

UNITED STATES AND NORTH AMERICA

CHAPTER SIXTEEN

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LEARNING OBJECTIVES

After studying this chapter, the candidate should be able to:

- Identify the general role and position of the United States in the global wine industry.
- Describe the differences between native American grapes, French-American hybrids, and vinifera.
- Discuss the differences between American viticultural areas and European appellations.
- Recall the major required and optional elements of a wine label in the United States.
- Recall the minimum content requirements for the use of place-of-origin terms, vintage dates, and grape variety names on a US wine label.
- Discuss the factors that make California of such great importance to the US wine industry.
- Identify the primary appellations, climatic zones, and major grapes of California, Washington, Oregon, and New York.
- Discuss the major wine-producing regions of Canada and Mexico.

UNITED STATES

Wine production in the United States now totals over 350 million cases, placing it just behind France, Italy, and Spain in terms of volume output. For the past several years, the US has been among the leading countries in terms of both exports and imports of wine. More recently, it has earned the title of the largest consumer of wine

in the world. Furthermore, American wine drinkers overall tend to drink better quality and more expensive wines than their counterparts in most other countries. Thus, the United States by many measures now drives the global wine industry.

Within the United States, the center of the wine industry is firmly situated in California. Of the American total, California produces just over 81%. Washington State, New York State, and Oregon are the next largest producers, typically followed by Virginia, Texas, Pennsylvania, Michigan, Missouri, Ohio, and Florida—although not necessarily in that order (which changes often). The other states contribute only a small fraction to the total, although many have thriving local wine scenes. According to the American Association of Wine Economists (AAWE), there are now more than 16,000 bonded wineries in the US, with at least one in all fifty states.

Canada and Mexico also have wine industries, albeit on a much smaller scale, producing wine near the US borders. Canada's wineries are found mainly in inland British Columbia and the Great Lakes area of Ontario, while Mexico's are primarily in Baja California. These countries will be discussed in more detail at the end of this chapter.

HISTORY OF AMERICAN WINE

The United States has a long history of winemaking. However, the development of a strong wine tradition was brought to an abrupt halt in the early twentieth century by a national alcohol ban known as Prohibition. It took many years after the repeal of Prohibition for the industry to reemerge as a significant sector of the domestic economy, and even longer to establish an international standing.

It is believed that many Native American tribes produced fermented beverages—including beer, fruit wine, grape wine, and other products—well before contact with European colonists. For instance, the Pueblo peoples produced a type of corn-based beer, as

witnessed by pottery fragments dating back to 828 BCE discovered at an archeological dig at Pueblo Bonito (in Chaco Canyon, New Mexico). Likewise, the Apache and Maricopa people produced wine from the fruit of the saguaro cactus, and it is believed that the Zuni people made a range of fermented beverages using aloe, corn, prickly pear, agave, and/or grapes. Other examples—including raspberry wine produced by Native Alaskans and a fermented beverage produced from the roots of Hawaiian ti plant—abound.

European colonists arrived in North America with a taste for—and knowledge of the production of—vinifera-based wine. Upon their arrival on the American East Coast, the colonists discovered native North American grapes growing in the wild. These grapes were used to produce wine as early as the 1560s in Florida and in the Jamestown colony by the 1600s. However, these early attempts at winemaking in the eastern colonies proved difficult, as the native grapes had an unexpected flavor that was considered somewhat unpalatable. Sometime later, when European vines were brought to the colonies, they failed to thrive and eventually died off. It is now known that the imported grapevines had little resistance to the local plant diseases and especially to the root louse phylloxera. However, elsewhere in North America, vinifera grapes were successfully planted—and vinifera-based wine was produced—in Texas and New Mexico by the 1620s, and in California beginning in the 1770s.

In the West, which was Spanish and then Mexican territory until the mid-1800s, there were no native grapevines, nor was there initially much demand for wine among the sparse inhabitants. The first vineyards were established by Catholic missionaries for the small-scale production of sacramental wine. The sole grape variety grown at that time was what has come to be called the Mission grape, a hardy but unexciting wine grape propagated for centuries after being brought to the Americas from Europe.

All of that changed in the 1800s when the West Coast became part of the United States following the Mexican War and, above all, when gold was discovered in California in 1849. The population of

California and the other western territories skyrocketed, as did the demand for alcohol. Commercial wineries, which had already begun to appear in Southern California, sprang up in Northern California as well. New vineyards, planted primarily by immigrants from Italy, Switzerland, and Germany, were stocked with vines imported from various places in Europe. By the turn of the century, the California wine industry was thriving and gaining a respectable reputation.

Problems started to develop in the late nineteenth and early twentieth centuries. First, the spread of phylloxera, which was being unknowingly carried around the world with grapevine cuttings, reached California. The bigger problem, however, was a political and cultural one. Moral crusaders on the East Coast promoted the idea that alcohol was responsible for many of society's ills and pushed for the prohibition of all forms of alcohol. The 18th Amendment to the US Constitution eventually won passage in 1919, which ushered in Prohibition as of January 1920.¹

¹ The National Archives indicates that the 18th Amendment was passed by Congress on December 18, 1917, was ratified on January 16, 1919, and took effect one year after its ratification.



Figure 16–1: Napa Valley landmark locally referred to as “the Grape Crusher Statue”

During the 13-year period of Prohibition, alcohol was illegal for general consumption, although there were liberal exceptions granted for wine used for religious and medicinal purposes. Individuals were even allowed to make up to 200 gallons of wine at home for family consumption. These exemptions made it possible for a few of the existing wineries to stay in business producing sacramental wine or grape juice for home winemaking, but most commercial wineries went out of business.

Surprisingly, grape production in California increased during this period as winegrowers switched from noble varieties to less distinguished, high-yielding varieties such as Thompson Seedless. The long-term impact on the US wine industry after Prohibition was that wines were made from blends that were less distinctive in flavor and intensity than before Prohibition, and therefore they had to be marketed using familiar, if misleading, names—such as Burgundy or Chablis—to identify the styles being sold.

As is well-known, the “noble experiment” of Prohibition proved to be a failure, as the laws were widely ignored by many Americans and little demonstrable good came out of it. Finally, with the Great Depression making alcohol tax revenue seem preferable to forced abstinence, the 21st Amendment was passed in 1933, repealing Prohibition on a national level and returning decisions about alcohol control to state and local governments.

With the onset of the Depression and World War II, it took several decades for the wine industry to rebuild itself and its consumer base. Beginning in the 1960s, wine became fashionable again, and increased demand helped the US wine industry (led by California) to grow in size and quality. Much of this success can be attributed to Robert Mondavi, Mike Grgich, Warren Winiarski, and several other winemakers who focused on producing quality wines able to compete with their French counterparts.



Figure 16–2: Clos Pegase Winery in Napa, California

The Paris Tasting of 1976, which placed Californian Chardonnay and Cabernet Sauvignon side by side with the finest white Burgundy and Bordeaux-classified growths, is now known to be “the vinous shot heard round the world.” This seminal event changed the course of American winemaking, as the top wines chosen in both the red and white categories were California wines. The first place winner among the red wines was Stag’s Leap Wine Cellars 1973 S.L.V. Cabernet Sauvignon (Napa), made by Warren Winiarski from three-year-old Cabernet vines. The first place in the white category was awarded to Chateau Montelena 1973 Chardonnay (Calistoga), made under the leadership of Jim Barrett. In an instant, Californian wine producers learned that they could compete with the well-established French, and winemakers all over the world realized their potential to compete as well.

By this time, US wine consumers had reached a new level of sophistication and began to pay attention to wine quality. Varietally labeled wines rather than semi-generic labels became standard, and place of origin became significant to buyers. The American wine industry has been on an upward path ever since.

IMPORTANT NAMES IN AMERICAN WINE HISTORY

- Ernest and Julio Gallo: brothers who were almost singlehandedly responsible for ensuring that there was consistent and reasonably priced wine on the American table after Prohibition
- Agoston Haraszthy: Hungarian immigrant who helped found the California wine industry and brought many European vines to Sonoma in 1861
- Charles Krug: founder of the first Napa Valley winery in 1861
- Nicholas Longworth: founder (in the 1830s) of one of the first successful commercial wineries in the US and who—using grapes grown in the Ohio River Valley—produced some of the first sparkling wines in America
- Robert Mondavi: California winemaker who was most instrumental in establishing the reputation of Californian (and, by extension, US) wine quality among consumers
- Frank Schoonmaker: wine journalist credited with introducing and promoting the concept of varietal labeling to help California better define its wines
- André Tchelistcheff: California winemaker who introduced many modern techniques to the US and mentored many other winemakers
- Bob Trinchero: son of Sutter Home Winery's co-founder, Mario Trinchero, Bob Trinchero developed the idea to create a white wine from the red Zinfandel grape, which, given its commercial success, saved many of California's Zinfandel vines from being uprooted or abandoned

AMERICAN VITICULTURAL AREAS

The place-of-origin, or appellation, system used in the United States is quite different from the appellation system of Europe. Unlike European appellations, there are no rules regarding approved grape varieties, minimum or maximum crop yields, planting densities, or

vinification techniques that must be followed in order to be permitted to use the place-name. This is not to say that place-names are unimportant in the United States, but simply that they do not dictate a specific style of winemaking.

The TTB maintains the list of defined areas that may be used to describe the place of origin of a wine. At a general level, a place of origin may be defined along political boundaries such as the entire country, a single US state, multistate (three maximum), a single US county, or multicounty (three maximum).

However, while such areas are acceptable, these political units are usually too large and too arbitrarily drawn to adequately identify a unique winegrowing region of distinction. For that reason, US wine law has a procedure for delineating areas that have unifying viticultural characteristics regardless of where they fall relative to political boundaries. These areas are called *American Viticultural Areas*, or AVAs.

There is no maximum or minimum size for an AVA; they vary from as small as one-quarter of a square mile to as large as several thousand square miles—the latter creating an AVA of dubious usefulness. It is not uncommon for AVAs to nest one within another or to partially overlap. In such cases, the smaller AVAs would be expected to produce wines of greater distinction than the larger ones. As of December 2022, 267 distinct AVAs had been approved in over 30 different states; of these, 147 are in California (and these numbers are sure to increase in the future).



Figure 16–3: US Capitol Building

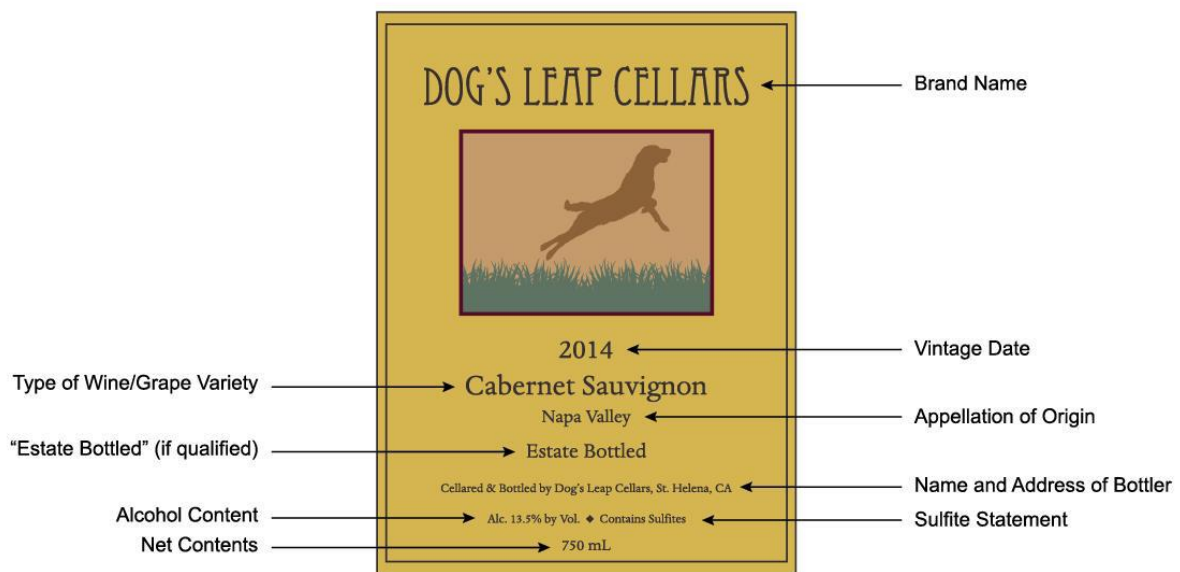


Figure 16–4: American wine label

US WINE LABELING LAWS

Beyond regulating the distribution of wine and approving AVAs, the TTB is also responsible for ensuring that wine labels meet federal labeling laws. Specifically, all wine labels in the United States, whether for wine made in America or imported from another country, require these elements:

A brand name

The class or type of wine (although this may be implicit rather than explicit)

The alcohol content

The name and address of the bottler or importer

The place of origin (country or more specific) for all imports or if a vintage date is included on the label

The net contents (volume) of the bottle

A sulfite statement (in almost all cases)

A health warning

Additional items that may appear on a wine label include the following:

- Vintage date
- Grape variety (or varieties)
- Appellation of origin
- The term “estate bottled”
- Optional information about the wine, the winery, or related subject matter
- Label art

The brand name, class/type of wine, and alcoholic content must appear on the brand label. The other items may also appear on the brand label or may be printed on one or more separate labels. For example, a small vintage label may be affixed to the bottle neck, avoiding the requirement to reprint new labels every year if nothing changes apart from the vintage date. The brand label and a second, informational label are sometimes called the front and back labels, respectively, but this can be confusing because many wineries put all of the mandatory information on a minimalist “front label” and then

make the back label more visually appealing; these wines are inevitably shelved with the “back label” facing forward.

Brand Name

Usually the most prominent word(s) on a label, the brand name may be the name of the producing winery, a certain product line from a large producer, or a proprietary name that identifies the wine.

Wine Class or Type

The label must include some indication of the *kind* of wine contained within. For most wines, this requirement is satisfied by citing a grape variety or an appellation on the label. In other instances, the label must specify one of the TTB-designated classes or types of wines, such as “table wine,” “sparkling red wine,” or “fruit wine.”

