

APPENDICES

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Appendix B: The Economic Contributions of Verde Valley Winemaking dated April 10, 2011 as prepared by Eric Glenn, Yavapai County Cooperative Extension for and in conjunction with the Verde Valley Wine Consortium.

Appendix C: About the Verde Valley by the Cottonwood Chamber of Commerce.

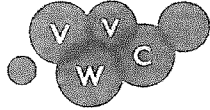
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APPENDIX A



VERDE VALLEY
wine consortium

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President

Paula Woolsey

Vice President

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OUR MISSION

The Verde Valley Wine Consortium is a wine producers' trade organization that promotes, enhances and connects every part of the wine community in the Verde Valley.

OUR VISION

The Verde Valley Wine Consortium assists in creating, nurturing and advancing the Verde Valley as a significant and important wine region – locally, regionally, nationally and internationally – in every aspect of winemaking, wine culture, wine education and wine tourism.

PRESENCE IN THE COMMUNITY

The VVWC is committed to keeping the local and regional community informed and up to date on Arizona legislation and how it specifically impacts the wine industry. We also initiate and fund economic impact studies on the Verde Valley wine region, gathering and organizing crucial language and data.

EDUCATION

The VVWC has evolved strong partnerships with Yavapai College, University of Arizona and University of Northern Arizona, and is fostering a tremendous amount of growth in the field of wine education. We became a founding partner with The Southwest Wine Center, on the Verde Valley campus of Yavapai College. By helping to fund their goal of becoming the premier academic center supporting wine growers throughout the southwest US. The Center will serve as a hub of education, research and rural economic development activity designed to support a young viticulture industry in achieving its potential as a significant US wine producing region.

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The Economic Contributions of Verde Valley Winemaking

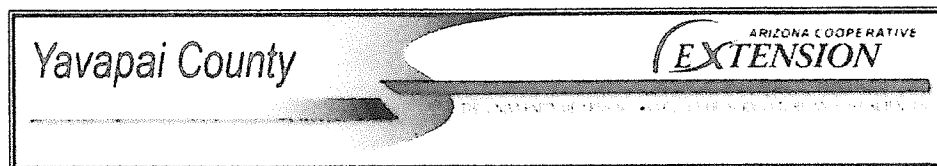
Prepared for / in conjunction with:



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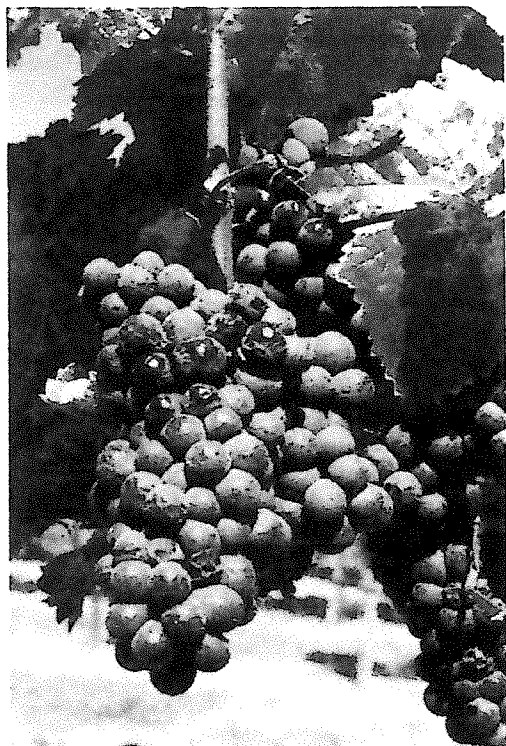
April 10, 2011



The Economic Contributions of Verde Valley Winemaking

This report provides conservative estimates of the economic contributions the wineries, tasting rooms and vineyards located in the Verde Valley made to the local (Yavapai and Coconino counties) and state economies during the fiscal year July 1, 2009 - June 30, 2010. Updates for the year ending December 31, 2010 are also given in some cases.

The methodology for this study is described on page 31.



Source: Photography by Janise Witt.

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Second, Melanie Meyers created the regional map used in this report and did a wonderful job with it. She also helped me put together the final survey/interview instrument. Thank you very much, Melanie!

I'd like to thank Pam Denney, as well, for her assistance in scheduling the first round of interviews I undertook.

Finally, I would like to express my appreciation to all of those people who were willing to talk to me about their operations. Of course, this report could not have been written without the detailed (and often proprietary) information they willingly shared with me.

I do also want to apologize that this report was completed six months behind schedule (my original target was late September/early October). Hopefully, the information detailed here can still be of use to those interested in Verde Valley winemaking.

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Executive Summary

- The **total of all economic activity in Arizona** related to Verde Valley wine is **estimated to be almost \$25 million**.
- Over **78 acres** of wine grapes are planted and viable in the Verde Valley; there are **14 vineyards** (some under the same ownership).
- During FY 2009-10 (from the 2009 Crush), the **13 licensed & bonded wineries** in the Verde Valley produced **over 21,000 cases** of wine. *(2010 crush estimate: ~27,000 cases)*
- Local wineries, vineyards and tasting rooms **employ 124 people**. When part-time and seasonal workers are converted to full-time equivalents, the employment figure is **74.11 FTE**.
- These firms' total **payroll is over \$2 million**.
- Verde Valley wineries, vineyards and tasting rooms have a **direct economic output of about \$5.5 million**. *(2010 estimate: ~\$6 million)*
- **Total spending** by Verde Valley wineries/vineyards/tasting rooms with other private firms totaled **more than \$6.5 million** during FY 2009-10. This doesn't include payments to employees or governments (payroll, benefits, taxes, etc.). *(2010 estimate: ~\$7.7 million)*
- As a rapidly-growing industry, **about \$3 million** of that business-to-business spending was for **capital expenditures**.
- Verde Valley winemakers made **more than \$81,500 in charitable contributions** during this time period.
- The **total of all economic output** in Yavapai and Coconino counties related to Verde Valley wineries/vineyards/tasting rooms, their suppliers and their employees (i.e. the sum of the direct, indirect and induced impacts) is **almost \$8.5 million**. *(2010 estimate: ~\$9.3 million)* **Value added**, a measure of net economic contribution, is **over \$3.9 million**.
- Another \$870,000 in economic activity is generated in the other 13 Arizona counties due to Verde Valley wineries/vineyards/tasting rooms, their suppliers and their employees. *(2010 estimate: ~\$960,000)*
- An estimated \$15 million in additional economic activity is generated in Yavapai and Coconino counties due to Verde Valley wine sales and Verde Valley wine tourism that takes place outside the wineries and tasting rooms.

Full Report

Introduction

Winemaking has been an important activity in the Verde Valley of northern Arizona for much of the region's history. Due to the vision and dedication of a growing group of winemakers, the industry is thriving and growing once again.

When compared to other states in the U.S., the wine industry in Arizona is still in its infancy and therefore relatively small. The Verde Valley isn't even the oldest or largest wine-producing region in the State. Regardless, this report will document several things: 1) Verde Valley winemaking is strong and it is expanding; 2) Verde Valley winemaking makes numerous valuable economic contributions at the local, county and state levels; 3) it offers many other benefits to rural communities, thereby enhancing residents' quality of life; and 4) although vibrant, the industry does face challenges—continued popular and governmental support are vital if winemaking in the Verde Valley is to continue growing and thriving.

Background/History of Project

This project was undertaken at the request of the Verde Valley Wine Consortium. For some time, members have wanted to see a research study that would quantify the wine industry's economic contributions. Such a study could be used for a variety of purposes, including lobbying efforts, marketing programs and grant applications.

As part of his program of work through Yavapai County Cooperative Extension, the author offered to conduct such a study for the Consortium **at no cost**. Supplementary support (travel costs, printing costs, etc.) for the project was provided by the Regional Center for Sustainable Economic Development ("the Center"). The Center is funded by a University Center grant from

The Economic Contributions of Verde Valley Winemaking

the Economic Development Administration, part of the U.S. Department of Commerce. The Center provides technical support, research and training services to economic development entities throughout Arizona.

Overview of Report

This report is organized into several main sections based on the type of economic contribution made (employment/payroll, revenue or output, local expenditures, taxes paid, etc.). In addition, the first two sections of the report focus on production at both vineyards and wineries. Later in the report, our focus will shift to other industries—both locally and around the state—that benefit from spending by winemakers and their employees or the actual product itself. Finally, we'll discuss a few of the general trends shaping winemaking in the Verde Valley, including some of the opportunities and challenges that lie ahead. The end of the report contains sources along with a description of the methodology used and the survey/interview instrument.

There are several important things that need to be taken into account when reading and interpreting this report. 1) The results reported here are primarily primary data collected directly from winemakers and their employees through personal, confidential interviews. However, the author did not get full participation from all winemaking entities, and even when interviews were completed, often the data reported were not complete. So, the primary data were supplemented in many cases by either a) additional secondary data collected from other sources or b) estimates based on the larger sample. Due to this reality, the figures presented here can be considered conservative estimates. 2) As mentioned previously, the majority of the figures in this report are for the period from July 1, 2009 to June 30, 2010 (which covers the 2009 crush). However, since the report was intended to be completed in October 2010, but unfortunately couldn't be finished until April 2011, some supplementary figures for the year ending December 31, 2010 (which

include production numbers from the 2010 crush) are also provided. Regardless, all data are in 2010 dollars. 3) Contrary to many other publications, this report details economic *contributions* to local and state economies, not economic *impacts*. In a nutshell, this means that the figures reported here don't necessarily represent net economic activity (with the exception of the *Value Added* data—defined on page 21), nor do they imply that all of this economic activity would completely disappear if winemaking didn't exist in the Verde Valley.

