5

The US Wine Industry

James T. Lapsley, Julian M. Alston, and Olena Sambucci

5.1 Introduction

Among countries, the United States is the world's fourth largest producer of wine and the largest consumer and importer (Wine Institute 2015a, b; ITC 2017). Consequently, the structure of the US wine industry is of interest, not

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J. T. Lapsley (✉)
Department of Viticulture & Enology, University of California, Davis, Davis, CA, USA
University of California Agricultural Issues Center, Davis, CA, USA

J. M. Alston
Department of Agricultural and Resource Economics, University of California, Davis, Davis, CA, USA
Robert Mondavi Institute Center for Wine Economics, University of California, Davis, Davis, CA, USA
Giannini Foundation of Agricultural Economics, Berkeley, CA, USA
e-mail: julian@primal.ucdavis.edu

O. Sambucci
Department of Agricultural and Resource Economics, University of California, Davis, Davis, CA, USA
e-mail: sloan@primal.ucdavis.edu

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just to Americans but also to wine producers and consumers in many other countries. This chapter describes the salient features of this fascinating industry throughout the marketing chain from the vineyard through to the final consumer from an economics perspective and, where possible, in quantitative terms.

The first main section (Sect. 5.2) describes the winegrape-producing industry—which is predominantly located in California and two other West Coast states, Washington and Oregon—in terms of the total number and size distribution of firms, patterns of prices, and production. This section draws heavily on Alston et al. (2015, 2018a, b). Winegrape production is somewhat vertically integrated with winemaking, but many firms specialize at least to some extent in either grape production or wine production, as we document. Section 5.3 documents details of US wine production and consumption, including the significant roles of exports and imports. The winemaking industry is mostly located close to where the grapes are grown, although each of the 50 states claims a wine industry. Details are provided on the total production and the mixture of sizes and types of firms. Next, Sect. 5.4 describes the unique US wine distribution system, from the producer (winery) through to the final consumer, created by the hodgepodge of laws and regulations governing the market as an aftermath of national Prohibition (1920–1933). Section 5.5 concludes the chapter.

5.2 Winegrapes

In 2016, the United States produced 4.4 million tons of grapes crushed for wine, with a farm value of $4.1 billion (Table 5.1), and it has accounted for about 10% of the world's wine volume in recent years (e.g., Wine Institute 2015a). Of the US total winegrape area of some 250,000 hectares in 2016, four states accounted for over 94%: California (CA), 80.3%; Washington (WA), 8.6%; Oregon (OR), 3.8%; New York (NY), 1.9%.[1] Of these, only New York is not on the West Coast. The total value of all US farm production in 2016 was $357 billion from a total of 370.1 million hectares, including $194 billion worth of crops produced using 157.7 million hectares of cropland (USDA/ERS 2018; USDA/NASS 2012b). Hence, the wine industry contributed 1.1% of the total value of farm production value (2.1% of crop value), but it did so using only 0.07% of all land in agriculture (or 0.15% of cropland). Winegrapes are more important in California, accounting for 8.9% of the value of farm production and 2.3% of all land in agriculture (or 6.3% of cropland).

[1] Areas of vines and cropland for 2016 in this paragraph are estimated based on areas in 2012, the most recent census for which data are available at the time of writing.

Table 5.1 Characteristics of US wine regions, 2016 data

Region	Crush district	Total acreage	Volume (tons)	Crush price ($/ton)	Value ($ millions)
Napa-Sonoma (NS)	3	59,675	226,442	2590	587
	4	45,339	153,045	4686	717
	Total	**105,014**	**379,487**	**3435**	**1304**
Central Coast (CC)	7	48,128	268,688	1386	372
	8	49,817	224,584	1656	372
	Total	**97,945**	**493,272**	**1509**	**744**
Southern Central Valley (SCV)	13	77,239	1,265,648	306	388
	14	20,980	283,335	298	85
	Total	**98,219**	**1,548,983**	**305**	**472**
Northern Central Valley (NCV)	9	7218	62,690	584	37
	11	74,072	802,122	612	491
	12	31,162	372,947	444	165
	17	22,087	168,592	621	105
	Total	**134,539**	**1,406,351**	**567**	**798**
Other California (OC)	1	17,250	77,951	1542	120
	2	9420	46,528	1684	78
	5	3824	21,281	910	19
	6	6858	30,565	1148	35
	10	7158	21,467	1371	29
	15	684	425	689	0.3
	16	1732	4839	1754	8
	Total	**46,926**	**203,056**	**1434**	**291**
California (CA)		**482,643**	**4,031,149**	**895**	**3609**
Washington (WA)		**52,000**	**270,000**	**1160**	**313**
Oregon (OR)		**23,000**	**67,000**	**2140**	**143**
New York (NY)		**11,684**	**54,000**	**626**	**34**
United States (US)		**569,327**	**4,422,149**	**927**	**4099**

Sources: Appendix Table 5A in Alston et al. (2018a). Created by the authors using data from USDA/NASS (2016a, b, 2017, 2018)

Notes: Average weighted prices per ton in California are calculated using total tons crushed, by crush district. Acreage of winegrapes in NY was calculated by applying volume of winegrapes as a percentage of total volume to total grape acreage, as data on winegrape acreage were not available

5.2.1 Production Regions and Varieties Grown

California differs from the other major producing states, and itself contains several distinct wine production regions that differ in terms of their terrain, climate, soil types, mixture of varieties grown, and quality of grapes and wines

produced. Data on production and prices of winegrapes in California are available in some cases by county (of which there are 58, not all of which grow winegrapes) and in others by crush district (of which there are 17). Some crush districts contain several counties or parts of counties. Alston et al. (2015) organized these data into five regions, defined such that each county fits entirely into one of the five regions. Treating each of the other significant wine-producing states (i.e., WA, OR, and NY) as a region, we have eight primary US wine-producing regions comprising these three plus the five in California.

