



THE ECONOMIC CONTRIBUTION OF COLORADO'S WINE INDUSTRY



Knowledge to Go Places

This report is part of an industry and CSU-funded research project undertaken in Fall of 2005 to identify the impact the Colorado Wine Industry has on the economy of Colorado. The project was funded by the Colorado Wine Industry Development Board and the Grand Junction Visitor and Convention Bureau. Project leaders were Dr. George Kress, representing the CSU College of Business, and Dr. Dawn Thilmany from CSU's Department of Agricultural and Resource Economics. Most of the data analysis on economic contributions using IMPLAN was performed by Phil Watson, PhD Candidate in the Department of Agricultural and Resource Economics.

Executive Summary

This study provides a brief overview of the economic role of the wine industry in Colorado, with some integration of a similar report focused on the primary wine growing area, Mesa County. After presenting underlying sales and production data, an estimate of the wine industry's economic contribution to Colorado is presented.

- In the US, wine sales are growing at a compounded annual growth rate of 12 percent: double the general economy's growth. In terms of sales, the industry reports \$16.5 billion in retail value for 2005¹, or \$56 per capita per year.
- Colorado's wine drinkers consume more than the average US consumer (3.66 vs. 3.06 gallons per capita). In 2004, 46.6 million total liters of wine were sold in Colorado, but currently, only 3% of those wine sales are produced in Colorado.
- There are 160 Colorado winegrape growers that devote almost 850 acres to winegrape production. Production has increased by over 20% per year since 1996, while the number of wineries increased by 250% since 1995.
- Colorado reported approximately \$11.8 million in wine sales that included \$1.3 million in wine grapes for the 2004/05 production year. Using the multiplier estimated through primary data collection from grape growers and the wineries, this would expand to \$21.1 million with indirect and induced effects.
- \$20.6 million of economic activity from wine-based tourism took place in Colorado in 2005, which increases to \$41.7 million once indirect effects are considered. This is notable since it is greater than the direct activity from wine production, and since much of this activity happens in Spring and Fall (when Colorado tourism is otherwise low), it helps to more fully use tourism capacity.
- The contribution of the 2005 Winefest to Mesa County was around \$1.3 million, or \$2.5 million with indirect effects. Another wine tourism activity, Wine Trains, add about \$41,000 to the economy, or \$79,000 with indirect effects: a significant impact with potential for growth given that only 4 trains run currently.

TOTAL IMPACT OF WINE INDUSTRY IN COLORADO

Given the estimates presented in this study, the contribution of the Colorado Wine Industry to the Colorado economy is \$21.1 million from direct wine sales (including returns to wine grape producers and how they contribute to the economy).

When the overall economic activity of wine-related enterprises, such as tasting room visits, wine festivals, wine trains and educational programs, are included, the total economic contribution of the Colorado Wine Industry in 2005 was \$41.7 million.

¹ <http://www.wineinstitute.org/communications/statistics/sales2005.htm>

INTRODUCTION

The wine industry appears to be experiencing robust sales growth, both in terms of consumption per person and prices received for wine. More and more consumers are developing a passion for wine as the baby boomer generation gets older and has more disposable income. Since the mid-1980's, consumption rates have increased by double-digits for the premium wine segment.

According to the Wine Institute, US wine consumption totaled 668 million gallons in 2004, up from 570 million gallons in 2000. In 1999, per capita wine consumption was over 2 gallons per person² while another study reported 8.77 litres (or 2.3 gallons) per capita for 2001³. This number grew at 10% per year between 1997 and 2000. With respect to dollar value, wine sales are growing at a compounded annual rate of 12 percent: double the general economy's growth. In terms of sales, the industry reports \$16.5 billion in retail value for 2005⁴, or \$56 per capita per year.

The potential for wine production as an economic development driver is of interest to a growing number of states throughout the country. Wine production, which typically adds value of approximately \$2-\$4 for each \$1 of farm gate value, is closely integrated with grape growing operations. Wineries with tasting rooms contribute another \$4-\$10 per \$1 of farm gate value to the rural economy by selling their wine directly to consumers⁵.

Colorado is a growing presence in the Intermountain West, even if it is only a small part of the US industry (see Appendix 1). A 2004 study by CSU Cooperative Extension estimates that there are 750-850 acres in wine grape production among 160 growers (with 650 acres consistently producing and processing/selling to the wine market). This production is almost evenly split between contract growers and wineries. Yet, far less is known about the importance of this growing industry to the Colorado economy in general, and more specifically, affiliated tourism activity that may significantly extend the impact of the wine industry to the economy.

To assess the state of the industry in Colorado, compare its economic contribution relative to the national industry and other Colorado sectors, and clearly define the role of the wine industry and events in local economies, a study was commissioned. Primary support came from the Colorado Wine Industry Development Board (CWIDB), with support from the Rocky Mountain Association of Vintners and Viticulturalists (RMVVA) and the Grand Junction Tourism Board to provide funding to Colorado State University for the economic analysis.

This study attempts to, first, describe the economic size and scope of Colorado's wine industry and, secondly, to analyze the impact of tourism on the Western Slope of Colorado, and more broadly, the Colorado economy. Using surveys given to consumers

² http://www.wineinstitute.org/communications/statistics/consumption1934_99.html

³ http://www.wineinstitute.org/communications/statistics/keyfacts_worldpercapitaconsumption02.htm

⁴ <http://www.wineinstitute.org/communications/statistics/sales2005.htm>

⁵ <http://www.wineamerica.org/newsroom/winefacts04.htm>

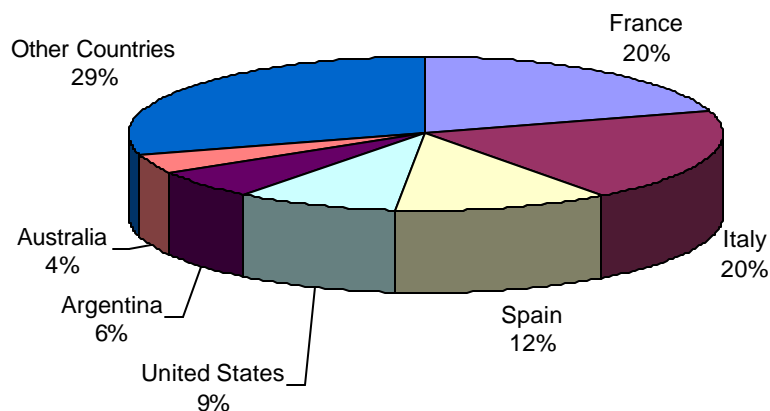
of the Colorado wine industry, as well as surveys sent to each wine grape grower and winery, direct and indirect contributions of the industry are estimated.

