

Economic & Fiscal Impacts of Wine & Wine Grapes in Washington State



2020 Update

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*Community Attributes Inc. tells data-rich stories about communities
that are important to decision makers.*

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EXECUTIVE SUMMARY

Background and Purpose

Wine production is an important and growing economic activity in Washington state. Wine production involves an extensive supply chain, beginning with grape growers and ending with grocery stores and distribution networks, and many steps in between. Over the years, customers across the U.S. and world have increasingly recognized and sought Washington state wines for their high quality and competitive price-to-value ratio.

The purpose of this report is to illustrate these linkages across the state economy, from supply chain transactions—such as sales of wine grapes to wineries—to the economy-wide impacts of wages spent by workers in Washington’s wine industry. This report is an update to the 2015 economic and fiscal impact analysis, with the latest data on wine production, sales, employment, and other key indicators of the wine industry in Washington. This update also includes a deeper analysis of regional wine industry impacts and the role of wine tourism, discussed further below.

Methods and Data Collection

Analysis in this study uses data published by state and federal sources, including the U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, U.S. Alcohol and Tobacco Tax and Trade Bureau (TTB), Washington State Employment Security Department, Washington State Department of Revenue, Washington State Department of Agriculture, and the Washington Wine Commission. Data analytics were augmented with interview findings, secondary research sources, and company-specific information gathered through websites, financial statements, and other publicly available information. Vintage Economics, a wine industry consultancy, provided data and analytics on wine shipments.

Economic and fiscal impacts were computed through use of the Washington State Input-Output Model, adjusted to account for sub-state regional economic conditions and tax impacts.

Key Findings

Wine Production, Distribution, and Sales

- In 2018, there were **59,200 planted acres** for wine grape production.
- Washington wineries crushed approximately **261,000 tons** of grapes in 2018. This was up from 229,000 in 2017, but slightly down from a peak of 270,000 in 2016.
- In 2018, there were **944 active licensed wineries** in Washington state, a 11% increase over 2017, representing a net increase of 90 licensed wineries.
- Wineries generated an estimated **\$2.4 billion** in sales in 2018. This amount represents a 48% increase over revenues in 2013 in inflation adjusted dollars, or at a compound annual growth rate of more than 8%.
- By comparison, fresh market Washington apples generated slightly less than \$2.1 billion in sales in 2018, based on data from the U.S. Department of Agriculture.
- Additional sales through downstream mark-ups summed to an estimated **\$1.3 billion**.
- In 2018, an estimated **4,800** individuals, on an annualized basis, directly worked in wineries, either as hired workers, business owners, or sole proprietors. These positions were associated with direct income of **\$203.2 million**.
- There were an estimated additional **10,900** workers employed in the distribution and sales of Washington wine, including staff and personnel at warehousing and distribution operations, restaurants, bars, and retail outlets.
- In 2018, the production, distribution, and sale of wine in Washington state directly supported **18,700 jobs** and had a total statewide economic impact of **41,600 jobs**, **\$2.1 billion** in labor income, and **\$8.4 billion** in economic impact, including impacts from wine tourism.
- The Washington state wine industry **grew twice as fast as the state economy**. Since 2013, the wine industry has grown 8% per year compared to 4% overall growth.

Wine Tourism

- In 2018, an estimated **2.6 million people** visited wineries across the state. The largest destinations for wine tourism included Walla Walla (503,900) and King County (592,500), though the latter included primarily day visitors whereas the former included mostly overnight visitors.
- Wine tourism directly supported **3,000 jobs** and had a total economic impact in 2018 of **5,100 jobs**, **\$223.7 million** in labor income, and **\$752.5 million** in business revenues.

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INTRODUCTION

Background and Purpose

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Data and Methods

Analysis in this study uses data published by state and federal sources, including the U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, U.S. Alcohol and Tobacco Tax and Trade Bureau (TTB), Washington State Employment Security Department, Washington State Department of Revenue, and the Washington Wine Commission. Data analytics were augmented with interview findings, secondary research sources, and company-specific information gathered through websites, financial statements, and other publicly available information.

Economic and fiscal impacts were computed through use of the Washington State Input-Output Model, adjusted to account for sub-state regional economic conditions and tax impacts.

Organization of Report

The remainder of this report is organized as follows:

- **Overview and history of Washington's wine ecosystem.** Overview of the wine supply chain in Washington and AVAs.
- **Wine industry metrics.** Leading direct activities and key indicators.
- **Wine tourism.** The role and importance of wine tourism across the state.
- **Economic and fiscal impacts.** Additional jobs, income, revenues, and taxes from upstream business-to-business transactions and household spending associated with wine production and sales.
- **Regional wine industry impacts.** The economic contributions of the wine industry in select counties.
- **Summary and conclusion.** Review of key findings.

HISTORY OF WINE PRODUCTION IN WASHINGTON STATE

Washington's wine industry comprises vineyards, wineries, supply businesses, education and training organizations, and other industry support, including the Washington State Wine Commission itself. Today's wine industry in Washington can trace its origins back to 1825 when the state's first wine grapes were cultivated in Fort Vancouver. However, the industry is rooted in events that took place during the last ice age: the Missoula floods, occurring roughly 15,000 years ago, deposited nutrient-rich soil in the east of the state. The floods, combined with volcanic material deposited from periodic eruptions, yielded excellent soil for growing grapes.

More than one century ago in 1914, William Bridgman planted wine grapes in Yakima valley. When prohibition was repealed in 1933, Bridgman established Upland Winery and introduced Dr. Walter J. Clore—who would later be referred to as “the father of Washington State wine”—to wine grape growing in Washington state. In 1937, Dr. Clore began research on grape varieties at Washington State College (now Washington State University). His research demonstrated that premium quality wine grapes could be grown in the volcanic soil and hot, dry climate of Central and Eastern Washington. He also identified varieties prime for planting in Washington.¹

It was not until 1983, however, that Washington received its first American Viticultural Area (AVA) distinction, a major marketing boon and legal protection that became the groundwork for an additional 12 legal appellations defined in subsequent years. In 1985, the state produced approximately 1.1 million cases of wine; in 2018, Washington state produced a record 19.4 million cases.

¹ Parker, Tom. *Discovering Washington State Wines*, Raconteurs Press 2002.

THE WINE INDUSTRY ECOSYSTEM

Washington's wine cluster encompasses a broad range of activities. These range from grape growers, agricultural support services—such as harvesting activities and crush events—to wine producers, wholesalers, and restaurants. Revenues are generated by many of these activities. For example, revenues generated from the sale of wine grapes from a vineyard to a winery, wine sales from a winery to a distributor, and sales from final consumption, such as at a restaurant or grocery store.

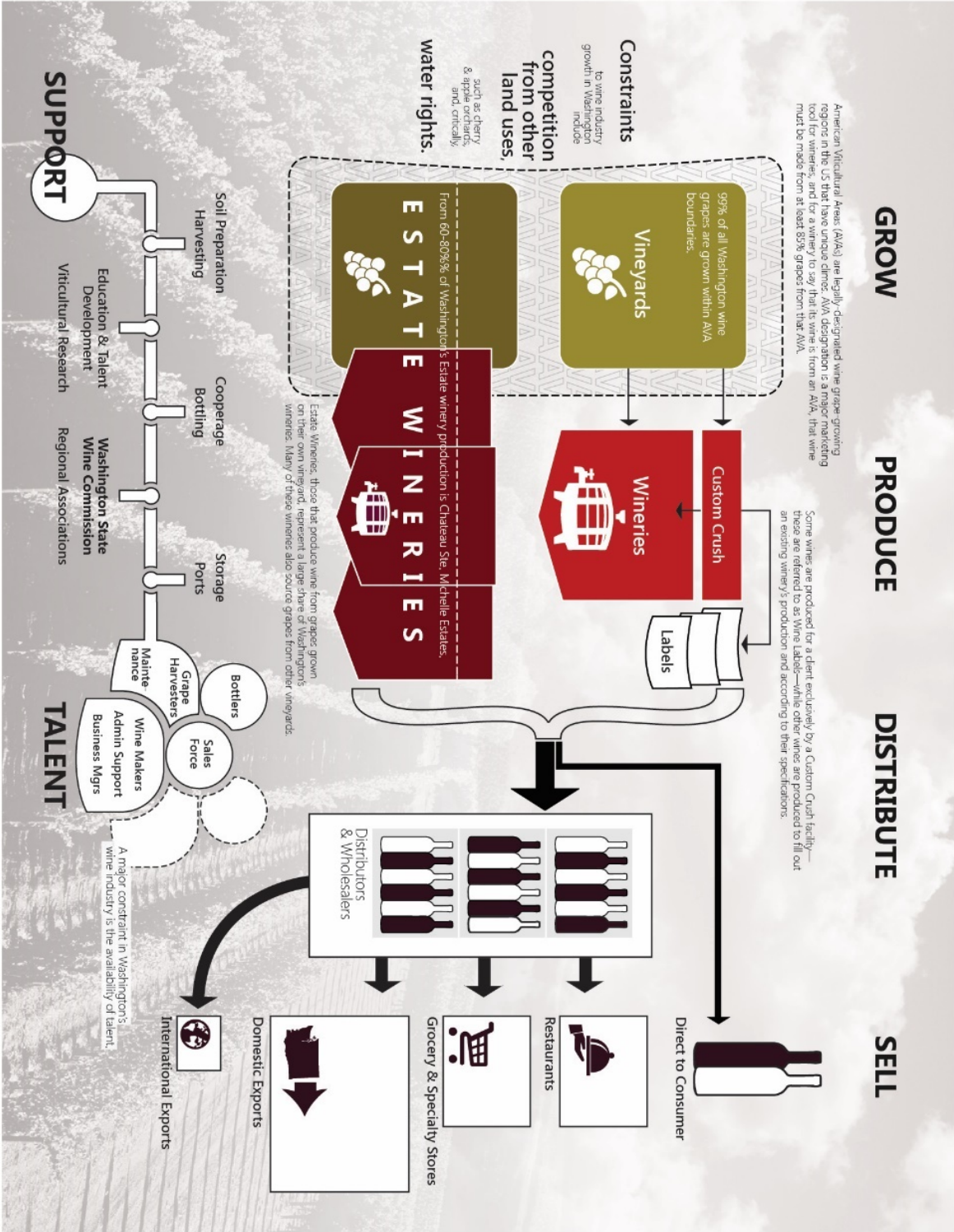
In this study, wine cluster activities are organized into five major categories, as illustrated in **Exhibit 1**:

- Vineyards and grape growing
- Wine production
- Wine distribution
- Wine final sales
- Support activities throughout this process

In many cases, participants in the wine cluster participate in more than one segment of the supply chain. For example, estate wineries—which, by definition, have their own vineyards—span production of grapes as well as wine. Similarly, small wineries rely more heavily on their own sales and distribution channels—such as wine clubs and tasting rooms—as a critical revenue source. Even wineries that operate their own vineyards often purchase additional grapes from other vineyards and estates and sell some of their grape production to other wineries. In some cases, wineries may also sell directly to restaurants, bypassing wholesalers completely. In still other cases, custom crush facilities will produce wine to be marketed and sold by other wine labels.

