



The 2012 Economic Contribution of Colorado's Wine Industry:

The Role of Consumers, Wineries and Tourism in the Growth of the Industry



This report is part of an industry and CSU-funded research project conducted from 2012-13 to update an earlier 2005 study on the economic contribution that the Colorado Wine Industry has on the economy of Colorado. Project leaders were Dr. Dawn Thilmany from CSU's Department of Agricultural and Resource Economics (DARE) with support from Dr. Marco Costanigro and guidance of the Colorado Wine Industry Development Board (CWIDB). Key personnel for data collection and analysis included Eyosiyas Tegegne, Brett Hines and Allison Bauman, all who were graduate research assistants in DARE.



Colorado State University

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Executive Summary

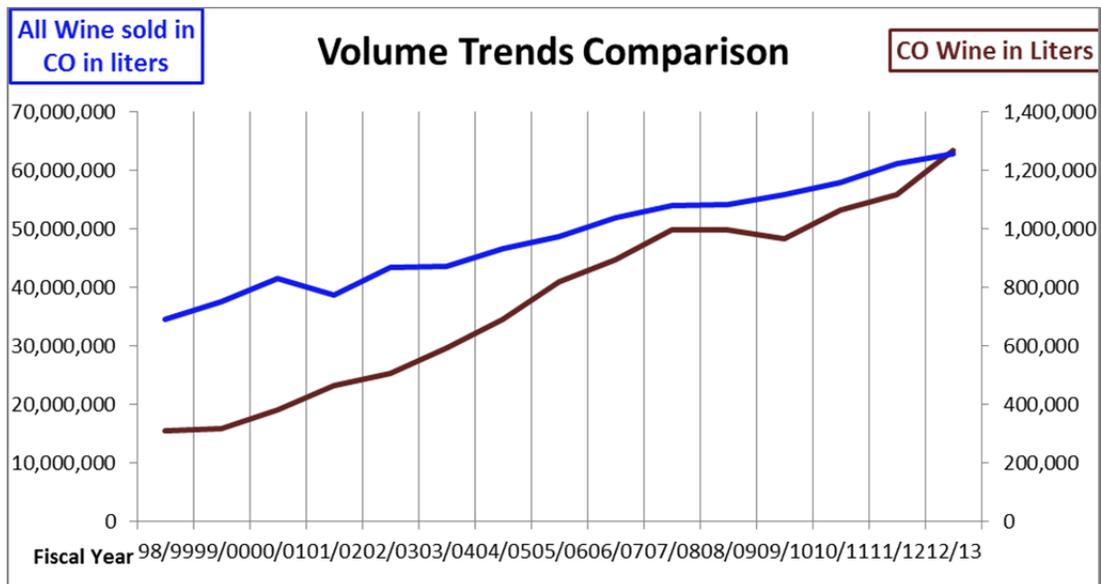
Globally and nationwide, the wine industry continues to record robust sales growth. The growing significance of the Colorado wine industry is very likely at the intersection of this wine boom, the interest in local foods and beverages and the unique approach to tourism Colorado chose to pursue which attracts a higher income, experience-seeking traveler. This summary highlights some of the key findings of a recent study by Colorado State University, commissioned by the Colorado Wine Industry Development Board, to provide more context to understand the growth seen in Colorado over the recent past.

Wine Consumers are Boosting Demand Nationwide...

Colorado's consumers outpace national growth, and increasingly, they are seeing Colorado wines as an option for their purchases. For the first time since the redevelopment of this industry, the state's wineries account for 5% of market share by value.

- In the United States, the industry reports \$34.6 billion in retail value for 2012¹, or approximately \$110 per capita per year. In terms of volume, adults consume 2.5 gallons per capita as of 2010, and wine represents over 10% of all beverage sales.
- Colorado's wine drinkers consume more than the average United States consumer (3.1 vs. 2.5 gallons per capita). In 2012, 61.1 million total liters of wine were sold in Colorado, and after steady growth by state-based wineries, over 5% of Colorado wine sales (by value) are produced in-state for the first time since the CWIDB was established.

Figure 1: Colorado Wine Sales: Total and Colorado-Sourced



¹ The Wine Institute

Colorado Wines Are Growing in Value as well as Volume....

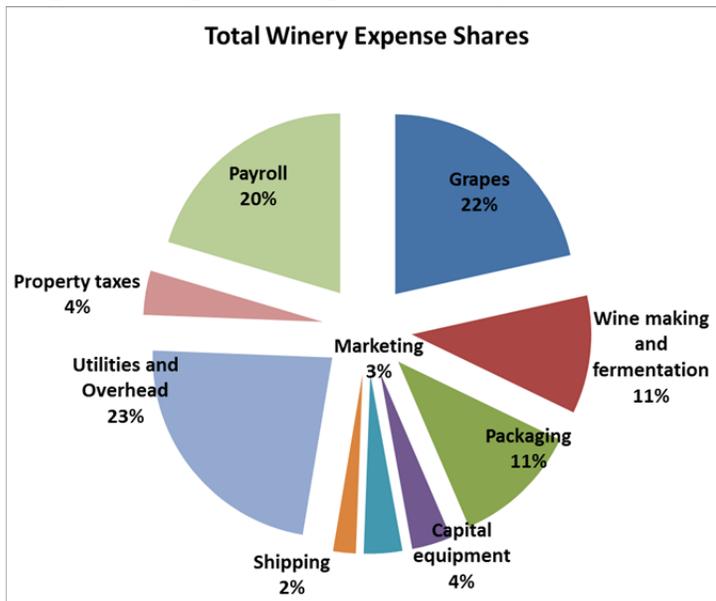
- Wine industry statistics show the median bottle price for all wines sold in the United States lies between \$6 and \$9, but using Colorado wineries' average bottle price of \$16.68, up from \$12.86 in 2005; translating to a 25% growth in volume, but a more impressive 69% growth in average price per bottle
- We estimate 20% of Colorado consumers buy 25% Colorado brands, another 18% bought a smaller share of Colorado wines, but 63% still don't buy Colorado wines. Of those who buy Colorado wines most frequently, they were most likely of all drinkers to purchase bottles in the \$16-25 range, which matches the Colorado market well.



The Growth in Wine Sales and Wineries Impacts Other Sectors of the Economy....

- Since 1990, vineyard acreage has increased from 240 acres to about 1,200 acres to support the 96 wineries licensed as of 2010. Based on the survey of wineries, approximately 340,000 tons are grown by wineries or bought by Colorado wineries from other Colorado vineyards (Sharp and Caspari, 2010).

Figure 2: Reported Expenditures by Colorado Wineries, 2012



- Colorado wineries reported approximately **\$24.8 million in wine sales**, and the average amount spent to purchase grapes was 22% or \$5.5 million in wine grapes for the 2011/12 production year. In 2010, CSU estimated that 1800-2000 tons of wine grapes were harvested in Colorado, worth \$2.2-2.8 million, but this study's responses from wineries suggest that number may have grown to over \$3 million in value.

- Colorado's wine industry and expenditures suggest it supports an economic multiplier of 1.68. Using this multiplier, the entire contribution of the industry to the state of Colorado expands **to over \$41 million** (with indirect and induced effects).

- Considering both Colorado wine-based events and visits to wineries by out-of-state visitors, the industry can contribute an additional **\$27 million of economic activity related to tourism in 2012, which increases to \$47 million** once indirect effects are considered. This is notable as it is similar to the economic activity driven by wine sales.
- The industry has also attracted many in-state visitors to their events and wineries, activity that might otherwise have taken place with our residents taking visits to other states. This additional activity represents almost **\$33 million** in direct tourism activity, or over **\$56 million** when indirect effects are considered.

To summarize the key findings of the Economic Contribution analysis, the following table presents the direct and total effects (including multiplier estimates of how industry activity circulates through the broader economy). Even the most conservative estimate, the industry contributed \$87.8 million to the Colorado economy in 2012. If one includes in-state travelers at winery events and venues, and may have spent a higher share of their tourism dollars in-state because such activities are available, the contribution grows to \$144 million in 2012.

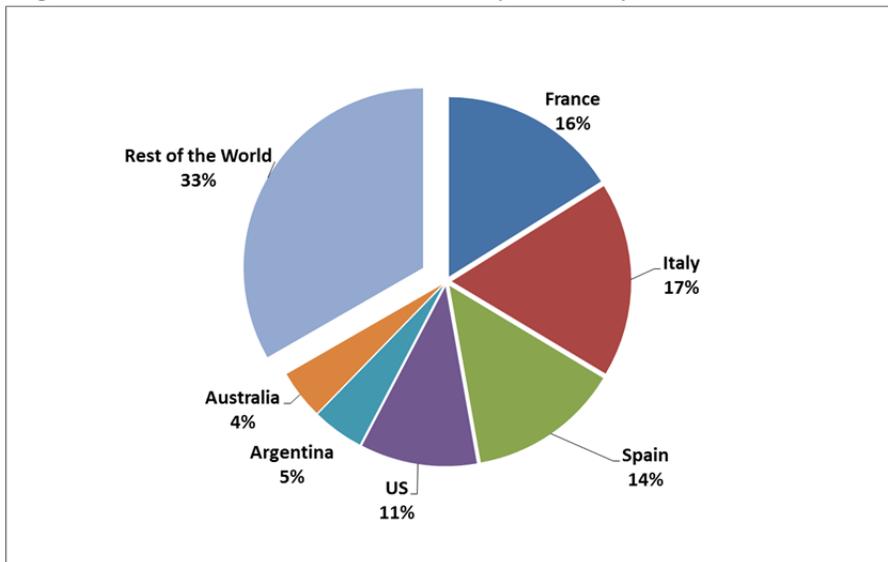
<u>Impact Type</u>	<u>Employment</u>	<u>Labor Income</u>	<u>Output</u>
Direct Effect-Wine Sales	366.4	\$ 2,090,778	\$ 24,394,661
Total Effect-Wine Sales	459.8	\$ 7,710,445	\$ 41,040,611
Direct Effect-In-State Travelers at Wine-Based Events	85.9	\$ 2,524,279	\$ 6,543,878
Total Effect-In-State Travelers at Wine-Based Events	119.7	\$ 4,158,510	\$ 11,250,756
Direct Effect-Out-of-State Travelers at Wine-Based Events	15.6	\$ 472,541	\$ 1,239,529
Total Effect-Out-of-State Travelers at Wine-Based Events	22.1	\$ 784,323	\$ 2,131,242
Direct Effect-In-State Visits to Wineries	425	\$ 11,271,473	\$ 26,367,719
Total Effect-In-State Visitors to Wineries	558	\$ 17,583,895	\$ 45,047,217
Direct Effect-Out-of-State Visits to Wineries	374.7	\$ 10,763,146	\$ 26,269,158
Total Effect-Out-of-State Visitors to Wineries	506.1	\$ 17,031,896	\$ 44,600,454
Total Economic Effects- Sales and Out-of-State Tourism	988	\$ 25,526,664	\$ 87,772,307
Total Economic Effects- Sales and All Wine-Based Tourism	1665.7	\$ 47,269,069	\$ 144,070,280

**The 2012 Economic Contribution of Colorado’s Wine Industry:
The Role of Consumers, Wineries and Tourism in the Growth of the Industry**

Global, Domestic and Colorado Trends in the Wine Industry

Nationwide, the wine industry continues to record robust sales growth, both in terms of consumption per person and the increase in numbers of wineries in traditional and new regions. As we explore the growing significance of the Colorado wine industry, we can provide some context by illustrating how global and national trends underlying this state’s industry may underlie the trends seen locally.

Figure 1: Global Wine Production by Country, 2010

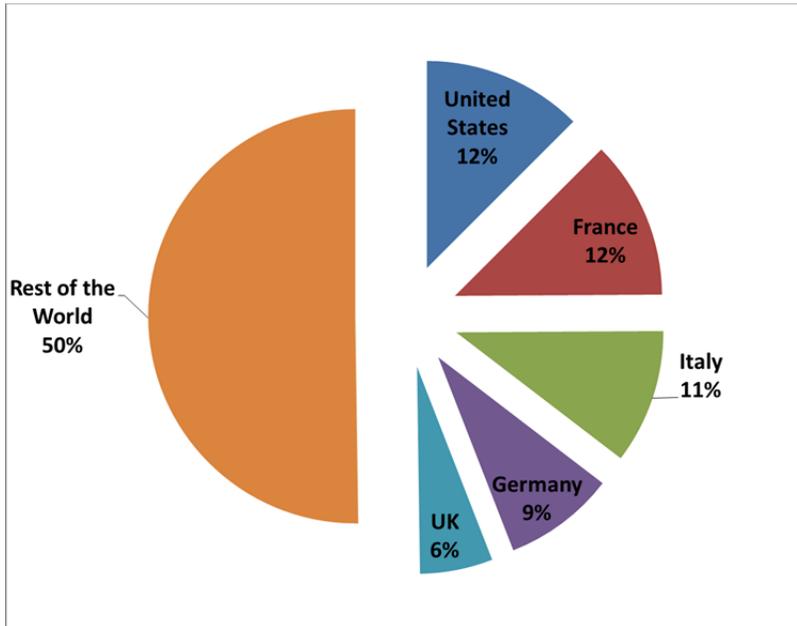


Source: http://www.wineinstitute.org/files/2010_World_Wine_Production_by_Country.pdf

World wine production and consumption is on the rise. In 2010, world production was approximately 26.3 billion. Figure 1 shows that France, Italy, and Spain accounted for almost 47% of the total world wine production in terms of volume, but the United States is significant, providing 10.5% of the total wine liters supplied to the market (Wine Institute, 2013).

In terms of consumption, in 2010 world consumption was approximately 23.2 billion liters. . The United States has become the largest market, accounting for almost 12.5% of the total world wine consumption in 2010 (when considering volume) followed by France and Italy (Figure 2). There is a significant overlap between production sources and those countries that represent the largest set of consumers, but significant international trade occurs in this sector.