Semi-Generic Names

In (and before) the 1900s, European placenames were often used to describe American-made wines produced in a comparable style. This practice was commonplace throughout the wine-producing world over a century ago. However, in recent times, the US government has agreed to ban the use of many such placenames on American-made wines. For example, US wines cannot be labeled “Rioja” or “Bordeaux,” regardless of the style of wine or grape varieties used.

However, a number of other European place-names, including Chablis, Burgundy, Chianti, Port (but not Porto), and Madeira, are considered by the US to be *semi-generic* names, meaning that although they clearly refer to European wine regions, they have been used outside of those regions for so long that they have lost their explicit reference to the original wine zone. These names may be used on US wine labels provided a US geographic term is also used, for example, “American Chablis” or “California Port Wine,” and only if the labels were approved prior to March 2006. The European Union will not allow such wines to be imported, but there remains a large market for these wines in the United States. Since the signing of the US–European Community Trade in Wine Agreement, new applications for the use of these terms will not be accepted nor

approved by the TTB for use on wine labels.

Similarly, for years *Champagne* was one of the TTB's semi-generic names, and sparkling wines that had been using the term on their labels (such as *California Champagne*) prior to 2006 may still use that designation. However, no labels submitted to the TTB after that point have been or will be approved for use of the term.

Alcohol Content

The alcohol level of a wine is provided in percentage by volume and usually falls in the range of 11% to 15%. Some styles of wine have lower alcohol levels; fortified wines have higher levels. For wines of 14% alcohol or less, the designation "table wine" may be used in place of giving an exact percentage.

If a percentage *is* stated, the TTB allows a variance of plus or minus 1.5% between the declared and the actual alcohol content; the allowed variance for wines with more than 14% abv is plus or minus 1%. This is a convenience for large wineries that produce millions of gallons of wine each year. As alcohol content may vary from batch to batch, this variance allows them to avoid printing new labels for each batch. The winery may also choose to disclose the exact level of alcohol on the label, as is often done with vintage-dated wines.

Name and Address of Bottler

The label must name the person or company that has ultimate control over the content of the wine. This may be the bottler (loosely defined, since the wine may come in a box or other container) or, for foreign wines, the importer. In most cases, the bottler is the winery that made the wine; in others, it is a wine merchant or négociant who bought bulk wine for blending and bottling.

Phrases preceding the words "Bottled by" on the label can indicate what involvement the bottler had in making the wine. Maximum participation, from growing the grapes to making the wine, is indicated by the phrase "Grown, produced, and bottled by." Wines from a négociant might have a label that reads, "Blended, cellared, and bottled by."

Country of Origin

The label must always specify the wine's country of origin if the wine has been imported to the United States or if the label includes a vintage date. Sometimes, this will be clearly stated ("American Wine" or "Product of Chile"). Other times, it will be implied by reference to a more precise area ("Napa County" or "Brunello di Montalcino").

For wines identified by country of origin only (nothing more specific, such as a state or an appellation), US wine law requires only 75% content from the stated country; this means that "American Wine" may contain up to 25% foreign bulk wine. In the rare case of a wine with less than 75% content from any one country, the exact percentages from each country need to be stated. However, other countries may require a greater percentage of grapes to come from the stated place of origin, so these will likely exceed the 75% minimum.

Net Contents

The label's net contents statement lists the volume of wine contained in liters or milliliters; the equivalent in fluid ounces is optional. A standard bottle is 750 milliliters (25.4 fluid ounces), but several choices—both smaller and larger—are acceptable. Permitted variances are specified for each bottle size. No net contents figure is needed on the label if the bottles themselves have that information embossed on the glass.

Sulfite Statement

Wines containing 10 parts per million or more of sulfur dioxide, which actually encompasses nearly all wines, are required to carry a label statement, such as "Contains Sulfites." Some labels give the name of the actual chemical added, for example, "Contains Potassium Metabisulfite."

Health Warning

All alcoholic beverages sold in the United States, including wine, are required to display the following statements:

1. "GOVERNMENT WARNING: According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects."
2. "Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems."

Wineries are not allowed to rebut or undermine these statements by adding anything to the label that would "suggest a relationship between the consumption of alcohol, wine, or any substance found within the wine, and health benefits." Nor can they refer consumers to "a third party or other source for information regarding the effects on health of wine or alcohol consumption."

Vintage Date

Vintage dating is optional; however, for any wine labeled with an AVA as its place-of-origin, a minimum of 95% of the wine in the bottle must have been made from grapes harvested in the stated year. For all other wines, the minimum requirement is 85%.

Blending a small amount of wine from other years into a new wine allows winemakers to top up barrels or to average out the quality from year to year without significantly changing the character of the primary vintage.

Grape Variety

The basic rules for varietal labeling are as follows:

- If a single grape variety appears on the label, the wine must contain a minimum of 75% of that variety, grown in the appellation of origin cited on the label. Exceptions include the following:
 - The minimum is reduced to 51% for native North American grape varieties of the species *Vitis labrusca*.
 - Oregon has adopted a more stringent definition than federal law, requiring some of its iconic varietals, such as Pinot Noir, Pinot Gris, and Chardonnay, to have a minimum

90% content of the named variety.

- If no one grape variety constitutes 75% of a wine, it can be varietally labeled only if all the varieties are named, along with the percentage each one makes up.

In general, the minimum content for varietal labeling of wines imported into the European Union is 85%, but an agreement between the EU and the United States allows varietally labeled US wines to be exported to the EU with a minimum of only 75%. Nevertheless, some export-oriented wineries adhere to the EU minimum to avoid any possible difficulties.

Meritage

Meritage (rhymes with “heritage”) is a term permitted for use with wines that are made in the style, and with the grape varieties, of the wines of Bordeaux.

The term *Meritage* was coined in 1988 by a group of vintners (the *Meritage Association*) in order to provide a recognizable name for blended wines to be used as an alternative to generic terms such as “table wine” or proprietary names (such as “Opus One” or “Elements”). Only members of the Meritage Alliance (as the group is now known) are entitled to use this term, and there are strict conditions for its use. For instance, a wine labeled as Meritage must be the winery’s most expensive wine of its style, and production cannot exceed 25,000 cases.

A red Meritage must be made with the traditional red Bordeaux varieties and may contain Cabernet Sauvignon, Merlot, Cabernet Franc, Petit Verdot, Malbec, St. Macaire, Gros Verdot, and Carmenère. At least two of the grapes must be used, and no one grape can account for more than 90% of the blend. A white Meritage must be made using Sauvignon Blanc, Semillon, and Muscadelle, with at least two grape varieties in the blend, and a maximum of 90% of any single variety.

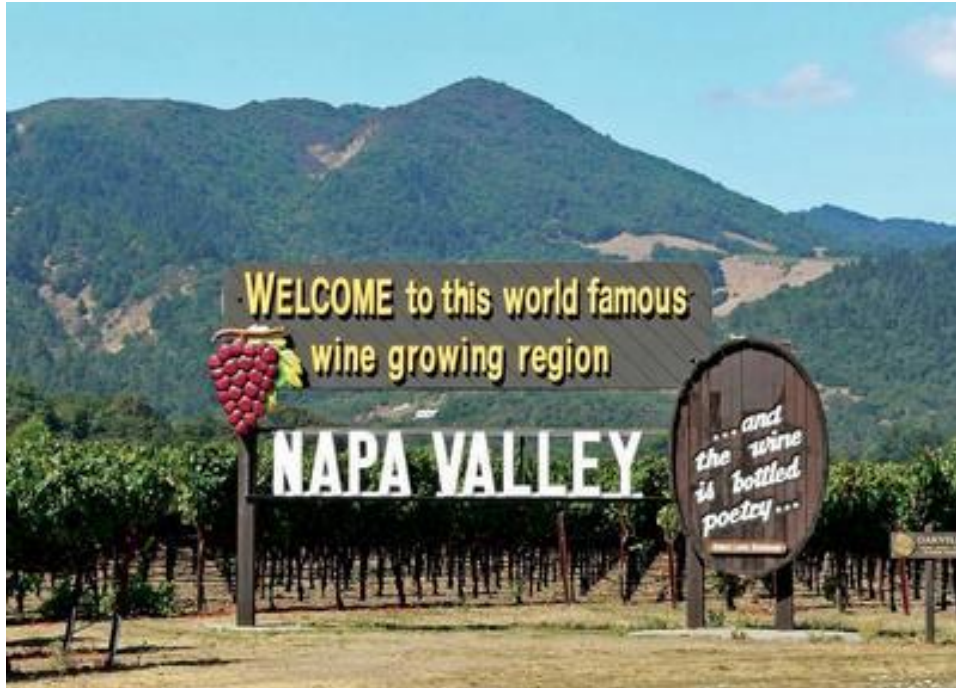


Figure 16–5: The famous sign welcoming visitors to Napa Valley

Appellation of Origin

While the majority of wines are required to indicate their country of origin, most are labeled with a more specific, and therefore theoretically higher-quality, place of origin. In the US, the places of origin for wines form the following idealized hierarchy based on size:

- Country
- State
- County
- AVA
- Vineyard

As in the case of vintage and variety, it is not essential that *all* of the grapes used in a particular wine be grown in the named place; a small proportion from outside the area can be used for blending. In general, for political units (country, state, county), it is sufficient that 75% of the grapes come from that location, although there are three exceptions: the states of California and Oregon both require wines carrying the state appellation to use 100% California or Oregon grapes, respectively; and those wines labeled as being from

Washington State are required to use a minimum of 95% from that state. It is also possible to name two or three contiguous states or counties as the place of origin if the percentage from each one is stated. The standard is tighter for viticultural areas: for AVAs, the minimum content is 85%, and for a vineyard to be named on a label, the minimum is 95%. These rules are summarized in table 16–1.

“Estate Bottled”

The term *estate bottled* on a wine label evokes the château concept of Bordeaux, where a winery is situated in the middle of the vineyards and all of the wine is produced from grapes grown on-site. This may be the case for American estate-bottled wines, too, but sometimes the definition is stretched almost to the breaking point. In the US, the rules are as follows:

- The grapes must come from one or more vineyards owned or leased by the winery.
- The vineyard(s) must be within a single AVA.
- The winery must also be located in that AVA.

Because some AVAs are enormous, the winery and the vineyard could conceivably be separated by many miles. Nevertheless, when a winery is involved in the operation of the vineyards from which it sources its grapes, quality is often more evident.

Optional Terms that Are Not Legally Defined

Unregulated information may be included on a wine label at the discretion of the TTB. Examples include descriptors of the wine’s sensory attributes, recommended serving temperatures, the history of the winery, and technical details about the wine or its production methods. However, the TTB routinely rejects labels that carry misleading information, health claims, or anything considered indecent.

Terms such as “Reserve,” “Special Selection,” and “Old Vines” may also be added. While these terms are generally associated with

wines that are extraordinary in some way, and are often used to differentiate between a company's multiple product lines, they have no legal definition at the federal level.

GEOGRAPHY AND CLIMATE

The North American continent is essentially covered by three countries: Canada in the north, the United States in the center, and Mexico in the south, as well as a handful of small nations south of Mexico. The prime winegrowing latitudes of 30° to 50° north are almost entirely within US territory (on the West Coast, the US ranges from 32° to 49°). The southernmost parts of Canada and northernmost parts of Mexico are also within the temperate climatic zone, where growing quality wine grapes is commercially feasible.

Because the entire country is within the favored latitudes for winegrowing, it might be expected that vineyards would be located all over the United States as they are in Italy and Greece. However, North America is a much larger landmass, and the central part of the country experiences a continental climate with weather extremes that make quality grape growing difficult. This situation is exacerbated in the mountainous West by high elevations.

Complex global air circulation patterns result in frequent rain in the exposed coastal areas of the Pacific Northwest, while down the coast the air gets progressively drier. The West Coast has a series of rugged mountain ranges that parallel the shoreline, including the Coast Range in California and Oregon, and the Cascades in Oregon and Washington. These mountains form a significant barrier to ocean air, producing a distinct line between the wetter coastal areas and the very dry interior zones. Furthermore, the same air circulation patterns cause ocean currents to move southward along the West Coast, bringing cold Arctic water down as far as Mexico and keeping the coastal areas much cooler than the interior of the country.

On the East Coast, the opposite air circulation flow has a tendency to push air and water northward from the subtropical Caribbean. This brings warm, very humid air and the warm waters of the Gulf Stream up from the south. With no mountains along the coast to provide a barrier, this humid air penetrates the Eastern Seaboard and produces ideal conditions for plant diseases and fungi to develop in the summertime, making viticulture much more challenging than it is on the West Coast. This problem limits the choices of grape varieties and raises the cost of grape growing on the East Coast.

US GRAPE VARIETIES

Native American Grape Varieties and Hybrids

When Norse explorers at the beginning of the eleventh century first visited North America, they named their discovery Vinland because of the wild grapevines they found growing there. However, these were not the *vinifera* wine grapes of Europe but various other species that had evolved somewhat different characteristics, making them far from ideal for wine production. Much later, when the English colonists tried making wine from these native American grapes, they found that there was a strong, unusual flavor component to the wine, which was unappealing to some. The grapes, of the species *labrusca*, were known as “fox grapes,” and the flavor was described as “foxy.” They were also extremely acidic.

Native American grapes continued to be used for winemaking since there was no alternative. The *vinifera* vines imported from Europe did not survive transplanting in America, primarily due to phylloxera and secondarily to disease, although these causes had not yet been identified. Various viticulturists investigated thousands of individual grapevines and helped to propagate the most satisfactory ones for winemaking.

These native American grapes included Catawba, Delaware, Niagara, and Concord. There is speculation that these may have had one or more *vinifera* ancestors, presumably from random propagation of

native grapes with unsuccessful plants from an early vinifera vineyard, and so they are sometimes referred to as native American hybrids. Their overwhelming characteristics, however, are those of labrusca vines. Native American grapes of other species include Norton and the more distantly related muscadine grape Scuppernong. All of these varieties continue to be used to make wine today in the eastern and midwestern US, and most are also grown for use in grape juice and as table grapes.



