

ARIZONA WINE GROWERS ASSOCIATION

WINE INDUSTRY ECONOMIC IMPACT ANALYSIS



October 2021



KEY FINDINGS

- Arizona wine production, measured in net production, has grown at quickened pace, nearly tripling (160% growth) in volume between 2012 and 2019. As of July 2021, there were 118 licenses for “farm wineries,” defined as wineries that produce between 200 and 40,000 gallons of wine per year.
- Wine production, distribution, and sales activities, including mark-ups generated from the sale of wine from wholesalers to retailers and restaurants, supported 420 direct workers and \$45.0 million in business revenues in 2019.
- Wine tourism, representing additional, non-wine spending on hotels, fuel, restaurants, and other travel expenses, directly supported 390 workers and \$33.7 million in business revenues.
- The combined economic impact of the Arizona wine industry, including direct activities and additional jobs, income, and revenues supported through business-to-business transactions and household consumption, totaled 1,270 jobs, \$55.6 million in labor income, and \$155.9 million in business revenues in 2019. Each job in the wine industry was associated in 2019 with a total of 1.6 jobs across the state economy.
- These impacts in turn supported federal, state, and local tax revenues of \$29.8 million in 2019.

INTRODUCTION

Arizona’s wine production dates to the earliest vineyards planted in North America. Spanish explorers reportedly established vineyards in Southern Arizona as early as the mid-16th century. The Arizona wine industry thrived and was among the largest centers of wine production in the U.S. until the advent of state and then federal prohibition in the early 20th century. The industry was shuttered and then remained dormant until the 1970s, when scientific research pointed to the soils and terrain as suitable for production of high quality grapes.

Today Arizona is home to two American Viticultural Areas (AVAs), both located in the southern part of the state. The 526,000-acre Willcox AVA, was established in 2016, within a large, shallow basin at elevations ranging between 4,135 feet and 4,700 feet. The Sonoita AVA was established in 1984. The AVA is 208,000 acres with elevations ranging between 4,500 and 5,000 feet above sea level. The Verde Valley region, located in central Arizona at elevations between 3,200 and 5,000 feet, is currently being petitioned for AVA status.

The wine industry contributes to Arizona’s statewide and local economic growth through multiple mechanisms. Wine production involves the hiring of workers and wage outlays for winemakers, sales staff, and other direct employment, and the generation of revenues from on- and off-site sales. Wineries also support tourism through tasting rooms and placemaking. Lastly, wine produced in Arizona is then sold downstream through various

channels, including wholesalers, restaurants, bars, and grocers, each of which generates revenues through added mark-ups. All these impacts support additional jobs, income, business sales, and tax revenues through supply chain transactions and worker household expenditures. For example, sales and employment among grape producers who sell their output to wineries, as well as the contracting of various services, such as cooperage, and purchasing of glass and other key inputs and supplies.

The Arizona Wine Growers Association has commissioned this report to provide a detailed, data-rich assessment of the economic contributions of the wine production to Arizona economy. Findings will support the Arizona Wine Growers Association's work to further support the growth of the industry and communicate its importance to legislators and other stakeholders.

Methods

Analysis draws on multiple state, federal, and private vendor sources. Data on wine production is primarily sourced from the U.S. Treasury Department Alcohol, Tobacco, Trade, and Tax Bureau (TTB). Employment is estimated through use of federal data sources, including series by the U.S. Bureau of Labor Statistics and U.S. Census Bureau. Wine tourism estimates rely on the 2017 Arizona Office of Tourism *Arizona Wine Tourism Industry* study, updated using industry growth to represent 2019 conditions. Economic and fiscal impacts are estimated using IMPLAN, an input-output model. Interviews were also conducted with industry stakeholders. A list of individuals who participated in this study can be found in **Appendix A**.

Outline of Report

The remainder of this technical report is organized as follows:

- **Wine industry direct measures.** Volume, revenues, employment, and income indicators directly tied to the production of wine in Arizona.
- **Economic and fiscal impacts.** Additional jobs, income, revenue, and taxes supported through upstream business-to-business transactions (indirect) and household consumption expenditures (induced) from the production and sale of Arizona wine and wine tourism.
- **Summary and conclusions.** Review of key findings.