Table 5.1 includes some detail on the salient features of the eight main US wine-producing regions we have identified as they stood in 2016. Several distinct patterns are apparent in this table, as illustrated in Fig. 5.1. First, California dominates the national total area, volume, and value of wine production. Second, the regional shares differ significantly among measures of area, volume, and value of production. In particular, the Southern Central Valley has a much larger share of volume compared with area and especially value of production, while the Napa-Sonoma region has a much smaller share of volume compared with area and value of production. These patterns reflect the relatively high yield per acre (and correspondingly low price per ton) of grapes from the Southern Central Valley and the conversely low yield and high price per ton in Napa-Sonoma. In 2016 in Napa County the average yield was 3.5 tons/acre and the average crush price was $4686/ton, about 15 times the average crush price in the Southern Central Valley where the average yield was 15.8 tons/acre. The other regions were distributed between these extremes with higher yields being generally associated with lower prices per ton.

Within the United States, in 2016 five varieties (Chardonnay, Cabernet Sauvignon, Merlot, Pinot Noir, and Zinfandel) accounted for over 50% of the total volume and 60% of the total value of production from the five states included in Table 5.1. As discussed in detail by Alston et al. (2015), these five varieties predominate in several of the main production regions—in particular in the premium price regions within California, as well as in Washington and Oregon—but the emphasis varies among the premium price regions and some regions are quite different. In particular, the hot Southern Central Valley (dominated by French Colombard and Rubired used to produce grape juice concentrate as well as bulk wine) and New York (dominated by non-*vinifera* American varieties, Concord and Niagara) are quite unlike the other regions climatically and in terms of their grape varietal mix.

Chardonnay is the most important variety in terms of total bearing area nationally and is highly ranked throughout the premium regions, but the

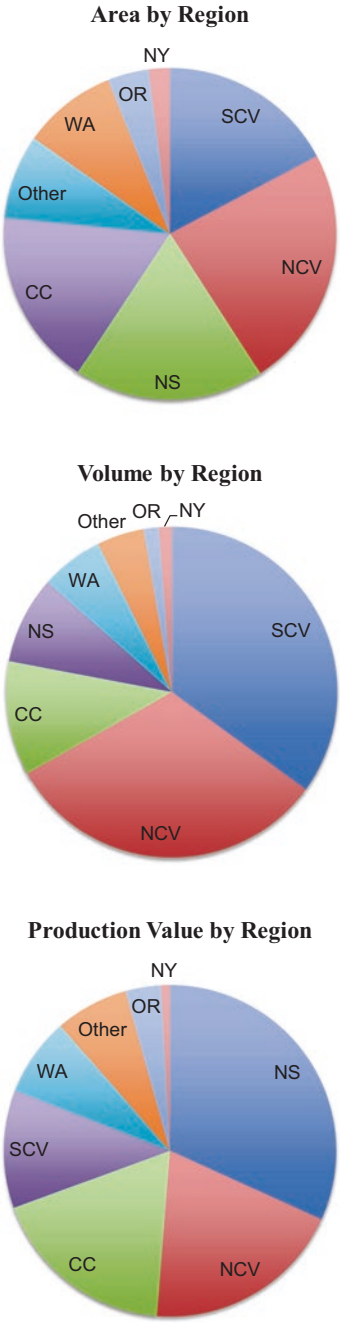

Fig. 5.1 US wine regions—area, volume, and value of production, 2016. (Source: Created by the authors using data from USDA/NASS 2016a, 2016b, 2017, 2018)

Napa-Sonoma region is especially known for its Cabernet Sauvignon, which is its most important variety and increasingly so, and likewise in Washington. The cooler coastal regions—in particular Oregon and the Central Coast of California—are relatively specialized in Chardonnay and Pinot Noir and other cool climate varieties. Zinfandel is more significant in the Northern Central Valley and other mid-price regions, and these patterns reflect this variety's dual roles in serving as both a premium red varietal wine and as lower-priced "blush" (white zinfandel) wine.

Prices vary systematically among regions—the Napa-Sonoma region has generally higher prices than other regions for all varieties, and the Southern Central Valley has generally lower prices. In addition, prices vary systematically among varieties—among the higher-quality (higher-priced) varieties grown in significant quantity, Cabernet Sauvignon generally is ranked higher than Chardonnay, and Zinfandel generally is ranked lower. But the sizes of the premia, and even the rankings of varieties, vary among regions. For example, Pinot Noir ranks above Cabernet Sauvignon almost everywhere, but not in Oregon where Pinot is by far the dominant variety, nor in the Napa-Sonoma region; Chardonnay is ranked above Cabernet Sauvignon in the Central Coast region.

Because grape-growing location has become recognized as an important element of perceived wine quality, the vineyard location is often identified on the wine label. Prior to 1983, wineries could only use geopolitical locations, such as counties or towns, on labels. In 1983 the Federal Government responded to industry desire to place more precise vineyard locations on wine labels by creating a new type of location, the so-called American Viticultural Areas (AVAs—see US Treasury/TTB 2013). AVAs are defined geographic areas that may be quite large and cross state or county lines, or may be quite small and lie within a county or, in some cases, another AVA. The Napa Valley AVA is, for instance, a large AVA located within Napa County. The Oakville AVA is a much smaller AVA that is located within the Napa Valley AVA. In contrast, the Carneros AVA is a defined AVA in the southern portion of Napa and Sonoma Counties. Today, wineries may identify the grapes used in a wine as coming from an AVA if 85% of the grapes were grown in the AVA.

