

The Wine and Spirits Industry Economic Contribution Study: 2016

Summary Results:

The Wine and Spirits Industry Economic Impact study measures the combined impact of the wine and distilled spirits industry, as defined by its traditional three tiers of production (vintners and distillers), wholesaling, and retailing, on the entire economy of the United States in 2016. The industry contributes about \$332.00 billion in output or just under 1.85 percent of GDP and, through its production and distribution linkages, impacts firms in all 536 sectors of the US economy.¹ The production process (as defined in this study) begins in one of three ways. In the case of spirits, agricultural products – such as barley, corn, rye and wheat – are purchased from farmers and agricultural supply companies throughout the country and distilled into various types of spirits products. Vintners purchase grapes and other fruits from farmers and growers and using a fermentation process convert these into wine. Alternatively, wine and spirits can enter the country as an imported finished product. The 8,240 firms that use agricultural products to produce wine and spirits or directly import the product into the United States are denoted as producers.² All told, these firms employ almost 71,871 people in production or importing operations, sales, packaging, and direct distribution.

Once wine and spirits have been produced or imported, they enter the second tier of the industry – the wholesaling tier. We estimate that there are about 3,050 firms involved in the wholesale supply of wine and spirits throughout the country (not including wholesaling operations directly owned and operated by the major distillers and vintners).³ Wholesalers are involved in the transportation of wine and spirits from the distillers and vintners or to a bonded warehouse operated by importers, and the storage of products for a limited period of time. The wholesaling tier of the industry directly employs around 74,150 individuals and is present in every state in the country.

Finally, the third tier of the industry directly sells products to the consumer. This can either be through on-premises sales (as in the case of a restaurant or tavern), or for off-premises consumption (grocery stores, package stores, etc.) The nature of beverage alcohol retailing varies by state. In some states, liquor stores sell wine, in some grocery stores. For this analysis, the retail tier is assumed to consist of firms in the following industries: Restaurants and taverns, retail stores, hotels, airlines, and amusement locales.⁴ While there are obviously other venues that may sell wine and spirits to the public – street vendors, cruise lines, non-profit groups, etc. they are not included in the analysis due to limited data availability or the small amount of product that they handle. We estimate that there are approximately 1,021,934 employees whose jobs depend on the sale of wine and spirits to the public.

Other firms are related to the three tiers of the beverage alcohol industry as suppliers. These firms produce and sell a broad range of items including ingredients for the production process, fuel, packaging materials, sales displays or machinery. In addition, supplier firms provide a broad range of services, including personnel services, financial services, advertising services, consulting services or even transportation services. Finally, a number of people are employed in government enterprises responsible for the regulation of the wine and spirits industry. All told, we estimate that the wine and spirits industry is responsible for 375,135 supplier jobs with these firms generating over \$77.62 billion in economic activity.

An economic analysis of the wine and spirits industry will also take additional linkages into account. While it is inappropriate to claim that suppliers to the supplier firms are part of the industry being

¹ Based on 2016 current-dollar GDP of \$18,569.1 billion. National Income and Product Accounts, *Gross Domestic Product: Fourth Quarter and Annual 2016 (Third Estimate) Corporate Profits: Fourth Quarter and Annual 2016, News Release*. US Department of Commerce, Bureau of Economic Analysis, March 30, 2017.

² Throughout this study, the term “firms” actually refers to physical locations. One distiller, for example, may have facilities in 5 or 6 locations throughout the country. Each of these facilities is included in the 3,050 count.

³ Physical locations.

