

THE ECONOMIC IMPACT OF NORTH CAROLINA WINE AND WINE GRAPES – 2016

A Frank, Rimerman + Co. LLP Report

August 2017

This study was commissioned by

**North Carolina Department of
Agriculture and Consumer Services**

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FULL ECONOMIC IMPACT OF NORTH
CAROLINA WINE AND WINE GRAPES
2016

\$1.97 Billion

NORTH CAROLINA WINE AND WINE GRAPES	2016 ECONOMIC IMPACT	2013 ECONOMIC IMPACT	% CHANGE
Full-time Equivalent Jobs	10,296	7,709	+34%
Wages Paid	\$375 million	\$260 million	+44%
Wine Produced (Cases)	1,115,000	569,000	+96%
Retail Value of North Carolina Wine Sold	\$130 million	\$91 million	+43%
Number of Wineries	168	130	+29%
Grape-Bearing Acres	2,300	2,300	0%
Number of Grape Growers	525*	525	0%*
Wine-Related Tourism Expenditures	\$319 million	\$257 million	+24%
Number of Wine-Related Tourists	1,917,000	1,711,000	+12%
Taxes Paid: Federal / State & Local	\$113 million / \$89 million	\$73 million / \$67 million	+44%

* a current count of grape growers was not available for this report.

ECONOMIC IMPACT OF NORTH CAROLINA WINE AND WINE GRAPES

Table 1 – Total Economic Impact of Wine and Vineyards in North Carolina

Revenue	2016	2013
Winery Sales	\$89,781,000	\$54,951,000
Retail and Restaurant Sales of NC wine	\$30,196,000	\$27,095,900
Distributors Sales	\$10,300,000	\$9,340,000
Non-Wine Revenue (Weddings, Events, etc.)	\$8,433,000	\$17,582,100
Tourism	\$319,118,000	\$257,434,200
Wine Grape Sales	\$4,386,000	\$3,961,000
Federal Tax Revenue	\$112,585,000	\$73,267,000
State Tax Revenue	\$88,677,000	\$67,263,000
Vineyard Development (excluding vines)	\$1,150,000	\$2,150,000
Charitable Contributions	\$1,303,000	\$913,900
Allied Industries -- Glass/Closures/Chemicals	\$177,370,000	\$190,170,600
Wine Research/Education/Consulting	\$1,265,000	\$1,350,100
Indirect (IMPLAN)	\$319,550,000	\$574,570,000
Induced (IMPLAN)	\$427,824,000	\$173,871,700
Total Revenue	\$1,591,938,500	\$1,453,920,600
Wages	2016	2013
Winery Employees	\$17,129,000	\$15,249,500
Vineyard Employees	\$15,967,000	\$17,749,900
Tourism	\$77,759,000	\$48,000,000
Vineyard Development and Materials - Labor	\$173,000	\$322,500
Distributors Employees	\$2,896,000	\$2,300,300
Retail/Liquor Stores - Wine Specific	\$360,000	\$587,400
Restaurant Sales of NC Wine	\$4,570,000	\$5,524,300
Allied Industries -- Glass/Closures/Chemicals	\$16,222,000	\$14,678,800
Wine Research/Education/Consulting	\$635,000	\$930,000
Indirect (IMPLAN)	\$107,110,000	\$98,445,400
Induced (IMPLAN)	\$132,658,000	\$55,814,900
Total Wages	\$375,478,200	\$259,603,000
Total	\$1,967,416,600	\$1,713,523,600

Sources: Frank, Rimerman + Co. Research, IMPLAN, NC State University, NC Department of Commerce, Bureau of Labor Statistics and various North Carolina wineries, consultants and suppliers surveyed.

EXECUTIVE SUMMARY

IMPACT OF WINE AND VINEYARDS ON THE NORTH CAROLINA ECONOMY

The North Carolina wine industry continues to grow as the number of wineries and cases produced both increased from 2013. The number of wineries in the state of North Carolina grew from 130 in 2013 to 168 in 2016, an increase of 29%, while the cases produced increased 96% from 569,000 cases to 1,115,000 cases in 2016. The majority of the industry's growth is coming from increased tourism and increased consumer demand for North Carolina wine. According to the Alcohol Tax and Trade Bureau (TTB), North Carolina was the 12th largest wine producer in the United States in 2016.