WINE PRODUCTION IN THE US

According to *2004 Economic Impact of California Wine*, written by the MKF Group (<http://www.mkf.com/press%20economic%20impact%20report.pdf>), the United States ranks fourth in total worldwide wine production (Figure 1). The total 2001 worldwide production of wine was estimated to be just over 7 billion gallons, with the U.S. supplying almost 680 million gallons. California is by far the largest producer of wine in the US, accounting for over 90% of total domestic production. Behind California, New York and Washington both have sizeable wine production (Figure 2). Thus less than 3% of U.S. wine is produced in the other 47 states, and based on 2004 national data, Colorado's wine production ranked 22nd.

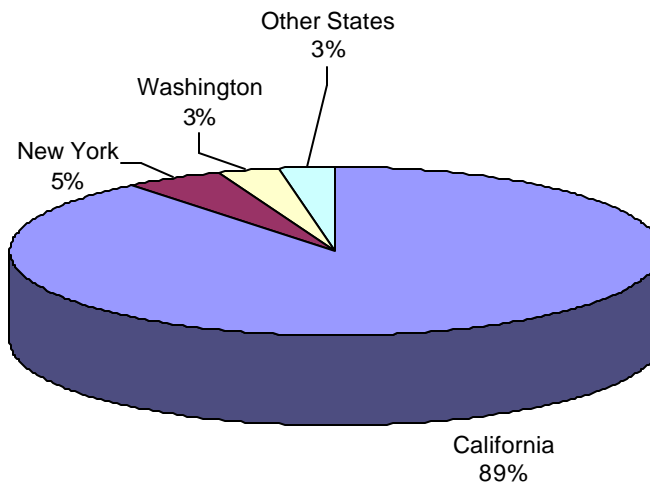
According to USDA data, total U.S. wine production decreased 76 million gallons in 2004 to a level of 604 million gallons. This reduction was primarily due to the almost 85 million gallon reduction in wine production in California, with other states actually increasing production over this time period.

Figure 1 - 2001 World Wine Production by Country (7.05 billion gallons)



Source: Wine Book 2005

Figure 2 - 2004 U.S. Wine Production by State (640 million gallons total)



Source: Wine Book, 2005

In terms of industry dynamics, the U.S. wine industry has experienced major growth in recent years. Wine is now produced in every state, and although three states dominate production, wine sales growth is significant in many others (Appendix 2). The U.S. grape crop has more than tripled in 15 years from \$955 million in 1985 to almost \$3 billion in 2000. Wine grapes have increased far faster than the overall grape crop and now represent almost 2/3 of total grape production. Grapes are the highest value fruit crop in the nation and the seventh largest crop overall. As vineyards continue to expand, so do the number of wineries who use the wine grapes as inputs. There are currently more than 3,000 wineries with at least one in each of the fifty states.

The economic activity directly generated by the US wine industry creates an increasing number of jobs, wages and economic activity as services are purchased and wages are spent. In aggregate, MKF reports that the wine industry contributes more than \$45 billion to the U.S. economy, along with 556,000 jobs, which account for \$12.8 billion in wages and \$3.3 billion in state and local tax revenues.

Other states have attempted to assess the economic contributions of their respective wine industries. A similar study released by New York's wine industry in 2005 showed a \$3.3 billion impact in that state and note that the industry contributed 23,000 jobs⁶ to New York's economy. In Washington, the wine industry affects the state economy by \$2.4

⁶ <http://www.newyorkwines.org/articles.root/799/MKF-917.pdf>

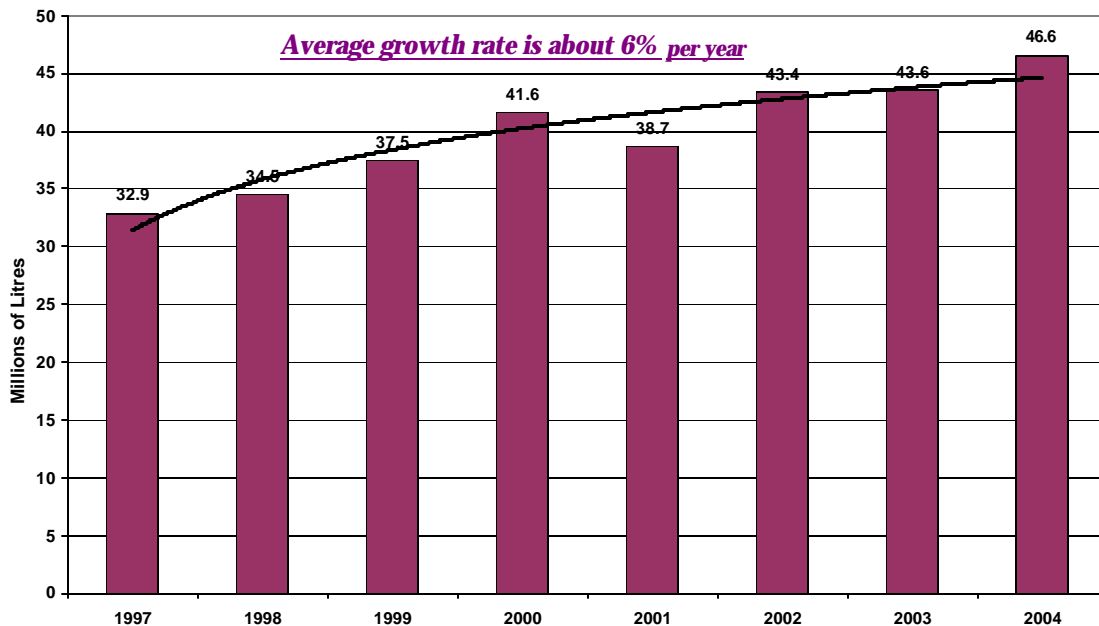
billion annually, employs more than 11,000 people statewide and directly paid \$34 million in wages⁷ when taking grape and wine production into consideration.

The California wine industry has an annual impact of \$45.4 billion on the state's economy, growing nearly 40 percent from 1998 to 2002, and producing the number one finished agricultural product in the state, according to the Wine Institute and California Association of Winegrape Growers. The MKF research indicates that the California wine industry and its affiliated businesses provided 207,550 full-time equivalent jobs, with a total of \$7.6 billion in gross wages. In California, more than 62,500 jobs were added at an annual growth rate exceeding nine percent during a period of rising unemployment⁸.

WINE CONSUMPTION IN THE US & COLORADO

Another important element of defining the size and potential for the Colorado Wine Industry is assessing the wine consumption among its residents⁹. Although Colorado's population, 4.6 million, is only 1.56% of total U.S. population, it accounts for 1.86% of U.S. wine sales. In 2004 Colorado ranked 16th among all 50 states in terms of total wine consumption. The per capita consumption of wine among Colorado adults in 2004 was 3.66 gallons, almost 20% greater than the 3.06 gallons per capita consumption among all U.S. adults. In 2004, 46.6 million liters of wine were sold in Colorado (Figure 3).