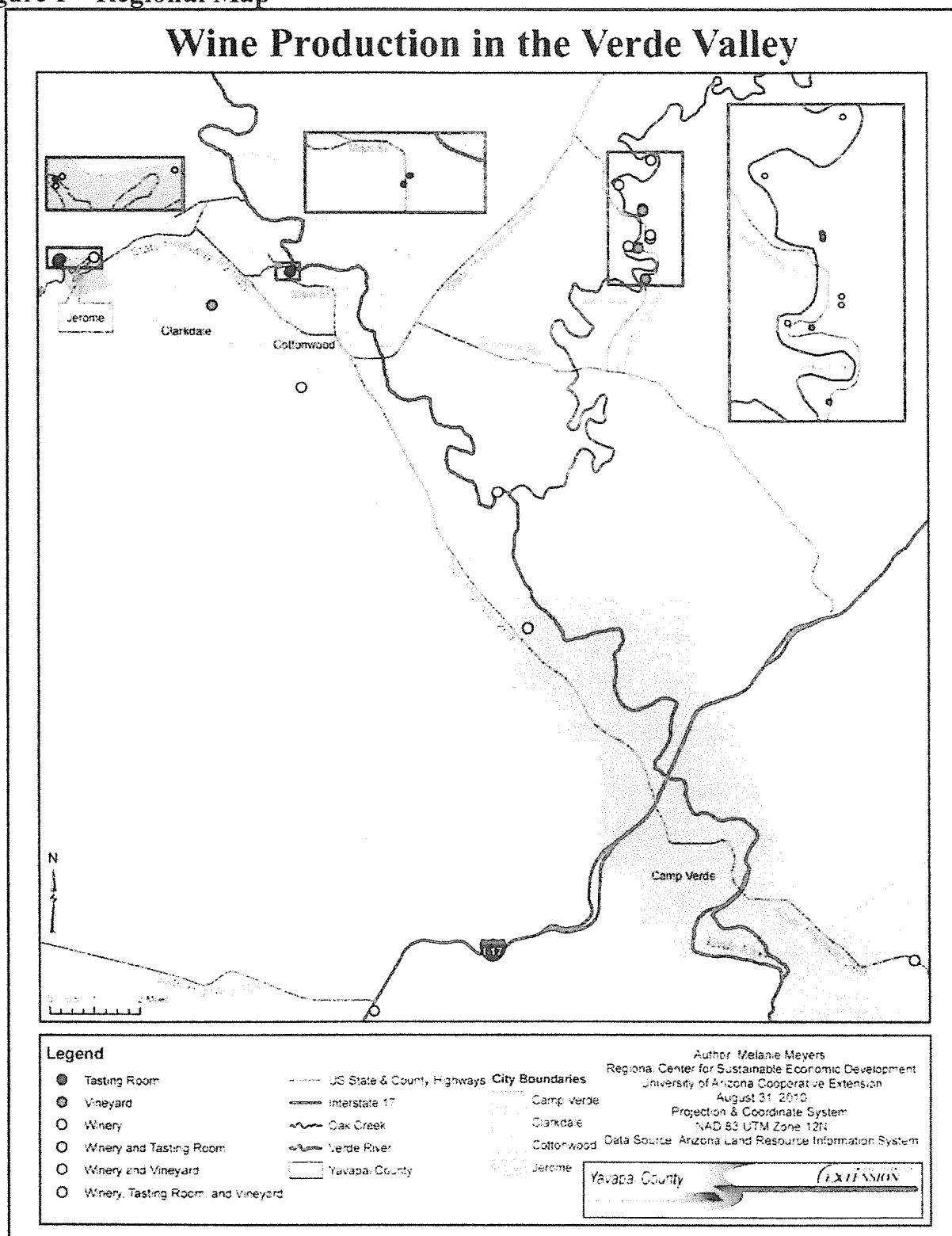
Basic Information

The wine industries in the Verde Valley are made up of three separate entities: vineyards, wineries and tasting rooms. For the purposes of this report, the differences between them can be thought of this way: vineyards are the locations of the wine grapes, wineries are the locations where the wine is actually created (and the locations that are licensed as such by the state or federal government), and tasting rooms are the locations where the public can sample, drink and purchase wine. As can be seen in *Figure 1*, often one location or parcel of land can contain more than one of these entities. In addition, there is a great deal of vertical integration in the industry: often, several vineyards, wineries and/or tasting rooms have the same ownership.

Figure 1 also demonstrates the spatial distribution of winemaking in the Verde Valley. Winemaking occurs across the region, but is concentrated in a few main areas: 1) the Page Springs area; 2) Cottonwood; and 3) Jerome.

As mentioned above, the wine industry in the Verde Valley is comparatively small. At the time of this report, there are 14 vineyards, 13 wineries and 10 tasting rooms in the Verde. In addition, though, there are numerous wholesalers and retailers around the state that buy and sell Verde Valley wines. On a more local level, there are at least 25 wine stores or wine bars in Yavapai or Coconino counties that sell Arizona wine (made in the Verde Valley or elsewhere).

Figure 1—Regional Map



Finally, it should be pointed out that Verde Valley winemaking operations have a variety of relationships with vineyards and wineries in the other parts of the state and country.

Vineyards

Number of Vineyards:	14
Total Acreage Planted:	78.35 acres

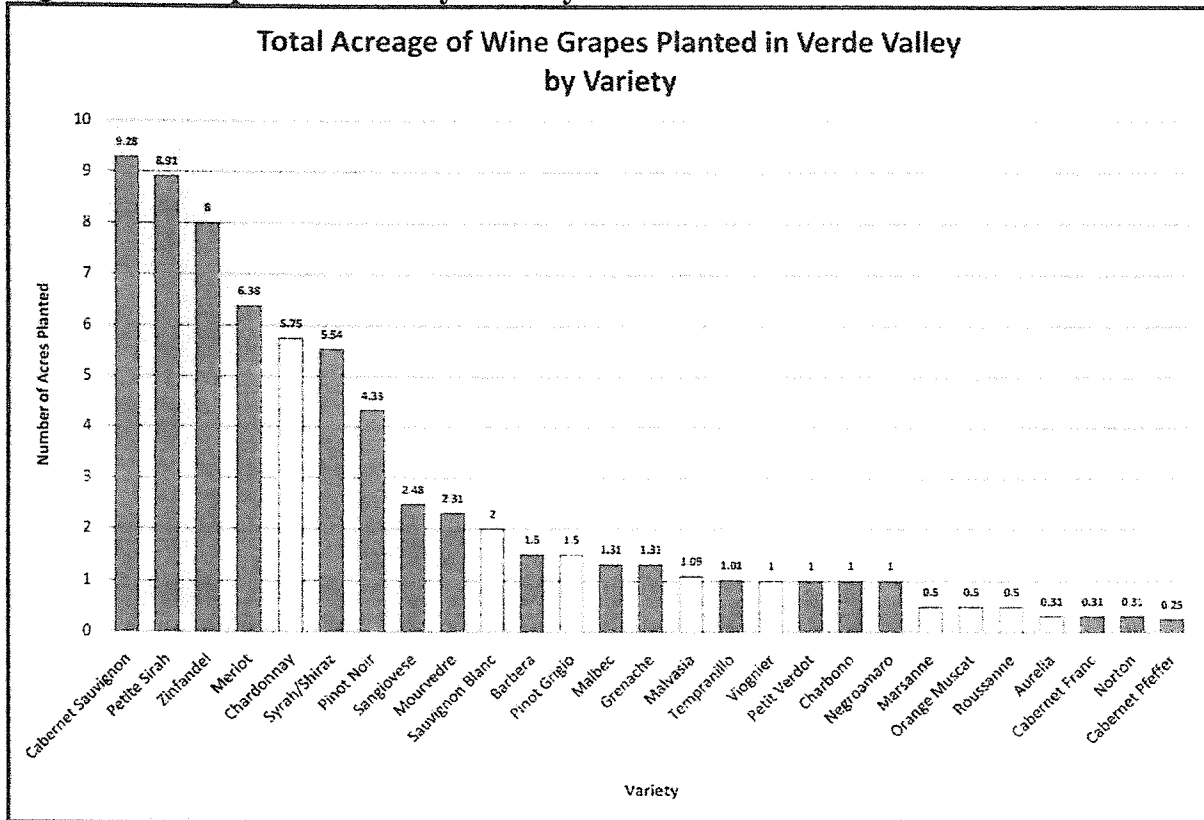
As noted above, there are currently 14 vineyards in the Verde Valley; however, many of those are under the same ownership. All in all, there are approximately 78 acres of grapes planted and viable in the region; however, this figure does include about 11 acres that aren't currently producing but could in the near future. Most producing vineyards are owned by local wineries, while others are stand-alone operations that supply the wineries. There is also additional acreage (~15 acres) in the Verde Valley that has been planted but is dormant or otherwise not currently viable.