The wine and grape industry in North Carolina contributed greatly to the economic strength of the state in 2016. North Carolina's wine, grape and related industries had a total economic value to the state of \$1.97 billion in 2016. The continued increase in the wine industry's economic impact to the state of North Carolina is based on increased tourism revenue, wages and jobs while production and the number of wineries in North Carolina also are on the rise. We estimate that roughly 1.9 million people visited North Carolina wineries in 2016. Wine, grapes and related industries account for 10,296 jobs in North Carolina with an associated payroll of roughly \$375 million. As shown below, most of these jobs were in the tourism industry.

Table 2 – Total North Carolina Wine/Grape Industry Employment

Employment	2016	2013
Winery	765	723
Vineyard	612	810
Distributors	57	48
Tourism	3,042	2,067
Vineyard Materials	5	9
Restaurants	317	384
Retail/Liquor Stores - Wine Specific	14	23
Allied Industries -- Glass/Closures/Chemicals	385	426
Wine Research/Education/Consulting	12	15
Indirect (IMPLAN)	1,961	1,797
Induced (IMPLAN)	3,126	1,408
Total Employment	10,296	7,709

Sources: Frank, Rimerman + Co. Research, IMPLAN, NC State University, NC Department of Commerce, Bureau of Labor Statistics and various North Carolina wineries, consultants and suppliers surveyed.

TOTAL TAXES COLLECTED

The wine and wine grape industry generates significant tax dollars, benefiting federal, state and local governments. Tax dollars are raised through sales taxes, excise taxes, income taxes, estate and gift taxes, payroll taxes, property taxes and other business taxes and fees. North Carolina's wine, wine grape and allied industries generate \$113 million in federal taxes and \$89 million in state and local taxes in 2016, including nearly \$12 million in total excise taxes.

Table 3 – Estimated Tax Revenues

Type of Tax	Total
Federal Tax Revenues	
Excise	\$9,144,000
Payroll	\$48,485,000
Income	\$51,633,000
Other (corporate profits, etc.)	\$3,322,000
Total Federal Tax Revenues	\$112,585,000
State Tax Revenues	
Excise	\$2,652,000
Sales	\$40,850,000
Payroll	\$506,000
Income	\$10,753,000
Property	\$24,293,000
Other (dividends, licenses, fines, fees, etc.)	\$9,623,000
Total State Tax Revenues	\$88,677,000
Total Tax Revenues	\$201,261,000

TOURISM

Tourism continues to be a material factor in the North Carolina wine and wine grape industry's overall impact on the broader state economy. Our survey of North Carolina wineries estimates that approximately 1.9 million tourists visited North Carolina wineries in 2016. Supporting these winery visitors is a diverse labor force of approximately 3,042 employees with total wages of \$78 million. The continued increase of tourist visits over the past several years can be attributed to the increase in the number of North Carolina wineries and continued improvement in wine quality, providing more destinations and opportunities for visitors to experience North Carolina wine country. Additionally, the continued improvement in the broader U.S. and local North Carolina economies also contributed to the impressive tourism impact.

Wine tasting tours are being widely promoted with positive sales results. In order for the industry to continue growing and attracting new visitors, wineries not only need to continue focusing on improving wine quality, but consider expanding into more wine-related events like private parties, weddings, and festivals held on winery properties. Some existing wineries have expanded their facilities to incorporate these additional revenue streams, resulting in increased winery revenue, employment and support services. Some wineries we surveyed in North Carolina incorporated these new functions with traditional facilities to take full advantage of these profitable ancillary activities. By our estimation, based on direct feedback from the wineries we surveyed, there was nearly \$8.4 million in revenue generated from these wine-related events and facilities.

WINE PRODUCTION AND SALES

Growing grapes and making wine is a long-term commitment to a community, both financially and physically. New vineyard plantings require three to five years before yielding a full crop, with another one to three years of aging for wine to be ready for sale. Unlike many industries, once vineyards and wineries are established they are effectively rooted and tied in place – a North Carolina vineyard cannot simply be relocated to another region or outsourced to another country. Wine and grapes are inextricably tied to the soil from which they are grown. Moreover, wine and their products and allied industries diversify local economies and create employment and new market opportunities.

