

# **The Economic Impact of the Wine and Wine Grape Industries on the Oregon Economy**

## **Summary Report**

**February 2018  
Full Glass Research**



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## **Executive Summary**

### **Economic Value**

**The sum of all economic activity in Oregon related directly or indirectly to wine is \$5.61 billion.**

**In 2016, estimated wine-related and induced jobs in Oregon totaled 29,738; related wages topped \$1 billion.**

- Over 1,000 Oregon wine grape growers produced a crop whose total value in 2016 was \$167.8 million.
- 725 Oregon wineries or wine companies bottled over 3 million nine-liter cases of wine and had revenues of over \$529 million in 2016 from the sale of packaged wine. Oregon wines shipped to other states/countries brought in over \$195 million in revenue, while direct-to-consumer shipments added another \$286 million.
- Retail sales of wine in Oregon from all sources via all channels topped \$1 billion in 2016. This supported 3,206 jobs in stores and retailers, 5,278 jobs in restaurants etc. and at least 320 jobs in distributors and importers.
- Between 2013 and 2016, the impact of wine-related tourism doubled, contributing \$787 million in revenues to the Oregon economy, and supporting 7,625 jobs at \$215 million in wages.
- Due to both the success of Oregon wineries and a stronger state economy, the value of supplies and services to the industry reached \$990 million in 2016.
- Wine-related activities contributed over \$155 million in tax and licensing revenues to the state and local governments in 2016.

- Since the last report covering 2013, growth and investment in the Oregon wine industry has expanded with at least 6,480 new acres planted, the number of wineries increased by at least 120 and winery sales in 9L cases up 27%.

## **Continued Growth & Investment**

Compared to the last report (which was based on 2013 data), wine grape acreage increased 11% and tons crushed by 42%. Yields trended upwards as plantings matured and viticultural techniques improved. The number of Oregon wineries increased by over 7%; the fact that sales volume and revenues outgrew the number of wineries reflects increasing success on a per winery basis. From 2013 to 2016, Oregon winery revenues increased 46%, reflecting increased sales direct to consumers and through the U.S. distribution system, as well as an increase in the prices achieved. The growth in size and resources of numerous Oregon wineries, aided by cooperative marketing by the OWB and regional organizations has expanded distribution of Oregon wines in many states. A number of factors were responsible for the pace of growth:

- Tourism impact was strongly boosted by a combination of more tourists overall, a higher percentage of them visiting wineries and wine country and higher spending per visit.
- Aided by tourism and increased hospitality infrastructure and expertise, Oregon wineries dramatically boosted direct-to-consumer sales. The increasing awareness and reputation of Oregon wine, combined with wider distribution in leading wine retailers and top restaurants outside Oregon boosted exports.
- Demand continues to be strong for Pinot Noir (Oregon's leading variety) and high end, small production wines (which describes most of the Oregon wine industry).
- An improved Oregon economy increased average wages in many sectors, as well as the multiplier effect of wine businesses and employees spending their money in Oregon.

Since 2012, five of the top-twenty largest wine companies in the U.S., as well as eight of the most prestigious and successful wine producers from Burgundy in France, have purchased or expanded holdings in Oregon.

## **Quality over Quantity in the Market**

Oregon winegrowers have maintained their focus on the higher-priced, higher-quality segment of the wine market, turning the state's low yields and cool climate into an asset. The market has shifted in this direction, with over-\$15/bottle wines growing faster than under-\$15/bottle wines in nine of the last ten years. Of the wine producing states, Oregon growers continue to achieve the highest average price per ton while Oregon wineries realize the highest average revenues per case. In chain and large retail sales, Oregon wines realize a substantially higher price than average, as well as Californian and Washington wines specifically.<sup>1</sup> Oregon's reputation for high quality, natural beauty, and intimate, small-scale production considerably boosts its appeal for wine tourism, which market research has shown to significantly increase the quality image of a region.<sup>2</sup>

## **Outlook**

The outlook for the Oregon wine industry is positive. Although the base of wine consumption is growing more slowly, regular and highly involved wine drinkers continue to increase their spending and demand for quality wines. The trend towards trading up in price and volume is now firmly entrenched;<sup>3</sup> and beginning to impact casual wine purchases as well as high end bottles. This will expand opportunities for Oregon wineries, whose economics make it difficult to compete in lower price segments. Demand for Pinot Noir, Oregon's leading grape, continues to grow at an average of 8% a year since 2013, compared to an average of 2% for the wine market as a whole<sup>4</sup>. Prices for Burgundy, the flagship region of Pinot Noir, have risen considerably; this will lead to further opportunities for Oregon as high-end consumers searching for an alternative at the high quality and prestige end of the market. In addition, due to its pickier nature with regard to growing conditions, there are fewer competitors in the Pinot Noir segment than for other leading red wines such as Merlot, Cabernet Sauvignon, or Rhone style blends.

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<sup>1</sup> Nielsen 2016 CY2016 Oregon 9L case=\$194.19, All wine average=\$86.46, CA=\$82.68, WA=\$118.44

<sup>2</sup> Wine Opinions surveys 2015, 2017 for Oregon Wine Board; Wine Institute tourism study 2017)

<sup>3</sup> Nielsen CY2013 average 9L case price =\$78.18; in 2016=\$86.46. Wine Market Council High Frequency Premiumization report December 2017

<sup>4</sup> Full Glass Research, Gomberg Fredrickson Report 2013-2016

Oregon has managed to maintain a price premium for its leading white grape, Pinot Gris, despite substantial competition from California and Italy. Press coverage and positive reviews of Oregon's Chardonnay and less well-known regions are broadening Oregon's offerings in the market. Oregon wineries have continued to make progress in expanding their market outside the state, through wine tourism, direct-to-consumer shipments, and sales to distributors in the rest of the U.S. Investors and wine companies outside the state are clearly optimistic on Oregon's future, having increased their investments in Oregon land, vineyards, wineries and brands. Consumer and trade surveys continue to indicate that Oregon leads other regions in association with sustainable and environmentally-friendly production.<sup>5</sup>

However, the industry cannot become complacent; competition from other wine regions continues to be fierce, due both to continuing entry of new wineries at the high end, and consolidation of California-based wineries in the mid and high-priced segments. In addition, declining numbers and consolidation in the wholesale tier and some retail channels have increased their buying power over winery suppliers. Small family wineries in Oregon have a harder time navigating the concentrated wholesale tier in many states, compared to their larger California and Washington competitors.

At the strategic level, a demographic shift is underway, as the baby boomers whose money and tastes dominated the wine market begin to decline in numbers and buying power, while the following two generations enter peak earning years with somewhat dimmer prospects. In the longer term, adapting to and mitigating climate change is a major challenge for growers and wineries in the years ahead. It is worth mentioning that Oregon has been in the forefront of the wine industry progress and research on environmental issues.

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<sup>5</sup> Wine Opinions Consumer survey 2016, Wine Institute & Wine Opinions "Green" report 2017

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## **Introduction**

The Oregon Wine Board and Oregon Winegrowers Association commissioned studies quantifying the economic impact of the wine grape and wine industry in Oregon for 2005, 2010, 2013 and now 2016 (released in 2018). To preserve continuity in methodology and enable tracking of progress, Full Glass Research has been engaged each time to execute the study.

The study gives a broad view of the industry, quantifying the revenues, jobs and wages associated with all tiers of wine production and distribution to the eventual consumer within a given year. In addition, it calculates the multiplier effect on the economy from wine-related businesses and employees' spending, the net contribution of the industry to the economy, the benefits specifically due to Oregon wineries and vineyards, and tracks changes over time. The report is useful for legislative and regulatory policy, grant and loan applications, business or government strategy, investment and academic applications.

It should be noted that economic impact is not a measure or indicator of profitability or investment returns. It measures the total amount of spending and employment that is due to the presence of an industry, an investment or government activity. It is possible for an industry or sector to have substantial economic impact due to its employment and purchasing from suppliers, yet low or no profitability due to high costs. In fact, high economic impact and lower profitability are typical of growth periods involving substantial capital investment.

## **Methodology**

This report uses a combination of techniques and methods to arrive at its numbers and conclusions. Estimates of the employment and revenues of industries producing or selling wine and wine grapes ("direct impacts") come from official public figures from a variety of sources (such as the Bureau of Labor Statistics, Oregon Liquor Control Commission, SOURCE/OASS; for a complete list of sources see page 40). For some sections, these data were combined with primary research such as surveys or interviews or used as inputs in a model (e.g. retail and wholesale revenues by channel). Revenues and employment of companies and individuals resulting from supplying the wine industry ("Indirect impacts") are estimated in some cases from combining cost/spending models, primary research and BLS data; in other cases, they are taken from the IMPLAN econometric model. Multiplier effects ("Induced impact") are accounted for by the IMPLAN model. See page 34 for more details on IMPLAN.

IMPLAN is an economic model that uses input-output tables for over 400 industries. Initially developed by the U.S. Forest Service, it is currently used by a wide range of companies, government departments and universities to estimate regional and industry-specific economic impacts. Readers should note that the precision of some numbers in the

study (e.g. \$726,268,725) is an artifact of the modeling process; the estimates are not accurate down to single, double or sometimes triple digits.

Note also that only in-state impacts are counted. For example, an Oregon winery's sales are entirely accrued to the winery and impact the state economy. Wholesaler sales within Oregon of its wines also impact the Oregon economy. But sales by its distributors in other states do not impact the Oregon economy and thus are not counted in this report.

## **Wine in the Economy**

Wine is not just an agricultural commodity. Wine is a consumer product, produced in a capital-intensive manner, that requires a wide variety of labor and services to reach the consumer. This impact is reflected in wages, revenues, taxes and spending on agricultural and production technology and supplies. Associated industries such as distribution, tourism, and retailing greatly benefit from the Oregon wine business. There is also the multiplier effect created by purchases from suppliers and service firms by the industry, as well as the spending of wages paid by the industry within the Oregon economy.

As a finished consumer product, wine typically adds more value and keeps more of its profit margin inside the state economy than most other agricultural products. Most agricultural products are exported from their region of production or sold to processors in their raw form. Many of the processors in turn sell their products on international bulk markets, which tend to be highly competitive with low margins. The final products may pass through numerous out-of-state entities and markups before reaching the consumer. As a result, a relatively small amount of the total profits or margins are retained in the local economy.