As will be highlighted later in this report, the grapes grown in the Verde are not sufficient to produce the volume of wine that comes out of local wineries. Most winemakers have to supplement local grapes with fruit or juice from outside the region; however, more and more of that shortfall is now coming from other parts of Arizona.

A very unique feature of grape production in the Verde Valley is its diversity compared to other grape-growing regions. Many winemakers have used local vineyards to experiment with a large number of different grape varieties (see *Figure 2*). They have therefore been able to test which varieties grow best in different locations, as well as which varieties blend well together.

As Figure 2 shows, production is dominated by red grape varieties—Cabernet Sauvignon. Petite Sirah and Zinfandel account for one-third of all viable acreage—although some whites are grown, as well.

Figure 2—Grapes Planted by Variety



Wineries

Number of Wineries: **13**
 Total Wine Production: **21,100 cases+ (~50,200 gallons)**
 (2010 crush estimate): (~27,000 cases; ~64,200 gallons)

As portrayed in Figure 1, there are 13 local wineries in the Verde Valley region. This list includes all federally-licensed and -bonded wineries in the region, and also corresponds with the

list of Arizona-licensed domestic farm wineries. It should be noted that not all of these licensed wineries are currently crushing/producing.

Those 13 wineries together produced over 21,100 cases during the study period (from the 2009 crush). Based on selected figures reported from the 2010 crush, it appears that production will be up about 25% this year compared to last year: production from the 2010 crush is estimated to be about 27,000 cases.

Verde Valley winemakers produce an extremely wide array of wines. Reds, whites and roses, both as varietals and blends, are made in the Verde Valley. Prices range from about \$10 per bottle to over \$100 per bottle; however, the majority of the wines produced are in the \$15-\$35/bottle range.

Employment

Direct Headcount Employment: 124
Direct Full-Time-Equivalent (FTE) Employment: 74.11

Vineyards, wineries and tasting rooms in the Verde Valley are significant employers, although much of their workforce is part-time or seasonal in nature. Regardless, we estimate that there are 124 people employed directly by winemakers in the region. Details on the breakdown between full-time, part-time and seasonal employees are given in *Figure 3*. That table also includes two numbers that can help us better understand the significance of this employment: Full-Time Equivalent (FTE) employment and Local FTE employment.

Since part-time and seasonal workers don't work as many hours in a year as full-time workers, we can convert part-time and seasonal positions to Full-Time Equivalents: this is done using the number of hours per week that part-time employees work, and the number of weeks per year that seasonal employees work. As shown in *Figure 3*, even when we account for those who

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work less than 40 hours per week or 52 weeks per year. Verde Valley winemakers employ the equivalent of 74.11 full-time positions, a significant number.

Even more importantly, the Local FTE figure of 72.10 tells us relatively how much these employees contribute to the local economy. As noted, 97% of all employees live in the Verde Valley, so the majority of take-home pay is spent locally on goods and services like housing, food, healthcare, etc.; there are very few incommuters (people who live elsewhere but commute into the Verde Valley for their jobs) who take their paychecks home to another community. The next section talks about payroll in more detail.

Figure 3—Direct Employment

Headcount	124
Full-time	36
Part-time	49
Seasonal	39
FTE (full-time equivalent)	74.11
Local FTE	72.10
<i>97% of employees live in Verde Valley—few incommuters means \$ spent locally</i>	

Wages/Payroll

Total Payroll:	\$ 2,026,000
Total Labor Income:	\$ 2,178,600+

Verde Valley vineyards, wineries and tasting rooms have a combined payroll of over \$2 million. As mentioned in the previous section, most wine industry employees live in the Verde

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Valley; therefore, much of this \$2 million is respent with local businesses or transferred to local and county governments in the form of taxes.

Payroll alone doesn't tell the whole story, though. In addition to the wages and salaries that are represented in the payroll figure, winemakers compensate employees in many other ways, including benefits and employer-paid payroll taxes. Although only a few of the winemakers surveyed provide benefits to their employees, this still represents a significant economic contribution to the region but one that is not easy to quantify. Finally, the payroll total mentioned above does not include proprietor income. Unfortunately, information on proprietor income was also difficult to obtain, both due to the organizational structures of most of these entities (Limited Liability Corporations or S-Corporations) and to the fact that few winemakers disclosed these figures.

Proprietor income and all types of employee compensation (wages/salaries, benefits, employer-paid payroll taxes) together make up *total labor income*. The total labor income contributed by Verde Valley winemakers is conservatively estimated at almost \$2.2 million, almost surely an undercount due to the reasons mentioned in the previous paragraph.

Expenditures

Total Business-to-Business Expenditures:	\$ 6,565,300
(2010 estimate):	(~\$ 7,681,400)
Capital Expenditures (FY09-10):	~ \$ 3,000,000

In addition to the money or other value that flows from winemakers to *people*—the paychecks and benefits provided to employees, along with the income proprietors generate—a great deal of money flows to other *businesses*, as well. These business-to-business expenditures

The Economic Contributions of Verde Valley Winemaking

totaled over \$6.5 million during the study period, and are estimated to be over \$7.6 million during 2010.

We term these expenditures *backward linkages*, as the money flows “back” to supplier firms that provide inputs to the winemaking process. For example, vineyards make expenditures on inputs like rootstock or fencing material that they need in order to produce a crop; wineries spend money with coopers, bottle manufacturers, trucking companies, vineyards and many others in order to create their product.

The survey results also show that at this point in time winemakers are still purchasing a majority of their inputs (by value) from outside the local region. In fact, only 38% of these expenditures were made locally. Obviously, items like oak barrels or corks aren’t manufactured locally. However, in many cases winemakers are already purchasing other pieces of equipment or supplies, as well as a variety of services (construction, legal, insurance, banking, etc.) locally. In addition, as the industry continues to grow, more and more suppliers may spring up in, or relocate to, the Verde Valley. As this happens, the percentage of business-to-business expenditures that stays in the region will also increase.

Both concepts—backward linkages and local purchasing—are important when estimating the “spill-over” effects caused in other parts of the economy by the winemakers’ activity. We’ll discuss these concepts in subsequent sections.

Interestingly, during the study period, a large proportion of these business-to-business expenditures could be considered capital expenditures: roughly \$3 million. As winemaking in the Verde continues to expand, it’s obvious that much of the revenue earned is being reinvested to prepare for future growth. However, it’s also clear when comparing expenses to revenue (revenue is discussed in a later section) that a great deal of additional capital—whether from the

proprietors themselves, financial institutions or investors—continues to flow into these winemaking businesses, as well.

Taxes

Verde Valley winemakers also make important economic contributions to governmental entities. The primary way they do this is through the myriad of taxes that they pay to local, county, state and federal governments: property taxes, payroll taxes, income taxes, transaction privilege (sales) taxes, excise taxes and luxury taxes.

Unfortunately, it was difficult to collect information on ALL taxes paid; in particular, few data on property taxes and income taxes (state and federal) were reported and it's not always easy to estimate those figures, either.

However, we attempted to do just that with the data available. If not reported, we utilized information on the volume of wine produced to calculate federal excise and state vinous luxury taxes, payroll totals to calculate payroll taxes and revenue to calculate sales tax. However, the result is definitely a conservative figure due to the many missing data points.

The last column of *Figure 5* gives the estimates of tax contributions (direct, indirect and induced contributions will be explained later). The total estimated tax contribution to local and state governments is at least \$739,000. Federal excise taxes (see *Figure 7*) are estimated to be \$57,900.

It should be noted, also, that there are many affiliated industries that generate revenue—and the associated sales taxes—from wine. These substantial sales taxes will be described in later sections.

Charitable Contributions

Total Charitable Contributions: **\$ 81,500+**

It's clear that Verde Valley winemakers are extremely committed to local organizations and communities. Even though many winemaking operations are fairly new and are focused on expanding their businesses, they still find the time and the will to make charitable contributions. Primarily, this consists of donating product (wine!), although many winemakers contribute money to organizations, as well. In all, we estimate that Verde Valley winemakers contribute over \$81,500 in goods and funds to local non-profits and other organizations.

Output/Revenue

Total Revenue: **\$ 5,448,000**
(2010 estimate): (~\$ 5,992,800)

Verde Valley winemakers generated almost \$5.5 million in revenue during the study period, and that total is estimated to be almost \$6 million in 2010. This revenue is made up of several components: 1) sales of grapes or juice to wineries; 2) direct-to-consumer sales of wine (either through tasting rooms, by internet/mail or other channels); 3) sales to wholesalers; 4) sales directly to retailers; 5) sales of non-wine products; and 6) other sources, like custom-crush fees, vineyard management fees and investments. Each winemaking entity derives its revenue from a completely different mix of all of these sources.

As mentioned previously in this report, total expenditures (both business-to-business and total labor expenses) and tax payments are estimated to be more than total revenue currently. However, by no means does this indicate problems with Verde Valley winemaking as a whole or with individual entities. On the contrary, the industry has been expanding rapidly and consistently and looks to continue doing so (2010 Crush production is up more than 25% from

the 2009 Crush and expansion into new markets is proceeding). Rather, it appears that winemakers continue to invest their own money, bring in additional funding and reinvest revenue in order to make capital expenditures (~\$3 million of the total) to prepare for that growth.