5.2.2 Size Distribution and Nature of Firms

Equivalent data are not available for every state, but some detailed data on the size distribution and nature of grape-producing firms are available for California, which accounts for four-fifths of US winegrape production

Table 5.2 California: total grape area and number of grape-producing farms, 2012

	Total grape area		
Geographic area	Farms	Acres	Acres/farm
Napa-Sonoma	3148	113,128	35.9
Central Coast	1286	131,448	102.2
Southern Central Valley	3141	463,380	147.5
Northern Central Valley	1489	176,826	118.8
Other CA	2398	54,819	22.9
California State Total	11,462	940,177	82.0

Source: Table 2 in Alston et al. (2018a). Created by the authors using data from USDA/NASS (2012a)

(Table 5.2). In 2012, California had 11,462 farms that grew grapes. The total area (including nonbearing vines) was 940,177 acres planted to grapes, an average of 82 acres per farm. These statewide average figures mask some variation among regions, and they also include grapes intended for grape juice, table grapes, and (dried) raisin production—all in the Southern Central Valley. Of the total of 463,380 acres of vines in the Southern Central Valley, an estimated 128,449 acres would have been devoted to wine production.[2] In the Central Valley—with its higher yields and lower prices per ton—winegrape production generally is conducted at a larger scale compared with the Coastal regions, especially Napa-Sonoma, with an average of 36 acres of winegrapes per producer. Not surprisingly, growers in California's Central Valley have mechanized, adopting mechanical pruning and harvesting at a higher rate than coastal growers, who generally continue to rely on hand labor for many operations. Over 80% of California's winegrapes are harvested by machine. Machine pruning is less widely adopted (Dokoozlian 2013).

Table 5.3 contains more information on the size distribution of grape producers in terms of area planted to grapes—again, including all end uses of grapes, not just wine. As is typical of farm-size distributions, this distribution is heavily skewed to the right. The vast majority of grape producers have relatively small vineyards and, while the average area is 80 acres of vines, the median is closer to 15 acres. Reflecting this skewedness, the roughly 50% of growers who had less than 15 acres of vines collectively accounted for less than 2% of the total vineyard area, while the 89 (less than 1%) growers who had 1500 acres or more were responsible for almost 30% of the total area. More than half the total vineyard area is on farms with 500 or more acres of vine-

[2] The percentage of winegrape acreage for the Southern Central Valley region in 2012 was estimated using the California acreage report (USDA/NASS 2012d) and applied to the total acreage for 2012 from Table 2 in Alston et al. (2018a).

Table 5.3 California: size distribution of grape producers, 2012

	Total bearing and nonbearing vines		Cumulative total	
Size range	Farms	Acres	Acres	%
0.1–0.9 acres	1357	450	450	0.05
1.0–4.9 acres	2509	5525	5525	0.59
5.0–14.9 acres	2165	18,345	18,345	1.95
15.0–24.9 acres	1374	25,673	25,673	2.73
25.0–49.9 acres	1340	47,004	47,004	5.00
50.0–99.9 acres	1094	75,613	75,613	8.04
100.0–249.9 acres	907	139,156	139,156	14.80
250.0–499.9 acres	359	123,336	123,336	13.12
500.0–749.9 acres	122	74,500	74,500	7.92
750.0–999.9 acres	71	60,783	60,783	6.47
1000.0–1499.9 acres	75	91,412	91,412	9.72
1500.0 acres or more	89	278,382	278,382	29.61
All Farms	11,462	940,177	940,179	100.00

Source: Table 3 in Alston et al. (2018a). Created by the authors using data from USDA/NASS (2012c)

yard. Of course, and as noted above, these distributional figures for the statewide industry as a whole will not be equally representative of all segments. In particular very large vineyards are much more likely to be found in the Central Valley than in the premium coastal valleys where land values are very much higher.

California includes a diverse mixture of production models. A vineyard may be vertically integrated with a winery, in a single enterprise, or the two enterprises may be entirely separate. In some cases a winery may crush and bottle only estate-grown fruit while, next door, a vineyard sells all its production to a winery somewhere else. Because grape growing and wine production are often separate businesses in California, most wineries contract with grape growers. Goodhue et al. (2003) reported that 90% of California growers sold grapes under contract and that 10% of contracts were pre-planting contracts in which the winery contracted to purchase grapes from a not-yet-established vineyard. Production models vary from region to region within California, and Table 5.4 provides details, district by district, of the balance between purchased, custom crush, and own tons crushed by wineries. For the state as a whole, only 15% of tons crushed were own-grown, the vast majority were purchased. This pattern was even more pronounced in the Southern Central Valley where only 5% of the crush was own fruit. In the premium coastal regions, the share of own-grown fruit was closer to 40% of the total crush.

Some wineries may have a cellar door from which they sell at retail whereas others may leave the retailing to others. Reflecting this diversity, California has

an active market for winegrapes—whether under contract or for spot sales—as well as markets for bulk wine and bottled wine. Particular sizes of vineyards—depending on the location and market segment to be served—are more or less appropriate for these different business models. Some wine businesses in California are engaged in every aspect, growing grapes, making wine, offering custom crush and winemaking services, importing and exporting bulk or premium wine, and providing cellar door experiences at boutique winery estates.

5.3 Wine Production and Consumption

The quantity of wine consumed in the United States has increased every year for the past 20 years, almost doubling from 464 million gallons in 1995 to 949 million gallons in 2016 (Wine Institute 2018). This expansion is a result of both population growth and an increasing rate of adult per capita con-

Table 5.4 Characteristics of California winegrapes crushed, 2016

Region	Crush district	Total tons crushed	Tons purchased	Custom crush	Own tons crushed	Own tons/ total tons crushed
Napa-Sonoma (NS)	3	226,442	144,846	1618	79,979	0.35
	4	153,045	89,402	3190	60,453	0.40
	Total	**379,487**	**234,248**	**4807**	**140,432**	**0.37**
Central Coast (CC)	7	268,688	172,141	787	95,760	0.36
	8	224,584	158,251	10,011	56,322	0.25
	Total	**493,272**	**330,392**	**10,798**	**152,082**	**0.31**
Southern Central Valley (SCV)	14	283,335	268,317	59	14,959	0.05
	13	1,265,648	1,210,224	213	55,211	0.04
	Total	**1,548,983**	**1,478,541**	**273**	**70,170**	**0.05**
Northern Central Valley (NCV)	9	62,690	35,429	1037	26,224	0.42
	11	802,122	729,455	3314	69,353	0.09
	12	372,947	274,361	1096	97,490	0.26
	17	168,592	148,460	991	19,141	0.11
	Total	**1,406,351**	**1,187,705**	**6438**	**212,208**	**0.15**
Other California (OC)	10	21,467	14,714	447	6306	0.29
	15	425	152	110	164	0.38
	16	4839	2145	221	2473	0.51
	1	77,951	53,736	9627	14,588	0.19
	2	46,528	33,919	3660	8949	0.19
	5	21,281	18,077	587	2617	0.12
	6	30,565	20,359	960	9246	0.30
	Total	**203,056**	**143,102**	15,612	44,342	**0.22**
California (CA)		**4,031,149**	**3,373,988**	**37,928**	**619,233**	**0.15**