Figure 2: World Wine Consumption by Country, 2010



Source: www.wineinstitute.org/files/2010_World_Wine_Consumption_By_Volume_Rank.pdf

Wine production in the United States has been growing at a steady pace for the last 10 years (Table 1). In 2012 alone, the United States produced more than 752 million gallons of wine. The United States is now one of the largest wine producers in the world increasing its share of global production by almost 10% over the past decade, but its supplies are still somewhat lower than its effective demand.

Table 1: United States Wine Production and Consumption Trends

Year	Wine Produced (Million Gallons)	Wine Consumed (Million Gallons)	Wine per Capita
2012	752	856	2.73 gals
2011	684	836	2.68 gals
2010	677	784	2.53 gals
2009	707	763	2.49 gals
2008	620	746	2.45 gals
2007	638	742	2.46 gals
2006	623	717	2.40 gals
2005	716	691	2.34 gals
2004	609	665	2.26 gals

Source: www.wineinstitute.org/resources/statistics/article83.

Table 2: United States Trade Position in the Wine Sector

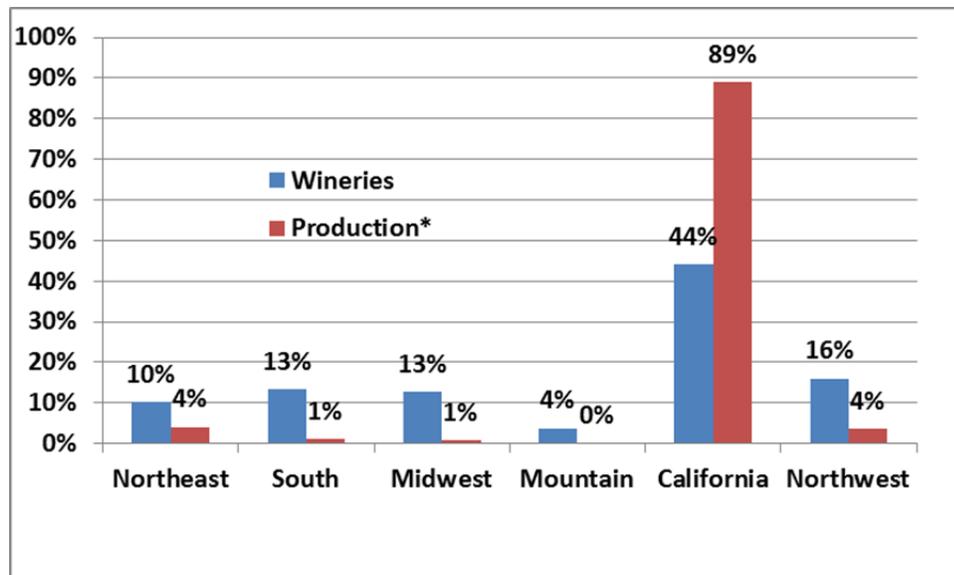
Country	Value of United States exports to...	Country	Value of United States imports to...
Canada	27%	Italy	30%
The United Kingdom	21%	France	24%
Hong Kong	8%	Australia	14%
Japan	7%	Chile	7%
Italy	6%	Argentina	6%
Germany	4%	Spain	6%

Source: www.ita.doc.gov/td/ocg/wine2011.pdf

Table 2 shows the international trade position of the United States in terms of exports, and while much of the wine comes from countries with a traditional presence in wine trade, emerging countries are significant importers to the United States as well.

To support the growing wine production sector and allow for growing supplies, there are 14,000 to 16,000 wine grape vineyards in the United States (ITA, 2010). California is the dominant wine grape producing state with the highest number of both wineries and production volume. As United States grape production increases (it was estimated to be 6.86 million tons in 2011), vineyards continue to expand to provide wine grapes to an increasing number of wineries. As of 2011, almost 58% of United States grape production is used for wine grape production.

Figure 3: Winery and Production Numbers by United States region, 2010



[Source: www.ita.doc.gov/td/ocg/wine2011.pdf](http://www.ita.doc.gov/td/ocg/wine2011.pdf); Note: Production may also include wine production from fruits other than grapes; Data doesn't total 100% due to incomplete state data

The top five wine grape varieties grown in the United States include Chardonnay, Cabernet, Sauvignon, Zinfandel, Merlot, and Pinot Noir (ITA, 2011). Accordingly, some of the primary production regions are in climates that are the best conditions for growing those varieties, with the Pacific Coast being a dominant supply region in the United States (Table 3). According to the Wine Institute (2010), California sold 197 million cases of wine in the United States alone, at an estimated retail value of \$18.5 billion followed by Washington and Oregon. In 2012, wine sales in the United States were valued at \$34.6 billion with California accounting for almost \$22 billion in retail sales (Wine Institute, 2012).

Although Table 3 shows the key production regions, wine is now produced in almost every state. This geographic expansion was originally driven by the increasing awareness about the potential for wine production as a tourism and economic development driver.

Table 3: Wineries and Value of Production by State,

State	Wineries	Retail Value in Billion \$
California	3364	\$ 18.50
Washington	700	\$ 0.44
Oregon	419	\$ 0.25
New York	306	
Texas	220	\$ 0.11
Virginia	193	

Source: <http://www.ita.doc.gov/td/ocg/wine2011.pdf>

Wine production, which typically adds value of approximately \$2-\$4 for each \$1 of farm gate value grape value, is one potential value-added activity for grapes and other specialty crops (fruits). Moreover, tasting rooms can contribute another \$4-\$10 per \$1 of farm gate value to the rural economy by selling their wine directly to consumers, depending on the tourism market of their area.

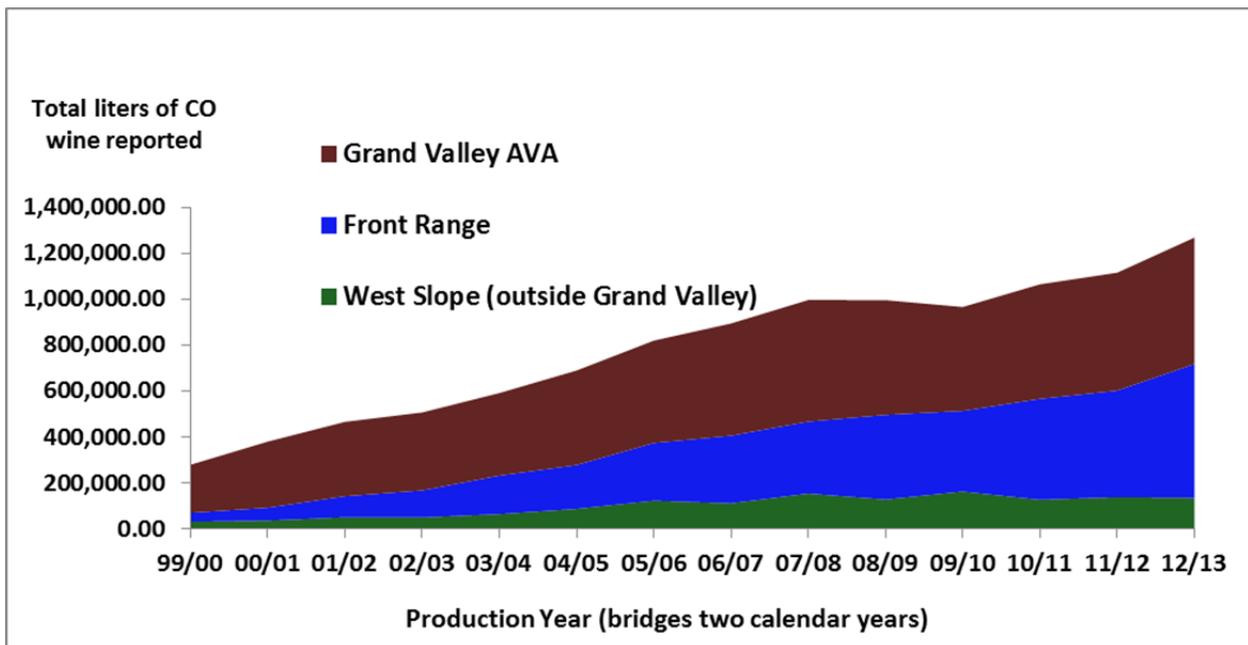
Colorado Grape and Wine Production

Colorado is a growing presence in the Intermountain West wine sector, even if it is only a small part of the United States industry. Wine grapes have been grown on a limited basis in Colorado since the end of the last century, but the last three decades have seen dramatic expansion. Since 1990, vineyard acreage has increased from 240 acres to about 1,000 acres (950 actively producing) and licensed wineries have increased from five to ninety-six (Caspari and Montano, 2012; Sharp and Caspari, 2010). Surveys collected from wineries estimated that \$3.7 million was spent to purchase grapes (from own farm and other Colorado farms) in 2012. CSU personnel

with the Colorado Agricultural Experiment station reported Colorado’s wine grape production to be near 2,000 tons (Caspari and Montano, 2012). The Grand Valley Area, Front Range and Western Slope are the major winery production regions. The primary varieties grown in Colorado are Merlot, Cabernet Sauvignon, Riesling, and Chardonnay. Under good management, shoot numbers on the vine can be adjusted to produce yields averaging 4 tons per acre. However, the average in the state of Colorado is 2.5 tons per acre.

Figure 4 shows the regional distribution of the Colorado wine industry, measured in terms of what share of wine sales are sourced from wineries in that region. The Western Slope’s Grand Valley continues to be the key source, but the Front Range winery cluster has grown considerably in recent years, and pulled ahead of the Grand Valley AVA for top production region in 2013. This regional spread had a notable impact on the winery visit and event numbers reported in the tourism section of this study.

Figure 4: Regional Shares of Colorado Wine Sales, 1999-2013

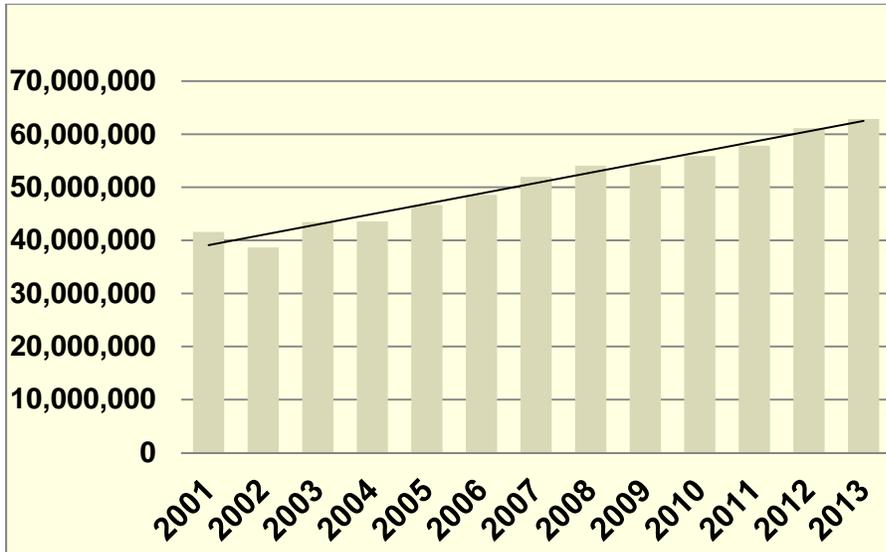


The size and dynamic of the Colorado’s wine industry was first studied in depth in a 2005 study by Colorado State University (Thilmany et al, 2006): this current study serves to update the 2005 study and explores the same economic issues. Wine production in Colorado continues to grow at a rapid rate, with a 251% increase in production volume over the past twelve years (2000 to 2012): sustained double-digit growth for over a decade.

Figure 5 shows the total Colorado wine sales over the past dozen years, regardless of source; not only do Colorado consumers buy more than the national average (3.1 vs. 2.5 gallons per capita), but growth in consumption is steady. Figures 6 and 7 show that the growth in purchases of Colorado wine is growing faster, even though Colorado wines still make up only 5% of total sales. Based on a sample of wineries that responded to a 2012 survey, we estimate wineries

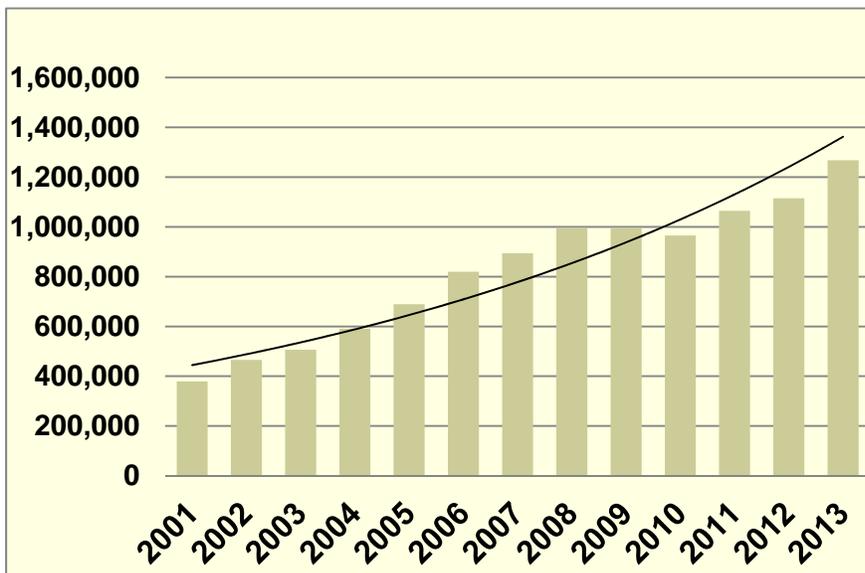
produced 1.2 million liters in 2012 (which lines up with liters sold by Colorado wineries in 2012, suggesting that wine stored for future consumption is minimal or matches wine produced in earlier years that was sold in 2012).

