

Insel & Company  
The Business of Wine

# The Economic Impact of Napa County's Wine and Grape Industry on the Economies of Napa County, California and the US

Prepared For Napa Valley Vintners  
May, 2025

AN INSEL & CO. RESEARCH REPORT

Copyright ©2024-5 Insel & Company™

All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior written permission of Insel & Company.

# HIGHLIGHTS

## Full 2022 Economic Impact of Napa-County-Related Wine & Grapes

\$11.7 billion in Napa County

\$21.6 billion Total California

\$36.7 billion Total US

	In Napa County	Total California	Total US
Operating Wineries	1,521	NA	NA
Total Winery Revenue, 2022	\$4,438,988,578	\$5,362,411,999	NA
Of Which: Direct Sales, 2022	\$1,314,373,043	\$1,614,933,555	NA
Total Distributor Revenue Generated By All Napa Related Wine, 2022	\$45,888,879	\$206,249,987	\$975,403,281
Total Retail Value Of All Napa Appellation Wine, Sold 3-Tier, 2022★	\$29,930,199	\$1,356,271,224	\$7,704,806,292
Total Retail Value Of All Wine Made In Napa County, Sold 3-Tier, 2022	\$53,340,314	\$1,593,361,197	\$7,964,764,201
Napa Appellation Wine Fermented (TTB), 2022, 9l Case Equiv †	13,642,451	17,717,469	17,717,469
Total Napa-Related-Wine Fermented (TTB) 2022, 9l Case Equiv †	17,095,012	21,170,030	21,170,030
Napa Bearing Vineyard Acres, 2022	46,128	NA	NA
Napa Grape Crop Size (Tons), 2022	131,144	NA**	NA
Value Of Napa Grape Crop, 2022	\$890,911,400	\$890,911,400	\$890,911,400
Full-Time Equivalent Jobs, 2022	55,875	94,251	199,639
Labor Compensation Generated, 2022	\$3,824,811,179	\$10,368,776,444	\$12,463,032,611
Expenditures By Wine-Related Tourists (Excluding Wine Purchases)	\$1,678,782,487	NA	NA
County & Local Taxes Paid	\$507,087,032	\$1,434,961,031	\$2,408,726,058
State Taxes Paid	\$437,119,725	\$1,216,430,372	\$2,435,357,104
Federal Taxes Paid	\$757,005,574	\$2,428,164,382	\$2,704,788,493

Sources: Insel & Company, California NASS, US Bureau of Labor Statistics, Napa County Agricultural Commissioner, industry interviews. Future Partners 2023 "Visitor Profile" prepared for Visit Napa Valley. \*\* We did not attempt to estimate the number of non-Napa vineyards growing grapes for non-appellation wine processed in Napa. + TTB provided total of reporting wineries in 2022. † TTB and Industry★ Does not include value of wine just bottled or warehoused in Napa County.

# OVERVIEW

Napa County's wine industry had, in 2022, a total economic impact of more than \$11.7 billion on Napa County's economy, as detailed in Table 1.

In other words, over a tumultuous six-year period of wildfire, drought, pandemic, inflation, intense competition and rapidly changing consumer behavior, the industry achieved a 24% or \$2.3 billion increase in its economic contribution – jobs, payroll, tax collections -- to the county.

This impact, directly and indirectly, included 55,875 jobs in Napa County in 2022, compared with 43,978 jobs in 2016, a 27% increase in employment by the industry despite rising wages and a tight labor market. The industry accounted for 72% of Napa County's 77,788 total employment in 2022, compared with 58% of Napa County's total employment of 75,503 in 2016, with industry wages then effectively equal to the county average wage of \$52,173.

The industry generated, in 2022, \$3.9 billion in income, or 73.7% of total 2022 compensation received in the county in 2022. The analysis found that average employment income in the industry, broadly defined, averaged more than \$69,000/acre, above Napa's average wage of \$67,518<sup>1</sup> in 2022. In 2016, the industry accounted for 59% of total compensation received in the county in 2016. Industry total income was \$2.29 million, with average income was equal to the county's average 2016 of \$52,173. Thus, income generated by the wine and grape industry, directly and indirectly, rose by nearly a third since 2016.

The industry generated more than \$507 million in county and local taxes in 2022, compared with \$106 million in the previous study. This increase does not reflect any major local tax increase but a more comprehensive consideration of total winery and vineyard property taxes, kindly provided by Napa County's Assessor and Treasurer-Tax Collector, combined with IMPLAN's complete revision of its tax analysis methodology.

2022 Property Tax paid by wineries and vineyards in calendar 2022 totaled more than \$156 million. Those taxes represent 27% of total property tax collected by the county in 2022, a significant share of Napa's real property assets, given that many of Napa's major wine properties were developed decades ago, and Proposition 13 constraints on property tax assessments and rates. Changing ownership and rebuilding of these properties are already beginning to have significant impacts on both county and city finances.

Of particular interest to the industry, Napa related wines are estimated to have generated more than \$1.1 billion in revenue for US wine wholesalers in 2022. This revenue is based on the estimated commission wholesalers received on the sale of these wines and reflects the premium prices accorded to Napa's wines, especially Napa appellation wines, even in this challenging market. This complex issue is further discussed in the Market Access section of this report.

---

<sup>1</sup> US Bureau of Labor Statistics, "Databases, Tables & Calculators by Subject," Quarterly Census of Employment of Wages (QCEW), Data extracted on March 24, 2025. Average Annual Pay in Total Covered [Categories], all industries, all establishment sizes, Napa County, California, US, 2022.

# WHAT IS ECONOMIC IMPACT?

Economic impact analysis answers the question: what would we lose if this industry were not here? It is measured by the revenue (sales dollars) generated by the industry and how that money is spent — by the businesses and the employees, suppliers and service providers to that industry, which generate the indirect and induced economic impact of the industry.

Economic Impact analysis is therefore *not* the industry's contribution to regional Gross Domestic Product (GDP), which is the value the industry *adds* to its suppliers' goods and services. If the industry did not exist, there would be no need for those suppliers' goods and services.

To understand this analysis, it is important to understand the wine and grape industry not as just planting wine grapes and fermenting the fruit of those plants into a liquid called wine, sold to wholesalers, but to understand the industry as a complex, capital intensive, network of agriculture and multiple allied industries that together produce and sell the highest value agricultural product made in the US, selling and shipping the fragile and valuable product both directly to consumers and through wholesalers to a variety of retailers and restaurants across the country. Moreover, to understand Napa's wine and grape industry is to see Napa County as a key hub of a production, sales and logistics network extending from California's Central Coast to parts of Oregon. That context makes this assessment of the economic impact of Napa's wine and grape industry unlike any other economic impact analysis the reader is likely to encounter.

To conduct this analysis, we built economic data models ("production functions" in economic speak) of each of the key sectors that comprise Napa's wine industry:

- **Wine grape growing in Napa County:** revenue generated and how it was spent for operations, including labor and suppliers, in 2022 *plus* 2022 growers' and vineyard managers' capital investments in equipment, vehicles, planting and replanting vineyards.

Recognizing, in this analysis, that wine grape farming in Napa is, unlike inland volume wine grape production, only about 15% mechanized and pays premium compensation plus benefits for vineyard labor, often full-time employed.

- **Wineries:** revenue generated in 2022, through each sales channel, including direct to consumer, and how it was spent on operations, including labor and suppliers, in 2022 *plus* 2022 vintners' capital investments in equipment, vehicles, and construction.
- In this 4<sup>th</sup> edition of this study, additional research was included on vintners', growers' and suppliers' substantial and rising operational and capital spending on wildfire prevention and mitigation, along with waste water management and treatment.
- **Independent bottlers, bottling wine not produced in Napa County:** revenue generated in 2022 and how it was spent on labor and suppliers, *plus* bottlers' capital investments in equipment and construction.
- **Warehousing,** including warehousing for bulk wine, wine case goods and winery DtC fulfillment, each of which require specific economic models, given their different revenue and spending patterns, along with their capital expenditures on construction, equipment, and vehicles etc. Several of these operations, and of the independent bottlers, have TTB winery permits, some as bonded wine warehouses; others are not bonded.
- **Transport and logistics:** most wine transport, both locally and nationally, is by truck:

- For grapes from vineyard<sup>2</sup> to winery or custom crush operation;
- For case goods from winery (or custom crush) to case goods warehouse to wholesalers' consolidation warehouse;
- For case goods from winery to fulfillment warehouse to pull, pack and ship Direct to Consumer sales not "carried" out of the tasting room with a customer;
- For bulk wine to bottlers (enroute to case goods warehouse) to wholesalers' consolidation warehouse;
- For imported bulk wine from port or crush location to bulk wine warehouses (often to stay a while);
- For case goods from wholesalers' consolidation warehouses to wholesaler (or large chain) regional distribution centers, across the US. It should be noted that:
  - Wines are "removed from bond" — therefore, for TTB (and excise tax) purposes, "sold" — when they leave the bonded wine case goods warehouse or winery for the consolidation warehouse.
  - A vast network of often independent truckers and small trucking firms, many based in Napa County, coordinated and engaged by truck brokers and logistics specialists on behalf of wholesalers, finally deliver Napa's wine, in refrigerated trucks, across the US.
  - Some wines do travel by rail from Napa, but with few refrigerated rail cars available in the region, these tend to be lower value volume wines. These wines may travel to the Midwest, from which they are disbursed to Eastern and Southern markets.