Figure 3: Total Wine Sales in Colorado, 1997-2004



Source: Colorado Wine Industry Development Board

⁷ http://www.wawgg.org/index.php?page_id=69

⁸ <http://www.wineinstitute.org/communications/statistics/Economic%20Impact%20Report%202004.htm>

⁹ Most of the information in this section was obtained from the book: "Wine Handbook--2005" published by the Adams Beverage Group.

Another difference between Coloradans and the average U.S. wine consumer is in the nature of our consumption. Colorado consumers report buying a much higher proportion of domestic wines than imported wines: 75.4% of the wine consumed in the U.S. is “Domestic,” while 86.9% of the wine consumed in Colorado is “Domestic”.

Table I shows that Coloradans also differ from the U.S. average in the types of wines consumed. Over 94% of wine consumed in Colorado is table wines compared to the 90.6% of table wines reported as the US consumption rate.

TABLE I
Types of Wine Consumed, U.S. vs. Colorado

Type of Wine	Colorado (%)	U.S. (%)
Table Wine	94.2	90.6
Wine Coolers	0.4	0.2
Champagne/Sparkling	3.5	4.8
Dessert/Fortified	1.6	3.7
Vermouth/Aperitif	0.3	0.7
TOTAL	100.0	100.0

Source: Adams Wine Handbook, 2005

The wine industry uses a Category Development Index (CDI) to compare each state’s per capita consumption of various categories of wines. This index is normalized at 100. Thus if a state receives a CDI of 120, that means its per capita consumption is 20% higher than the U.S. average. A CDI of 85 indicates that state’s per capita consumption is 15% lower than the U.S. average. Table II identifies Colorado’s consumption indexes in five key wine categories. Those data further illustrate the state’s relatively high consumption of table wines along with a surprisingly high consumption of wine coolers, suggesting where Colorado wineries may want to focus future product development.

TABLE II
Colorado’s CDI of Major Wine Categories
Source: Adams Wine Handbook, 2005

Wine Category	CDI
Table Wine	124
Wine Coolers	200
Champagne/Sparkling	87
Dessert/Fortified	51
Vermouth/Aperitif	52

A recent national study of 1300 U.S. adults, sponsored by the Wine Market Council, found that “Core” wine drinkers (people who drink wine at least once a week) account for almost 87% of the wine consumed in the U.S. Although the size of this group has increased by 38% since 2000, it still comprises less than 14% of the total U.S. adult

population. “Marginal” wine drinkers (people who consume wine at least every three months) comprise another 18.9% of the adult population (Table III). The Core wine drinkers may be an attractive segment to target for the Colorado wine industry since one loyal Core customer will lead to a disproportionate increase in sales, although Core drinkers may also be the most difficult to impress and gain as customers.

TABLE III
 Alcohol Consumption Patterns of U.S. Adults
 Source: 2005 Study Sponsored by Wine Market Council

<u>Category</u>	<u>% Of U.S. Adults</u>
"Core" Wine Drinkers	13.7
Marginal Wine Drinkers	18.9
Beer/Spirits Only	24.7
Non-Drinkers	42.7
TOTAL	100

In short, all secondary data on Colorado’s wine market suggest high potential not only in terms of total consumption but also in growth of sales and propensity to consume wine produced domestically (although further research must establish how well Colorado wines compete with other domestic sources).

GRAPE AND WINE PRODUCTION IN COLORADO

The size and impact of Colorado’s wine industry have not been extensively studied prior to this study, which collected a large amount of direct industry data¹⁰. Over the past six years, Dr. Horst Caspari, State Viticulturist at the Western Colorado Research Center has annually surveyed Colorado winegrape growers to identify their planting patterns and intentions. Based on their responses he estimates that, while there are close to 160 winegrape growers in Colorado, only about 130 of these growers are continuously in production and they devote close to 850 acres to winegrape production. In 2004, the three primary varieties grown in Colorado were Merlot (21% of the acres), Cabernet Sauvignon (18%), and Chardonnay (16%).

The typical active Colorado vineyard has 6.2 acres, with an average yield of 2.5 tons of grapes per acre. In 2004 they produced about 1,230 tons of grapes, but not all of these grapes were sold since they became inputs to the growers’ own wine production. Of those sold, the average price received for a ton of grapes was approximately \$1,300, with an estimated total crop value of \$1.6 million (assuming those sold were of similar value to those retained for wine production). It should be noted, that some wine grapes produced

¹⁰ Most of the data contained in the remaining sections of this report were obtained from these sources: (1) survey of winegrape growers by Dr. Horst Caspari; (2) mail surveys conducted among Colorado winegrape growers and wineries; and (3) personal interviews among visitors to the Grand Junction Winefest and selected wineries during Fall 2005.

in 2005, did not contribute to wine sales in the same year since many varietals are stored for future sales years.

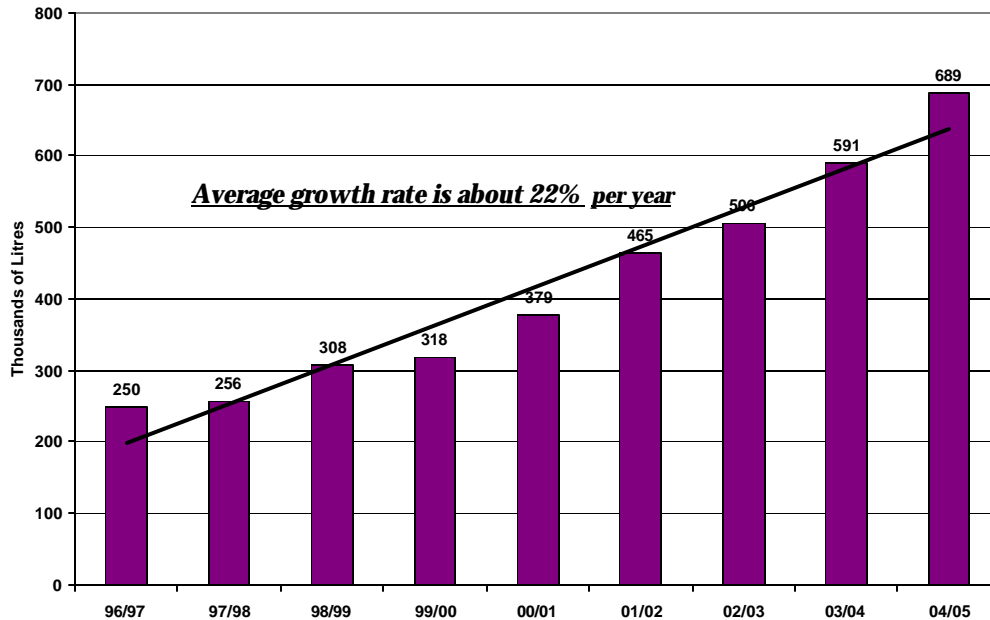
It is estimated that total U.S. wine production in 2004 was around 640 million gallons. In the US, there are currently more than 3,700 wineries, with 1,689 (45%) located in California (Table IV). As of March 2006, there are 66 wineries operating in Colorado.