WINE INDUSTRY DIRECT MEASURES

Vineyards and Grape Production

Grape production is concentrated in three regions of the state: the Wilcox AVA, in southeastern Arizona; Sonoita AVA, along the Mexico border; and the Verde Valley, located in central Arizona and currently in consideration for AVA designation. Statewide, in 2020 there were an estimated 1,650 planted vineyard acres in production (Pierce, 2020). The Wilcox AVA is the largest grape producing region of the state. According to a 2013 vineyard study, the Wilcox AVA represented nearly 67% of all acreage planted and 75% of all grape production that year (USDA National Agriculture Statistics Service, 2014).

Red varieties represent the overwhelming share of grape production in Arizona. A 2016 study of the Verde Valley found that more than 80% of planted acreage was for red varieties, including Syrah (17.85 acres), Petite Syrah (11.75 acres), and Cabernet Sauvignon (11.4 acres) (Pierce, 2020). There are 24 commercial vineyards covering 125 acres in the proposed Verde Valley AVA, with plans by some existing vineyards to expand by 40 acres in the near future. The proposed AVA is also home to 11 wineries (U.S. Alcohol and Tobacco Tax and Trade Bureau, 2020).

Arizona grapes range between \$2,000 and \$2,500 per ton. This is generally more expensive than major grape production regions of the U.S., such as the Central Valley in California and Yakima Valley in Washington state. For example, in 2019, the average price for wine grapes grown in California was \$827 per ton across all varieties (albeit wide variation in quality, region, and varieties);¹ in 2020, average prices fell 20% (California Department of Food and Agriculture, 2020). In 2017 (latest crush report), the average price per ton for Washington state wine grapes across varieties and AVAs was \$1,198 (Washington State Wine Commission, 2017).

Current and Future Challenges for Vineyards

Industry stakeholders interviewed for this study expressed concern about the availability of grapes and planted acres now and in the coming years. The higher price for Arizona wine grapes compared with other regions reflects strong demand for Arizona grapes among a fast growing state wine industry. Even if there is a significant increase in planted acres, newly planted vines typically take three to five years to bear fruit usable for wine production. Land use competition with much more water-intensive crops (e.g., corn, pecans) is also inhibiting factor in vineyard growth and production, according to some stakeholders. More volatile weather patterns likely influenced by climate change may also adversely impact grape production; intense rain and late season frosting can be severely damage grape wines.

¹ Napa County grapes cost nearly \$4,600 per ton in 2020.

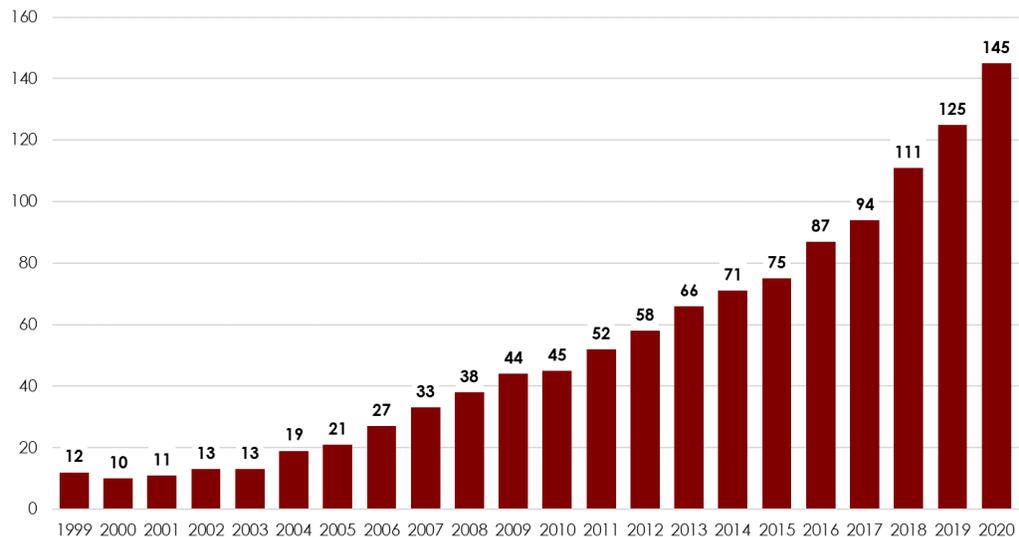
Agriculture land costs also vary widely by region. The Wilcox region ranges around \$4,000 and acre, whereas land in the Verde Valley—also a popular vacation destination—can cost \$50,000 per acre or higher.

Expertise in viticulture is also critical; even if farmers wish to convert part of their acreage to potentially much more profitable wine grapes, they may not have the experience and knowledge base in wine grape cultivation to be successful. The Southwest Wine Center at Yavapai College was established in 2009 and has been an important source of human capital for the industry, offering associate degrees in viticulture and enology to address this growing demand for talent.

