.65	4.71	1.95			

**Table A13: Oregon Food and Beverage Industry – Food Processing – Seafood Product Preparation and Packaging**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	1,084	\$60.13	\$83.88	\$481.70	\$2.47	\$3.87	\$12.41
Indirect Effect	1,373	\$81.92	\$109.18	\$170.20	\$12.09	\$9.10	\$12.00
Induced Effect	646	\$39.06	\$67.48	\$113.60	\$2.75	\$3.21	\$3.21
<b>Total Effect</b>	<b>3,103</b>	<b>\$181.11</b>	<b>\$260.54</b>	<b>\$765.50</b>	<b>\$17.31</b>	<b>\$16.18</b>	<b>\$27.62</b>
<i>Multiplier</i>	2.86	3.01	3.11	1.59			

**Table A14: Oregon Food and Beverage Industry – Food Processing – Bakeries and Tortilla Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	5,853	\$304.70	\$486.33	\$1,250.48	\$5.48	\$17.34	\$67.66
Indirect Effect	2,188	\$190.29	\$267.39	\$594.82	\$2.80	\$10.21	\$39.95
Induced Effect	2,224	\$134.62	\$232.55	\$391.29	\$9.47	\$11.06	\$11.07
<b>Total Effect</b>	<b>10,265</b>	<b>\$629.61</b>	<b>\$986.27</b>	<b>\$2,236.60</b>	<b>\$17.75</b>	<b>\$38.62</b>	<b>\$118.68</b>
<i>Multiplier</i>	1.75	2.07	2.03	1.79			

**Table A15: Oregon Food and Beverage Industry – Food Processing – Other Food Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	4,498	\$276.26	\$546.84	\$2,322.25	\$8.87	\$18.79	\$63.77
Indirect Effect	8,116	\$461.73	\$625.57	\$1,257.61	\$14.37	\$28.13	\$90.87
Induced Effect	3,338	\$201.84	\$348.57	\$586.53	\$14.19	\$16.58	\$16.59
<b>Total Effect</b>	<b>15,951</b>	<b>\$939.83</b>	<b>\$1,520.98</b>	<b>\$4,166.39</b>	<b>\$37.43</b>	<b>\$63.50</b>	<b>\$171.23</b>
<i>Multiplier</i>	3.55	3.40	2.78	1.79			

**Table A16: Oregon Food and Beverage Industry – Beverage Manufacturing - Soft Drink and Ice Manufacturing**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	583	\$40.44	\$76.76	\$325.90	\$1.82	\$2.95	\$8.86
Indirect Effect	462	\$36.04	\$57.40	\$111.27	\$2.35	\$2.81	\$7.16
Induced Effect	344	\$20.78	\$35.87	\$59.97	\$1.45	\$1.70	\$1.71
<b>Total Effect</b>	<b>1,388</b>	<b>\$97.26</b>	<b>\$170.03</b>	<b>\$497.14</b>	<b>\$5.62</b>	<b>\$7.46</b>	<b>\$17.73</b>
<i>Multiplier</i>	2.38	2.41	2.22	1.53			

**Table 17: Oregon Food and Beverage Industry – Beverage Manufacturing - Breweries, Wineries, and Distilleries**

Impact Type	Employment	Labor Income (\$M)	Value Added (\$M)	Output (\$M)	Local/County Tax Revenue (\$M)	State Tax Revenue (\$M)	Federal Tax Revenue (\$M)
Direct Effect	6,163	\$342.32	\$725.89	\$2,037.23	\$89.64	\$58.12	\$50.22
Indirect Effect	3,814	\$290.83	\$445.22	\$873.40	\$16.65	\$21.36	\$57.09
Induced Effect	2,874	\$173.89	\$300.19	\$504.50	\$12.21	\$14.27	\$14.30
<b>Total Effect</b>	<b>12,851</b>	<b>\$807.04</b>	<b>\$1,471.30</b>	<b>\$3,415.12</b>	<b>\$118.50</b>	<b>\$93.74</b>	<b>\$121.61</b>
<i>Multiplier</i>	2.09	2.36	2.03	1.68			