TABLE IV
Number of Wineries in the U.S. and Colorado
Source: Alcohol and Tobacco Tax and Trade Bureau

Year	US Wineries	US Growth Rate	Colorado Wineries	CO Growth Rate
1975	579		2	
1985	1367	136%	3	50%
1995	1817	33%	13	333%
2000	2188	20%	30	131%
2005	3726	70%	66	120%

Over the last five years the production and sale of Colorado wine has doubled (Figure 4).

Figure 4: Colorado Wine Production, 1996-2005



Source: Colorado Wine Industry Development Board

The amount of wine produced in Colorado over the last decade has been increasing at a fairly rapid rate as more vineyards and wineries enter the business. In fiscal year 1994/95, around 113,600 liters of Colorado wine were produced. By the 2004/05 season that number had increased five-fold to almost 689,000 liters.

In fiscal year 2004/05, Colorado wineries produced approximately 76,550 cases (1 case contains 12 750 ml bottles). This was approximately 1.5% of all the wine sold in Colorado by volume. If the average retail value reported by Colorado wineries, \$12.86 per bottle, is assumed (Colorado wine tends to be higher priced than the U.S. average of \$6.14 per 750 ml), the retail value of Colorado wine was around \$11.8 million or a little over 3% of total market share by value.

It is important to recognize that wineries also attract many tourists/visitors, the focus of another section of this report focused on associated economic activity. Numerous wine tasting events and wine festivals occur around the state, drawing visitors to these communities for purposes of tasting wine. Table V lists the total attendance at many of the festivals around the state.

TABLE V
Attendance at Various Wine Festivals Across Colorado
Source: Event Organizers

Event	Attendance
Colorado Mountain Wine Festival	5,200
Denver International Wine Festival	800
Fort Collins Wine Festival	900
Lafayette Wine Festival	2,200
Manitou Springs Wine Festival	800
Mesa Verde Wine Festival	500
Stapleton Wine Festival	300
Steamboat Springs Wine Festival	2,000
Telluride Wine Festival	3,000

RESULTS OF ECONOMIC CONTRIBUTION ANALYSIS

The data used for this analysis were collected through a process that integrated the various elements that contribute to an industry's contribution to the economy (direct sales, money spent by those whose inputs and labor are purchased, allied activities, and of particular interest to Colorado, the tourism driven by the existence of the wine industry). (see Appendix 3).

Direct Contributions

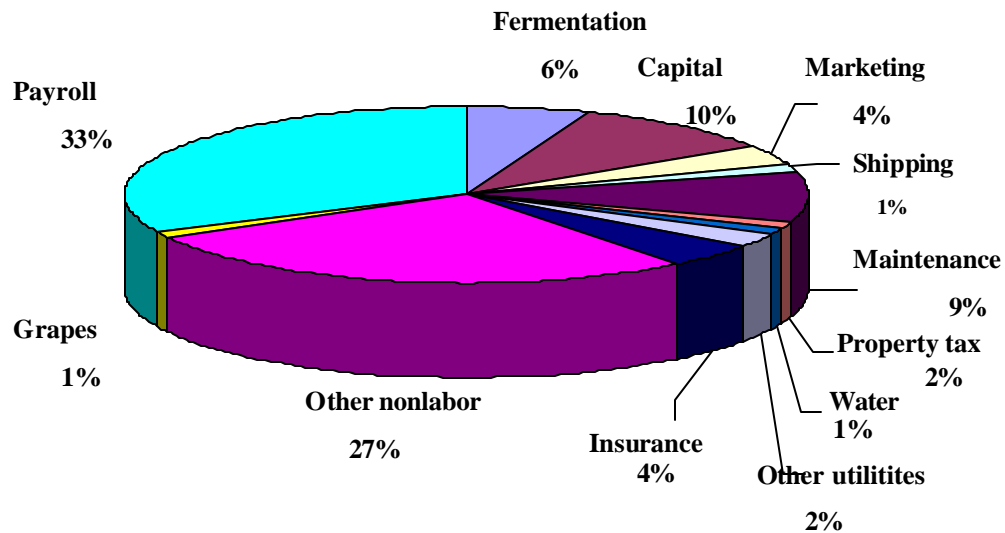
The direct revenue from wine sales attributed to Colorado's wine production industry totaled an estimated \$11 million in 2004 (Table VI) while total industry expenditures were estimated at \$7.85 million dollars (Figure 5). The distribution of these expenses is important to the economic analysis, because they affect how the wine industry generates activity for other businesses that support it in the state. Intermediate inputs, or the

expenditures of an industry on goods that get used up in the production of their product, accounted for 48% of the total \$11 million in industry revenue. The remaining 52% was accounted for as wages paid, taxes, returns on capital and proprietor's income. The wine industry was estimated to have directly generated 70 jobs in Colorado's economy, paid out \$1.4 million in employee compensation (including salaries and benefits), and contributed over \$400,000 in sales tax revenue to the state.

Grapes are not as large a share of the wine value as some might expect, although one might argue that the presence of the vineyards adds appeal to potential visitors to Wine County. Still, the value of Colorado's grape production totaled \$955,000 in 2003 and total grape acreage was estimated at 650 acres. This puts the value of grape production at

Figure 5: Winery Expenditures

\$7,851,436 Total for Colorado Wineries



Source: Colorado State University 2005 Winery Survey

\$1300 per acre. By comparison, an optimistic yield for irrigated corn in Eastern Colorado is 200 bushels per acre and at \$2 a bushel this would generate \$400 dollars an acre.

TABLE VI
Colorado Wine Industry Output, Employment, and Value Added
(in \$millions)

	Industry Output	Employment	Employee Compensation	Proprietor Income	Other Property Income	Sales Taxes	Total Value Added
Wineries	\$10.998	70 workers	\$1.45	\$3.15	\$0.79	\$0.40	\$1.63

Source: IMPLAN estimates with data collected from 2005 Colorado State winery survey

Indirect Contributions

At the national level, the Wine Institute expanded the economic reach of wineries, augmenting direct revenues by the activity created by allied industries. Similarly, for this study, a more directed economic impact analysis for Colorado using primary data and a customized IMPLAN economic analysis was conducted. IMPLAN is based on specific economic relationships. The categorization of economic activity by IMPLAN can be summarized in these three areas:

- Direct effect refers to production change associated with a change in demand for the good itself. It is the initial impact to the economy, which is exogenous to the model.
- Indirect effect refers to the secondary impact caused by changing input needs of directly affected industries (e.g., additional input purchases to produce additional output).
- Induced effect is caused by changes in household spending due to the additional employment generated by direct and indirect effects.