Source: Created by the authors using data from USDA/NASS (2016a)

sumption. Both trends are expected to continue and the volume of US wine consumption is predicted to increase by 50% by 2030 from a 2010 base (Lapsley 2010). US growth trends stand in marked contrast to declines in volume of wine consumed in France, Italy, and Spain (OIV 2015). It is no surprise that many suppliers, both domestic and foreign, are focused on the US market.

5.3.1 Domestic Production and Consumption

In the United States, wine is defined as the product of the fermentation of fruits, predominantly grape, into an alcoholic beverage. Because alcohol is taxed in the United States, wine production is regulated at the Federal level by a bureau of the Department of the Treasury, the Alcohol and Tobacco Tax and Trade Bureau, generally known by its last three initials as the "TTB." The TTB licenses alcohol producers, including wineries, receives tax payments from producers and importers, approves wine labels, and publishes monthly and annual production statistics. Wine producers file reports of production and sales and make tax payments to the TTB. The frequency of such reports depends upon the amount of tax liability, but every producer files at least once a year. The information from producers is summarized each month by the TTB, along with an annual report. These reports are available online at http://www.ttb.gov/wine/wine-stats.shtml. Much of the data presented in this section is derived from TTB annual statistics. Wine producers are also licensed by the states in which they operate, and state requirements for production and licensing differ from state to state, a topic that is covered in greater detail in Sect. 5.4.

Wines are taxed at different rates, depending upon wine type, alcohol concentration, and volume of production. Still wines are defined as wines containing less than 0.392 grams of carbon dioxide per 100 milliliters. Still wines with 0.5–16% alcohol by volume pay a Federal tax ranging from $0.07 per gallon for production volumes below 30,000 gallons up to $1.07 per gallon for volumes over 750,000 gallons. Wines with alcohol concentration of 16–21% pay $0.57 per gallon for production below 30,000 gallons and $1.57 per gallon for production over 750,000 gallons. Wines with alcohol concentrations over 21% but under 24% incur a tax of $2.15 per gallon when produced in volumes under 30,000 gallons up to $3.15 per gallon for production over 750,000 gallons. Wines containing carbon dioxide above the limit for still wines are referred to by the TTB as "effervescent" and are grouped into two categories: Artificially carbonated, which pays a tax of between $2.30 and

$3.30 per gallon, and naturally carbonated, which is taxed between $2.40 and $3.40 per gallon (U.S. Treasury/TTB 2016a) depending upon volume produced. These tax rates are for calendar years 2018 and 2019 and may change depending upon Congressional action (or inaction).

The TTB figures for production of still wines include wines made from fruits other than *Vitis vinifera* and from non-*vinifera* grapes. "Wine" produced from apples is called "hard cider" and is taxed between $0.164 and $0.226 cents per gallon depending upon the volume produced. Hard cider is listed separately from other still wines in TTB reports, but non-*vinifera* wine is not reported separately. Although we have no way of knowing the exact volume of non-*vinifera* wines, we do know that wines produced in California are made from *Vitis vinifera* and represent about 85% of all wine produced in the United States.

Still wine accounts for the vast majority of domestically produced and bulk imported wine that is bottled and consumed in the United States, although smaller volumes of other types of wine are produced, and about 10–11% of production is used for distillation. According to 2016 TTB data, over 604 million gallons of still wine were bottled and removed after payment of tax for domestic consumption. This represented 82.6% of the approximately 708 million gallons of domestically bottled wine.[3] Cider accounted for 6.5% of total volume, effervescent wine was 3.9%, flavored wines, such as vermouth, and wine coolers totaled 3.4% and 3.5%, respectively (Fig. 5.2).

In the past decade, the volume of domestically bottled wine (including cider) tax-paid into the US market has increased by almost one-third, from just over 527 million gallons in 2005 to over 700 million gallons in 2016. Cider consumption increased more than eightfold, growing from 4.8 million gallons to 47.5 million gallons. Still wine grew by almost one-third during the same period, while wine cooler volume declined. Table 5.5 shows volumes by type of wine removed tax-paid in 2005 and 2016, and the percentage change. We assume tax-paid bottled wine is intended for the US market because exported wine does not pay Federal tax.

The vast majority of wine produced in the United States is produced in California. In 2016, the TTB reports approximately 806.4 million gallons of still wine produced in the United States, with California responsible for 680.3 million gallons, or 84.3%. New York State, with 27.9 million gallons, and Washington State, with 40.7 million gallons, are second and third

[3] The term "removed" here refers to removal of the product from a bonded warehouse, as it enters commerce and, if it is destined for domestic sale, incurs excise tax.

