

**2023 Economic Impact Study
of the Pennsylvania Wine & Grape Industries**

Prepared for:



By



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Executive Summary

The 2023 Pennsylvania Wine & Grape Economic Impact Study estimates the economic contributions made by the wine and grape industries to the Pennsylvania economy in 2023. John Dunham & Associates (JDA) conducted this research, which was funded by the Pennsylvania Wine Marketing and Research Program (PWMP). This work used standard econometric models first developed by the U.S. Forest Service, and now maintained by IMPLAN, Inc.¹ Data came from PWMP, the Pennsylvania Liquor Control Board, additional industry sources, government publications, and Data Axle.²

The study defines the wine and grape industries as: winegrape growing, juice grape growing, wine production, juice grape production, wine wholesaling (including PLCB jobs), wine retailing (on/off premise), wine research and education, and wine tourism, including the direct to consumer sales of wine by local wineries in the Commonwealth of Pennsylvania.³ In the case of the wholesale and retail tiers of the industry, only the impacts from Pennsylvania produced wine are included. The first tier of the industry is comprised of vineyards which grow winegrapes and juice grapes. Wineries, in turn, use these fruits (as well as other fruit from both Pennsylvania and other states) to produce wine. Other firms, mainly large food manufacturers produce juice grape products in the state. Once the wine and juice are produced and packaged, the products are ready for the second tier of the industry – the wholesalers.⁴

Pennsylvania is what is called a *control state*. As such, a state agency, the Pennsylvania Liquor Control Board (PLCB) is responsible for all wine and spirits wholesaling in the state. In addition, private wholesale firms operate as sales representatives for the wines or spirits that they carry or import. The PLCB is responsible for transporting and the short-term storage of wine from producers to the third tier – the retailers.

The retail tier is made up of on-premise retailers such as restaurants, bars, sport stadiums, etc. and off-premise retailers. Again, in Pennsylvania nearly all off-premise sale of wine is done under the auspices of the PLCB, which operates approximately 600 retail locations known as *Fine Wine & Good Spirits Shoppes*. Wineries in Pennsylvania also have the ability to distribute to retailers, as well as sell their products directly to the consumer either by shipping the products directly, or through their own channels such as tasting rooms and restaurants. Additionally in 2016, Pennsylvania allowed for the limited off-premise retail sale of wine through supermarkets, and licensed on-premise establishments.⁵ While this is a growing part of the retail market in the commonwealth, only a very small part of Pennsylvania produced wine is sold through these channels.

In addition to the three tiers of the industry, the study calculates the economic contribution to the state made through the spending of tourists visiting Pennsylvania's 368 wineries.⁶

¹ IMPLAN® model, 2021 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (2023), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078, www.IMPLAN.com.

² Data Axle data as of October 3, 2023. Data Axle is the leading provider of business and consumer data for the top search engines and leading in-car navigation systems in North America. Data Axle gathers data from a variety of sources, by sourcing, refining, matching, appending, filtering, and delivering the best quality data. Data Axle verifies its data at the rate of almost 100,000 phone calls per day to ensure absolute accuracy.

³ Throughout this study, all references to the “wine industry” include the production, wholesaling, and retailing of wine and grape juice.

⁴ Note that due to the large national market for juice grape products, the retail and wholesale operations are not included in this analysis.
⁵ In 2016, the Commonwealth has opened up limited wine retail activities for the first time since Prohibition. Limited private wine sales will now be allowed at grocery stores, restaurants, bars, hotels, and delis that have pre-existing liquor licenses and decide to upgrade them to take advantage of the new law. In addition, restaurants and bars with an “R” type license can now sell up to four bottles of wine per transaction for off-premise consumption. While restaurants and bars are included in the on-premise retail part of this analysis, data are not yet available to calculate the amount of on-premise sales occurring at these types of establishments. Sales of Pennsylvania wine for off-premise consumption at other retail stores are included in the analysis.

⁶ Throughout this study, the winery count refers to the number of winery facilities. A single winery may have multiple facilities throughout the state or country. Each of these facilities is included in the winery count.

The impact of associations and organizations that help develop the wine and grape industries through education and research have been included in this study.