When a business expands or contracts, there is a ripple effect through the economy. For example, when a grower or winery expands, they buy more fertilizer or bottles and they hire more workers. This new economic activity generates even more activity in related businesses who sell to the operation, and who, in turn, buy more inputs and hire more labor. The total impact of a change by one industry therefore is multiplied through the economy through various linkages to other businesses and payments to workers. To capture this effect, it is necessary to use an economic model that contains these linkages, but it is virtually impossible to fully determine linkages through an entire economy by means of surveys. Still, this study goes further than most economic analyses in directly collecting a large share of primary data to integrate into IMPLAN.

The economic outcomes of an IMPLAN simulation are based on two important features in the model, production functions and regional purchase coefficients (RPCs). The production functions describe what inputs the industry uses to create its output. In the case of wineries the largest suppliers of inputs are manufacturing, wholesale trade, agriculture, and real estate. These sectors have relatively high RPCs with manufacturing coming in at over 0.5 and wholesale trade, agriculture, and real estate are all over 0.7. In summary, the dominance of local sourcing among these sectors is part of the reason there is a relatively high multiplier for this industry.

The sizes of the indirect and induced multipliers are also affected by the economic activity that spills out of the study area, the state of Colorado. The leakages from the study area come from purchases that are made for imports, which do not multiply through the local economy as fully as purchases from businesses inside the study area.

Specifically, IMPLAN draws on the Regional Purchase Coefficient for an industry, which indicates the proportion of local demand that is met by local supply. It was estimated that total sales of wine in the state of Colorado were just over \$382 million and an additional \$31 million of wine was purchased as an intermediate input into other goods such as an ingredient in foods. This puts total wine demand in the state at \$417 million. With Colorado producers generating \$9.2 million in wine sales in 2002, it is assumed that the state's wine industry is only supplying 2.2% of the state's demand.

In addition to the direct revenues generated by wineries, the wine industry leads to indirect revenues in other industries such as grape growers, graphic artists, and bottle makers. For example, when the wine industry expands they demand more grapes, more labels, and more bottles. This increased demand has an effect on the suppliers of these intermediate goods. This is called an indirect effect of an industry. Likewise, the income that the wine industry generates both in the wine production industry and in the indirectly enabled industries is spent in the economy, which then creates an induced effect.

Together the direct, indirect and induced effects are used to calculate the industry's multiplier. All of these effects together constitute the total economic contribution of an industry. The multiplier calculated for the wine industry was 1.922 (Table VII). So, the industry is estimated to generate about \$21.1 million dollars in economic activity in Colorado, but this figure still doesn't account for affiliated activities such as tourism.

TABLE VII
Economic Output Multipliers for Colorado's Wine Industry

	Direct Effects	Indirect Effects	Induced Effects	Type I Multiplier	Type II Multiplier
Wineries	1	0.423	.499	1.423	1.922

Source: IMPLAN estimates with data collected from 2005 Colorado State winery survey

On top of wine production, Colorado's wine industry also generates economic activity by attracting tourists who visit the wineries and attend events and festivals. Based on data obtained from surveys of Colorado wineries, it is estimated that in 2005 over 120,000 people visited the state's wineries, and another 37,000 participated in various education and wine tasting programs. (The average winery had 2,250 visitors and 698 participants in various wine related programs during the past year.) Reported expenditures by visitors suggest that these places generate an additional \$11.8 million in direct spending, using very conservative assumptions about what tourism can actually be attributed to the wine industry (Appendix 4). After this number is put through the customized regional input-output model it was determined that tourist expenditures contribute an additional \$20.6 million of economic activity to the Colorado economy. Thus, the wine industry in Colorado contributed \$41.7 million in economic activity to Colorado.

WHAT IS THE ECONOMIC IMPACT?

The results presented here have all been in terms of the economic contribution of the wine industry, which includes all the sales associated with wine and how that money cycles through the economy. It was found that the total economic contribution of the wine industry was \$41.7 million dollars. The true economic impact of an industry is generally much smaller than its contribution, because an impact accounts only for the marginal gain in economic activity that the industry adds to the economy over what would likely be present if the industry were not present. It is often also presented as the marginal gain or loss to economic activity in the region due to an expansion or contraction of the respective industry.

Although many people report contributions as impacts, they should be viewed separately. For example, if some local Mesa County residents did not attend the Colorado Mountain Wine Festival, they might redirect the money they spent there to another activity or purchase. Therefore, it is likely that the entire amount they spent at the festival would not be lost from the local economy. When reporting an industry contribution it is appropriate to include expenditures from locals, but when presenting true impact numbers, local expenditures must be scaled back to account for potential substitute spending. Conversely, expenditures by nonlocals who came to the region to attend the wine festival are considered new dollars to the economy and are counted as true impacts, which is one reason tourism is such an important piece of the wine industry's role.

Yet, in the case of the wine industry, it can be argued that wine purchased by locals and visitors are both impactful. If there were no wine production in Colorado, people would likely substitute wines from other regions. People would likely still spend approximately the same amount on wine, they would simply buy it from outside the state and thus the state would lose that economic activity as a leakage. Thus, Colorado's wine industry represents import substitution, and the entirety of the industry's output can be considered an economic impact to the state's economy.

Accounting for total sales of wine and nonlocal tourist expenditures, the true economic impact of the Colorado wine industry was estimated to be slightly lower at \$23 million.

The economic role of the wine industry in Colorado is quite sizable, and is relatively concentrated in Mesa County on the Western Slope. Because of its importance to the industry and its role in tourism, a special focus was placed on this region in the analysis.

IMPACT OF THE WINE INDUSTRY ON MESA COUNTY

Mesa County's temperate summers and its high elevation lend themselves to growing winegrapes. A corollary activity is the production of wine from these grapes, leading to the establishment of numerous wineries throughout the Grand Valley area. A third element of the wine industry's impact on Mesa County is the number of people attracted to the area to purchase wine, take part in winery tours and tastings, as well as participating in the rapidly growing Colorado Winefest.

Winegrape Production Mesa County

Based on data collected annually from Colorado vineyards, Dr. Horst Caspari estimates Mesa County has 70 grape growers and over 500 acres devoted to winegrapes. In 2004, these growers produced around 750 tons of grapes with a total sales value of \$1.1 million. This means that of the total Colorado winegrape acreage, 67% of those acres are located in Mesa County and provide 69% of the total dollar value of Colorado's winegrapes. It is clearly an important element of the state's industry.

Some of the primary elements that determine the economic contribution of an industry to an area are the share of sales that go to inputs that have direct impacts on the region's economics base, including labor, inputs and taxes paid to local entities. Because of the seasonal aspect related to the growing of winegrapes and because many of the vineyards are fairly small and manned with family labor, it is difficult to quantify the number of full time equivalent employees working in these vineyards. It is estimated there are around 35 full-time equivalent employees working in Mesa County vineyards. Data collected by Dr. Caspari indicate labor cost per acre to be around \$2,000. This means the vineyards in Mesa County paid out around \$1 million in wages (500 acres x \$2,000). This would loosely translate to about \$28,500 in wages per full-time equivalent employee.