Support activities refer to additional services that are critical to wine production. These include harvesting support services, soil preparation, and crush activities. Small and medium-sized wineries may use external services for tasks such as bottlers and marketing support. All wineries require supplies such as barrels and refrigeration equipment that must be procured from specialized wholesalers.

Exhibit 1. Washington Wine Industry Supply Chain



Vineyards and Grape Growing Regions

American Viticultural Areas (AVAs) are wine-growing areas in the U.S. that have distinctive geographic, geological, and environmental features that ultimately result in unique wines. AVA status helps consumers identify wines within the region and protects a region's market label. In order for a region to gain AVA status, it must have evidence that the name of the proposed AVA is locally or nationally known as referring to the area, evidence that the proposed boundaries are legitimate, and evidence that the growing regions are distinctive, according to the Alcohol and Tobacco Tax and Trade Bureau (TTB). Once an AVA is established, at least 85% of the grapes used in a wine must be from the AVA for the winemaker to specify the appellation on the wine label.

Washington currently is home to 14 American Viticultural Areas. Some of these embedded or subareas within larger AVA, such as the Red Mountain AVA within the much larger Columbia Valley AVA (**Exhibit 2**).

Exhibit 2. American Viticultural Areas (AVAs) in Washington State



Source: Washington Wine Commission, 2019.

Columbia Valley

Washington's largest AVA, Columbia Valley, encompasses almost all wine grape acreage in the state. With 58,400 acres planted, the AVA subsumes the AVAs of Red Mountain, Yakima Valley, Walla Walla Valley, Wahluke Slope, Rattlesnake Hills, Horse Heaven Hills, Snipes Mountain, Lake Chelan, Naches Heights, and Ancient Lakes of Columbia Valley.²

Yakima Valley

Washington's first AVA, Yakima Valley, was established in 1983. Yakima's long growing season and silt-rich, loamy soils make it a unique growing region. The region is planted primarily with Chardonnay, Merlot, and Cabernet Sauvignon, and is home to roughly one-third of the state's vineyard acreage. (Yakima County)

Walla Walla Valley

Established just one year after Yakima Valley, Walla Walla Valley traces its wine grape ancestry back to the 1850s when Italian immigrants began growing vines in windblown soils. The region is primarily known for its red wine grape varieties like Cabernet Sauvignon, Merlot, and Syrah, but also grows a large quantity of Chardonnay grapes. The area has a long growing season, between 190 and 220 days, and soil with good drainage. (Walla Walla County)

Puget Sound

The Puget Sound AVA was established in 1995. With more rain and a significantly more temperate winter than the state's other AVAs, Puget Sound produces distinctive grapes across its roughly 100 acres of planted vineyards. Many of the wines produced by the 20 wineries in the AVA follow a light, crisp style that is suited for the region's seafood offerings. (Whatcom, Skagit, Snohomish, Island, San Juan, King, Pierce, Thurston, Mason, Kitsap, Clallam, and Jefferson Counties)

Red Mountain

Red Mountain received AVA designation in 2001. Named after the wine-red cheatgrass that blankets the sandy area, Red Mountain produces grapes that create robust, tannic reds. In 1997, at the time without AVA status and the marketing boost that goes along with it, growers were able to charge up to 30% higher prices than the rest of the state for their grapes. Today, the Red Mountain AVA—the smallest in the state—is home to two of the state's most well-known vineyards, Ciel du Cheval and Klipsun, and has produced two of

² Washington State Department of Agriculture, 2019.

just 17 American wines to earn a 100-point rating from the Wine Advocate. (Benton County)

Horse Heaven Hills

Running along the Columbia River, Horse Heaven Hills has steep south-facing slopes that have loamy soils with good drainage. Horse Heaven Hills is the appellation of the state's first, second, and third "100-point" wines. Roughly one-quarter of Washington's wine grape vineyards are located in the appellation, which has grown grapes since 1972. (Klickitat, Yakima, and Benton Counties)

Columbia Gorge

The Columbia Gorge AVA is located on the narrow passage between the temperate maritime climates in Western Washington to the desert climate in Eastern Washington. The region has a truly unique spectrum of rainfall and sunshine, with rain diminishing by roughly one inch over every mile from west to east. Varieties like Pinot Noir, Gewurztraminer, Chardonnay, Pinot Gris, and Riesling are primarily grown in the west of the appellation, while Cabernet Sauvignon, Syrah, Zinfandel, and Barbera are grown in the east of the appellation. (Skamania and Klickitat Counties)

Wahluke Slope

Wahluke Slope has one of the driest and hottest climates in the state, and its soils are uniformly well-drained. This allows vineyard managers to precisely deliver water to vines, giving unprecedented control over vine ripening. The AVA produces Merlot, Syrah, and Cabernet Sauvignon, as well as Riesling, Chardonnay, and Chenin Blanc. (Grant County)

Rattlesnake Hills

Rattlesnake Hills has roughly 1,500 planted acres across 29 vineyards. Producers in the area focus on Cabernet Sauvignon, Malbec, Merlot, Syrah, Chardonnay, and Riesling. Good air circulation in the area helps vineyard owners avoid early fall and spring frosts that threaten grapes and buds, respectively. (Yakima County)

Snipes Mountain

Snipes Mountain, the state's 10th AVA, is named after an 1850s rancher who settled and farmed the area. The mountain's slopes have rocky soil home to vineyards since 1914. AVA status was petitioned by Upland Vineyards, who first planted in 1917. The second-oldest Cabernet Sauvignon vines in the state are located in the AVA and have been producing grapes for more than 40 years. (Yakima County)

Lake Chelan

The Lake Chelan AVA is characterized by the coarse, sandy sediment in the area formed during the movement of ice age glaciers. Grapes grown in the appellation have discernable textures and minerals. Additionally, the proximity to the lake results in a milder climate than surrounding areas. The longer growing season and reduced risk of frost are valuable assets to wine grape growers. (Chelan County)

Naches Heights

Naches Heights, established in 2011, is a relatively small AVA with just 40 acres planted. The windblown soil is heavy in clay, which results in better water retention. (Yakima County)

Ancient Lakes of Columbia Valley

Ancient Lakes of Columbia Valley, founded in 2012, is home to roughly 1,400 acres of planted vineyards. Soils in the region contain very few nutrients, which results in grapes with more intense flavor. The land lends itself to white varieties, and the primary varieties grown in the area are Riesling and Chardonnay. (Grant County)

Lewis-Clark Valley

The Lewis-Clark Valley AVA is Washington's youngest AVA, established in 2016 in an area between the Snake and Clearwater rivers. The AVA is split between Washington and Idaho, with 85,238 acres in Washington state and the remaining 220,332 acres in Idaho (about 72%). The area is known for its temperate climate within the colder surrounding regions, producing high quality fruit trees such as peaches, apples, wine and table grapes. There are currently 16 vineyards operating in the AVA. (Asotin County)

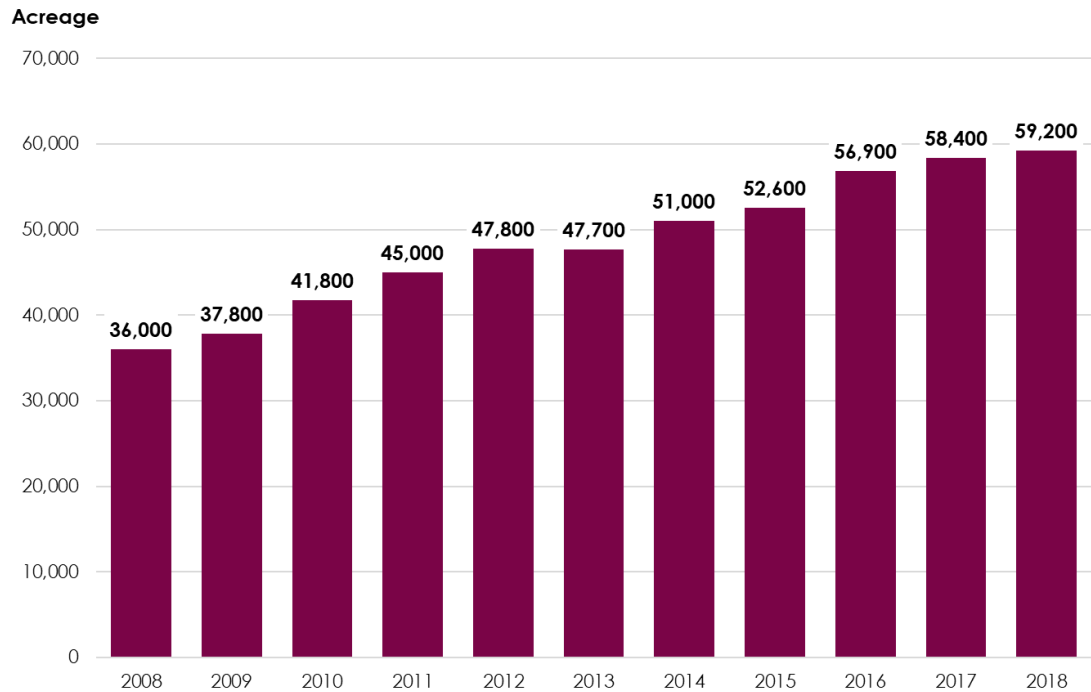
INDUSTRY METRICS

Grape Production and Acreage in Washington

In 2018, there were 59,200 planted acres for wine grape production (**Exhibit 3**). This acreage total represented a 1.4% increase over 2017, and 65% increase compared with 2008.³

³ Despite this growth, there may still be nearly 150,000 available acres that could be developed in the coming years. Andy Purdue, "Ste. Michelle's Baseler envisions 200,000 acres of Washington vineyards," *Great Northwest Wine*, April 7, 2016. Available at: <https://greatnorthwestwine.com/2016/04/07/ste-michelles-baseler-envisions-200000-acres-washington-vineyards/>.