Oregon wine producers retain more of their revenue stream locally. They buy grapes from Oregon vineyards and produce wine using complex and expensive equipment, but also do the packaging, marketing and selling to wholesalers or foreign importers. This supports a more substantial local supplier industry, in the form of professional services, industrial wholesalers and producers and sellers of equipment, inputs and infrastructure.

Furthermore, wine maintains higher margins through the distribution system than most other foods and beverages. Some of wine's most important distribution channels (fine wine shops, restaurants, wholesale on-premise specialists) are labor intensive businesses. It should be noted that wine consumed in the state of Oregon (not just wine produced in-state) provides revenues from which restaurant and retail store owners and their employees are paid. Distribution of wines from producer tier through the wholesale tier to the retail/restaurant tier provides additional wages and employment. Each tier also contributes taxes. Finally, wine regions are a strong attraction for tourists and the upscale demographics of wine consumption ensure that many wine tourists spend more than the average visitor, boosting restaurant and hotel revenues in wine regions. Wineries typically house themselves in more complex and elaborate structures than other

agricultural enterprises for marketing and tourism reasons, which generates additional infrastructure and service revenues.

This report measures wine's impact at the supplier, grower, winery, wholesale and retail level. Wholesale and retail sales include wine produced in other states and countries. Although sales of these wines support jobs and investment in two tiers of the distribution system, sales of Oregon wines have a stronger impact on the state economy. The following table compares the impact of sales of Oregon wines vs. other wines. Sale of a bottle of Oregon wine has a much stronger impact than a bottle of wine produced elsewhere.

### **Share of in-state Economic Impact: Oregon wine vs. Other wines**

<b>Measure</b>	<b>From Oregon Wine</b>	<b>From Other Wines</b>
Share of Retail Sales Volume in Oregon	<b>8%</b>	<b>92%</b>
Share of Wine-related Spending Impact in Oregon	<b>51%</b>	<b>49%</b>
Share of Wine-related Jobs in Oregon	<b>59%</b>	<b>41%</b>

This is the fourth assessment of the industry's economic impact; the previous two reports were published in May 2011 and January 2015 respectively. The increase in the economic impact of the Oregon wine industry has been substantial; Oregon has seen steady growth in sales and two spurts of industry investment. The first period of growth occurred from 2005 to 2008, with a tremendous surge in vineyard plantings plus increases in the number of wineries, and industry employment. After a pause induced by the recession, renewed growth occurring from 2012 to the current date has brought in outside investors, more new wineries, and a major investment in new capacity. The Oregon wine industry's original focus on quality was prescient, as the wine market has moved upscale, with currently declining sales at the low end and double-digit growth rates in the high-priced segments.

### **Outside Investment**

Oregon's success and fundamental qualities have not gone unnoticed, and a number of important wine industry firms have invested or boosted their holdings in Oregon in the

past several years. The following are the most prominent examples from the past four years:

- Jackson Family Wines purchased Gran Moraine, Zena Crown and Maple Crown vineyards, as well as a lower portion of the Soléna vineyard and a winery building.
- Precept Wines purchased Yamhela vineyard.
- Louis Jadot purchased Resonance vineyard.
- Domaine Drouhin purchased Roserock vineyard.
- Foley Family Wines purchased the Four Graces brand & vineyards.
- Ch. Ste. Michelle purchased the Willakia vineyard in March 2016; and has continued to expand the Erath brand.
- Vintage Wine Estates purchased the Firesteed brand.
- A number of top quality producers from France have invested in Oregon recently, including Dominique Lafon, Alexandrine Roy, Louis-Michel Liger-Belair, Jean-Nicolas Méo, Bruno Corneaux at Domaine Divio, and Gonzague and Claire Lurton.

The investments by Jackson Family, Ch. Ste. Michelle and Louis Jadot are particularly noteworthy because these firms have strong distribution in other states; distribution has been a major barrier to expanding sales of Oregon wine. These companies should improve visibility, availability and trial for Oregon wines in the U.S. market.

## **A Note on Growth and Change**

When comparing changes in numbers from the 2011, 2014 and 2018 reports (based on 2010 & 2013 & 2016 data), readers should bear in mind the following.

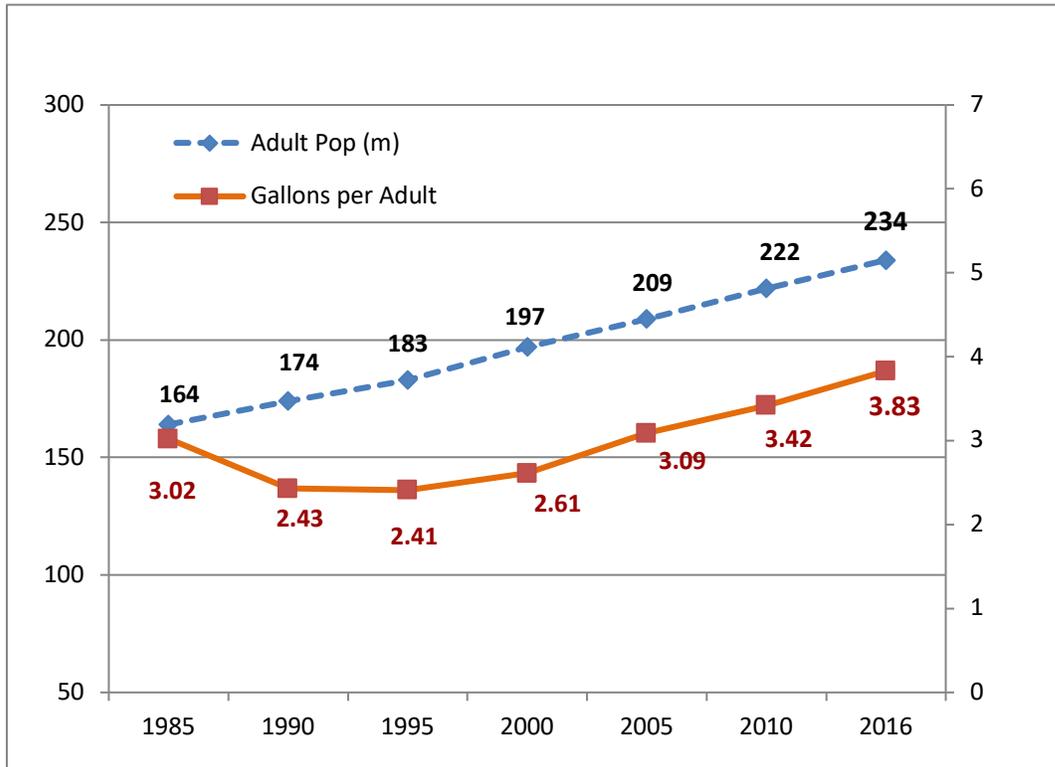
- The difference between vintage and harvest conditions, and their impact on crop size, yields and prices. For example, in a poor-yielding vintage the total crop value may decline due to small volume, even as price per ton and demand increase.
- There have been some revisions to data and methodology in the 2016 report, to improve accuracy and completeness, and adapt to changes in primary research numbers. These include: a change in the allocation of on-premise revenues and jobs related to tourism; more accurate valuation of overnight and out-of-state tourist spending; limited data on certain retail and supplier sectors; and updates to estimated pricing on-premise.
- See pages 38-39 for complete details and comparison of the 2016 data with 2013.

## The Wine Market in the U.S. & Oregon

### Growth in American Wine Consumption

For reasons related to culture, taste and demographics, per-capita, adult consumption of table wine has also grown strongly and steadily since 1990.

#### U.S. Population and Per Capita Table Wine Consumption 1985-2016

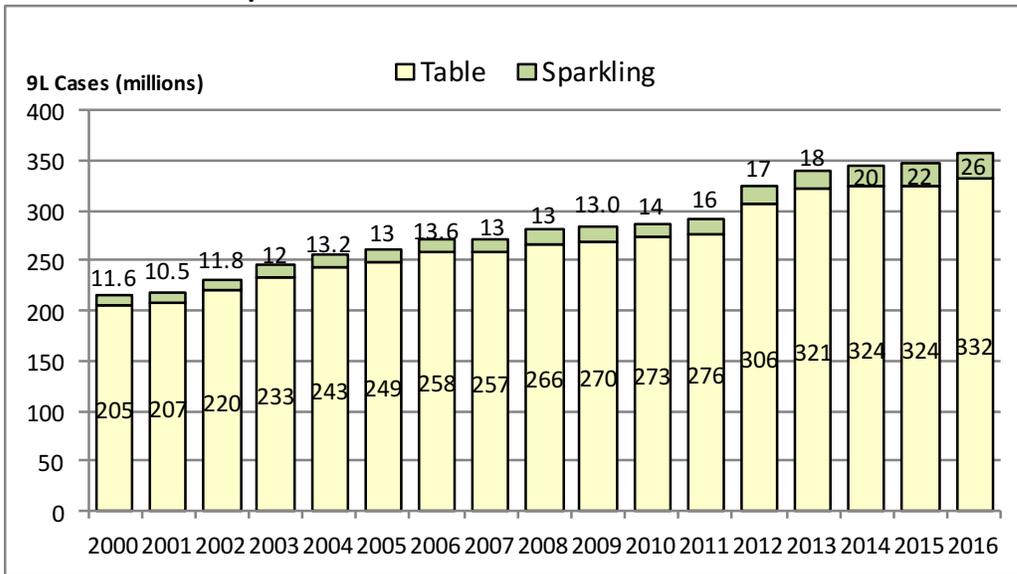


Source: U.S. Census, BW166

From 2000 to 2016, table wine shipments of wine in the U.S. market<sup>6</sup> grew from 205 million 9L cases to 332 million cases. In the same period, sparkling wine sales grew from 11.6 million cases to 26 million. It is notable that, after periods of little or no growth in 2000-2002 and 2005-2009, sparkling wine sales have averaged 10% growth since 2010.

<sup>6</sup> Table Wine is defined by the TTB as still wine from grapes between 7% and 14% alcohol. Originally intended to cover still wines and exclude fortified or sparkling wines, it no longer covers all such wine as a significant proportion of still wine now exceeds 14% alcohol without fortification, due to use of riper grapes with higher sugars. This proportion is smaller in Oregon, with its cooler climate. Nevertheless, table wine continues as a classification for regulatory purposes and data-gathering.