Tax data available in the Mesa County Assessor's Office indicated that in 2005 the average vineyard paid around \$650 in property taxes. Multiplying that figure times the number of vineyards (70) indicates that these vineyards contributed close to \$46,000 in county property taxes. There may also be spillover effects to adjacent properties if wine country is considered a desirable real estate attribute (similar to golf courses).

Economic Activity Among Mesa County Wineries

Eighteen wineries are located in Mesa County. Although this is only 27% of the state's wineries, Mesa County wineries account for almost 60% of the wine produced in Colorado. Of the 689,000 wine liters produced in Colorado in 2005, almost 411,500 were produced in Mesa County. Assuming they produce average value wine, this represents \$7.1 of Colorado's \$11.8 million in wine sales for the 2004/05 production year. Using the multiplier estimated in the broader Colorado Economic Contribution study, this would multiply to \$13.6 million once indirect effects are considered.

Since most wineries are only open for retail business a limited number of hours per week, many of their employees work only part-time, but the amount paid is the more important activity to note. Based on survey data collected from 34 Colorado wineries, it is estimated that the average winery's annual labor costs are between \$23,000 and \$28,000. Using the higher figure because Mesa County wineries tend to be larger; it is estimated that Mesa County's wineries paid out around \$504,000 in wages in 2005. (This does not include the money the owners derived from the winery.)

The wineries produced around 412,000 liters of wine. Of that amount, 52% were sold at the winery and 42% were wholesaled to liquor stores/restaurants throughout the state (Table VIII). This is important because the share that is sold directly helps to retain a higher value of the total sales value to local labor, owners and community tax base.

In 2005, these 18 wineries paid around \$79,000 in total property taxes to the County.

TABLE VIII
Percent of Colorado Wine Sold Through Various Outlets
Source: 2005 Survey of Colorado Wineries

Types of Outlets	Percent of Case Sales
Sold at Winery	52.4
Sold at Festivals	3.4
Shipped to Customer	2.1
Wholesale Sales	42.1
TOTAL	100

Because Mesa County wineries are among the largest in the state, they are a prime attraction for tourists seeking to directly purchase Colorado-produced wine. Mesa County wineries attracted over 70,000 visitors to their facilities and had contact with an additional 22,000 adults via their education and wine-tasting programs (source: winery surveys). This is important because it increases the employment impact of the industry and may help use excess tourism capacity during shoulder seasons, such as the fall, in Mesa County. The impact of this visitation is addressed later in this report.

Economic Impact of Tourism

Tourism is Colorado's second largest industry for bringing new dollars into the state's economy (manufacturing is number one). This is a particular important fact when considering economic impacts, because tourism represents one of the few sources of "new income" to regions that is truly an impact (rather than a diversion away from a similar activity). So, most tourism activity can be called a true impact.

Because the Grand Valley's economy is especially dependent upon tourism, a major study was undertaken in 2004 by the Adams Group in Colorado Springs in an attempt to quantify its impact. That research was sponsored by the Grand Junction Visitor and Convention Bureau. In that study, over 700 adults were surveyed in five Mesa County

locations with 230 of these people given in-depth interviews providing a variety of data on their expenditures while in the area. If those interviews are representative of the average traveler to Mesa County, tourism generated more than \$407 million in taxable sales and provided (directly and indirectly) around 7,600 jobs and \$160 million in wages and salaries. Thus, in 2003, tourism provided almost 15% of the jobs and 35% of the sales taxes collected in Mesa County.

Based on data obtained from Colorado State University's 2005 surveys of Colorado wineries, it is estimated that in 2005 over 150,000 people visited the state's wineries or attended a wine-related event. Again, Mesa County wineries were a large share of the total representing 58% of visitors and 60% of education and tasting programs, even though they are among less populated areas than wineries on the Front Range, suggesting it is becoming a destination spot for those wanting to try, experience and purchase Colorado wine.

Economic Impact of Winefest

Although the Adams study provided valuable information, it dealt with tourism in general in Mesa County. Additional research was needed to identify the specific impact the wine industry and its events have on Mesa County's tourism. Surveys were conducted among visitors to the annual Colorado Mountain Winefest held September 15-18, 2005 in Palisade, Colorado. The paid attendance at the 2005 Winefest was 5,200, a figure we used to estimate the total impact given our survey respondents' answers.

Two types of interviews were undertaken among these attendees. Representatives from the Grand Junction Visitor and Convention Bureau (GJVCB) interviewed 178 visitors to the event over the three day period. A second project involved researchers from Colorado State University. They conducted more extensive interviews among 495 Winefest visitors, seeking information about their expenditures while in the area in order to quantify the economic impact of this Festival.

Key Findings From GJVCB Surveys (n=178)

The biggest economic impact to the region comes from visitors who travel from other areas and stay overnight in order to spend more in surrounding businesses. In this case, almost 90% of the interviewees were from Colorado, with 21% living in Mesa County (Table IX).

Of those attendees who came from outside the Grand Valley area, the vast majority (75%) spent at least two nights for the event (reinforcing the similar response of 2.6 nights found in the CSU survey). Of those people staying overnight in the area, most (63%) stayed in local facilities (motels/hotels/B and B's) an average of 2.5 nights. Fifty percent of the interviewees were attending the Winefest for the first time and the drawing power of this event was evidenced by the finding that 80% of those surveyed stated they came to Mesa County specifically to attend the Winefest.

TABLE IX
Origin of Winefest Visitors

<u>Origin of Winefest Visitors</u>	<u>Percent of Total Visitors</u>
Mesa County Resident	21%
Live Within 100 Miles/Not Mesa County	18%
Live 100 to 500 Miles Away	53%
Live 500 to 1000 Miles Away	4%
Live More Than 1000 Miles Away	3%

The success of the event was also demonstrated by the finding that most of the respondents (91%) indicated they were “very satisfied” (67%) or “satisfied” (24%) with their experiences at the Winefest. Most importantly, all (100%) of the out-of-state respondents indicated they were “very satisfied” with the event, an important signal since they represent the highest potential true economic impact to the region.

Key Findings From CSU Winefest Surveys (n=495)

The second group of surveys at the Winefest was conducted by faculty and grad students from CSU’s Department of Agricultural and Resource Economics. Over a two day period, 495 adults were asked to complete a written survey on the premises of the Colorado Mountain Winefest and its related events (wine education seminars and chocolate-wine tasting event). In addition, those interviewees who traveled over 100 miles to reach the Winefest (62% of the interviewees, similar to 60% reported in Table VIII) were asked additional questions about expenditures associated with the Winefest.