Figure 16–6: Concord grapes

Once it was discovered that phylloxera was responsible for the destruction of the early American vinifera plants as well as those in vineyards throughout Europe, the native American species took on a new role as saviors of the world's vinifera vineyards. Native American species had evolved and adapted to coexist with phylloxera. Viticulturists used these resistant vines to combat the phylloxera blight in two ways. The first was to hybridize native American grapes and vinifera, with the goal of developing phylloxera-resistant vines that produced fruit with a vinifera flavor profile. That goal was never completely achieved, but botanists in France developed many varieties that came close, such as the white Seyval Blanc and Vidal Blanc, and the red Chambourcin. These French-American hybrids were a temporary solution to the phylloxera problem in France, but

they became very popular in the eastern United States, where they represented a step up in quality from the native American varieties.

The second manner in which native North American grape varieties were used to neutralize the phylloxera threat was through grafting. It was discovered that the rootstock of an American grapevine could successfully be grafted with the upper end, or scion, of a vinifera vine. The graft would take root and grow into the lower trunk of the new vine, while everything above it, including the fruit, would remain 100% vinifera. This method proved to be the answer that viticulturists sought, and most vinifera vines the world over are grafted onto American rootstock today. The choice of exactly which native American vine is used for the rootstock allows the grape grower to control the vine's rate of growth and to pair the vine to the specific soil and climate to which it is best adapted.

Table 16–1: Requirements for Use of Designations on US Wine Labels

REQUIREMENTS FOR USE OF DESIGNATIONS ON US WINE LABELS							
LABELING TERM	Grape Variety	Vintage	Appellation of Origin				
			Country	State	County	AVA	Specific Vineyard
Examples	Chardonnay	2009	Australia; France	New York; Michigan	Napa County; Yamhill County	Chalk Hill; Napa Valley	Bien Nacido Vineyard
MINIMUM CONTENT	75% (of named grape variety)*	85% 95% if labeled with an AVA	75%	75%**	75%	85%***	95%
* Oregon requires a minimum of 90% for key varieties, e.g., Chardonnay and Pinot Noir. **California and Oregon require 100%; Washington State requires 95% ***Oregon requires 95%							

Vinifera Grape Varieties

The majority of the wine made in the United States is produced using vinifera grape varieties originally brought into the country from Europe. For the most part, these are selected from among the dozen or so prominent international varieties, such as Chardonnay and

Cabernet Sauvignon, that have been shown to produce excellent wine in many different locales. However, some vines were imported so long ago that it is not always clear what varieties they were.

For instance, research in recent years has determined that Zinfandel is identical to the native Croatian grape known as Crljenak Kaštelanski (Tribidrag), and that a Long Island grape grower named George Gibbs brought the variety to his nursery in the 1820s. By the year 1829, the name *Zinfardel* was being used, which later, after several permutations, morphed into *Zinfandel*. The meaning and etymology of the name remain a mystery. Likewise, Petite Sirah is now known to be the same grape as *Durif*, a natural Syrah × Peloursin cross that—in the 1860s—occurred by chance in the nursery of a French botanist by the name of Francois Durif.

As part of the wine labeling regulations in the US, the TTB maintains a list of grape varieties that are approved as type designations for American wine. The list currently includes more than 300 grape names, as well as 47 that are pending approval. Within this list, some grapes are considered identical, with the following grape names among those approved as synonyms:

- Fumé Blanc for Sauvignon Blanc
- Mataro and Monastrell for Mourvèdre
- Muscat Canelli for Muscat Blanc
- Pinot Grigio for Pinot Gris
- Shiraz for Syrah
- Valdepeñas for Tempranillo
- White Riesling for Riesling
- Durif for Petite Sirah
- Garnacha for Grenache
- Ugni Blanc for Trebbiano

Grape name synonyms that are no longer permitted for use on American wine labels include the following:

- Gamay Beaujolais (previously used for Pinot Noir or Valdiguié)

- Johannisberg Riesling (previously used for Riesling)
- Napa Gamay (previously used for Valdiguié or Gamay)

CALIFORNIA

California is by far the largest wine producer of the fifty US states. It contains about 80% of the vineyard acreage in the country and produces more than 81% of the wine. According to the California-based Wine Institute and the California Association of Winegrape Growers, the California wine industry has an annual impact of more than \$61 billion on the state's economy and \$121 billion nationally.

The state is ideally suited for viticulture with ample sunshine, mild winters, generally low humidity, and a Mediterranean climate that rarely brings any rainfall or even clouds in the summer or during harvest season.

Areas in the north and right along the coast can be too cool for significant grape growing, while sheltered interior valleys can get excessively hot during the summer, but there are many inland parts of the state that receive cooling sea breezes that moderate the heat and provide perfect growing conditions. In particular, high-quality wine regions are found between Santa Barbara and Mendocino Counties inland from breaks in the coastal mountain ranges.

MAJOR WINEGROWING AREAS OF CALIFORNIA

As of December 2022, California has 147 AVAs. Five of these are broad regional AVAs that collectively encompass most of the other smaller appellations. These AVAs are as follows:

- North Coast: encompasses all or part of Napa, Sonoma, Mendocino, Lake, Marin, and Solano counties—all of which are located north of San Francisco Bay
- Sierra Foothills: in the Sierra Nevada Mountains east of Sacramento
- San Francisco Bay: covering the area from San Francisco and

Oakland south to Santa Cruz (overlaps a portion of the Central Coast AVA)

- Central Coast: takes in the Pacific coast counties between Oakland and Santa Barbara
- South Coast: below Los Angeles

These five “super-AVAs” are defined only loosely by climate and geology; their primary purpose is to allow grapes from several distant quality wine regions to be blended and still qualify for AVA and estate bottled status.

Meanwhile, the majority of California’s grapes, used mostly for table grapes, juice, and raisins, but also for a considerable amount of wine, are grown in the Central Valley, particularly the San Joaquin Valley south of Sacramento. Comprising nearly 300,000 acres (121,400 ha), this is the largest vineyard acreage in the state, yet it does not fall under any of the super-AVAs.

NAPA COUNTY

Napa County, in particular the Napa Valley AVA and its sub-appellations, is the best-known US wine region. For the most part, this reputation has been built on the strength of Napa Valley’s powerful Cabernet Sauvignons and Cabernet-led Bordeaux-style blends. These outstanding wines are produced by large, well-established wineries as well as by numerous small boutique wineries that have achieved “cult” status, with demand far exceeding the supply, even at sky-high prices.

Grapes have been grown in Napa since the 1830s, and the first winery in the valley was established in the 1860s. There are now more than 400 wineries in the county. At 45,000 acres (18,200 ha), Napa is the third largest California county in terms of wine grape acreage planted, after San Joaquin and Sonoma. The area contains almost a tenth of the state’s vineyards by acreage, but because vineyard yields are kept low, the county’s wine production is just 4% of the state total by volume.

Geography and Climate

Napa County lies north of San Pablo Bay, an upper extension of San Francisco Bay, with the Napa River generally running north to south the length of the county. The Napa Valley itself is a very narrow valley, flanked by mountain ranges on either side that separate the valley from Solano County to the east and Sonoma County to the west. For the most part, these mountains protect the valley proper from the cold air coming off the Pacific Ocean, keeping the valley warm and sunny throughout most of the growing season. However, the Mediterranean climate does show some variation within the valley because of its geography.

Main Wine Growing Regions of California



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Figure 16–7: California wine regions

In terms of climate, the most important feature in Napa is the air that works its way north off the chilly waters of San Pablo Bay. The high pressure and heat of California's interior pulls cool air off the bay, bringing frequent morning fogs and keeping the southern part

of the county significantly cooler than the valley farther north.

During the morning, the valley floor is blanketed in fog (which burns off later in the day) while the hillsides are generally warmer, since they sit above the fog. Once the fog has burned off, however, the hillsides are generally cooler than the valley floor due to their elevation. Similarly, high-elevation vineyards in the mountains generally have cooler days and warmer nights than those on the valley floor.

Napa also varies from the west to the east. The eastern side of the valley is drier and warmer because it is a farther distance from the ocean, while the western appellations are subject to cooler temperatures and greater oceanic influence.

Grape Varieties

About three-quarters of Napa County's total acreage is devoted to red varieties. Cabernet Sauvignon is by far the leading grape variety, followed by Merlot and Pinot Noir. Chardonnay and Sauvignon Blanc are the most widely planted white grapes. A wide range of well-known grapes—including Zinfandel, Cabernet France, Petite Sirah, and Malbec—are planted throughout the area, but all other varieties are minor players by comparison with the more than 22,000 acres (8,900 ha) dedicated to Cabernet Sauvignon. The diversity of terroir, as discussed above, influences which grapes are grown where throughout the valley.

Napa Appellations

Napa County is one of the counties included in the North Coast AVA. Within the county itself, there are 17 AVAs, including the Napa Valley AVA, which itself covers the majority of the land in the county—aside from Lake Berryessa and some surrounding areas. The majority of Napa's vineyards are located in the western half of the county.

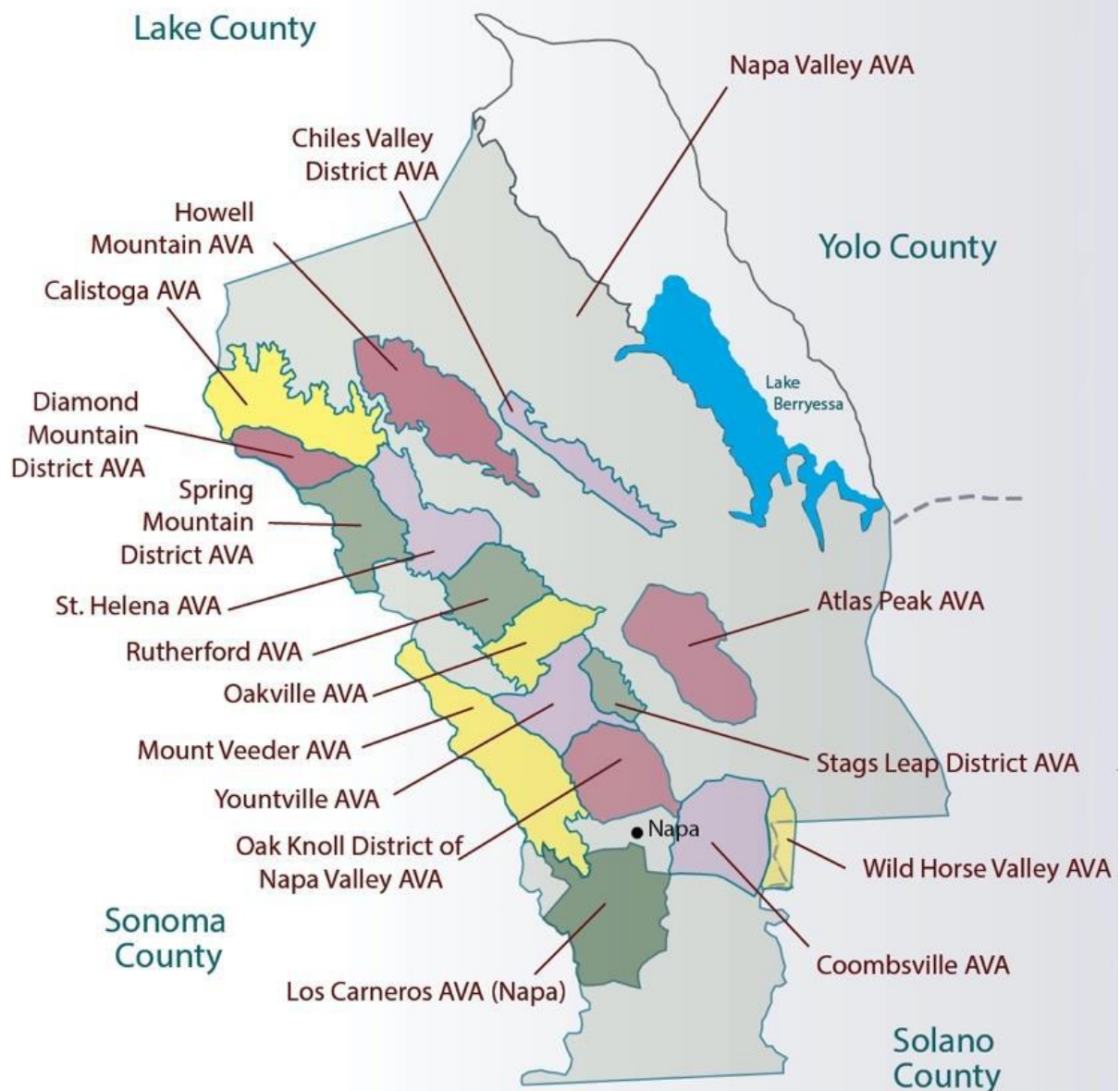
The heart of the Napa Valley, stretching north from the city of Napa, includes those appellations that are often referred to as the "valley floor appellations" of Napa. This is prime Cabernet Sauvignon territory and home to the majority of the county's most famous

wineries, with vineyards planted along both sides of the Napa River and up into the hillsides. Appellations in this central part of Napa include the following:

- **Calistoga AVA:** Calistoga is one of the warmest (and northernmost) AVAs of Napa. Summertime temperatures can reach 100°F (38°C) in the summer—but the proximity to the Chalk Hill Gap can bring cooling breezes in the evenings. Principal varieties include Cabernet Sauvignon, Zinfandel, Syrah and Petite Sirah.
- **St. Helena AVA:** St. Helena is a warm area—summertime temperatures can reach the mid-90s°F (34–36°C). This area experiences less fog, less wind, and more heat retention due to the narrowing of the valley floor. In addition to its plantings of Cabernet Sauvignon, St. Helena is planted to Merlot, Cabernet Franc, Zinfandel, and several white varieties.
- **Rutherford AVA:** Rutherford, a moderately warm area known for its “Rutherford dust,” is home to a unique soil type and climate, resulting in wines with firm tannins. This area is largely planted to Cabernet Sauvignon, Merlot, Cabernet Franc, and Sauvignon Blanc.
- **Oakville AVA:** Oakville is a fairly warm area with a good deal of moderating influence from the night and early morning fog. Leading grapes include Cabernet Sauvignon, Cabernet Franc, Merlot, and Sauvignon Blanc.
- **Yountville AVA:** Yountville is a moderate climate area influenced by morning fog and the strong breezes off of San Pablo Bay. Afternoons here are typically cooler than those located farther north in the valley.
- **Stags Leap District AVA:** Stags Leap District is a moderately warm area, somewhat cooled by afternoon winds. The bare rocks of Stags Leap itself and the surrounding hills radiate warmth, meaning that mid-summer temperatures can reach as high as 100°F (37.7°C), but typically remain in the mid-90s (34° to 36°C).
- **Chiles Valley AVA:** Chiles Valley is located somewhat to the

east of the valley floor appellations and extends into the hillsides of the Vaca Mountains. Summer days are fairly warm, but the vineyards at the higher elevations (which go as high as 1,200 feet [366 m]) get quite chilly at night.