The study measures various factors of the Pennsylvania wine and grape industries including the number of jobs, the wages paid to employees, total output, and charitable contributions. In addition, it assesses the economic impact of the suppliers that support the Pennsylvania wine and grape industries, as well as those industries supported by the induced spending of both the direct and supplier industries.

Every industry inevitably makes purchases from a mix of different industries—thus, an economic activity within one industry always extends beyond its origins. Economic activity started by the wine and grape industries generates output (and jobs) in hundreds of other industries, often far removed from the site of the original operation. The impact of supplier firms and the “induced impact” of the re-spending by employees of industry and supplier firms are calculated using an input-output model of the United States. The study calculates the impact at the state, state legislative district, and county levels.

The study also estimates taxes paid by industry and its employees. Federal taxes include industry-specific excise and sales taxes, business and personal income taxes, FICA, and unemployment insurance. State and local tax systems, on the other hand, vary widely. Direct retail taxes include state and local sales taxes, license fees, and applicable gross receipt taxes. Private retailers pay real estate and personal property taxes, business income taxes, and other business levies that vary in each state and municipality. The PLCB generates additional revenues for the Commonwealth, generally providing about \$839.3 million per year in profits to the General Fund.⁷ All private entities engaged in business activity generated by the industry pay similar taxes. In addition to this, consumers pay millions in federal, state, and local sales and excise taxes when they purchase wine at both on- and off-premise establishments.

Members of the industry and their employees pay \$502.1 million in federal, state, and local business taxes. Consumption taxes, which account for state and local sales taxes as well as excise taxes that apply to specific retail services, contribute \$24.6 million to the Federal government and Pennsylvania’s economy.

⁷ PLCB Fiscal Year 2021-2022 Annual Report.

Economic Impact Results

The Pennsylvania wine and grape industry includes wineries, grape growers, juice grape production, PLCB wholesale operations and private wholesalers that represent wineries, as well as retail establishments that sell wine to consumers, including PLCB Fine Wine & Good Spirits Shoppes, grocery stores, restaurants, and bars. The industry also attracts many visitors to wineries and vineyards in Pennsylvania. The economic impact of spending from these visitors is an important aspect of the overall wine and grape industry. Their economic contribution is estimated in the tourism impact and includes spending on lodging, food, transportation, retail purchases, and other spending. In addition, the economic impact of research and educational organizations which promote and support the wine and grape industries in Pennsylvania are included in the study. Overall, the wine and grape industries in Pennsylvania directly create 10,756 jobs, generating \$518.2 million in wages. The industries directly generate \$1.8 billion in economic activity in the state.

The full economic impact of the wine and grape industries extends beyond the initial direct impacts. In order for these companies to conduct their businesses, they require goods and services that must be purchased from other industries. This additional economic impact is referred to as the supplier impact. Examples of the supplier impacts created by the wine and grape industries include the purchase of farming equipment and supplies, payment of rent to landlords, spending on packaging materials, consultants, drivers, lawyers, etc. and even government officials responsible for the regulation or licensing of wine businesses.

Furthermore, the induced impact is created when the people employed by the direct and supplier sectors spend their wages. These expenditures can be captured in businesses such as movie theaters, restaurants, retail shops, health care, and education. The overall economic impact of the wine and grape industries in Pennsylvania is presented in Table 1 below.

Table 1
Pennsylvania Wine and Grape Industries Economic Impact 2023

	Jobs	Wages	Economic Output
Juice Grape Vineyards	444	\$23,658,500	\$54,150,700
Wine Grape Vineyards	125	\$6,660,600	\$15,245,100
Juice Production	380	\$27,377,400	\$224,002,300
Wineries	2,178	\$148,180,400	\$710,913,100
Wholesale	5	\$503,000	\$2,075,300
Retail	191	\$6,789,200	\$16,176,800
Tourism	7,420	\$303,501,200	\$747,068,100
Research and Education	13	\$1,571,200	\$3,482,800
Total Direct Impact	10,756	\$518,241,500	\$1,773,114,200
Total Supplier Impact	4,404	\$346,751,700	\$998,510,800
Total Induced Impact	5,930	\$376,021,100	\$1,020,168,700
Total Impact	21,090	\$1,241,014,300	\$3,791,793,700

The model is primarily based on direct job numbers gathered from a variety of sources including Data Axle, PLCB Fiscal Year 2021-2022 Annual Report, and other government and industry publications. The process for developing these figures is outlined below.