The CSU survey found that 70% of the out of town visitors were in Mesa County on a vacation (with the remainder visiting family or in the area for another reason). Visitors to the Winefest indicated that they were accompanied by 3.3 people, on average. About half, 46%, reported the Winefest was their primary reason for visiting Mesa County, so to be conservative, their expenditures were the only ones considered in the economic impact analysis (since they can truly be called new money generated by the wine industry). Although the expenditures and economic activity are of paramount interest to this study, it is interesting to understand the types of people traveling to the Winefest, and any potential information that might pose on future growth of tourism or related wine sales growth if visitors become more loyal customers of Colorado wines. Following are summaries of the survey’s key findings:

Demographics of Winefest Attendees

- Majority (69%) were female
- Average age--49.2 years
- 72% of Colorado residents had lived in the state more than ten years
- Over 63% were employed full-time; 11% were retired
- 23% were in households with annual incomes of less than \$50,000, 15.6% had household incomes over \$100,000 (Table X)

TABLE X
Average Annual Household Income of Winefest Visitors

Annual Income	Percent of Total Visitors
Less than \$30,000	7.6%
\$30,000 to \$50,000	15.7%
\$50,000 to \$75,000	25.0%
\$75,000 to \$100,000	17.2%
\$100,000 to \$150,000	25.5%
More than \$150,000	9.0%

Wine Consumption Patterns of Winefest Attendees

- 51% drank wine at least three times a week; 35.8% drank wine 2-3 times per week, signaling an extremely high share of “core” drinkers (Table XI)
- Over the past three months they had purchased 12.6 bottles of wine
- 29% of their wine purchases were Colorado wines (Table XII), compared to the 1.5% average market share for all consumers
- Spent an average of \$59.07 per month on wine, about 30% of which (\$13.25) was on Colorado wine, compared to the US average of \$14 per capita each 3 months.
- They tended to buy higher priced wine than the average consumer given our finding that the average Colorado bottle sells for \$12.69 and Table XIII’s findings

TABLE XI
Wine Consumption Patterns of Winefest Visitors

Wine Consumption Pattern	Percent of Total Visitors
Drink Wine Daily	17.4%
2-3 Times Per Week	33.5%
Weekly	14.1%
2-3 Times Per Month	16.7%
Once a Month or Less	13.3%

TABLE XII
Origin of Wine Purchases of Winefest Visitors

Origin of Wine	Percent of Sales
Colorado Wines	29.2%
Other U.S. Wines	47.9%
International	22.9%

TABLE XIII

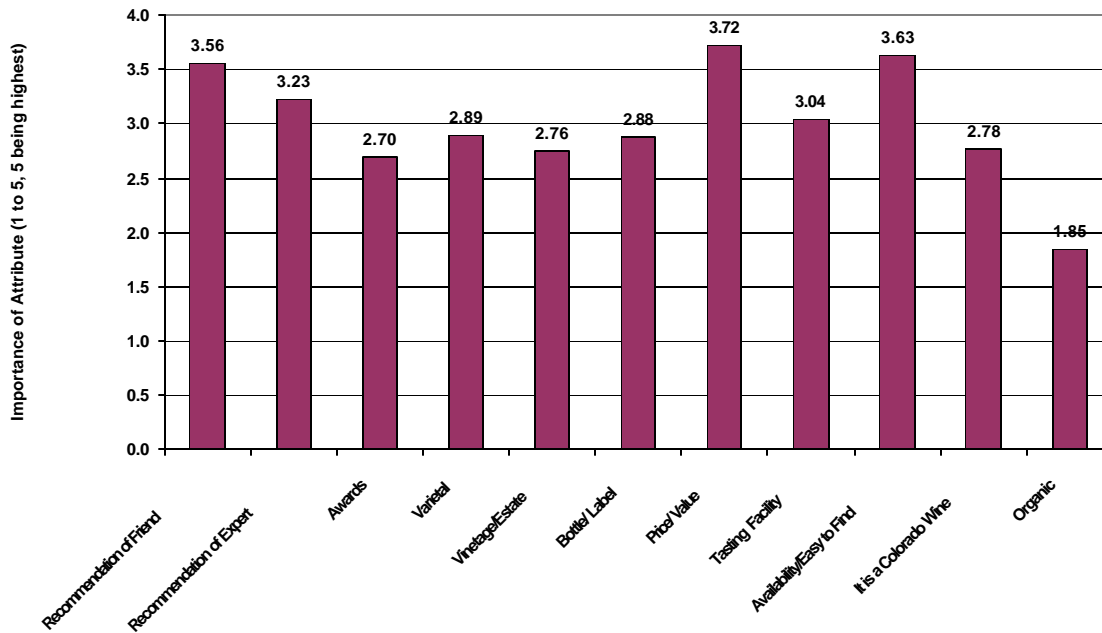
Typical Wine Purchases in Various Price Ranges by Winefest Visitors

Bottle Price	Colorado Wines	Non-Colorado Wines
Less than \$10	17.2%	29.8%
\$10-15	48.9%	41.4%
\$16-25	25.5%	21.1%
Above \$25	8.4%	7.7%

Influences on Wine Purchases

- Attendees’ two most important influences when choosing wines were “Price/value” and “Availability/easy to find” (Figure 6)
- The least important influence when choosing wines was its being “Organic”
- Almost 58% of their wine was purchased at liquor/wine stores
- Over half of their purchases (51%) were “Red” wines, while 35% were “White”

Figure 6: Importance of Wine Attributes
Winefest Respondents



Source: CSU 2005 Winefest Survey

Wine Knowledge/Attitudes

On a scale of 1 to 10 (10 being highest), the respondents who stayed overnight reported the following:

- Their level of wine expertise--5.1 (compared to 4.8 for all respondents)
- Their familiarity/ knowledge of Colorado wines--4.7 (compared to 4.3)
- Their assessment of the quality of Colorado wine--6.8 (compared to 6.5)

In summary, an unusually large percentage of the Winefest attendees (51%) are “Core” wine drinkers. As previously identified, this group comprises only 14% of the U.S. population, but consumes almost 87% of the wine. The attendees also tend to be more mature (49 years of age) and well above average in terms of household annual income. Each of these findings suggest great potential for the industry and the impact of the Winefest since attendees are inordinately likely to spend more and purchase Colorado wines if they are available and find products they prefer.

Overall Economic Contribution of Colorado Mountain Winefest to Mesa County

Using the information provided from the 495 people who completed the survey at Winefest, and assuming there were around 5,600 people at the Winefest (including visitors, staff, workers, performers, etc.) over the three day period; the total direct contribution of the 2005 Winefest to Mesa County was around \$1.3 million. Once indirect effects are considered, this would double to almost \$2.5 million in 2005.