Source of Revenue

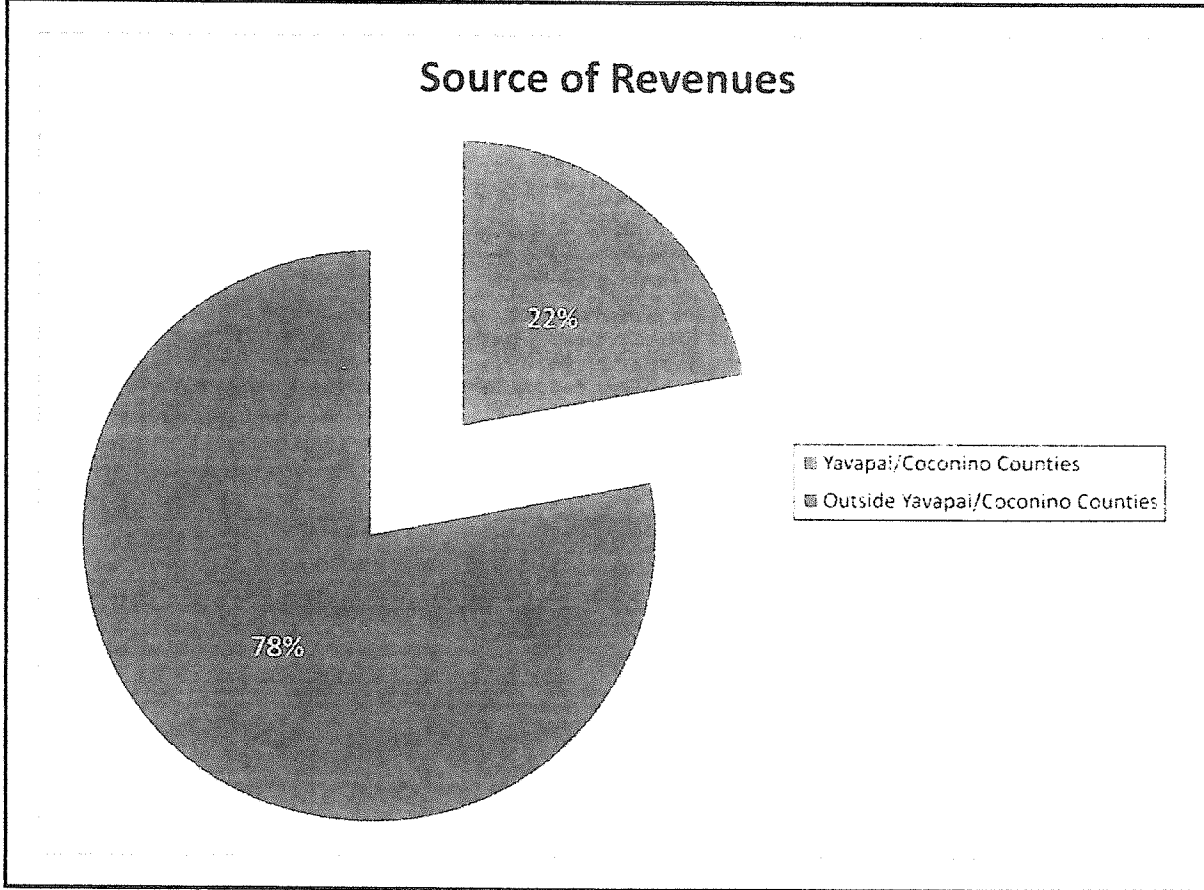
We can describe total revenue in more detail by calculating where it comes from: either inside or outside of the local region. Earlier in this report, when talking about the locations of the vineyards, wineries and tasting rooms, as well as where employees live, we defined the local region as the Verde Valley itself. In this and later sections, we define the local region as Yavapai and Coconino counties. We do this to better capture and describe all of the ways that Verde Valley winemakers contribute economically to other local industries.

Figure 4 graphically displays the breakdown between revenue that originates in Yavapai and Coconino counties and revenue that originates elsewhere. It should be noted that money is constantly circulating around the globe; the only true “origin” is the printing press or the mint. In this case, we describe the source of revenue based on the residence of the first purchaser. We would consider a wholesaler located in Phoenix that sells to a retail store in Prescott as non-local, and a Japanese tourist who buys a bottle from a tasting room in Jerome would also be considered non-local.

Using that definition, it’s apparent that almost 80% of all revenue is non-local. Whether the customer is a tasting room visitor driving up from Phoenix or a wholesaler, a restaurant in Bisbee or a couple in New York ordering over the internet, Verde Valley winemakers bring new money into the region, and this is extremely important to the local economy. It also means that the

potential market for Verde Valley wines (and related products) is much larger than it would be if customers were primarily local.

Figure 4—Source of Revenues



Multiplier Effects

As mentioned above, economic contributions can have “ripple effects” that extend into other industries and to households. For example, a winery may buy a tractor from a dealer; that dealer may use the money received to buy another tractor from the manufacturer, but may also pay an accountant or pay its employees.

Community economists often utilize a broad category of models/techniques called *input-output analysis* to examine these ripple effects. Input-output analysis estimates economic change based on the assumption that production in a region is made up of linked firms that interact with each other. If production in one sector or industry increases, that directly affects how much they can buy from the supplier firms that provide their inputs. Input-output analysis can provide estimates of *multipliers* that indicate how a change in demand for a product or service can affect the entire local economy; therefore, those ripple effects are often called *multiplier effects*. We can create multipliers and calculate multiplier effects for output, income and employment, among others.

When describing multiplier effects, we often break them up into three categories: direct, indirect and induced. *Direct effects* are those created by the firm or industry itself: in our case, all of the survey data collected about the vineyards, wineries and tasting rooms themselves are direct effects. *Indirect effects* are those caused by winemakers' spending with their suppliers. *Induced effects* are those caused by the spending done by winemakers' employees. Multipliers describe the relationship between the direct effects and the indirect and induced effects. We calculated the indirect and induced effects by using our survey data as inputs to IMPLAN, a well-known input-output model. As mentioned earlier, the concepts of backward linkages and local purchasing are important when constructing an input-output (i-o) model and analyzing its results. First, i-o models only analyze backward linkages, so they don't explicitly track intermediate economic contributions that might occur between the winery and a final consumer, e.g. at a wine bar. Second, both the way we define our local study region and our calculation of the percentage of expenditures made within that local region are important because i-o models

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normally only report indirect and induced effects within the local region: all of the direct effects collected by survey are considered local since the winemakers are all located in the local region.

So, *Figure 5* displays direct, indirect, and induced contributions for a variety of measures: employment, labor income, value added, output and taxes. Employment is given as headcount figures, not full-time equivalents. Labor income, as described earlier, is the sum of any proprietor income and all types of employee compensation (wages/salaries, benefits, employer-paid payroll taxes). Output is simply the sum of gross sales.

**Figure 5—Primary Local Contributions
(Yavapai & Coconino Counties)**

Type	Employment (Headcount)	Labor Income ¹	Value Added ²	Output ³	Taxes ⁴
Direct Effect	124	\$2,178,600	\$2,600,500	\$5,448,000 (~\$5,992,800)	AT LEAST \$359,600
Indirect Effect	8	\$377,700	\$626,600	\$1,923,000 (~\$2,115,300)	AT LEAST \$215,700
Induced Effect	10	\$389,400	\$699,000	\$1,077,500 (~\$1,185,300)	AT LEAST \$164,000
Total	142	\$2,945,700	\$3,926,100	\$8,448,500 (~\$9,293,400)	AT LEAST \$739,300

- 1) Labor income includes employee compensation (wages & salaries, benefits, employer-paid payroll taxes) plus proprietor income.
- 2) Value added is a measure of net economic activity or new value generated, i.e. the value of all outputs minus the value of all inputs.
- 3) 2010 estimates are given in parentheses. All other figures are for FY09-10.
- 4) In addition to many local and county taxes, these figures also include many state taxes, so the contributions aren't strictly local. However, the figures are decidedly conservative, as data on both income and property taxes were a) often not reported and b) difficult to estimate when not reported.

Two columns require more detailed explanation. First, in the taxes column, the amount reported as the direct effect does include some taxes paid to the state of Arizona, so it is not strictly local only. Second, the *value added* column describes net economic activity or new value

generated, i.e. the value of the final product minus the value of all inputs. These figures are important because they are more like traditional economic accounting, where only the value of the final products/sales is reported. By contrast, measures (like output) in input-output analyses measure the value of EACH transaction (sale) and sum them. For example, if a winery spends \$10 on grapes and other inputs and sells the wine created for \$18, total output would be \$28 while value added would be \$8. Both output and value added can provide useful information depending on the needs of the user.

Contributions to Arizona's Other 13 Counties

Total Economic Contributions to Rest of State: \$ 870,000
(2010 Estimate): (~\$ 957,000)

The indirect and induced contributions listed in *Figure 5* (with the exception of taxes) are local, meaning they affect Yavapai and Coconino counties. However, we know that Verde Valley winemakers' economic activity affects other parts of the state, as well. For example, they may hire an advertising firm from Phoenix or pay property taxes on a vineyard in Santa Cruz County; in addition, if one of their employees lives in Willcox and spends most of her paycheck there, there are significant induced effects. We estimate that total indirect and induced output in Arizona's other 13 counties during the study period was \$870,000, or approximately \$957,000 in 2010. In addition, another seven headcount employees statewide are supported by the activity of Verde Valley winemakers.