Figure 5: All Wine Liters Sold in Colorado, 2001-13



Source: www.coloradowine.com/cms/index.cfm/feature/175_41/colorado-wine-production-and-market-share.cfm

Figure 6: All Wine Sales by Colorado Wineries

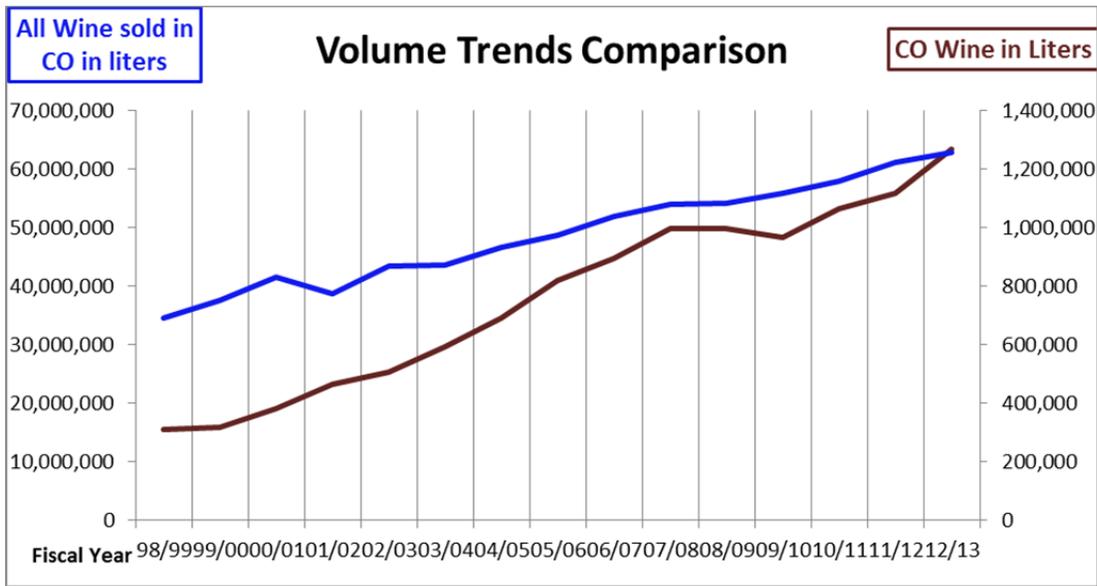


Source: www.coloradowine.com/cms/index.cfm/feature/175_41/colorado-wine-production-and-market-share.cfm

Not only is there notable growth in the volume of sales, but the market share for Colorado wine is also growing because the relative value of wines produced in the state are higher than national

averages. In short, the supply of Colorado wines is growing in value while United States' average wine prices remain stable. Industry statistics reported in the Adams Wine Handbook show the median bottle price for all wines sold in the United States lies between \$6 and \$9, but using wineries' self-reported bottle prices, the average bottle price for Colorado wines is approximately \$16.68, up from \$12.86 in 2005 (Table 4). These numbers translate to a 25% growth in volume over the last five years, but a more impressive 69% growth in average price per bottle².

Figure 7: Colorado Wine Sales Volume Relative to All Wine Sold, 1998-2013



Source: www.coloradowine.com/cms/index.cfm/feature/175_41/colorado-wine-production-and-market-share.cfm

² Prices were estimated using reported bottle prices by wineries; details of those value estimates are given later in the report

Table 4: Production and Sales of Colorado Wine

Fiscal Year	% Mkt share of CO wine by vol.	CO liters	All wine Liters Sold in CO	Change in CO liters	Change in Total State	Change in Mkt Share	CO bottle price \$12.86/750ml in 2005 \$16.68/750ml in 2013	Nat'l bottle price: \$6.14 avg 750ml	% Mkt share of CO wine by \$
91/92	0.3311%	91,800	27,729,900				\$1,224,000.00	\$227,015,448.00	0.5392%
92/93	0.3629%	101,660	28,015,100	110.74%	101.03%	109.61%	\$1,355,466.67	\$229,350,285.33	0.5910%
93/94	0.3955%	117,060	29,596,300	115.15%	105.64%	109.00%	\$1,560,800.00	\$242,295,042.67	0.6442%
94/95	0.3744%	113,160	30,224,100	96.67%	102.12%	94.66%	\$1,508,800.00	\$247,434,632.00	0.6098%
95/96	0.2984%	99,660	33,402,300	88.07%	110.52%	79.69%	\$1,328,800.00	\$273,453,496.00	0.4859%
96/97	0.7402%	250,160	33,796,900	251.01%	101.18%	248.08%	\$3,335,466.67	\$276,683,954.67	1.2055%
97/98	0.7781%	255,732	32,866,984	102.23%	97.25%	105.12%	\$3,409,760.00	\$269,071,042.35	1.2672%
98/99	0.8932%	308,163	34,499,149	120.50%	104.97%	114.80%	\$4,108,840.00	\$282,433,033.15	1.4548%
99/00	0.8480%	318,116	37,513,821	103.23%	108.74%	94.93%	\$4,241,544.27	\$307,113,147.92	1.3811%
00/01	0.9124%	379,443	41,588,183	119.28%	110.86%	107.59%	\$5,059,240.00	\$340,468,591.49	1.4860%
01/02	1.2042%	465,459	38,653,758	122.67%	92.94%	131.98%	\$6,206,125.20	\$316,445,432.16	1.9612%
02/03	1.1649%	506,214	43,456,472	108.76%	112.42%	96.74%	\$6,749,515.07	\$355,763,650.77	1.8972%
03/04	1.3562%	590,977	43,574,504	116.74%	100.27%	116.43%	\$7,879,696.40	\$356,729,939.41	2.2089%
04/05	1.4763%	688,904	46,663,932	116.57%	107.09%	108.85%	\$11,812,408.28	\$382,022,056.64	3.0921%
05/06	1.6868%	819,517	48,584,553	118.96%	104.12%	114.26%	\$14,051,990.31	\$397,745,540.56	3.5329%
06/07	1.7199%	893,783	51,966,371	109.06%	106.96%	101.96%	\$15,325,392.49	\$425,431,357.25	3.6023%
07/08	1.8428%	995,989	54,047,484	111.44%	104.00%	107.14%	\$17,077,897.22	\$442,468,735.68	3.8597%
08/09	1.8371%	995,364	54,180,583	99.94%	100.25%	99.69%	\$17,067,177.46	\$443,558,372.83	3.8478%
09/10	1.7278%	965,635	55,887,299	97.01%	103.15%	94.05%	\$16,557,418.89	\$457,530,687.81	3.6189%
10/11	1.8403%	1,064,438	57,839,892	110.23%	103.49%	106.51%	\$18,251,566.66	\$473,515,915.84	3.8545%
11/12	1.8238%	1,115,139	61,142,266	104.76%	105.71%	99.10%	\$19,120,909.00	\$500,551,350.99	3.8200%
12/13	2.0170%	1,268,101	62,871,315	113.72%	102.83%	110.59%	\$28,202,566.24	\$514,706,498.80	5.4793%

Source: www.coloradowine.com/cms/index.cfm/feature/175_41/colorado-wine-production-and-market-share.cfm

The Economics of the Wine Industry: A Closer Examination

In fiscal year 2012, Colorado wineries produced 123,904 cases with one case containing twelve 750ml bottles. Sales value increased by more than 350% in the last decade, with Colorado wine production increasing by 70% from 2000 to 2012. However, understanding the bigger picture of how this increasing production translates into economic value, contributions and spillovers to the greater Colorado economy requires more information, analysis and discussion. In 2005, a study was completed that was the first benchmark of the industry's 'footprint' in the economy and tourism sector, and has helped to guide industry leadership.

For an updated analysis, the Colorado Wine Industry Development Board (CWIDB) commissioned a Colorado State University Department of Agricultural and Resource Economics (CSU-DARE) team to explore the contribution of the wine industry to the state's economy as well as assess the economic impact it generates in the tourism sector. There are several key expectations for how this study may inform the wine industry and its partners. Perhaps the most interesting thing to individual wineries is how the quality, consistency and visibility of the Colorado industry have evolved over the past several years. With an increasing number of wineries, maturing set of winemakers and continued interest in local foods and beverages among Coloradans, there is an expectation to find higher sales and attendance at Colorado festivals and winery venues resulting in significant growth in the economic contribution of this industry. For the industry as a whole, this research will be part of the criteria used to evaluate whether investments made through the CWIDB have resulted in the intended outcomes of sales growth, higher consumer awareness and a more visible industry in the state.

This study attempts to, first, describe the economic size and scope of Colorado's wine industry and, secondly, to analyze the impact of wine-related tourism on the Colorado economy. Using surveys given to consumers of the Colorado wine industry, as well as surveys sent to each winery, direct and indirect contributions of the industry are estimated. Although much of the focus and approach is similar to the 2005, we can review actions taken to arrive at estimates, as well as new analyses that were conducted at the request of the CWIDB leadership.

Focus of Analysis

As an update of the 2005 CSU study, we will continue to assess Colorado's Grape and Wine Industry assuming it primarily impacts the state's economy in three ways:

1. The income associated with the sales of Colorado wines, with a particular focus on the direct use of winegrapes (or other Colorado grown ingredients) by wineries.
2. The variety of new expenditures generated from the various Colorado wine festivals and winery-based events driven by this growing sector. A focus on core Colorado wine consumers will be made since they are a target market.

3. The expenditures for equipment, property taxes paid, number of employees, and other economic outlays associated with wine production, with a particular focus on how the size of wineries may influence multipliers.
4. The shift in business models/margins as a small business grows into a medium-sized business, especially within the alcohol distribution chain. With this analysis, we can estimate the changes in economic impact from the distribution segment as wineries move into a higher share of wholesale revenues

Methods of Analysis

1. All key existing quantitative data pertinent to the Colorado Grape and Wine Industry (along with comparative national data) will be gathered for the Colorado industry (wine sales, rate of growth, global and national trends). Some comparative data from peer states (Virginia, Kentucky) will be explored.
2. Primary data will be obtained using surveys and interviews with three groups:
 - a. Owners/managers of a representative sample of Colorado wineries
 - b. Industry-based information on sales volumes, wine event attendance (where Colorado wine is a primary focus) and market structure
 - c. Direct surveying of wine event and winery participants
3. These primary data and secondary data will be incorporated into a customized input/output model (IMPLAN) to derive an economic impact figure depicting the industry's impact on Colorado, with particular focus on tourism and jobs activity.

A Scan of Other States' Wine Industries

Economic contribution and impact studies have been conducted for many of the wine producing states in the U.S., including California, Colorado, Minnesota, Missouri, New York, North Carolina, Ohio, and Oregon. These studies are typically funded, in part, by the state's wine growers association or a similar organization and conducted by a university in the state or by a private consulting firm. In general, the goal of these studies is to provide a measure or updated measure of the wine industry; calculating the size of the industry, projected growth, and economic contribution.

In the study of the economic contribution of the wine industry to the state of Minnesota (Gartner & Tuck, 2008), researchers conducted a survey of producers to get an estimate of direct expenditures and then used IMPLAN to determine the resulting indirect and induced contributions of the wine industry. Based on conversations after Colorado's 2005 study, the Minnesota research team adopted many of the same methods of analysis. Based on responses from surveys, researchers calculated an estimate of the number of people that attended a winery event and then utilized daily expenditure estimates based on a different tourism study to determine the direct economic impact of winery related tourism. Total economic contribution of the wine industry to the state of Minnesota in 2007 was estimated as \$36.2 million.

Studies of the economic contribution of the wine and wine grape industry to the state of New York in 2005 , North Carolina in 2005, and Ohio in 2008 were all conducted by the MFK consulting group, and thus all studies have a similar approach (MFK Research LLC, 2005; MFK Research LLC, 2007; MFK Research LLC, 2010). Estimates of the direct impact of the wine industry are based on a combination of data from: the National Agricultural Statistics Service, Department of Labor, Alcohol and Tobacco Tax and Trade Bureau, and direct conversations with winery owners. After estimating the direct impact, IMPLAN was utilized to calculate indirect and induced impacts as well as tax implications. However, no customization of the sectors was described, so multipliers may vary from what actually occurs, depending on their industries' structure.

In the Ohio study, an estimate of the tourism impact was provided based on recent survey data completed by the Ohio Wine Producers Association; in the New York study, the tourism impact was estimated using data from local tourism councils; and in the North Carolina study other MFK research was listed as the source for the tourism impact. Results from the studies conclude that the economic impact of the wine industry in New York in 2005 was \$6 billion, in North Carolina in 2005 was \$813.3 million, and in Ohio in 2008 was \$582.8 million. These numbers seem high, but were hard to examine without more details on their methods. In the Colorado study, we decided primary tourism data would be necessary to obtain credible numbers.

The economic contribution and impact of the wine industry in Missouri in 2010 and in Napa Valley, California in 2012 were conducted by the Stonebridge Research Group (Stonebridge Research Group, 2010; Stonebridge Research Group, 2012). In both studies, multiple data sources were used to estimate direct impacts of the wine industry including: the National Agricultural Statistics Service, the United States Bureau of Labor Statistics, federal and state excise tax data, the Alcohol Tobacco and Tax and Trade Bureau, and industry interviews. Tourism impacts were estimated using interviews of wineries to obtain estimates of the number of visitors and estimates of visitor spending from studies conducted by the tourism office to obtain a direct impact from tourism. As in previous studies, IMPLAN was used to estimate indirect and induced impacts from the wineries and from wine-based tourism. The economic impact of the wine industry in Missouri was estimated at \$1.6 billion in 2009, and in Napa Valley \$13.3 billion in 2011. Although these studies did more primary analysis of tourism, it is not clear how they delineated how vital the wine industry was in the tourism activity of those who participated.