Vineyards

The production of wine and grape juice begins with the farming of grapes at vineyards. According to the US Department of Agriculture, back in 2017, about 1,910 acres of farmland were used to grow grapes.⁸ These vineyards produced about 13,500 tons of grapes with a total value of \$7.7 million to be used specifically in the process of making wine.⁹ In addition to producing wine grapes, Pennsylvania is one of the leading producers of juice grapes in the country. Based on these same 2017 data, about 77,300 tons of juice grapes, valued at \$17.2 million are produced in the state, as are a small amount of fresh table grapes.

The USDA stopped publishing data on grape production in 2017, so no recent data are available. However, based on the change in wine and grape juice output, an estimate for 2023 has been developed. In 2017, growers in Pennsylvania produced \$4,034 worth of winegrapes and \$1,573 of juice grapes per acre. Inflating this to 2023 dollars suggests that growers at that time grew \$4,884 (\$2023) worth of wine grapes and \$1,904 worth of juice grapes per acre. At that time, wine producers utilized \$65.9 million (\$2023) worth of grapes and juice producers used \$147.2 million (\$2023) worth of grapes. This is equal to \$30,861 worth of wine grapes per combined winery and vineyard job, and \$169,803 worth of juice grapes per juice production and vineyard job. These figures were used in the 2018 economic impact analysis.

Using the same production per job ratios and multiplying by current wine and juice production jobs provides an estimate of \$89.5 million wine grapes and \$139.9 million worth of juice grapes for 2023. (Table 2).

In 2017, the state grew 7.96 tons of wine grapes and worth of wine and 175.28 tons of juice grapes per employee. Multiplying these ratios by the new employment values provides new estimates for grape acreage and production. This is then multiplied by the current value of grapes, to develop the figures presented in Table 2 below.¹⁰ All told, it is estimated that vineyards in Pennsylvania produce a total of 96,147 tons of grapes on about 13,630 acres. At current prices, this production is valued at over \$55.3 million.

Table 2
Estimated Grape Production in Pennsylvania (2023)

	Acres	Tons	Percent	Price Per Ton	Value	Percent
Wine Grapes	\$2,597	\$18,321	\$0	\$1,745	\$31,969,901	\$1
Juice Grapes	\$11,034	\$77,826	\$1	\$300	\$23,347,755	\$0
Total	\$13,631	\$96,147	\$1	\$2,045	\$55,317,656	\$1

It is estimated that wine grape vineyards in Pennsylvania directly employ an estimated 125 full-time equivalent (FTE) people growing winegrapes.¹¹ These jobs pay a total of \$6.7 million in wages while contributing \$15.2 million in economic activity to the state. When the total impact of the winegrape

⁸ Based on *Noncitrus Fruits and Nuts 2017 Summary*, US Department of Agriculture, National Agricultural Statistics Service, Available at: <https://downloads.usda.library.cornell.edu/usda-esmis/files/zs25x846c/bc386n064/rr172065h/NoncFruiNu-06-26-2023.pdf>. The latest data available are for 2017. Pennsylvania data on acreage are not broken down by grape type, therefore tonnage is used as a proxy to calculate acreage.

⁹ Ibid.

¹⁰ Farm Credit East Knowledge Exchange. (2023, March 28). 2023 Northeast Wine Grape Outlook. Today's Harvest Blog. Available at: <https://www.farmcrediteast.com/en/resources/todays-harvest-Blog/230328WinegrapeOutlookfromtheNortheast>

¹¹ Some of these jobs may be double counted in the winery impacts. Limited data available makes it difficult to estimate the impact from vineyards that are owned and operated by wineries. The impact of winery owned vineyards is already captured in the winery economic impact.

industry is included (including supplier and induced jobs), 214 FTE jobs depend on the growing of winegrapes in Pennsylvania, generating nearly \$12.0 million in wages and over \$28.5 million in economic impact.