In 2016, there were 168 wineries in North Carolina producing wine, up 29% from 130 wineries in 2003. Based on information from the TTB, total wine bottled in North Carolina in 2016 was 2.7 million gallons, or approximately 1,115,000 nine-liter equivalent cases. The majority of the state’s wineries made wine with grapes sourced from North Carolina vineyards, resulting in more than 72% of all wine produced in North Carolina being made from North Carolina grapes.

Table 4 – Trend of Growth in North Carolina Wineries

Year	# of Wineries
2016	168
2013	130
2009	89
2007	67
2005	55
2003	34

Source: Wine Institute, TTB

ECONOMIC IMPACT OF NORTH CAROLINA WINE AND WINE GRAPES

While the majority of the state consists of small wineries with production of less than 5,000 nine-liter equivalent cases, the state's overall wine sales are concentrated within a few larger winery producers. The two largest wineries, Duplin Winery and Biltmore Estate Winery, sell the majority of their wines through the three-tier distribution system. These sales account for a majority of North Carolina wine sales. However, the vast majority of North Carolina wineries primarily sell direct to consumers through winery tasting rooms or direct to retail and restaurants, allowing them to obtain higher margins on their product. Based on winery survey responses, we estimate at least 28% of North Carolina wine was sold direct to consumers in 2016.

The retail value of North Carolina wine sold in 2016 is estimated at \$130 million, with actual sales generated by the wineries themselves totaling \$90 million. This includes sales to consumers in the winery tasting rooms, winery mailing lists and e-commerce/Internet sales. Excluded from these figures was the additional \$8.4 million generated in non-wine revenue associated with wineries hosting special events/weddings and selling various merchandise on-site.

Based on our research and interviews with winery owners, wineries in North Carolina provided employment for 765 full-time equivalent jobs in 2016 with an overall payroll totaling approximately \$17 million. Wineries employ full and part-time workers for bottling, storage, maintenance and winemaking needs in addition to the traditional hospitality (tasting room), finance, sales and marketing functions. Many wineries also employ seasonal workers, particularly during harvest season.

The continual growth in number of wineries and planted acreage that only moderately increased over the past several years has led many wineries to look elsewhere for bulk wine, grapes or fruit juice/concentrate to meet its production needs. The industry needs to quickly consider how to alleviate what appears to potentially become a larger problem down the road if the industry wants to continue to grow and develop into a profitable business for local wineries, as opposed to paying higher prices for grape/wine sourced outside of the state.

In 2016, North Carolina was the 12th largest producer in the United States, according to data provided by the TTB. That being said, the number of new wineries producing wine in North Carolina increased dramatically in the last three years since 2013 (growing 29%). North Carolina's increased number of wineries can be partially attributed to increased tourist visitors throughout the state. In order to continue growing production and attracting interest from visitors and wine consumers in general, the state's wineries need to continue focusing on improving their winemaking and vineyard practices to keep pace with the overall wine industry at large.

Table 5 – Top States’ Annual Gallons Produced in 2013

Rank	State	Gallons Produced	% of Total
1	California	680,272,512	84.35%
2	Washington	40,747,190	5.05%
3	Ney York	27,696,308	3.43%
4	Pennsylvania	12,405,181	1.54%
5	Oregon	11,822,972	1.47%
6	Ohio	5,938,738	0.74%
7	Michigan	2,576,238	0.32%
8	Kentucky	2,176,059	0.27%
9	Vermont	2,172,526	0.27%
10	Virginia	2,157,395	0.27%
11	Texas	1,907,299	0.24%
12	North Carolina	1,903,060	0.24%
	All Others	14,702,413	1.82%
	Total U.S.	806,477,891	100.00%

GRAPE PRODUCTION

According to the National Agricultural Statistics Service (“NASS”), there were approximately 2,300 grape-bearing acres in North Carolina in 2016. There were approximately 525 grape growers in North Carolina in 2013 and a more recent count was not available for this report. While vineyard acreage in North Carolina slightly increased over the past several years, yields have also varied. Historically, vineyards in North Carolina averaged approximately three tons per acre, but in 2016 vineyards averaged 2.1 tons per acre. This is largely due to occasionally unfavorable weather conditions such as late spring frost and mid-season hail storms, harmful herbicide drift from neighboring fields and, to a lesser extent, vine loss due to insects, black rot and phylloxera, among others.