In the study of the economic contribution of the wine industry to the state of Oregon, researchers calculated a total economic impact of \$2.7 billion (Full Glass Research, 2011). Direct impacts of the industry were calculated using secondary data sources such as the Oregon Agricultural Statistics Service and the Oregon Liquor Control Commission, as well as primary data from a survey of Oregon wineries. Tourism impacts were calculated using data from Oregon tourism office estimates. As in all previous studies, IMPLAN was used to calculate indirect and induced

impacts from both wineries and wine-related tourism, but there was no detail on whether customization of sectors or closer examination of tourists was completed.

As is evident from previous studies of the economic contribution and impact of the wine sector to a state's economy, although the size of impacts varies widely, the methods by which they are calculated are very similar across all studies. While some rely more heavily on survey data and others on secondary data sources, all studies estimate both direct economic contributions from the sales of wine and direct economic impacts from tourism. Once direct contributions and impacts are estimated, IMPLAN is utilized to determine indirect and induced impacts, thus providing a total economic contribution and impact of the wine industry in each of the states studied. In this paper we will follow a similar methodology, using a combination of survey data and secondary data to calculate direct impacts and contributions and utilize IMPLAN to calculate indirect and induced impacts. However, by customizing the IMPLAN wine sector, we believe we can create a more credible estimate of true economic activity and contributions. Plus, we hope to delineate the role wineries are playing in attracting tourists, and delineating where winery visits and events are merely additional activities on trips. These differences are important, and although they may lower the numbers reported for this state, it makes those estimates defensible in the economic development community.

Wine Consumers and Visitors

Overall, the consumption of wine by Americans is on an upswing. From 2000-2010, Americans consumed almost 700 million gallons of wine a year on average. By 2012, the total consumption of wine was 856 million gallons, with the trend showing increased consumption of United States produced wine. International Wine and Spirit Research forecasted that this trend will continue and US wine consumption should continue to grow by 10% each year between 2010 and 2015. According to the Houston Chronicle, by 2015, the United States will surpass France in the per capita consumption rate of wine. In 2012, the most popular varieties of table wine consumed in the United States by market share include Chardonnay (21%), Cabernet Sauvignon (12%), Merlot (9%) and Pinot Grigio (8%), (Wine Business, 2013). Recent data (2012) shows that every United States resident, on average, consumes 2.73 gallons of wine, while consumption in Colorado averages 3.1 gallons per capita.

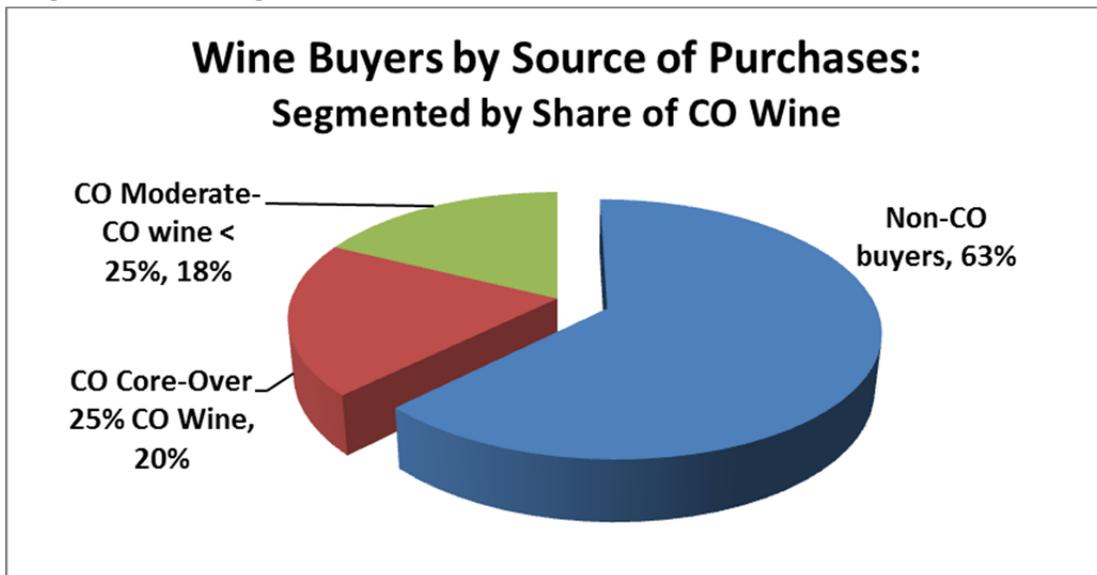


But, the Colorado Wine Industry is interested in growing smartly as they enter mainstream wine markets, by both strengthening the current consumer base and attracting new wine drinkers that may be interested in Colorado wines for various reasons. The mega-trends and the information on Colorado wine's share of sales in Colorado are key data points. Yet, to better understand the types of consumers driving this growth, and better inform the economic contribution analysis, CSU conducted a survey in late 2012. The survey was intended to explore wine buying

behavior, preferences, frequency of Colorado wine purchases, expenditures when attending wineries and wine events, and some other household information. More than 250 surveys were completed at five locations including a wine festival, a wine and cheese festival, a tasting room, and two liquor stores with a focus on buying behavior, visits to wineries and wine events and perceptions of Colorado wine. Surveying was targeted to assure that there was a significant sample of those who seek out Colorado wines (to gain more information on this key group), as well as those who were participating in wine as part of their travel and tourism choices. But, some surveying was conducted at liquor stores so that there was information on more typical wine consumers so that more generalizable conclusions could be drawn.

Using information from surveys completed at the mainstream liquor store (Wilbur’s Beverage in Fort Collins, Colo.), we estimated three categories of wine consumers, primarily defined by the share of their wine purchases that they reported were from Colorado wineries. Figure 8 shows that about 20% of those surveyed purchase at least 25% of their wine from Colorado brands, another 18% bought some Colorado wines (but less than 25%) and 63% reported buying no Colorado wines. (Note: these levels were chosen because there was a natural break in the data at about 25% of wine purchases).

Figure 8: Defining Core Colorado Wine Consumers



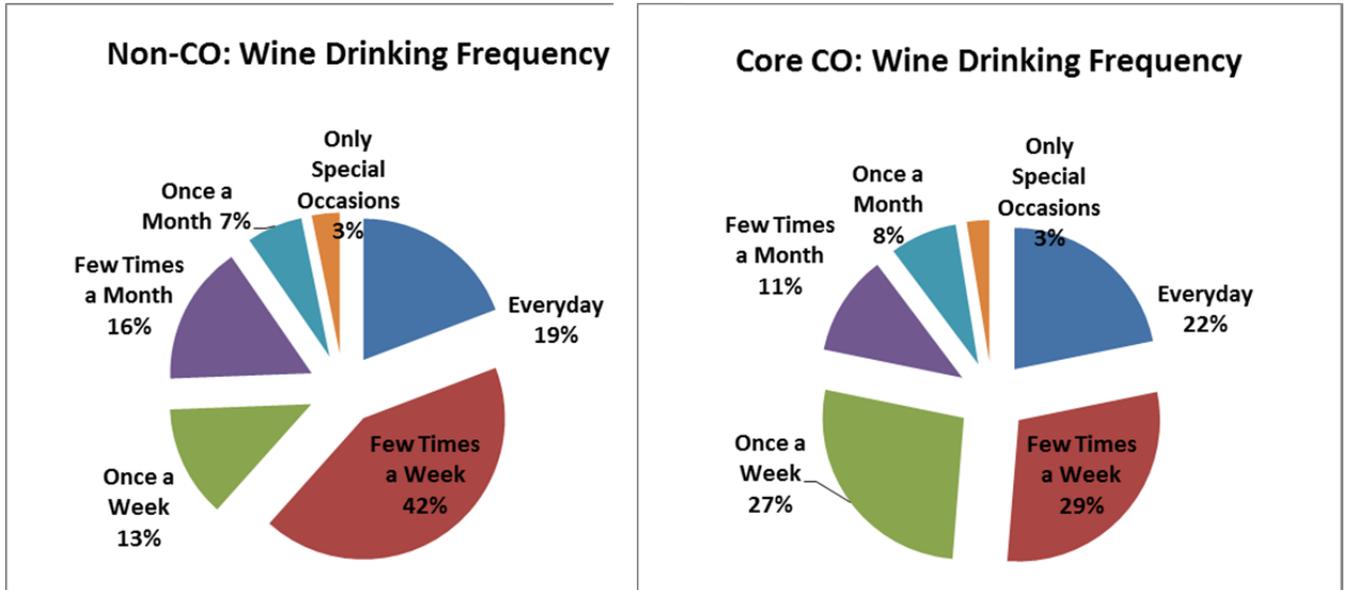
**Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
 CO Moderate (18%) bought some Colorado wines (but less than 25% of total purchases);
 Non-CO buyers (63%) reported buying no Colorado wines.**

Calculating a simple average of these categories would provide a market share that is consistent with the market share that calculated from the market level data (5.5 %, found in Table 4). Specifically, if the 20% core buyers spend 25% of their dollars, that would account for about 5%, and the other 18% may account for the other 0.5-1%. So, it is realistic to assume these categories

are good estimates of key customer groups. From this point forward, we will use these groupings to do some comparative analysis of important target customers for the industry.

Figures 9a and 9b are the first comparisons across these groups, and show many similarities, but a few striking differences as well. One key contrast is that a larger share of Colorado wine drinkers are drinking at least once a week, which is encouraging news for the industry since these consumers' frequency will drive growth if they remain fans of Colorado wine choices.

Figures 9 a & b: Wine Consumption Frequency, Colorado Core vs. Non-Colorado

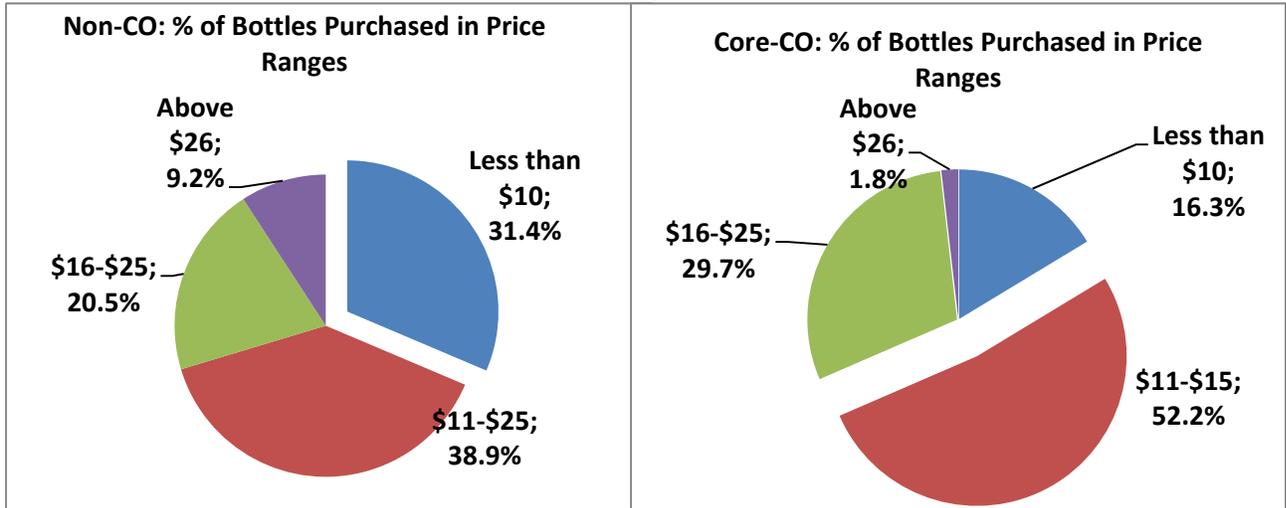


**Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
Non-CO buyers (63%) reported buying no Colorado wines.**

Besides frequency, the other important aspect that could drive growth in Colorado wine's market share is the price paid for each bottle of wine. Figures 10a and 10b show how purchases vary between the Colorado core buyers and others.

Again, there are some similarities across these wine consumer groups, but Colorado Core wine consumers were less likely to buy in the lowest price category (less than \$10 bottles), and more commonly choose wines in the middle value ranges. But, Non-Colorado wine drinkers are purchasing a significantly higher amount of wine bottles priced \$26 or above compared to Core Colorado consumers. Yet, this comparison may be a bit misleading since Colorado does not have many choices in the high end wine category compared to the International or California sector.

Figures 10 a & b: Average Bottle Price Purchased, Colorado Core vs. Non-Colorado



Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
 Non-CO buyers (63%) reported buying no Colorado wines.

To gain a broader perspective on wine pricing in the national market, Table 5 shows some recent changes in the structure of pricing. The overarching theme is that, in general, consumers are purchasing higher quantities of less expensive wine, with the median price between \$6 and \$9. This is consistent with the price range reported by many Moderate Colorado wine drinkers while those who were self-reported Core Colorado wine drinkers are among a smaller, but growing, cohort of wine consumers seeking out mid-range priced wines. And given the small and shrinking share of bottles purchased in the highest price points, Colorado’s smaller presence in those price points may be less troubling.

Table 5: National Market Shares for Wine bottles, United States averages

Dollar Share	Price Point	% Change Comparable 12 Months		
		2007	2008	2009
8.5%	0-\$2.99	+ .05%	+4.4%	+3.4%
25.4%	\$3-\$5.99	+ 5.3%	+ 5.7%	+ 9.7%
25.3%	\$6-\$8.99	+ 3.0%	+ 0.8%	- 0.7%
18.5%	\$9-\$11.99	+ 13.7%	+ 8.1%	+ 5.8%
11.0%	\$12-\$14.99	+ 10.8%	+ 5.4%	+ 1.4%
6.4%	\$15-\$19.99	+ 15.4%	+ 8.5%	- 0.5%
4.7%	\$20+	+ 14.7%	+ 1.4%	- 6.4%
100%	Table Wine	+ 7.4%	+ 4.4%	+ 3.4%

Table 6 represents another characterization of these same purchase trends by summarizing the self-reported purchases of respondents, divided by their Core CO, Moderate CO and Non-Colorado groupings. In addition to indicating the volume of wine purchased by these groups in the previous three months, it also indicates their preferred vessel, which does vary somewhat by group. So, these volumes would be aggregated to arrive at total purchases in the last three months by each cluster.