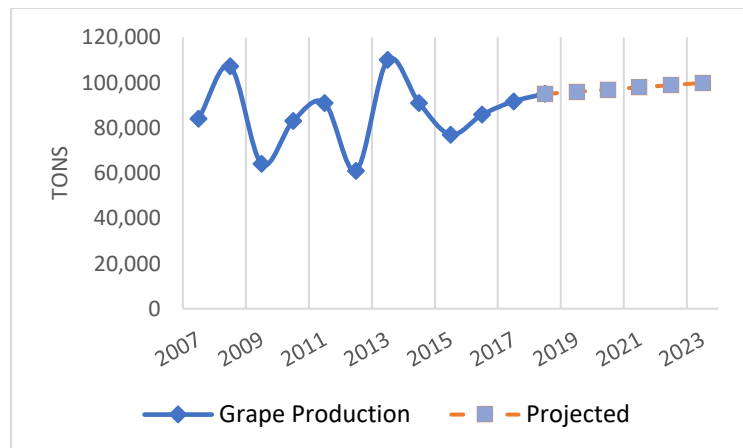
Table 3
Economic Impact of Vineyards in Pennsylvania 2023

Vineyard Type	Jobs	Wages	Economic Output
Wine Grape Vineyards	125	\$6,660,600	\$15,245,100
Supplier Impact	34	\$1,865,000	\$4,050,300
Induced Impact	55	\$3,463,400	\$9,240,000
Total Wine Grape Impact	214	\$11,989,000	\$28,535,400
Juice Grape Vineyards	444	\$23,658,500	\$54,150,700
Supplier Impact	122	\$6,624,900	\$14,387,000
Induced Impact	193	\$12,301,600	\$32,820,700
Total Juice Grape Impact	759	\$42,585,000	\$101,358,400
All Vineyards	569	\$30,319,100	\$69,395,800
Supplier Impact	156	\$8,489,900	\$18,437,300
Induced Impact	248	\$15,765,000	\$42,060,700
Total Vineyard Impact	973	\$54,574,000	\$129,893,800

The juice grape industry in the commonwealth is even larger. Concentrated in Erie County, Pennsylvania juice grape growers provide 444 FTE jobs, paying \$23.7 million and generating nearly \$54.2 million in economic activity. All told the grape growing industry in Pennsylvania is responsible for almost 980 jobs, paying over \$54.6 million in wages. Almost \$129.9 million in economic activity in Pennsylvania is due to wine and juice grape growing.

Grape production is not only important to the state’s economy, but it is a growing industry. Based on JDA’s estimates, overall grape production in Pennsylvania grew by 4,847 tons (or about 970 tons per year) since 2018.

Figure 1
Pennsylvania Grape Production by Year



Wineries

Once grapes are grown at vineyards, they are transformed into wine (and other products) at local Pennsylvania wineries. Wineries in the state may grow winegrapes and other fruits in their own vineyards and orchards or they may purchase winegrapes or fruit juice from growers located in other states. Wineries then continue the vinification process which may include crushing, pressing, and fermenting the fruits, aging, and bottling and cellaring the wine. Wineries in Pennsylvania may sell directly to consumers through their tasting rooms and on-site restaurants or self-distribute to local retail licensees. The impact of these activities is included in the wineries' impact and is not included in the wholesale and retail economic impacts in order to avoid double counting. Pennsylvania's 368 wineries employ almost 2,171 people (FTE jobs) and pay more than \$148.2 in wages and benefits. These firms directly generate \$711.0 million in economic activity in the state.¹²

In line with a nationwide trend, Pennsylvania has experienced growth in winery employment. When the last economic impact study of the Pennsylvania wine and grape industries was conducted, it was reported that the average winery employs 4.2 FTE workers.¹³ The data for 2023 show 5.9 FTE workers per winery, a 40 percent increase, suggesting that the state's wineries have undergone a substantial expansion in their workforce.