Exhibit 3. Historic Vineyard Planted Acres



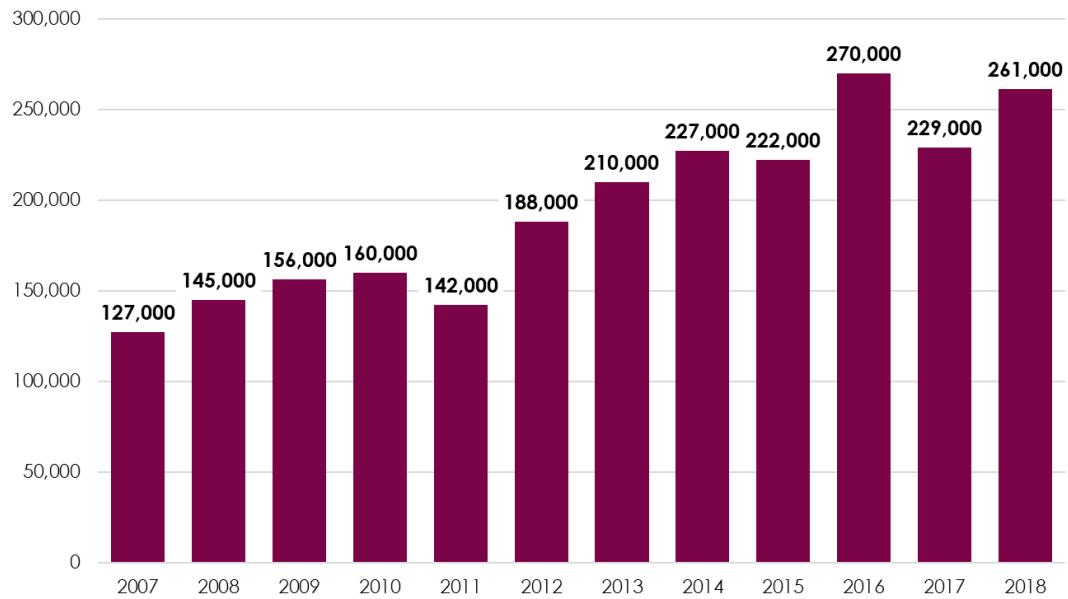
Source: Washington State Department of Agriculture, 2019.

Washington wineries crushed approximately 261,000 tons of grapes in 2018. This was up from 229,000 in 2017, but slightly down from a peak of 270,000 in 2016 (**Exhibit 4**). However, while large and growing, Washington's tonnage of utilized *vitis vinifera* is equal to 7% that of California's.⁴

⁴ U.S. Department of Agriculture, National Agriculture Statistics Service, 2019.

Exhibit 4. Utilized Wine Grapes in Washington, 2007-2018

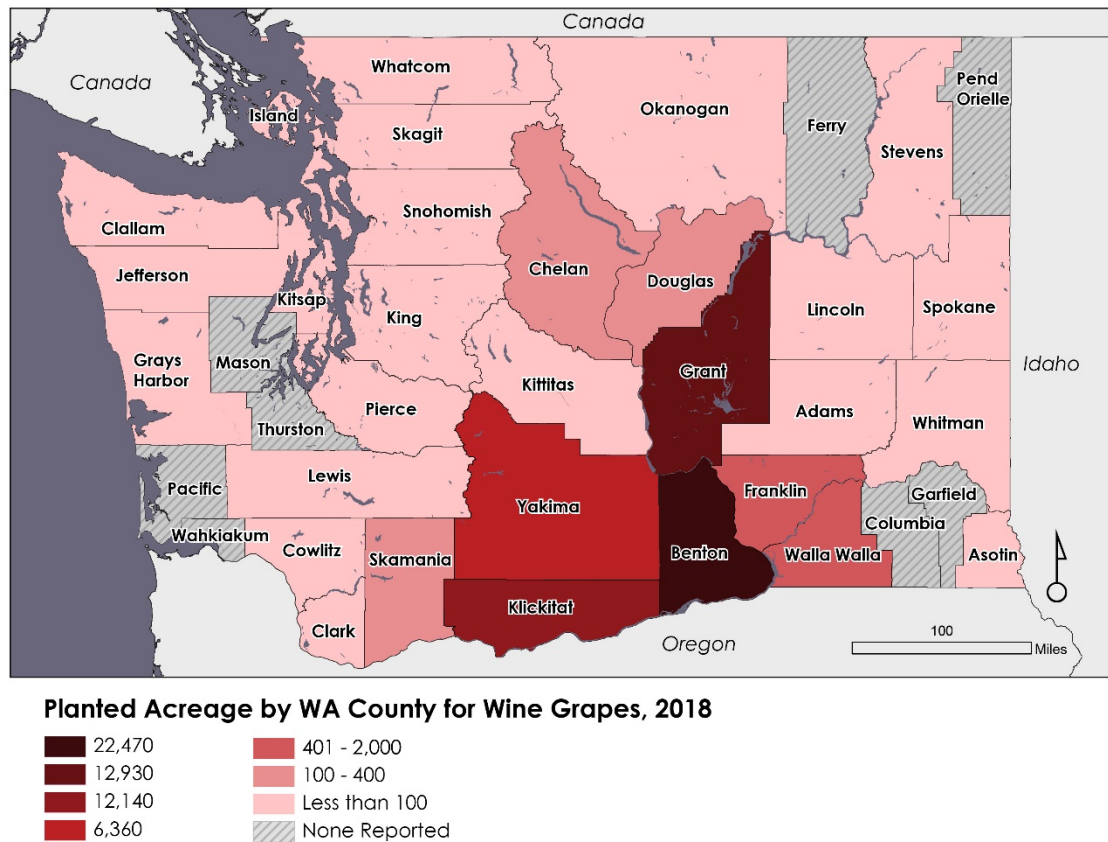
Tons Utilized Grapes



Source: U.S. Department of Agriculture, National Agriculture Statistics Service, 2019.

The primary regions for wine grape production are in Central and Eastern Washington (**Exhibit 5**). Benton County was home to 22,500 planted acres for wine grapes in 2019, representing 38% of all wine grape planted acreage in Washington state. Other major concentrations of wine grape planted acreage included Grant County (12,900 acres), Klickitat County (12,100 acres), Yakima County (6,400 acres), and Walla Walla County (2,000 acres).

Exhibit 5. Wine Grape Acres Planted by County in Washington State, 2018



Sources: Washington State Department of Agriculture, 2019; Community Attributes Inc., 2019.

The average price per ton of wine grapes in Washington in 2018 was \$1,213 (**Exhibit 6**). However, reds on average were much more expensive than whites, with an average price per ton of \$1,413 compared to \$873. The largest varietals by volume of purchase were cabernet sauvignon (74,400 tons, approximately 29% of all wine grapes utilized), followed by chardonnay (16%), white riesling (15%), and merlot (14%).⁵

⁵ Washington's average price per ton, across all varietals, is 20% higher than California, though the latter includes many more high volume, lower cost varietals.

Exhibit 6. Production and Average Price per Varietal, 2018

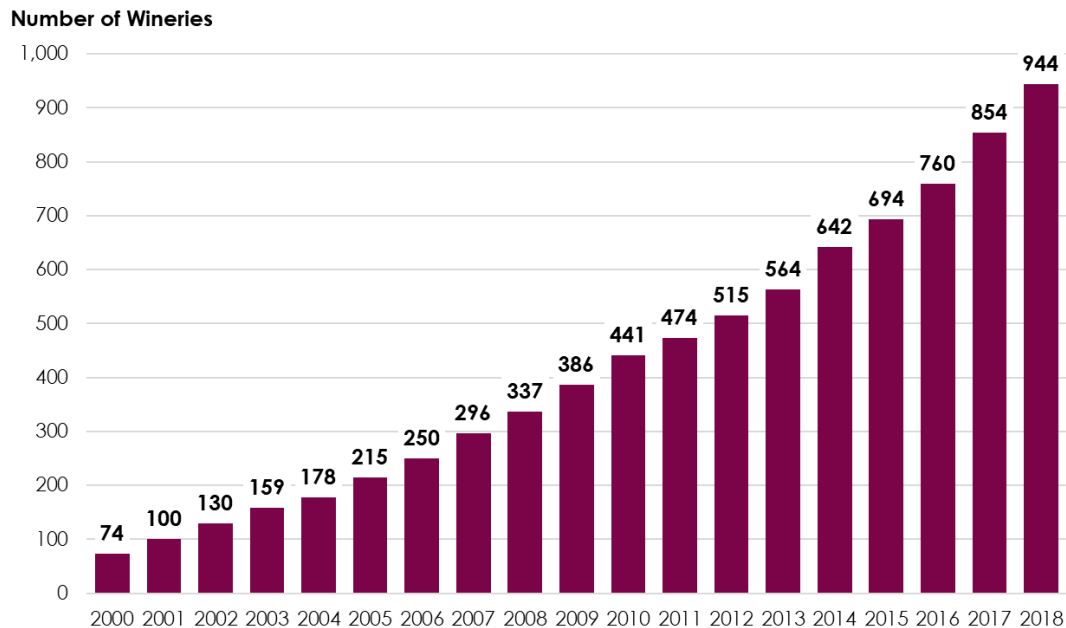
White Varieties	Tons Utilized, 2018	Average, 2014-2018	Average Price/Ton, 2018
Chardonnay	41,500	42,380	\$939
White Riesling	38,300	41,480	\$800
Pinot Gris	10,200	9,340	\$776
Sauvignon Blanc	10,100	8,320	\$932
Gewurztraminer	2,300	2,620	\$698
Viognier	1,800	1,760	\$1,004
Semillon	545	829	\$1,136
Chenin Blanc	380	506	\$1,004
Other white varieties	2,475	1,965	\$1,055
<i>Total White Varieties</i>	<i>107,600</i>	<i>109,200</i>	<i>\$873</i>
Red Varieties			
Cabernet Sauvignon	74,400	59,580	\$1,505
Merlot	37,500	38,200	\$1,340
Syrah	24,300	19,600	\$1,183
Cabernet Franc	4,100	3,720	\$1,618
Malbec	3,900	2,820	\$1,501
Sangiovese	1,700	1,500	\$1,000
Grenache Noir	1,400	1,300	\$1,390
Petit Verdot	1,400	1,300	\$1,675
Pinot Noir	1,100	1,320	\$1,046
Mourvedre	1,200	1,020	\$1,536
Other red varieties	2,400	2,240	\$1,623
<i>Total Red Varieties</i>	<i>153,400</i>	<i>132,600</i>	<i>\$1,413</i>
All Varieties	261,000	241,800	\$1,213

Source: Washington Wine Commission, 2019.