Wineries and Wine Production

As of 2020, according to the U.S. Alcohol and Tobacco Trade and Tax Bureau, there were 145 bonded winemaking locations (albeit some of these locations are owned by the same vintner; **Exhibit 1**). These bonded locations are spread across 13 counties, with more than 80% within the counties of Yavapai, Santa Cruz, Cochise, and Maricopa. Since 2005, the number of bonded locations has grown at an annual compound growth rate of 14% per year. Wineries nationally increased 8% over the same period.

Exhibit 1. Licensed Winery Locations, Arizona, 1999-2020



Source: U.S. Alcohol and Tobacco Tax and Trade Bureau (2021).

As of July 2021, there were 118 licenses for “farm wineries,” defined as wineries that produce between 200 and 40,000 gallons of wine per year (**Exhibit 2**).² According to Arizona law, farm wineries that produce less than 20,000 gallons are allowed to self-distribute to retailers and restaurants (Arizona Department of Liquor Licenses and Control, 2017). Farm wineries

² Wineries in Arizona that produce above 20,000 gallons a year must sell their wine through a licensed distributor.

that exceed this amount in a calendar year must work with a licensed state distributor for off-premises sales.

Four wineries possess licenses to sell to wholesalers, while 10 are licensed to directly ship their wines to Arizona residents. After adjusting for multiple licenses per business, including among those with multiple farm winery licenses, there are an estimated 114 unique winery labels in Arizona (as of July 2021). The low number of wineries licensed to sell to wholesalers (4) indicates that most wineries sell their wine via direct-to-consumer, and thus outside the multi-tiered distribution & sales system. Only an additional 10 wineries are licensed to ship direct to consumer, indicating that the vast majority of these direct-to-consumer sales are transacted on-premises at the winery or remote tasting room.³

Interviewees expressed frustration with the current regulatory framework for winemaking in Arizona. The current upper limit of 20,000 gallons for self-distribution is viewed by interviewees as unnecessarily low and often imposes an artificial limit on growth. Wineries typically grow their business first through self-distribution, developing relationships with local and regional grocery and liquor stores and restaurants. The advent of this 20,000 gallon limit for self-distribution, according to interviewees, thus significantly curtails growth opportunities.⁴

Exhibit 2. Arizona Winery Licenses, as of July 2021 (license # in parentheses)

License Type	Description	Number in Arizona
In-state producer (#1)	Allows winery to sell to an in-state wholesaler.	4
Farm Winery (#13)	Arizona winery that produced between 200 and 40,000 gallons annually.	118
Direct Shipment Wine (#17W)	Allows winery to ship limited amounts of wine produced at their winery to Arizona residents.	4
Remote Tasting Room (#19)	Remote tasting rooms located in Arizona and are owned and operated by a licensee that concurrently owns a farm winery licenses.	37
Custom Crush (#21)	An agreement between a "host" Farm Winery and a "tenant" Farm Winery to produce wine on behalf of the tenant.	10

Source: Arizona Department of Liquor Licenses and Control (2021); Arizona State Legislature (2021).

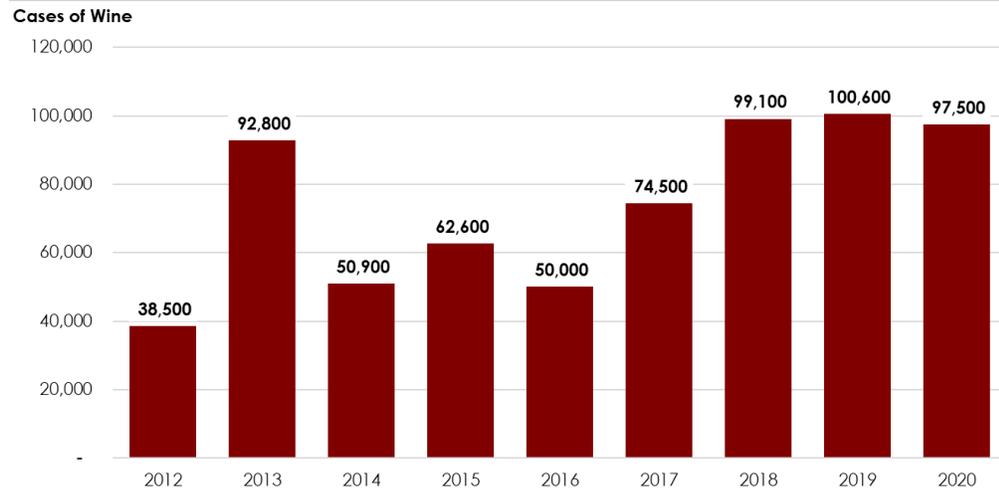
³ A small number of Arizona wineries are either meaderies or cideries. Both are technically wineries, though the business models differ slightly from traditional grape-based wine production.