AVAs of Napa County



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Figure 16–8: Napa County Wine Regions

The southern section of the county, due in part to its proximity to San Pablo Bay, experiences a somewhat cooler climate. Appellations in this area include the following:

- **Oak Knoll District of Napa Valley AVA:** Oak Knoll has a cool, well-balanced climate with a good deal of marine influence and fog that often remains until late-morning. Chardonnay is a leading grape variety, as well as Merlot, Cabernet Sauvignon, Pinot Noir, and Riesling.
- **Coombsville AVA:** This is one of the cooler areas of Napa, located very close to San Pablo Bay. Daytime temperatures in the summer can be as many as ten degrees (F) lower than most other Napa AVAs. Due to the morning fog and humidity, a portion of this area allows for the development of botrytis.
- **Carneros/Los Carneros AVA:** Carneros, shared with Sonoma County and located to the south (and extending to the east) of Oak Knoll, is one of the coolest regions of Napa. Carneros is planted mainly with Chardonnay and Pinot Noir, some of which go into the county's sparkling wines.
- **Wild Horse Valley AVA:** This region, located close to San Pablo Bay and shared with Solano County, is another of the coolest areas of Napa. Chardonnay and Pinot Noir are the main grape varieties.

Napa's higher-elevation appellations include those located in the Mayacamas Mountains to the west of the valley (along the border with Sonoma County), as well as a few located in the Vaca Mountains to the east. These include the following:

- **Mount Veeder AVA:** This is a cool-to-moderate climate area located along the border with Sonoma. Summertime highs average 85°F (29°C). Elevations range from 500 to 2,600 feet (152–192 m) with most vineyards above the fog line.
- **Diamond Mountain District AVA:** This is a moderately warm

climate area, located along the border with Sonoma.

Temperatures in the summer can reach as high as 90°F (32°C) and see less temperature fluctuation than those on the valley floor below. Elevation ranges from 400 to 2,200 feet (122 to 671 m).

- **Spring Mountain District AVA:** This region, located along the border with Sonoma, is cool-to-moderate, depending on elevation and aspect. Typical summertime highs reach 85°F (29°C), and elevation ranges from 600 to 2,600 feet (183–792 m).
- **Howell Mountain AVA:** Howell Mountain is located above the fog line on the eastern side of the valley. This is the only appellation in Napa that is elevation-specific, with the boundaries drawn at the 1,400 foot (425 m) contour, while central portions of the AVA reach up to 2,400 feet (730 m) in elevation. Principal grape varieties include Cabernet Sauvignon, Merlot, Zinfandel and Viognier
- **Atlas Peak AVA:** The Atlas Peak AVA is located on the eastern side of the county in the Vaca Range and with vineyards planted at 760–2,600 feet (232–792 m) above sea level. Summer temperatures rarely reaching above 90°F (32°C). Cabernet Sauvignon and Chardonnay are the main grape varieties planted in the Atlas Peak AVA.

LEADING GRAPE VARIETIES OF NAPA VALLEY	
Red Grapes	White Grapes
Cabernet Sauvignon	Chardonnay
Merlot	Sauvignon Blanc
Pinot Noir	Semillon
Zinfandel	Pinot Gris/Grigio
Cabernet Franc	Muscat
Petite Sirah	
Syrah	
Petit Verdot	
Malbec	

Figure 16–9: Leading Grape Varieties of Napa Valley

SONOMA COUNTY

Sonoma County is somewhat less widely known internationally than Napa, but it is generally considered Napa’s equal in terms of quality wine production. It is not as centralized as Napa and is more diverse in terms of terroir, which contributes to its less prominent identity and, many believe, to its charm.

Sonoma’s commercial wine industry began in the 1850s, with quality vinifera grape varieties introduced to the area in the 1860s. It has remained at the forefront of wine production ever since, even during Prohibition, and now has about one-eighth of the state’s acreage under vine.

Geography and Climate

As a county with 60 miles (96 km) of coastline, Sonoma is more strongly influenced by the ocean than are more inland areas like Napa, and the immediate coastal zone is a marginal winegrowing region. However, the coastal ridges that parallel the shoreline either block or channel the fog and keep a barrier between the cold ocean water and the majority of the vineyard areas of Sonoma. Areas where sea breezes penetrate—most notably, the gap where the Russian River breaks through the coastal range—are the coolest parts of the county, whereas the warmest climate is found in the northeast corner, furthest from these moderating influences.

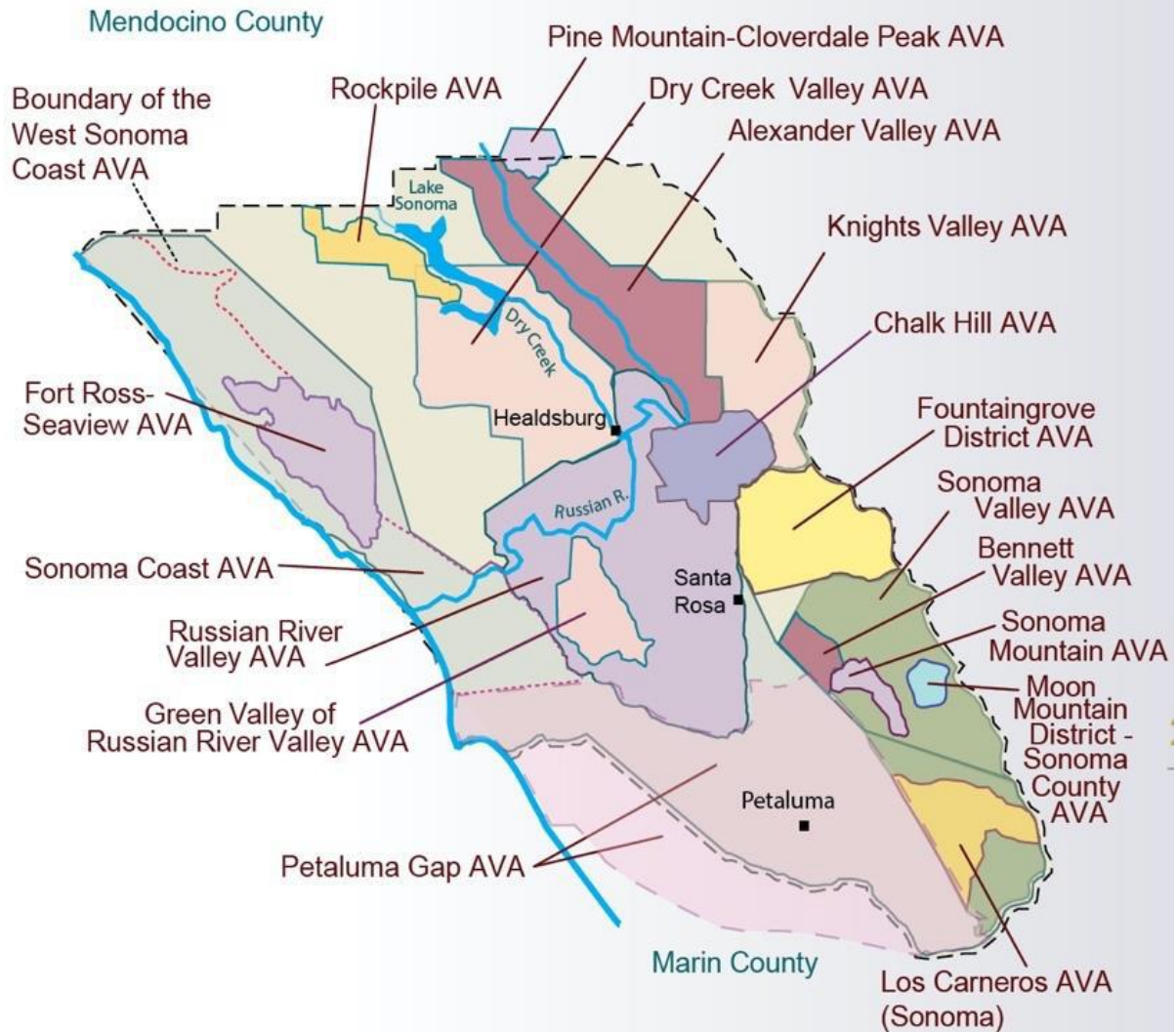
Grape Varieties

About two-thirds of Sonoma's wines are red, with Pinot Noir and Cabernet Sauvignon as the leading red varieties. Merlot and Zinfandel are also important red grapes. The single most widely planted variety, however, is Chardonnay, which accounts for 80% of the county's white wines.

Sonoma Appellations

The AVAs of Sonoma cover a larger area than the AVAs of Napa, and there is no one single AVA covering the majority of the county. Sonoma's AVAs are more like overlapping pieces of a puzzle.

AVAs of Sonoma County



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Figure 16–11: Sonoma County wine regions

The Sonoma Coast AVA: This area covers a large swath of the county's coastline and is heavily influenced by the nearby ocean. The Sonoma Coast AVA has an exceptionally cool climate and a high degree of rainfall—even relative to other parts of Sonoma. The area runs parallel to the Pacific Ocean from San Pablo Bay to the border with Mendocino County. Pinot Noir, Chardonnay, and cool-climate

Syrah are the leading grapes and wines produced here. At nearly 500,000 acres (202,300 ha), it makes sense that the Sonoma Coast AVA contains many microclimates, as defined by the numerous mountain ridges, hills, and valleys that make up the area. The Sonoma Coast AVA has three sub-appellations, as follows:

- **Fort Ross-Seaview AVA:** In 2011, the Fort Ross–Seaview AVA was carved out within the northern portion of the Sonoma Coast AVA. Vineyards within this steep, mountainous region are generally planted at elevations of 800 to 1,800 feet (244 to 550 m) above sea level.
- **Petaluma Gap AVA:** Approved in 2017, the Petaluma Gap AVA covers the southern portion of the Sonoma Coast AVA and extends into the northern part of Marin County. The namesake Petaluma Gap—a geological feature known as a *wind gap*—is actually a 15-mile-wide area of low-lying hills that creates something of an opening in the otherwise much taller coastal mountains. This feature allows for almost-daily, west-to-east afternoon breezes that range from 8 to 20 miles an hour and cool the area. The Petaluma Gap is largely planted to Pinot Noir, Chardonnay, and Syrah.
- **West Sonoma Coast AVA:** The West Sonoma Coast AVA hugs the rugged coastline of Sonoma County and exhibits an overall cool, maritime climate. This area—which includes the Fort Ross-Seaview AVA—is largely defined by the steep mountains and ridgelines of the Sonoma Coast Highlands/California Coast Range.

The Russian River Valley AVA: The Russian River Valley, located in the county’s center (inland of the Russian River’s cut through the coastal range) is another cool-climate region. Although warmer than the coast, these lower-temperature areas are influenced by the maritime air and morning fogs, making them ideal for Pinot Noir and Chardonnay—produced in both still and sparkling versions. Single-vineyard wines are also highly prized in these areas. This region has two sub-appellations:

- **Green Valley of Russian River Valley:** The Green Valley of Russian River Valley sub-appellation is one of the smaller AVAs of Sonoma County and considered to be the most consistent in terms of its cool, foggy climate and sandy soils.
- **Chalk Hill AVA:** The Chalk Hill AVA, also within the Russian River Valley AVA, takes its name from the chalky appearance of the area's volcanic white soils. The Chalk Hill AVA, which is slightly warmer than the surrounding areas, is well-known for robust Chardonnay and Sauvignon Blanc.

The Sonoma Valley AVA: The Sonoma Valley AVA covers a thin stretch of land located between the Sonoma Mountains to the west and the Mayacamas Mountains to the east. The mountains to the west block much of the cooling influence coming from the Pacific Ocean; however, the AVA lies in the watershed of Sonoma Creek—which drains into San Pablo Bay and allows for the cooling effects and fog of the bay to penetrate inland. The Sonoma Valley AVA has several sub-appellations:

- **Sonoma Mountain AVA:** The Sonoma Mountain AVA is a small but diverse area located in the hills to the east of the Sonoma Valley. Many of the vineyards are planted above the fog line and on east-facing slopes, making for long days of full sun. Other vineyards are planted in the valleys with varying levels of sun—as such, this small area is planted to a wide range of grape varieties.
- **Bennett Valley AVA:** The tiny Bennett Valley AVA is located in a valley just to the north of the Sonoma Mountain AVA. Surrounded by hills, this is one of the cooler areas of the Sonoma Valley.
- **Moon Mountain District Sonoma County AVA:** This area is located along the western slopes of the Mayacamas Mountains, on the border between Napa and Sonoma. This mountainous area is unique due to its red, rocky, and iron-rich volcanic soils.
- **Carneros/Los Carneros AVA:** This cool-climate area, shared between Napa and Sonoma Counties, is influenced by both San

Pablo Bay and the Petaluma Gap—both of which allow for coastal breezes to penetrate inland. The main products here are Chardonnay, Pinot Noir, and sparkling wines.

