

Washington Wine Grape and Winery Employment Needs
Assessment with Projections to 2018

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EXECUTIVE SUMMARY

A Needs Assessment of the Washington wine grape industry was conducted to estimate the potential employment increase from 2013 to 2018. The method of employment was determined by estimating the number of new jobs that would be created during that time period. A new job is considered one that currently does not exist, and is measured in fulltime equivalents (FTE). Previous Needs Assessments in 2001 and 2008 measured new hiring's, which includes both new jobs and hiring turnover in an existing position. Therefore, employment presented herein represents a conservative estimate because it does not account for additional hiring in current industry positions, which also provides positions for grape and wine program graduates.

The total projected increase in total FTE's that might be required by 2018 by both the vineyard and winery sectors of Washington's wine grape industry ranges between 2,188 (low estimate) and 6,463 (high estimate). While the total increase is significant, the needs should be analyzed by level of education/training expected. Employment by education/training using the high estimate includes:

- Bachelors level new employment of 28.6 for vineyard positions and 183.6 in the winery sector
- Associates level new employment of 37.2 for the vineyard positions and 223.2 in the winery sector
- More than 42 annual new jobs for Bachelors level training, and more than 52 annual new jobs for Associates level positions in Washington vineyards and wineries.

The various institutions involved in the training of such potential employees should examine their ability to produce such individuals by 2018. When the total projections are coupled with the needs in the grape and wine industry and support sectors a major concern arises as to whether the Washington based institutions have the capacity to train the appropriate number of individuals or if the industry will have to rely on securing a noticeable number of individuals from out-of-state sources.

INTRODUCTION

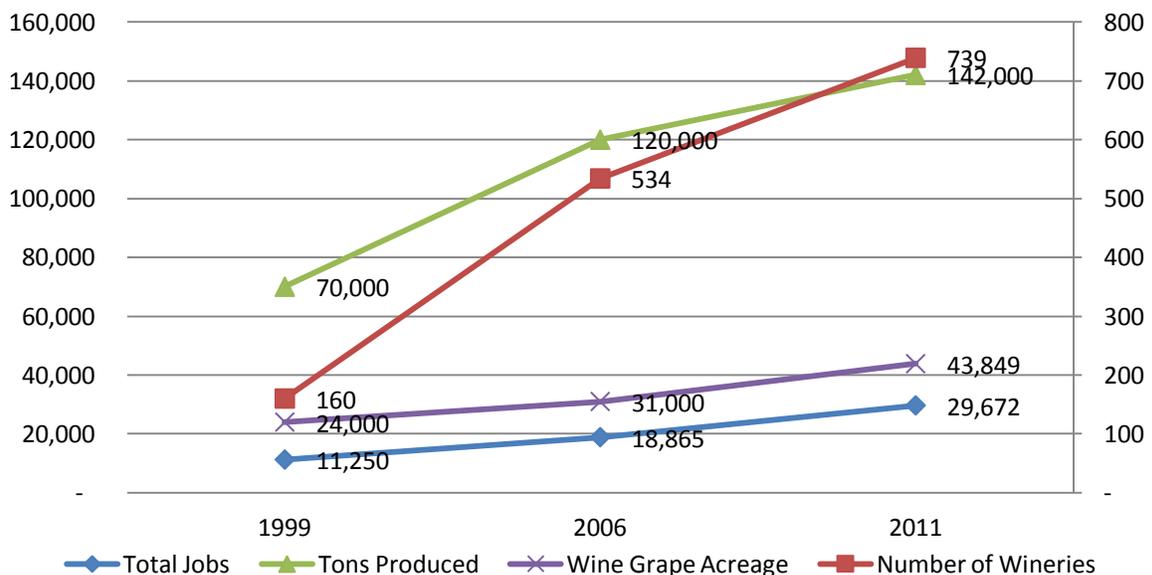
The Washington Wine Education Consortium contracted with Agri-Business Consultants, LLC to provide an update of the Washington grape and wine industry employment needs. The update consists of projections to 2018. The updated projections are based upon employment levels that existed in 2011 and were extrapolated to 2018 by developing coefficients that reflect recent historical growth trends.

The needs assessment update consists of: 1) development of industry growth coefficients reflecting changes in the acreage and number of wineries; 2) extrapolation of the industry employment needs based upon the growth coefficients; 3) completion of a summary of employment by categories; and 4) estimated employment needs by level of expected education/training.

METHODOLOGY

To estimate the future number of jobs that will exist in the Washington wine and grape sectors in 2018 the historical industry trends reflecting the levels of production and required labor were analyzed. The historical trends that were analyzed are: 1) the total jobs in the wine and grape sectors as well as the employment in surrounding support industries such as nurseries, wine distribution, tourism, etc.; 2) the number of wineries in Washington; 3) tons of wine grapes produced in Washington; and 4) Washington wine grape acreage. These data series consisted of observations in the 1999, 2006, and 2011 economic impact studies done by Washington State University, MKF Research, and Stonebridge, respectively. Figure 1 highlights the trends in each historical series.