These economic data models are developed from, wherever possible, official sources including TTB (Alcohol and Tobacco Tax and Trade Bureau of the U.S. Department of the Treasury), the National Agricultural Statistics Service (NASS) of the USDA, the California Department of Food and Agriculture, the U.S. Bureau of Labor Statistics (BLS), County Crop Reports, the U.S. Census Bureau and multiple other such sources. The suppliers' and service providers' data added to the analysis are *incremental*, not duplicative, to indirect and induced impacts included in IMPLAN's calculations. In developing these models, we examined each of IMPLAN's assumptions, including each sector spending plan, to ensure no activity is double-counted. Where necessary, with guidance from IMPLAN staff, we either corrected the assumed "spending plan" element or deleted and replaced it with correct data, as described in the Methodology section to this report. IMPLAN's models include only operating expenditures, not capital expenditures, so those economic activities had to be manually added. Also as explained in the Methodology section, IMPLAN's models are based on the largest growers and wineries. In the wine industry, as many others, the largest enterprises produce the lowest value, high volume wines and therefore do not reflect most Napa wine producers and growers, which specialize in higher-end products. Therefore, these models needed substantial manual adjustment or customization to accurately reflect the region's industry.

IMPLAN's models for the wine industry also do not include the economic impact (jobs created, tax collected, suppliers supported) of warehousing or bottling facilities for third-party wines or wholesale consolidation and distribution, which have also been manually added. By assuming all sales are to wholesalers, IMPLAN excludes the economic impact of direct-to-consumer sales and related wine tourism. IMPLAN also excludes the economic impact of sales of Napa-related-wines to retailers and restaurants — the business created in these industries by offering Napa's wines.

---

<sup>2</sup> Wine grapes are transported by truck over relatively short distances or, for longer distance transport, are crushed into bulk wine for transport by specialized tanker trucks.

All of these activities also have been manually added to the IMPLAN model to ensure this analysis reflects the full scale of wine and grape activities in Napa County.

## THE ECONOMIC IMPACT OF NAPA'S WINE AND GRAPE INDUSTRY

The years since 2016, the year of the last economic impact study, have been challenging for Napa's wine industry: drought, wildfires, inflation, tariffs, even a pandemic, amid the continuing evolution of the US and global wine markets. Uncertainty complicates all business's operations but is a particular burden to the fine wine industry that requires several years to create these valuable products.

Napa Valley's wine industry had, in 2022, **a total economic impact of more than \$11.7 billion<sup>3</sup> on Napa County's economy, as detailed in Table 1 below, compared with the industry's total economic impact of \$9.4 billion in 2016.**

**TABLE 1: TOTAL ECONOMIC IMPACT OF NAPA COUNTY'S WINE AND GRAPE INDUSTRY**

	Napa	Total California	Total US
Winery 3 Tier & Export Revenue	\$3,124,615,536	\$3,748,228,700	3,748,228,700
Winery Direct Sales	\$1,314,373,043	\$1,614,183,299	\$1,614,183,299
Wine Grape Sales	\$891,276,214	\$1,020,288,575	\$1,020,288,575
Total Direct Impact	\$5,330,264,793	\$6,382,700,574	\$6,382,700,574
Distributor Markup (All Napa Related Wines)	\$45,888,879	\$206,249,987	\$1,188,746,808
Retail Markup (All Napa Related Wines)	Included in Tourism	\$339,127.25	\$1,383,327,223
Restaurant Markup (All Napa Related Wines)	Included in Tourism	\$518,202,282	\$2,873,018,193
Tourism	\$1,678,782,565	\$1,678,782,565	\$1,678,782,565
Vineyard Suppliers & Development	\$250,394,391	\$247,392,980	\$196,371,814
Winery Suppliers & Development	\$684,137,773	\$1,244,296,137	\$901,101,926
Warehousing & Bottling	\$332,835,898	\$596,516,188	\$755,420,680
Transport	\$64,964,537	\$121,990,716	\$168,447,062
Charitable Contributions (Not Paid Out Of Winery Revenue)	\$63,000,000	\$63,000,000	\$63,000,000
Tax Revenues (Not Paid Out Of Winery Revenue)	\$91,807,510	\$111,067,500	\$111,067,500
Total Supplier & Related Industries Impact	\$3,211,811,553	\$4,787,837,482	\$9,319,283,771
Indirect (IMPLAN)	\$1,345,119,910	\$5,300,848,965	\$9,970,144,953
Induced (IMPLAN)	\$1,829,001,002	\$5,092,332,292	\$11,015,173,280
<b>Total Impact</b>	<b>\$11,716,197,258</b>	<b>\$21,563,719,313</b>	<b>\$36,687,302,587</b>

Source: Insel & Co Interviews, US Bureau of Labor Statistics, TTB, Napa County & Cities, CFDA NASS, and IMPLAN

Sources: IMPLAN, US Bureau of Labor Statistics, California NASS, TTB, Sovos ShipCompliant DTC Shipping Report, Industry Interviews

<sup>3</sup> <https://www.officialdata.org/2022-dollars-in-2016#:~:text=The%20dollar%20had%20an%20average,Labor%20Statistics%20consumer%20price%20index.>

## EMPLOYMENT

Napa's wine and grape industry directly accounted for nearly 22,000 jobs, and indirectly (including suppliers and service providers) and the spending of those in those industries (induced impact), for nearly 56,000 jobs in Napa or **72%** of Napa County's total 77,788 jobs in 2022<sup>4</sup>.

**TABLE 2: TOTAL EMPLOYMENT GENERATED BY NAPA COUNTY WINE INDUSTRY**

	In Napa County	Total California	Total US
Vineyard	7,546	8,346	8,346
Winery	14,405	18,035	19,042
Total Direct	21,951	26,381	27,388
Total Vineyard Suppliers	2,681	4,916	6,269
Total Winery Suppliers	2,959	6,344	9,692
Tourism	12,115	12,115	12,115
Restaurant & Retail	Included in Tourism	5,567	39,337
Distributors	95	372	1,840
Total Warehousing, Fulfillment, Bottling	1,669	3,127	3,264
Transport	302	820	1,931
Total Suppliers & Related Industries	19,821	33,261	74,448
Total Indirect (IMPLAN)	7,461	13,876	41,335
Total Induced (IMPLAN)	6,642	20,727	56,468
Total	55,875	94,245	199,639

Source: US Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW), Industry Interviews and IMPLAN

<sup>4</sup> Based on US Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages data.

## WAGES

Employee compensation directly generated in 2022 by Napa County's wine and grape industry and its suppliers and service providers totaled **nearly \$4 billion, or 73.7% of total labor compensation** in the county, including wages generated by suppliers and service providers to the industry (indirect wages) and spending by the industry's workforce (induced wages). **The data indicates that wages for the industry, broadly defined, average more than \$69,000, above Napa's average wage of \$67,518<sup>5</sup>.**

To put these findings in context, according to the US Bureau of Labor Statistics employment data, the next largest employers in Napa County are food and beverage stores (primarily grocery), with 7,243 jobs, averaging \$41,757 in average compensation and local government employing 5,684 persons. With compensation ranging from \$70,791 for Health and Education sectors and \$99,520 for public administration. The accommodation sector, including hotels, employs 4,354 persons with an average compensation of \$53,181.

**TABLE 3: TOTAL WAGE & SALARY COMPENSATION GENERATED BY NAPA COUNTY'S WINE AND GRAPE INDUSTRY IN 2022**

Sector	Napa	California	US
Vineyard	\$403,895,613	\$1,016,070,449	\$1,016,070,499
Winery	\$1,348,591,273	\$1,420,142,905	\$1,438,774,455
<b>Total Direct</b>	<b>\$1,752,486,886</b>	<b>\$2,436,213,354</b>	<b>\$2,454,844,954</b>
Total Vineyard Supplies	\$124,066,290	\$239,009,298	\$352,253,480
Total Winery Supplies	\$276,783,428	\$378,585,748	\$635,723,351
Tourism	\$691,775,260	\$691,775,260	\$691,775,260
Restaurant & Retail	Included in Tourism	\$192,830,279	\$1,497,129,389
Distributors	\$11,277,487	\$37,277,926	\$174,903,848
Total Warehousing, Fulfillment, Bottling	\$108,913,358	\$216,542,610	\$425,640,144
Total Transport	\$17,442,317	\$69,791,450	\$124,011,666
<b>Total Suppliers &amp; Service Providers</b>	<b>\$1,230,258,140</b>	<b>\$1,825,812,571</b>	<b>\$3,901,437,138</b>
Indirect (IMPLAN)	\$492,370,095	\$2,860,626,348	\$2,860,626,348
Induced (IMPLAN)	\$349,696,058	\$3,246,124,171	\$3,246,124,171
<b>Total</b>	<b>\$3,824,811,179</b>	<b>\$10,368,776,444</b>	<b>\$12,463,032,611</b>

Source: Insel & Co Interviews, US Bureau of Labor Statistics QCEW, and IMPLAN.