U.S. Wine Consumption 2000-2016



Source: BW166, Gomberg-Fredrikson; figures restated since 2014 edition

As both a wine-consuming and wine producing state, Oregon has reflected the rapid growth of American wine consumption. It has absorbed much of Oregon’s own production as well as substantial amounts of California, Washington and foreign wines.

Wine sales of all types in Oregon in 2016 came to over 7.3 million 9L cases, an increase of 11% over 2013 and 31% over 2010.<sup>7</sup> It is important to note that, while sales of Oregon-made wine make the broadest contribution to the Oregon economy, sales of other wines do create jobs and value at wholesale and retail levels.

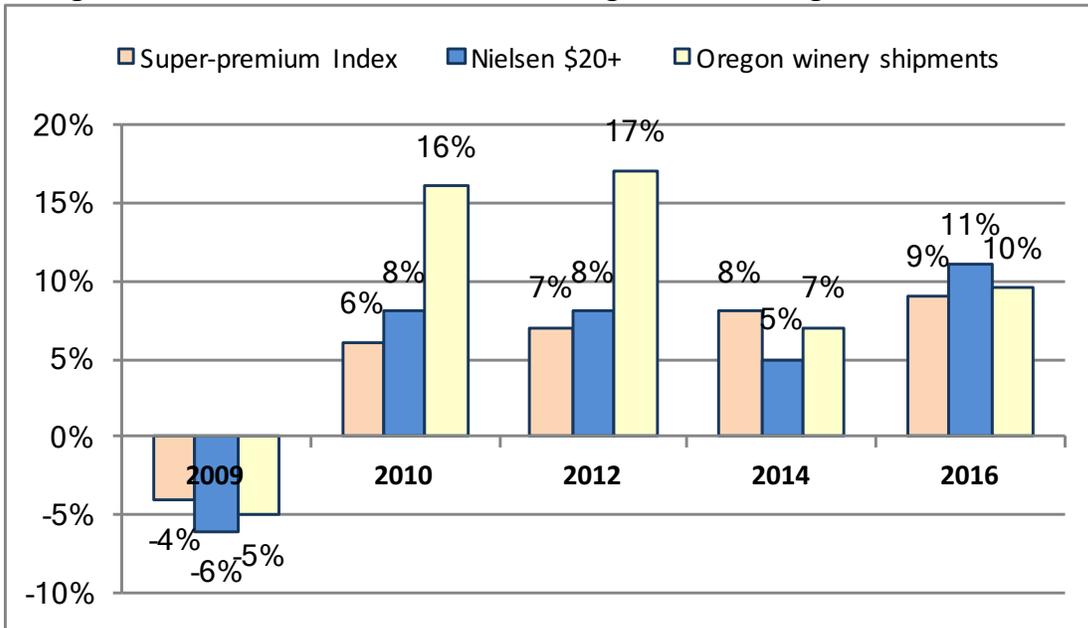
<sup>7</sup> OASS, SOURCE, Full Glass Research



Source: FGR, OLCC, 2013 # revised

Critically for the Oregon wine industry, the growth in volume of wine consumed was accompanied by steady “premiumization” of the wine industry. Consumers not only bought more wine but spent more per bottle. Except for a brief period 2008-2010, sales of inexpensive generic wine have declined steadily from the mid-1990s to the present day, whereas sales of mid-priced (retail price of \$8-15 per 750ml bottle or equivalent) and high-priced (\$15+) wines increased dramatically.

**Change in Total U.S. Sales vs. Prior Year for High End Wine Segments 2009-2016**



Source: Gomberg-Fredrikson CA wine \$14+; FGR estimates; Nielsen all channel retail; OASS/SOURCE

## **Wine Sales in Oregon**

The impact of wine sales originates from two different sources: (1) sales of wine made by Oregon wineries both within and outside the state of Oregon; (2) total sales of wine from all sources within the state of Oregon. Sales of wine in Oregon, regardless of the wine's origin, benefit importers and the wholesale and retail tiers that sell wine within the state, plus industries that support them such as trucking, retail software, and restaurant suppliers.

The revenue from sales of wine made in Oregon supports Oregon wineries and vineyards, as well as the industries that supply and service them. It brings in revenue from outside the state, creating a greater net impact.

**Total Revenues for Oregon Wineries:                   \$ 529,075,387\***

*\*does not include sale of bulk wine to other wineries or bottlers.*

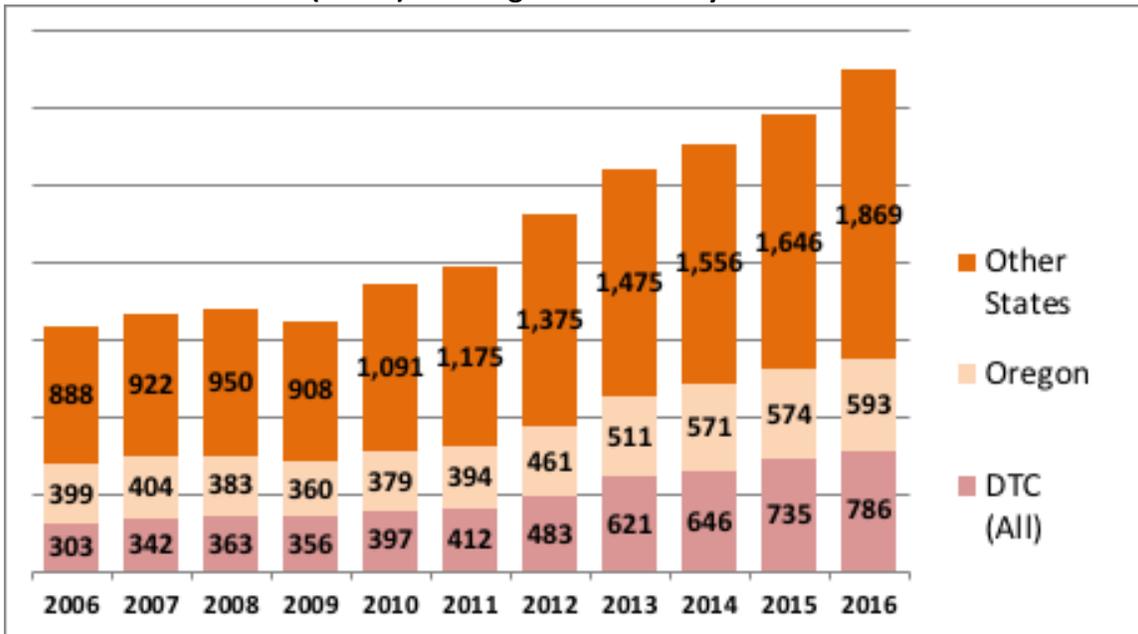
Oregon wineries sold 23% of their bottled wine direct to consumers, via tasting rooms, wine clubs, events, catalog/mail or website sales. Slightly more than 1/5<sup>th</sup> of all club and mailed sales go to out of state consumers. In addition, and unknown but substantial portion of tasting room sales go to tourists from other states. Direct sales realize higher prices for wineries than sales to distributors, due both to capturing the retail margin and the greater demand for wineries' high-end wines in this channel. Therefore they account for over half of total revenue from wine sales at Oregon wineries.<sup>8</sup>

Oregon wineries sold 17% of their bottled wine through in-state distributors and retail, whereas 58% of it was distributed into other states, 2% was exported to other countries. Oregon's larger wineries distribute a higher proportion of their volume off-premise and less via direct-to-consumer routes such as wine clubs or the tasting room. Smaller wineries tend to sell a higher proportion of their wine on-premise and direct to the consumers via tasting rooms, mailing lists, wine clubs, etc.

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<sup>8</sup> SOURCE, FGR winery revenue model

Case Sales (1000s) for Oregon Wineries by Destination Market



Source: SOURCE/OASS winery census 2006-2016; DtC includes tasting room, club, web and mail sales

Oregon’s international wine exports totaled 65,515 cases in 2016. Among export markets, Canada is by far the most important, accounting for 44% of exports. Japan and United Kingdom follow with 10% and 11% shares. Among the major markets, the United Kingdom has shown the strongest growth from 2013 to 2016.<sup>9</sup>

**Oregon winery sales to all channels in 2016 in all markets (including wholesale, retail, direct to consumer and export) were 3,390,958 bottled 9L cases with revenues of \$529 million.**

<sup>9</sup> SOURCE, Full Glass Research

**Total Retail Level Wine Sales in Oregon (all sources): \$ 1,044,031,643\***

*\*does not include direct-to-consumer sales at wineries*

Total consumer purchases of wine from all regions and countries within Oregon in the entire retail tier (stores, restaurants, etc.) are estimated to be \$1.04 billion, not including direct-to-consumer sales from Oregon wineries. On-premise sales (restaurants, hotels, etc.) of wine in Oregon are estimated to be \$538 million on sales of about 1.53 million cases. Off-premise sales (wine shops, grocery stores, etc.) totaled \$506 million on sales of 5.75 million cases. On-premise revenues exceed off-premise despite lower volume due to the much higher margins in the on-premise sector, as well as a higher-priced product mix.

In 2016, Oregon consumers and visitors to Oregon purchased over 7.5 million cases of wine, including tasting room sales and direct to consumer shipments within Oregon. Of these cases, about 1.2 million were produced by wineries in Oregon, and over 6.3 million were produced outside of Oregon.<sup>10</sup>

When tasting room sales, sales to Oregon distributors and retailers, and sales direct to Oregon consumers are added together, Oregon consumes 36 percent of its own wine production, and exports 64%. Based on SOURCE figures and the FGR winery revenue model, in 2016 it exported 2 million cases of wine to other states, both into distribution and direct to consumers, resulting in revenues of approximately \$254 million.<sup>11</sup>

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<sup>10</sup> SOURCE, OLCC, Full Glass Research

<sup>11</sup> Full Glass Research, SOURCE

## Industry Direct Employment

The production and sale of wine requires employment in vineyards, wineries, distribution, retail and restaurants. These forms of direct employment support at least **12,144** jobs within the state of Oregon and generate over **\$324** million in gross payroll.