Figure 1: Washington State Grape and Wine Industry Total Jobs, Tons Produced, Acreage, and Number of Wineries in 1999, 2006 and 2011



Examination of the above figure demonstrates the strong relationship that exists among the historical data series for the time period of 1999 through 2011. However, to quantify the strength of the relationships the correlations among the series were calculated. Table 1 contains these coefficients.

Table 1: Correlation coefficients for number jobs, tons produced, and number of wineries

	Acreage	Number of Jobs	Tons Produced
Number of Jobs	0.9976		
Tons Produced	0.9251	0.9491	
Number of Wineries	0.9443	0.9647	0.9985

While all of the correlation coefficients are high, the relationships between the number of jobs versus the Washington wine grape acreage as well as the number of jobs versus the number of wineries are paramount to the analysis. Only the correlation between the tons produced and the number of wineries was higher. The growth in tons produced would naturally be captured by the number of wineries and /or the acreage of wine grapes.

Given the correlations, the most direct way to project employment in the winery and wine grape producing sectors was to extrapolate the trends in wine grape acreage and number of wineries to the future (2018) and then to associate that with the total number of jobs. The estimated total number of jobs was then separated into those associated with wineries and those with vineyards. Additional projections were made for the areas of distributors, retail and restaurant, tourism, suppliers, and the government/education/research sectors.

The extrapolation of the wine grape acreage to 2018 was accomplished by calculating the average annual growth in acreage over the historical time period (1999-2013). The addition of an acreage estimate for 2013 obtained from the Washington Wine Grape Growers Association was added to the acreage data series. Therefore, the acreage increased from 24,000 acres in 1999 to the estimated acreage in 2013 of 50,259, or an increase of 26,259 acres over the 14 year time period. The annual growth in acreage was calculated to be 5.42%.

The annual growth rate was obtained by dividing the 2013 acreage by the 1999 acreage and raising that quotient to the power of 1/14, then subtracting that value from 1.0. The resulting value is the annual growth rate.

The annual growth rate was then multiplied by the acreage in 2013 to obtain the acreage in 2014. This procedure was followed through for the next four years to arrive at an estimated wine grape acreage of 65,438 in 2018.

The exact same procedure was followed with the projection of the number of wineries. The number of wineries increased from 160 in 1999 to 812 in 2013. The increase of 652 wineries results in an annual growth rate of 12.30% over that 14 year time period. The total number of wineries by 2018 would reach 1,450 with the continuation of the 12.30% annual growth rate.

The 5.42% annual growth rate for wine grape acreage was used to represent the low estimate of new employee needs in 2018 and the 12.30% growth rate for wineries to represent the high

estimate of new employee needs. The term jobs and full time equivalents (FTE) are used interchangeably in this report.

The Stonebridge report published in 2012 indicated that 29,672 total jobs or FTE'S across all sectors of employment were associated with the Washington wine grape industry in 2011. Winery employment accounted for 12.23% of the total employment, while vineyards accounted for 9.73%.

The approach used the Stonebridge base level of employment in 2011 and extrapolated it by the 5.42% annual growth rate in wine grape acreage to represent the low projection levels of employment needs. The 12.30% annual growth rate in the number of wineries was used as the high projection levels of employment needs for vineyards and wineries. For the other sectors surrounding the Washington wine grape industry the low and high projections were also used.

PROJECTIONS FOR VINEYARDS AND WINERIES

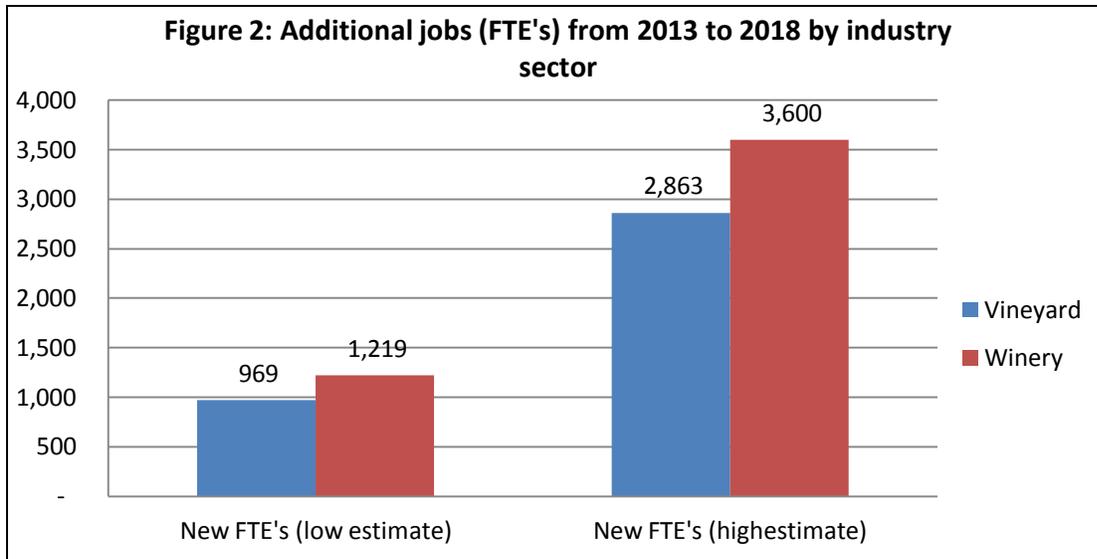
Using the methodology described above the projected level of employment in vineyards and wineries is reported in Table 2 with a range from low to high.