<sup>5</sup> US Bureau of Labor Statistics, "Databases, Tables & Calculators by Subject," Quarterly Census of Employment of Wages (QCEW), Data extracted on March 24, 2025, Average Annual Pay in Total Covered [Categories], all industries, all establishment sizes, Napa County, California, US, 2022.



## PUBLIC REVENUES

From grape to consumer, the wine and wine grape industry generates significant tax dollars, benefiting federal, state and local governments. Tax dollars are raised through sales taxes, excise taxes, income taxes, estate and gift taxes, payroll taxes, property taxes and other business taxes and fees, including permits and licenses of various types.

**TABLE 4: TOTAL PUBLIC REVENUES GENERATED BY NAPA COUNTY'S WINE AND GRAPE INDUSTRY IN 2022<sup>6</sup>**

	Total Tax Generated by Napa Related Wine & Grapes in Napa County	Total Tax Generated by Napa Related Wine & Grapes in California	Total Tax Generated by Napa Related Wine & Grapes in the US
Property Tax (Secured And Unsecured)	\$156,016,331	\$156,016,331	\$156,016,331
Winery Direct Sales Tax**	\$13,807,510	\$15,067,500	\$15,067,500
<b>Total Napa Related Taxes</b>	<b>\$169,823,841</b>	<b>\$171,083,831</b>	<b>\$171,083,831</b>
Other County & Local Taxes	\$337,263,191	\$1,263,777,200	\$2,237,642,227
Total County & Local Taxes	\$507,087,032	\$1,434,861,031	\$2,408,726,058
State Excise Tax**	\$1,405,587	\$1,554,847	\$1,554,847
Winery Direct Sales Tax**	\$78,900,000	\$96,900,000	\$96,900,000
Other State Taxes	\$356,814,138	\$1,117,975,525	\$2,336,902,257
<b>Total State Taxes</b>	<b>\$437,119,725</b>	<b>\$1,216,430,372</b>	<b>\$2,435,357,104</b>
Excise Tax	\$5,491,436	\$5,543,677	\$5,543,677
Other Federal Taxes	\$751,514,138	\$2,422,620,705	\$2,699,244,816
<b>Total Federal Taxes</b>	<b>\$757,005,574</b>	<b>\$2,428,164,382</b>	<b>\$2,704,788,493</b>
<b>Total Taxes Paid</b>	<b>\$1,701,212,331</b>	<b>\$5,079,455,785</b>	<b>\$7,548,871,655</b>

Sources: Napa County Tax Collector, Napa County Agriculture Commission, Napa County Planning Commission, Napa County municipalities, CDFA, TTB and IMPLAN (for "Other Taxes" for each region.) Winery Direct sales tax data estimated based on the Napa County tax breakdown and on estimates of DTC sales. Excise tax estimated based on relevant tax rates. IMPLAN economics staff reported that IMPLAN estimates of 2022 excise and other "indirect taxes" may not be reliable.

Activities in Napa County related to wine produced in Napa County generated more than **\$ 1.7 billion<sup>7</sup>** in total public revenues in 2022, including **more than \$507 million in local taxes and other public revenues**, another \$437 million in state revenues and more than **\$757 million in federal revenues**, as shown in Table 4 above. Activities within California related to Napa County wine generated more than \$5 billion in public revenues at the local, state, and federal levels. Across the US, these activities generated more than \$7.5 billion in public revenues at all levels.

<sup>6</sup> Does not include the substantial taxes state excise taxes or state and local sales taxes paid on wine across U.S.

<sup>7</sup> All the tax estimates in this table, except for the county specific estimates, excise and winery direct sales taxes, were produced by the IMPLAN model.

To put these tax contributions into perspective:

- 2022-23 property taxes paid by the wine and grape industry, broadly defined, totaling more than \$156 million dollars, represented 27% of total county-wide property tax collections in the same period of more than \$532 million.
- Property tax collections are constrained by Proposition 13, as many of Napa's major wine properties were developed several decades ago. The tax impacts of updating these properties or changes in ownership are significant: as shown in Table 5 below, seven of the ten largest property tax payers in Napa County in 2022-23 were wine or vineyard properties that recently changed ownership or had significant construction.

**TABLE 5: TOP PROPERTY TAXPAYERS, 2022-23**

E&J Gallo Winery	Realty Income Properties 2 LLC
Global Ag Properties SPP Napa Vineyards	Robert Mondavi Properties Inc.
Heitz Wine Cellars	Skihawk Development Group
Laird Kenneth E & Gail	Sutter Home Winery Inc
Pacific Gas & Electric Company	Treasury Wine Estates/Diageo

Sources: Napa County Assessor's 2022-2023 report; City of Napa: Top property taxpayers in Napa County for 2022-2023 fiscal year

- Sales and use taxes are collected by the state, with the local share (1% to 1.5%, of the total 7.5% charged in the county), distributed directly by the state to the county and cities, depending upon where the tax is collected. The County reported that the sales tax collected by wineries in the unincorporated areas of the county in 2022 totaled more than \$8.6 million, representing 54% of all sales taxes collected in this area in the year, suggesting that the county's share of 2022 sales tax collections was more than \$15.5 million. Unfortunately, Napa's municipalities were unable to provide this information. We developed a conservative estimate of the total value of sales tax collected in Napa, based on estimates of direct-to-consumer sales delivered onsite, of \$13.5 million. Estimates of total sales tax collected across all jurisdictions in the county in 2022 was not available.
- Napa County wine growers have voted over several decades to pay substantial assessments toward pest control and research, the wine grape crush report and farmworker housing. (Napa County is the only region in California in which growers have volunteered to be assessed for farmworker housing, which was also built on land donated by growers.) **Such voluntary assessments totaled approximately \$931,334 in 2022.**
- In addition to these taxes, which are not included in IMPLAN's tax estimates, IMPLAN estimates that the industry, directly and indirectly contributed more than **\$337 million** in various taxes and fees to local government revenues in 2022.
- Thus, taxes and assessments contributed by the wine and grape industry in 2022 to the county and other local jurisdictions totaled nearly **\$507 million** in fiscal year 2022.

## NAPA COUNTY WINE PRODUCTION AND SALES

In 2022, all wine produced in Napa County, whether Napa County grown or grown elsewhere in California and vinified in the county, represented 6.7% of all the wine produced in California and 5.3% of all wine produced in the United States, as shown in Table 6 below, according to data provided by the Alcohol and Tobacco Tax and Trade Bureau of the US Treasury Department (TTB). TTB defines wine production as “gallons of fruit<sup>8</sup> fermented,” rather than cases of finished grape wine.

**TABLE 6: NAPA COUNTY WINE PRODUCTION IN 2022**

	Gallons	% of US Wine Produced	% of California Wine Produced	% of Total Napa County
Total US Wine Produced, 2022	761,701,063	100.00%	NA	NA
Total CA Wine Produced, 2022	604,987,247	79.40%	NA	NA
Total Wine Produced in Napa County, 2022	40,651,938	5.30%	6.72%	100.00%
Napa Valley Appellation Wine Produced in Napa County, 2022	13,642,451	1.80%	2.25%	33.56%
Total Napa Valley Appellation Wine Produced in California, 2022	17,717,469	2.33%	2.93%	NA

Source: TTB.gov, Wine National Report, Wine State Report and TTB National Revenue Center

**The volume of Napa County appellation wines — wines with a minimum of 75% Napa County Grapes — accounted for less than 3% of all California wines sold in the US in 2022.**

**All Napa County related wines** (including wine produced in Napa County, wherever grown, plus wine made from grapes grown in Napa County but processed elsewhere) accounted for **16.7%, or one in every six bottles, of all California wine sold in the US** in 2022.

<sup>8</sup> Only an incidental amount of non-grape wine, if any, is produced in Napa County.

**TABLE 7: SHARES OF US WINE SOLD IN THE US, 2022<sup>9</sup>**

	9L Cases	% of US Wine Sold in US	% of CA Wine Sold	% of Napa County Wine Sold
Total Volume US Wine Sold, 2022	295,182,089	100.00%	NA	NA
Total Volume California Wine Sold, 2022	202,007,511	68.40%	100.00%	NA
Total Volume Napa County Produced Wine, Sold 2022	33,757,841	11.40%	16.71%	100.00%
Total Volume Napa Grown Wine Produced in Napa County, Sold 2022	5,916,288	2.00%	2.93%	17.53%
Total Volume Napa Grown Wine, Sold 2022	8,641,338	2.93%	4.28%	NA%

Source: TTB.gov, Wine National Report, Wine State Report and TTB National Revenue Center

## Consumer Direct Sales

Direct-to-Consumer (DtC) sales enable consumers to buy wines that are not otherwise available to them from retailers (“off-premise”) or eating or drinking places (“on-premise”) in their home markets.