Affiliated Industries

Additional Local Revenue from VV Wine Sold: \$ 1,172,000
Additional Local Revenue from Tourism: \$ 14,014,000

As mentioned earlier, input-output analysis only looks at backward linkages. What about forward linkages where wine moves through wholesale and retail channels? How about other industries/businesses that generate revenue from wine tourism?

Forward linkages include industries like wholesale trade, warehousing, truck transport between wholesalers and retailers, wine and liquor stores, grocery stores, caterers and all eating and drinking places (restaurants, bars, etc.). Although the economic contributions to these industries due to Verde Valley wine are hard to estimate without surveying these establishments directly, we estimate that at least another 11 headcount employees are supported directly or indirectly through additional wholesale and retail sales of Verde Valley wines within the local region. In addition, we estimate that almost \$1.2 million in revenue/output is generated through these channels.

In addition to forward linkages, wine tourism-related impacts are significant, but again, hard to quantify. Wine tourists spend money in several other industries, including lodging places, gas stations, convenience stores, eating and drinking places, tour companies and many other retail stores.

Tourism related to the Verde Valley wine industry results in estimated revenue of more than \$14 million in Yavapai and Coconino counties. This does not include tasting room and tour-related business at the wineries, just the hotel, restaurant and other business generated.

Figure 6 and Appendix I describe how this estimate was made. From direct surveys, we calculated that there were approximately 286,000 visits to Verde Valley wineries and tasting

The Economic Contributions of Verde Valley Winemaking

rooms during the study period. Assuming these customers visit an average of two wineries/tasting rooms per trip, and using our survey data that indicates 83% of visitors live outside the study region, we estimate that there were 118,700 tourists from outside the study region who visited Verde Valley wineries/tasting rooms during the study period.

Figure 6—Tourism and Expenditures

Total Visits to Tasting Rooms ¹	286,000
Total Tasting Room Visitors ²	143,000
Visitors from Outside the Region (“Tourists”) ³	118,700
Average Expenditure per Tourist per Trip ⁴	\$139.12
Total Tourist Expenditures	\$16,514,000
(less direct spending at tasting rooms) ¹	(\$2,500,000)
Total Other Local Tourism Expenditures ⁵	\$14,014,000

1) Estimate. Source: author interviews.

2) Estimate of total visitors to the region assuming an average of two wineries per tourist trip. Source: author interviews.

3) Estimate of tasting room visitors who live outside Yavapai/Coconino counties. Source: author interviews.

4) Estimate based on methodology and visitor spending profiles used in *Verde Valley Tourism Study* (2008, Arizona Hospitality Research and Resource Center, Northern Arizona University). Average expenditure per trip based on survey data (amount spent per category, e.g. lodging, restaurant/bar, etc.) and author’s calculation of the percentage of all visitors who reported spending money in each category. Results indicated an average trip length of two days and an average party size of 2.6.

5) Estimate of additional spending (i.e. in addition to tasting room spending) in Yavapai and Coconino counties by wine tourists from outside the region.

Utilizing research conducted by Northern Arizona University’s Arizona Hospitality Research and Resource Center, and assuming spending by wine tourists is similar to spending by Verde

Valley tourists in general, we estimate an average expenditure of \$139.12 per person per trip. Applying that figure to our survey results, we estimate wine-related tourism contributes an additional \$15.7 million to the economies of Yavapai and Coconino counties (\$14.5 million in output and \$1.2 million in tax revenue). These figures do not include contributions from wine purchased or other money spent with the winemakers themselves (which is covered under direct output).

Tourism directly related to the wine industry employs approximately 157 people in the study region and another 38 through indirect and induced effects (see *Figure 7*). Again, this is in addition to employees of tasting rooms or other winery hospitality; they are covered under wine industry direct employment.

It should be noted that Northern Arizona University is currently conducting a more detailed study on Verde Valley wine tourists and their spending patterns, specifically. Once that study has been completed, the more accurate expenditure data collected can be used in place of the estimates reported here.

Finally, there is another industry related to winemaking that has begun to make its own economic contributions in the region: education/workforce development. In particular, Yavapai College has already spent money to develop and staff a viticulture/oenology program and offer additional courses on wine appreciation and other topics. In addition, it has planted a one-acre vineyard and procured equipment and supplies in order to utilize that site for its programs. Unfortunately, those economic contributions are outside the scope of this report. However, they are significant and will continue to grow over the next several years, so they definitely bear mentioning here.

Summary of Economic Contributions

Total Statewide Economic Contributions: \$ 24,973,500

Figure 7 describes the total economic contributions—direct, indirect and induced—made by Verde Valley winemakers to the state of Arizona. When including primary local contributions, local forward linkages, other local tourism contributions, and indirect and induced contributions to the rest of the state, we estimate total statewide economic contributions of over 350 headcount employees and almost \$25 million in output.

Figure 7—Total Statewide Contributions, FY09-10

Type	Employment (Headcount)	Taxes	Output
Total Primary Local Contributions (from Figure 5)	142	AT LEAST \$739,300	\$8,448,500
Local Forward Linkages	11	\$76,200 ¹	\$1,172,000
Other Local Tourism	195	\$1,191,000 ²	\$14,483,000 ³
Remainder of State (Indirect & Induced)	7	\$172,900 ⁴	\$870,000
Total Statewide Contributions ⁵	355	AT LEAST \$2,179,400	\$24,973,500
<i>Federal Contributions</i>	<i>N/A</i>	<i>\$57,900 ⁶</i>	<i>N/A</i>

- 1) Using an average transaction privilege (sales) tax rate for Yavapai and Coconino counties.
- 2) Using an average transaction privilege (sales) tax rate for municipalities in Yavapai and Coconino counties.
- 3) Output deflator applied to original expenditures; result includes indirect and induced effects.
- 4) In addition to indirect and induced effects, this tax figure includes some direct effects from payment of property taxes in other counties.
- 5) These figures are for the state of Arizona only.
- 6) Includes excise taxes only. In fact, total federal tax effects approximately net out to zero. The most recent available data show that, for all federal taxes as a whole, Arizona is a recipient state: for every dollar in federal taxes paid, \$1.19 is returned to the state in the form of federal expenditures. Source: 2005. Tax Foundation Special Report No. 158, "Federal Tax Burdens and Spending by State." and U.S. Census Bureau's Consolidated Federal Funds Report.

Opportunities and Challenges

Although the primary purpose of this report is to detail and quantify the economic contributions of Verde Valley winemakers, this section contains a quick list of selected strengths of the industry and opportunities it can take advantage of, as well as a few challenges it faces now or could face in the future without public, financial and legislative support.

Strengths/Opportunities

As detailed in this report, winemaking in the Verde Valley is healthy and growing. Here are some additional positive items to consider:

- Much like Oregon and other states, Verde Valley winemakers are focused on high quality, not large quantities. Therefore, they are less vulnerable to price-based competition from low-cost, high-volume producers around the world.
- In fact, Verde Valley wines, and Arizona wines as a whole, are beginning to receive greater recognition for their quality and value.
- Winemaking is a great industry for rural areas, especially those with an existing agricultural base and culture.
- In particular, wine and grapes are long-term investments and long-term employers. Not only are the investments long-term but they are inherently tied to “place”: a particular location, soil, landscape and aspect. Unlike manufacturing or service enterprises, vineyards, once planted, cannot simply get up and move to another country which might offer cheaper labor, a better business climate or tax incentives.
- Winemaking is also an environmentally-sustainable practice that preserves open space.
- There is a growing interest in Arizona, and northern Arizona specifically, in locally-produced food products.
- Across the country, wine consumption continues to increase. In particular, there is a growing demand among younger segments of the population.
- The health benefits of wine (red wine in particular) are increasingly touted.

The Economic Contributions of Verde Valley Winemaking

- Over the last decade as a whole, wine tourism throughout the U.S., even in states not traditionally known as wine producers, is booming. Wine tourists tend to be a higher-spending cohort and also bring in outside money to a region.
- This is part of a larger trend of increasing agricultural and culinary tourism driven by “experiential” consumers.
- Phoenix is one of the largest consumer markets in the U.S., and there is still plenty of room for expansion of sales there.
- Verde Valley wines continue to expand into the out-of-state export market, as well.
- Direct-to-consumer sales (barring future legislative changes) currently provide a way for smaller producers to avoid the traditional “three-tier” system (winery to wholesaler to retailer), utilize the internet as a marketing tool and compete on quality.
- The Verde Valley wine industry was one of the few local industries that experienced growth through the recent recession.
- As the industry continues to expand, a greater proportion of all economic contributions will stay in the Verde Valley.

Challenges

However, the wine industry does face challenges, and could face additional ones in the future:

- Grape-growing is, and will continue to be, an endeavor with significant risks. In particular, natural risks like frost, hailstorms and disease pose challenges for consistent production.
- Wineries themselves face the risks caused by a sometimes uncertain supply of grapes or juice and also face constantly-changing market risks.
- As an example, even though more than 90% of total revenues nationwide are generated through the “three-tier” system, recently several legislative challenges to the alternative system of direct sales have been introduced. If these efforts are successful, smaller producers will once again find it harder to compete with larger, more established producers.
- Currently, there is not sufficient grape production in the Verde Valley to meet the demand from local wineries. Although many wineries have sufficient supplies elsewhere in Arizona, additional local acreage is needed as production continues to

increase.