⁴ Winemakers producing less than 20,000 gallons can, and often do, work with distributors, but the amount is decided by the winery, and can be any amount less than their total sales volume.

Production

In 2019, Arizona wineries moved 97,500 cases of wine from bonded to non-bonded sales locations in 2020 (**Exhibit 3**), an approximate (albeit imperfect) measure of production.⁵ Arizona’s wine production in 2019 ranked 30th among states, based on TTB net production data (**Exhibit 4**).

Exhibit 3. Net Production, Still and Effervescent Wine (Bottled), Arizona, 2012-2020



Source: U.S. Alcohol and Tobacco Tax and Trade Bureau (2021).

Exhibit 4. Bottled Wine Net Production by State, Cases, 2019

Rank	State	Taxable Withdrawals* <i>Thousands of cases</i>
1	California	259,411.6
2	New York	14,276.1
3	Washington	12,648.5
4	Pennsylvania	11,292.0
5	Oregon	5,747.6
6	Ohio	2,802.2
7	Texas	2,667.3
8	Vermont	1,827.5
9	Michigan	1,544.6
10	North Carolina	1,517.7
...
30	Arizona	100.6

Source: U.S. Alcohol and Tobacco Tax and Trade Bureau (2021).

*Taxable withdrawals are not a perfect measure of wine sales. Withdrawals refer to the transfer of wine from a bonded location to a non-bonded location (both can be

⁵ Net production is based on the amount of wine that is bottled and moved from a bonded to a non-bonded (and thus taxable) location for sale. Net production volumes reflect wine volumes after some evaporation, removal of sediment due to racking, and other volume losses in the winemaking process.

the same premise) for sale. However, withdrawals do serve as a reasonable proxy for sales, both over time and in comparison with states.

Exhibit 5. License Holders and Share of Production by Production Volume Levels, Arizona, Cases, 2019

Range	License Holders	Share of Production
		Volume
Between 15,000 and 25,000 cases	2	22.4%
Between 5,000 and 15,000 cases	9	38.6%
Between 2,000 and 5,000 cases	15	22.4%
Between 500 and 2,000 cases	23	13.4%
Less than 500 cases	28	3.3%

Source: Arizona Department of Liquor Licenses and Control (2020).

Note: in 2019, 93 winery licenses reported production volumes, out of 105 active licenses. These 105 licenses were held by 77 unique wine license owners.

Wine Revenues, Employment, and Income

In 2019, wineries in Arizona generated an estimated **\$42.8 million** in revenues, including on-premises direct-to-consumer sales, direct shipments, and sales via distribution channels (based on a discounted amount sold to distributors). Total employment directly employed among wineries in Arizona summed to 390 with associated labor compensation (including wages plus estimated supplemental benefits) of \$16.5 million (**Exhibit 6**).⁶

An additional \$2.2 million in revenues were generated through mark-ups from the sale of Arizona wine throughout the 3-tier distribution system, including from wholesaler to retailer and restaurant, and sale to final consumers. **Combined, the wine industry supported direct revenues of \$45.0 million in 2019.**

Exhibit 6. Wine Production and Sales Direct Impacts, 2019

	Employment	Labor Income	Output
Wineries	390	\$16.5	\$42.8
Mark-ups <i>Wholesalers, retailers, restaurants</i>	30	\$1.1	\$2.2
Total	420	\$17.6	\$45.0

Sources: U.S. Census Bureau (2020); U.S. Bureau of Labor Statistics (2021); U.S. Bureau of Economic Analysis (2021); High Peak Strategy LLC (2021).

⁶ In 2019, according to the U.S. Bureau of Labor Statistics, there were 43 employers in Arizona whose primary industry classification was “winery”—the remaining licensed wineries were either classified as an industry other than “winery” (e.g., wholesaler, restaurant) or were sole proprietors with no employees (U.S. Bureau of Labor Statistics, 2021). Businesses defined in federal employment records as wineries employed an annual average of 350 workers in 2019, though the total amount of workers will vary throughout the year.