Discussions about DtC sales often assume that DtC sales were driven by consumers’ interest in finding wines not available in the three-tier market. The reality has for years been more complicated. Consumers often visited Napa to personally experience a wine they had encountered in a memorable tasting, often in a restaurant, or because of Napa’s reputation for exceptional wine. The economics of wine tourism are straightforward for wineries: they operate tasting rooms to sell bottles of wine and to acquire customers for future purchases through wine clubs and allocation lists. As the recent Visit Napa tourism report noted, Napa visitors visited about three wineries, as well as perhaps a downtown tasting room or two. The current Visit Napa Valley report does not estimate wine purchases from these visits, but previous such reports indicated that visitors tend to recall only some of the tasting rooms visited, usually the one where they purchased wine.

Given the high-cost of shipping bottles of wine, and the delays involved, more exclusive, higher priced wines, often from small producers not available at local retailers, such as Napa’s fine wines, have tended to dominate DtC sales in the US. The Covid pandemic changed that pattern somewhat, as home-bound consumers drank more and shopped from home. Online sales (e-commerce), traditionally a small segment of this channel, suddenly became a major source of sales, requiring vintners, especially smaller producers, to invest in new capabilities. Larger producers in all price segments increased their DtC marketing. Avoiding trains and planes, consumers also began exploring other closer-to-home locations for day trips, with, for example, Central Coast vintners welcoming new visitors from California’s Central Valley and Inland Empire.

<sup>9</sup> For this report, wine sold means total taxable removals of wine (both bottled and bulk) and tax-free removals for export, according to TTB Wine National Report and TTB Wine State Report, 2022, and data from TTB National Revenue Center on total wine removed from Bond in Napa in 2022, combined with analysis developed from Napa County Crop Report, 2018-2021 supplemented by industry interviews on patterns of wine and grape trade patterns. Wine Removed from Bond in Napa County therefore includes wine grown, blended, bottled and warehoused in bonded warehouses within Napa County. All Napa Appellation wine sold includes estimates of the same for Napa Appellation wines produced in other parts of California.

Overall, the pandemic shifted DtC sales somewhat toward lower price wine segments, including higher volume, mid-price wines usually sold by retailers, as reflected in the Sovos ShipCompliant Annual Direct to Consumer Wine Shipping Report.<sup>10</sup> That shift reduced Napa's share of the DtC market.

As the pandemic ended and consumers returned to stores, DtC sales gradually returned toward their traditional higher price wine segments. 2022 was a pivotal year in this shift. Some of the growth in winery e-commerce sales remains, but well below its pandemic peak. As the Sovos ShipCompliant blog noted: "2022 was the first time in the report's 13-year history that either DtC shipment volume (-10.3%) or the value of shipments (-1.6%) fell, and the first time a year-over-year decline in both measures has been seen...Wines priced at \$100 or more increased their volume by 7.8% and those with an average bottle price over \$200+ grew in volume by more than 20% in 2022. This helped the channel maintain its share of off-premise domestic sales, even as wines under \$30 dropped in volume by 17.5%.<sup>11</sup>"

New wineries keep entering the industry,<sup>12</sup> expecting to sell direct to consumer. As Silicon Valley Bank's 2022 Direct to Consumer Report noted: "The increasing number of wineries participating in DtC sales has led to market saturation. With more wineries vying for consumer attention, standing out in a crowded marketplace has become increasingly difficult. Established wineries often possess greater brand recognition and consumer loyalty, making it challenging for new entrants to gain traction."<sup>13</sup> Specifically, the number of wineries in Napa County increased by 38%, from 1,106 to 1,509, from 2016 to 2022, most focused on DtC sales, while the number of visitors to Napa County increased by only 5.5% since 2016.

Our estimates of Napa's consumer direct sales volume and value, drawn from winery interviews, Sovos ShipCompliant reports and Community Benchmark's visitor data, slightly exceed that of the Sovos ShipCompliant Report estimates, which are projected from their customer base. Napa has a significantly larger base of allocation-based luxury wineries and major luxury wine brands than other regions as well as a larger volume of wine tourism for its size than most wine regions, not captured in the standard data.

The last economic impact report noted the shift of several wineries to appointment-only arrangements, to discourage tourists not interested in buying wine. This report also has added to DtC sales revenue conservative estimates of tasting fees generated in 2022, as tasting fees in the County have now increased to reflect the real cost of operating winery tasting rooms. The fees also discourage less serious potential customers.

An increasing number of Napa's wineries have also opened off-site tasting rooms in Napa's downtown shopping neighborhoods, which are much lower cost to operate (just rent a retail location, add decor and have two people onsite when open) and where, as in any retail location, customers expect to pay for what they consume, minimizing non-buying visitors.

---

<sup>10</sup> <https://sovos.com/shipcompliant/blog/the-next-era-of-dtc-wine-shipping-starts-now/>

<sup>11</sup> <https://sovos.com/shipcompliant/press/mid-year-direct-to-consumer-wine-shipping-report-shows-decline-in-overall-volume-and-value/>

<sup>12</sup> TTB reports that the number of Operating Wineries in just Napa County increased from 1106 to 1521, from 2016 to 2022, a 38% increase.

<sup>13</sup> <https://www.svb.com/globalassets/library/uploadedfiles/wine/2023-direct-to-consumer-wine-report.pdf>

## WINE TOURISM

Since most winery DtC sales start in the tasting room, visitor numbers, for potential customers, (and therefore wine tourism) is critically important to Napa's wineries.

According to the Visit Napa Valley 2022 Visitor Profile and Economic Impact of Tourism report for Napa County, Napa County received 3.7 million visitors in 2022, down 4.9% from the number in 2018 but 5.5% more than in 2016. "Day-trippers" were a larger share of visitors than pre-Covid, as hotel stays continue their recovery from the pandemic. 79.3% of visitors visited wineries, reportedly 3 or more wineries during their visit, while about 18% visited "stand-alone tasting rooms."

Spending on wine was included in total tourism retail spending (in the Economic Impact of Tourism report), estimated to total \$829,700,845 in 2022. This retail spending represented about 32.8% of visitors direct total spending of \$2,527,249,325. Daily spending was an estimated \$281. Given the cost range of Napa wine and of tasting fees now ranging upwards of \$50 per person, it's not clear how much wine these visitors actually purchased. In our previous studies, several wineries complained that tourists were not actually buying wine, leading more wineries to require prior appointments for tastings and subsequently to raise their tasting fees to fund onsite tasting room costs. These concerns do appear to be justified.

To assess the role of tourism in the total economic impact of wine and grapes in the county, we estimated the impact of tourism spending for the 79.2% of visitors who visited wineries, based on the Visit Napa Valley spending analysis. Since economic impact of direct-to-consumer sales are already valued as part of winery impact, we deducted from this analysis the value of visitor retail spending from this analysis, while assessing the impact of other *direct spending* by those who visited tasting rooms, as indicated in Table 1, Total Impact, and Table 2, Employment, and Table 3, Wages, above. The county-specific revenues generated by tourism is indicated by the county's share of sales taxes collected in Napa for winery-direct sales, including in Table 4.

## NAPA'S WINERIES

TTB reports that Napa had 1,521 operating wineries in 2022, compared with 1,106 in 2016, a 38% increase, as noted above. With limited access to conventional distribution in the three-tier system, the new wineries, all relatively small, focused almost entirely on the crowded luxury wine DtC market. It is often difficult for individuals, "passionate about wine" and determined to produce the finest wines, to recognize that the sales of such wines command a *very* small share of the US wine market. The best available retail estimates indicate that wine costing more than \$30/bottle — well-below Napa's typical wine price — represent less than 5% of all US wine sales.

As the number of wine producers in Napa has grown, vineyard acreage has remained nearly static and yields per acre remain low (less than 3 tons per acre on average for Cabernet, and now often imperiled by drought or wildfire), wine grape prices tend to be pressed beyond commercial levels, complicating operations for more economic producers. It is not hard to find deeply discounted close-out sales of Napa appellation wines, especially from very small, lesser-known producers. Private label sales of Napa wines are now estimated to be as much as 15% of all Napa wines by volume and, unsurprisingly, surging in peak harvest years. When these studies began, nearly 20 years ago, private label was a relatively small and select channel for Napa wine, often a carefully honed partnership between vintners and luxury restaurants and a few specialty wine retailers. Today, as private label has become a key profit driver for retailers, private label Napa wines can be found in grocery chains and retailers.

In a soft market resistant to price increases, Napa wineries are facing rising costs, not only for grapes and labor but also equipment, both imported and domestic, materials (from glass, to capsules to steel tanks and wooden pallets), professional services, and bank credit along with highly volatile shipping costs. One survey Insel & Co conducted for hospitality (tasting room) workers *pre-Covid* found starting hourly wages

had reached \$18/hour, well above the minimum wage, and rising above \$30/hour when incentives, such as bonuses for wine club subscriptions, are included. Cellar labor wages have increased to levels comparable with vineyard labor, with a comparably scarce skilled workforce.