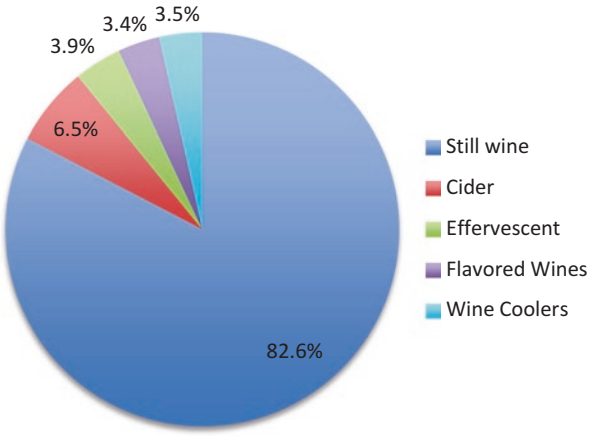

Fig. 5.2 Volume shares (%) of tax-paid, domestically bottled wine, by wine type, 2016. (Source: Created by the authors using data from US Treasury/TTB 2016c)

Table 5.5 Gallons of bottled wine removed tax paid into US market

	2005	2016	Percentage change
Wine type	Millions of gallons		Percent
Still wine	457.2	604.2	32.2
Cider	4.9	47.5	867.3
Effervescent	19.4	28.6	47.4
Flavored wines	15.8	25.0	58.2
Wine coolers	30.3	25.8	−14.9
Total taxable removals	527.6	731.0	38.6

Source: Table 7 in Alston et al. (2018a). Data are from Treasury/TTB (2005, 2016c). Percentage calculations by authors

in production. All of California's and Washington State's wine production is from *V. vinifera* grape varieties, while New York State's production includes fruit wines and wines produced from native grape species and hybrids.

The increase in US demand for wine is reflected in an increase in the number of wineries, which has more than doubled in the past decade. In 2004 there were 4325 wineries in the United States, with 2059 located in California, but by 2014 the number of US wineries had increased to 10,417, with 4285 located in California. Other major states with wineries are Washington State, 989; Oregon State, 580; and New York State, 481. However, every state has a few wineries and produces some wine (U.S. Treasury/TTB 2016b).

Although over 10,000 wineries are operating in the United States, a handful of large wineries dominate production and distribution of wine. Over the past 20 years, the largest US wine producers have become marketers of wine as well as producers, importing bulk wine to be bottled under their own brands, and importing and distributing bottled wines from foreign producers. It is estimated by industry analysts that in 2014, the three largest US wine producers, *E & J Gallo*, *The Wine Group*, and *Constellation Brands*, together produced or imported approximately half of all wine sold in the United States. The top ten producers accounted for over 80% of US sales, and the top 30 are estimated to be responsible for approximately 710 million gallons of the 769 million gallons of wine consumed in 2014, or 92% of sales (Wine Business Monthly 2015; Wine Institute 2018), leaving 59 million gallons to be supplied by the remaining smaller firms. These indicative figures impart a sense of the concentration within the US industry.

Since the TTB does not release production data at the firm level, it is not possible to report precise figures of production volume by wineries. However, given that there were more than 10,000 wine producers in 2014 and having estimated that US total wine consumption, after subtracting sales by the top 30 wine firms, was approximately 59 million gallons (which includes imported bottled wine not sold by the largest firms), it follows that the typical US winery is very small, perhaps producing 5000 gallons of wine. This conclusion is reinforced by an examination of wine production by region within California. Using TTB data of California wine producer and blender permit holders at the end of 2015, we sorted wineries by production region. Then, for each region, we computed its share of California's total grape tonnage in 2016 and its share of the total number of California wineries in 2015. Results are shown in Table 5.6.

As noted in Sect. 5.2, California's Northern and Southern Central Valley vineyards (crush districts 9, 11, 12, 13, 14, and 17) produce approximately 70% of California's winegrapes. However, this productive grape-growing region has only 9% of California's wineries. Central Valley wineries are quite large and efficient, processing almost 3 million tons of grapes in 2016 and producing inexpensive wine retailing at under $8 per bottle, which accounts for a large share of all table wine sales. More than 70% of California's wineries are located in coastal areas (crush districts 1–8); yet, collectively, these areas produced just 26% of all California winegrapes in 2016. For the most part, these coastal wineries, along with wineries in California's Sierra Nevada foothills, are quite small, each producing small quantities of more expensive wines.

Wines consumed in the United States retail at a variety of prices and labels often bear information on varietal content as well as where the grapes used to

Table 5.6 Share of all California wineries (2015) and tons crushed (2016) by region

Region	Crush district	Volume (tons)	Number of licenses (number)	Share of tons crushed (percentage)	Share of licenses (percentage)
Napa-Sonoma (NS)	3	226,442	785	5.6	20.3
	4	153,045	959	3.8	24.7
	Total	**379,487**	**1744**	**9.4**	**45.0**
Central Coast (CC)	7	268,688	106	6.7	2.7
	8	224,584	719	5.6	18.6
	Total	**493,272**	**825**	**12.2**	**21.3**
S. Central Valley (SCV)	14	283,335	16	7.0	0.4
	13	1,265,648	52	31.4	1.3
	Total	**1,548,983**	**68**	**38.4**	**1.7**
N. Central Valley (NCV)	9	62,690	112	1.6	2.9
	11	802,122	141	19.9	3.6
	12	372,947	14	9.3	0.4
	17	168,592	17	4.2	0.4
	Total	**1,406,351**	**284**	**34.9**	**7.3**
Other California (OC)	10	21,467	255	0.5	6.6
	15	425	39	0.0	1.0
	16	4839	224	0.1	5.8
	1	77,951	115	1.9	3.0
	2	46,528	49	1.2	1.3
	5	21,281	24	0.5	0.6
	6	30,565	248	0.8	6.4
	Total	**203,056**	**954**	**5.0**	**24.7**
California (CA)		**4,031,149**	**3875**	**100.0**	**100.0**

Source: Data from USDA/NASS (2016a), US Treasury/TTB (2015). Percentage calculations by authors

produce the wine were grown. Price and varietal information is generally derived from UPC (bar code) labels that are scanned by retailers, who then sell their data to consumer research firms such as IRI or Nielsen, which then collate and clean the data for resale to producers and others. Scanner data represent perhaps 50% of US wine sales by volume and do not include information from major retailers such as Costco or Walmart, or from restaurants and bars, which retail approximately 25% of all alcoholic beverages by volume.