Table 6: Reported Wine Purchases, 3 Months prior to survey

	Average wine bottles purchased in last 3 months	Average wine cases purchased in last 3 months	Average wine glasses purchased in last 3 months	Average boxed wine purchased in last 3 months
Core CO Drinkers	10.66	1.83	13.00	3.55
Moderate CO Drinkers	16.57	1.44	16.88	2.50
Non-CO Drinkers	13.73	2.36	8.03	1.68
Everyone	13.35	1.99	11.52	2.39

Source: CSU Wine Survey, conducted Fall 2012-Winter 2013

Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
 CO Moderate (18%) bought some Colorado wines (but less than 25% of total purchases);
 Non-CO buyers (63%) reported buying no Colorado wines.

The pattern among these purchases is less clear, but one finding may illustrate an opportunity to gain traction with the Moderate Colorado wine consumers. Non-Colorado wine drinkers, on average, purchased the most cases of wine in a three month time frame at 2.36 cases per month, compared to 1.83 cases of Core Colorado wine consumers. However, the Moderate CO drinkers buy by the glass and the bottle, which creates an opening to gain their interest through casual tastings and recommendations by restaurant staff or retailers.

Together, frequency and pricing information should give a better sense of how various consumer groups contribute to market share, and potential growth as the industry continues to develop. Table 7 summarizes the self-reported expenditures by the three designated groups. On average, Core Colorado wine consumer’s drink more frequently than Non-Colorado wine consumers, but Non-Colorado consumers spend more on wine annually (approximately \$270.32 more than Core Colorado wine drinkers). The overall consumer wine expenditure average was \$212.29 and \$849.17 for the three month and annual expenditures, respectively. However, one should be cautious in interpreting these, as the surveys were conducted in times of the year where purchases may be higher (wine grape harvest), and these averages exceed what would be expected given per capita consumption and wine pricing data shared above.

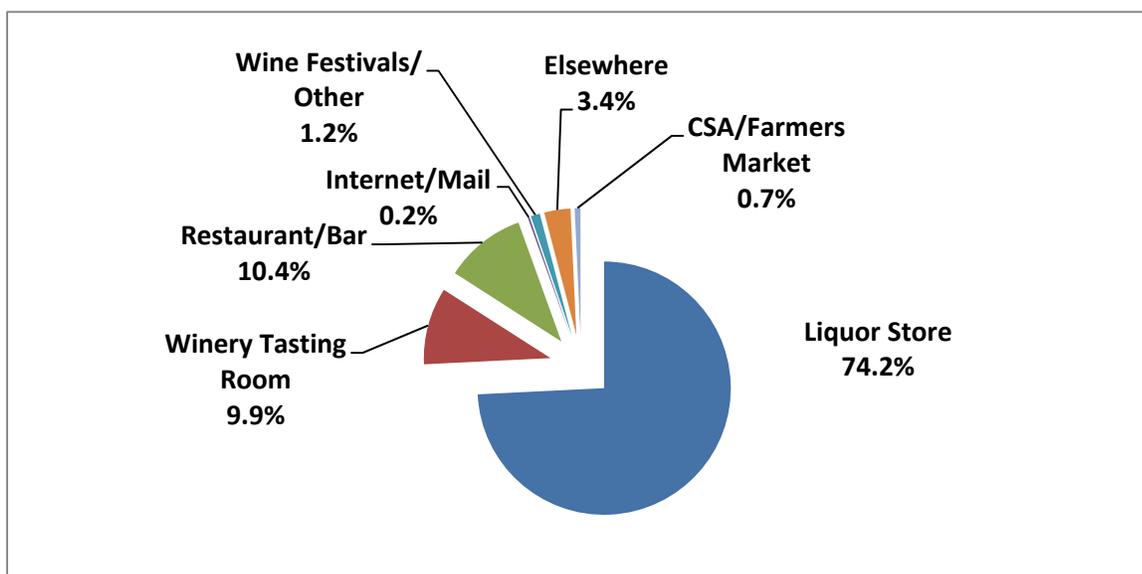
Table 7: Wine Expenditures and Annual Projections, by consumer groups

	Average wine expenditure - last 3 months per consumer	Projected 12-month wine expense per consumer
Core CO Drinkers	\$ 174.55	\$ 698.18
Moderate CO Drinkers	\$ 198.17	\$ 792.69
Non CO Drinkers	\$ 242.13	\$ 968.53
Everyone	\$ 212.29	\$ 849.17

Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
 CO Moderate (18%) bought some Colorado wines (but less than 25% of total purchases);
 Non-CO buyers (63%) reported buying no Colorado wines.

Where consumers decide to purchase their wine plays a role in the local economy as well, both because it affects how money circulates through the community and because Colorado wines may still have a disadvantage in gaining access to some market channels. State and local policy play a major role in the shaping of wine markets, as the laws dictate which sorts of establishments may or may-not distribute wine. Currently in Colorado, wine is not allowed to be sold in grocery stores, except for certain case study locations. Not surprisingly, we found that approximately 74.2% of wine purchased was from liquor stores (Figure 11).

Figure 11: Where Consumers Buy Wine: Reported Shares through Various Channels



Although it is likely that there is a significant share of wine purchased at restaurants/bars (given the number of glasses reported in Table 6 above), the share of consumers reporting purchases directly from a winery tasting room is likely inflated given some of the population surveyed was intercepted at a winery (or wine event). However, as will be discussed more in the economic analysis, purchases made from wineries differentially impact the economy because all revenues are going directly into establishments rather than through wholesale distribution.

The other interesting aspect of where consumers buy their wines is the potential ‘barrier’ it represents to those wineries not available in all outlets. One could imagine that only the most loyal customers will search out and make extra trips to purchase Colorado wines if they are not available where they normally buy other goods.

Table 8: Potential Opportunity Costs to Find Preferred Wines

	Average Minutes to Market	Average Extra trips to Market (per Month)	Average Minutes (Extra Trips)
Core CO	19.19	3.38	42.21
Moderate CO	17.21	4.93	23.24
Non CO	18.60	2.96	53.39
Full Sample	18.47	3.48	44.11

Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands;
CO Moderate (18%) bought some Colorado wines (but less than 25% of total purchases);
Non-CO buyers (63%) reported buying no Colorado wines.

Table 8 shares this study’s attempt to explore the time it takes for consumers to travel to the markets from which they are purchasing their wines. On average, it takes survey participants approximately 18 minutes to reach their purchase site with few notable differences. And, it isn’t surprising that non-Colorado wine consumers are taking less extra trips per month to purchase wine since they purchased more cases (Table 6) but the time they are spending on those trips suggest they go out of their way to get their choice of wine. Given the significant time these buyers are spending to procure their wine, it does seem that marketing channel issues affect wine purchases, especially if one believes these opportunity costs of time to get wine may differentially affect Colorado’s core consumers (who also reported almost one hour of extra time devoted to their wine shopping). This may be an issue for the industry to further explore if policy changes are perceived as a significant barrier to further growth for Colorado wines.

Table 9: Participation in Winery Events and Tourism

Full Sample	How many times per year do you attend:-A wine festival in Colorado?	How many times per year do you attend:-A wine tasting at a winery in Colorado?	How many times per year do you attend:-A wine dinner/tasting party that features Colorado wines?
Core CO Drinkers	1.31	2.87	1.24
Moderate CO Drinkers	1.33	2.26	0.89
Non CO Drinkers	1.10	1.44	1.31
Everyone	1.23	2.16	1.20

Note: CO Core (20%) purchase at least 25% of their wine from Colorado brands; CO Moderate (18%) bought some Colorado wines (but less than 25% of total purchases); Non-CO buyers (63%) reported buying no Colorado wines.

As the production of Colorado wine increases annually, so do the marketing and spillover effects of the state’s wine industry, most visibly with the tourism sector. Our survey asked consumers about their participation in Colorado wine festivals and winery visits as a means to estimate the tourism activity spurred by the growth of the sector. We were not surprised to find that the Core Colorado wine group participated in wine-related tourism the most frequently; an average of 2.87



visits to Colorado wineries, compared to 1.44 visits for the Non-Colorado ‘control’ group. It was encouraging to find that the Non-Colorado group attended more annual dinners or wine tasting parties in which a Colorado wine was featured (1.31 times per year). This may present an opportunity to increase interest and awareness if more resources were targeted at developing and promoting such events.

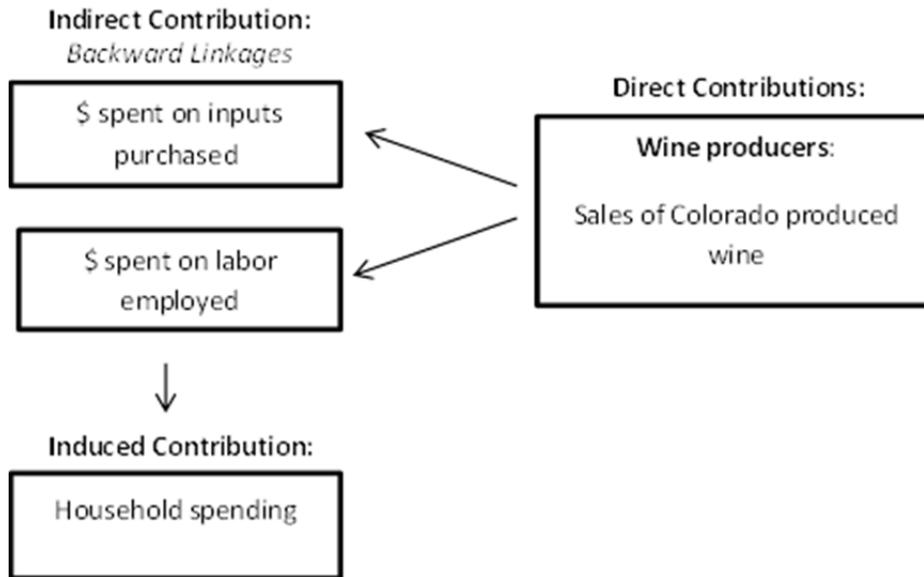
Understanding some of the key dynamics of Colorado wine consumers is important to develop marketing strategy, but we will also use some of these findings to guide our analysis of the economic contributions of this sector to the Colorado economy.

Estimating Economic Contributions from the Wine Sector

As outlined in an earlier section, this project intended to update a previous study of the Colorado wine industry (Thilmany et al, 2006) using a similar methodology, but further refining the data collection and customization process. Input-output modeling is the most common framework that has been used by many regional economists to analyze data on inter-industry structure, estimate economic change and quantify economic contribution. As was the case in the 2006

study, IMPLAN (Impact Analysis for Planning) software was used and provided key economic results and relationships outlined in Figure 11.

Figure 11: General Framework of Economic Contribution Analysis



The data in an IMPLAN model is a combination of national averages and publically available regional data from sources such as the Bureau of Labor Statistics (BLS) and the National Agricultural Statistical Service (NASS). For a sector like the Colorado Wine industry, national averages are unlikely to be representative as wine production in Colorado differs from that of California (which is the dominate force in the national average). To refine and populate a more customized model, the first step was to collect surveys from consumers of Colorado wine industry and wineries. As mentioned previously, the consumer survey included a variety of questions that determined average wine expenditures on hotel, regional transportation, food, Colorado produced goods, shopping, entertainment and other expenditures among core CO drinkers, noncore CO drinkers and non CO drinkers (appendix). The majority of that information was used to arrive at impacts to tourism (including number of days each consumer if they visit for a wine festival or an event). In addition to the consumer survey outlined above, a winery survey was conducted to determine the gross sales and allied economic activities associated with sales of Colorado wine (appendix). With more detailed information on expenditures (for equipment, property taxes paid, payroll for employees, etc) associated with wine production, and a particular focus on where those purchases and expenditures occur, we can more accurately measure the impact of the wine sector on surrounding communities.

To augment the information on tourism gathered from consumers, we asked wineries to approximate the total number of people who visit their wineries annually and who they sell to

when they attend “wine events,” and also asked them to estimate the share that were from in- and out-of-state (since many may have the chance to see personal identification, payment or shipping information that would indicate their place of residence). The total attendance at events was information gathered from event organizers, but the wineries’ numbers were used to reinforce estimates.