Research firm IWSR<sup>14</sup>'s comments in December 2024 confirmed vintners' limited pricing power, noting that<sup>15</sup> "Booze costs rose nearly 15% from the first half of 2019 to the first half of this year, less than the 23% jump in consumer prices at large during that period. As of last month, alcohol costs were up only 1.8% since the year before, while inflation overall was 2.7%...Many brands are chasing value-wary shoppers' wallets with increasingly competitive deals and discounts."

Insel & Co interviews with Napa wineries for this study concluded that, for most producers, Napa wine sales were flat for 2022 — and substantially weaker in 2023.

WSWA's SipSource report on 2022 found that 2022 "is by far the worst performance since we have been reporting on these categories via SipSource...Twelve-month rolling data places total spirits and wine depletions down -2.9% compared to year end 2021." However, data over a four-year period — averaging massive disruptions from COVID, European land wars, and supply chain interruptions — places total growth rate down only -0.2%, essentially flat with the spirits category up +4.2% in volume and wine down -3.9%<sup>16</sup>. Wine's sales decline has accelerated, with a drop of 8% in the 12 months through August 2024, although by year-end 2024 the decline had moderated to -7.2% in total volume and 6.4% in total value.

"Despite market challenges including changing consumer preferences, potential tariffs on imported single-origin products, and supply chain disruptions, analysts expect favorable comps to produce slow but marked improvements in Q1 of 2025," added SipSource<sup>17</sup>. In 2025, we should expect to see less impact from inventory management at the retail level — what destocking can happen already has. Retailers can only destock so far before failing to meet their consumers' needs."

SipSource data found that the loss of demand for wine has been dominated by falling demand for lower priced, volume wines, reporting that sales in "the \$8-\$10.99 table wine price tier experienced a double-digit drop of -12.7% across combined on- and off-premise channels." The phrase Europeans often use to describe this trend is "Drink Less, Drink Better," suggesting that the fine wine segment of the US wine industry, led by Napa, may somewhat less affected by declining American alcohol consumption.

Nielsen IQ's Beverage Alcohol forecast for 2025<sup>18</sup> found that consumers of non-alcohol drinks continue to consume alcohol, balancing the two for more "healthful" consumption. The same has been true of those taking GLP-1 medication. It is possible that the feared "Neo-Prohibition" movement may actually be a "new moderation" movement — less abstention from alcohol than a shift toward more moderated alcohol consumption, reflecting the different perspectives of new generations. However, NIQ also found that while all beverage alcohol products, except RTD (Ready to Drink), have been impacted by the no-alcohol trend, wine is the one category whose sales have actually declined.

Nielsen data shows Gen Z and Millennials actively interested in alcohol, just differently than their parents whom the wine industry so successfully cultivated. The industry may have forgotten that those boomers who fell in love with wine were consciously choosing alternatives to their parent's preference for spirits and cocktails. Today's rising generations may come to wine when they find a way to make wine their own.

---

<sup>14</sup> IWSR (The International Wine & Spirits Record) is a UK based beverage alcohol research organization. It merged in 2020 with Wine Intelligence, another UK based research organization.

<sup>15</sup> <https://www.nbcnews.com/business/consumer/alcohol-prices-stabilize-liquors-are-getting-cheaper-rcna183644>

<sup>16</sup> <https://www.wswa.org/news/sipsource-year-end-report-tracks-worst-performance-report-inception>

<sup>17</sup> <https://www.wswa.org/news/wswas-sipsource-wine-and-spirits-sales-decline-continues>

<sup>18</sup> NIQ "Beverage Alcohol: What Will Drive 2025?"

## Wholesale Distribution and Market Access

Napa related wine generated an estimated \$1.1 billion in revenue for the wine wholesale industry in 2022. This revenue is based on the estimated commission wholesalers received on the sale of these wines and reflects the premium prices accorded Napa's wines, especially Napa appellation wines, even in this challenging market.

However, at the same time that higher priced wines generate higher commissions for wholesalers, they can also generate much higher inventory costs.

Wine has long been the slowest moving of the major beverage alcohol categories. A long- standing metric in grocery, for example, is that beer inventory turns over (sells through) daily, spirits inventory turns over in 30 days and wine inventory in 90 days. Since the "Great Recession," wholesalers have worked to maintain wine inventory at that 90-day level. Lesser known and more expensive brands tend to sell more slowly, focusing wholesaler attention toward the strongest, fastest moving brands, and to higher margin private label wines, to minimize working capital expense.

## Market Access Issues and Prospects

Given the tightening market, a few metrics about today's wine market may be useful to vintners:

- While the growing concentration of the wine wholesale industry is regularly noted, equally important may be growing concentration among the wholesalers' customers.
  - The recent attempt of Albertson's and Kroger to merge highlighted the concentration in the grocery industry. By 2023, "nearly 70% of all money spent at grocery stores across the country going to four top parent companies (Walmart, Kroger, Albertsons, plus a regional chain), <sup>19</sup>per state," while, in multiple markets, a single company, often Walmart, represents more than 50% of grocery sales.
  - The 100,000 plus number of wine labels currently in the market has also been well reported by BW166. Less reported is that the average specialty and grocery store set for wine ranges from 300 to 700 SKUs. Concurrently, rising personnel and food costs have decimated restaurant margins, driving cuts to wine lists and inventories.
  - Although grocery and specialty store pure e-commerce slowed down after Covid, shopping online and pickup at the store has remained popular. However, the cost of setting up automated inventory tracking, picking and collection, as well as enhanced websites, took up to 6 points off retailers already shrinking margins, accelerating the already growing importance of higher margin private labels and faster moving brands.
  - Recent NIQ data<sup>20</sup> indicates that only about 3.7% of stores in their network carried wines selling for more than \$50 per 750mL. Conversely, while there were 1,074 wines selling for more than \$100 per 750mL in these channels, those wines represented less than 0.07% of all wine sales – but more than half of those sales were for Napa, or at least North Coast, wines. However, as the wine industry knows, wines in these price segments are more likely to be sold in specialty stores or on premise.
- On-premise venues, especially fine dining, also struggling to minimize price increases in the face of food inflation, rising labor costs and technology investments, have changed suppliers, eliminated menu items and sought lower cost ingredients.

---

<sup>19</sup> "Mapping the Corporate Hold on U.S. Grocery Markets," by: Melanie Canales and Aaron Johnson, 8/7/2024. Grocery Gap Atlas, a project of the University of Chicago. <https://grocerygapatlas.rafiusa.org/posts/market-dominance>. Retrieved February 15, 2025.

<sup>20</sup> NIQ: Wine Velocity Report, 4/9/25. Nielson Consumer LLC



- Restaurant chains began centralizing wine lists after the great recession, reducing regional options and the number of suppliers, including among wine wholesalers.
- Sales at fine dining restaurants are forecast to decline by 0.5%<sup>21</sup> in 2025. Restaurant Business magazine<sup>22</sup> reports that “Full-service chains haven’t regained traffic lost during the pandemic.”
- Especially as wine sales slow, restaurants streamline wine lists and inventory, to make room for a wider variety of beverages and reduce overall inventory costs.
- With interest rates on commercial credit lines averaging more than 5%, and rising operating and labor costs, inventory costs, particularly the cost of holding slow moving SKUs, become a major factor in retailer, restaurant and wholesaler stocking decisions.

## Wine Industry in Context

It’s been useful over the last two decades to look at the fine wine market in a broader context: that of the broader luxury consumer product market and the general economy. A particularly useful recent trend forecast for that industry will sound familiar to many vintners:

“A long-feared cyclical slowdown<sup>23</sup> has arrived. Consumers, scarred by the recent period of high inflation, are increasingly price sensitive... There is still growth to be found, but economic uncertainty, geographic disparities as well as shifting customer behavior and preferences mean seizing it will require navigating a maze of compounding challenges at every turn. Consequently, 2025 is likely to be a time of reckoning for many brands.”

Consistent with those observations is the latest finding from the Conference Board<sup>24</sup>:

“The Conference Board *Consumer Confidence Index*® fell by 7.2 points in March to 92.9 (1985=100). The *Present Situation Index*—based on consumers’ assessment of current business and labor market conditions—decreased 3.6 points to 134.5. The *Expectations Index*—based on consumers’ short-term outlook for income, business, and labor market conditions—dropped 9.6 points to 65.2, the lowest level in 12 years and well below the threshold of 80 that usually signals a recession ahead.”

## GRAPE GROWING IN NAPA COUNTY

When we first began these studies nearly 20 years ago, both growers and grape and wine brokers estimated that only a very small, if not negligible, share of Napa’s wine grapes were vinified outside Napa’s boundaries. That share increased in 2010 and by 2016, the year of the previous report, that volume was estimated at 22%-23%, a level which seems to have stabilized since then. Most of these grapes move to wineries in neighboring counties in the North Bay (and their economic impact is included as part of the California impact of Napa related wine and grapes in this report.)