Although scanner data do not represent the entire universe of wine sales in the United States, they do provide information on the US marketplace for wine. In 2014, according to Nielsen data, 70% of all table wine tracked by Nielsen, both domestically produced and imported, sold for under $8 per bottle, while approximately 4.7% retailed at above $15 per bottle (Penn 2015). These numbers differ somewhat from those supplied by industry analyst, Jon Fredrikson, who focuses on California wine sold in the United States. Fredrikson (pers. comm. 2016) estimates that in 2015, 52% of California

wine retailed for under $7 and that 15% retailed at above $14 per bottle. The discrepancies are probably the result of comparing different years, different data sources, and the inclusion of imported wine in the Nielsen data.

Wines sold in the United States may bear a varietal designation on the label if 75% or more of the wine was produced from the named grape variety. Nielsen data for table wine sales for the 52 weeks ending in October 2015 show that approximately 85% by value carried a varietal label. Chardonnay, at 19%, and Cabernet Sauvignon, at 16%, were the two most popular varieties, followed by Pinot Grigio, Pinot noir, Merlot, and Sauvignon blanc, which collectively accounted for 28% of the value of table wine sold in the United States. In 2015, red wine represented just over 50% of Nielsen tracked wine sales by value, followed by white wines at 43% of value, and rose or blush wines at 6% (Wine Business Monthly 2016).

5.3.2 Imports and Exports

The United States consumes more wine than it produces, but even though a net importer, the country exports significant quantities of wine: For the past decade approximately 100 million gallons each year, a bit over 10% of its total production in 2016, if distilling material is included. Hence, the United States is a major importer of wine, and for the past decade, approximately one-third of all wine consumed in the United States has been imported. Figure 5.3 shows the volumes and values of imported and exported wine of all types by year.

The share of imported wine in total consumption has increased slightly over the past decade, but the increase in import volume has been primarily in inexpensive bulk wine, rather than in bottled wine. In 2005, US wineries imported 10.3 million gallons of wine in containers larger than 4 liters, a volume that represented approximately 6% of all imported wine. By 2016 bulk wine imports had grown to 70.5 million gallons, accounting for almost 25% of all imported wine volume. During the same period, bottled wine imports increased by 31%, from 176 million gallons in 2005 to 240 million gallons in 2016 (ITC 2017).

The growth in volume of imported bulk wine has become an issue for winegrape growers in California's southern Central Valley. Their concern has centered on a trade policy referred to as "drawback," which allows an importer to recapture up to 99% of taxes paid on imported goods when goods defined as "interchangeable" are exported. In 2003, the US Bureau of Customs and Border Protection allowed drawback on imported wine for the first time and

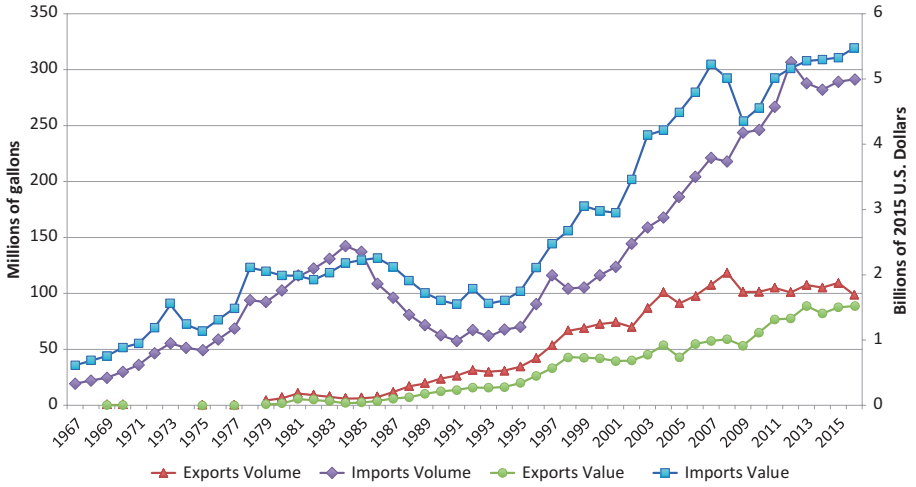

Fig. 5.3 Volume and value of US imports and exports of wine, 1966–2015. (Source: Fig. 5 in Alston et al. (2018a). Data are from ITC (2018). *Notes:* Nominal monetary values in these graphs were deflated by the consumer price index (CPI) for all goods taken from USDL/BLS 2015)

defined interchangeable wine as wine under 14% in alcohol, of the same color, and within 50% of value. Such tax refunds could be as high as $1.60 per gallon for wines imported in large containers from countries without free trade agreements. Since prices of bulk wine imported into the United States have ranged around $3.80 per gallon for the past decade, the incentive is strong and the potential drawback is significant. Some Central Valley grape growers fear that drawback encourages California wineries to import increased quantities of bulk wine, rather than to purchase California grapes. However, Sumner et al. (2012) concluded that when imports exceed exports, the drawback policy encourages exports, which should increase demand for California grapes. Bulk import volumes have exceeded bulk export volumes since 2011.

The United States exports both bottled and bulk wine. While the volume of exports increased by just 8.5%, from 91.0 million gallons in 2005 to 98.7 million gallons in 2016, the value of exported wine increased by over 130%, from $606 million dollars in 2005 to $1.5 billion in 2016. The United Kingdom is the single largest importer of US wine and took 32% of all US wine exports by volume. However, most of the UK import volume is shipped in bulk and at a low price of $11 per gallon. By value, Canada is the most important importer of US wine, buying bottled wine at an average price of over $21 per gallon and receiving more than 18% of US wine exports by volume in 2016. Over the past decade, China has emerged as a major market for US wine, growing from just over 1 million gallons in 2005 to over 6 million

gallons in 2016. Most of this is bottled wine at an average price of over $27 per gallon (ITC 2017). Although volume and value of wine exported have increased in the past ten years, it seems that most US producers are focused more on the expanding domestic market than on export opportunities.