This is a fairly conservative estimate, given that only those that reported the travel as being driven primarily by the Winefest were included in the estimate, and wine sales were subtracted since they are already accounted for in direct contributions. (Assumptions are laid out more clearly in the broader Colorado Economic Impact paper written in conjunction with this project).

Impact of the “Wine Train”

Another source of wine related revenues for Mesa County is the “Wine” Train. The estimated impact from the four trains that ran in the 2005 season is \$41,000 and \$79,000, for direct and broader impacts.

CONCLUSIONS

This study on the economic contributions of the wine industry to Colorado is of interest for several reasons. In addition to the numbers showing the size of this industry (summarized in the Executive Summary), it also demonstrates the need to understand the nature and dynamic of an industry when trying to conduct impact analyses. Finally, the tourism portion of the study and its findings should appeal to other regions of the country who see wine production’s tourism potential as a particularly relevant economic development strategy given the growing interest in developing agritourism sectors.

Appendix 1

Colorado Wine Production and Market Share

based on tax revenue
figures

Avg. retail bottle \$ comparison

FY	% Mkt share of CO wine by vol.	CO liters	All wine Liters	Change in CO Prod.	Change in Market	Change in Mkt Share	Avg. retail bottle \$ comparison		% Mkt share of CO wine by \$
							CO: \$10 avg 750ml	Nat'l: \$6.14 avg 750ml	
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%	\$9,185,387.47	\$382,022,056.64	2.4044%

Appendix 2: Wineries by State

Wineries by State	1975	1980	1985	1990	1995	2000	2002	2004
Alabama		1	3	4	4	4	4	5
Alaska							4	6
Arizona	1	1	5	4	9	14	12	17
Arkansas	11	11	9	6	6	6	8	7
California	330	508	712	807	944	1,156	1553	1,689
Colorado	2	2	3	5	13	30	42	54
Connecticut	2	4	11	12	9	11	19	21
Delaware	4	1	1		1	1	1	1
Florida	4	5	11	7	5	6	22	33
Georgia	1	4	7	9	9	9	12	17
Hawaii	1	1	2	1	2	1	5	5
Idaho	2	3	8	16	17	14	21	27
Illinois	8	7	13	7	11	15	37	62
Indiana	6	10	12	20	20	20	31	35
Iowa	14	13	19	16	10	10	20	27
Kansas		2		2	10	10	9	12
Kentucky		3	2	6	9	9	21	31
Louisiana	1		3	1	4	7	7	7
Maine	1		2	5	3	3	8	10
Maryland	4	11	15	17	14	14	14	19
Massachusetts	6	9	16	16	18	18	28	29
Michigan	10	21	29	31	28	28	78	90
Minnesota	2	2	4	5	7	7	14	19
Mississippi		4	6	4	4	4	6	5
Missouri	13	25	29	39	37	37	61	67
Montana					1	3	4	11
Nebraska			5		1	3	8	12
Nevada					2	2	3	4
New Hampshire	1	1	1	1	3	3	3	8
New Jersey	15	12	18	21	21	21	30	33
New Mexico	5	5	18	19	20	28	30	29
New York	43	69	100	108	125	125	173	203
North Carolina	1	4	5	10	12	21	30	48
North Dakota							1	6
Ohio	32	44	49	46	47	47	85	100
Oklahoma	3	4	2	1	2	3	15	23
Oregon	16	36	53	89	113	160	180	228
Pennsylvania	14	29	52	60	52	52	83	99
Rhode Island		4	3	4	4	4	5	7
South Carolina	1	3	3	4	3	3	5	6
South Dakota						1	4	7
Tennessee		2	6	13	15	15	27	29
Texas	2	11	24	31	30	42	72	91
Utah			1	2	3	3	7	8

Vermont	2	2	1	4	4	4	8	9
Virginia		11	34	48	46	65	86	97
Washington	16	22	55	88	95	125	242	323
West Virginia		1	6	7	10	10	16	17
Wisconsin	5	11	9	12	13	13	26	30
Wyoming					1	1	2	3
<hr/>								
	579	919	1,367	1,608	1,817	2,188	3,182	3,726
States	34	40	43	42	47	48	50	50

Source: the Alcohol and Tobacco Tax and Trade Bureau

Appendix 3- Data and Methods

This project developed comprehensive surveys on all aspects of grape growing, wine producing and wine marketing operations. The survey, administered by Colorado State personnel, was mailed to all wine grape growers and wineries throughout the state of Colorado. The information was gathered and administered by Colorado State University (CSU) personnel.

Surveys to the grape growers and winery solicited information on general characteristics of the operation (location, production/capacity, type of ownership), revenue and operating expenses, marketing receipts and channels and water use. Direct surveys of winery and festival visitors were also developed and conducted by teams who traveled to various venues across the state. Wine consumers were asked about their preferences for varietals, how they choose wines, experience, expenditures during that outing and more general wine spending patterns. These data were then compiled and used to assess economic value and allied economic activity from a consumer standpoint.

A list of the growers and wineries was provided by the Colorado State University Experiment Station at Palisade and the Colorado Wine Industry Development Board and used to generate a mailing list.

Appendix 4: Wine Impact Assumptions

For Festival Estimate:

- 1) Everyone spent at least one day at event/venue
- 2) Anyone not responding to number of people accompanying (#28), had one in party (only they were in party)
- 3) Expenditures were translated in per day and per person then multiplied by number of days
- 4) Only primary purpose of trip respondents were counted
- 5) 62% of winefest respondents were more than 100 miles from home, and answered traveler questions, so 62% of 5200 in attendance assumed to be travelers.
- 6) 38% of winefest respondents were locals, so only that day's expenditures (minus wine) were counted
- 7) Admissions were counted for locals and travelers
- 8) Wine sales were not included, since they should be counted already in direct contribution

For Estimate of Winery Share:

- 1) For volume, we have 688,904 litres, which is 918,539 bottles and 76,544 cases. Our sample had 49,900 cases. So, although we have 50% of wineries (34 of 68), it represents 65% of wine volume.
- 2) Several wineries did not report sales, so it was estimated using the average weighted bottle price and reported cases. These estimates filled in "holes" in sales data.
- 3) Total sales reported in survey equaled \$7,148,497, so assuming this is 65% of total, revenue in Colorado equaled \$10,997,688.

For Tourism Estimates:

- 1) Estimate total winery visitors by totaling responses and aggregating to full winery universe.
- 2) Reporting wineries assumed they saw 80,580 people, assuming that is 65% of total for the state, 123,969 or 124,000 approximate total visitor days occurred. Since we have a sample of 245, we have 0.1976% of the total visitors.

For Average Weighted Bottle Price:

- 1) As discussed in the winery share assumptions, several wineries reported volume but not sales. So we assumed shares in each price category multiplied by midprice in that range multiplied by 12 multiplied by number of cases. (\$8 for less than 10 and \$25 for more than 25).
- 2) For the industry, the weighted average bottle price (conservative estimate) was \$12.86.