While Cabernet Sauvignon has long been king in Napa, its increasing domination of Napa’s wine production is notable, driven by a 114% increase in grape price over the period, compared with a 68% increase in Merlot prices, a 58% increase in Chardonnay grape prices and a 60% increase in Sauvignon Blanc grape prices, the other major Napa varieties.

<sup>21</sup> <https://www.restaurantbusinessonline.com/financing/citing-weak-industry-traffic-technomic-cuts-its-2024-restaurant-sales-forecast>

<sup>22</sup> <https://www.restaurantbusinessonline.com/financing/how-business-has-not-changed-pandemic>

<sup>23</sup> The State of Fashion, 2025, produced by McKinsey & Co. and The Business of Fashion. Available on The Business of Fashion website.

<sup>24</sup> <https://www.conference-board.org/topics/consumer-confidence>

**TABLE 8: NAPA COUNTY GRAPE PRICE AND PRODUCTION PATTERNS<sup>25</sup>**

	% of Total Napa Winegrape Production				% of Total Napa Winegrape Value			
	2006	2011	2016	2022	2006	2011	2016	2022
Cabernet Sauvignon	37%	28%	44%	55%	49%	56%	63%	<b>72%</b>
Merlot	18%	5%	6%	7%	16%	4%	3%	4%
Zinfandel	3%	3%	2%	2%	2%	2%	2%	1%
Chardonnay	17%	11%	17%	12%	14%	11%	9%	7%
Sauvignon Blanc	7%	4%	9%	7%	5%	4%	4%	2%

Source: Napa County Crop Reports 2006, 2011, 2016, 2022

By contrast, neighboring counties of Sonoma and Mendocino are increasingly concentrating on “Burgundian” varieties — Pinot Noir and Chardonnay — more suitable to their terroir and coastal climate, and commanding premium prices, albeit prices well below Cabernet Sauvignon.

With limited new vineyard development potential, the volumes and varieties of wine grapes grown in Napa is largely been shaped by nature (climate, terroir) and the wine market. Many vintners try to offer their customers a variety of wines, offering Pinot Noir and Chardonnay from Napa’s share of Carneros, and grapes sourced from Sonoma, Mendocino and the Central Coast. Lake County supplements Napa’s production of Sauvignon Blanc, blending it into both 75% Napa County appellation wines and into North Coast appellation wines.

## Farming, Harvest and Planting

In 2022, Napa County growers harvested 131,144 tons of Napa Appellation Grapes from 46,128 acres across approximately 3,026<sup>26</sup> vineyard locations.

- Wine grapes harvested in Napa’s vineyards grapes had a value of \$890,911,400 in 2022, for a weighted average grape price of \$6,806.72 per ton.
- Approximately 30,000 of these tons left Napa (as fresh grapes or as bulk wine) to be processed into wine in other, usually neighboring, counties.
- About 51% of Napa’s vineyard acreage is farmed by several dozen independent vineyard management companies, who are also licensed Farm Labor Contractors (FLCs.) Vineyard management companies, by spreading costs across multiple properties, allow smaller and midsize growers access, for a fee, to capital equipment and large, experienced and stable vineyard teams that they would otherwise be unable to afford.
- Farming costs per acre in Napa averaged \$14,000 to \$16,000, with costs for steep hillside properties farmed organically reaching to \$25,000 per acre. Farming costs have increased about 20% in recent years. Labor represents about 60% of vineyard farming costs.

<sup>25</sup> Since every growing year has its anomalies, especially recent years, it is always awkward to select any specific years as examples. These years are chosen simply because the trend shown is representative and consistent with report years.

<sup>26</sup> Based on Napa County tax records. Vineyards are often composed of multiple separate blocks, often acquired at different times and held in different entities.

- Best available data indicates that Napa growers planted only about 108 new acres in 2022, at an average cost upwards of \$60,000 per acre, about 20% higher than before Covid. Another 677 acres were replanted, at average costs upwards of \$50,000/acre, also about 20% higher than before Covid. Although labor also represents about 60% of these costs, the most severe cost increases were in steel, for trellises and irrigation pipe. Interestingly, there are no longer any vineyard nurseries based in Napa.

## Vineyard Labor

Napa has long had a stable, long-term vineyard labor community, with most of Napa's vineyard workers employed full-time, with generous benefits, by Napa's growers, wineries and vineyard management companies. Most of this generation of workers, some who have worked for the same vineyard, winery or farm management company for up to 40 years, are aging now, retiring from the vineyard, with replacements scarce. As they retire, these workers, following the classic immigrant path in the US, are also determined that their children not work in the fields but pursue professional careers.

- Vineyard worker compensation has increased, ranging from about \$18/hour for beginners to upwards of \$36/hour for tractor drivers and other skilled labor, and can exceed these levels during harvest.
- New laws limiting farm worker hours to an 8-hour day with overtime pay beyond that were meant to assure farm workers fair compensation. However, as harvest is increasingly compressed into a very short period of very long days, few growers in this weak wine market can afford overtime rates that can exceed \$50/hour. Vineyard workers used to bonus hours at harvest now have to seek temporary extra hours with other crews, often at lower than their regular pay.
- When these studies first began nearly 20 years ago, independent<sup>27</sup> Farm Labor Contractors (FLCs) were rare in Napa. Today there are at least three locally-based FLCs. They report that, given Napa's premium compensation levels, they can always draw labor from other regions to fill any shortfall Napa encounters in workers.
- One side effect of the vineyard labor shortage has been the increased involvement of women in vineyard crews, last seen in the 1980s. And where, a decade ago, women were seldom seen in vineyard management, today women, including the daughters of retired vineyard workers, are increasingly seen as both crew leaders and vineyard managers.
- There is some use of H2A special visas for visiting seasonal immigrant labor in Napa, but the arrangement, requiring housing along with premium pay, is not feasible for most growers and farm managers.

---

<sup>27</sup> Vineyard management companies are also usually licensed FLCs. The reference to "independent FLCs is intended to distinguish these operations from the professional, full-service, vineyard managers.

## Mechanization and Farming Costs

- Today, only about 15% of Napa's vineyard land is mechanized. Mechanized farming cost in Napa's valley vineyards averages about \$10,000 per acre. Mechanization has been found to reduce labor cost, especially harvesting costs, by up to 90%.
- Although multiple trials have shown that the equipment designed for vineyard mechanization, much of it French, delivers excellent quality, comparable or better than manual work for most tasks, growers and, more importantly, their winemaker customers, remain skittish. Even where it is adopted, final pruning remains a task left to skilled manual work. Moreover, adopting mechanized equipment requires replanting of most vineyards, allowing for wider rows and vertical trellises, an expensive proposition. Nevertheless, at least partial mechanization of a growing share of Napa's acreage is probably inevitable.

## WAREHOUSING, LOGISTICS AND BOTTLING: NAPA COUNTY AS THE HUB OF THE WEST COAST WINE INDUSTRY

Napa County is increasingly the nexus for wine logistics for much of the West Coast wine industry: warehousing, bottling and wholesale shipping consolidation not only for wines from Oregon south to Paso Robles, as well as up to an estimated one-third of the bulk wine arriving at the Port of Oakland, as shown in Table 9 below.

Looking back on previous reports, as indicated in Table 9, the volumes of wine passing through Napa at the various stages of wine's journey, from grape growing to shipping, began to diverge in 2014.

Warehousing and bottling volumes appear to have peaked in 2015 at about 50 million case capacity, and have now stabilized at about 30 million cases, as construction of new facilities continued in American Canyon and other areas of the county, as shown in Table 10.

**TABLE 9: NAPA COUNTY'S WINE INDUSTRY, 2016-2022**

Year	Wine Grape Production (Prior Harvest, Gal. Equiv.)	Wine Production (Fermentation, Gal. Equiv.)	Total Bottled (Gallons Equivalent)	Total Removed From Bond (Sales)
2016	18,246,522	49,843,228	80,716,467	99,748,993
2017	22,497,762	44,336,357	63,763,034	92,974,325
2018	20,934,711	52,348,219	55,127,931	88,445,141
2019	27,132,231	53,171,998	60,582,229	83,395,544
2020	23,479,134	36,934,855	68,609,632	86,264,798
2021	14,598,717	38,397,791	60,510,380	88,316,113
2022	17,717,469	44,431,933	57,604,492	80,276,146

Source: TTB.gov

Partial explanation of this pattern may include the shift of Treasury Estates Wine's large central bottling and warehousing from Napa to the former Diageo facility in Sonoma County along with the completion of Trinchero's Lodi facility and Gallo's acquisition of the independent Ranch Winery, one of the county's largest permitted wine making and wine bottling operations. Note the increase in the *number* of warehouse facilities does not necessarily suggest a comparable increase in warehouse *capacity*.