- In the past, winemakers have often had to deal with a scarcity of skilled, trained labor. However, Yavapai College and others have begun to tackle this issue by creating local education and workforce training programs for the industry.
- In some cases, winemakers have been unable to secure sufficient financing to proceed with expansion plans.
- Also, many winemakers are often hampered by government regulations, zoning restrictions or taxes.

Conclusion

Winemaking in the Verde Valley is very important to the economies of Yavapai and Coconino counties, and also contributes to the economy of Arizona as a whole. The vineyard and winery industries provide employment and a paycheck to local residents (who then spend much of their income in the region); make significant purchases with other local companies; contribute tax money to local, county and state governments; and give to charities and non-profits. They do this by creating valuable products that 1) bring outside money and people into the region and 2) can be resold or utilized by other retail and tourist-serving businesses. Perhaps just as importantly, winemakers make these many economic contributions while preserving open space and the region's agricultural heritage, serving as good neighbors in their local communities and also operating in an environmentally-sustainable manner. As we recognize these facts, it's vital that all of us support Verde Valley winemaking and do what we can to ensure that it remains a part of our region for a long time to come.

Sources/References

- Arizona Department of Agriculture
- Arizona Department of Liquor Licenses and Control
- Arizona Department of Revenue
- Arizona Office of Tourism
- Arizona Vines and Wines* magazine
- Arizona Wine Growers Association
- Full Glass Research. 2005. *The Economic Impact of the Wine and Wine Grape Industries on the Oregon Economy*. Berkeley, CA.
- Manta Media Inc.
- MIG, Inc. *IMPLAN*. Version 3 software and www.implan.com. Hudson, WI.
- MKF Research, LLC. 2007. *The Impact of Wine, Grapes and Grape Products on the American Economy 2007: Family Businesses Building Value*. Helena, CA.
- Northern Arizona University, Arizona Hospitality Research & Resource Center. 2008. *Verde Valley Tourism Survey*. Flagstaff, AZ.
- The Tax Foundation
- The Wine Institute
- U.S. Alcohol and Tobacco Tax and Trade Bureau
- U.S. Department of Agriculture, Economic Research Service
- U.S. Department of Agriculture, National Agricultural Statistics Service
- Verde Valley Wine Consortium and Yavapai College
- Wine America
- Numerous confidential interviews by the author with industry personnel, supplemented by information from winemakers' and related firms' websites

Appendix I: Methodology

Data Collection and Supplementary Estimation

A majority of the data used in this report was collected directly from winemakers, tasting room managers and other employees. These *primary data* were collected through a series of confidential interviews, utilizing the survey instrument shown in *Appendix II* as a guide. Rarely was every question in the survey instrument answered, and some wine producers weren't interested in sharing their information. However, these direct interviews—along with some follow-up correspondence by the author—provided a wealth of information for this report.

Since the author was unable to garner 100% participation from winemakers, the collected data were supplemented by estimates—either from *secondary data* sources (data collected and compiled by others), if possible, or by extrapolating from the survey data. For example, in some cases Dun and Bradstreet and other business databases provided estimates. Remaining missing data points were filled using estimates based on averages across all winemaking operations, subsequently adjusted based on the relative size, location and makeup of the operation.

Direct, Indirect and Induced Effects

As mentioned in the body of this report, economic effects can be separated into three categories: direct, indirect and induced. *Direct effects* are those created by economic activity in the industry or industries being studied, in this case wineries, vineyards and tasting rooms. *Indirect effects* are those created by the spending that these wineries, vineyards and tasting rooms make with the firms that supply them with goods and services. *Induced effects* are those created when winery/vineyard/tasting room employees spend their paychecks on local goods and

services. The direct effects are all within the study region (Yavapai and Coconino counties), while the indirect and induced effects can be either within the region or outside the region.

The direct economic effects of Verde Valley winemaking were calculated directly from the primary data collection and supplementary estimates, as described above. The indirect and induced effects were calculated using IMPLAN, an economic model that uses input-output analyses to estimate how activity in one industry creates “ripple effects” throughout the regional and state economies.

Additional Secondary Data and Related Study Methodologies

In addition to primary data collection, supplementary estimates and IMPLAN outputs, additional information was gathered from many other agencies and organizations. In particular, the U.S. Department of Agriculture, the Tax Foundation, the U.S. Alcohol and Tobacco Tax and Trade Bureau, The Wine Institute and Wine America were great sources of supplementary data.

Finally, tourist expenditure estimates were based on the methodology and visitor spending profiles of the *Verde Valley Tourism Survey* conducted by Northern Arizona University’s Arizona Hospitality Research & Resource Center in 2008. In that survey, the average expenditures per trip were based on survey data (amount spent per category, e.g. lodging, restaurant/bar, etc.) and the percentage of all visitors who reported spending money in each category; results indicated an average trip length of two days and an average party size of 2.6. Calculations by the author using those spending data resulted in an average expenditure per person per trip of \$139.12. See *Figure 6* and its associated footnotes for additional information about the methodology used to calculate expenditures by wine tourists, specifically.

Appendix II: Survey/Interview Instrument

2010 ARIZONA WINEMAKER ECONOMIC IMPACT SURVEY

Grape Grower & Winemaker Questions

1. Do you grow your own grapes? (If the answer is no, please skip to Question 6).
 2. What products are your grapes used/produced/sold for?
 3. How many acres do you have planted in grapes? By varietal? How much is for other uses?
 4. In the last year, how many new acres were planted? Removed? How much did it cost per acre to develop/plant?
 5. What is the value (price per ton? other?) of your grapes?
6. From what sources do you get your wine grapes (locations, growers, vineyards)?
7. Do you produce your own wine? If not, who does? Where is it produced?
8. How much wine do you produce each year (barrels, bottles, tons, liters)?
9. Do you crush your own grapes? If not, who does? Where?
10. Do you bottle your own wine? If not, who does? Where?
11. What varietals/blends of wine are produced at your winery? What are the percentages of each?
12. Do you grow any other agricultural products? How many acres of each?
13. Do you produce any other alcoholic beverages?

The Economic Contributions of Verde Valley Winemaking

Winery Owner Questions

1. When did you purchase the land your winery is located on?
2. What kind of ownership structure do you operate your vineyard and/or winery under (ie. partnership, sole proprietorship, limited liability corporation, etc.)?
3. How many proprietors or owners are there for your vineyard and/or winery?
4. What year did you open your vineyard and/or winery?
5. How large is your vineyard and/or winery in acres?
6. Do you have any land under development for grape production, buildings, etc.?

Employee & Ownership Questions

1. How many people do you employ on a full-time basis?
2. How many people do you employ on a part-time basis?
3. How many hours per week do the part-time employees work?
4. How many people do you employ on a seasonal basis?
5. How many weeks (or months) out of the year do those seasonal employees work for you?
6. What is your total payroll?
7. Do you offer benefits to your employees? If so, what kind?
8. Where do your employees live (by community or zip code)?
9. If construction activity has occurred within last year (or is ongoing), how many construction employees did you hire? How many hours? Cost? (**If paid contractor directly, calculate this under expenses.**)

Tourism Questions

1. How many tourists visit your winery/tasting room (annually, monthly, or weekly)?
2. Can you estimate what amount (or percentage) of sales you generate from tourists on-site?

The Economic Contributions of Verde Valley Winemaking

3. Where are your on-site tourists from? (break down by Verde V., other N. AZ, Phx, Tuc, rest of state, other U.S., international; estimate if necessary)
4. How long do tourists to your vineyard and/or winery stay in the area and where? (estimate)

Distributor Questions

1. Who are your distributors (wholesalers and retailers)?
2. Where are they located?
3. How much of your product goes to each distributor?

Sales & Revenue Questions

1. What was your total annual revenue over the last 12 months?
2. What are the sources of this revenue (wine-grapes, wine, etc.)?
3. How much has your revenue grown (since beginning, in last year, in last five years)?
4. What are the sources (and percentages, by type) of your revenue? (sales, rents, investments, services provided, etc.)
5. How are your sales allocated, by percentage? (direct in tasting room, direct-to-consumer by mail, other retail, special events, wholesalers, export)
6. Where are your off-premise customers located (Verde V., other N. AZ, Phoenix area, Tucson area, the rest of the state, the rest of the U.S., international)?
7. How much does your average bottle of wine cost?
8. How much does your most expensive bottle of wine cost?
9. How much does your least expensive bottle of wine cost?

Suppliers, Expenses & Spending Questions

1. How much did you invest in developing your acres for wine production in the last year?
2. How much did you spend in the last year on maintenance and repair? Farm & vineyard equipment? Crush & press equipment?
3. How much did you spend in the last year on vineyard development/plantings? Removals?
4. How much did you spend in the last year on barrels?
5. How much did you spend in the last year on stainless steel tanks?
6. How much did you spend in the last year on glass, corks, closures, and packaging? (Separate these out)
7. How much did you spend in the last year on wine labels and other printing?
8. How much did you spend in the last year on winery and vineyard chemicals, gases, sprays, fertilizers, and other miscellaneous supplies?
9. How much did you spend in the last year on shipping?
10. How much did you spend in the last year on trucking/distribution?
11. Do you use any grapevine nurseries? If so, how much did you spend with them in the last year? (Where are they?)
12. How much did you spend in the last year on research, testing, education, etc?
13. How much did you spend in the last year on charitable contributions?
14. How much did you spend in the last year on legal/compliance issues or services? (types?)
15. How much did you spend in the last year on banking, finance, or insurance services? (types?)
16. How much did you spend in the last year on consulting/professional services? (types?)
17. Are there any other major expenses we haven't yet covered?