LEADING GRAPE VARIETIES OF SONOMA COUNTY	
Red Grapes	White Grapes
Pinot Noir	Chardonnay
Cabernet Sauvignon	Sauvignon Blanc
Zinfandel	Pinot Gris/Grigio
Merlot	Viognier
Syrah	Semillon
Petite Sirah	
Cabernet Franc	
Malbec	
Sangiovese	
Petit Verdot	

Figure 16–10: Leading Grape Varieties of Sonoma County

The inland areas: In the inland areas to the north of the Sonoma Valley AVA, the average temperatures steadily rise, and these regions typically experience much warmer climates than those closer to the waters. Sonoma’s inland AVAs include the following:

- **Dry Creek Valley AVA:** The Dry Creek Valley AVA is considered to be one of the best areas in California for Zinfandel—which has been cultivated continuously in the region for over 100 years. Just two miles wide, Dry Creek Valley is located on

the southern edge of Lake Sonoma and follows Dry Creek (a tributary of the Russian River). The area's signature wine—its rich, flavorful Zinfandel—is typically grown on the hillsides alongside Merlot and Cabernet Sauvignon; the slightly cooler valley floor is known for Sauvignon Blanc as well.

- **Rockpile AVA:** The Rockpile AVA, located on a high ridge above Lake Sonoma, is a sunny, mountainous area. Vineyards are planted at elevations up to of up to 1,900 feet (580 m). Like its neighbor-to-the-south, Dry Creek Valley, Rockpile is best known for rich, intensely colored Zinfandel.
- **Alexander Valley AVA:** The Alexander Valley AVA stretches along a southeasterly-flowing section of Russian River for close to 20 miles (33 km). Vineyards are planted on both sides of the river and into the foothills of the Mayacamas Mountains. This is one of the warmer parts of Sonoma and is well-known for vibrant, fruit-driven Cabernet Sauvignon.
- **Knights Valley AVA:** The Knights Valley AVA, located along the border with both Napa and Lake Counties, is planted mainly to Cabernet Sauvignon. This is a warm region consisting of several miles of mountainous terrain with well-drained soils and abundant sunshine.
- **Pine Mountain/Cloverdale Peak AVA:** The Pine Mountain-Cloverdale Peak AVA is shared between Sonoma and Mendocino Counties. Located in part on the slopes of Pine Mountain itself, it is one of the highest elevation grape-growing regions in California with vineyards ranging from 1,600 to 3,000 feet (488 to 914 m) above sea level.
- **Fountaingrove District AVA:** The Fountaingrove District AVA, approved in early 2015, lies just to the north of the Sonoma Valley AVA in the area between the Sonoma Coast AVA and the Napa Valley AVA. Most of the vineyards in the area are located in the foothills of the Mayacamas Mountains—some as high as 2,000 feet (700 m) above sea level.



Figure 16–12: Smudge pots used to warm the vineyards in case of freeze

The Northern Sonoma AVA: The large Northern Sonoma AVA encompasses most of the other Sonoma AVAs, with the exception of the area covered by the Sonoma Valley and Carneros AVAs in the far south/southeast of the county. This large AVA allows much of the wine grown and produced within the boundaries of Sonoma County to use an AVA as its place of origin, and in many cases also qualifies the wine to use the term “estate bottled” on the label.

MENDOCINO COUNTY

The area around Mendocino County, north of Sonoma, is mostly mountainous and forested, with much of the land not suitable for viticulture. The 17,000 acres (6,900 ha) of vineyards that do exist within the county are generally confined to river valleys, with 25% growing certified organic grapes.

Within the broad Mendocino AVA is the Anderson Valley AVA, one of the coolest winegrowing areas of California. This long, narrow valley in the south-central part of the county has a marginal climate that

has proven excellent for Pinot Noir and sparkling wine production. Although planted in smaller quantities, aromatic white grapes such as Riesling, Gewürztraminer, and Pinot Gris also produce wines that are highly regarded.

The Mendocino Ridge AVA is unique in that it is noncontiguous, as only the areas at elevations of 1,200 feet (366 m) above sea level or higher are included. As such, this appellation is often referred to as “Islands in the Sky.” Because of its location above the fog line, the vines receive plenty of cool-climate sunshine. Much of the area in this AVA is steep-sloped and covered with forests; currently just over 250 acres (101 ha) of the region’s total 250,000 acres (101,170 ha) are planted to vines. New plantings are largely Pinot Noir, but the region maintains some old vine Zinfandel, which creates some of the most distinctive Zinfandels in the state.

Most of the other vineyards of Mendocino lie along the eastern side of the county, connecting with adjacent Lake County. This relatively flat land in the watershed of the Russian River is well protected from maritime influence by the coastal mountains and therefore can get quite hot in midsummer, but it has cool nights. This wide diurnal variation permits grapes to reach full maturity while retaining vibrant acidity. Cabernet Sauvignon, Zinfandel, Petite Sirah, and Rhône varieties can be found here.

Mendocino County is home to the smallest AVA within California—the Cole Ranch AVA. Named after Ohio native John Cole, who planted the first vines in the area in the 1970s, the tiny appellation sits between the Russian River (to the east) and the Anderson Valley (to the west). The AVA’s 60 acres (24 ha) of vines are largely planted to Cabernet Sauvignon, Merlot, Pinot Noir, and Riesling.

LAKE COUNTY

Located at the intersection of the Vaca and Mayacamas Mountains, Lake County is only 10 miles (16 km) from Calistoga, yet the drive along the winding roads takes an hour. The county contains one of

the oldest geological lakes within the United States and is the largest geothermal field in North America. The presence of Clear Lake buffers the temperature, permitting grape growing despite the county's inland locale. Young volcanic soils provide extremely good drainage throughout the county.

The average elevation of Lake County's vineyards is 1,500 feet (460 m), with some areas reaching up to 3,000 feet (915 m) above sea level. The high elevation coupled with good air quality (the purest in California, according to the Environmental Protection Agency) maximizes the solar potential, resulting in higher levels of ultraviolet light. Consequently, the grapes develop thicker skins and higher levels of anthocyanins, polyphenols, and tannins, as well as lower levels of pyrazines. Moreover, there is low relative humidity and great diurnal swings, the latter of which prevent heat retention and promote good acid retention.

Cabernet Sauvignon is the most widely planted grape in Lake County, followed closely by Sauvignon Blanc. Merlot, Zinfandel, and Chardonnay are also represented. Lake County currently has eight designated AVAs:

- Clear Lake AVA
- Benmore Valley AVA
- High Valley AVA
- Red Hills–Lake County AVA
- Big Valley District–Lake County AVA
- Kelsey Bench–Lake County AVA
- Guenoc Valley AVA
- Upper Lake Valley AVA

California's Central Coast



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Figure 16–13: California Central Coast wine regions

THE CENTRAL COAST

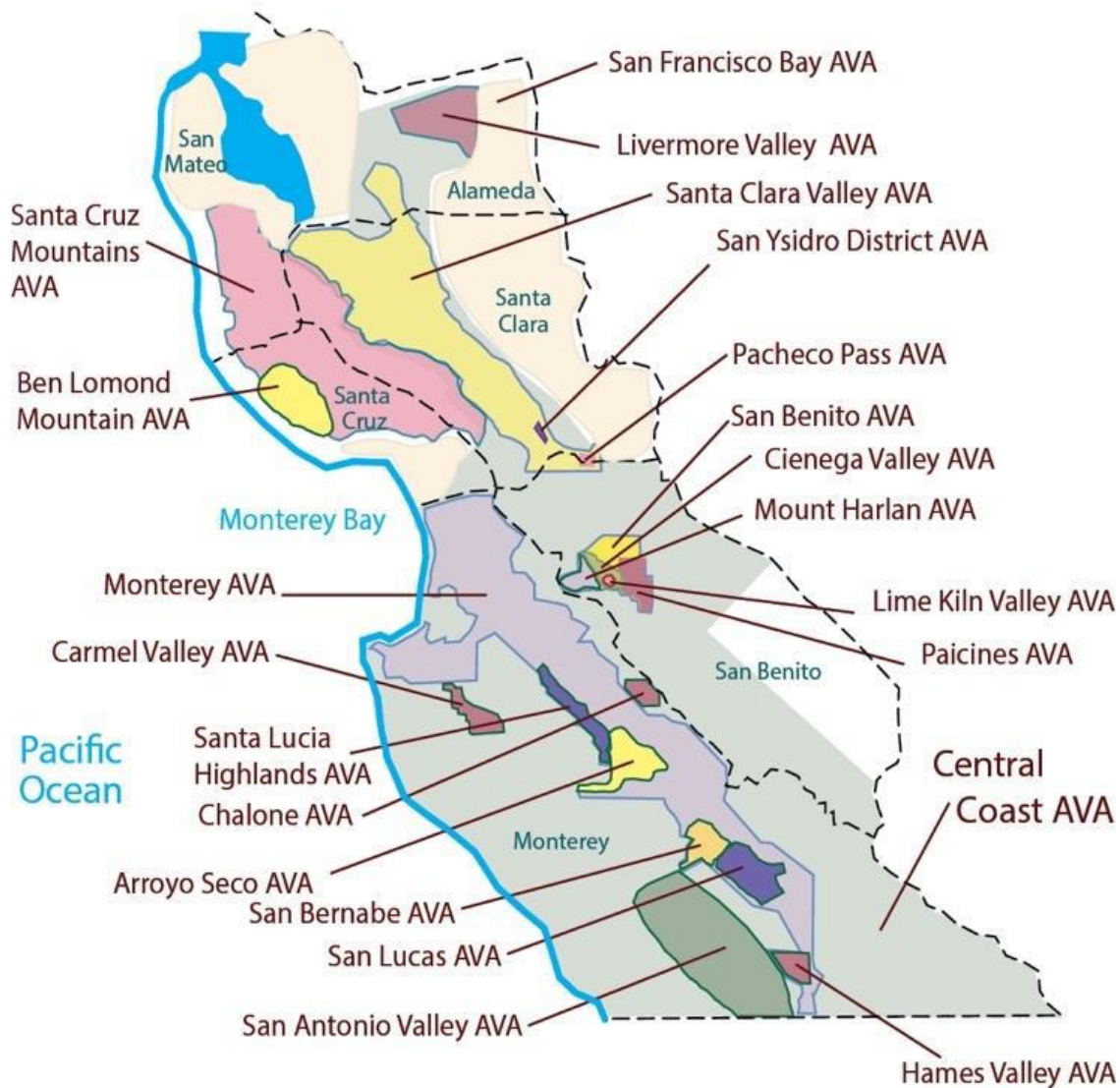
Conceptually, the Central Coast is the cool-climate area along the

Pacific coast between San Francisco and Santa Barbara, defined by the maritime influence of the Pacific Ocean. Prevailing winds blowing across the cold ocean currents create blankets of fog, cooling the coastal areas as far inland as they can penetrate until stopped by mountains. These areas are well-known for their Chardonnays, Pinot Noirs, and other well-structured, light- to medium-bodied wines.

In reality, the Central Coast AVA covers a huge amount of ground, taking in almost the entire coast from San Francisco to Santa Barbara, but including some warmer, inland areas on the eastern side of the mountains as well. (Please note that while Santa Cruz County is part of the Central Coast AVA, the Santa Cruz Mountains AVA and its subregion, the Ben Lomond Mountain AVA, are specifically excluded.)

Many of the important wine regions of the Central Coast AVA are found within the counties of Monterey, San Luis Obispo, and Santa Barbara. These are discussed below.

AVAs of California's North Central Coast



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Figure 16–14: North Central Coast wine regions

Monterey County

Monterey County is one of the top five wine-producing California counties; nearly 20% of the state's Chardonnay is produced in

Monterey. While logic might prompt one to think that Monterey's southerly locale would make it a warm region, this is not the case. At Monterey, there is a gap in the mountains where they begin to run east-west, or perpendicular rather than parallel to the ocean. This orientation plays a big role in the Monterey wine region, with the warmer air at the southwestern end of the valley creating a vacuum that pulls the cooler ocean air downstream. The primary appellation in this area is the Monterey AVA, along with several sub-AVAs:

- Cool-climate AVAs, located about midway down the valley, include Santa Lucia Highlands, Arroyo Seco, and Chalone. These areas are known for cool-climate grape varieties, including Pinot Noir, Chardonnay, Riesling, Pinot Blanc, and Pinot Grigio.
- The warmer areas of southern Monterey, including the San Lucas and Hames Valley AVAs, are known for Cabernet Sauvignon and Rhône varieties.

San Luis Obispo County

San Luis Obispo County is home to the following AVAs:

- The Paso Robles AVA covers roughly the entire northern half of San Luis Obispo County and extends across more than 666,500 acres (270,000 ha). This large AVA contains 11 AVAs (approved in November of 2014) within its boundaries; these sub-appellations showcase the diversity of the larger area in terms of its range of soils, varying levels of marine influence, and elevations—which range from 700 feet (213 m) to 2,400 feet (730 m) above sea level. Not surprisingly, a wide range of grapes are grown in the area. The leading varieties include Cabernet Sauvignon, Zinfandel, Merlot, Grenache, Syrah, and Mourvèdre; cooler areas are known for Pinot Noir and Chardonnay (among others). The sub-appellations of the Paso Robles AVA include: Adelaida District, Creston District, El Pomar District, Paso Robles Estrella District, Paso Robles Geneseo District, Paso Robles Highlands District, Paso Robles Willow Creek District, San Juan Creek, San Miguel District, Santa

Margarita Ranch, and the Templeton Gap District.

- York Mountain is a small AVA that sits on the western edge of the much larger Paso Robles AVA. This is a mountainous region, very close to the ocean, that sits at the edge of the Templeton Gap—a channel in the Santa Lucia Mountains that draws the cool air inland towards Paso Robles.
- The San Luis Obispo Coast AVA—also known as the SLO Coast—stretches for over 60 miles/115 km along the Pacific Coastline from Ragged Point to just beyond Grover Beach. This coastal-influenced, cool-climate area includes the Edna Valley and the Arroyo Grande Valley AVAs.
- Edna Valley, a cool region located to the south of Paso Robles and close to the coast, features Chardonnay and Pinot Noir.
- Arroyo Grande Valley, another cool region, is located south of Edna Valley and close to the coast, also featuring Chardonnay and Pinot Noir.