Even though most of the state's wineries are small, Pennsylvania is a leading producer of American wine. While detailed data from the US Department of Treasury are no longer available, it is possible to infer that Pennsylvania is the 4th largest wine producing state.¹⁴ Unofficial sources suggest that the state is either the 4th largest producer with about 12.4 million gallons vinified in 2023, or the 5th largest depending on the source.¹⁵

Table 4
Estimated Annual Wine Production by State (2023)

State	Annual Wine Production (gallons)
California	680,300,000
Washington	40,700,000
New York	28,000,000
Pennsylvania	12,400,000
Oregon	11,800,000
Ohio	5,900,000
Michigan	2,600,000
Kentucky	2,200,000
Vermont	2,200,000
Virginia	2,200,000
Texas	1,900,000
North Carolina	1,900,000
New Jersey	1,800,000
Florida	1,600,000
Other	10,600,000
Total	806,100,000

¹² For the purposes of this study wineries include wineries and a handful of those cideries that produce both cider and wine.

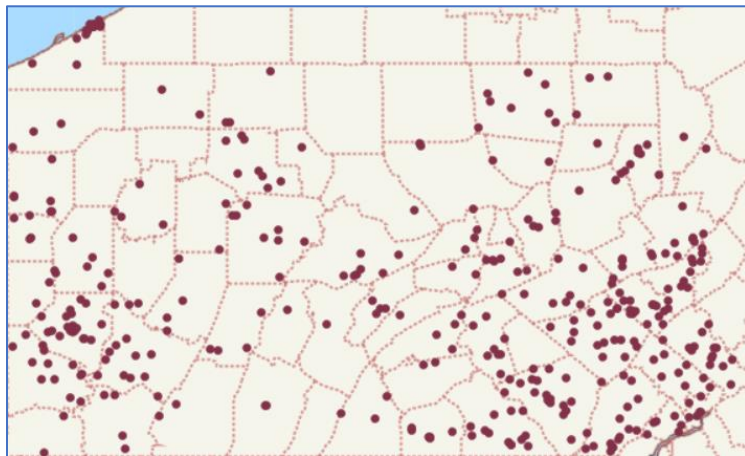
¹³ *2018 Economic Impact Study of the Pennsylvania Wine and Grapes Industry*, prepared for the John Dunham & Associates, March 28, 2019. Available at: https://pennsylvaniawine.com/wp-content/uploads/2019/09/PAWines_EcoImpact_FULL_2018.pdf.

¹⁴ *15 US States That Produce Most Wine 2023: The Cream of the Crop*, *Southwest Journal*, July 31, 2023, at: www.southwestjournal.com/us-states-that-produce-most-wine/ See *Wine Production by State 2024*, at: Worldpopulationreview.com, website, at: <https://worldpopulationreview.com/state-rankings/wine-production-by-state>.

¹⁵ See *Wine Production by State 2024*, at: Worldpopulationreview.com, website, at: <https://worldpopulationreview.com/state-rankings/wine-production-by-state>.

Pennsylvania wines are made from a range of grape varieties, including native grapes like Delaware, as well as vinifera and hybrid varieties like Merlot and Chambourcin. Conditions in the state are particularly favorable to Cabernet Franc. There are five (American Viticultural Areas) in Pennsylvania: Cumberland Valley, Central Delaware Valley, Lake Erie, Lancaster Valley, and Lehigh Valley. The large number of AVAs and diverse geography ensures that wineries are located throughout the Commonwealth.

Figure 2
Location of Pennsylvania Wineries



Wholesalers

Traditionally, most wine is sold through what is called the three-tier system, whereby producers sell to wholesalers, who in turn sell to retailers. In fact, only a small part of the wine produced in Pennsylvania is sold through wholesalers, with most production either sold directly by the wineries, or self-distributed to local licensees. This is because Pennsylvania is a control state and wine wholesaling is the exclusive purview of the State-owned, PLCB.¹⁶ According to the PLCB, only 196,938 gallons of Pennsylvania produced wine entered the wholesaling system. This was just 0.76 percent of all wine sold through PLCB warehouses.¹⁷ Considering that Pennsylvania wineries produced upwards of 12.4 million gallons in 2023, only about 1.6 percent of wine produced in the state is sold through Pennsylvania wholesaling establishments. Because of this, the wholesaling impact of the industry is very small – just 5 FTE jobs, and about \$2.1 million in economic output.