Tax & Regulation Questions

1. How much did you pay in taxes in the last year?
2. How much of various types of taxes do you pay? (Sales, excise, payroll, property, state income—corporate and/or personal)
3. How much did you pay in the last year for fees and licensing?
4. Did you pay dues to the state wine association in the last year?
5. Are there any other fees or dues (licensing, taxes, etc.) that we haven't covered?

Other Questions

1. What kind of agricultural practices do you utilize in production of your wine-grapes and other agricultural products (organic, other practices)?



Source: *Photography by Janise Witt.*

APPENDIX C

• About the Verde Valley

• **Regional Setting**

The Verde Valley includes about 714 square miles located in the geographic center of Arizona, about 100 miles north of the Phoenix metropolitan area. The Verde River runs through the valley from northwest to southeast and is augmented by flows from Sycamore Canyon, Oak Creek, Beaver Creek and West Clear Creek. The area is unsurpassed in its variety of physical beauty with the red rocks and Mogollon Rim to the north and east and the Black Hills and Mingus Mountain dominating the western and southern portions of the valley.

The City of Cottonwood is located adjacent to the Verde River at elevations ranging from 3,300 feet to 3,900 feet above sea level and experiences a mild climate which, together with its proximity to an abundance of natural amenities such as the Grand Canyon, Sedona, Dead Horse Ranch State Park, Tuzigoot National Monument and the historic mining communities of Clarkdale and Jerome, continues to attract steady growth and tourism.



Historic Old Town

Don't be surprised if you see one of our resident peacocks strolling down the street or sidewalk of Old Town. We encourage you to spend some time shopping and dining in Old Town where you'll find a variety of unique and eclectic shops and fine eateries that will surely put a smile on your face. Visit the Old Town Association site for more details.

<http://www.oldtown.org/>

Land Ownership

Nearly 80% of the land in the Verde Valley is National Forest. The Coconino National Forest is generally located north and east of the Verde River while the Prescott National Forest is

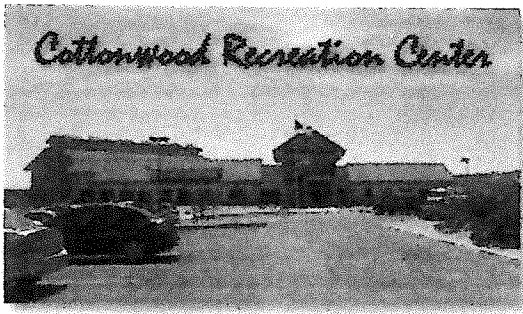
south and west of the River. The region includes 20 square miles of State Trust Land most of which is located along state highways between Cottonwood and Sedona and between Cottonwood and Camp Verde. Only about 17% of the Verde Valley is privately owned.

Recent History

The City of Cottonwood incorporated in 1960. During this period area roads were improved , particularly the Highway 89A "Bypass" and SR 260 to serve the needs of the Phoenix Cement Plant located in Clarkdale. This facility supplied the cement for the Glen Canyon Dam project near Page. During the early 1970's about 4,500 lots were platted outside the Cottonwood City Limits by Ned Warren - the Queen Creek Land & Cattle Company. These lots, known as Verde Village, have limited infrastructure but have been built upon over time and few vacant parcels remain today. With road development and an increasingly large residential base, commercial development moved south from Old Town to SR89A intersections at Main Street and at SR260 during the 1970's and 1980's.

Since 2001 the City has pursued the acquisition of the private water companies serving the area and with those acquisitions the City of Cottonwood has become a full service municipality.

Cottonwood has experienced a major expansion of the Verde Valley Medical Center, development of new residential projects such as Cottonwood Ranch and many commercial and office projects.



Current Projects

Many new commercial projects are underway. One of the most exciting is a "State of the Art" Cottonwood Community Recreation Center. This new center seeks to provide a wide range of indoor recreation activities, while serving all age groups and abilities within the community.

Population Growth

The Verde Valley has experienced significant population growth in recent years - 51% between 1990 and 2000. The table below shows the areas population increases during this period.

Community	1990 Population	2000 Population	% Change
Incorporated Communities			
Cottonwood	5,918	9,179	55.1
Clarkdale	2,144	3,422	59.6
Camp Verde	6,243	9,451	51.4
Jerome	403	329	-18.4
Sedona	7,720	10,192	32.0
Sub-Total	22,428	35,573	58.6
Unincorporated Communities			
Verde Village	7,037	10,610	50.8
Big Park	3,024	5,245	73.4
Cornville	2,089	3,335	59.6
Lake Montezuma	1,841	3,344	81.6
Sub-Total	13,991	22,534	61.0
Verde Valley Total	36,419	55,107	51.13
Yavapai County	107,714	167,517	55.5

Source: Cottonwood Chamber of Commerce

APPENDIX D

Arizona's Growing Wine Industry

We're gaining grapes, wineries and prestigious recognitions

by Alison Stanton



Lawrence Dunham Vineyards

From an economic standpoint, Arizona's wine industry is doing really well, according to Peggy Fiandaca, president of the Arizona Wine Growers Association and owner and marketing director of Lawrence Dunham Vineyards. "It is growing; there are new acres of grapes in the ground and new wineries opening up. Between 2011 and 2012, we doubled the number of gallons of wine that were produced in Arizona, and it is only getting better."

While there were only a handful or so of wineries in Arizona six or seven years ago, there are now around 78. Most of these are scattered throughout the state's three major wine regions. "The oldest is in the southeastern part of the state in Sonoita and Elgin; this is where the heart of the state's wine industry began," Fiandaca says, adding that the area is the only one of the three federally designated as an American Viticultural Area. The majority of the state's grapes come from two other regions: the greater Willcox area and the Verde Valley. All three regions have the high elevations that grapes require to grow well.

The history of Arizona's wine industry actually began in the pre-Prohibition days, says Fiandaca. Back then, Arizona had more grapes in the ground than California. From Prohibition times until the 1980s, it was illegal to make wine in Arizona. In 1982, Arizona passed a series of laws that enabled and regulated

the activities of a new class of liquor license, the Domestic Farm Winery. "Arizona's law was modeled after other states, but in May 2005, the U.S. Supreme Court ruled against the State of Michigan on a direct-to-consumer shipping case that made many provisions of Arizona's wine law unconstitutional," Fiandaca says. The successful passage of SB1276, which was signed by the Governor in June 2006, brought Arizona's wine laws in compliance with the Supreme Court's ruling and re-ignited the wine industry.

Glass Half Empty

For the Arizona wine industry to grow and succeed even further, three key things must happen. First, there must be better support in the form of funding. "We grow some of the finest wine in the country in Arizona, but every day we hear questions like 'What? You make wine in Arizona?'" Fiandaca says, adding that to get more economic support, the industry must increase its focus on marketing. Recent news indicates that people are already beginning to take notice of Arizona wines. Two of the state's wines have earned a rating of 90 points by Wine Spectator, a desired designation. These are the 2010 Page Springs Cellars's Colibri Syrah Clone 174 and the Burning Tree Colibri Vineyard's Syrah from 2010, both from Southern Arizona.

Next, there must be a greater emphasis on research that centers on preventing diseases and pests that can impact the crops of grapes. Bringing in supply-chain industries to support the state's wine industry is also key to the success of the industry. Currently, Fiandaca notes, starting a winery means purchasing most of the products — and, in many cases, the grapes — from out of state. "We need to be able to grow our own grapes and produce our own wine. Right now, there are not enough Arizona grapes being grown to meet the demand, and, due to lack of capital or access to funding, many winemakers purchase grapes and contract the winemaking process due the incredible vineyard and winery start-up costs."

To help the state's wine industry grow, the University of Arizona and Yavapai College have teamed up to work on the Emerging Wine Industry Strategic Plan. Those who participated in the project looked at the wine regions in areas like California and the Pacific Northwest to study how they grew and what steps Arizona can take to enjoy similar success. Yavapai College is also in the process of building a Southwest Wine Center, which will teach students about growing grapes and producing wine.

Taste of Money

Tom Schumacher, president of the Verde Valley Wine Consortium, says the state's wine industry is having a positive impact on both local and state economies. Referring to "The Economic Contributions of Verde Valley Winemaking," which was published in April 2011 by the University of Arizona and Yavapai County Cooperative Extension, Schumacher says the estimated direct economic impact of the Verde Valley wineries, vineyards and tasting rooms in 2009-2010 was \$5.5 million. In addition, the report concluded that the total of all economic activity in Arizona related to Verde Valley wine is estimated to be almost \$25 million.

As the wine industry grows, new businesses will open or relocate nearby to take advantage of the expanding market, says Schumacher, who is also involved with the Yavapai College Southwest Wine

Center. "The wine industry will support businesses involving packaging, marketing, storing, selling and shipping wine, as well as those that provide the supplies and maintain the equipment for the businesses."

Successes and Challenges

Sam Pillsbury, a winemaker who lives in Phoenix, makes his Pillsbury Wine Company wine under custom crush contract (a common practice of paying a bonded winery other than one's own to process grapes into wine) in both Camp Verde and Willcox. Pillsbury, who owns tasting rooms in Old Town Cottonwood and Willcox, says he is committed to using only grapes that are grown in the area around Willcox in Sulphur Springs. "We do not import grapes or juice. I began this operation specifically to make a 100-percent regional wine."