Table 6 – North Carolina Grape Production Statistics for 2007-2016

Harvest Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Acres	1,700	1,700	1,800	1,800	1,800	1,800	2,300	2,300	2,300	2,300
<i>Increase over prior year</i>	13.3%	0.0%	5.9%	0.0%	0.0%	0.0%	27.8%	0.0%	0.0%	0.0%
Yields/Acre	2.2	3.3	2.7	2.9	2.9	2.8	2.3	2.6	3.2	2.1
Ton Produced	3,650	5,600	4,800	5,200	5,200	4,950	5,200	6,000	7,300	4,900
<i>Increase over prior year</i>	-25.5%	53.4%	-14.3%	8.3%	0.0%	-4.8%	5.1%	15.4%	21.7%	-32.9%
Price (\$)	1,268	891	818	874	1,030	931	843	807	762	895
Crop Value (\$)	4,630,000	4,988,000	3,927,000	4,545,000	5,105,000	4,469,000	3,961,000	4,358,000	5,561,000	4,386,000
<i>Increase over prior year</i>	-5.5%	7.7%	-21.3%	15.7%	12.3%	-12.5%	-11.4%	10.0%	27.6%	-21.1%

The majority of the wineries we spoke with had vineyards of their own from which they source fruit. Most of these vineyards were located on-site, at the winery’s estate property. A few wineries we surveyed also indicated that they sell grapes, other fruit and/or juice to other wineries as well. Every one of them sold grapes and/or bulk wine to other wineries in North Carolina, although only a few also indicated they sold to wineries out of state as well.

Table 7 – United States Grape Production, 2013

Rank	State	2016	2016
		Bearing Acreage (all types of grapes)	Total Production (Tons)
1	California	841,000	6,726,000
2	Washington	73,000	488,000
3	New York	37,000	171,000
4	Michigan	12,600	93,400
5	Pennsylvania	13,000	85,800
6	Oregon	23,000	67,000
7	Texas	4,500	13,600
8	Virginia	3,400	8,500
9	Ohio	1,500	5,500
10	Missouri	1,700	5,330
11	North Carolina	2,300	4,900
	Others	-	-
	Total U.S.	1,013,000	7,669,030

VINEYARD EMPLOYMENT

Larger North Carolina wineries reported utilizing both full-time and seasonal vineyard employees. Often grape production uses seasonal labor for harvests and vineyard development and full-time positions for maintenance of currently-bearing acres and development of new vineyards yet to bear fruit, as well as both full and part-time staff for finance, sales and other business management functions.

However, most grape growers in North Carolina manage smaller vineyards and can do so without outside labor. Based on surveys with wineries and vineyard owners, as confirmed with information collected by the USDA-NASS and the Bureau of Labor Statistics, approximately 612 full-time equivalent workers were employed in the vineyards in both a development and ongoing vineyard maintenance or development capacity for a total payroll of approximately \$16 million in 2016.

COMMUNITY SUPPORT

Based on our estimates, wineries and growers throughout the state of North Carolina have donated approximately \$1,303,000 to charities in 2016, including gifts of wine and gift certificates. The amount of charitable contributions is likely underestimated as many wineries do not track in-kind contributions, which can be substantial. However, the majority of the wineries we spoke with described their charitable contributions as usually being in-kind donations of wine, tasting/tours and the like.

WINEMAKING EQUIPMENT, SUPPLIES AND SERVICES

The number of in-state suppliers or distributors of winemaking equipment, supplies and services is relatively small. Only a handful of small businesses exist in North Carolina that supply the wine and wine grape industry as a portion of their overall business. They primarily include bottle suppliers, farming chemical providers, trucking services, warehousing and label producers. As the North Carolina wine industry continues to grow, so will the number of ancillary businesses that supply the industry. The majority of the state's allied supplier industry is due to Nomacorc, an industry leader in wine closure manufacturing. They are the largest synthetic cork producer in the world.