Data on employment was obtained from the Bureau of Labor Statistics. For vineyard employment, the average annual salary is \$28,855; for winery employment \$33,341; for distribution employment it's \$49,037. Note that it is highly probable that the annual salaries for vineyard and winery full time employment are significantly underestimated, for reasons explained in the following two pages and in Appendix 3. Wholesale and retail employment impacts were modeled based on wine sales vs. total sector revenues for those industries.

The table of direct employment includes all jobs classified as vineyard or winery or wine distributor by the BLS. Due to the seasonal and overlapping nature of winery and vineyard jobs, as well as the usage of vineyard management companies, and the nature of BLS data for these professions, it is highly likely that the BLS numbers are under-estimates (see Appendix 3 for details).

**Wine Industry Direct Employment, 2016**

Industry	Number of employees	Total wages paid
Vineyard * ‡	1,053	\$30,384,000
Winery * ‡	2,993	\$99,790,133
Distribution/Wholesale**	321	\$15,741,033
Grocery/chain stores***	1,703	\$47,354,111
Wine store employees	1,503	\$32,354,805
Eating & drinking places***	5,278	\$111,317,224
<b>Total</b>	<b>12,295</b>	<b>\$336,941,306</b>

Source: Bureau of Labor Statistics and Full Glass Research

\* The vineyard and winery employment are almost certainly an undercount, due to BLS reporting methods, the part time nature of some vineyard and winery work, classification under other industry sectors (e.g. bottling services and vineyard management) and other issues. See below and Appendix 3 for more details.

\*\*The distribution employee count is likely an undercount. BLS reports only employees of organizations classified wine distributors, which may leave out beer/wine distributors and outsourced transport, warehousing and broker jobs. Economic modeling and industry interviews indicate that employment is significantly higher in this tier than the BLS figures. See distribution on page 39.

\*\*\* Prorated for wine's share of their total business revenues

‡ See appendix 3 on vineyard & winery employment

The table also includes all jobs classified as wine & spirits distribution/wholesale by the BLS (spirits are distributed via a state-run organization in Oregon), but not wine-related

jobs at beer wholesalers who also distribute wine. Employees in the retail and restaurant tier, who work in businesses that sell other products and services (food, etc.) are allocated to the wine-related direct employment on the basis of the percent of total revenues that are the result of wine sales.

Winery and grape-grower spending also generates significant in-state employment via its indirect impact on industries supplying the production, marketing and distribution process with packaging, machinery, services etc. When supplier industries are included, the employment impact is 17,123 jobs and \$597 million in payroll.

Note that the BLS statistics do not include owners of businesses not on the payroll, nor other non-salaried family members. For certain agricultural businesses these can be a significant number of individuals and dollars, especially in Oregon with its many small family-owned wineries and vineyards.

Employment and wages in wineries and vineyards are significantly undercounted by the BLS statistics, for the following reasons:

- There is no distinguishing between part-time and full-time jobs for wage reporting, so part-time jobs reduce the average and total wages. This can be significant in the wine industry during harvest and crush.
- BLS statistics only include operations of a certain size and those belonging to the unemployment insurance program. Job data from numerous agricultural businesses and small family businesses are not gathered.

Projecting vineyard and winery employment on the basis of industry surveys, acreage and production results in much higher employment estimates, specifically:

- 1,800 full time job equivalents in vineyards, with at least \$52.6 million in wages;
- 7,500 full time job equivalents in wineries, with at least \$252 million in wages.

On the other hand, cost models for wineries suggest a lower number of jobs, in the range of 3,500 to 4,000. It should also be noted that, for reasons discussed above, the average weekly wages are underestimated in the BLS winery and vineyard categories, so a corrected estimate for wages would be even higher. Equivalent average salaries in industry surveys range from \$39,000 to \$55,000.

## Wine Grape Production

In terms of total grape quantity, Oregon is not a leading producer, with less than 1% of (0.87% in 2016) the total tonnage of grapes in the U.S. However, for wine grapes it is important, ranking fourth among the states for overall production and third for premium wine grapes (those selling for \$1,000+ a ton) after Washington and California.

The vast majority of the wine made by Oregon wineries comes from Oregon grapes, although some grapes (2,660 tons, 3.2% of crush 2016) are brought in from other states (primarily Washington).

Oregon’s 2016 wine grape harvest was 79,782 tons, a 6% decrease from the prolific 2015 crop, but a dramatic increase over the 56,246 tons in the 2013 vintage from the last economic impact study. This is due in large part to increased acreage as well as a slightly higher yield than 2013. Although 2016 was not a high-yielding year, yields have been generally rising in Oregon since 2011.

## Wine Grape Cultivation

In 2016, Oregon wine grapes were the state’s most valuable fruit crop, with a market value of nearly \$167 million. The value of the wine grape crop has roughly quadrupled since 2004. (Note that the above valuation includes tonnage from vineyards owned by wineries where the grapes are not sold, but rather used by the wineries. It is imputed from average price per ton for grapes sold multiplied by total crushed tons).

The following chart illustrates the wine grape crop value compared to those of other crop values over the last three economic impact reports.

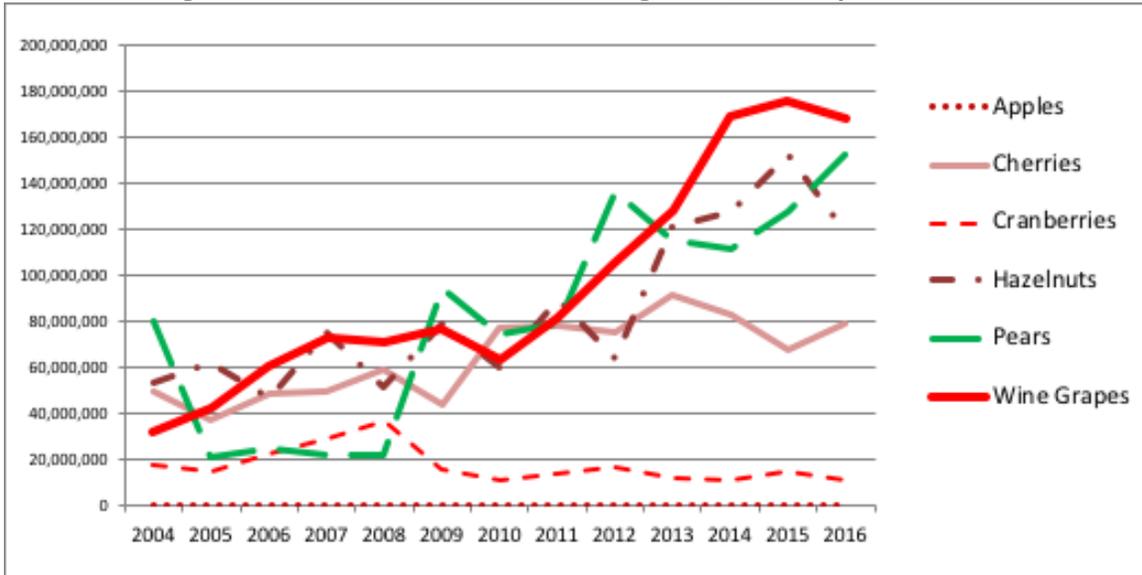
**Oregon Dollar Value by Commodity, 2004 vs. 2010 vs. 2016**

Commodity	2004	2010	2016
Apples	\$26,057,000	\$29,254,000	\$59,800,000
Cherries	\$49,819,000	\$77,256,000	\$79,200,000
Cranberries	\$17,977,000	\$10,950,000	\$10,600,000
Hazelnuts	\$52,992,000	\$59,670,000	\$118,800,000
Pears	\$76,703,000	\$76,347,000	\$148,000,000
<b>Wine Grapes</b>	<b>\$32,200,000</b>	<b>\$62,321,000</b>	<b>\$167,800,000</b>

Source: OASS, SOURCE

The chart below depicts yearly total value of six leading crops in Oregon. Wine grape values have not only outgrown other crops but are less volatile from year-to-year. Prices leveled off since 2014, as the market digests the surge of new vineyards coming on line that were planted in 2013-2014 and a 44% increase in the average tonnage in 2015-2016 compared to the previous four years.

Oregon Dollar Value Trends for Leading Fruit/Nut Crops, 2004-2016



Source: OASS, SOURCE

**Wine Grape Grower Revenues: \$100,782,472**

In 2016, Oregon grape growers harvested 79,782 tons of grapes with an estimated market value of \$167,859,000. Note that not all wine grapes are sold – a substantial amount of Oregon’s grapes is grown in winery-owned vineyards (AKA “estate” vineyards); these are mostly not involved in independent sales transactions and only generate revenue through their incorporation into wine. While firm statistics for the ratio of estate to independent vineyards or tons are not available at this time for 2016, based on the average ratio of purchased to total grapes (49%) during the period 2007 to 2014, independent grape sales within Oregon would have comprised 39,437 tons at an average price of \$2,056 for \$81.1 million. Additional sales to out-of-state producers added an estimated \$19.7 million, for total grower revenues of \$101 million.

## Wine Grape Vineyard Development

<b>Total Vineyard Development Spending, 2016*:</b>	<b>\$33,200,774</b>
<b>Vineyard Removals:</b>	<b>\$ 469,500</b>

*\*net of labor costs (which are in vineyard labor, page 18)*

When developing a vineyard, the site must be prepared to plant vines – land must be cleared, drainage improved, the soil amended, erosion controlled, etc. Once the vines are planted they must be trellised and trained. It can take between two and four years before the vine bears a commercial crop. Generally speaking, costs during the first two years after planting are considered development costs, while costs in the third year tend to follow normal vineyard maintenance (often slightly lower). This process is very capital and labor intensive, with development costs ranging widely from \$15,000 to \$30,000 an acre, depending on the specific location of the vineyard and planting layout. The most important cost factor in planting a vineyard is the vine spacing. Different vineyards use different vine spacing depending upon the site, desired grape flavors, and cost considerations.

Based upon changes in plantings declared in the SOURCE vineyard census, and cost estimates from interviews with vineyard managers, developers and accountants, approximately \$58.8 million was invested in developing 2,713 acres during 2016, including labor. Some acreage removal also occurs every year, as growers pull vineyards due to disease, age and declining yields, financial conditions, or preference for a different variety. 313 acres were declared removed in 2016, resulting in an estimated \$469,500 in spending.<sup>12</sup> Based on changes in acreage, approximately \$139 million has been spent on planting since the last economic impact report.