Pillsbury released his first wines under his own label in 2007. His first vintage was 500 cases, which grew to 3,000 cases in 2011. Despite his increasing success, Pillsbury says money is always a challenge. "It takes a minimum of seven years to break even when you grow your own grapes, and I plant more each year. I am always scratching for funds."

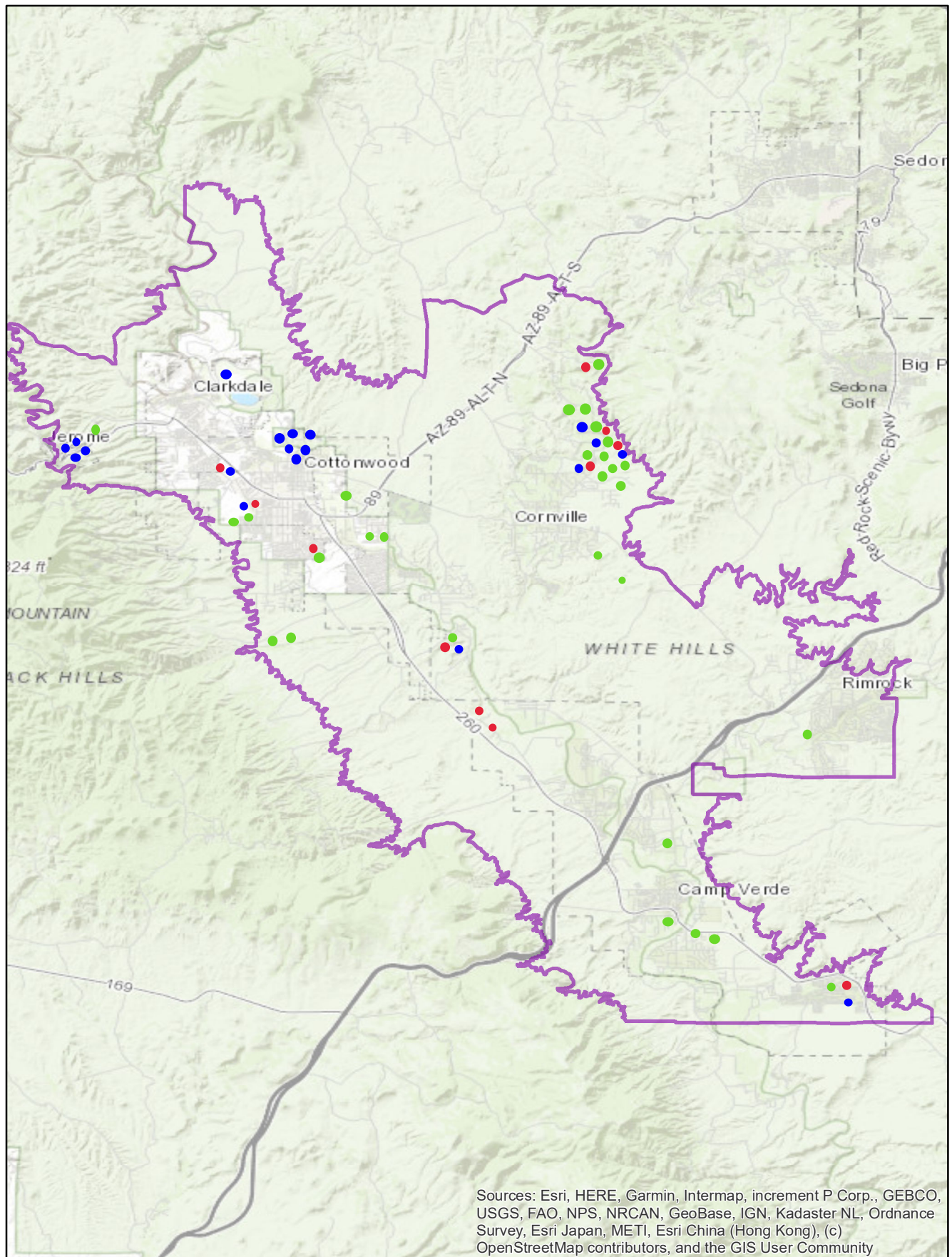
Robert Carlson, a partner in Carlson Creek Vineyard near Willcox with his parents Bob and Liz and brother and sister John and Katherine, says he and his family farm 125 acres, 40 of which are under vine and the rest of which is in various stages of development. In the past several years, they have been "magnificently busy," routinely selling out of their wine. The Carlsons purchase about 15 percent of their grapes from neighboring vines in the Willcox area. The lack of Arizona fruit is the main issue Carlson and his family contend with, and vineyard development constrains the rest of their business growth. "In any other major wine region, there is a host of grape growers offering their fruit," Carlson says. "Since our industry has grown so fast, the growers that existed have fallen behind the demand or have been outright acquired by wineries."

Schumacher and Fiandaca predict the Arizona wine industry will continue to grow. Basing his prediction on what he feels is a conservative growth estimate of 10 percent per year, Schumacher estimates the total economic impact of the Verde Valley Wine Industry in 2015 will be more than \$44 million. Fiandaca is equally optimistic. "Over the next 10 years, we are going to have a lot more grapes in the ground and a lot more wineries on board. I predict that over the course of the next decade, Arizona will have over 200 wineries, and will have double the number of acres of grapes we have now."

Source: Greater Phoenix In Business Magazine, October 2013

Note: Because Appendix E was too large to be scanned, TTB created this approximation of the original appendix.

Appendix E--Distribution of Vineyards, Wineries, and Tasting Rooms within the Proposed Verde Valley AVA



Key:

- Vineyard
- Winery
- Tasting Room

APPENDIX F

USGS TOPOGRAPHIC MAP QUADRANGLES

Munds Draw	Clarkdale	Page Springs	Sedona
	Cottonwood	Cornville	Lake Montezuma
		Middle Verde	Camp Verde

2016 PROPOSED VERDE VALLEY AVA VINEYARD SURVEY - Appendix G

Includes only planted vines (both bearing and non-bearing)

VARIETY	ACRES	%			ACRES	%	
Aglianico	2.90	2.3%			REDS	101.01	80.9%
Agostinga	0.30	0.2%			WHITES	23.89	19.1%
Albarino	0.30	0.2%				124.90	
Barbera	6.51	5.2%					
Cab Franc	2.15	1.7%			TOP REDS	ACRES	%
Cab Pfeffer	0.10	0.1%	1	Syrah	17.85	14.3%	
Cab Sauvignon	11.40	9.1%	2	Petite Sirah	11.75	9.4%	
Carignane	1.00	0.8%	3	Cab Sauv	11.40	9.1%	
Charbono	0.80	0.6%	4	Sangiovese	8.40	6.7%	
Chardonnay	2.45	2.0%	5	Zinfandel	7.75	6.2%	
Chardonel	0.60	0.5%	6	Merlot	6.85	5.5%	
Counoise	0.50	0.4%	7	Barbera	6.51	5.2%	
Grenache	3.80	3.0%	8	Tempranillo	4.65	3.7%	
Malbec	1.25	1.0%	9	Grenache	3.80	3.0%	
Malvasia Bianca	5.27	4.2%	10	Mourvedre	3.25	2.6%	
Marsanne	0.25	0.2%		TOP WHITES			
Merlot	6.85	5.5%	1	Malvasia Bianca	5.27	4.2%	
Montepulciano	0.35	0.3%	2	Viognier	3.55	2.8%	
Mourvedre	3.25	2.6%	3	Chardonnay	2.45	2.0%	
Muscat	1.42	1.1%	4	Vermentino	2.20	1.8%	
Nebbiolo	2.30	1.8%	5	Seyval Blanc	1.70	1.4%	
Negro Amaro	1.80	1.4%					
Norton	0.20	0.2%		RESPONSES/INFO			
Petit Verdot	0.10	0.1%	1	880 Page Spgs Rd			
Petite Sirah	11.75	9.4%	2	Alcantara			
Pinot Gris	1.65	1.3%	3	Apache Plume			
Pinot Noir	1.65	1.3%	4	Baker's old place			
Refosco	1.00	0.8%	5	Britt			
Riesling	0.30	0.2%	6	Busich			
Roussanne	0.90	0.7%	7	Caduceus/Merkin			
Sagrantino	0.70	0.6%	8	Clear Creek			
Sangiovese	8.40	6.7%	9	DA Ranch			
Sauv Blanc	1.00	0.8%	10	Echo Canyon			
Semillon	0.50	0.4%	11	Eckles			
Seyval Blanc	1.70	1.4%	12	Edge Of The Vines			
Syrah	17.85	14.3%	13	Esther			
Tannat	2.00	1.6%	14	Five Trees			
Tempranillo	4.65	3.7%	15	Freitas			
Teroldego	0.70	0.6%	16	Javelina Leap			
Traminette	0.80	0.6%	17	Jurisin			
Vermentino	2.20	1.8%	18	Meyers			
Viognier	3.55	2.8%	19	Norton			
Zinfandel	7.75	6.2%	20	Oak Creek			
	124.90		21	Page Springs			
43 varieties			22	Rachel			
39 vinifera			23	Red Hawk			
4 hybrid			24	Southwest Wine Ctr			