Table 10: Colorado Winery Survey respondents by size

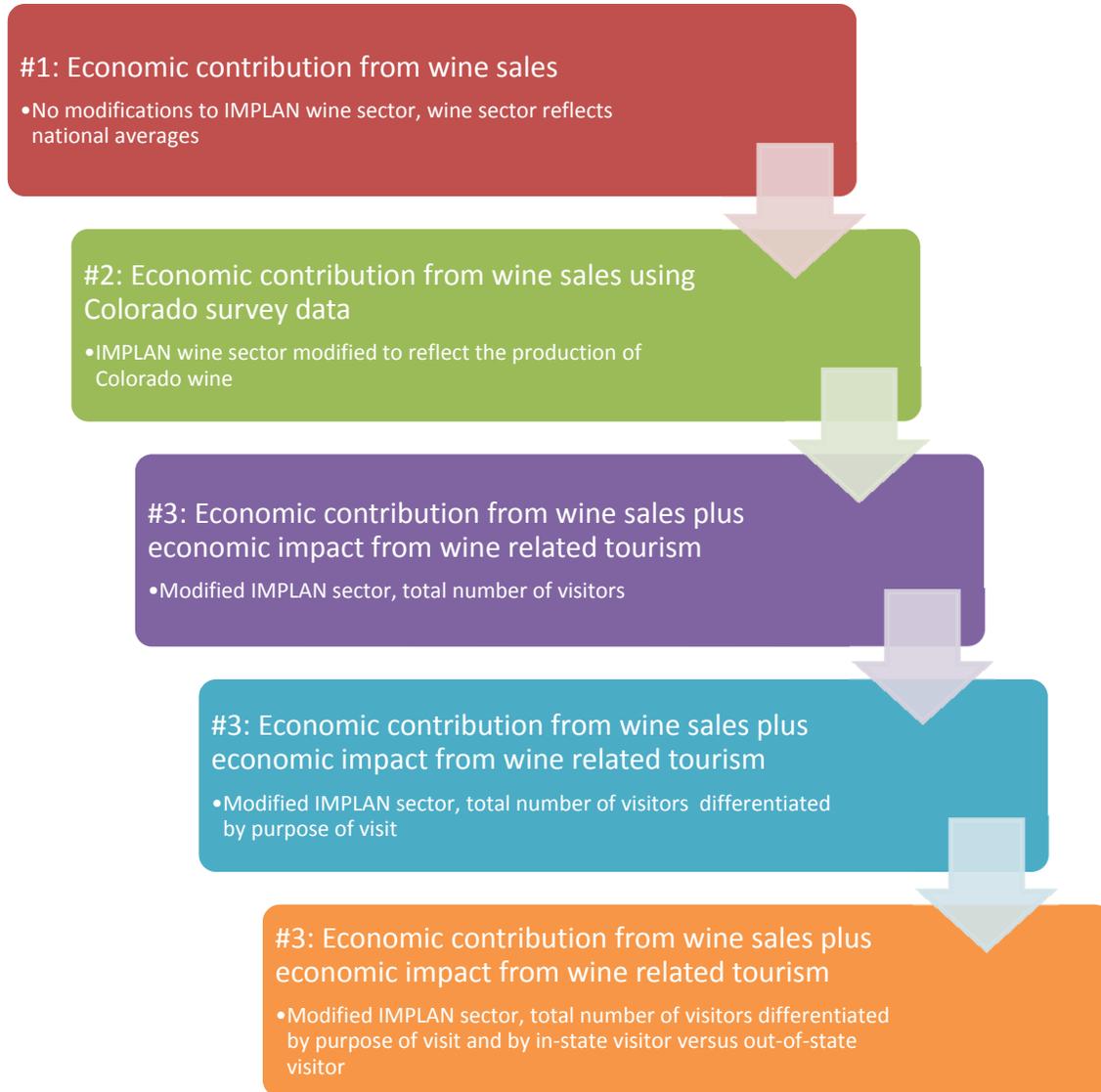
Number of Cases	Wineries	Total Cases Sold
0-700	17	3,829
701-4800	11	16,491
Above 4800	3	25,192
Total	31	45,512

Unfortunately, the winery survey had a response rate of only 33% (Table 10) but the research team was strategic in targeting specific size categories to ensure the sample we do have is representative of the industry. Using the production numbers shared in Table 10, we could verify that we have one-third of the wineries and that they represent about the same share of total wine volume. So, the low response rate is still of concern, but we proceeded by generalizing that all numbers provided by this sample could be expanded by a magnitude of three to arrive at industry numbers for many categories. Where appropriate, we also provided analysis broken down by size categories.

Refinement of the Economic Contribution Approach

As shared with the CWIDB early in the project planning, we know that IMPLAN’s value of wine production and economic numbers are highly inflated for Colorado because it assumes the industry provides some “average” share of all wine sold in Colorado, which is a high consumption state. Therefore, the Minnesota IMPLAN Group, Inc. (MIG) encourages analysts with better data to always use it when building models for better model results. In earlier work by CSU, several methods to better estimate and communicate what we can learn about the contributions of different economic sectors have been developed (Watson et al, 2007; Gunter and Thilmany, 2012). Figure 12 maps out the steps this team took to refine the estimates for this study, and we will briefly summarize how those steps fine-tuned the estimates so the CWIDB can be confident sharing the results with their key stakeholders.

Figure 12: Steps to Refine Estimates of the Economic Contribution and Impact Modeling of the Colorado Wine Industry

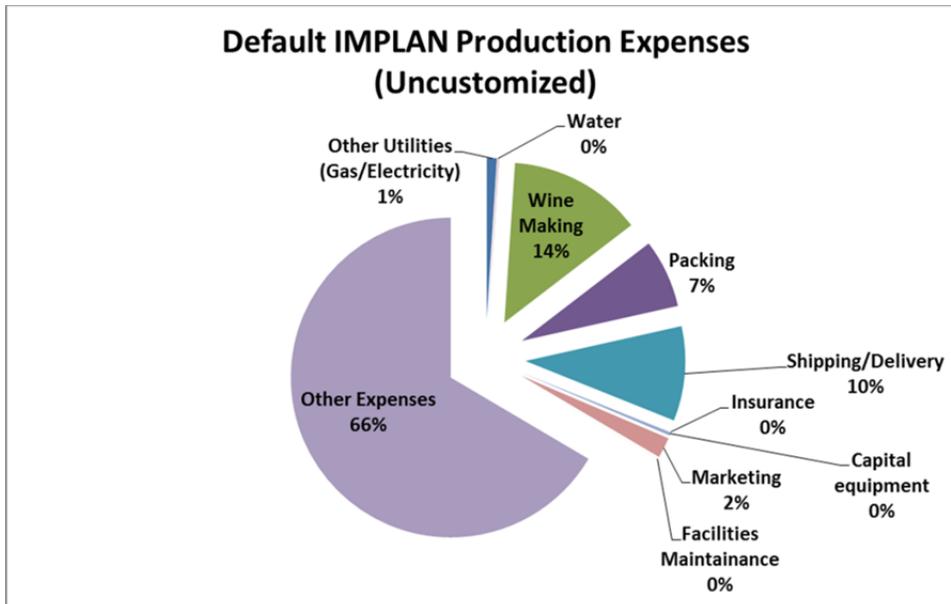


Key Steps in the Economic Contribution Analysis

Direct, Indirect and Induced Contribution

For any analysis that uses IMPLAN as the key analytical tool, the contributions are laid out in three different parts: direct, indirect and induced contributions. The direct contribution is the economic activity that directly results from an industry, such as goods sold, people hired and salaries paid. It refers to production associated with the demand for a good, but if it isn't customized with good data, it may be inaccurate. Indirect effects are the secondary contributions due to the increased input demand from directly affected businesses. For example, when a Colorado winery produces wine, it purchases inputs from input suppliers like wine bottles and winegrapes. This stimulates the input supply businesses that sell goods and services to the winery to purchase inputs for their own operations as well as hire labor. Thus, by understanding the basic business patterns of the wine industry, we can calculate the indirect contribution of Colorado wineries to Colorado's economy that results from economic activity of input suppliers. The induced contribution is the economic activity associated with household spending that is a result of households earning money from working in wineries or with those businesses associated with the wine industry. Together, the direct, indirect and induced contributions estimate the total economic contribution of the wine industry.

Figure 13: Default IMPLAN Production Expenses for the Wine Industry



Production expense allocations based on industry averages for the wine sector are presented in figure 13 (default IMPLAN data). Note that production expenses will be refined with survey data in a later step. The economic contribution of the Colorado wine industry given default IMPLAN data is \$30.1 million (Table 11). This result represents the contribution estimates that one would

arrive at if they simply based them off the gross sales reported by CWIDB, using assumptions built into IMPLAN.

Table 11: Phase I-Economic Contributions: Estimates with Average Wine Bottle Price from 2006 study

<u>Impact Type</u>	<u>Employment</u>	<u>Labor Income</u>	<u>Output</u>
<u>Direct Effect</u>	58	1,611,970	18,807,916
<u>Indirect Effect + Induced Effect</u>	69	4,083,711	11,301,986
<u>Total Effect</u>	127	5,695,681	30,109,902

Note: No tourism impacts are considered in this phase.

As Figure 12 illustrates, the purpose of doing a more thorough assessment is to refine broad estimates with information we can learn about the industry, including its buyers, sellers and visitors. The first refinement is updating the model with information from the winery survey. As stated earlier, the value of sales of Colorado wine was estimated at \$24.8 million (significantly above the \$18.8 million included in the analysis presented above). Table 11 used an estimate based on average wine bottle prices from 2006, but given weighted average pricing for sales reported by the wineries, we updated this number to \$16.68 per 750 ml bottle, thereby increasing the value of sales to \$24.8 million in 2012 (Table 12). Combined with indirect and induced effects, that raised the contributions of the industry to \$39.8 million simply because the wineries are achieving greater price points.

Table 12: Economic Contributions: Updated Colorado wine value from 2012 survey

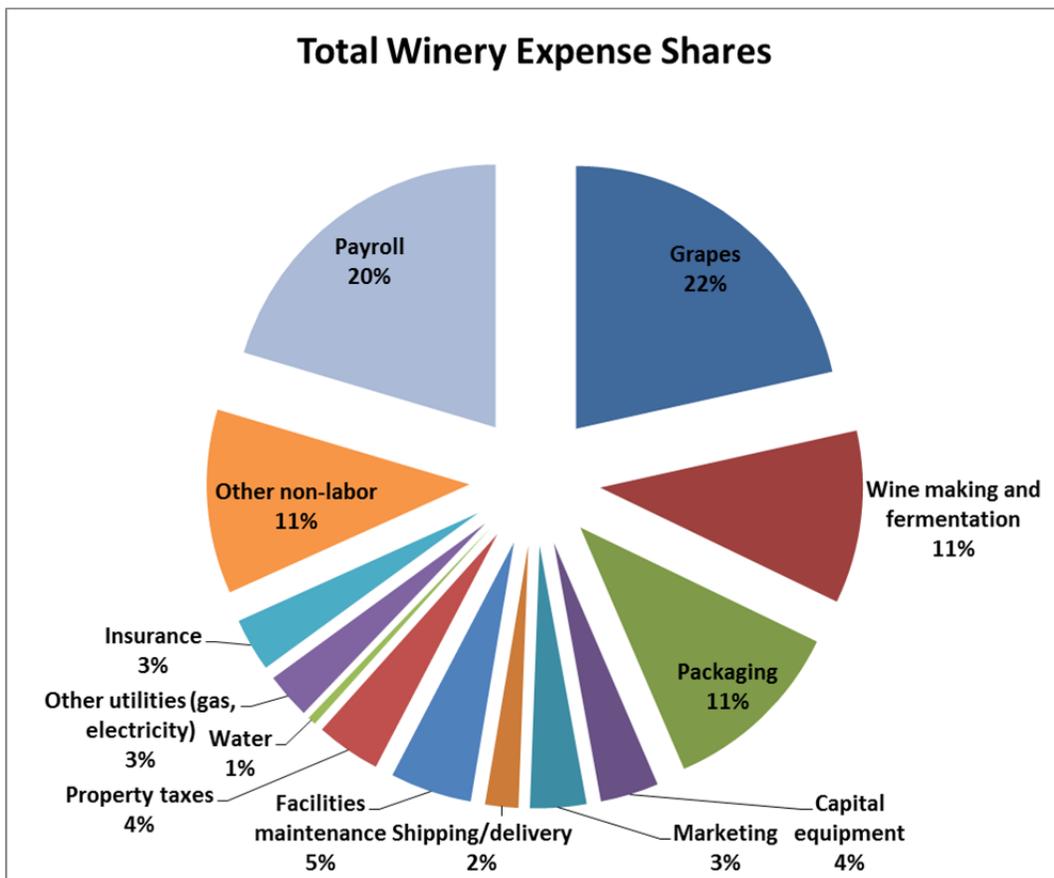
<u>Impact Type</u>	<u>Employment</u>	<u>Labor Income</u>	<u>Output</u>
<u>Direct Effect</u>	77	2,127,800	24,800,681
<u>Indirect Effect + Induced Effect</u> <u>(approx)</u>	91	5,400,000	15,000,000
<u>Total Effect</u>	168	7,527,800	39,800,681

Note: This table integrates new wine bottle price estimate but does not consider cost estimates of wineries. **Essentially, this table shows growth from industry in increased value perceived by customers (rather than production growth).**

Figure 12 lays out our economic contribution methodology by steps, to describe how we refine IMPLAN's estimates of the wine sector's economic activity into more accurate estimates based on data collected from the industry and Colorado consumers/travelers. As one of the initial steps, using information from the 2012 survey of wineries, we estimated more accurate production expenditure shares for the Colorado industry (Figure 14).

The results of the surveys are then used to customize IMPLAN output data based on the distribution and proportion of the expenses the wineries reported, but still using some assumptions from IMPLAN about locations of firms that provide those services (most labor is assumed to be very local). These expenses are intermediate expenses that include goods that are used in the production process like marketing, shipping, maintenance, utilities and grapes, as well as value added activities, that are primarily comprised of employee compensation, proprietor income, other property type income and indirect business tax. The customized model results are then more accurate terms of total industry output, labor income (wages, salaries, rents and profits), total value added (similar to Gross Domestic Product), and employment.

Figure 14: Estimated Expenditures for Colorado Wineries, 2012



The economic contribution of the Colorado wine industry, refined with both accurate sales values and expenditure data that reflect how the wine sector is contributing to other aspects of the Colorado economy, is \$41 million. Although the numbers have not changed change, they do more accurately reflect the industry’s presence in the economy. The multiplier derived for the wine sector is 1.65; this means that for every \$1 of Colorado wine that is sold, the contribution to the state’s economy is \$1.65.