Based on our research, our prior report and discussions with wineries and trade professionals, we estimate there were 385 full-time employees working at wine and grape industry-related suppliers. Total wages were \$16.2 million while total revenue was \$177 million.

EDUCATION, CONSULTING AND WINE INDUSTRY RESEARCH

Approximately 12 people were employed on a full-time basis in North Carolina in wine-related education, consulting and research capacity at various universities and trade organizations, with total wages of roughly \$635,000. Total funding/revenue was \$1.3 million in 2016.

SUPPORT BY STATE AND REGIONAL ORGANIZATIONS

State and regional organization support is critical to the success of the industry. North Carolina's state, regional and private organizations are becoming more effective and organized at supporting and promoting the local wine industry. The North Carolina Wine and Grape Council in particular significantly helped support and drive industry growth for North Carolina's wine and grape organizations. The budget for the North Carolina Wine and Grape Council has been reduced significantly over the past few years, making it difficult for the organization to be as effective as it has been in the past.

In order for the North Carolina wine industry to continue growing, it is critical wineries and all associated organizations and vendors receive significant financial support from the state and local governments, particularly with funding dollars that will enable better marketing of the industry as a whole. In addition to improving winemaking and vineyard practices, it is this kind of financial support that will help the industry's growth better reflect that of many of its neighboring states.

A CONSERVATIVE MEASURE OF VALUE

Statistics alone do not adequately measure the intangible value the wine industry brings in terms of overall enhanced quality of life, limitation of urban sprawl and greater visibility for the state of North Carolina worldwide. Accordingly, the figures provided in this report should be viewed as a conservative baseline measure of the economic impact, as the true impact of the North Carolina wine industry, including intangible benefits is much greater. That measure of economic impact is approximately \$1.97 billion within the state of North Carolina, for an industry that is a unique partnership of nature, entrepreneurship, artistry and technology.

North Carolina wine and wine grape producers face sizable challenges to their continued growth and success. Working to support the North Carolina wine industry and to ensure its long-term success will protect the significant benefits the industry provides to the North Carolina economy.

METHODOLOGY

DATA COLLECTION

Data for this study was collected from a variety of public sources supplemented by primary research with wineries, suppliers, growers and other economic entities and supported by a variety of studies undertaken by industry and professional organizations. For several data items the numbers provided are only partial, given the limited availability of information, and therefore are considered conservative. For this analysis, we relied upon 2015 IMPLAN figures for North Carolina.

DIRECT, INDIRECT AND INDUCED EFFECTS (IMPLAN)²

All economic activities have “ripple” effects: employment of one person creates economic activity for others, whether the salesman who sells the employee a car or the restaurant where she eats lunch. Economic impact studies endeavor to measure those “ripples” as well as the direct activity, to help assess the impact of the potential gain or loss of an industry.

Economic impact studies estimate the impact of an industry in a defined geographic region by identifying and measuring specific concrete and economic events, such as the number of jobs, the wages, taxes and output generated by each job.

IMPLAN¹ is the acronym for “**IM**portant analysis for **PLAN**ing.” IMPLAN is a well established and widely used economic model that uses input-output analyses and tables for over 500 industries to estimate these regional and industry-specific economic impacts of a specific industry.

The IMPLAN model and methodology classifies these effects into three categories, Direct Effects, Indirect Effects and Induced Effects.

Direct Effects are economic changes in industries *directly* associated with the product’s final demand. Thus, direct effects consider the direct employment and spending of wineries, vineyards, distributors and immediately allied industries.

Indirect Effects are economic changes – income created through job creation in industries that supply goods and services to the directly affected industries noted above. For example, the purchases of electricity and gasoline by wineries and of cash registers purchased for a tasting room.

¹ IMPLAN is the standard economic model for economic impact studies, developed by the University of Minnesota and the US Forestry Service in the 1980s and currently used by over 1,500 organizations, including most federal, state and local organizations.