The estimated weighted average, per-acre development cost of \$21,470 is based upon a survey of vineyard developers, planting density and the variety and location of the vineyard acres developed, net of labor. Only the first two years of development are considered.

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<sup>12</sup> SOURCE, Full Glass Research

## Vineyard Maintenance, Management & Equipment

**Bearing Vineyard Maintenance Spending:                   \$ 54,440,337\***

*\*not including sprays, fertilizers and other vineyard inputs are detailed on page 30;*

*\*net of labor costs (which are in vineyard labor, page 18)*

Annual vineyard maintenance costs, such as cultivation, tying and training, weed control and pruning have increased with labor and input costs and typically range from \$5,000 to \$8,500 per acre, depending on the variety, trellising, spacing and maintenance regimes. We estimate a total of more than \$69 million to maintain the 27,658 bearing acres in 2016. Spending on acres planted in 2015-2016 is covered in vineyard development section on page 30. Spending on locally-sourced inputs such as such as fertilizer, fungicide, etc. has also been removed from this total, as these are covered in the Supplier Industries.

Spending on much of the labor involved in vineyard maintenance is covered in the vineyard and winery employment section (see page 37). A substantial proportion of vineyards in Oregon are maintained by independent, vineyard management companies. There was insufficient data to precisely measure total impact of vineyard management at the time of this report. IMPLAN estimates vineyard management revenues of \$10.2 million, not including labor costs.

## Environmental Impacts and Investment

The combination of concerns over food safety, environmental and wildlife conservation and global warming has caused substantial rethinking of growing and production practices by many grape growers and wineries. A variety of new methods and products have emerged to address these issues. The Oregon wine industry has been at the forefront of this movement for wine grape growing and winery practices. Substantial acreage is now farmed with various forms of sustainable or organic methods, wineries have adopted carbon footprint reduction schemes, and a number of certification organizations for such methods are headquartered in Oregon.

Sustainable farming and wine production generally includes a reduction in carbon footprint, increased use of renewable resources, and a decrease in inputs that require non-renewable energy or have injurious side effects on the environment. Organic grape production eliminates certain inputs such as artificial fertilizers, pesticides and fungicides. Organic wine production is less common, requiring both use of organic grapes and elimination of certain inputs such as SO<sub>2</sub>, whether naturally derived or not. Biodynamics is a specialized form of organic grape growing.

These practices are not only good for the environment, but have a positive impact on the perception of Oregon wines in the marketplace and provide additional selling points or brand identification for Oregon wineries. In a survey of the Wine Opinions national trade panel in 2016, 52% of trade members associated Oregon with environmentally friendly and sustainable production, compared to 7-26% for seven other leading sources of wine. Over ¼ of frequent wine consumers strongly associate Oregon with sustainable or organic wine production.<sup>13</sup>

While a detailed report on the economic impact of these activities is outside the scope of this report, they represent a substantial investment by the industry. The last vineyard certification survey in 2014 showed from 35-46% of Oregon acres (depending on the extent of multiple certifications) certified by at least one agency monitoring sustainability or organic/biodynamic production.

Based on a survey of vineyard managers, sustainable, organic and biodynamic viticulture increases management costs from a marginal amount to 20%, depending on the vineyard. While costlier to the farmer, this spending does increase viticulture's economic impact in Oregon, particularly since there is an increased labor component and more of the inputs are created locally. FGR/Live studies have shown that grapes grown using these methods have higher average prices, although there are other factors involved. Other benefits cited in surveys include improved quality of soil, less frequent spraying in more precise locations, documenting and preserving land value for future owners or sale of the property.

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<sup>13</sup> Wine Opinions national consumer panel 2016

## **Winery Maintenance, Vehicles and Equipment Spending**

### **Winery Maintenance, Vehicle & Equipment Spending\*: \$13,882,000**

*\*not including stainless steel tanks or inputs covered in the supplier section*

*\*\*see also page 30 for direct employment in wineries*

Winery maintenance spending was based on our winery survey, production in gallons and winery cost models. It includes spending on supplies needed for production and maintenance at the winery, as well as related vehicles, equipment, lab equipment, supplies, etc. It does not include new winery buildings, external laboratory services, stainless steel tanks, cooperage, or inputs such as gases, refrigerant and chemicals, which are covered in other sections of the report.

Unlike stainless steel tank production (covered separately), a substantial proportion of major winery equipment (such as bottling lines, presses, crusher/de-stemmers, vehicles) is produced in other states or countries. In such cases, the economic impact within the state of purchases by Oregon wineries is confined to the dollars retained by local brokers and suppliers of the equipment. Based on the OWB-FGR surveys, only 31-38% of this investment is spent on firms within Oregon, and in some cases only the sales margin and installation/service fees impact the Oregon economy. The above number is the net revenue impact in Oregon.

## ALLIED INDUSTRIES

We have analyzed separately a number of the industries that benefit from wine production and distribution such as wholesalers, tourism, equipment and supplies and trucking/warehousing. Some related industries – for example winery construction - have not been separately enumerated in this study due to limited availability of data, but will be covered in the expanded final report. However, the indirect economic impact of these industries has been captured under IMPLAN analysis, further discussed on page 34.

### Distribution (Wholesalers, brokers, importers)

<b>Direct Employment:</b>	<b>321 (BLS*) / 962 (projected**)</b>
<b>Total Wages:</b>	<b>\$15,741,033 (BLS*) / \$51,600,000 (projected**)</b>
<b>Total Revenue:</b>	<b>\$526, 298,513</b>

*\*jobs classified by BLS under wine wholesalers*

*\*\*estimated jobs including brokers and beer/wine combined wholesalers, based on comparative retail revenues and industry interviews*

For various legal, management and economic reasons, the vast majority of wines from other states, and many Oregon wineries, are sold through the “three-tier system,” from winery to distributor-wholesaler to retail & restaurant. Wholesalers buy wine from wineries or importers and sell to the retail tier. Oregon wineries may also sell directly to retail accounts, acting as their own wholesaler/distributor (a minority practice). Wineries from other states may sell directly to Oregon consumers or have their wines imported into Oregon and distributed by an Oregon wholesaler. For wine produced outside the United States, importers may add another tier of distribution. Importers, wholesalers and brokers can add value to wine distribution through delivery, bill collection, warehousing and sales and promotion efforts. Brokers do not take possession of wine, but aid in selling it through wholesalers and the retail tier.

In general, wineries substantially discount their wines when selling them to wholesalers. This transfers margin and revenues from the winery to the wholesale tier, where the distributor’s sales and margins support employment at the distributor. Wholesale revenues support their investment in fixed assets such as buildings, equipment, delivery vehicles. The major distributors in Oregon are privately held, so there is little specific public information available about the distribution tier. Distributor revenues have been estimated based the FGR distribution revenue model which incorporates surveys of distributors and wineries, scan data, SOURCE sales data and OLCC tax data.

The employment and revenue estimates above are based on distribution and sales of all wines in Oregon, not just those produced by Oregon wineries.

In Oregon there are some distributors with substantial beer and wine business, whereas others specialize only in beer or only in wine. While the BLS records 321 jobs in wholesale distribution of wine only (beer wholesalers removed), economic modeling

based on wholesale revenues estimates total employment in this tier at 962 jobs, including the jobs at beer/wine distributors and brokers.

## **Tourism**

<b>Direct Employment:</b>	<b>7,625 employees</b>
<b>Total Wages:</b>	<b>\$215,855,209</b>
<b>Total Revenue:</b>	<b>\$786,827,053</b>

In Oregon, visiting “wine country” is an increasingly important segment of the tourism industry. Tourism related to the wine industry results in estimated expenditures of \$786.8 million throughout the state. This estimate covers hotel, food, entertainment, transportation, retail and other business generated in Oregon by visitors to wineries. It does not include tasting room revenues at the wineries;

Overall visitation to Oregon increased 10% between 2013 and 2016, while the proportion that were pure tourism increased from 47% to 58%. In addition, the percent of tourist who visited wineries increased by 22% for overnight visitors to 11% and 40% for day-trippers to 7%. As a result, the number of wine-related visits increased from 1.8 to 3.3 million from 2013 to 2016.

In addition, spending in restaurants by visitors generally increased during the same time period, resulting in a major increase in wine-related tourist revenues and employment.

Based on Dean Runyan and Longwood research, 12% of Oregon overnight leisure trips by adults and 7% of leisure day trips include winery visits and/or wine tasting. The total number of wine-oriented trips is estimated at 1,800,764, of which 743,000 or 43% are estimated to come from out-of-state tourists.

The Full Glass Research wine tourism model estimates that tourism directly related to the wine industry employs 7,625 people and generates over \$215 million in wages. This does not include employees of winery tasting rooms or other winery hospitality, who are covered under winery employment.<sup>14</sup>

It should be noted that these figures represent an enormous increase since the last report; due to the factors above, but also in part from (a) more accurate measurement of overnight visitors spending; (b) the inclusion of tourist-related on-premise revenues in this section rather than just in the on-premise retail section of the report.

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<sup>14</sup> FGR Tourism model, Dean Runyan, Travel Oregon

## **Wine Production - Supplies and Services**

### **Bottling & Processing, Custom Crush Services**

<b>Total Jobs:</b>	<b>30+ (bottling/processing only)*</b>
<b>Total Wages:</b>	<b>\$1.3-1.6 million (bottling/processing only)*</b>
<b>Total Revenue:</b>	<b>\$6-12 million (bottling/processing only)</b>

*\*custom crush facility jobs and wages are included under winery employment, page 18*

A bottling line is a substantial capital investment that, in most wineries, is used less frequently than pumps, tanks, filters or many other types of equipment. Unlike crushing and pressing equipment, it is not required until the end of the production process. Many wineries elect to contract with mobile bottling services, or have their wine bottled at custom crush facilities or bonded warehouses that offer this service, rather than invest in their own bottling line. Multiple firms offer this service, while others perform filtering or other processing for many wineries. This segment of the business has seen strong growth and investment in recent years, primarily by Oregon-based companies.

In addition to bottling services, there exist wineries that do most or all of their business as “custom crush” facilities, i.e. making wine for other wineries and for brands without winery homes. Custom crush services are also offered by wineries with excess capacity on an irregular basis. Employment at custom crush facilities is covered in the Winery employment statistics (page 18), but revenues are not, although custom crush revenues become part of the cost structure for wines later sold in or out of state. At this time, insufficient data is available to allow a detailed analysis of the custom crush sector. Estimates of its revenue is in the All Other Indirect revenue summation.