**TABLE 10: WAREHOUSING EXPANSION IN NAPA COUNTY, 2012-2022**

Year	Total Number of Bonded Wine Cellars	Total Number of Tax Paid Wine Cellars
2022	59	22
2021	57	14
2020	49	14
2019	43	13
2018	42	13
2017	41	11
2016	37	9

Source: TTB.gov

## WINERY AND VINEYARD SUPPLIERS AND SERVICE PROVIDERS

Each iteration of this study allows more opportunities to deepen and expand the analysis of suppliers and service providers to the industry. Since the enterprises involved in the industry are either privately owned or services to the wine industry are just one of their several lines of business, there is little if any public information available. Individual interviews with a combination of suppliers, vintners, growers and industry advisors were required to assemble the relevant data. Since the information collected is often proprietary, we have aggregated the data as "suppliers to wineries" or "suppliers to vineyards". We are grateful for the cooperation and patience of so many of the respondents.

Many wine industry suppliers have located the production or, for imported products, their US sales operations, close to or in Napa County. Supplying Napa producers added credibility. Researchers reported that most new winery and vineyard technologies try to trial their products and equipment in Napa, to demonstrate their acceptance by the industry's most respected producers. Similarly, the most respected wine laboratory in the US, ETS, operates from a Napa Valley location.

However, several suppliers have moved from Napa locations to neighboring counties or the Central Valley. Consolidation and acquisition have moved as much as 80% of Napa's label printing capacity to other counties or out-of-state. About 70% of all barrels used in Napa winemaking have long been imported.

Purchase of new oak barrels has declined considerably with increasingly sophisticated use of barrel alternatives and growth of stainless-steel fermentation. Sources estimate that most wines costing up to \$25 per 750mL, will use barrel alternatives, such as oak staves or chips in stainless steel tanks, if they do use oak. Use of oak alternatives is just one of several techniques wineries have developed for controlling costs as grape and labor costs rise.

There has been considerable consolidation among glass bottle producers internationally. Glass bottles for Napa County's wines are largely produced within California. We had previously assumed that much of this production occurred in various other regions of the US. Imports are, however, growing, with far more confidence now in the quality and consistency of Chinese-made bottles, depending of course on shipping, tariff and related issues. Construction, custom metal work and similar activities for Napa County wineries are also more likely to originate in Napa County, but stainless-steel tank construction has largely shifted to neighboring counties, particularly Sonoma.

Among professional services, the growing challenge of the land use regulations has driven escalating demand for specialists among lawyers, consultants, engineers and environmental researchers. While the county expresses concern about attracting new and young entrepreneurs, the estimated cost to *begin* consideration of any winery-related permit, now reaching \$250,000 when required studies are included, presents a formidable barrier. Alternative mechanisms for encouraging innovation in and by the industry deserve exploration.

## CHARITABLE CONTRIBUTIONS

The wine industry is unique in its charitable support, both in-kind and cash, for the community. And Napa's wine industry leads the industry in such support. The industry provides its support through the Napa Valley Vintners (NVV), through wineries and directly from vintner and grower families and individuals and through various other industry organizations.

Napa Valley Vintners, for example,

- In 2022 itself directly donated \$8.2 million to community organizations and services while also donating a building valued at \$17 million to Ole Health, from the proceeds of its annual Auction Napa Valley and related reserve funds.
- Has given more than \$230 million in Napa Auction proceeds to local health care, youth education programs and affordable housing since 1981. Funds supported programs such as \$8 million to affordable workforce housing in Napa Valley, \$3.5 million to the Community Health initiative to ensure every child in Napa County has access to health insurance and nearly \$5 million to ensure every child enters kindergarten ready to learn through our Napa Valley Early Learning Initiative, which is targeted to English-language learners.
- In addition to supporting many nonprofits and strategic initiatives, has stepped up during times of natural disaster and emergencies. The Napa Valley Community Disaster Relief Fund managed by the Napa Valley Community Foundation, was created with a \$10 million lead gift from NVV following the 2014 South Napa Earthquake.
- In response to wildfires in the community, has supported local firefighting efforts through investments in early detection software, communications systems, fire road maintenance, and the rehabilitation of forest lands. In total, NVV has committed \$2.1 million to the cause.
- During COVID, invested \$550,000 to help bring COVID testing and vaccinations to Napa County. And even without fundraising in 2020 and 2021 due to the pandemic, NVV granted \$7.8 million in 2020 and \$5.9 million in 2021 to Napa County nonprofits.

Over decades, Napa Valley wine growers and vintners, nearly all family-owned, locally-based businesses have personally contributed substantially to the Napa community, with ranging from land for farmworker housing to the theater at St. Helena's High School, founding and consistently supporting what is now called Ole Health, the first community health clinic in wine county, and the range of Napa's health, social and youth service agencies, schools and arts organizations.

Many wineries do not track such contributions or differentiate between family and company support. From interviews with a cross section of wineries, vintners, growers and non-profits, along with the NVV to estimate the industry's charitable contributions *not paid directly from winery revenue*, to be at least \$63 million. To put this figure in context, the Napa Valley Community Foundation estimated that individual, corporate and foundation giving in Napa totaled \$157 million for 2022.

In addition, as some of Napa's leading wineries have changed hands, their founders, who helped build Napa's modern wine industry, have also been remarkably generous in sharing the proceeds of those sales with the community, ensuring stability for many of the Napa non-profit organizations they helped create. The challenge remains for the next generation of proprietors to sustain this tradition.

We have not attempted to estimate the many charitable donations provided by Napa Valley's wine industry to activities outside the county.

# THIS ECONOMIC IMPACT UPDATE

This third update of the economic impact of Napa County wine and grapes is distinguished from the previous studies by:

- TTB's more detailed data, aggregated from 5,120 reports submitted by bonded wineries and bonded wine warehouses, on wine production (completed fermentation), wine bottling and wine removed from bond in the county, enabling more in-depth examination of these sectors.
- More detailed data on warehousing operation and construction, including allied fulfillment, bulk wine and logistics economic activities.
- More detailed data and analysis of wine and wine grape shipments among counties, allowing a more complete assessment of the economic impact of Napa Appellation wine produced outside of Napa County from grapes grown in Napa County, an increasingly important element of Napa Valley's wine activities, as noted above.
- Deeper insight into wine grape growing costs, suppliers and patterns, including better data on planting and replanting activities.
- Better visitor data, to supplement winery interviews and Sovos ShipCompliant data, thanks to help from Community Benchmark.
- More comprehensive banking and credit data, with support from Silicon Valley Bank.

## Methodology

The standard analytical framework for economic impact studies in the US is the IMPLAN model.

IMPLAN, an input-output model of the US economy, estimates the indirect and induced impacts, the element in an economic impact study of wine – necessary but unfortunately not sufficient. An easy path for economic impact analysis is to assume that, as a well-established national input-output model of the US economy, IMPLAN “knows” everything. But IMPLAN is not a sentient being, artificial or otherwise. All it “knows” is the data that is fed into it, known as its source data. IMPLAN processes that data as the humans who build it instruct it to.

What, therefore, is IMPLAN's source data, for wine, for wine grapes, or for Napa County? Further, how does IMPLAN process that data?

## Wine Grape Analysis

### IMPLAN Source Data

IMPLAN's source data for wine grapes is “fruit.” Specifically, the “average price of the three major fruit crops” produced in the US, as specified in the USDA NCIT0522 report: grapes (all varieties), apples and strawberries, although IMPLAN doesn't specify how it calculates an average price among these three very different crops. An informal effort to do so produced an average price of very roughly \$1,100/ ton. IMPLAN also assumes that some product called “fruit” has one national standard price<sup>28</sup> each year. This would of course imply that the production practices and yields are standardized for all fruits across the country. With those assumptions, IMPLAN's source data states that production value and volume in any region would only vary by the number of acres involved, or the region's share of a state's acreage. Napa County has 5.6% of California's total 829,352 fruit acreage – therefore, the value of its production would be 5.6% of California's total fruit production volume and value.

---

<sup>28</sup> It is tempting to compare this treatment of “fruit” to the national market for grain – but that market does not treat wheat, rice, oats, cornmeal, barley, all of which are “grains” as a single crop with a single price.

Thus, IMPLAN's "industry detail" for Napa County estimates the value of Napa County's total "fruit" production at \$308 million in 2022, significantly short of the value of Napa's actual wine grape crop, which exceeded \$890 million. Perhaps to fill in the gaps in Napa's economy, IMPLAN's Napa County also has a substantial oil and gas extraction industry, generating more than \$220 million in output in 2022, which would come as a surprise to the state of California and to Napa residents.

When we ran the standard IMPLAN model, with the un-customized Napa County data and "un-customized" production function for grapes, but using the "detailed model" approach, including the actual value of grape output, labor and wages in Napa's vineyards, IMPLAN estimated the total grape production at \$323 million, assigning the remaining "fruit" value and labor force to a variety of other products (that did not in fact exist.) Thus, we had little choice but to customize IMPLAN's Napa County data, to reflect official data, such as the NASS Grape Crush Report and the County Crop Report, and the production function and spending plan "fruit." Moreover, although official data reports that wine grapes represent 98% of Napa's agricultural production (and 99% of Napa's fruit production) and that professional vineyard management companies farm 51% of Napa vineyard acreage, including vineyard management companies (IMPLAN code 19, "support services for agriculture") as part of the labor force for grape growing, IMPLAN converted that labor to the production of other fruit crops, which did not exist. Thus, it was necessary to redefine this labor force as vineyard labor to generate reasonably accurate fruit production results in the IMPLAN model.