Wineries, Production, and Shipments

In 2018, there were 944 active licensed wineries in Washington state, a 11% increase over 2017, representing a net increase of 90 licensed wineries (**Exhibit 7**). The number of active winery licenses has increased more than twelve-fold since 2000, when there were just 74 active licenses.

Exhibit 7. Licensed (Active) Wineries in Washington State, 2000-2018

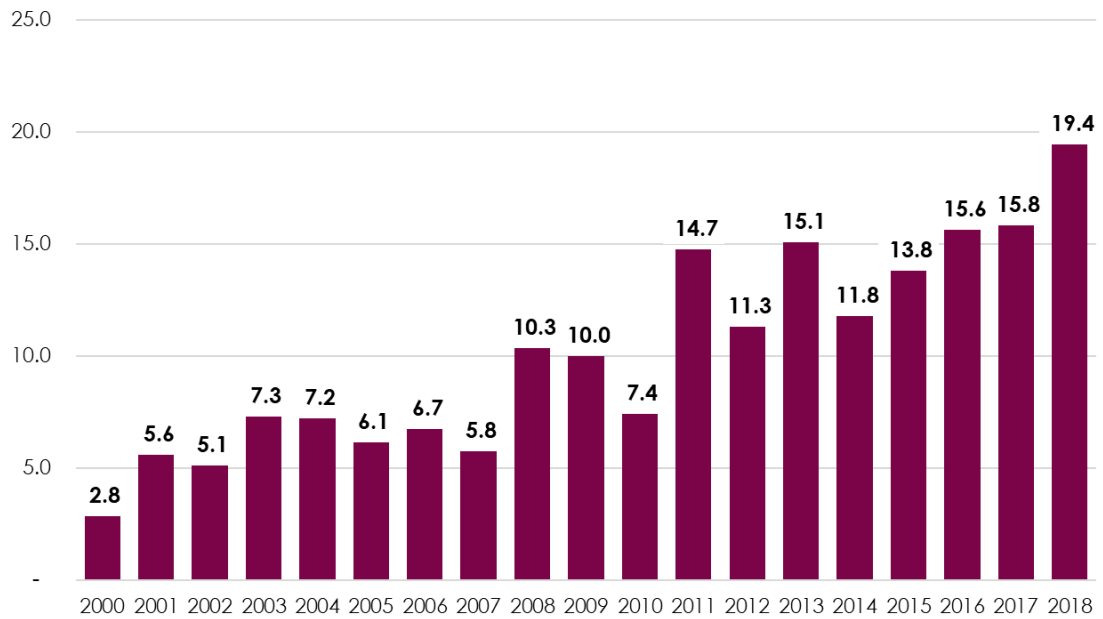


Sources: *Washington State Liquor and Cannabis Board, 2019; Community Attributes Inc., 2019.*

Net bottled wine production describes the amount of wine that has moved out of bonded storage, though it does not necessarily track actual sales.

Nonetheless, net production over time is a useful indicator of overall industry growth. In Washington state, net production reached a record 19.4 million cases in 2018, up from 15.8 million in 2017 (**Exhibit 8**).

Exhibit 8. Historic Net Bottled Wine Production (Cases) in Washington State
Millions of Cases



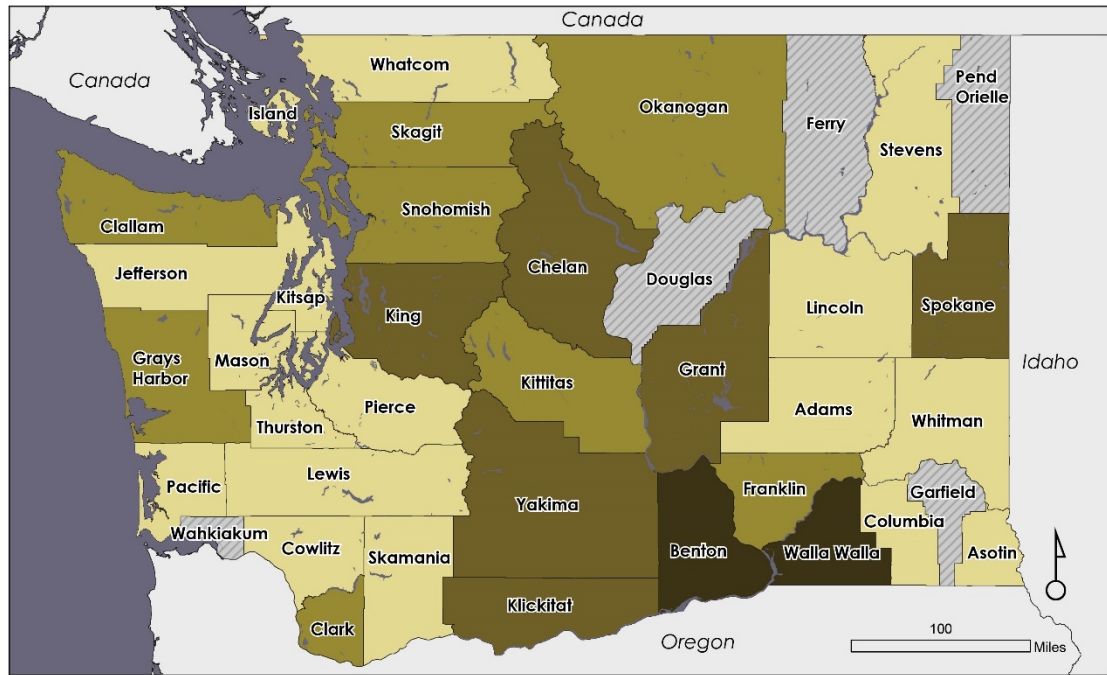
Source: Washington State Liquor and Cannabis Board, 2019; Community Attributes Inc., 2019.

Wine shipments are a more accurate measure of wine sales. These include sales to wholesalers and distributors, self-distribution, and direct-to-consumer sales either at a tasting room or through a wine club. In 2018, according to Vintage Economics, wine shipments from Washington wines totaled 12.5 million cases. This was slightly down from nearly 13.0 million cases in 2017, 13.4 million cases in 2016, and 12.9 million cases in 2015.⁶

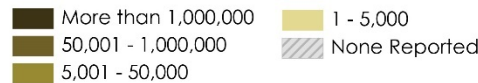
Wine shipments are tracked according to where they leave a bonded warehouse, not where the wine is produced. Out of 39 counties in Washington state, 34 shipped cases of wine in 2018 (**Exhibit 9**).

⁶ Vintage Economics, 2018 and 2019 Washington Wine Reports, available from the Washington Wine Commission.

Exhibit 9. Map of Wine Shipments by County, 2018



Winery Shipments (cases) per WA County, 2018



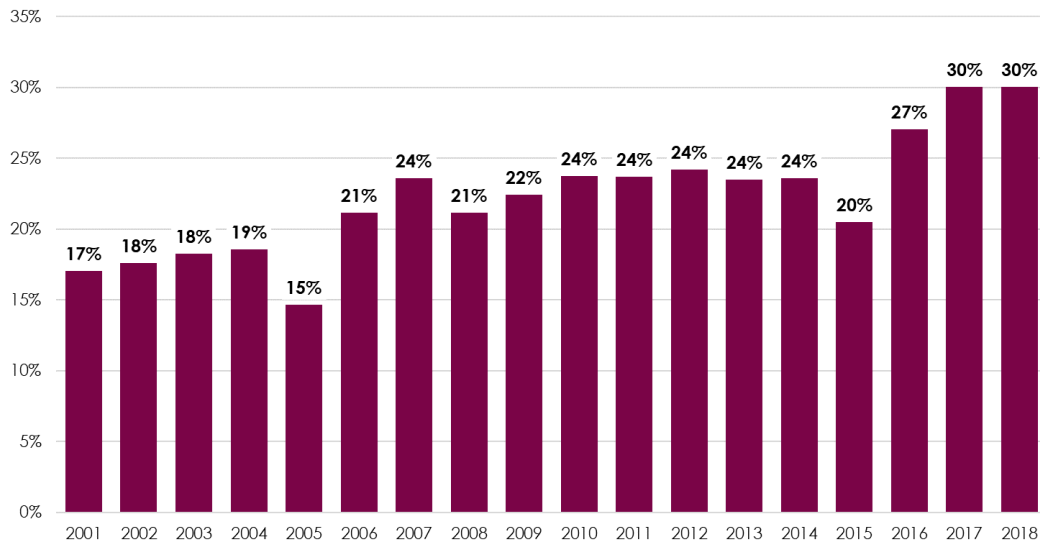
Sources: Vintage Economics, 2019; Community Attributes Inc., 2019.

Note: Wine shipments data represents the location (county) where wine is released from a bonded warehouse. In some cases, such as for Walla Walla, there is a larger share of wine shipments relative to its statewide share of wine grape planted acreage as shown in Exhibit 5.

Washington wine's market share of wine sold through distribution networks in the state reached 30% by volume the past two years (2017 and 2018), reflecting a growing desire among in-state consumers for local wine (**Exhibit 10**). The remaining 70% of wine by volume comes from domestic and international imports, such as California, Oregon, Europe, and South America.

Exhibit 10. Washington Wine In-State Importers and Distributor Sales Market Share by Volume, 2001-2018

Share Washington Wine



Sources: Washington State Cannabis and Liquor Board, 2019; Community Attributes Inc., 2019.