Additional independent production services used by wineries include various forms of filtration and specialized vinification equipment.

### **Trucking, Transportation & Warehousing**

<b>Direct Employment:</b>	<b>118 (transport) 87 (warehouse)</b>
<b>Total Wages:</b>	<b>\$7,618,632 (transport) \$4,512,713 (whse)</b>
<b>Total Revenue:</b>	<b>\$20,373,177 (transport) \$8,981,716 (whse)</b>

Trucks are used to transport grapes, bulk wine, empty glass, barrels, supplies and equipment to wineries. Trucks also move full cases of bottled wine and bulk wine to warehouses, distributors and export staging. This estimate does not include proprietary trucking by distributors, but does include trucking costs for wineries that handle their own distribution and importers or brokers that outsource delivery.

There are warehouses that store wine for wineries, stage shipments, coordinate transport, and may offer additional services such as compliance, direct to consumer shipping or bottling. Many wineries use warehouses for bottled wine storage at some point in its journey from production facility to consumer, whether because space is short at the winery or for transport consolidation and efficiencies. There are no public figures available for warehouse usage and spending, but a high proportion of Oregon wineries use them for at least some of their wine.

**Services – Banking, Consulting, Accounting, Insurance, etc.**

<b>Direct Employment:</b>	<b>183</b>
<b>Total Wages:</b>	<b>\$11,004,195</b>
<b>Total Revenue:</b>	<b>\$ 27,088,258</b>

Wineries and vineyards require a wide variety of supporting services, ranging from typical business support such as accounting, advertising and marketing and insurance to specialized services such as waste water engineering, label design, enological and environmental consulting, and regulatory compliance. In addition, as a capital intensive long-term business, wineries and vineyards use a wide variety of financing methods. All of these generate business for local service industries. The surge of vineyard and winery investments and acquisitions by outside companies undoubtedly boosted revenues in this sector during 2016.

**Production Equipment and Supplies**

**Corks & Closures, Glass & Other Packaging**

<b>Total Revenue:</b>	<b>\$6,810,800</b>
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Although wineries spent nearly \$28 million on packaging such as glass, corks, and capsules in 2016, there are no capsule, cork, or other closure manufacturers in Oregon. Therefore, the majority of revenue for corks and closures goes to out-of-state producers and only the margins retained by wholesalers, brokers and salespeople for the out-of-state cork producers remain in Oregon. Since packaging salespeople may cover additional territories outside Oregon and brokers often support other products, it is not possible to estimate related employment separately.

Some Oregon wineries are now packaging wine in kegs that are distributed to restaurants and bars and returned for refilling, similar to beer. Insufficient data is available at this time to provide an estimate of their impact.

**Stainless Steel Tanks & Related Equipment**

<b>Direct Employment:</b>	<b>70 employees*</b>
<b>Total Wages:</b>	<b>\$3,966,805*</b>
<b>Estimated Revenue:</b>	<b>\$8.4 million+</b>

*\*steel tank and equipment firms typically also sell other equipment and infrastructure materials, thus the employment estimate here may also reflect their sales*

Durable and easy to clean, stainless steel is the most frequently used material for fermentation and storage in the wine industry. Stainless steel tanks are made in Oregon, in a few other states, and in Europe. Oregon has several large firms involved in the design and manufacture of stainless steel tanks. In addition, various winery equipment brokers or representatives sell tanks and related equipment. There are a variety of types, ranging from basic containers to temperature-controlled tanks with automated features and computer monitoring. Tanks have a useful life of approximately 25 years, so they are not purchased frequently; business tends to follow major expansions in winery volume and capacity and then level off. The business among wineries tends to be extremely cyclical, as capacity expansion is affected by new plantings (with a lag effect), the rate of new winery starts, ease of credit and other variables.

Based on the reported capacity issues and the increase in wine production from 2010 to 2016, there is no doubt that there has been substantial investment in stainless steel tanks by the wine industry during that period. Using an adjusted version of the NW Winery production cost model<sup>15</sup>, winemaker interviews, the number of new wineries crushing grapes and assuming both the industry's ability to process the large 2015 harvest and plan for 2017, FGR estimates that at least \$8.4 million was invested in stainless steel tanks in 2016.

There are a number of stainless steel producers and sellers in Oregon, although not all produce or represent tanks for the wine industry. Since they are private companies, only limited data was available, and we relied on modeling and IMPLAN for these estimates.

**Wine Labels and Other Printing**

<b>Direct Employment:</b>	<b>39</b>
<b>Total Wages:</b>	<b>\$1,815,499</b>
<b>Total Revenue:</b>	<b>\$9,414,000</b>

Wine labels are required by Federal (TTB) regulation. Labels are also the key element in wine package design, as wineries attempt to create an image, communicate with consumers and gain notice on the shelves. In fact, for many small wineries, labels are the

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<sup>15</sup> <http://www.nwwinerycalculators.org/index.php>

most important part of winery marketing. A certain number of labels are affixed to the outside of cases of wine to identify the product. Additional labels are often printed for marketing purposes, for press kits and to hand out at events.

We estimate that in 2016 the Oregon wine industry purchased approximately 45 million labels with a value of roughly \$8.4 million, with \$5.4 million in value coming from Oregon printers. In addition, Oregon printers sold labels to wineries outside Oregon.

In addition to labels, wineries generate substantial demand for other printed materials, such as brochures, posters, sales presentations, cards, and so on. This spending is extremely variable by winery and some of it is done in-house, some by local copy and printing services and some by commercial printers. The total number of jobs related to printing services for wineries is 85, with related wages of \$3.5 million.

### **Cooperage and Barrels**

Oregon wineries probably spend more than \$20 million on new barrels annually, but only a small portion goes to firms within Oregon. The two categories of Oregon revenue would include in-state sales of the relatively small Oregon Barrel Works' products; and sales or broker fees for representatives or resellers based in Oregon. However, there is insufficient information to estimate this revenue, which could easily range from \$100,000 to \$600,000 a year.

Oregon Barrel Works, the Pacific Northwest's only cooperage, is based in McMinnville and produces and sells barrels made from French and Oregon Oak. Oregon Barrel Works produces Oregon oak barrels starting with the sourcing of the trees and working to finished barrels. They also purchase wood from France which is seasoned and then coopered into barrels, and provide barrel repair and maintenance. They also produce barrels for beer companies. As a privately-held firm, their employment and revenue numbers are not available.

### **Winery & Vineyard Agricultural Supplies & Inputs (Chemicals, Gases, Cleaners, Sprays, Fertilizers, Filter & Fermentation Aids, etc.)**

<b>Direct Employment:</b>	<b>178 employees</b>
<b>Total Wages:</b>	<b>\$ 5,370,310</b>
<b>Winery Spending:</b>	<b>\$ 4,072,823</b>
<b>Vineyard Spending:</b>	<b>\$ 7,052,790</b>

This is a broad category, containing everything from biodynamic vineyard applications to machine lubricants. Oregon wineries and vineyards and related production services spend approximately \$11.1 million annually on variable inputs, of which the majority goes to companies in Oregon. Some of these inputs are also manufactured in Oregon.

## Other Economic Effects

### Taxes & Regulation

The wine industry generates significant tax dollars, benefiting federal, state, and local governments. In Oregon, tax dollars are raised through excise taxes, income taxes, estate and gift taxes, payroll taxes, property taxes, and other business taxes and fees, such as occupational taxes, licenses, and import duties.

An excise tax is a type of sales tax on a specific commodity, in this context assessed on wine sales. Industry employers also pay payroll taxes to federal and state governments for their employees along with a percentage of their net income in the form of income taxes, which is paid at the corporate level or passed through to individuals, depending on the ownership structure. We have not included estate or county taxes in the tax revenue summary below. Oregon has no state sales tax. Property tax is a tax on the ownership of property by local government. Property taxes are also covered in Appendix 3 – Regional and County Impact since they are primarily used for local government.

#### Oregon State Taxes, Licenses and Other Fees Directly Related to Wine\*

Tax Type	Total 2016
Employment Taxes	\$4,200,746
Corporate Income	\$5,199,355
Personal Income	\$41,358,098
Other Taxes and Fees	\$29,606,670
Employment Taxes	\$4,200,746
Property Taxes	\$75,496,699
<b>Total</b>	<b>\$155,861,568</b>

Source: Oregon Department of Revenue, OLCC, FGR

\*Does not include commercial or residential property tax impacts; see appendix 4 for property tax estimates

The majority of licensed Oregon wineries are excise tax-exempt due to their small production. Most of the Oregon excise tax dollars come from larger wineries and wines imported into the state. The tax rate for non-exempt wine is 67 cents per gallon for wine under 14 percent alcohol and 77 cents per gallon for wine over 14 percent alcohol. Only 2 of the 67 cents accrue to the Oregon Wine Board.

**State and Local Government**

**Total Revenues:** **\$13,858,626\***

*\*attributable to wine*

Wine production and sales are licensed and regulated at the state level as well as Federal. In addition, vineyard and winery activity in obtaining permits, inspections, adapting to local ordinances and other activities provide fees and support employment at the county level.

## Direct, Indirect, Induced and Net Effects

### IMPLAN Modeling

IMPLAN is derived from the phrase “**IM** impact analysis for **PLAN**ing.” IMPLAN is an economic model that uses input-output tables for over 400 industries. Initially developed by the U.S. Forest Service, it is currently used hundreds of universities, government agencies, corporations and economic consulting firms doing research to estimate regional and industry-specific economic impacts. Full Glass Research supplemented its figures for employment, wages, and revenue with IMPLAN estimates for those areas not specifically covered in our analysis. For example, we developed our own estimates for the wine-related wages and employment within the retail sector. However, we used IMPLAN for estimates of the impact of these wages being spent within the Oregon economy on housing, food, entertainment, etc. In some cases, such as spending on chemicals and related supplies or trucking, Full Glass used IMPLAN to calculate part or all of the effect on revenues, employment and wages. The IMPLAN analysis for this report was conducted by Professor Robert Eyler PhD. Professor Eyler is Professor of Economics at Sonoma State University and proprietor of Economic Forensics & Analytics, and has extensive experience analyzing wine industry impacts. In the IMPLAN model, these effects are categorized as follows:

**Direct** effects are changes in the industries associated directly with final demand. For example, in this study, winery revenue is the direct effect of all wine sold by Oregon wineries. Direct jobs and wage (income) effects represent the employees hired by, or income derived directly from, the production and sale of wine – from vineyard down through retail sales. Direct effects were estimated based on extensive primary research by Full Glass Research. IMPLAN was not used for these calculations.