These small numbers do not suggest that Pennsylvania wine is not widely distributed in the state; however, they do suggest that most of this wine is distributed via the wineries themselves, and as such, the economic impact of most wholesaling activities is included in the winery impact numbers.

¹⁶ In addition, private wholesalers operate in Pennsylvania and work with licensed retailers to develop consumer benefits such as wine lists and wine pairings, and to ensure that the wines that they represent are properly stored and served. Other wholesalers have offices in the state that are involved with the importation of wine, both for the PLCB and for sale in other states.

¹⁷ Information obtained from the Pennsylvania Liquor Control Board (PLCB) in response to a written request for data on wines sold by the PLCB, in accordance with the Right to Know Law (RTKL) [65 P.S. § 67.703]

Retailers

The third tier, retailing, is responsible for selling wine to consumers through on- and off-premise businesses such as restaurants, bars, licensed grocery stores and approximately 600 PLCB Fine Wines & Good Spirits Shoppes. Only the portion of economic activity created by these businesses due to the sale of Pennsylvania produced wine is accounted for in the analysis. In Pennsylvania, the wine industry creates 191 jobs in the on- and off-premise retail and hospitality sectors. These jobs pay about \$6.8 million in wages and contribute \$16.2 million in economic activity to the state.

Table 5
Economic Impact of Wine Retailers in Pennsylvania 2023

	Jobs	Wages	Economic Output
On-Premise Retail	148	\$5,151,200	\$12,403,200
Off-Premise Retail	43	\$1,638,000	\$3,773,500
PLCB Fine Wine & Good Spirits Shoppers	41	\$1,561,814	\$3,597,988
Licensed Retailers	2	\$76,186	\$175,512
Total Retail Impact	191	\$6,789,200	\$16,176,700

Tourism

Wineries and vineyards are attractive destinations for both Pennsylvanians and out-of-state visitors. These visitors not only create business for the wineries and vineyards they visit, but they also spend millions on lodging, food, transportation, and other retail purchases. JDA estimates that about 7,659,000 people made over 25.2 million visits to Pennsylvania's wineries and vineyards. In addition to spending in the wineries and vineyards on wine, food, events, etc., these people spent an estimated \$899.5 million in other parts of the Pennsylvania economy. The economic activity created by these visitors generates about 7,420 FTE jobs, paying about \$303.5 million in wages, and contributing \$747.1 million in economic activity to the state. Once supplier and induced effects were added to this sector, the economic impact created by these visitors surpassed almost \$1.7 billion.

Table 6
Economic Impact of Tourism in Pennsylvania 2023

	Jobs	Wages	Economic
Tourism	7,420	\$303,501,200	\$747,068,100
Supplier	2,003	\$150,430,600	\$427,233,000
Induced	2,947	\$187,072,700	\$520,794,000
Total	12,370	\$641,004,500	\$1,695,095,100

Research and Education

The wine and grape industry in Pennsylvania is also supported by research and education organizations which engage in applied research and educational programs to protect and improve grape cultivation as well as wine related industries. These organizations are responsible for spreading sound business practices as well as promoting new, innovative techniques to further the development of the Pennsylvania wine industry. Approximately 13 people were employed in Pennsylvania based research and education organizations, receiving about \$1.6 million in wages and generating \$3.5 million in economic activity. Once supplier and induced effects were added to this sector, the economic impact of wine and grape

research and education services surpassed \$8.4 million. And this does not include the valuable benefits that come from better viticulture and vinification activities.