Santa Barbara County

Santa Barbara County, located a 90-minute drive north of Los Angeles, is geologically unique in that it is one of the few places on the California coast where both the coastline and the mountain ranges run east–west as opposed to north–south. Seven AVAs are currently located within Santa Barbara County:

- Santa Maria Valley, an often foggy and windswept region, is the northernmost. It is known for cool- weather grapes, including Chardonnay and Pinot Noir.
- Santa Ynez Valley, a long east–west corridor with a diversity of climates, is the largest of the six and produces a wide range of wines.
- Ballard Canyon is a subregion somewhat centered within the larger Santa Ynez Valley AVA. The area has long been appreciated for spicy red wines produced from Syrah and Grenache.
- The Los Olivos District AVA is a subregion of the Santa Ynez Valley AVA, located just north of the Santa Ynez River, and just

east of the Ballard Canyon AVA.

- Sta. Rita Hills, which sits mostly within the larger Santa Ynez Valley AVA, is located on its western border and therefore enjoys a much cooler climate than the inland areas.
- The Happy Canyon of Santa Barbara AVA, a subregion of the Santa Ynez Valley AVA located on its eastern side, is one of the warmer areas. Local lore suggests that the name of the region comes from the time of Prohibition, when bootleg alcohol was produced in the area, prompting folks to “take a trip to Happy Canyon.”
- The Alisos Canyon AVA, approved in August of 2020, is a small region wedged between Santa Maria Valley (to the north), and the Santa Ynez Valley (to the south). The area has been described as a “Goldilocks Rhône Zone,” referring to its climate as “not too hot, not too cold, but just right” for Rhône varieties such as Syrah, Grenache, and Viognier.

THE CENTRAL VALLEY

California’s Central Valley is a huge expanse of fertile land between the Coast Range and the Sierra Nevada Mountains. Fifty-five percent of the state’s total grape acreage is planted here, amid major plantings of other agricultural crops. Much of the grape crop goes into juice and raisin production, but a significant percentage is made into bulk wine. Wine grapes of the Central Valley include Chenin Blanc, French Colombard, Muscat, Chardonnay, Zinfandel, Cabernet Sauvignon, and Merlot.

The Lodi AVA

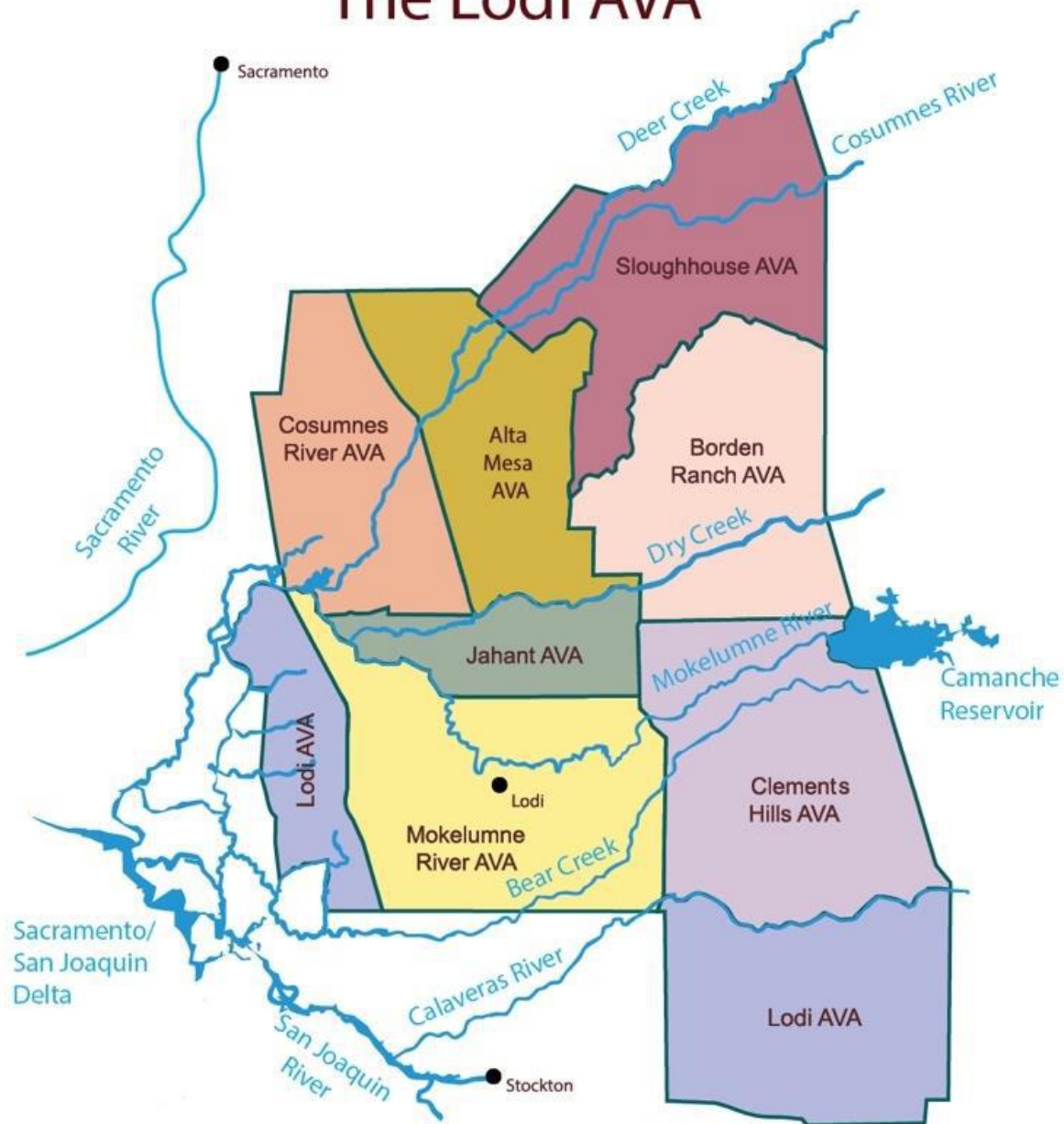


Figure 16–15: The Lodi AVA and subregions

Lodi

While much of the Central Valley is considered to be too hot for the production of quality wine, the area east of San Francisco Bay has, overall, a cooler climate. This is due to the presence of the largest gap in California's Coast Range, the Golden Gate entrance to San Francisco Bay. This gap provides access for the cool winds off the

Pacific Ocean to penetrate inland, following the natural inlet of the San Joaquin/Sacramento River Delta to the foothills of the Sierra Nevada Mountains.

The principal appellation in this area is the Lodi AVA, with over 100,000 acres (40,500 ha) of vines and a surprisingly Mediterranean climate. During the growing season, the Lodi area is typically sunny, with warm daytime temperatures, cooling “delta breezes” in the afternoon, and a significant drop in temperatures at night. Diurnal temperature shifts can be as much as 45 degrees Fahrenheit and allow for the development of rich fruit flavors and bright, crisp acids in the grapes and the wines made from them.

The Lodi AVA, approved in 1986, currently has seven sub-appellations:

- Alta Mesa
- Borden Ranch
- Clements Hills
- Cosumnes River
- Jahant
- Mokelumne River
- Sloughhouse

Lodi and its sub-appellations grow over 70 different varieties of grapes, and have gained a reputation for old-vine Zinfandel, Petite Sirah, Cabernet Sauvignon, and Viognier, as well as other Rhône, Italian, and Spanish varieties. Lodi’s Bechthold Vineyard, planted in 1886, is home to some of the world’s oldest (and still productive, at 2 to 4 tons per acre) plantings of Cinsault.

THE SIERRA FOOTHILLS

The Sierra Foothills AVA covers a scattering of mostly high-elevation vineyards on the western slopes of the rugged Sierra Nevada range east of Sacramento and the Central Valley. Though geographically large, the area has just 5,700 acres (2,300 ha) planted to vines—just

over 1% of California's total wine grape acreage. The vines are devoted overwhelmingly to red varieties, particularly Zinfandel. Comprised of eight counties, the area includes five sub-AVAs: North Yuba, Fiddletown, El Dorado, California Shenandoah Valley, and Fair Play.

SOUTHERN CALIFORNIA

Southern California might be more famous for sandy beaches than vineyards these days, but it is actually the birthplace of the California wine industry. Back in 1769, long before California was a state, Father Junípero Serra, a Spanish Franciscan missionary, founded the first Catholic mission in California on the site of present-day San Diego. This new outpost of Christianity, named San Diego de Alcalá, was the first of nine missions Serra would found, stretching from San Diego to modern-day San Francisco. Up and down the length of what is now the state of California, the Franciscan Fathers gave the area its humble viticultural beginnings by planting the Mission grape for use in sacramental wines.

While many Americans know the story of the California Missions, even dedicated wine lovers might be surprised to learn that commercial winemaking in California also had its origins in the southern end of the state. California's first commercial wineries were established in what is now Los Angeles as early as the 1820s. By 1833, the area was growing Bordeaux varieties brought to the area by Jean-Louis Vignes, a native of the Bordeaux region of France. Vignes named his estate "El Aliso," in honor of an ancient Sycamore tree growing near the entrance to his property. Known to his neighbors as "Don Luis del Aliso," Vignes was an adventurer who traveled the world before settling down, planting vineyards, and making wine in southern California.

Many producers followed in Vignes' footsteps, and the area of southern California soon became the largest grape-growing area in the state. However, winemaking in the region was decimated by both Prohibition and Pierce's disease. Soon, the land in southern

California became more valuable to the makers of residential housing, parks, and office buildings than it was to the producers of wine.

However, winemaking still survives in the area today. The South Coast AVA, with over 3,000 acres (1,200 ha) under vine, includes parts of the counties of Los Angeles, San Bernardino, San Diego, Orange, and Riverside. The Temecula Valley AVA, located in Riverside County, currently has over 1,500 acres (610 ha) planted to vine. Smaller plantings are to be found in the Ramona Valley AVA and the San Pasqual Valley AVA (both in San Diego County). The area's most planted varieties include Zinfandel (including some very old vines), Cabernet Sauvignon, Merlot, and Syrah. The area is also becoming increasingly known for Petite Sirah and Viognier.

Warmer and drier inland AVAs in southern California include the Cucamonga Valley AVA (shared by Riverside and San Bernardino Counties), with just over 1,000 acres (405 ha) of vines. The large Antelope Valley of the High California Desert AVA and its tiny neighbors, the Sierra Pelona Valley and the Leona Valley AVAs, are located slightly to the north and east of Los Angeles.

WASHINGTON STATE

The state of Washington is the second largest producer of vinifera wine in the United States and, at more than 50,000 planted acres (20,200 ha), has the most vineyard acreage after California. State law requires that any wine using a Washington appellation contain a minimum of 95% Washington grapes.

Geography and Climate

Washington is divided by the high-altitude Cascade Mountain range into a cool and very rainy western part and a larger zone to the east that has desert-like conditions with hot summers, very cold winters, and very little precipitation.

The western section, near Puget Sound, is where the Washington wine industry began, but it has so little sunshine that ripening grapes can be quite difficult. For this reason, almost all of the state's vineyards are now located east of the Cascades, which form a rain shadow that creates the near-desert conditions. Despite the lack of rain, runoff from the snowy Cascades finds its way into the Columbia River and well water. This provides ample water for irrigation, without which viticulture would be impossible. The state's northerly latitude provides long days in midsummer and, in fact, offers more sunshine hours than California. The continental climate brings cold winters, making winterkill a very real threat to the vines.



Figure 16–16: Rain shadow diagram

Grape Varieties

Washington produces over 70 grape varieties, with nearly 60% of the state's vineyards planted to red grapes. Cabernet Sauvignon and Merlot are the most widely planted red varieties. Syrah is planted in less quantity; but is seen as an "up-and-coming" variety and draws some of the highest critical acclaim. While Chardonnay is the leading white variety by acreage, Washington State is considered a leading region for Riesling (the number two white grape).

WASHINGTON APPELLATIONS

Nearly all of Washington State's commercial vineyards (and AVAs)

are located in the eastern section of the state. The lone exception is the Puget Sound AVA, which is responsible for less than 1% of the state's wine production. The area around Puget Sound—the cooler, wetter part of the state—is home to the state's leading population centers of Seattle, Tacoma, and Olympia. Due to this proximity to residents and the tourist trade, many Washington State wineries maintain production facilities and tasting rooms in the Puget Sound AVA.

The remainder of Washington State's AVAs are located in the eastern section of the state, well within the rain shadow created by the high Cascade Mountains. The Columbia Valley AVA, one of the largest appellations in the country and the largest in Washington State, encompasses most of the state's vineyard land in eastern Washington, as well as a small section crossing into Oregon. The majority of the AVAs located in eastern Washington are contained within the borders of the Columbia Valley AVA. These include the following:

- **Lake Chelan AVA:** The Lake Chelan AVA sits at a higher elevation than the surrounding area and is significantly influenced by the “lake effect” that creates mild and favorable temperatures, resulting in a longer growing season and a reduced risk of frost.
- **Wahluke Slope AVA:** Comprising nearly 15% of Washington's total acreage, Wahluke Slope AVA is one of the driest and warmest AVAs in the state. It is planted to Merlot, Syrah, and Cabernet Sauvignon, along with some white varieties.
- **White Bluffs AVA:** The White Bluffs AVA—registered in July of 2021—is situated atop an elevated plateau that averages 200 feet (60 m) higher than the surrounding area. This elevation provides a degree of protection against frosts and freezing temperatures. The area is named for a deep layer of lakebed sediment (the Ringold Formation) that is whitish in color and visible in places alongside the Columbia River.
- **Naches Heights AVA:** The Naches Heights AVA was first

planted in 2002 with Pinot Gris, Riesling, and Syrah. Elevations in the area range from 1,200 to 2,100 feet (366–640 m), making it considerably higher than the surrounding areas. Soils are mostly wind-blown loess with a significant amount of clay, which helps to retain water in this otherwise dry area.