Table 13- Economic Contributions using Customized Colorado Wine Sector

Impact Type	Employment	Labor Income	Output
Direct Effect	366.4	2,090,778	24,394,661
Indirect Effect	56.7	4,015,033	11,789,376
Induced Effect	36.7	1,604,634	4,856,574
Total Effect	459.8	7,710,445	41,040,611

At the request of several wineries, we decided to add several new analyses in this update, including scale-specific multipliers. In our analysis, instead of simply presenting one multiplier for the wine industry, we created customized multipliers related to the size of the winery. Because the Colorado wine industry is made up of very different business models ranging from smaller producers with a focus on direct sales and more hand labor, up to much larger production facilities who mechanize part of their process and rely on some wholesale relationships, we know that their contributions to the economy may differ. And, when calculating multipliers in order to determine total economic contribution of an industry, the way in which a good is produced plays a large role in determining the magnitude of the multiplier. Economic contribution multipliers are estimated for three broad size classes: small wineries that produce less than 700 cases a year, midsize wineries that produce 700-4,800 cases a year, and large wineries that produce more than 4800 cases (Table 14). Breakdown of size categories is based on our assessment from the wineries survey.

Table 14: Scale-dependent Economic Contribution Multipliers

	Direct Effect	Indirect	Induced	Total Effects
Large	1	0.522259	0.209069	1.731328
Midsize	1	0.454403	0.188889	1.643293
Small	1	0.365748	0.166221	1.53197

As is evident from Table 14, multipliers for the large wineries are the largest. This tells us that for every dollar of wine sold, the total contribution to the state’s economy is \$1.73 if that wine

was produced at a large winery and \$1.53 if that wine was produced at a small winery. What is it that creates this difference? The likely contributor to this difference is that more of the inputs utilized in the more mechanized production of the large wineries are purchased within the state and create more economic activity than for the smaller wineries, creating a larger indirect and induced impact. These are estimates however, and each winery likes varies from the average; however, these numbers can be used confidently by any winery to estimate their own impact to their surrounding community. Note that there are still the tourism linkages to consider.

Tourism

Wine is, and will likely remain, a unique complement to the broader tourism industry of Colorado. Wine festivals (winey visits, tasting room visits, wine making class and classes on wine appreciation) and visits to wineries bring in money and create economic activity to the region as tourists purchase goods and services from local businesses.

To arrive at estimates of wine-based tourism, we started by calculating the day-by-day average expenses of tourists by tabulating consumer survey results from the wine festivals. For example, average expenditures included per day expenditures on hotel, regional transportation, food, CO produced goods, shopping, entertainment and spending on other goods.

Tables 15 a & b: Tourism Expenditures by Wine-based Travelers

Full Sample	How many nights are you planning on staying in total?	How many total days are you on vacation in Colorado (at this location or at other sites)?	How much do you expect to spend (in dollars per day) on the following during this trip:-Hotel	How much do you expect to spend....Regional transportation (including gas)
Primary Reason	2.15	8.00	\$ 142.57	\$ 76.79
Secondary Reason	2.18	4.00	\$ 225.00	\$ 127.27
Just an Activity (J.A.)	2.57	3.41	\$ 126.53	\$ 51.81
Secondary + J.A.	2.44	3.63	\$ 168.19	\$ 82.56

How much do you expect to spendFood	How much do you expect to spendShopping on Colorado produced goods	How much do you expect to spend-Other shopping	How much do you expect to spend ...Bottles of wine	How much do you expect to spend ...Entrance Fee/Entertainment	How much do you expect to spend ...Travel to and from region
\$ 98.75	\$ 55.36	\$ 42.36	\$ 103.69	\$ 74.48	\$ 126.60
\$ 147.27	\$ 40.71	\$ 10.00	\$ 95.45	\$ 72.88	\$ 177.86
\$ 58.89	\$ 46.79	\$ 12.50	\$ 58.35	\$ 76.40	\$ 87.43
\$ 92.41	\$ 44.76	\$ 11.67	\$ 72.93	\$ 74.83	\$ 117.57

To avoid double counting, we excluded wine purchases because they are already counted when we calculate the direct contribution of wine sales in Colorado. Total expenditures were calculated by multiplying the total number of visitors by the number of self-reported travel days and then by the average daily expenses. Tables 15 a and b summarize these expenditures.

In addition to sharing summaries of expenditures, it was important to delineate whether wine tourism was a key, secondary or less pertinent reason for the trip. So, the survey asked visitors if visiting the winery or wine festival was the primary reason for their trip, a secondary reason, or just an activity on a trip planned for other purposes. If visiting the winery was their primary reason for their trip, then the entire expenditure was attributed to the wine industry. If it was a secondary reason, 50% was attributed to wine industry and it was just an activity.

Although the consumer survey provides this expenditure data, we still relied on wine event managers and the wineries themselves to arrive at estimates of the number of visitors we see in Colorado. Given responses to our queries, the Winery events estimated hosting about 16-18,000 visitors (Table 16, the range was increased to reflect more minor events which were not included here) in addition to 265,790 winery visitors.

Table 16: Wine-related Traveler Estimates, 2012

Attendance at Various Wine Festivals Across Colorado, 2012
Source: Event Organizers

Event	Attendance
Castle Rock WineFest	2500
Colorado Mountain Wine Festival	5200
Colorado Urban Winefest	2000
Grande River concert series	2000
Colorado Winery Row Fridays Uncorked	1500
Manitou Springs Wine Festival	2000
Woodland Park Vino and Notes	800

To refine simple estimates of visitors, we calibrated these numbers by the estimated percentage of non-local visitors or visitors that were more than 100 miles from home that visited a Colorado wine festival (either self-reported by consumers in surveys at events, or estimated by the wineries with respect to their visitors). For the local respondents, only that day’s expenditure is counted. Summing up resident and non-resident expenses at these events gave us a good estimate of the total expenditure by visitors at wine festivals.

For tourism estimates from winery visitors, we aggregated responses from the sample and converted to full winery universe and calculated total expenditure accordingly. Summing up local and non-local expenditures on wine festivals with expenditures on visitors to wineries resulted in the dollar value of total spending that is used to customize IMPLAN data.

Table 17: Tourism Impacts, Divided by In-State and Out-of-State Visitor Contributions

In-State-Winery Visit				
Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	425	\$11,271,473	\$17,105,807	\$26,367,719
Indirect Effect	51.7	\$2,760,901	\$4,671,154	\$7,904,739
Induced Effect	81.3	\$3,551,520	\$6,441,051	\$10,774,760
Total Effect	558	\$17,583,895	\$28,218,013	\$45,047,217
Out- of- State-Winery Visit				
Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	374.7	\$10,763,146	\$17,174,413	\$26,269,158
Indirect Effect	52.6	\$2,830,230	\$4,713,020	\$7,899,378
Induced Effect	78.7	\$3,438,521	\$6,236,438	\$10,431,917
Total Effect	506.1	\$17,031,896	\$28,123,870	\$44,600,454

Summary of Approach, Findings and Advantages of Refined Estimates

Characterizing the economic contribution of the Colorado wine industry and its tourism impacts is not simply presenting a single number, it warrants a discussion of how these numbers are calculated and the different assumptions that are behind the range of numbers presented. In order to calculate economic contributions and impacts, a large volume of data is needed regarding what is produced, sold, and consumed in an economy. IMPLAN, a commercially available and widely used software package for estimating economic impacts, was utilized in this study. The data provided by IMPLAN utilizes a combination of local and regional data as well as national averages.

When one considers a sector, such as wine, that is relatively small in Colorado compared to leading states such as California and Washington, data provided by IMPLAN is not likely to provide an accurate representation of the wine sector in a state like Colorado. Customization of an industry sector is a necessary first step in order to accurately reflect how the Colorado wine industry operates. Utilizing a weighted average of winery survey responses (based on industry structure) allowed us to accurately modify production functions, which describe the production process for Colorado wineries. In the table below, you can see that using the IMPLAN wine industry default category, the economic contribution from wine sales was \$39.8 million. After

we modified production functions to more accurately reflect the Colorado wine industry, the contribution increased to \$41 million. The latter is likely the more accurate estimation of the contribution of wine sales for the Colorado wine industry.

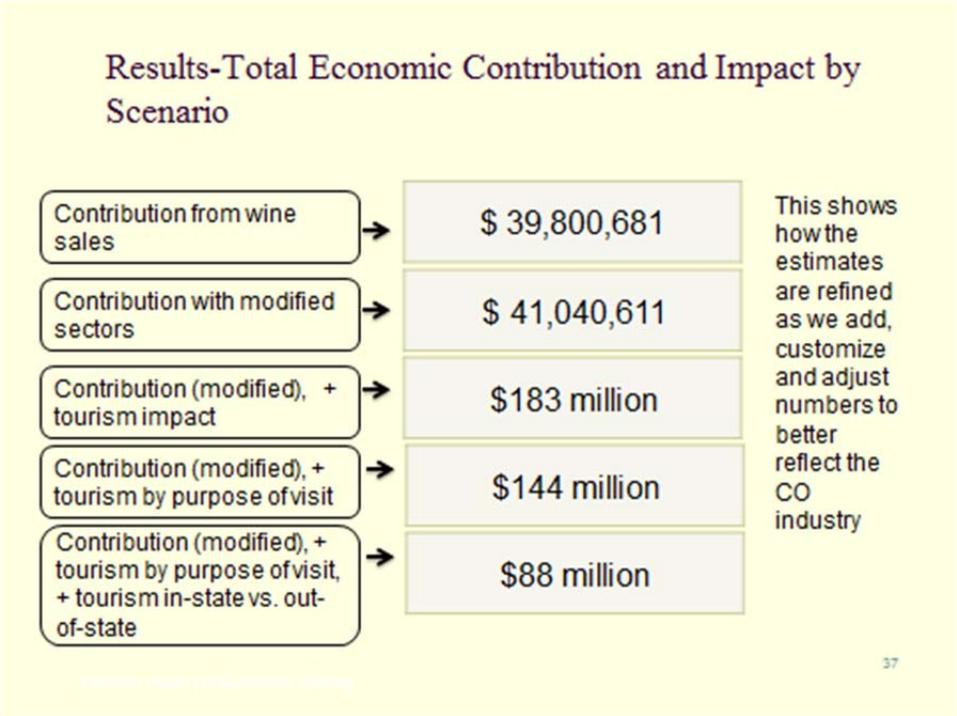
The economic contribution from wine sales only tells a part of the story; wine-related tourism is considered a spillover effect for these enterprises and is an important piece of the picture. There are three main factors that we considered in modeling the tourism impact: one, what are the average daily expenditures of a wine tourist; two, to what extent do the winery or event drive their travel plans; and three, is the traveler in-state or out-of-state.

The first of the three is the simplest estimate of the tourism impact and attributes all tourism spending to the wine industry. This simple impact is \$183 million. The second factor, to what extent to the winery or event drive travel plans, is important to consider so as to not overestimate spillover effects by incorrectly attributing economic activity to the wine industry. In this case, we asked visitors if visiting the winery or wine festival was the primary reason for their trip, a secondary reason, or just an activity on a trip planned for other purposes. If visiting the winery was their primary reason for their trip, then the entire expenditure was attributed to the wine industry. If it was a secondary reason, 50% was attributed to wine industry and it was just an activity. When tourism impacts were modified by purpose of visit, the estimate of the economic impact from tourism decreased to \$144 million.

The last factor to consider is whether the tourist was in-state or out-of-state. When we consider economic impacts, a visitor from outside the state is bringing in all new money. If they had not come to Colorado to visit wineries, they would have spent their money in a different state. All of the money spent by an out-of-state tourist is considered an economic impact driven by the Colorado wine industry.

In-state tourists may need to be handled differently; if they had not spent their money at Colorado wineries, they may spend at least of a portion of that money somewhere else in Colorado. On the other hand, some would argue that tourism dollars they spend in Colorado attending events or visiting wineries is preserved in our state, rather than spent in other states where winery-based tourism may draw Colorado travelers (Oregon, California, and Washington). For these reasons, it is unclear what share of the money spent by in-state tourists to consider as an impact to the Colorado wine industry. Since different economic development stakeholders handle this issue differently, we simply report in-state and out-of-state visitor spending separately to inform the discussion, but the true economic contribution lies within the range of numbers (\$88-144 million) presented here.

Figure 15: Total Economic Contribution of the Colorado Wine Industry and Tourism Impact, Five Scenarios of the Industry’s Activity and Breadth



References:

Most data sources are cited directly beneath the figures or tables where they are summarized. More academic work is cited below.

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Appendices:

WINE SALES IN THE U.S.—1993 to 2012 in millions of 9-liter cases
(Wine shipments from California, other states and foreign producers entering U.S.
distribution)

Year	Table Wine¹	Dessert Wine²	Sparkling Wine/ Champagne	Total Wine	Total Retail Value³
2012	314.9	27.5	17.7	360.1	\$34.6 billion
2011	304.4	29.8	17.4	351.5	\$32.9 billion
2010	286.4	27.9	15.4	329.7	\$30.0 billion
2009	280.1	26.9	14.0	321.1	\$28.7 billion
2008	273.2	27.2	13.4	313.8	\$30.0 billion
2007	272.0	26.3	13.8	312.1	\$30.4 billion
2006	264.0	24.1	13.6	301.6	\$27.8 billion
2005	256.2	21.9	13.0	291.1	\$25.8 billion
2004	247.7	18.9	13.0	279.7	\$24.0 billion
2003	239.7	16.8	12.1	268.8	\$22.3 billion
2002	232.2	15.6	11.8	259.5	\$21.8 billion
2001	215.4	14.3	11.4	241.4	\$20.3 billion
2000	213.2	13.9	11.8	238.9	\$19.2 billion
1999	199.8	13.0	15.6	228.4	\$18.1 billion
1998	196.0	13.0	12.2	221.2	\$17.0 billion
1997	193.9	12.2	12.2	218.3	\$16.1 billion
1996	184.6	13.0	12.2	210.3	\$14.3 billion
1995	169.9	12.6	12.6	195.2	\$12.2 billion
1994	165.7	13.9	13.0	192.6	\$11.5 billion
1993	160.2	14.7	13.9	188.9	\$11.0 billion

Sources: Volume—Wine Institute, Department of Commerce, Estimates by Gomberg, Fredrikson & Associates. Preliminary. History revised.