⁴ State owned package stores in “control states” are generally not included as they are agencies of state government and therefore do not always have Infogroup records.

analyzed⁵ the spending by employees of the industry and those of supplier firms whose jobs are directly dependent on wine and spirits sales and production should surely be included. This spending on everything from housing, to food, to educational services and medical care makes up what is traditionally called the “induced impact” or the multiplier effect of the industry. In other words, this spending, and the jobs it creates is induced by the production, distribution and sale of wine and spirits. We estimate that the induced impact of the industry is about \$93.74 billion, and generates 562,645 jobs, for a multiplier of about 0.58.⁶

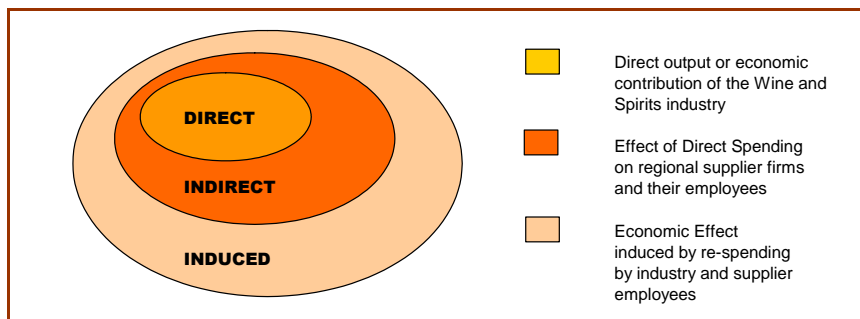
An important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the community. In the case of the wine and spirits industry, this contribution comes in two forms. First, the traditional direct taxes paid by the firms and their employees provide over \$49.75 billion in revenues to the federal, state and local governments. In addition, the consumption of wine and spirits generates approximately \$9.06 billion in federal and state excise taxes and an estimated \$9.28 billion in other state consumption taxes.⁷

Table 1 below presents a summary of the total economic impact of the industry in the United States in 2016.

Table 1: Economic Impact of the Wine and Spirits Industry: 2016

(\$ In Billions)	Direct	Supplier	Induced
Output	\$160.644	\$77.619	\$93.739
Jobs	1,901,519	375,135	562,645
Wages	\$58.850	\$23.968	\$29.115
Business Taxes			\$49.752
Consumption Taxes			\$18.339

Methodology



The Economic Impact of the Wine and Spirits Industry starts with an accounting of the direct employment in the various sectors. Winemaking and distilling encompasses company-owned distribution operations, bottle production and other support operations, and importers. Wholesaling

includes the nationwide network of wine and spirits wholesalers and related warehouse and transportation operations. Retailing includes locations where wine and spirits are consumed “on-premise,” such as bars, restaurants, sports and entertainment venues, and airlines. “Off-premise” retail outlets are supermarkets, package stores, warehouse stores, and similar locations. The data comes from a variety of government and private sources.

It is sometimes mistakenly thought that initial spending accounts for all of the impact of an economic activity or a product. For example, at first glance it may appear that consumer expenditures for a product

⁵ These firms would more appropriately be considered as part of the supplier firms’ industries.

⁶ Often economic impact studies present results with very large multipliers – as high as 4 or 5. These studies invariably include the firms supplying the supplier industries as part of the induced impact. John Dunham and Associates believes that this is not an appropriate definition of the induced impact and as such limits this calculation to only the effect of spending by direct and supplier employees.

⁷ Federal excise taxes are actually paid by the vintner or distiller and included in the price of the product. In this analysis, however, they are included as part of consumption taxes (but redistributed based on the location where the product was consumed).

are the sum total of the impact on the local economy. However, one economic activity always leads to a ripple effect whereby other sectors and industries benefit from this initial spending. This inter-industry effect of an economic activity can be assessed using multipliers from regional input-output modeling.

The economic activities of events are linked to other industries in the state and national economies. The activities required to produce a case of wine from crushing grapes, to packaging, to shipping generate the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services such as building materials from local or regional suppliers. Additional, induced impacts occur when workers involved in direct and indirect activities spend their wages in the region. The ratio between total economic and direct impact is termed the multiplier. The framework in the chart on the prior page illustrates these linkages.

This method of analysis allows the impact of local production activities to be quantified in terms of final demand, earnings, and employment in the states and the nation as a whole.