Growth Opportunities

Some winemakers, having tried to export their wine outside Arizona, have turned their focus to the in-state market. Arizona wine remains a small minority of wine sales in the state, often outcompeted by wine from California, Washington, Oregon, and foreign imports. The Phoenix region is among the fastest growing metropolitan areas in the country. Winemakers see this large population base as important still largely untapped for Arizona wine. Married this growth opportunity, many millennials put a high premium on farm-to-table and local brand consumption.

Wine Tourism

Wineries draw both in-state and out-of-state visitors seeking daytrip or overnight excursions. According to the Arizona Office of Tourism, in 2017 Arizona wine tourism directly generated \$41.9 million in revenues, including \$12.0 million in gasoline store sales and \$14.5 million in hotels, motels, and other accommodations. There were an estimated 600,000 visitors to vineyards and tasting rooms in 2017, of which approximately 57% were day trip-trippers and 43% overnight visitors (Fitch, Combrink, & Pitts, 2017, p. 31).

In this analysis, we update these figures for year 2019 and remove wine tourist wine purchases to avoid double-counting of economic impacts. Year 2019 estimates were generated by inflating estimates from 2017 to 2019 dollars and scaling non-wine purchases based on growth in the adult population ages 25 and above, based on U.S. Census Bureau data (2021).⁷

In 2019, wine tourism directly supported **390 jobs, \$13.5 million in labor income** (inclusive of supplemental benefits), and **\$33.7 million in wine tourism spending**.

ECONOMIC AND FISCAL IMPACTS

Additional economic activities—measured in jobs, income, and revenue—are support by wine production through the upstream purchases of various supplier goods and services, referred to as **indirect impacts**. Further impacts accrue through direct and indirect workers who spend a share of their earned income on various types of household consumption, such as groceries, fuel, dining out, and entertainment; these impacts are referred to as **induced impacts**. The sum of direct, indirect, and induced impacts is referred to as **total economic impacts**. These impacts in turn support taxable activities and spending, measured as fiscal impacts.

The primary tool for assessing these broader economic impacts was the IMPLAN Arizona model, an input-output model custom-built to reflect the unique intra- and inter-industry transactions and household spending within the state economy.

⁷ According to the U.S. Census, the Arizona adult population 25 years of age and above increased approximately 5% between 2017 and 2019.

Economic Impacts

In 2019, the production distribution, and sale of Arizona wine was associated with a total economic impact of \$91.4 million and 690 workers (**Exhibit 7**).

Exhibit 7. Economic Impacts of Wine Production and Sales, 2019

	Direct	Indirect	Induced	Total
Employment	420	120	150	690
Labor Income (mils \$)	\$17.6	\$7.1	\$7.7	\$32.4
Output (mils \$)	\$45.0	\$22.1	\$24.4	\$91.4

Sources: IMPLAN Group LLC (2021); High Peak Strategy LLC (2021).

Wine tourism, representing allied spending on hotel accommodations, dining out, and related day-trip and overnight travel expenses, directly supported 390 jobs and \$33.7 million in output (**Exhibit 8**).⁸

Exhibit 8. Economic Impacts of Wine Tourism, 2019

	Direct	Indirect	Induced	Total
Employment	390	110	80	580
Labor Income (mils \$)	\$13.5	\$5.5	\$4.2	\$23.2
Output (mils \$)	\$33.7	\$17.4	\$13.3	\$64.4

Sources: IMPLAN Group LLC (2021); Arizona Office of Tourism (2017); High Peak Strategy LLC (2021).

Total economic impacts of the wine industry in Arizona in 2019 are presented in **Exhibit 9** below. In 2019, the industry—based on the combined impacts of wine production, sales, distribution, and wine tourism—supported nearly 1,300 jobs and \$155.9 million in businesses output. Each direct job in the wine industry was associated with 1.6 jobs across the Arizona state economy (1,270 total jobs ÷ 810 direct jobs).

⁸ Wine tourism estimates were based on the 2017 Arizona Office of Tourism wine tourism impact estimates (Fitch, Combrink, & Pitts, 2017). However, to avoid double-counting, estimated spending on wine by wine tourists was removed from the 2019 estimate. Furthermore, 2017 estimates were scaled to 2019 by: 1) inflating values to 2019 dollars, based on implicit price deflators published by the U.S. Bureau of Economic Analysis (2021); and 2) increasing impacts based on the 2-year increase in the adult population in Arizona ages 25 and older, drawing on U.S. Census Bureau population data for Arizona.