- **Horse Heaven Hills AVA:** Located near the Columbia River, the Horse Heaven Hills AVA benefits from tempering winds and steep slopes. Some of the state's highest-rated wines hail from this appellation.
- **The Burn of Columbia Valley AVA:** The Burn of Columbia Valley AVA, registered in July of 2021, is a triangle-shaped appellation located alongside the north bank of the Columbia River. The topography of the area—comprised mainly of southeast-facing benchland sloping towards the river—makes it a bit warmer than much of the surrounding region. Cabernet Sauvignon is the leading variety.
- **Ancient Lakes of Columbia Valley AVA:** The Ancient Lakes of Columbia Valley AVA—defined on its western side by the Columbia River—is dominated by a gentle (4%) slope facing its eastern boundary. The area is named for a series of more than 30 pothole lakes—formed by the Missoula Floods more than 12,000 years ago—that dot the region.
- **Rocky Reach AVA:** Approved in 2022, the Rocky Reach AVA is located south of Lake Chelan, near the northern end of the Columbia Valley. The area—planted mainly to Cabernet Sauvignon—follows a narrow stretch of the Columbia River atop a unique crystalline type of bedrock.
- **Royal Slope AVA:** The Royal Slope AVA is almost entirely located on a series of gently rolling, south-facing slopes with elevations ranging from 610 feet (186 m) to 1,756 feet (535 m) above sea level. The area is particularly well-known for Washington State's first 100-point Syrah—Charles Smith's Royal City Syrah 2006, crafted using grapes sourced from Stoneridge Vineyard.
- **Walla Walla Valley AVA:** The Walla Walla Valley AVA spills over into Oregon and has been home to grape growing since

the 1850s, when grapes were first planted by Italian immigrants. Although Cabernet Sauvignon is the leading grape, a wide range of varieties are currently planted here.

- **Yakima Valley AVA:** The Yakima Valley AVA—with vineyards planted on either side of the winding Yakima River—was the state’s first appellation and accounts for over one-third of the vineyards. This is one of the few areas in Washington State planted to a majority of white grapes, and its primary grape is Chardonnay. Other leading grape varieties include Cabernet Sauvignon, Merlot, Riesling, and Syrah. In recent years, several small sub-appellations have been approved within the confines of the Yakima Valley AVA. These include the following:
 - Rattlesnake Hills AVA
 - Red Mountain AVA
 - Snipes Mountain AVA
 - Candy Mountain AVA
 - Goose Gap AVA

Two more AVAs are located in eastern Washington but outside of the borders of the Columbia Valley AVA. These AVAs are described below:

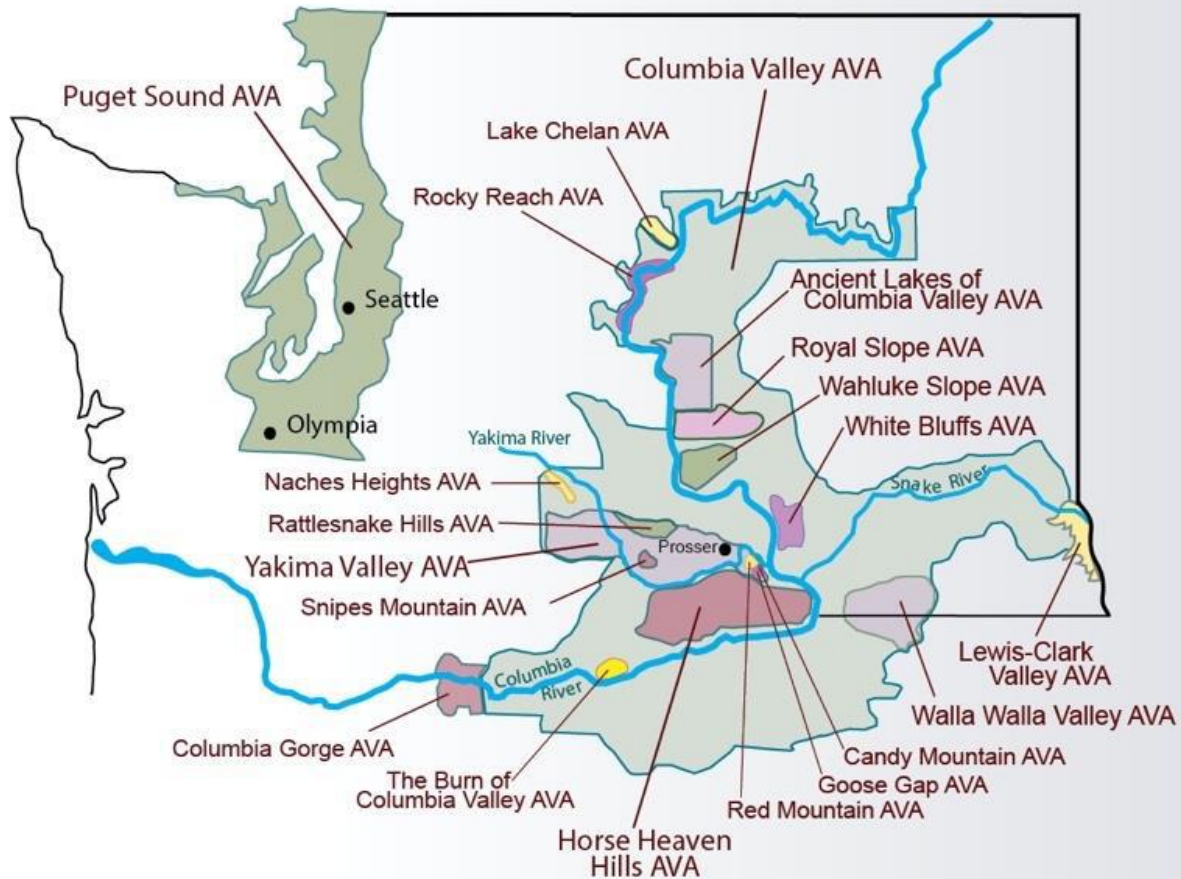
- **Columbia Gorge AVA:** The Columbia Gorge AVA, which straddles the Columbia River, is partially located in the state of Oregon. Located where the Columbia River cuts a very narrow passage through the Cascade Mountains, this area encompasses a wide range of climates, soils, and geology.
- **Lewis-Clark Valley AVA:** The Lewis-Clark Valley AVA—the easternmost AVA in Washington State—roughly follows the contours of three rivers: the Snake, the Clearwater, and the Grande Ronde. Of the area’s total 306,000 acres (124,000 ha), 72% are in Idaho, with the remaining 86,000 acres (35,000 ha) located in Washington State.

LEADING GRAPE VARIETIES OF WASHINGTON STATE

Red Grapes	White Grapes
Cabernet Sauvignon	Chardonnay
Merlot	Riesling
Syrah	Pinot Gris/Grigio
Cabernet Franc	Sauvignon Blanc
Malbec	Gewürztraminer
Sangiovese	Viognier
Grenache	Semillon
Petit Verdot	Chenin Blanc

Figure 16–17: Leading Grape Varieties of Washington State

AVAs of Washington State



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Figure 16–18: Washington wine regions

OREGON

The Oregon wine industry, dominated by small, often family-run vineyards, consistently ranks as one of the top four largest producers of wine in the United States. The wines of Oregon, particularly Pinot Noir, Pinot Gris, and sparkling wines, are highly acclaimed both in the United States and abroad.

From 1965 to 1968, UC Davis graduates David Lett, Charles Coury,

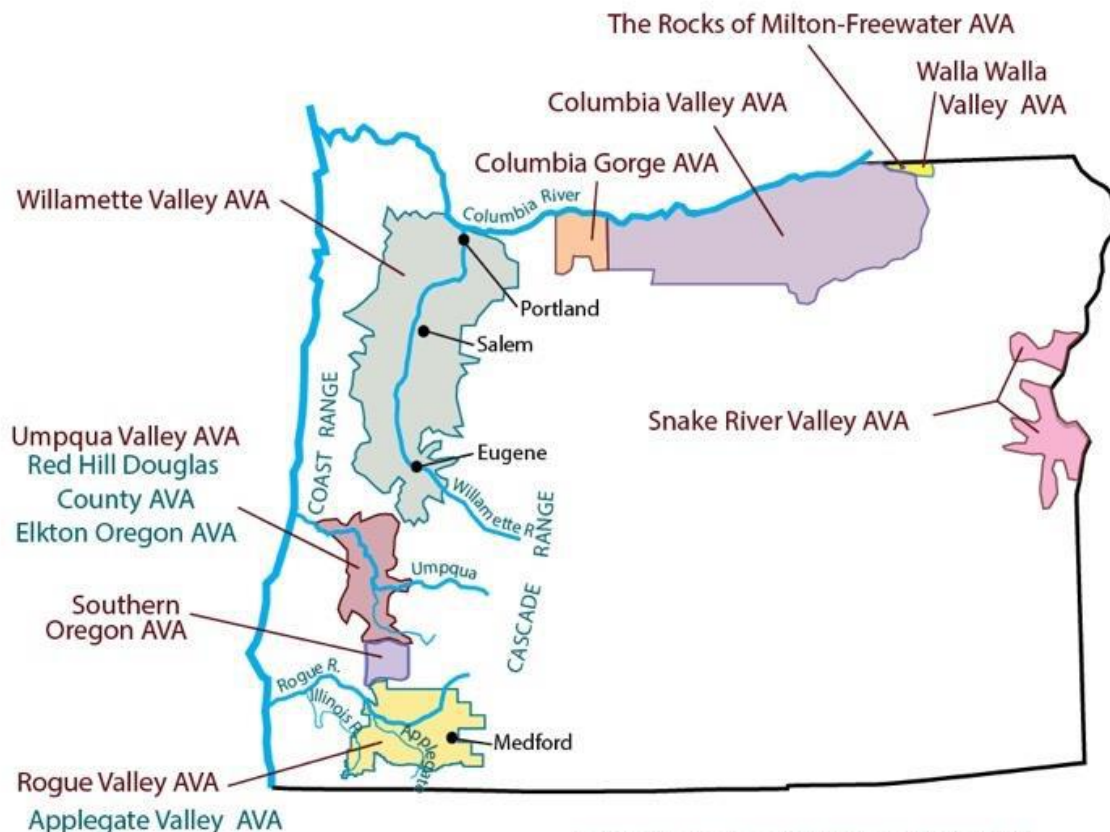
and Dick Erath were separately determined to plant vineyards and make wine in Oregon's Willamette Valley. Seeing similarity between the terroir of Oregon and that of Burgundy, they set about crafting wines that emulated the Burgundian style of Pinot Noir, while at the same time respecting the valley's own unique soils and climate. Soon, the world noticed. Perhaps the most ringing endorsement of their success was the investment made by Maison Joseph Drouhin, a top Burgundy négociant and producer who established Domaine Drouhin in the Willamette Valley in 1988.

Geography and Climate

Most of Oregon's wineries are west of the Cascades, primarily located in the valley of the north-flowing Willamette River between the Coast Range and the Cascades. In the past, Oregon has not had much of a wine industry in the east, however, the areas close to and shared with Washington and Idaho are set for growth.

Many of Oregon's wine regions are well-suited to cool-climate viticulture. The growing season is typically long and dry, but there is always a concern that the grapes will not fully ripen before the approach of winter rains forces the growers to harvest.

AVAs of Oregon



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Figure 16–19: Oregon wine regions

There are additional vineyard areas in the southwest of the state, in the valleys of the Umpqua and Rogue Rivers. These warmer regions are better protected from the maritime effects and are able to ripen red grapes such as Cabernet Sauvignon, Merlot, and Syrah.

Grape Varieties

Oregon's premier grape variety is unquestionably Pinot Noir, which makes up close to 60% of the vineyard acreage. Other leading red grapes include Cabernet Sauvignon and Merlot. The top white variety is Pinot Gris, followed by Chardonnay, Riesling, and Pinot Blanc.

To a lesser extent, some producers are working with Syrah, Viognier, Tempranillo, and other Mediterranean varieties, many of which are sourced from the warmer areas in the southern reaches of the state.

Oregon wine law is unique in that it requires key varietal wines to contain a minimum of 90% of the grape variety stated on the label. Thus, many of Oregon's best known wines—including Pinot Noir and Pinot Gris—will contain a minimum of 90% of the named grape variety. In 2007, this regulation was loosened a bit to allow exceptions for the following 18 varieties: Cabernet Franc, Cabernet Sauvignon, Carmenère, Grenache, Malbec, Marsanne, Merlot, Mourvèdre, Petit Verdot, Petite Sirah, Roussanne, Sangiovese, Sauvignon Blanc, Semillon, Syrah, Tannat, Tempranillo, and Zinfandel.

Oregon Appellations

Nearly three-quarters of Oregon's vineyards fall within the large, cool-climate Willamette Valley AVA, situated approximately 50 miles (80 km) from the Pacific Ocean. The Willamette Valley includes 11 sub-appellations, as follows:

- Chehalem Mountains
- Dundee Hills
- Ribbon Ridge
- Eola-Amity Hills
- Laurelwood District
- Lower Long Tom
- McMinnville
- Mount Pisgah-Polk County
- Tualatin Hills
- Yamhill-Carlton District
- Van Duzer Corridor

Extending from the southern tip of the Willamette Valley to the border of California, the Southern Oregon AVA combines the more precise Rogue Valley and Umpqua Valley AVAs. The Rogue Valley includes one sub-AVA, Applegate Valley, while the Umpqua Valley

includes the sub-AVAs of Elkton Oregon and Red Hill Douglas County. Three appellations straddle the Oregon–Washington border: Columbia Gorge, Columbia Valley, and Walla Walla Valley. The Rocks District of Milton-Freewater AVA—named after the cobblestone-rich soils that define its borders—lies entirely within the Oregon portion of the Walla Walla Valley AVA. “The Rocks” (as the district is often called) is a tiny area that covers just 3,770 acres (1,525 ha).