Once the direct impact of the industry has been calculated, the input-output methodology discussed below is used to calculate the contribution of the supplier sector and of the re-spending in the economy by employees in the industry and its suppliers. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of the Wine and Spirits Wholesalers Association model, only the most conservative estimate of the induced impact has been used.

Model Description and Data

This Wine and Spirits Industry Economic Impact Model (Model) was developed by John Dunham and Associates based on data provided Infogroup,⁸ the Wine and Spirits Wholesalers Association, the National Beer Wholesalers Association, and state and federal governments. The analysis utilizes the IMPLAN Model in order to quantify the economic impact of the wine and spirits industry on the economy of the United States. The model adopts an accounting framework through which the relationships between different inputs and outputs across industries and sectors are computed. This model can show the impact of a given economic decision – such as a factory opening or operating a sports facility – on a pre-defined, geographic region. It is based on the national income accounts generated by the US Department of Commerce, Bureau of Economic Analysis (BEA).⁹

- ❖ Producer employment is based on employment at specific locations reported to Infogroup by the companies as of September 2016. The data are modified to add in company-owned operations that may be reported as wholesaling or supplier (e.g. vineyards or packaging) production. Finally, data from major importers – as reported by Infogroup – are added to the production sector.
- ❖ Wholesale employment is employment at specific locations reported to Infogroup by the companies as of September 2016. These data are adjusted to reflect company employment by location provided by major wholesalers, the National Beer Wholesalers Association, and the Wine and Spirits Wholesalers Association.
- ❖ Data on the retail sectors are all based on sales of wine and spirits in each of the 50 states and the District of Columbia. These amounts are multiplied by either the wine and spirits multipliers and output per employee ratios included in the IMPLAN model for the retail components of the industry in order to estimate total employment in each sector, or a calculation based on wine and spirits sales as a percentage of total alcohol sales.¹⁰ These results were cross-checked against a wide variety of

⁸ Job numbers are from Infogroup the leading provider of business and consumer data for the top search engines and leading in-car navigation systems in North America. Infogroup gathers data from a variety of sources, by sourcing, refining, matching, appending, filtering, and delivering the best quality data. Infogroup verifies its data at the rate of almost 100,000 phone calls per day to ensure absolute accuracy.

⁹ The IMPLAN model is based on a series of national input-output accounts known as RIMS II. These data are developed and maintained by the U.S. Department of Commerce, Bureau of Economic Analysis as a policy and economic decision analysis tool.

establishment data by state and were found to present a reasonable estimate of the employment in each sector generated solely by beverage alcohol sales. Retail data are adjusted to take into account dry counties, and state regulations pertaining to sales in grocery and food stores.

- ❖ All data on the number of establishments for the production and wholesaling sectors come from the Infogroup data, augmented by data from the Alcohol and Tobacco Tax and Trade Bureau of the US Department of Treasury (TTB), the National Beer Wholesalers Association and the Wine and Spirits Wholesalers Association.

Once the initial direct employment figures have been established, they are entered into a model linked to the IMPLAN database. The IMPLAN data are used to generate estimates of direct wages and output in each of the three sectors: winemaking/distilling, wholesaling and retailing. IMPLAN was originally developed by the US Forest Service, the Federal Emergency Management Agency and the Bureau of Land Management. It was converted to a user-friendly model by the Minnesota IMPLAN Group in 1993. The IMPLAN data and model closely follow the conventions used in the “Input-Output Study of the US Economy,” which was developed by the BEA.