Exhibit 9. Total Economic Impacts of Wine Industry in Arizona, 2019

	Direct	Indirect	Induced	Total
Employment	810	230	230	1270
Labor Income (mils \$)	\$31.1	\$12.6	\$11.9	\$55.6
Output (mils \$)	\$78.7	\$39.5	\$37.7	\$155.9

Sources: IMPLAN Group LLC (2021); Arizona Office of Tourism (2017); High Peak Strategy LLC (2021).

Fiscal Impacts

The above economic impacts in turn support taxable spending and activities across the state. In 2019, Arizona wine industry—including the production, distribution and sale, and wine tourism activities—supported an estimated \$29.8 million in federal, state, and local taxes (**Exhibit 10**).

Exhibit 10. Total Fiscal Impacts of Wine Industry in Arizona, 2019

Government Level	Tax Payments
Federal Taxes	\$17.5
State Taxes	\$7.1
County Taxes	\$0.9
Subcounty General and Special District Taxes	\$4.3
Total	\$29.8

Sources: IMPLAN Group LLC (2021); Fitch, R., Combrink, T., & Pitts, T. (2017); High Peak Strategy LLC (2021).

SUMMARY AND CONCLUSIONS

Arizona is a fast growing hub for high quality wine grapes and wine production. The state is home to two American Viticultural Areas, the Wilcox and Sonoita AVAs, and has a third AVA, the Verde Valley, pending federal review and designation. Between 2012 and 2019, net wine production volumes nearly tripled (160%) as the number of new wineries continues to grow and existing wineries expand operations. As of July 2021, there were 118 licenses for “farm wineries,” defined as wineries that produce between 200 and 40,000 gallons of wine per year.

The production and sale of wine, along with wine tourism spending (such as on hotels, restaurants, and travel expenses) in 2019 directly supported 810 workers across the state with labor compensation (including supplemental benefits) of \$31.1 million. Wine production and distribution directly generated an estimated \$45.0 million in business revenues across the state in 2019. Factoring in indirect and induced impacts, the wine industry in Arizona in 2019 was associated with an estimated 1,270 jobs, \$55.6 million in income, and \$155.9 million in business revenues. These impacts in turn supported federal, state, and local tax revenues of \$29.8 million in 2019.

There are significant upside opportunities for the Arizona wine industry. Arizona is one of the fastest growing states in the U.S., spurring increasing demand for local, high quality wine. However, there are several perceived constraints on this growth. Interviewees for this project expressed concerns about the availability of grapes, the supply of which is being outstripped by new demand, driving up prices. Stakeholders also called attention to the current regulatory framework for wine as unnecessarily inhibiting winery growth. According to some stakeholders, this is particularly the case for a 20,000 gallon upper limit per farm winery license on production before a winery is compelled by Arizona law to work exclusively with a licensed distributor for all off-premises wine sales.

APPENDIX

Appendix A. Wine Industry Interviews

Individual	Affiliation
Brooke Lowry Ide	Vino Stache
Kris Pothier	Chateau Tumbleweed
Maynard James Keenan	Caduceus Cellars, Merkin Vineyards, Four Eight WineWorks
Michael Pierce	Bodega Pierce Winery
Mickey Sarkett	Action Beverage
Rod Young	Arizona Stronghold, Provisioner Wine
Todd Bostock	Dos Cabezas Wine Works

Appendix B. Description of Data Sources

The following data sources were used for this report:

- **U.S. Bureau of Labor Statistics’ Quarterly Census of Employment and Wages.** Employment and wage data for workers covered in the Arizona state unemployment insurance system, i.e., payroll workers. Employment is reported by detailed North American Industry Classification System codes.
- **U.S. Economic Census.** Detailed data on employment, wages, and value of shipments for Arizona businesses for year 2017. Published by U.S. Census Bureau.
- **U.S. Alcohol and Tobacco Tax and Trade Bureau.** Data on net production and federally licensed operations in Arizona by calendar year and month.
- **U.S. Bureau of Economic Analysis.** Implicit price deflators used to adjust prior years’ sales and income estimates to 2020 dollars.
- **U.S. Census Bureau American Community Survey 1-Year Estimates.** Population estimates used to adjust data for tourism based on growth from 2017 to 2019.
- **Arizona Department of Liquor Licenses and Control.** Production volumes by winery license annually.
- **IMPLAN.** An input-output economic modeling tool for assessing indirect and induced impacts of wine production, distribution, and wine tourism spending in Arizona.

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