Revenue, Jobs, and Income

Revenues from Wine Production and Wine Sales

Wineries generated an estimated **\$2.4 billion** in sales in 2018. This amount represents a 48% increase over revenues in 2013 in inflation adjusted dollars, or at a compound annual growth rate of more than 8%. The wine industry grew twice as fast as the Washington state economy overall. Over this same period, statewide gross business income—a measure of business revenues—across all industries grew 24% in inflation-adjusted terms, or 4% per year.⁷

Wine revenues have grown faster than overall net production, suggesting that the price point for many Washington wines has increased over time. Sales include direct-to-consumer transactions (such as tasting room sales and through wine clubs), self-distribution, and sales to distributors (including for in-state, out-of-state, and foreign exports).

Revenues from wineries are further augmented with additional revenues generated throughout the distribution system and the mark-ups accrued at each downstream stage. These include mark-ups generated when wine is sold from a distributor to a restaurant, bar, hotel, or retail outlet, and the additional mark-up charged by these operations when the wine is sold to a final consumer. Across these channels, an estimated additional **\$1.3 billion**

⁷ Washington State Department of Revenue.

in revenues were generated among these operations from the downstream sales of Washington wine (**Exhibit 11**).

Exhibit 11. Summary of Wine and Mark-up Revenues, 2018

Segment	Revenues (mils \$)
Wineries	\$2,428.0
Mark-ups	
Distributor Mark-ups	\$515.1
Restaurant Mark-ups	\$354.7
Retail Mark-ups	\$425.6
Total mark-up revenues	\$1,295.3
Total	\$3,723.3

Sources: Washington State Cannabis and Liquor Board, 2019; Washington State Department of Revenue, 2019; Community Attributes Inc., 2019.

Employment and Labor Income

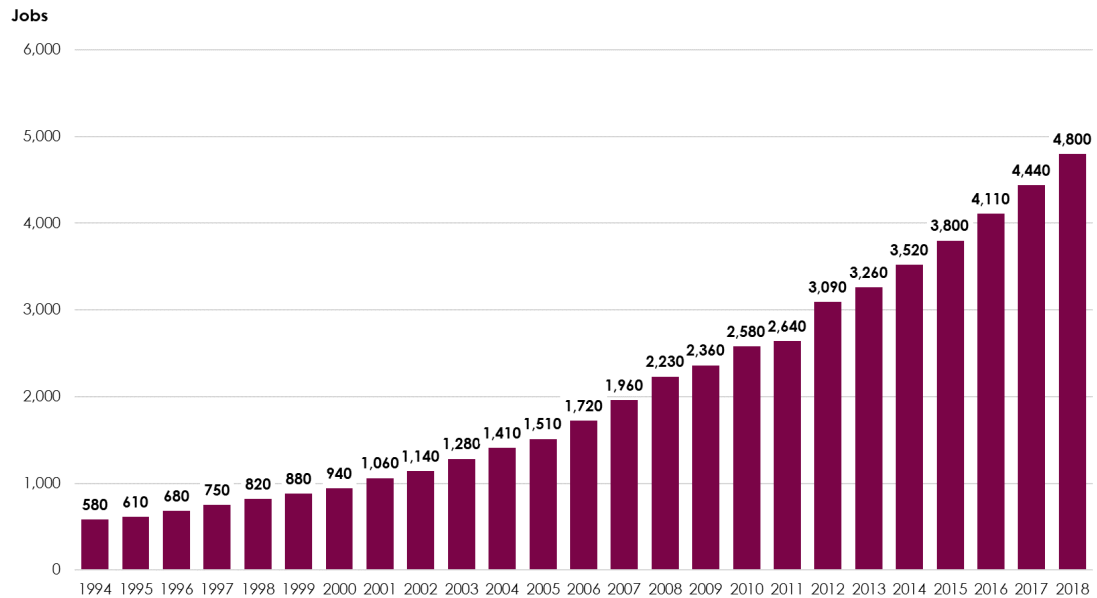
In 2018, there were an estimated **4,800** workers, averaged across the full year, directly tied to wineries, either as hired workers, business owners, or sole proprietors. These include positions engaged in winemaking, tasting room operations, sales and distribution, procurement, and administration. These positions were associated with direct income of **\$203.2 million**.⁸

In addition to jobs at wineries, there were an estimated additional **10,900** workers employed in the distribution and sales of Washington wine, including staff and personnel at warehousing and distribution operations, restaurants, bars, and retail outlets.⁹

⁸ Based on CAI estimates and wage data published by the Washington State Employment Security Department.

⁹ Ibid.

Exhibit 12. Winery Jobs Over Time



Sources: Washington State Liquor and Cannabis Board, 2019; Washington State Employment Department, 2019; Washington State Department of Revenue, 2019; Community Attributes Inc., 2019.

WINE TOURISM

In this study, wine tourism includes visitors whose trips are explicitly to visit wineries and tasting rooms and additional visitors who visit wineries and tasting rooms as part of a broader itinerary. Visitors are attracted to Washington state wineries by the opportunity to taste and buy wine directly. Some wine enthusiasts explore new wineries, while others return to the same winery out of brand loyalty. As opposed to a regular wine purchase, a tourist's choice of winery is also based on the winery's visitor amenities, such as tasting rooms, events, and food options, as well as the surrounding area's tourism assets, such as hotels and tour services.

Some visitors live locally, others come from within Washington, and, increasingly, the state attracts visitors from out of state, Canada, and overseas, including Japan, China, and South Korea. From a statewide economic impact perspective, out-of-state visitors spending income earned outside Washington represent a net inflow of money into the state economy. Winery visitors coming from within the state are important, too, and intrastate tourism has had a major impact on communities across the state, most notably Walla Walla and Woodinville. Other regions in Washington are increasingly attracting visitors, including to many smaller wineries.

Wine industry tourists spend disposable income on wine, accommodations, travel costs, restaurants, and entertainment—a net inflow of income that

translates into additional jobs, wages, business revenues, and taxes. Economic impacts of wine tourism can be quantified in many different ways, including visits to wineries, tourism spending, number of employees, and number of establishments.

Wine Tourism Regions

Woodinville is the state's most common destination for wine tourists, largely due to its proximity to Seattle and the Puget Sound region. Unlike most other wine regions, Woodinville can be a day trip or happy hour destination. A large number of wineries call Woodinville home, including the Chateau Ste. Michelle.

Walla Walla wineries represent the second-largest attractor of wine tourists in Washington. Because of its distance from major population centers, wine tourists who visit Walla Walla are more likely to stay overnight and visit, on average, more wineries per trip.

Walla Walla and other wine regions are working to attract visitors for whom wine is a bonus, not the primary reason for visiting. These visitors, such as parents dropping off college students or business conference attendees, can be a significant source of visitor spending. Synergy between the wine industry and other attractions bring visitors to these areas. Wineries benefit from added foot traffic to their tasting rooms while event planners can use the concentration of world class wineries in the area to attract more events.

Wine visitors in Walla Walla can also boost visitor spending in the wine communities between Walla Walla and Puget Sound. A tourist travelling from Seattle to Walla Walla who is interested in wine is likely to stop along the way in Yakima or Benton counties. According to interviews, Walla Walla winery events cause a noticeable uptick in Yakima hotel stays and winery visits. Visitors to each of the state's major wine tourism regions have unique spending patterns and preferences. Visitors to Walla Walla may spend more on hotel accommodations and other non-wine spending, compared with visitors to Woodinville, of which a larger share are single-day visitors.¹⁰

¹⁰ Based on interviews.

Wine Tourism Indicators and Spending

In 2018, an estimated 2.6 million people visited wineries across the state. The largest destinations for wine tourism included Walla Walla (503,900) and King County (558,300), though the latter included primarily day visitors whereas the former included mostly overnight visitors. Estimated visitors by county are presented in **Exhibit 13** below. Visitors to King, Walla Walla, Benton, Chelan, and Yakima counties constituted more than two-thirds (68%) of all wine tourist visits in Washington state in 2018.

Exhibit 13. Estimated Wine Visitors by County, 2018

County	Wine Visitors Share	
King	558,300	21%
Walla Walla	503,900	19%
Benton	306,400	12%
Chelan	238,300	9%
Yakima	211,100	8%
Spokane	108,900	4%
Clark	81,700	3%
Klickitat	61,300	2%
Grant	54,500	2%
All Other Counties	517,400	20%
Total	2,641,800	100%

Sources: Walla Walla Valley Wine Alliance, 2019; Community Attributes Inc., 2019.

The largest categories of spending for winery tourists statewide—in addition to the purchases of wine and spending at wineries—were lodging and food and beverage purchases. Food and beverage spending, primarily at restaurants, directly supported more than 1,500 jobs in 2018, while lodging expenses supported nearly 1,000 jobs (**Exhibit 14**).

**Exhibit 14. Statewide Business Revenues and Direct Employment
Supported by Wine Tourism, 2018**

Segment	Business Revenues	Jobs
Entertainment	\$26.7	290
Retail Purchases	\$32.2	80
Food and Beverage	\$113.8	1,510
Lodging	\$119.8	970
Transportation Costs	\$107.8	150
Total	\$400.6	3,000

Source: Community Attributes Inc., 2019.

King County was the largest destination for wine tourists, but wine tourism spending was lower than Walla Walla. This was due in part to the more common instance of one-day excursions to wineries in King County, as compared to Walla Walla where visitor expenditures more often include overnight lodging (**Exhibit 15**).

Exhibit 15. County-Level Wine Tourist Direct Impacts, 2018

County	Wine Visitors	Visitor Spending	Supported Jobs
King	558,300	\$59.9	440
Walla Walla	503,900	\$82.3	620
Benton	306,400	\$50.1	380
Chelan	238,300	\$38.9	290
Yakima	211,100	\$34.5	260
Spokane	108,900	\$17.8	130
Clark	81,700	\$13.3	100
Klickitat	61,300	\$10.0	80
Grant	54,500	\$8.9	70
Other counties	517,400	\$84.8	630
Statewide Total	2,641,800	\$400.6	3,000

Sources: Walla Walla Valley Wine Alliance, 2019; Community Attributes Inc., 2019.