**Indirect** effects are the changes in industry sectors that supply goods and services to industries directly affected by the changes in demand for wine or grapes. Examples of indirect effects are the purchase of bottles, corks, utilities, and goods and services by the wine industry. Some indirect effects were estimated based on primary research, but where this research was insufficient they were supplemented or replaced by IMPLAN.

**Additional indirect revenues (above the line items in the report) calculated with IMPLAN were \$527,736,044. Additional indirect employment is estimated at 4,482 jobs and \$243,826,195 in wages.**

**Induced** effects are changes in economic activity resulting from households spending of income earned from direct or indirect sales. For instance, employees of wineries and printers spend their wages and salaries in Oregon, resulting in additional output, income, and jobs in Oregon. These effects were entirely estimated using IMPLAN. **Induced effects included revenues of \$782,761,939; employment of 4,990 jobs at \$225,208,675 in wages.**

## Measuring Net Economic Effects

This study was intended to give as wide and comprehensive a view of the economic impact of wine in Oregon as possible. Thus, for nearly every sector that is impacted by production or sales of wine, we calculated the total revenues and wages resulting from that activity. This is essentially a summary or catalogue of the impact of wine on the Oregon state economy. It enables those making decisions affecting the production or sale of wine to get a better idea of the scope and potential impact of those decisions, by economic sector and activity. In addition, it provides a valuation of each sector's wine related activity as it would be felt or seen by that sector.

Economists evaluating investments or policies with economic impact have another way of comparing choices among those alternative investments or policies. This is to measure the net economic effect of the choice. This changes the analysis when applied to a vertical analysis of a production or distribution process, for example when raw materials are purchased and transformed by one entity, sold to another entity, and then sold to the final consumer. With this type of analysis, costs for one participant that are revenue for another participant are removed from the valuation, so that only the net value added by the processor or distributor contributes to the measurement. In addition, wages are treated separately in this analysis, since: (a) some portion of the wages is actually spent on products or services in the revenue stream; (b) the wages paid in one tier are costs for that tier, thus reducing the net economic impact of revenues.

Which method should be applied depends on the intent of the user. If the policy-maker wants to assess the scope of revenue, wages and employment that would be affected by a policy impacting a particular sector or tier of the industry, the summary approach is more useful. If the policy-maker is comparing alternative investments or policies that affect multiple tiers of the industry, or assessing the comparative economic contribution of unrelated industries, then the net economic impact might be preferred – provided that all of the alternatives are valued using the same basis and methodology.

Full Glass Research consulted with Professor Robert Eyer of Sonoma State and Economic Forensics in synthesizing our primary research and the IMPLAN model output to arrive at the following valuation of net economic benefit for the Oregon wine industry:

<b>Revenue Category</b>	<b>Net Impact</b>
Grape grower revenues	\$101,950,910
Net Winery Direct Impact	\$427,124,477
Net Wholesale Tier Direct Impact	\$395,713,168
Net Retail Tier Direct Impact	<u>\$648,318,475</u>
	\$1,573,107,030
Indirect & Induced Net Impact (IMPLAN)	<u>\$449,455,915</u>
<b>Total Net Effect</b>	<b>\$2,200,562,945</b>

## Total Oregon State Economic Impact

<b>Revenue</b>	<b>Total Oregon 2016</b>
Wine Grape Sales*	\$100,782,472
Winery Sales	\$ 529,075,387
Distributors' Sales (in Oregon)	\$526,298,513
Retailers and Restaurant Wine Sales (in Oregon)**	\$ 946,935,903
Tourism**	\$786,827,053
Vineyard Development	\$33,200,774
Vineyard Maintenance and equipment	\$54,440,337
Winery Maintenance, equipment, tanks, infrastructure	\$22,282,000
Winery & Agricultural inputs	\$11,125,613
Glass, corks, closures, packaging	\$6,810,800
Trucking, Shipping, Warehousing	\$29,354,893
Professional Services - banking, insurance, accounting, consulting, etc.	\$27,088,258
Printing (including wine labels)	\$9,414,000
Tax Revenues (includes estimation for property taxes)	\$155,861,568
Government fees and direct funding	\$13,858,626
Other Indirect effects – IMPLAN	\$527,736,044
Wine Industry Induced Revenues - IMPLAN	\$782,761,939
<b>Total Revenue</b>	<b>\$4,563,854,080</b>

\* does NOT include winery-owned grapes valued at market prices; value with them = \$167,859,000

\*\* on-premise restaurant spending by tourists is listed under Tourism to avoid double-counting in restaurant wine sales. Actual total of ALL retail wine sales is \$1,044,053,406.

<b>Wages</b>	<b>Total Oregon 2016</b>
Winery Employees*	\$99,790,133
Vineyard Employees*	\$30,384,000
Tourism Employees (hotel, restaurant, etc. wine-related)***	\$215,855,209
Distributor Employees (BLS wine statistics only)**	\$15,741,033
Wine Store Employees	\$32,354,805
Grocery and chain retail employees (wine-related)	\$47,354,111
On-premise employees (wine-related)***	\$98,872,675
Trucking, shipping, warehouse employees	\$12,131,345
Printing (including labels)	\$1,815,499
Tanks and related equipment	\$3,996,805
Professional Services, Banking, Finance, Insurance	\$11,004,195
Other Indirect Services & Suppliers****	\$247,823,000
Wine industry Induced *****	\$ 225,208,675
<b>Total Wages</b>	<b>\$1,042,331,485</b>
<b>TOTAL IMPACT (Revenue+Wages)</b>	<b>\$5,606,185,565</b>

<b>Employment</b>	<b>Total Oregon 2016</b>
Winery Employees*	2,993
Vineyard Employees*	1,053
Tourism Employees (hotel, restaurant, wine-related only)***	7,625
Distributor Employees (wine only)**	321
Wine Store Employees	1,503
Grocery and chain retail employees (wine-related)	1,703
On-premise employees (wine-related)***	4,571
Trucking, shipping, warehouse Employees	205
Printing (including labels)	39
Tanks and related equipment	70
Professional Services: Banking, Finance, Insurance, Associations	183
Other Indirect Services & Suppliers****	4,482
Wine industry Induced *****	4,990
<b>Total Employment</b>	<b>29,738</b>

\*underestimate; FGR estimates are 1800+ jobs and \$52.6m wages for vineyards & 3500 to 7000 jobs with \$120-252m in wages for wineries; see pg. 19 and Appendix 4 for details

\*\*underestimate; see Distribution pg. 25 and Appendix 3 for details

\*\*\* all tourism-related restaurant employment was shifted from On-premise to Tourism. Total on-premise including tourist-related is 5,278 jobs and \$111 million in wages (see pg. 18)

\*\*\*\*indirect estimated from primary research and IMPLAN; induced from IMPLAN

## Appendix 1 Review of Changes since 2013

The Oregon Wine industry has experienced impressive growth since the last economic impact study, that was carried out in 2014 using 2013 data.

The standout number is the tourism impact, more than doubling since 2013. This was driven by the exponential effect of an increase in visitors to Oregon, an increase in the proportion of them that were tourists or “leisure visitors”, and an increase in the percent who visited wineries. There was also a change in methodology that allowed a more accurate estimate of their spending.

The indirect revenues and jobs and induced spending also showed extremely high growth, due to the combination of an improved economy (which increased the multiplier effect) and the impressive growth of winery spending and supplier revenues.

Where methodology changes were an important factor, the 2013 numbers have been adjusted to the 2016 methodology to allow a fairer comparison.

Category	2013	2016	% CHANGE
Oregon Winery Sales	\$363,479,079	\$529,075,387	46%
Wine exported from state*	\$127,565,439	\$195,457,789	53%
Oregon Wine sold Direct-to-Consumer	\$196,938,456	\$286,244,645	45%
Wine Grape Crop Value	\$127,990,000	\$167,859,000	31%
Retail Wine Sales (on/off premise, all types)**	\$884,663,500	\$ 1,044,031,643	18%
Wine-related Tourism**	\$295,239,468	\$786,827,053	167%
Direct State Tax Revenue (property taxes not included)	\$37,804,095	\$80,364,869	113%
Indirect (Supplier) jobs**	2,076	4,979	140%
Indirect revenues & wages**	\$449,598,611	\$ 990,229,953	120%
Induced jobs	3,162	4,990	58%

\*Does not include Direct-to-Consumer sales shipped to consumers in other states.

\*\* The following 2013 numbers have been restated for either greater accuracy or to put them on the same methodology as 2016 for comparison:

- 1) Wholesale revenues were modified slightly to reflect higher margins in restaurants than in the 2013 distribution revenue model; the 2013 number in this table has been adjusted to match.
- 2) Retail restaurant revenues- 2016 reflected higher margins and product mix in restaurants than in the 2013 distribution revenue model; the 2013 number in this

table has been adjusted to match. Unlike the summary table on page 36 the 2016 restaurant revenue here includes tourism-related revenues, as does the 2013 number.

- 3) 2016 tourism model included a substantially higher and more realistic estimate of average overnight wine tourist spending; and included on-premise revenues related to tourism. The 2013 number in this table has been adjusted to match those changes.
- 4) The 2016 supplier numbers included data on additional smaller industries supplying the winery and distribution tiers.

The restated numbers above eliminate the effects of significant changes in methodology when comparing 2016 to 2013, with the exception of the supplier industries.

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## Appendix 2 – Impact of Oregon Wineries & Vineyards

The complete report describes the effects of wine production and sales throughout the economy, from input and service suppliers to retail sales, for all types of wine. A substantial portion of the retail and wholesale revenue and wage effects are related to the sales of wine imported into Oregon, whether from other states or countries. This appendix isolates the economic impact of just Oregon-produced wine and grapes on the state economy.

The following table enumerates revenue, wages and jobs that are derived solely from Oregon wine grapes and wine, without the impact of wine imported into the state.