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Induced Effects are the effects of these new workers spending their new incomes, creating a still further flow of income in their communities and a flow of new jobs and services. Examples are spending in grocery and retail stores, medical offices, insurance companies and other non-wine and grape related industries.

Beginning in late 2009, the Minnesota IMPLAN Group released version 3.0 of its flagship IMPLAN software product, which makes it possible to include Trade Flows in an impact analysis. We used this latest version with its increased functionality to produce this report.

ABOUT FRANK, RIMERMAN + CO. LLP

Frank, Rimerman + Co. LLP, founded in 1949, is the largest, locally-owned provider of accounting and consulting services in California. With offices in San Jose, Palo Alto, San Francisco and St. Helena, California, New York, New York and over 300 professionals, Frank, Rimerman + Co. LLP offers strategic business and information consulting services, tax consulting and planning, audit and financial reporting, accounting services, litigation and valuation services.

Frank, Rimerman + Co. LLP is the leading research source on the U.S. wine industry. We continue to strive to raise the bar on the quality of information and analysis available to the wine industry.

Frank, Rimerman + Co. LLP produces original research on the business of wine and wine market trends, publishes a number of industry studies and provides business advisory services and conducts custom business research for individual companies and investors.

Frank, Rimerman + Co. LLP has a dedicated Wine Business Services practice which lists many wineries, vineyards, industry suppliers and industry trade organizations as clients. Services provided include:

- Economic impact studies
- Custom industry research
- Financial benchmarking
- Financial audits, reviews and compilations
- Income tax consulting and compliance
- Business valuation
- Financial modeling and business plan development
- Accounting services
- Enterprise sustainability
- Transaction readiness
- Business planning and general winery consulting

FRANK, RIMERMAN + CO. LLP PUBLICATIONS

Grape Trends

By combining the annual crush and acreage reports into one easy-to-use quick reference guide, Grape Trends provides, in one source, all the information needed to make informed decisions about California's grape supply for production planning. Provided in electronic form, Grape Trends includes a complete summary of current, past (since 1997) and projected tons, prices, and bearing acres for all of California's major grape growing regions and counties for all varieties recorded, including: Chardonnay, Sauvignon Blanc, Cabernet Sauvignon, Merlot, Syrah, Zinfandel, and Pinot Noir.

Grape Price Analysis Tool

The Grape Price Analysis Tool enables users to take a deep dive into the California Grape Crush Report and analyze estimated bottle prices in relation to tonnage prices. The tool makes the data from the Crush Report easy to access and provides actionable results to help determine tonnage prices based on an estimated finished bottle price.

Economic Impact Reports

Frank, Rimerman + Co. LLP completed the first study of the Impact of Wine, Grapes and Grape Products on the American Economy for Wine America, the Wine Institute, Winegrape Growers of America and the National Grape and Wine Initiative as well as the first economic impact study of the Wine and Grape Industry in Canada. Additionally, Frank, Rimerman + Co. LLP produced economic impact studies for the following US states: Arkansas, California, Illinois, Iowa, Michigan, Missouri, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Virginia and Washington.

ECONOMIC IMPACT OF NORTH CAROLINA WINE AND WINE GRAPES

Recent Economic Impact Studies and Updates published by Frank, Rimerman + Co. LLP include the following:

- Economic Impact of Wine and Grapes in Canada 2016
- Economic Impact of Texas Wine and Vineyards 2015
- Economic Impact of Virginia Wine and Vineyards 2015
- Economic Impact of Kentucky Wine and Wine Grapes 2014
- Economic Impact of North Carolina Wine and Wine Grapes 2013
- Economic Impact of Missouri Wine and Wine Grapes 2013
- Economic Impact of Texas Wine and Vineyards 2013
- Economic Impact of Wine and Wine Grapes in Iowa 2012
- Economic Impact of Wine and Wine Grapes in Ohio 2012
- Economic Impact of the Wine and Grape Industry in Canada 2011
- Economic Impact of Wine and Grapes in New Jersey 2011
- Economic Impact of Wine and Wine Grapes in Illinois 2011
- Economic Impact of Wine and Grapes in Canada 2011
- Economic Impact of Texas Wine and Vineyards 2011
- Economic Impact of Pennsylvania Wine, Grapes and Juice 2011