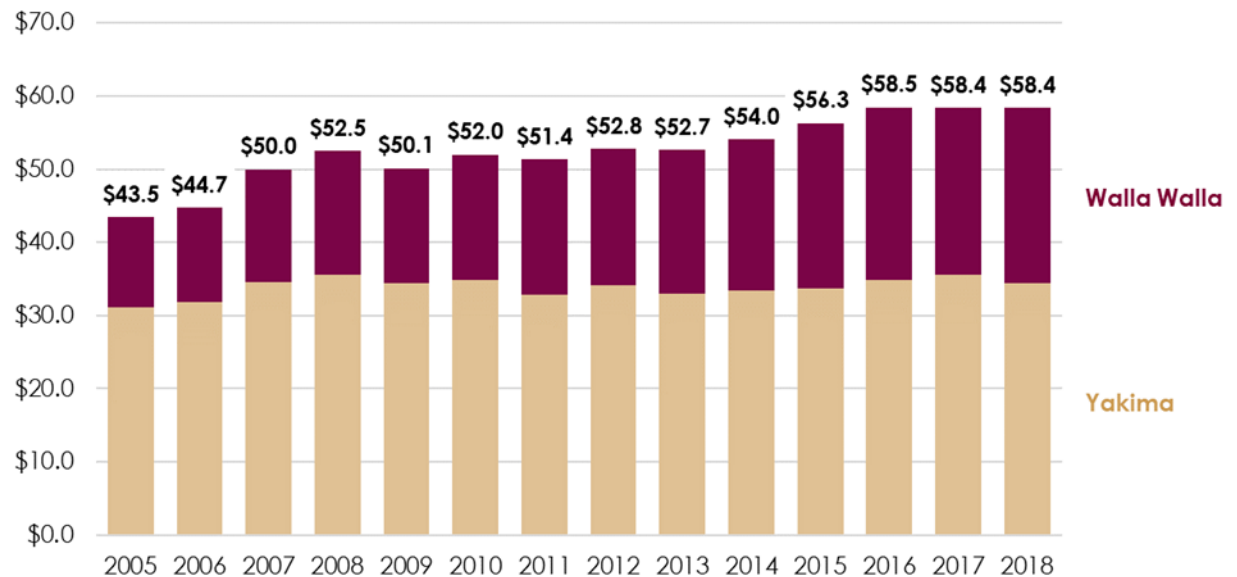
Note: For Walla Walla county, estimates are based on the 2019 report produced by Dr. William Beyers and Don Morgan on behalf of the Walla Walla Valley Wine Alliance.

Yearly spending on hotel stays has risen steadily in Walla Walla and Yakima cities, reaching nearly \$60 million from 2016 to 2018 (**Exhibit 16**). From 2009 to 2018, hotel accommodation taxable retail sales grew by 1.7% annually. Unlike in urban or suburban wine areas like Woodinville, hotel stays in Walla Walla and Yakima are a useful indicator of local tourism

activity, whether or not it is wine-related. Although only a portion of the hotel revenue in **Exhibit 16** is directly attributable to wine tourism, surveys and interviews indicate that wine is a significant driver of tourism in Walla Walla and Yakima counties. A 2019 survey of Walla Walla County visitors found that approximately three-quarters were visiting primarily for wine.¹¹

Many wineries are able to accommodate wine tourism. Based on data from the Washington Wine Commission, among survey respondents, 57% reported having a tasting room (**Exhibit 17**).

Exhibit 16. Walla Walla and Yakima Cities
Hotel Accommodation Taxable Retail Sales (Millions, 2018 \$)



Sources: Washington State Department of Revenue, 2019; Community Attributes Inc., 2019.

¹¹ William B. Beyers and Don Morgan. *Economic Impact of the Walla Walla Wine Industry*. April 2019. <https://www.wallawallawine.com/wp-content/uploads/2019/05/Economic-Impact-of-WW-Wine-Industry-April-2019.pdf>

**Exhibit 17. Share of Licensed Washington State Wineries
with Amenities, 2018**

Amenity	Share of Wineries
Tasting Room	57%
Reception Facilities	16%
Retail Sales	13%
Picnic Area	9%
Gift Shop	5%
Wedding Facilities	4%
RV Parking	3%
Restaurant / Food	3%
Bed & Breakfast	1%

*Sources: Washington State Wine Commission, 2018; Community Attributes Inc., 2019.
Note: Based on self-reported data from wineries.*

ECONOMIC AND FISCAL IMPACTS OF WINE

In 2018, the production, distribution, and sale of wine in Washington state directly supported 15,700 jobs and had a total statewide economic impact of 36,500 jobs, \$1.9 billion in labor income, and \$7.6 billion in business revenues (**Exhibit 18**).

**Exhibit 18. Economic Impacts of Wine Production, Distribution,
and Sale, 2018**

	Direct	Indirect	Induced	Total
Jobs	15,700	10,300	10,500	36,500
Total Compensation (mils 2018 \$)	\$677.1	\$621.9	\$582.2	\$1,881.2
Business Revenue (mils 2018 \$)	\$3,723.3	\$2,212.0	\$1,694.3	\$7,629.6

Sources: Washington State Office of Financial Management, 2018; U.S. Bureau of Economic Analysis, 2019; Federal Reserve Bank of St. Louis, 2019; Community Attributes Inc., 2019.

These impacts in turn supported state tax revenues through both direct activities and the secondary impacts of upstream business-to-business transactions and worker income-derived consumption expenditures. Tax impacts summed to \$54.6 million, including \$35.9 million in sales and use taxes (**Exhibit 19**).

Exhibit 19. State Fiscal Impacts (mils 2018 \$)

	Direct	Secondary	Total
B&O	\$5.1	\$9.2	\$14.3
Sales & Use Taxes	\$14.6	\$21.3	\$35.9
Other	\$1.0	\$3.4	\$4.4
Total	\$20.7	\$33.8	\$54.6

Sources: Washington State Office of Financial Management, 2018; Washington State Department of Revenue, 2019; Community Attributes Inc., 2019.

Wine tourism directly supported 3,000 jobs and had a total economic impact in 2018 of 5,100 jobs, \$223.7 million in labor income, and \$752.5 million in business revenues (**Exhibit 20**).

Exhibit 20. Statewide Economic Impacts of Wine Tourism, 2018

	Direct	Indirect	Induced	Total
Jobs	3,000	800	1,300	5,100
Total Compensation (mils 2018 \$)	\$109.8	\$44.7	\$69.2	\$223.7
Business Revenue (mils 2018 \$)	\$400.6	\$150.5	\$201.5	\$752.5

Sources: Washington State Office of Financial Management, 2018; U.S. Bureau of Economic Analysis, 2019; Federal Reserve Bank of St. Louis, 2019; Community Attributes Inc., 2019.

REGIONAL WINE INDUSTRY IMPACTS

In 2018, wine was commercially produced in 34 out of 39 counties in Washington. However, 94% of total statewide net production took place in just four counties: Benton (11.5 million cases), Yakima (3.1 million cases), King (2.6 million cases), and Walla Walla (1.1 million cases). Of the remaining counties, only three others produced at least 100,000 cases: Grant (485,900 cases), Chelan (161,400 cases), and Spokane (124,400 cases).

Walla Walla County

Walla Walla County is an important center of grape growing, wine production, and wine tourism. The Walla Walla Valley AVA, the second established in Washington, stretches across the border into Oregon. Most of the winery activity in the AVA occurs on the Washington state side. Some of Walla Walla's largest wineries include Leonetti, Long Shadow, L'Ecole, and Woodville Canyon.¹²

Quantified visitor spending impacts based on surveys showed \$145 million in visitor spending, including on lodging, entertainment, and travel. Wine-related spending like wine purchases, tasting, events, and tours, accounted for \$66 million or 46% of total visitor spending. Furthermore, 77% of survey

¹² Beyers and Morgan. *Economic Impact of the Walla Walla Wine Industry*. April 2019.

respondents said that wine was the primary reason for their visit, indicating a strong association between visitor spending and regional wine activities.

In Walla Walla, wineries generated \$115.3 million in revenue in 2018, of which 56% was from direct to consumer sales like wine clubs, online purchases, and wine bought at the winery. An additional 36% of revenue came from wholesale distribution and the remaining 8% of revenue from tasting fees and wine and grape sales to other wineries, among other sources of revenue.

There were estimated total economic impacts of 2,484 jobs, \$114.1 million in labor income, and \$430.3 million in business revenue in Walla Walla County in 2018 (**Exhibit 21**).

Exhibit 21. Economic Impacts of the Wine Industry in Walla Walla County, 2018

	Total
Jobs	2,484
Total Compensation (mils 2018 \$)	\$114.1
Business Revenue (mils 2018 \$)	\$430.3

Sources: Beyers, William B. and Don Morgan. Economic Impact of the Walla Walla Wine Industry. April 2019.

King County

The wine industry in King County primarily includes wine production and wine tourism, as opposed to grape production. In 2018, there were more than 200 licensed active wineries in King County, making it the largest concentration of wineries in Washington state. There are also standalone tasting rooms for wineries based in other parts of the state. The Woodinville area is home to 59 wineries with tasting rooms, creating a popular destination for winetasting day trips from the cities in the Puget Sound. The largest single winery operation in the county is the Chateau St. Michelle, with reported net production of more than 1.4 million cases. In addition, many of the largest wineries have corporate offices in King County.

The wine industry in King County, including wine production, associated downstream revenues from mark-ups, and wine tourism, directly supported 2,680 jobs in 2018, \$108.9 million in labor compensation, and \$609.3 million in business revenues. The industry supported an additional 1,160 jobs, or a total economic impact of 3,840 jobs across the county (**Exhibit 22**).

Exhibit 22. Economic Impacts of the Wine Industry in King County, 2018

	Direct	Indirect	Induced	Total
Jobs	2,680	690	470	3,840
Total Compensation (mils 2018 \$)	\$108.9	\$45.4	\$25.6	\$180.0
Business Revenue (mils 2018 \$)	\$609.3	\$149.8	\$73.2	\$832.3

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

Lower Columbia Region: Skamania, Klickitat, and Clark Counties

The Lower Columbia wine region spans Skamania, Klickitat, and Clark counties and includes the Columbia Gorge AVA (shared with Oregon) and parts of the Horse Heaven Hills AVA. There are nearly 60 licensed wineries in the region as of 2018, which collectively shipped almost 120,000 cases of wine.