Wine Consumer Survey

First, we would like to ask you a few questions about your food preferences.

How do you like your coffee?

- Strong and black
- Mild, nothing in it
- With cream and/or sugar
- Frappuccino'ed
- I don't

How do you feel about salt?

- I put it on everything
- I use it often, it bothers me when food is under-salted
- Like the taste but don't miss it when it's not on my food
- Take it or leave it
- Don't really like salty stuff

Do you like citrus?

- Oh yeah, the more mouth puckering the better
- Like it, don't love it
- I drink the occasional glass of OJ
- Indifferent
- Nope, not at all

Do you like earthy flavors like mushrooms and black-truffles?

- Yes, I'll more or less eat dirt
- Yeah, I like these flavors
- In moderation, as a secondary flavor
- Not really my thing
- Definitely not

Do you like blackberries, raspberries and blueberries?

- Love berries, eat them raw
- Like these flavors, mostly as jam
- Like them with something sweet, like ice cream or in pie
- So so
- No, not really

How adventurous are you when it comes to food and drink?

- I'll try anything
- Always looking to try something new
- I don't actively seek out new tastes
- I know what I like
- I only eat and drink what I already know

Next, we would like to ask you some general questions about your wine consumption.

How often do you drink wine?

- Every day
- A few times a week
- Once a week
- A few times a month
- Once a month
- Only on special occasions or holidays
- I drink beer not wine
- I drink spirits and mixed drinks, not wine
- I do not drink alcohol at all

What was your approximate total expenditure (in dollars) on wine over the past 3 months?

Please recall the number of wine purchases you made in the last three months in terms of the number of:

- Bottles (#)
- Cases (#)
- Glasses (#)
- Boxed wine (#)

What share of these purchases would you estimate were wines from the following regions?

- _____ Colorado
- _____ Other U.S.
- _____ International

What was your approximate total expenditure (in dollars) on Colorado wine over the past 3 months?

If the Colorado wine that you purchased was 50% less expensive, what would you spend your extra money on (check all that apply):

- More purchases of Colorado wines
- More purchases of other wines (from outside of Colorado)
- Other alcoholic beverages
- Other consumer goods
- Other activities

What percentage of wine do you buy at the following markets or venues:

- _____ Supermarket/warehouse store
- _____ Liquor store
- _____ Winery tasting room
- _____ Restaurant/Bar
- _____ Farmers' market or CSA
- _____ Wine festivals or other special events
- _____ Internet/Mail
- _____ Elsewhere, please specify

What percentage of your bottles are purchased in the following price ranges:

- _____ Less than \$10
- _____ \$11-\$15
- _____ \$16-\$25
- _____ Above \$26

On a scale of 1 to 10 (highest), how would you rate your:

- _____ Level of expertise concerning wine?
- _____ Familiarity with Colorado wines?
- _____ Opinion of Colorado wines?

How familiar are you with the Colorado wine industry?

- Not at all
- Not very
- A little
- Somewhat
- Very

How important are the following factors to you when choosing a wine?

	Not important-1	2	3	4	Very important-5
Recommendation of a friend	<input type="radio"/>				
Recommendation of restaurant, winery or liquor store staff	<input type="radio"/>				
Wine critics' rating	<input type="radio"/>				
Grape variety or blend	<input type="radio"/>				
Reputation of, or experience with winery	<input type="radio"/>				
Design of bottle and label	<input type="radio"/>				
Price/Value	<input type="radio"/>				
Ability to taste before buying	<input type="radio"/>				
Availability/Easy to find	<input type="radio"/>				
Produced in a local winery	<input type="radio"/>				
Made with Colorado fruit (Colorado Grown on label)	<input type="radio"/>				

Now we would like to ask you a few questions about today's outing.

Are you more than 50 miles from your place of residence?

- Yes
- No

How many times per year do you attend:

A wine festival in Colorado?

A wine tasting at a winery in Colorado?

A wine dinner/tasting party that features Colorado wines?

If you were not here today, what activities would you most likely be participating in? (check all that apply)

- Outdoor activities
- Eating a local restaurants
- Shopping
- Stay at home
- Other, please specify _____

How many miles did you travel to get to the event?

- 50 to 100 miles
- More than 100 but less than 500 miles
- More than 500 miles but less than 1000 miles
- Over 1,000 miles

Do you plan to stay (or have you stayed) overnight in this location for your visit?

- Yes
- No

How many nights are you planning on staying in total?

How many total days are you on vacation in Colorado (at this location or at other sites)?

When planning your vacation, was visiting the wine festival and/or wineries the:

- Primary reason
- Secondary reason
- Just an activity on your trip

If you did not participate in this wine event, what would you have done?

- Still come to the region, spent same amount
- Still come to the region, spent less
- Went elsewhere in Colorado, spent same amount
- Went elsewhere in Colorado, spent less
- Went elsewhere

How much do you expect to spend (in dollars per day) on the following during this trip:

- Hotel
- Regional transportation (including gas)
- Food
- Shopping on Colorado produced goods
- Other shopping
- Bottles of wine
- Entrance Fee/Entertainment
- Travel to and from region
- Other

How many minutes did it take you to drive to this market?

How many extra trips do you make per month, beyond grocery shopping, to purchase craft beer, wine and spirits?

Do you make any additional trips or drive out of your way to purchase a specific brand or style of beer, wine or spirits?

- Yes
- No

How much time do you think you spend taking these additional trips each month?

What is the style or type are you generally looking for in these extra trips (check all that apply):

- A brand name
- A specific winery, brewery and/or distillery
- A Colorado based beer, wine or spirit

Do you make a special trip to purchase your Colorado-based beer, wine and spirit because they are not available where you typically shop for alcohol?

- Yes
- No

If all of your beer, wine and spirit choices were available where you already shop for food, estimate how much more you would purchase of those specific types (in dollars)?

Next, we would like to ask you a couple questions regarding your risk preferences.

Would you take a new job with a 50–50 chance it will double your income and a 50–50 chance that it will cut your income by a third?

- Yes
- No

Would you take a new job with 50–50 chance that it would double your income and a 50–50 chance that it would cut your income in half ?

- Yes
- No

Would you take a new job with a 50–50 chance that it would double your income and 50–50 chance that it would cut your income by 20%?

- Yes
- No

Next, we would like you to make some comparisons of different wines.

Imagine you are at a liquor store where wine is organized by region. How would you expect a Syrah from Colorado to compare with one from Australia considering the following factors:

- _____ Drinking quality
- _____ Price
- _____ Availability
- _____ Consistency of flavor
- _____ Prestige of your wine selection
- _____ Environmental impact
- _____ Appropriate for a special occasion (gift, dinner party, etc.)

Imagine you are at a liquor store where wine is organized by region. How would you expect a Riesling from Colorado to compare with one from Washington in the following factors:

- _____ Drinking quality
- _____ Price
- _____ Availability
- _____ Consistency of flavor
- _____ Prestige of your wine selection
- _____ Environmental impact
- _____ Appropriate for a special occasion (gift, dinner party, etc.)

Lastly, we would like to ask you basic demographic questions.

Where is your residence?

Zip Code

Country, if international

If a Colorado resident, how long have you lived in Colorado

- 1-5 years
- 5-10 years
- 10+ years

What is the range of your annual household income?

- Less than \$30,000
- \$30,000 to \$49,999
- \$50,000 to \$99,999
- \$100,000 to 149,999
- \$150,000 to \$199,999
- Over \$200,000

What is your gender?

- Male
- Female

What is your age?

- 21-29
- 30-39
- 40-49
- 50-65
- over 65

WINERY SURVEY

1. How many years has your winery been in operation? _____ Years

In what area is your winery located? _____ Front Range
_____ Grand Valley AVA
_____ West Elks AVA
_____ Montezuma County/Four Corners area
_____ Pikes Peak/Arkansas Valley area
_____ Western Slope, not mentioned above
_____ Other _____

2. Which of the following types of 'wine events' did your winery host or participate in over the past 12 months, and what was their total attendance?

_____ Wine making classes	_____ total # of attendees
_____ Classes on wine appreciation	_____ total # of attendees
_____ Special tour events (senior groups, business groups)	_____ total # of attendees
_____ Other types of events _____	_____ total # of attendees

3. For the following questions, we know it may be hard to estimate, but just provide us with your best guess.

(a) Approximately how many people visited your winery over the past 12 months?

_____ Number of visitors

(b) Approximately how many people visited a remote tasting room that featured your wines (possibly in collaboration with another winery) over the past 12 months?

_____ Number of visitors

(c) Approximately what percent of these visitors were from out-of-state?

_____ Percent of out-of-state visitors

4. List the various wine festivals or Colorado-based events your winery participated in over the last 12 months.

5. How many tons of grapes did your winery acquire this year, and at what average cost per ton?

From your own field(s) _____ Tons; Average cost per ton \$ _____

(Estimate production costs or what you could have earned selling grapes)

From other Colorado growers _____ Tons; Average cost per ton \$ _____

From out-of-state growers _____ Tons; Average cost per ton \$ _____

Total tons _____ **Tons**

6. If you purchased all or some of your grapes from other growers, what portions of that tonnage were obtained under the following contractual arrangements?

Long term contract (3+ years) _____ Tons per year
 Short term contract (less than 3 years) _____ Tons per year
 Cash (Spot) market _____ Tons per year

7. How many cases of wine were sold through your winery in the past year, and what were dollar sales in each category?

Sold at the winery	_____	Number of cases	Sales \$ _____
Sold at festivals and events	_____	Number of cases	Sales \$ _____
On-line sales shipped from the winery	_____	Number of cases	Sales \$ _____
Wholesale sales direct to liquor stores and restaurants	_____	Number of cases	Sales \$ _____
Sold to a wholesaler for distribution	_____	Number of cases	Sales \$ _____
Sold out-of state through a wholesaler (not including Internet sales)	_____	Number of cases	Sales \$ _____
Total number of cases sold	_____	Number of cases	
Total Wine Revenues	\$ _____		

8. What percent of your retail wine sales were in the following price ranges?

Less than \$10 per bottle	_____	% sold
\$10-15 per bottle	_____	% sold
\$16-25 per bottle	_____	% sold
<u>More than \$25 per bottle</u>	_____	% sold
Total		100 %

9. Do you stock and sell wines from other Colorado Wineries? _____ Yes _____ No

If yes, what were your total annual sales of those wines? \$ _____ Sales

11. What were the non-labor expenditures in your winery over the last 12 months in each of the following areas?

\$ _____ Winemaking and Fermentation expenditures (chemicals, yeasts and nutrients, fining agents, extract, juice or other flavorings, etc..)
 \$ _____ Packaging expenditures (bottles, labels, corks, etc.)
 \$ _____ Capital equipment expenditures (vats, bottling line improvements, etc.)
 \$ _____ Marketing expenditures (advertising, brochures, Web Site, Social Media, etc.)
 \$ _____ Shipping/delivery expenses
 \$ _____ Facilities maintenance (landscaping, building improvement, etc.)
 \$ _____ Property taxes
 \$ _____ Water expenses
 \$ _____ Other utilities (gas, electricity)
 \$ _____ Insurance (property, group insurance, etc.)
 \$ _____ Other non-labor expenditures (Please describe.) _____

12. (a) What were the gross sales of auxiliary items sold at your winery over the past 12 months?

\$ _____ Food items (cheese, crackers, chocolate, meats, etc.)

\$ _____ Non-food items (shirts, wine gifts, hats, glasses, etc.)

\$ _____ Sales taxes to city, county or other entity

(b) Approximately what percent of these items were purchased from Colorado suppliers?

_____ % of food items purchased from Colorado suppliers

_____ % of non-food items purchased from Colorado suppliers

13. How many workers (including yourself and family members if appropriate) does your winery employ in the following activities?

(a) Winery retailing and marketing activities

_____ Number of full-time employees (25+ hours per week)

_____ Number of part-time employees (less than 25 hours per week)

(b) Wine production activities

_____ Number of full-time employees (25+ hours per week)

_____ Number of part-time employees (less than 25 hours per week)

14. What were your winery's approximate overall payroll expenses over the past 12 months?

\$ _____ Amount paid to winery employees

15. What do you feel is the maximum number of cases of wine your winery could produce with your present production equipment?

_____ Maximum number of cases we could produce

16. What are your expansion plans over the next three years for each of these four categories?

No expansion planned Plan to expand by:

(a) Wine processing equipment _____ _____%

(b) Wine storage equipment _____ _____%

(c) Bottling equipment _____ _____%

(d) Acreage devoted to grapes _____ _____%

17. (a) What percentage of your current on-line wine sales are shipped directly to consumers either inside or outside Colorado?

_____ % of wine shipped directly to consumers

(b) What would be the impact on your wine sales if the State of Colorado prohibited all on-line sales and the resulting shipments of wine to consumers inside or outside Colorado?

- Would decrease my wine sales by at least 20%
- Would decrease my wine sales by 10-20%
- Would have only a slight impact on my wine sales

18. What would be the impact on your business if the Colorado Wine Industry Development Board and its Development Fund were eliminated due to state budget cuts?

- Would have a major negative impact
- Would have a minor negative impact
- Would have little or no impact

20. What one or two actions do you feel can be taken to significantly increase the production and sales of Colorado wine? Please describe below.

THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY!
PLEASE RETURN YOUR COMPLETED SURVEY IN THE ENCLOSED ENVELOPE.