Sector	Revenue	Wages	Jobs
Vineyards	\$189,592,021	30,384,000	1,053
Wineries	\$561,908,387	99,790,133	2,993
Tourism	786,827,053	215,855,209	7,625
Suppliers (indirect)	\$84,930,564	24,627,625	421
Wholesalers	\$76,793,648	\$2,296,816.95	47
Retail tier	\$106,752,500	\$20,016,150	902
Induced	\$98,164,018.15	\$28,242,799.45	626
<b>Total 2016</b>	<b>\$1,904,968,191</b>	<b>\$421,212,733</b>	<b>13,667</b>

## Appendix 3 County & Regional Impacts

In this report, the economic impact of the wine industry has also been allocated by wine-growing region and, where feasible, by county. The following tables provide estimates of wine-related revenues, wages and employment by region and county. The method used to allocate these impacts by region and county varies, depending on what is being measured. In some cases (e.g. winery employment) the data is directly available at county level from the Oregon Employment Department. In others, the state-level data has been allocated based on winery production, vineyard acreage or other relevant data that exists at the county level. In still others, IMPLAN economic modeling software was used to allocate the effects.

Property taxes have been included because they are a primary fund-raising method for local government.

Note that revenues from some service and product providers that typically cover multiple counties and regions or are represented by brokers or agents, have not been included. IN addition, the employment impact for distributors and some professional services has been allocated on an estimated business revenue basis, rather than actual workplace or residency. Finally, the regional definitions exclude some counties. Because of the above differences in methodology, the regional and county numbers do not add up to exactly the same as the corresponding total state numbers. They are intended to be used independently.

### Wine Industry Economic Impact by Region 2016

Region	Willamette Valley	Southern Oregon	Columbia Valley
Winery/Grower Revenues	\$411,315,334	\$96,703,682	\$37,783,076
Wholesale & Retail Revenues*	\$797,705,278	\$154,933,360	\$55,773,478
Wine-related Tourism Revenues	\$431,444,766	\$105,540,523	\$37,634,056
Indirect & Induced Revenues	\$880,653,131	\$171,043,808	\$61,572,976
Wages	\$611,024,450	\$128,725,074	\$46,726,088
Employment	17,152	3,746	1,363

*\*Wholesale & Retail revenues from all wine of all types/sources*

**Wine Industry Economic Impact by County 2016**

Counties	Wine-Related Revenue (\$)*	Related Wages (\$)*	Related Jobs*	Indirect & Induced Jobs	Property Taxes
BAKER	\$19,256,476	3,112,476	107	92	\$906,560
BENTON	\$88,289,493	12,297,324	675	286	\$2,560,493
CLACKAMAS	\$137,644,382	13,181,189	723	543	\$4,044,913
CLATSOP	\$17,619,024	3,231,187	140	108	\$718,707
COLUMBIA	\$3,946,860	684,410	31	26	\$162,874
COOS	\$10,958,222	1,952,274	86	66	\$320,664
CROOK	\$1,038,375	147,510	8	11	\$47,741
CURRY	\$1,931,488	274,384	17	21	\$107,133
DESCHUTES	\$51,767,931	9,172,981	376	283	\$1,914,838
DOUGLAS	\$107,337,623	21,875,092	786	327	\$2,468,818
GILLIAM	\$252,461	35,864	2	3	\$17,954
GRANT	\$1,528,111	321,118	13	6	\$67,189
HARNEY	\$161,856	22,993	2	2	\$9,023
HOOD RIVER	\$59,888,336	11,983,276	423	167	\$1,201,327
JACKSON	\$201,716,821	40,056,839	1,451	659	\$5,030,518
JEFFERSON	\$1,109,017	165,382	10	11	\$49,885
JOSEPHINE	\$48,123,121	9,707,332	356	162	\$1,028,935
KLAMATH	\$5,483,145	987,000	45	38	\$245,065
LAKE	\$26,435,931	4,976,144	151	3	\$16,141
LANE	\$75,943,264	14,159,440	600	449	\$2,588,775
LINCOLN	\$12,960,978	2,063,385	93	89	\$493,485
LINN	\$45,045,079	9,946,131	384	194	\$1,495,272
MALHEUR	\$2,550,194	480,942	23	18	\$87,820
MARION	\$167,723,512	33,454,969	1,236	603	\$4,509,879
MORROW	\$912,698	129,656	5	7	\$39,904
MULTNOMAH	\$470,682,529	91,035,126	3,441	1,982	\$11,884,060
POLK	\$180,982,148	38,184,923	1,356	490	\$3,686,634
SHERMAN	\$1,896,593	360,482	16	11	\$96,210
TILLAMOOK	\$10,213,706	1,965,533	77	43	\$313,193
UMATILLA	\$40,867,084	8,214,689	305	145	\$944,553
UNION	\$1,195,695	169,859	12	15	\$63,157
WALLOWA	\$599,997	85,235	5	6	\$26,521
WASCO	\$27,373,438	5,452,161	195	84	\$616,446
WASHINGTON	\$224,720,596	43,615,662	1,636	887	\$6,300,565
WHEELER	\$719,859	102,262	5	6	\$25,761
YAMHILL	\$687,116,905	132,267,139	4,497	2,261	\$15,187,663

*\*includes wholesale & retail impact from all wine of all types/sources, plus tourism*

## Appendix 4 Under-reporting of Jobs & Wages in Official BLS Statistics

The jobs and wages of those employed directly by the wine industry are based on data from the Bureau of Labor Statistics. However, the BLS data for vineyard and winery jobs are certainly an underestimate, due to the following factors:

- Reporting of wages and jobs to the BLS is based on participation in the unemployment insurance program. Vineyards or wineries that are too small to meet the required payroll threshold, use mostly contracted labor or mainly family members generally do not report to the BLS. In addition, vineyard management and some agriculture companies are classified in a different sector.
- The prevalence of seasonal and part-time work in the industry may cause problems in estimating the number of full-time equivalent jobs when reporting to the BLS. It also reduces the estimates for salaries and wages, because the BLS does not distinguish between part-time and full-time jobs when it comes to monthly wage estimates, thus a part-time wage is divided into a full-time job. Salary surveys by industry publications come in at 10% to 30% higher than BLS.
- Many wineries crush or bottle at other facilities; to the extent these are reporting wineries or custom-crush facilities, the production jobs are reflected in the BLS data, but related administration, sales and marketing may not be categorized under wineries.
- Wineries that own vineyards may register employees under the winery rather than the vineyard.

The replacement estimates offered by Full Glass Research in the report are based on taking jobs per acre from vineyard surveys and jobs per 9L case of production from winery surveys, then multiplying them by the planted acres and reported production of wine in Oregon in 2016. Due to the relatively small sample size, we have NOT used them in the report summary numbers, or in calculating induced impacts. See page 19 for details on industry job and wage corrections.

In addition, the wine wholesale jobs and wages are probably underestimated by the BLS, which classifies wholesalers as wine or beer wholesalers before summarizing their job data, despite the fact that distributors in Oregon do both. Since beer is usually the larger part of the business, several wholesalers with substantial wine business are classified as beer wholesalers. FGR's corrected estimates are based on industry interviews and the estimated share of retail dollar sales by beer vs. wine.

Readers interested in more detail on the issues of estimating direct employment by vineyards and wineries are referred to "**Fruit of the Vine: Oregon's Grape and Wine Industry**" by Annette Shelton-Tideman, February 10, 2016; State of Oregon Employment Department.

**Sources**

Oregon Wine Board (including winery & vineyard surveys jointly administered by OWB and Full Glass Research)

SOURCE (Southern Oregon University Research Center vineyard & winery census)

Oregon Agricultural Statistics Service  
California Agricultural Statistics Service  
Washington Agricultural Statistics Service  
National Agricultural Statistics Service  
Oregon State Department of Agriculture

Oregon Department of Revenue  
Oregon Employment Department  
Oregon Liquor Control Commission

Oregon Tourism Commission

BW166  
The Nielsen Company  
Wine Opinions  
Wine Market Council  
Wine Business Monthly

U.S. Alcohol and Tobacco Tax and Trade Bureau

U.S. Census  
Bureau of Labor Statistics

Dean Runyan Associates, TravelOregon

The Wine Institute

Economic Forensics and Analytics

Numerous confidential interviews with industry personnel by Full Glass Research

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### **About Full Glass Research**

Full Glass Research, founded by Christian Miller in January 2005, is dedicated to consumer, market and economic research in the wine and food industries. In addition to consulting and research for private and government clients, Full Glass Research also helped found and continues to advise the Wine Opinions national trade and consumer panels. Christian Miller has worked in wine and food industries since 1983. He earned his undergraduate degree in Economics from Franklin & Marshall College in 1980 and an M.B.A. from Cornell University in 1985, followed by successive research and management positions at Kendall-Jackson and Sebastiani Vineyards. His experience includes work with both small and large companies, as a negociant, brand manager, in operations analysis and market research. Before starting Full Glass Research, he was Director of Research at MKF, a leading CPA/Consultant firm in the wine industry. He was a founding member of the Wine Market Council's Research Committee, and currently co-manages the OIV Wine Marketing Program at the University of California, Davis.

Full Glass Research can be reached at [www.fullglassresearch.com](http://www.fullglassresearch.com).

### **About the Oregon Wine Board and Oregon Winegrowers Association**

The Oregon Wine Board is a semi-independent state agency that replaced the Oregon Wine Advisory Board when Governor Ted Kulongoski signed the House Bill 3442 into law on September 23, 2003. The Board is charged with supporting enological, viticultural, and economic research and the promotion of grape growing and winemaking in Oregon. The intent of the legislation is to give the state's wine industry greater autonomy, authority, and ability to develop, market, and promote Oregon wine.

The Oregon Winegrowers Association is the non-profit membership association for Oregon wineries and vineyards. OWA conducts legal and lobbying advocacy work on behalf of the industry to ensure a positive business, social and economic environment for the production and sale of Oregon wines. OWA represents the industry before state and federal government agencies and legislative bodies and related industry associations on such issues as direct shipment, land-use, and taxation. Funds to support OWA come from voluntary membership fees.

The Oregon Wine Board and Oregon Winegrowers Association can be reached at [www.oregonwine.org](http://www.oregonwine.org) or (503) 228-8336.