5.4 Distribution

In 2018, the United States was the largest national wine market in the world in value and in volume. Yet, despite its name, as a market the United States is hardly "united" and from a wine marketing perspective is better considered as 51 different entities consisting of 50 states and the Federal District of Columbia. As a legacy of the American experiment with Prohibition from 1920 to 1933, each state has the constitutional power to regulate the production, importation, and sales of alcoholic beverages within its borders. This has resulted in significantly different systems of distribution and sales from state to state. For instance, in Utah, the State acts as the sole importer and retailer of alcoholic beverages. In contrast, other states license private importers, wholesalers, and retailers to distribute and make retail sales.

Other differences among states abound. Some states, such as New York, do not allow sales of alcoholic beverages in stores that sell foods. Other states, such as Oregon, allow private licensed distribution of beer and wine but act as distributors of distilled beverages sold in the state. Some states, such as Ohio, require that suppliers post wholesale prices with the state prior to selling to an Ohio distributor. This price posting, along with mandated markups for distributors and retailers, results in no discounting or price competition among retail stores. Other states, such as Colorado, allow only one license per business entity, which precludes chain retailing of alcoholic beverages. Because of these differences among states, wine suppliers, whether domestic producers or importers, must treat each state as a separate sales environment. For this reason, a uniform system of wine marketing and distribution across the United States is essentially impossible for wine producers and importers.

National Prohibition, which prohibited the commercial production, distribution, and sale of alcoholic beverages, was enacted by Congress in 1917 as the 18th Amendment to the US Constitution. As with all Constitutional amendments, after approval by two-thirds of Congress, it required ratification by three-quarters of the states. The 18th Amendment was ratified in January 1919, and Prohibition became effective a year later, on January 16, 1920 (Seff and Cooney 1984). By the late 1920s, many observers believed that national Prohibition was a failure, having led to illegal alcohol sales and the rise of

organized crime. However, the overturning of the 18th Amendment required a new Constitutional amendment, which needed both a two-thirds approval by Congress, and ratification by 36 of the then 48 states. At the time, more than 12 states opposed the repeal of Prohibition, which effectively blocked repeal. In 1932, a compromise was reached.

The 21st Amendment was passed by Congress in February 1933 and ratified by the states in December of that year. The political price of the compromise is found in section two of the 21st Amendment which states that "The transportation or importation into any State, Territory, or possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited." The 21st Amendment thus essentially grants to each individual state the ability to control the sale of alcoholic beverages however it wishes, up to and including the prohibition of sales, although states cannot discriminate between alcoholic beverages produced in state or out of state, as such discrimination violates the "Commerce Clause" of the Constitution.

In 1933, following Repeal of Prohibition, each state had to determine how it would tax and control the production, distribution, and sales of alcoholic beverages. At Repeal, the main concerns for state governments were to collect state alcoholic excise taxes and to encourage "temperance" by controlling who could enter the new marketplace, by regulating the hours and locations of sales, and by separating production and distribution from retailing (Mendelson 2009). Approximately 20 states became what are referred to as "control" states, where the state became the importer and retailer for alcoholic beverages. Today, following a policy change in Pennsylvania in June 2016, Utah remains as the only control state where all wholesaling and retail sales are performed by the state. Most of the other original control states have retained some form of state wholesaling and sales for spirits but now allow wine and beer to be imported, distributed, and sold by companies licensed by the state. The majority of the states at Repeal did not choose the control model but rather created state governmental agencies, often referred to as Alcoholic Beverage Commissions (ABCs), which set conditions for retail sales and licensed producers, wholesalers, and retailers.

Regulation of production, distribution, and sales varies greatly among states. California, the major wine-producing state, allows licensed wine producers to act as producers, wholesalers, and retailers, although limiting the number of retail locations allowed to a wine producer. Over the past two decades, as wine production has expanded in other states, state governments have encouraged domestic wine production by amending laws to allow their in-state wineries, under restricted conditions, to sell directly to retailers and

consumers. However the general case is that, in most states, out-of-state wine suppliers (either domestic producers or importers of foreign wines) must acquire licenses from the state ABC and then must sell to in-state wholesalers licensed by the state ABC. These wholesalers pay state excise taxes for wine imported into the state and maintain inventory for sale to state licensed retailers. Licensed retailers then sell to consumers. This system is referred to as the "three-tier" system, with the first tier being the supplier, the second tier being the wholesaler, and the third tier being the retailer.

The three-tier system places at least two business entities between a supplier and the end consumer. The system also requires that, in most instances, suppliers must have a business relationship with at least one wholesaler in every state in which the supplier desires to sell wine. A cursory examination of the listing of wholesalers at the TTB web site (U.S. Treasury/TTB 2015) shows over 19,000 licensed wholesalers across the 50 states. But this number is quite misleading, as each wholesale location requires a separate license, and the 19,000 licensees are not distinct firms. Most wholesalers are quite small businesses that serve a limited geographic area within a state, but in every state and nationally, distribution of alcoholic beverages is dominated by a handful of large wholesalers.

Industry analysts indicate that in 2017 the four largest wholesalers of alcoholic beverages accounted for approximately 55% of all wholesale sales (Wines and Vines 2017). Wholesaler consolidation is an ongoing trend that will probably continue because distribution of alcoholic beverages exhibits economies of scale. Table 5.7 lists the top four wholesalers in the United States, all of which are multibillion dollar companies and all the result of recent mergers. The top wholesaler, *Southern Glazers*, was created in 2016 when *Southern*, the largest distributor, merged with *Glazers*, then the fourth largest. *Breakthru Beverage* had been created a year earlier when *Wirtz Beverage* merged with New York-based *Chalmers Sunbelt*. *Republic National Distributing Company* was the result of a 2007 merger of *Republic Beverage Company* and *National Distributing Company*. Most recently in November 2017, the numbers 2 and 3 wholesalers, *Republic National* and *Breakthru Beverage*, announced their intention to merge operations in 2018 (Marsteller 2017) although as of this writing, the merger has not yet occurred.