LEADING GRAPE VARIETIES OF OREGON	
Red Grapes	White Grapes
Pinot Noir	Pinot Gris
Syrah	Chardonnay
Cabernet Sauvignon	Riesling
Merlot	Pinot Blanc

Figure 16–20: Leading Grape Varieties of Oregon

Willamette Valley AVAs

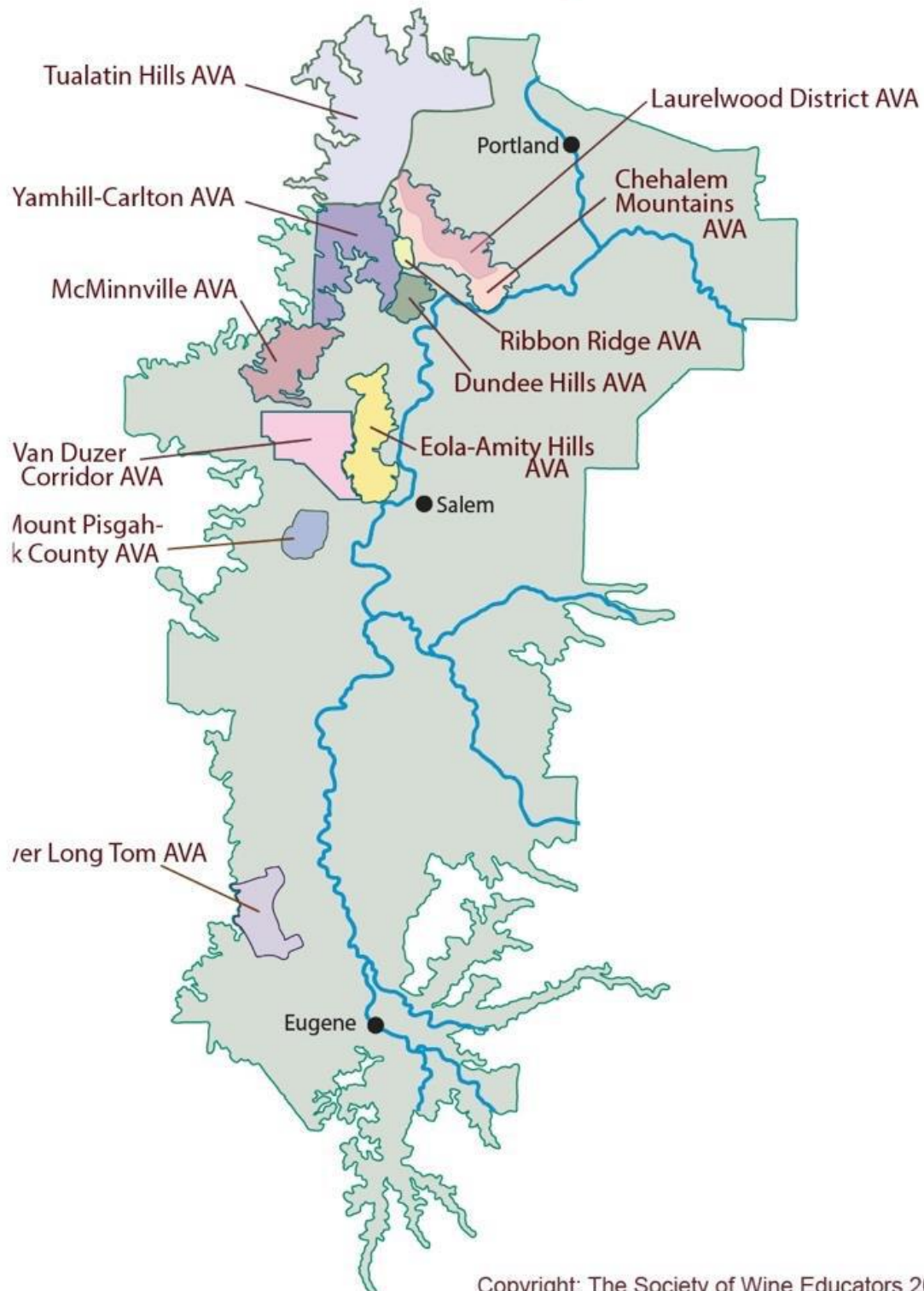


Figure 16–21: AVAs of Oregon's Willamette Valley

The Snake River Valley AVA, located nearly 400 miles (645 km) inland of the Pacific Ocean, is located along the Oregon-Idaho border. The majority of the AVA's five million acres (two million ha) of land are located in the state of Idaho, where it follows the course of the Snake River for nearly 200 miles (322 km). While rather thinly populated with vineyards on the Oregon side, the Idaho side of the Snake River Valley AVA contains over 1,100 acres of commercial vines, accounting for nearly 85% of Idaho's commercial vine acreage. The Snake River Valley AVA is planted to a variety of grapes, including Cabernet Sauvignon, Merlot, Syrah, Chardonnay, and Riesling.

NEW YORK

Winegrowers in the eastern states face more difficult viticultural conditions than those in the west because of high summer humidity, which fosters mold and disease, and potentially harsh winters. Nevertheless, several states maintain flourishing wine industries.

New York played a significant role in the wine and grape industry of the United States before Prohibition, and in recent years the wine culture of the state has grown, evolved, and modernized considerably. The Finger Lakes AVA and its two sub-AVAs, Seneca Lake and Cayuga Lake, comprise the largest wine-producing region and account for 85% of New York's production. Here, with a climate akin to Germany's, Riesling and Cabernet Franc do well. The three main lakes of the region, Cayuga, Seneca, and Keuka, help to mitigate the region's temperature.

Originally, the Finger Lakes featured native and hybrid grapes exclusively. The region's embrace of vinifera in the early 1960s was due to the persistence of Dr. Konstantin Frank, a viticulturist from Russia who believed that European vines could survive the cold climate. Today, the area produces crisp, light-bodied wines using

cool-climate vinifera varieties in addition to a good deal of labrusca varieties (particularly Concord, which thrives throughout the northeastern United States), and cold-hardy hybrids as well, including Vidal, Seyval Blanc, and Cayuga.

Downstate, the Long Island wine region is located just two hours east of New York City. With the first vines planted in 1973, the region is relatively young. This area is divided into the island's two "forks," including the North Fork of Long Island AVA and the Hamptons AVA in the South Fork. Home to a maritime climate, Long Island is significantly influenced by water, with the Atlantic Ocean to the south, Peconic Bay between the two forks, and the Long Island Sound to the north. Given these climatic conditions, Bordeaux-style blends abound, but single-variety wines are also prevalent, particularly Merlot and Chardonnay. Most of the wineries are located on the North Fork, where conditions are slightly more favorable and land is less expensive. Wines produced from a blend of grapes from both "forks" are labeled with the more general Long Island AVA.

AVAs of New York State



Figure 16–22: New York State wine regions

The Hudson River Region AVA, located north of New York City, is home to the Brotherhood Winery—established in 1839 and the oldest continuously operating winery in the United States. The region is also home to Benmarl Vineyards—originally planted with vines in the early 1800s and one of the oldest vineyards in the country. Despite its impressive history, the Hudson River Region AVA has seen much of its growth in the past few decades.

CANADA

Canada's small-but-dynamic modern wine industry can be traced back to 1974 and the repeal of a decades-long moratorium on new winery licenses. This led to the establishment of several new wineries and at this same time, the industry began to turn its focus from native North American varieties and hybrid grapes to vinifera varieties and international trade. The Inniskillin Estate Winery in Niagara-on-the-Lake—one of the first of these new wineries—is often credited with creating the reputation of one of the country's most beloved products: Canadian Icewine.

Canada's wine production is concentrated in the provinces of Ontario and British Columbia; other regions—notably Nova Scotia and Quebec—produce wine as well, as discussed below.

ONTARIO

The province of Ontario—home to the nation's capital city (Ottawa) as well the country's most populous city (Toronto)—is the largest wine producer out of Canada's 13 provinces and territories. Ontario is located along the northern border of the United States and contains nearly 17,000 acres/6,680 ha of commercial vineyards, thus accounting for nearly 55% of the nation's total.

The majority of Ontario's vineyards lie in the southern half of the province, situated between the 41st and 44th parallels. The cool continental climate of this inland region is moderated by the presence of the Great Lakes—primarily Lake Ontario and Lake Erie. As such, the area does not usually experience extreme heat and while the winters are cold, vine-killing levels of deep freeze are typically avoided.

Since 1988, the vineyards and wines of Ontario have been regulated via an appellation and quality control system known as the Vintners Quality Alliance (VQA). The VQA began as a voluntary system but has had the force of law in Ontario since 1999. The VQA mandates certain quality and labeling standards and defines the area's appellations of origin, known as Dedicated Viticultural Areas (DVAs).

Ontario currently has three primary DVAs—Niagara Peninsula, Lake Erie North Shore, and Prince Edward County—as well as several regional appellations and sub-appellations. The Niagara Peninsula DVA—radiating around Lake Ontario—is the leading region, with close of 85% of the province’s vines.

Ontario is currently planted to approximately 60% white grapes and 40% red grapes. Leading varieties include Riesling, Cabernet Franc, Chardonnay, and Pinot Noir. While the majority of the area’s production is dry table wines, the area is highly renowned for its Icewine, most often produced from Vidal or Riesling grapes. Ontario is the world’s leading producer of Icewine by volume.

BRITISH COLUMBIA

British Columbia, located on Canada’s Pacific Coast, is the second largest wine producing region in Canada and home to just over 35% of the country’s vines. Located along the 49th parallel—north of Washington State—this is one of the world’s northernmost wine-producing regions. Leading grape varieties of British Columbia include Chardonnay, Pinot Noir, Riesling, Cabernet Sauvignon, and Merlot.

The great majority of British Columbia’s vines are located in the Okanagan Valley—a long, narrow, and dry valley situated inland of the Coast Mountain Range and tucked between the Cascades and the Columbia Mountains. The valley’s continental climate is somewhat assuaged by the northerly latitude and the presence of Lake Okanagan.

The Okanagan Valley is home to most of British Columbia’s Dedicated Viticultural Areas (DVAs) and has seen the recent approval of several new appellations and sub-appellations. Other areas of British Columbia that support commercial viticulture include those located on Vancouver Island, other Gulf Islands, the southwest coast, and the Kootenays (a region in the province’s southeast).

The British Columbia Wine Authority (BCWA) was established in

1990 to oversee wine quality, labeling standards, and appellations of origin (Designated Viticultural Areas/DVAs). The BCWA has adopted a quality control system referred to as the *BC Vintner's Quality Alliance* (BC VQA)—as well as a set of standards for wines labeled as “Wine of Marked Quality.”

QUEBEC

Located to the north of New York and Vermont, the province of Quebec contains the city of Montreal as well as the provincial capital, Quebec City. This cool-climate region produces a range of wines and wine styles based around cold-hardy hybrid varieties such as Frontenac, Vidal, Seyval Blanc and Marquette—although vinifera varieties are planted in increasing amounts. Icewine—*Vin de Glace du Québec*—is a particular specialty.

NOVA SCOTIA

Located on Canada's eastern edge, the province of Nova Scotia produces small amounts of a range of wine types and styles. However, the region's flagship wine is Tidal Bay. The name Tidal Bay is strictly regulated and reserved for still (non-sparkling) white wines produced from 100% Nova Scotia grapes. Tidal Bay wines are fresh and crisp in acidity, dry to off-dry, and highly aromatic.

Table 16–2: Designated Viticultural Areas (DVAs) of Ontario, Canada

DESIGNATED VITICULTURAL AREAS (DVAS) OF ONTARIO, CANADA		
Viticultural Area	Regional Appellations	Sub-appellations
Lake Erie North Shore		South Islands (includes Pelee Island)
Niagara Peninsula	Niagara Escarpment	Beamsville Bench
		Short Hills Bench
		Twenty Mile Bench
	Niagara-on-the-Lake	Four Mile Creek
		Niagara Lakeshore
		Niagara River
		St. David's Bench
	(no regional appellation)	Creek Shores
		Lincoln Lakeshore
		Vinemount Ridge
Prince Edward County		
Source: Ontario Regulation 406/00: Rules of Vintners Quality Alliance Ontario relating to terms for VQA wine (September, 2022)		

Table 16–3: Designated Viticultural Areas (DVAs) of British Columbia, Canada

DESIGNATED VITICULTURAL AREAS (DVAS) OF BRITISH COLUMBIA, CANADA		
Province	Geographical Indication	Sub-appellations
British Columbia	Fraser Valley	
	Gulf Islands	
	Kootenays	
	Lillooet	
	Okanagan Valley	East Kelowna Slopes
		Golden Mile Bench
		Golden Mile Slopes
		Lake Country
		Naramata Bench
		Okanagan Falls
		Skaha Bench
		South Kelowna Slopes
		Summerland Bench
		Summerland Lakefront
		Summerland Valleys
	Shuswap	
	Similkameen Valley	
	Thompson Valley	
	Vancouver Island	Cowichan Valley
Source: British Columbia Wine Authority (BCWA), 2022		

MEXICO

Wine is vinified in at least seven Mexican states, with 90% of modern production centered in Baja California. The main wine region here is the Valle de Guadalupe near the city of Ensenada, where vines are planted at elevations ranging from 1,000 feet (305 m) to 1,250 feet (380 m), and where the area enjoys a Mediterranean climate. The city of Ensenada is considered a center of wine tourism in Mexico, and hosts an annual *Fiesta de la Vendimia* (Vintage Festival) every year in August. Ensenada is also a key point on the *Ruta del Vino* (Wine Route) that connects over 50 wineries as well as the cities of Tijuana and Tecate.

Mexico currently has nearly 6,200 acres (2,500 ha) planted to vinifera varieties. Principal white grape varieties include Chenin Blanc, Chardonnay, Sauvignon Blanc, and Viognier; principal red grapes include Cabernet Sauvignon, Merlot, Malbec, Grenache, Barbera, Syrah, and Tempranillo.

The Mexican state of Coahuila, located in northeastern Mexico adjacent to the US border, is the home of Casa Madero, one of the oldest wineries in the Americas. Casa Madero was founded by Don Lorenzo de Garcia in 1597 as Hacienda de San Lorenzo.

The estate was purchased by Don Evaristo Madero in 1893, and the name was changed to Casa Madero. The area, near the present-day city of Parras de la Fuente, enjoys a relatively cool climate due to the elevation provided by the Sierra Madre Oriental Mountains. These conditions make for well-balanced grapes and excellent wines, and Casa Madero continues to be one of the most important wine and brandy producers in Mexico.