- ❖ Wages: Data from the US Department of Labor’s ES-202 reports are used to provide annual average wage and salary establishment counts, employment counts and payrolls at the county level. Since this data only covers payroll employees, it is modified to add information on independent workers, agricultural employees, construction employees, and certain government employees. Data are then adjusted to account for counties where non-disclosure rules apply. Wage data include not only cash wages, but health and life insurance payments, retirement payments and other non-cash compensation. It includes all income paid to workers by employees. Further details are available from the IMPLAN at <http://www.implan.com>.
- ❖ Output: Total output is the value of production by industry in a given state. It is estimated by IMPLAN from sources similar to those used by the BEA in its RIMS II series. Where no Census or government surveys are available, IMPLAN uses models such as the Bureau of Labor Statistics Growth model to estimate the missing output.
- ❖ Taxes: The model includes information on income received by the Federal, State and Local Governments. The model produces estimates for the following taxes at the Federal Level: Corporate Income, Payroll, Personal Income, Estate, Gift, and Excise Taxes; Customs Duties; and Fines, Fees, etc. State and Local tax revenues include estimates of: Corporate Profits, Property, Sales, Severance, Estate, Gift and Personal Income Taxes; Licenses; Fees; and certain Payroll Taxes.
- ❖ Consumer Taxes paid due to the consumption of wine and spirits beverages in each state are also included in the analysis. These data are calculated based off of tax revenues and volumes reported by the TTB and by state revenue agencies. These figures – while mostly separate from the reported taxes paid – contain very small double counts. This is because individuals employed by the industry or its suppliers purchase wine and spirits, and the sales taxes on beverage alcohol as well as state and federal excise taxes paid by these people are already included in the direct taxes section. In addition, estimates of state level sales taxes are included based on the calculated sales of wine and spirits in each state.

Data and Modeling Considerations When Comparing 2016 with Earlier Studies:

There have been a large number of changes to the economy, the beverage alcohol industry and the data sources used in this model when compared to 2014.

¹⁰ For restaurants, bars and food stores. See: *Table 2.4.5U. Personal Consumption Expenditures by Type of Product*, US Department of Commerce, Bureau of Economic Analysis, Revised March 2017. Data are for 2015.

First, and most importantly, the IMPLAN database that is used to develop all of the supplier and induced outputs has undergone a major revision. The 2014 data tables used in this model have been restructured to include nearly 100 more economic sectors than did the 2012 tables used in the last edition of the Wine and Spirits Industry Impact Study.¹¹ This restructuring, while providing significantly more accuracy, also creates some difficulties when comparing across years.

In addition to these modeling changes, we have switched data providers from Dun & Bradstreet to Infogroup. While there are good and bad attributes to both of these data sets, and we firmly believe that the Infogroup data are as good if not more accurate than D&B, there will be differences in definitional and collection techniques that could be reflected in the final job numbers.

There have also been sizable changes in the industry itself. While wine sales are virtually flat over the period, spirits sales are up 19 percent – with much of this coming from growth in lower priced brands and products. At the same time, differences in modeling as well as government (BEA) data on both wholesale and retail markups have led to reductions at the wholesale level and for off-premise sales. In addition, our modeled figure for on-premise markups on spirits is down dramatically. Control state margins are also included in tax figures and can be negative where legislated markups are below the market allocations. Finally, the base price calculations for spirits are down by 14 percent from the last model, reflecting different consumer tastes and mix of product purchases. All of this has led to substantial reductions in estimated sales tax revenues while excise taxes have remained fairly flat. JDA believes that the 2016 model more accurately reflects markups and tax rates and that the 2014 model was overstated.

Finally, the wholesaling sector has undergone a metamorphosis over the past few years. In 2016, there are few exclusive wine and spirits wholesalers (or for that matter beer wholesalers) left. Most beverage alcohol wholesalers now handle all of these products and more. This is why employment is increasing in the sector even though it is undergoing consolidation. There are fewer facilities, but the wine and spirits share of all of the tens of thousands of formerly exclusive beer wholesalers are now showing up in the model. In addition, a great deal of effort was spent this year doing a better job of cleaning TTB tax on wholesale locations. The vast majority of wholesale licenses are actually held by either producers or retailers, which may ship to consumers or other retailers as part of their operations. These “retail” wholesalers have been cleared from the database, leading to a much smaller population of actual wholesalers in the model.