Finally, a major contribution of the IMPLAN model is its "estimation of trade flows between all counties in the US," which IMPLAN called its "Gravity Flow Model." Those interactions are essential to an impact model. However, the level of generalization built into that models again requires customization to accurately apply it to wine grapes and wine. The Gravity Flow Model develops a Regional Purchase Coefficient (RPC) for each commodity, to describes the proportion of each dollar of local demand for a given commodity that is purchased from local producers, IMPLAN recognized that distance, cost and mode of travel could be deterrents to inter-regional trade and therefore incorporated the Trade Flow Model and the Freight Analysis Framework developed by The Center for Transportation Analytical Oak Ridge National Laboratory (ORNL) in its econometric model of trade flows. These models estimate the travel patterns for "all commodities." The results for "fruit" are drawn from ORNL's analysis of "all non-citrus fruit." *All commodities in this category are estimated to travel an average of 500 miles by truck in their fresh state.* (The ORNL papers also report that processed non-citrus fruits are estimated to travel only about 200 miles, but those findings do not seem to be part of the Gravity Flow Model.)

The consequence of this analysis, built into IMPLAN's models for grape growing, is the presumption that only 35% of Napa's wine grapes remain in the region in which they are grown, with the balance traveling hundreds of miles for sale or consumption. The model assumes a major role for fruit wholesale distributors and fresh fruit warehouses in the industry, just as there apparently are for apples, strawberries etc. The wine and grape industry knows that wine grapes cannot safely travel hundreds of miles in harvest season heat; at best, they would first be crushed into bulk wine, which would have very different cost, market and timeline than fresh grapes. There are of course some regions, such as Santa Barbara County, where a large share of grapes is ultimately vinified at wineries as distant as Sonoma County, but only after being quickly crushed into bulk wine near their harvest location. Few wineries would risk such treatment for Napa wine grapes, given their distinctive quality and premium price. Thus, this assumption also had to be manually customized in the IMPLAN model, with implications for the economic impact analysis for both grape and wine.



## Napa's Reality

In reality, of course, Napa's average wine grape's price in 2022 was \$6793/ton and its 2022 total production was valued at \$890,911,400. Moreover:

- Most of California's wine grape production is mechanized, compared with only about 15% of Napa production. Labor costs therefore represent about 60% of Napa County wine grape farming costs, compared to 10-15% in other parts of the state.
- Wine grape yields in California in 2022 ranged from 12.86 tons per acre in Fresno County (where the average grape price was \$326) to Napa's 2.84 tons per acre. The California statewide average grape price was \$955 in 2022.
- Napa's farming costs range from \$10,000/acre for the mechanized acreage to up \$25,000/acre for organically farmed hillside vineyards. Farming costs in California's Central Valley average about \$4,000/acre.
- Only about 22%-23% of Napa's wine grapes travel beyond Napa County for processing into wine, with the vast majority going to vintners in neighboring counties. Only a negligible share of the grapes harvested are consumed in their fresh state.

## Winery Data and Assumptions

A different problem is encountered in IMPLAN's wine analysis, which is built on the Annual Survey of Manufacturing, specifically the anonymized tax returns of the 12 largest producers in each state, supplemented by a "brief review" of the returns of selection of smaller producers. Of the 1500 licensed wineries in Napa County, perhaps one, even two, might qualify within, or be comparable to, that "12 largest producer" data set – and do so only because they are among the few authorized<sup>29</sup> to process grapes from outside Napa County.

The economics of producing millions of cases of volume wines, as these largest producers do, is vastly different from that of producing 5,000 to 200,000 cases of wine, like most of Napa's wineries. IMPLAN's current winery models assume a standard "spending plan" for producers, one that appears to assume a high level of automation, internal provision of services such as marketing and public relations, with labor as a fairly modest share of total costs. The apparent profit margin in these models is about 30%, compared with most winery benchmarking projects which estimates average winery profit margins at 15% -- and often less. Moreover, most of the million case wineries in IMPLAN's data set buy the majority of their grapes, while many Napa wineries are "estate wineries" – own their vineyards and thus have very different cost structures<sup>30</sup>.

## Other Complicating Assumptions

IMPLAN is structured to consider economic activity over a single calendar year. It measures an industry based on the sales price of the product. In the northern hemisphere, where wine grapes are harvested between August and October and even the simplest fine wine requires a few months for fermentation, blending, bottling and shipment, sales of finished wine seldom occur in the same calendar year. (Bulk wine sales, like wine grapes sales, may occur immediately on crush but not finished wines.) For many Napa producers, wine sales may occur 2-3 years after grapes are harvested. Thus, the IMPLAN model for locations like Napa must be customized. This project has thus taken a "cross-section" approach – wine

---

<sup>29</sup> Wine Definition Ordinance: Ordinance 947: "an ordinance of the board of supervisors of the county of napa, state of California, amending title xii of the napa county code pertaining to wineries, accessory uses, accessory structures, and repealing chapters 2 and 3 of article 4 of title xii relating to the ap-i and ap-e zoning districts." Adopted in 1990.

<sup>30</sup> Some analysts assume that, since their region has many estate wineries, IMPLAN's winery data would already include vineyard labor and therefore there is no need to separately analysis grape growing. Unfortunately, they have missed the footnote in the ASM's reports noting that *agricultural labor is specifically excluded from ASM analysis*. The footnote does not explain how the ASM identifies agricultural labor for exclusion but it does necessitate separate analysis of such data.

sales in 2022 refer to grapes harvest from 2018 to 2021, depending on variety and type of production. The economic impacts of wine grapes are based on the sales value and volume, labor and inputs required for grapes harvested in 2022 (and that may become wine for several years.) The procedure recommended by IMPLAN staff was to assume in the wine production function (and therefore commodity spending plan) that, while grapes represented 20% to 23% of wine's final price, those grapes were not available within the county. Apparently a more accurate assumption – that the related wine grapes were in inventory (as wine fermenting in tanks or aging in barrels or bottles) would not work within IMPLAN.

## **Customizing IMPLAN**

The need to customize IMPLAN for this analysis is the consequence of a model built, perhaps inevitably, on series of broad assumptions about enormous and complex US economy. Without such broad assumptions, national income accounts could not possibly have been developed. However the application of those same broad assumptions, without correction, to a relatively small, specialized industry produces misleading and inaccurate results.

For all these reasons, we have found it essential to customize IMPLAN's models from the detailed spending plans for wineries to the cost structure of grape growers and economic structure of the county region — and to supplement IMPLAN's models with primary data on wine production and sales, grape growing costs and sales and the vast range of suppliers and service providers required to grow grapes, produce, bottle and sell wine, especially fine wine, in today's real world.

We build this model from every validated or official data source we can identify, from county tax, planning, and production data to state agricultural and tax data to Federal labor and Census data, all supplemented by in-depth interviews with a cross section of growers, vintners, suppliers, service providers, local but also nationwide, in a multi-month process to build an alternative economic production function for wine and wine grapes in Napa.

In addition, unlike most IMPLAN impact models, our analysis does not stop at the producer's wholesale transaction. The mandate of this project is to assess the impact of Napa's entire wine and grape industry. We define that to include:

- Grape growing from planting, including nurseries and land preparation and replanting, through harvest to delivery to winery/processor, including the entire grape labor force, benefit providers, all equipment and services involved.
- Winemaking in Napa, both from Napa-grown wine grapes and from grapes brought in from other regions, the labor force involved, suppliers and service providers, whether winery owned or custom crush.
- Wine brought to Napa from other regions, including imported grapes trucked from the Port of Oakland, just to be bottled and warehoused – or just warehoused, including bulk warehousing -- as well as the construction new wineries or rebuilding of those damaged by wildfires – as well as the industry's substantial investments in fire protection and mitigation, in water management and conservation and waste management.
- Wine made elsewhere – generally neighboring counties – from Napa-grown grapes, and the related costs and inputs.
- Sales of all these wines through all channels, including DtC, Exports, Private Label, and the 3-tier system.
- Delivery of these wines to customers, whether consumers or wholesalers or the Port of Oakland, including freight forwarders, DtC fulfillment, consolidation of shipments to wholesalers and then long distance shipment to markets, both near and cross country.

- The revenue and employment generated by the wholesalers, retailers and restaurants who sell the wine.

And we do this at the county, State of California and US national level. An ambitious and unique project, this work has consumed nearly two years, much like the previous edition required 18 months. Every effort in this prolonged project has been made to ensure the accuracy of the data, assumptions and the findings of this research, however different the result appears from the typical economic impact analysis of wine. Primarily because it *is* different.