When a domestic wine producer or importer has distribution with a company such as *Southern Glazers* or *Republic National Distributing Company*, the supplier can be assured of geographic reach for its products. However, the supplier will also be one of hundreds, perhaps thousands, of suppliers, each vying for attention from the large distributor. In a national sales environment with over 9000 domestic producers, the reality is that most individual suppli-

Table 5.7 Four largest US alcoholic beverage distributors, 2014

Company	Estimated revenue ($ billions)	Market share by revenue (%)	Total states covered (number)
Southern Glazers	16.5	29.0	41
Republic National	6.5	11.4	22
Breakthru Beverage	5.4	9.4	16
Young's Market Co.	3.0	5.2	11

Source: Wines and Vines (2017)

ers are not in a position to choose a distributor in a given market. Rather, the distributor chooses the supplier. Without a licensed distributor, it is difficult for a supplier to sell more than a few cases of wine in a given market.

Because of the inherent difficulty in securing distribution in every state, some suppliers might decide to focus on one or two states or metropolitan markets rather than to pursue national distribution. States differ greatly in total population as well as rates of per capita consumption; hence the volume of wine consumed varies tremendously from state to state. Table 5.8 lists the top ten wine-consuming states in 2016, showing each state's wine consumption in thousands of gallons and as a share of total US wine consumption. In 2016, the top five wine-consuming states consumed 42% of all wine consumed, and the top ten states almost 60% of all wine sold in the United States. Collectively, in 2016 these top ten states consumed 526 million gallons, which, if they were a country, would put them in fifth place, behind Germany and ahead of the United Kingdom (Wine Institute 2015b). Clearly, a wine supplier does not need to pursue national distribution in order to sell significant volumes of wine in the United States. But it is equally true that most suppliers focus on states with high volumes of wine consumption, making those markets quite competitive.

State laws also affect where wine is sold, making it less meaningful to speak of national trends. In those states where wine can be discounted and can be sold in chain grocery stores, large retailers such as Costco and Walmart have gained market share. These retailers use their purchasing power to negotiate lower purchase prices, and this, combined with efficient store management and scale, which allow lower operating margins, enables them to offer lower prices to consumers. But some state sales environments are not conducive to large chain retailers. The states of New York and New Jersey, the third and fourth largest wine markets by volume in the United States, do not allow wine to be sold in grocery stores. Retailers in these states must choose between sell-

Table 5.8 Top ten wine-consuming states in 2016

State	Gallons (thousands)	Share (%)
California	148,347	16.5
Florida	71,538	8.0
New York	67,598	7.5
Texas	59,177	6.6
Illinois	35,041	3.9
New Jersey	34,027	3.8
Massachusetts	28,934	3.2
North Carolina	28,085	3.1
Pennsylvania	27,230	3.0
Virginia	26,246	2.9
Top ten total	526,223	58.6
US total	898,700	100.0

Source: Haughwout et al. (2018)

ing groceries and selling alcoholic beverages. Some states, such as Ohio, do not allow distributors to offer price discounts to retailers based on volume purchases, thus negating the purchasing power inherent in chain retailing, at least for alcoholic beverages. Other states, such as Colorado and Massachusetts, limit the number of retail locations per license holder, thus reducing the potential for chain retail sales.

The reduction of costs in supply chains has been a major force in business modernization for at least two decades. However, the current alcoholic beverage supply chain in the United States is entrenched in state law and efforts to bypass the three-tier system have met with little success, although there have been some changes. In 2005, the US Supreme Court reviewed Michigan and New York laws that allowed in-state wineries to make direct shipments to in-state consumers, but disallowed that privilege to out-of-state wineries. In a 5 to 4 decision in *Granholm v. Heald*, the Court found that states could not discriminate between in- and out-of-state producers, thus opening the door for direct shipments from winery to consumer (Mendelson 2009).

Although this decision has legalized the possibility of direct shipments to many states, the reality is that states can legally require registration fees, payment of excise taxes, and reporting requirements that, while in aggregate are reasonable expenses for in-state wineries with significant volumes of direct sales, become prohibitively expensive for an out-of-state winery that is shipping only a few cases per month to a particular state. Shipping costs for a few cases are also significantly higher than for truckloads of wine. Although direct shipping of wine and the bypassing of the three-tier system may widen the range of consumer choice, direct shipping still represents a very small percentage of wine sales in the United States. In 2014, nine years after the Granholm

decision, approximately 4 million cases were direct shipped to consumers, which represents just over 1% of wine consumption in that year (Gordon 2015; Wine Institute 2018).

The United States is an attractive market for wine producers because it is large, lucrative, and still growing with a significant demand for premium wines as well as lower-priced wines. However, the effect of America's experiment with Prohibition is still felt in the marketplace in the form of the three-tier system of distribution. The sale of more than a few cases of wine in a state functionally requires that a supplier have an agreement with an in-state wholesaler. Consolidation of distributors coupled with an increasing number of suppliers makes distribution one of the key challenges for domestic and foreign wine producers desiring to sell wine in the United States.

5.5 Conclusion

This chapter has reviewed winegrape growing and wine production, distribution, and consumption in the United States. The industry is concentrated in the western United States, dominated by California, which produces four-fifths of the total. Nationally, winegrape growing is relatively unimportant when compared with commodities such as corn or soybeans, and winegrapes are best understood as a high-value specialty crop, whose high prices are driven by an increasing demand for wine on the part of American consumers. This increased demand has been met by expansion of vineyard acreage across the United States, by increased importation of bulk and bottled wine, and by a doubling of the number of US wineries over the past decade. Although the experiment with Prohibition has left a legacy of patchwork laws throughout the nation, making wine distribution cumbersome and costly, increased consumer demand for wines of all types is forcing changes in distribution. These changes, coupled with increased rates of per capita consumption and population growth, should insure that the United States remains the world's major wine-consuming country for the first half of the twenty-first century.

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