Finally, in the distilling sector there has been significant growth in small marginal distilleries. These operations employ many people but their average wage rates and output per worker levels are much lower than the larger facilities that have traditionally dominated the industry. This means that employment is rising faster than either wages or economic output – particularly in those states where smaller “craft type” distilleries dominate.

The 2016 model reflects the best data and modeling techniques available now, and should provide a very accurate measure of the economic foot print of the industry today. Any errors are unintentional and are strictly those of John Dunham & Associates.

IMPLAN Methodology:¹²

Francoise Quesnay one of the fathers of modern economics, first developed the analytical concept of inter-industry relationships in 1758. The concept was actualized into input-output analysis by Wassily Leontief during the Second World War, an accomplishment for which he received the 1973 Nobel Prize in Economics.

¹¹ The latest IMPLAN data available are for 2015; however, JDA updates our models in even years.

¹² This section is paraphrased from IMPLAN Professional: Users Guide, Analysis Guide, Data Guide, Version 2.0, MIG, Inc., June 2000.

Input-Output analysis is an econometric technique used to examine the relationships within an economy. It captures all monetary market transactions for consumption in a given period and for a specific geography. The IMPLAN model uses data from many different sources – as published government data series, unpublished data, sets of relationships, ratios, or as estimates. The Minnesota IMPLAN group gathers this data, converts it into a consistent format, and estimates the missing components.

There are three different levels of data generally available in the United States: Federal, state and county. Most of the detailed data is available at the county level, and as such there are many issues with disclosure, especially in the case of smaller industries. IMPLAN overcomes these disclosure problems by combining a large number of datasets and by estimating those variables that are not found from any of them. The data is then converted into national input-output matrices (Use, Make, By-products, Absorption and Market Shares) as well as national tables for deflators, regional purchase coefficients and margins.

The IMPLAN Make matrix represents the production of commodities by industry. The Bureau of Economic Analysis (BEA) Benchmark I/O Study of the US Make Table forms the bases of the IMPLAN model. The Benchmark Make Table is updated to current year prices, and rearranged into the IMPLAN sector format. The IMPLAN Use matrix is based on estimates of final demand, value-added by sector and total industry and commodity output data as provided by government statistics or estimated by IMPLAN. The BEA Benchmark Use Table is then bridged to the IMPLAN sectors. Once the re-sectoring is complete, the Use Tables can be updated based on the other data and model calculations of interstate and international trade.

In the IMPLAN model, as with any input-output framework, all expenditures are in terms of producer prices. This allocates all expenditures to the industries that produce goods and services. As a result, all data not received in producer prices is converted using margins which are derived from the BEA Input-Output model. Margins represent the difference between producer and consumer prices. As such, the margins for any good add to one. If, for example, 10 percent of the consumer price of beer is from the purchase of hops, then the hops margin would be 0.1.

Deflators, which account for relative price changes during different time periods, are derived from the Bureau of Labor Statistics (BLS) Growth Model. The 224 sector BLS model is mapped to the 536 sectors of the IMPLAN model. Where data are missing, deflators from BEA's Survey of Current Businesses are used.

Finally, one of the most important parts of the IMPLAN model, the Regional Purchase Coefficients (RPCs) must be derived. IMPLAN is derived from a national model, which represents the "average" condition for a particular industry. Since national production functions do not necessarily represent particular regional differences, adjustments need to be made. Regional trade flows are estimated based on the Multi-Regional Input-Output Accounts, a cross-sectional database with consistent cross interstate trade flows developed in 1977. These data are updated and bridged to the 536 sector IMPLAN model.

Once the databases and matrices are created, they go through an extensive validation process. IMPLAN builds separate state and county models and evaluates them, checking to ensure that no ratios are outside of recognized bounds. The final datasets and matrices are not released before extensive testing takes place.