Table 2: Projected employment levels in Washington vineyards and wineries, 2013-2018

Year	Wineries (high)	Wineries (low)	Vineyards (high)	Vineyards (low)
2013	4,578	4,034	3,642	3,210
2014	5,141	4,253	4,090	3,384
2015	5,774	4,483	4,593	3,567
2016	6,484	4,726	5,158	3,760
2017	7,282	4,982	5,793	3,964
2018	8,178	5,253	6,505	4,179

The projected total employment needs since 2013, as presented in Table 2, suggest a low estimate of 9,432 (5,253 plus 4,179) to a high estimate of 14,683 total employees could be needed by the entire Washington wine grape industry by 2018 for these two major sectors.

These employment levels mean that an additional 1,219 (low) to 3,600 (high) employees would be needed in the winery phase of the industry and an additional 969 (low) to 2,863 (high) employees would be needed in the vineyard sector by 2018 over the employment levels estimated for 2013.



To translate these employment needs into jobs by the level of training required as needed by the Washington Education Consortium, the 2001 needs survey conducted by Washington State University (WSU) was used to estimate the added number of FTE'S or employees needed by level of education/training. The findings of that survey indicated that the positions within a vineyard where the employer would expect a four year degree, or Bachelor of Science degree, were for a vineyard manager and viticulturalist/fieldman. The position of crew supervisor would be expected to have an Associate's degree or two years of training. The other positions of irrigator, pruning crew, harvesting crew, machinery/mechanic, and general labor would all be expected to have less than an Associate's degree.

For the wineries, the 2001 survey conducted by WSU found that the positions of general manger or vice president of production, production manager, wine maker, and assistant wine maker were expected to have a four year degree or a Bachelor of Science degree. The survey also found that the positions of laboratory technician, viticulturist, and lead cellar worker or master were expected to have an Associate's degree or equivalent training. The positions of press operator, bottling line supervisor, worker, or part time employee were expected to have less than an Associate's degree or two years of training. This was also true for warehouse personnel and tasting room employees.

The 2001 WSU survey was used further to calculate the percentage of employees that the industry sought at that time in these various positions. It was assumed that the same percentages would apply today since the industry is still in its growth mode. These percentages for vineyards were: 1) 1.0% Bachelor of Science degrees; 2) 1.3% Associate's degree; and 3) 97.7% less than an Associate's degree. These percentages for wineries were; 1) 5.1% Bachelor of Science degree; 2) 6.2% Associate's degree; and 3) 88.7% less than an Associate's degree.

The above percentages were used in conjunction with the additional employees to estimate the range of needed employees by level of education/training as reported in Table 3.

Table 3: Projected Employee Needs By the Washington Wine Grape Industry by Level of Training Through 2018

Level of Education/ Training	----Vineyards----		----Wineries----	
	Low	High	Low	High
Bachelor of Science (BS)	9.7	28.6	62.2	183.6
Associate's (AA or AAS)	12.6	37.2	75.6	223.2
Less than a AA	946.7	2,797.2	1,081.3	3,193.2

The above estimates in Table 3 indicate that between 71.9 (9.7 plus 62.2) and 212.2 additional employees with a four year degree will be needed by the Washington Wine Grape industry by 2018. There will be need for 88.2 to 260.4 additional employees by the industry by 2018 with at least an Associate's degree or two years of training. The range of additional employees (FTE's) needed by the industry by 2018 with less than two years of college training will be between 2,027.0 and 5,990.4

EMPLOYEE NEEDS OF SUPPORTING SECTORS

The Stonebridge report contained the employee or FTE levels of other sectors surrounding the Washington Wine Grape industry. These levels of employment in 2011 as contained in the Stonebridge report as well as the projected employee levels are reported in Table 4. These employment levels are the total for each sector based upon the annual growth rate of wine grape acreage in Washington and the number of Washington wineries. The growth rates used was 5.42% for the wine grape acreage.

Table 4: Employment Levels In Sectors Supporting the Washington Wine Grape Industry, 2011, 2013 and 2018, low estimate

Sector	Year		
	2011	2013	2018
Distributors	431	479	633
Retail/Restaurant	2,882	3,203	4,170
Tourism	3,307	3,675	4,785
Suppliers	994	1,105	1,438
Research/Education	<u>93</u>	<u>103</u>	<u>135</u>
Government			
Total Jobs Direct	14,225	15,809	20,583

In regards to the projections provided in Tables 4 the authors of this report believe that the low range is the most probable to happen, given the trends from the previously conducted Needs Assessment studies.