In the Lower Columbia Region, the wine industry directly supported 460 jobs, \$17.1 million in labor compensation, and \$75.9 million in business revenue in 2018. Including indirect and induced impacts, the region's total economic impact was 660 jobs, \$28.6 million in labor compensation, and \$111.5 million in business revenue (**Exhibit 23**).

Exhibit 23. Economic Impacts of the Wine Industry in Skamania, Clark, and Klickitat Counties

	Direct	Indirect	Induced	Total
Jobs	460	110	90	660
Total Compensation (mils 2018 \$)	\$17.1	\$6.4	\$5.1	\$28.6
Business Revenue (mils 2018 \$)	\$75.9	\$20.9	\$14.7	\$111.5

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

Chelan County

Chelan County is home to the 24,114-acre Lake Chelan AVA. Founded in 2009 and with just 269 acres planted (as of 2017), this relatively young AVA has opportunity for growth. In 2018, about 60,000 cases of wine were shipped from Chelan County.

In 2018, Chelan County's wine industry was directly responsible for 390 jobs, \$12.7 million in labor compensation, and \$65.5 million in business revenue. Total economic impacts of the wine industry in Chelan were 530 jobs, \$20.1 million in labor compensation, and \$90.2 million in business revenue (**Exhibit 24**).

Exhibit 24. Economic Impacts of the Wine Industry in Chelan County, 2018

	Direct	Indirect	Induced	Total
Jobs	390	80	60	530
Total Compensation (mils 2018 \$)	\$12.7	\$4.3	\$3.2	\$20.1
Business Revenue (mils 2018 \$)	\$65.5	\$15.4	\$9.2	\$90.2

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

Benton County

Benton County is the Eastern edge of the Yakima Valley AVA, containing most of the Horse Heaven Hills AVA and all of the prestigious Red Mountain sub-appellation. There were 101 licensed wineries in Benton County in 2018, including 14 Hands Winery and Hogue Cellars. Benton County is also the location for a significant amount of wine shipping activity. Wine is consolidated and warehoused here before distribution.

Benton and Yakima counties form a continuous wine tourism area. Many wine visitors stay in the area, usually in Yakima, and explore the wineries and vineyards throughout the valley. In Benton County, the wine industry supported 4,160 total jobs, \$194.7 million in labor income, and \$1.4 billion in business revenue (**Exhibit 25**).

Exhibit 25. Economic Impacts of the Wine Industry in Benton County, 2018

	Direct	Indirect	Induced	Total
Jobs	2,360	1,300	500	4,160
Total Compensation (mils 2018 \$)	\$95.2	\$72.5	\$27.0	\$194.7
Business Revenue (mils 2018 \$)	\$1,012.7	\$268.0	\$77.7	\$1,358.5

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

Yakima County

In addition to the Yakima Valley AVA, the state's first, Yakima County is home to the Naches Heights, Horse Heaven Hills, Rattle Snake Hills, and Snipes Mountain AVA. There are 66 licensed wineries in the county and numerous vineyards that account for about a third of the state's vineyard acreage.

Because of this concentration of vineyards and wineries, the Yakima Valley, including Yakima and Benton counties, is a popular wine tourism destination. Yakima County is the jumping off point for many wine visitors because of its proximity to the Puget Sound and lodging amenities. From here, visitors can easily explore the wineries and vineyards along Interstate 82 into Benton County.

The wine industry in Yakima County accounted for 1,900 direct jobs, \$77.4 million in labor compensation, and \$826.4 million in business revenue. Factoring in multiplier effects, the Yakima County wine industry supported a total of 3,510 jobs, \$170 million in labor compensation, and \$1.2 billion in business revenue (**Exhibit 26**).

Exhibit 26. Economic Impacts of the Wine Industry in Yakima County, 2018

	Direct	Indirect	Induced	Total
Jobs	1,900	1,220	390	3,510
Total Compensation (mils 2018 \$)	\$77.4	\$71.7	\$20.9	\$170.0
Business Revenue (mils 2018 \$)	\$826.4	\$271.5	\$60.5	\$1,158.5

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

SUMMARY AND CONCLUSIONS

Across Washington state, wineries, wine tourism, and mark-ups from wine sales directly support 18,700 jobs, \$787.9 million in total compensation (including benefits), and \$4.1 billion in business revenue (**Exhibit 27**). The value of Washington wine (sales of \$2.4 billion) exceeded that of fresh apples (\$2.1 billion) in Washington state in 2018.¹³

Exhibit 27. Summary of Direct Economic Impacts of the Wine Industry in Washington State, 2018

Segment	Jobs	Total Compensation (mils 2018 \$)	Business Revenue (mils 2018 \$)
Wineries	4,800	\$203.2	\$2,428.0
Mark-ups	10,900	\$474.9	\$1,306.3
Wine Tourism	3,000	\$109.8	\$400.6
Total	18,700	\$787.9	\$4,134.9

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

¹³ U.S. Department of Agriculture, National Agricultural Statistics Service, 2020.

When the impacts of supply chain purchases (indirect) and the spending by employees of direct and indirect wine industry businesses (induced) are considered, the Washington state wine industry had a total economic impact of 41,600 jobs, \$2.1 billion in labor compensation, and \$8.4 billion in business revenue in 2018 (**Exhibit 28**).

Exhibit 28. Summary of Combined Economic Impacts of Wineries, Mark-ups, and Wine Tourism, 2018

	Direct	Indirect	Induced	Total
Jobs	18,700	11,100	11,800	41,600
Total Compensation (mils 2018 \$)	\$786.9	\$666.5	\$651.5	\$2,104.9
Business Revenue (mils 2018 \$)	\$4,123.9	\$2,362.5	\$1,895.8	\$8,382.2

Sources: Washington State Office of Financial Management, 2018; Community Attributes Inc., 2019.

APPENDIX

Exhibit A1. Summary of Total Economic Impacts by County

County/Region	Jobs	Total Compensation	Business Revenue
Benton	4,160	\$194.7	\$1,358.5
Chelan	530	\$20.1	\$90.2
Lower Columbia Region	660	\$28.6	\$111.5
King	3,840	\$180.0	\$832.3
Walla Walla	2,484	\$114.1	\$430.3
Yakima	3,510	\$170.0	\$1,158.5
Other counties	26,416	\$1,397.4	\$4,400.9
Statewide	41,600	\$2,104.9	\$8,382.2

Sources: Washington State Office of Financial Management, 2018; Beyers, William B. and Don Morgan. Economic Impact of the Walla Walla Wine Industry. April 2019; Community Attributes Inc., 2019.

Exhibit A2. Summary of Wine Activities by County, 2018

County/Region	Active Licensed Wineries	Planted Acres	Production	Shipments	Winery Business Revenue (mils \$)
			(Cases)		
Adams	3	65	310	170	\$0.05
Asotin	1	10	3,140	1,660	\$0.47
Benton	100	22,465	11,463,330	8,815,220	\$950.58
Chelan	85	355	161,410	60,560	\$20.59
Clallam	5	-	11,370	8,980	\$1.69
Clark	30	115	18,000	12,320	\$2.74
Columbia	1	-	3,600	1,500	\$0.53
Cowlitz	5	-	2,060	910	\$0.31
Douglas	5	400	5,320	(4,055)	\$2.81
Ferry	-	-	-	-	\$0.00
Franklin	6	1,755	47,220	15,200	\$7.01
Garfield	-	-	-	-	\$0.00
Grant	21	12,930	485,940	647,110	\$72.33
Grays Harbor	3	10	7,380	5,620	\$1.10
Island	12	10	19,700	8,540	\$2.93
Jefferson	9	15	2,870	3,490	\$5.59
King	203	15	2,559,740	692,450	\$367.09
Kitsap	18	15	15,120	710	\$0.13
Kittitas	9	25	16,420	9,370	\$2.45
Klickitat	18	12,135	90,850	101,040	\$12.79
Lewis	6	10	70	870	\$0.01
Lincoln	1	15	260	560	\$0.00
Mason	7	-	5,550	2,580	\$0.82
Okanogan	14	90	7,440	7,120	\$1.51
Pacific	1	-	-	880	\$0.00
Pend Oreille	-	-	-	-	\$0.00
Pierce	24	10	10,620	2,490	\$1.55
San Juan	6	10	5,590	2,670	\$0.83
Skagit	14	15	27,470	15,050	\$4.08
Skamania	10	300	53,690	4,410	\$8.02
Snohomish	33	5	36,600	19,970	\$3.61
Spokane	27	5	124,450	66,680	\$18.04
Stevens	4	25	2,570	380	\$0.14
Thurston	18	-	13,630	3,110	\$1.94
Wahkiakum	-	-	-	-	\$0.00
Walla Walla	161	2,005	1,084,390	1,853,970	\$154.32
Whatcom	17	15	15,270	4,250	\$1.35
Whitman	3	5	4,330	3,170	\$0.64
Yakima	64	6,355	3,118,480	168,500	\$779.89
Washington State	944	59,185	19,424,190	12,537,455	\$2,428.0

Sources: Vintage Economics, 2019; Washington State Department of Agriculture, 2019; Washington State Liquor and Cannabis Board, 2019; Community Attributes Inc., 2020.

Data Sources and Data Estimation Methods

This report uses a wide range of data sources representing jobs, labor income, self-employed activities, production volumes, and sales. Below is a summary of leading sources.

Jobs and wages

The primary data series for these estimates was the Quarterly Census of Employment and Wages (QCEW), available through both the Washington State Employment Security Department and the U.S. Bureau of Labor Statistics. QCEW data is reported down to the 6-digit North American Industry Classification System (NAICS) level, though lesser specificity and/or data suppression is common for geographies smaller than Washington state.

Most, but not all, wineries are assigned the NAICS code for wine production (312130). However, a large number of winery operations are designated in the NAICS as vineyards, wholesalers, restaurants, or other non-winery codes, making a simple query of wineries using the NAICS an incomplete representation of the industry. To resolve this issue, CAI worked with the Washington State Employment Security Department to run a custom jobs and wages aggregation based on an alternative approach using each licensed winery's unified business identifier (UBI) code, a 9-digit number unique to each registered business in the state. Statewide employment and wage aggregations were generated for businesses with NAICS codes other than "winery" and then added to those assigned a winery code.

The QCEW only represents businesses with payroll, therefore excluding the self-employed, as well as business owners. We further estimated these remaining participants in the wine industry by comparing total licensed wineries to those captured in QCEW records. Workers and wages among remaining operations not captured in the QCEW were estimated using a ratio of individuals per self-employed establishment and partnership operations.

Revenues

Wine revenue estimates were based on several sources. Because several major participants in wine production, most notably Ste. Michelle Wine Estates, are classified by the Washington State Department of Revenue (DOR) as wholesalers and not wineries, gross business income (i.e., gross receipts, GBI) data for wineries does not adequately capture these activities.

To resolve this issue, CAI used a combination of gross sales by volume within Washington, imputed gross revenues from out of state sales derived from the Washington State Department of Revenue's preferential tax rate disclosure

data, form 10-K financial documents (for SMWE), and reports and news articles to estimate winery sales by value.

Vineyard Employment and Wages

The ratio of acreage planted of wine and non-wine grapes for 2007-2013 was used to estimate wine grape vineyards' share of total vineyard employment. The same ratio was used to determine wine grape vineyards' share of total vineyard wages.

Wine Production and Shipments Volumes

The primary source for wine production was the Washington State Liquor and Cannabis Control Board. In addition to data available on the LCB's website, additional archival records on production and sales to importers and distributors through a custom data request.

A cleaned, adjusted summation of production and shipments volumes by winery was provided by Vintage Economics.

Acreage Estimates

Acreage estimates are reported for planted acres and were sourced directly from the Washington State Department of Agriculture.

Mark-up Estimates

Mark-up revenues represent an important segment of impacts for wine production. While the sale of wine from a winery to wholesaler, and wholesaler to a restaurant or retailer, and the final sale to a consumer, includes the underlying value of the wine, the margins earned at each level of transaction represent direct revenues generated through the sale above the value of the wine itself.

CAI first compared Washington State Liquor and Cannabis Control Board data on gross in-state Washington winery sales and sales to distributors and determined that 97% of all sales from wineries by value were to distributors. Next, an estimated 30% mark-up—based on research by Washington State University and interviews with industry participants—was applied to this amount to calculate wholesaler mark-up revenues within Washington.

The 2007 U.S. Benchmark Input-Output Table was consulted to estimate the split between wholesaler sales to retail outlets (80%) and restaurants (20%). Based on interviews, an estimated 30% was applied to retail sales, while a 150% mark-up was applied to restaurant sales.

Tourism Activities

Tourism activities were estimated through the use of data and assumptions developed through interviews. The analysis followed in two steps: 1) estimating wine tourism impacts for Walla Walla; and 2) estimating total unique visitors by county and applying some elements of Walla Walla visitors to these other regions. Walla Walla analysis was based on a 2019 report by William B. Beyers and Don Morgan, *Economic Impact of the Walla Walla Wine Industry*. Estimated county-level tourism spending and visitor counts used tourism expenditure data reported for Washington state and by county by Dean Runyan Associates.¹⁴

County Metrics

Vineyards

Vineyard-level metrics were derived from NAICS 111332 (grape vineyards) and wine and non-wine grape production. In order to estimate total employment, the ratio of self-employed to total employed for the state (discussed above) was applied to wine grape vineyard employment at the county level. Wage income for the self-employed was estimated by applying the county-level wage per employee to total estimated self-employed. Revenues were scaled by employment. King County vineyards were suppressed, so the average employees per firm and wages per employee for the next-highest level (111) were applied to vineyard firms.

Wineries

Winery-level metrics were derived from NAICS 312130 (wineries). As with vineyard calculations, in order to estimate total employment, the ratio of self-employed to total employed for the state was applied to winery employment at the county level. Wage income for the self-employed was estimated by applying the county-level wage per employee to total estimated self-employed. Revenues were then scaled by employment. Because of data suppression for Walla Walla employment, the average employees per firm and wages per employee for the next-highest level (3121) were applied to winery firms.

Economic Impact Analysis

Definitions: Direct, Indirect, and Induced Effects

For determining economic impact, three distinct types of effects are quantified and added together. The first area, **direct effects**, refer to the immediate activities that are being studied and which involve the sale of a product to either an end-user or as a domestic or foreign export. In the case

¹⁴ Dean Runyan Associates, "Washington State Travel Impacts & Visitor Volume, 1990-2017P," Prepared for the Washington Tourism Alliance, May 2018.

of wine production, the value of grapes is carried over into the production of wine and is therefore not considered a direct activity (along with any supplier sales to wineries). The two exceptions are for wine sales to wholesalers and retailers; in input-output modeling, the only revenues reported for retailers and wholesalers are for the gross margins generated from the sale, and thus do not include the underlying value of the wine being sold.

Indirect effects are the effects of inter-industry transactions. The sale of bottles to a winemaker, for example, is an inter-industry transaction from a bottle wholesaler to winery. Even wine grape sales to a winemaker are inter-industry transaction. **Induced effects** refer to the effects of wages spent by employees supported by direct and indirect revenues, such as business revenues among retailers and restaurants supported through winery employees spending a share of their income at these establishments, and resulting jobs supported by these sales. Indirect and Induced effects together are often referred to as **Secondary** effects.

Multiplier Effects and Total Economic Impacts

The multiplier effect describes how an increase in one economic activity is correlated with a broader increase reflecting the combined direct and secondary impacts across the economy. **Multiplier Effects** thus represent the total economic impact of an activity divided by the direct activity being modeled, measured either as revenues, jobs, or wages.

The primary tools for estimating the broader impacts of the wine cluster in Washington State were the Washington State Input-Output (I-O) Model for year 2007, published in 2012, and IMPLAN. The Washington State I-O Model provides a data-rich rendering of the state economy across 52 sectors. The transactions table, which underpins the I-O model, provides estimates of intermediate purchases, sales, and final demand across all modeled sectors. The complex analysis of the model, published online by the Washington State Office of Financial Management, allows analysts to model the impacts of economic activities when output, labor, wages, and first round direct purchases/requirements are known.

In order to apply the input-output model for multiple years of analysis, implicit price deflators were used to adjust previous year totals to 2018 (the most recent modeling year). Direct requirements for wine production were calculated based on shares of purchases for each sector to each year of output, derived from the 2007 transactions table, as well as IMPLAN social accounting matrices, and interviews.

The economic impacts of wine production in Washington include direct, indirect, and induced effects, the total impact being the sum of these impacts. Analysis begins with a transactions table, constructed from multiple data

sources by Beyers and Lin.¹⁵ This table captures all transactions between and within industries and final demand, the latter including personal consumption expenditures (i.e., household consumption), domestic and foreign exports, investment, and federal, state, and local expenditures. Total output in an economy is thus the sum of inter- and intra-industry purchases, also referred to as intermediate transactions, and final demand. The input-output transactions table is governed by an important accounting identity requiring that all purchases in an economy must equal all output. Within the transactions matrix, the sum of each column represents all purchases by an industry or source of demand and will equal the amount sales and output by that activity.

For example, in the latest transactions table, the input-output sector “Software Publishing and Internet Service Providers” in 2007 purchased nearly \$5.3 billion in non-labor inputs from other industries in Washington. Added to this, the sector paid \$9.7 billion in wage and salary outlays (including non-wage benefits), plus \$8.3 billion in other value added activities (e.g., profits, dividend payments) and \$10.1 billion in imported (domestic and foreign) inputs; these amounts total \$33.4 billion, exactly equal to total sales, or output, by this industry in Washington.

The columns of a transactions table thus represent production functions for each modeled industry. Direct requirements coefficients, also referred to as technical coefficients, are the share of total purchases for each input. For example, in 2007, again return to the Software Publishing and Internet Service Providers industries in Washington, firms belonging to this grouping purchased \$240.4 million in goods and services from the industry category “Architectural and Engineering /Computer Systems Design and Related Services,” translating into a direct requirements coefficient of 0.0072, or 0.72% of all purchases made by Software Publishing and Internet Service Providers based in Washington State (\$240.4 million / \$33.4 billion).

Once a matrix of direct requirements is calculated, a series of equations are used to relate changes in demand in one sector of the economy to changes in gross output to across the entire economy. Inter-industry transactions, denoted “O,” is equal to a vector X of gross output per industry multiplied by the matrix of direct requirements, denoted “A.”

$$(1) O = AX$$

The vector of gross output per industry, X, is the sum of inter-industry output (transactions) and final demand. In the above example, \$41.7 billion

¹⁵ Beyers, W. & Lin, T.-w. (2012). *The 2007 Washington State Input-Output Model*. Olympia, WA: Washington State Office of Financial Management. Retrieved from http://www.ofm.wa.gov/economy/io/2007/I-O_2007_report.pdf.

in total output in aerospace is equal to \$842.8 million in inter-industry sales plus \$40.8 billion in final demand.

$$(2) X = O + D$$

Combining equations (1) and (2) results in industry gross output equaling the sum of industry output multiplied by direct requirements plus final demand:

$$(3) X = AX + D$$

Rearranging this equation:

$$(4) D = (1-A)X, \text{ and}$$

$$(5) X = D(1-A)^{-1}, \text{ the } (1-A)^{-1} \text{ inverse matrix referred to as the "Leontief Inverse."}$$

Finally, input-output modeling is primarily used to assess economy-wide changes given a change in one or more activities, resulting in equation (6):

$$(6) \Delta X = (1-A)^{-1}\Delta D$$

Adjusting for Double Counting

In order to calculate the combined impact of all direct activities analyzed in this study, more accurate estimates of final demand must be completed. Final demand refers to the final sale of goods and services to end users or to additional value-added processing outside Washington state (either domestically or overseas), and thus excludes inter- and intra-industry sales. For example, essentially all wine grapes produced in Washington state are either by estate wineries, for their own production, or sold to other wineries as an intermediate input. Adding both farming-based economic impacts and processor-based impacts would result in double-counting of some jobs and revenues. The same issue applies to purchases of other suppliers, such as equipment from wholesalers. Revenues, jobs, and wages tied to these activities/transactions are accounted for as indirect impacts. In the case of estate wineries, estimates are revised for direct jobs, income, and revenues to reflect only the share of the business engaged in production of wine (and not wine grapes).

Customizing Model to County Level

To adjust the I-O model to conduct county-based estimates, CAI employed location quotients for each industry covered in the state I-O model for each county of interest. Location quotients, which measure the relative concentration of any given activity in a select geography relative to a benchmark, in this case Washington state, help control for the unique specificities of the region being analyzed.