Table 7
Economic Impact of Wine Research and Education in Pennsylvania 2023

	Jobs	Wages	Economic Output
Research and Education	13	\$1,571,200	\$3,482,800
Supplier	10	\$846,900	\$2,111,600
Induced	14	\$986,100	\$2,760,700
Total	37	\$3,404,200	\$8,355,100

Supplier firms

The supplier impact created by the wine and grape industry includes goods and services from a multitude of different sectors. These purchases include varied goods such as farm equipment, supplies, tools, cash registers, and promotional materials. Services such as consulting, banking, legal, and marketers are also a part of the supplier impact. In the case of the wine and grape industry, government jobs are created in government agencies (including the PLCB) responsible for the regulation of wine and vineyard related businesses.¹⁸ An estimated 4,401 supplier jobs overall are created by the wine and grape industry, paying \$346.8 million in wages, and generating about \$998.5 million in economic activity.¹⁹

Table 8
Supplier Impact of the Wine and Grape Industries in Pennsylvania 2023

Sector	Jobs	Wages	Economic Output
Business and Personal Services	1,584	\$134,466,300	\$258,945,200
Transportation and Communication	840	\$75,542,200	\$249,582,900
Wholesaling	667	\$64,124,000	\$210,556,900
Finance, Insurance and Real Estate	428	\$24,278,200	\$120,338,800
Travel and Entertainment	354	\$12,942,400	\$34,784,200
Agriculture	117	\$4,665,800	\$5,555,700
Manufacturing	182	\$13,165,800	\$70,033,300
Government	96	\$10,013,200	\$22,531,500
Retailing	87	\$4,059,000	\$11,688,700
Construction	45	\$3,222,900	\$11,414,700
Mining	4	\$271,900	\$3,078,900
Other	-	\$0	\$0
Total Impact	4,404	\$346,751,700	\$998,510,800

Induced Impacts

The induced impact is created by the expenditure of wages earned by employees in the direct and supplier sectors. These jobs are dependent on the wine and grape industries in Pennsylvania and would not exist if not for it. Businesses included in the induced impact include everything from restaurants and movie theaters to physicians' offices and universities. The induced impact of the wine and grape industries

¹⁸ Note that PLCB wholesaling and retailing jobs are included in those sectors of the model. Regulatory jobs like licensing, adjudication and enforcement would be considered supplier impacts.

¹⁹ This includes the impact supplies and services purchased by wineries located throughout the United States from companies located in Michigan. See *2023 Economic Impact Study of the Wine Industry Methodology and Documentation*, prepared for, WineAmerica by John Dunham & Associates, August 10, 2023, at: <http://wineamerica.org/impact>.

created 5,930 jobs, paying \$376.1 million in wages, and generating about \$1.0 billion in economic activity.

Table 9
Induced Impact of the Wine and Grape Industries in Pennsylvania 2023

Sector	Jobs	Wages	Economic Output
Business and Personal Services	2,735	\$191,901,100	\$347,607,500
Travel and Entertainment	931	\$32,112,700	\$88,877,500
Retailing	860	\$37,318,800	\$102,052,800
Transportation and Communication	480	\$45,810,600	\$166,210,200
Finance, Insurance and Real Estate	368	\$24,700,700	\$169,062,700
Wholesaling	195	\$20,872,400	\$77,372,800
Other	183	\$8,537,500	\$12,962,100
Government	74	\$7,583,300	\$19,794,800
Construction	44	\$3,105,600	\$11,246,200
Manufacturing	43	\$3,456,000	\$21,920,600
Agriculture	16	\$532,500	\$1,774,400
Mining	1	\$89,900	\$1,287,100
Total Impact	5,930	\$376,021,100	\$1,020,168,700

Fiscal Impacts

An important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the country. In the case of the wine and grape industries, the business taxes paid by firms and their employees provide \$327.5 million to the federal government and \$174.5 million to state and local governments. In addition, the consumption of Pennsylvania wine generated an estimated \$9.3 million in federal tax revenues and \$15.3 million in state and local tax revenues. These consumption taxes include taxes such as excise taxes and state sales taxes.

Table 10
Taxes From Wine and Grape Industries in Pennsylvania 2023

Consumption Taxes from Sale of PA Wine				
	PLCB	Direct Shipment and Sales	Bulk	Total
Federal Excise Tax	\$15,626	\$119,214	\$9,135,000	\$9,269,840
State Wine Excise Tax	\$1,241,440	\$4,257,654	\$0	\$5,499,094
PLCB Markups and Fees	\$2,397,282	\$0	\$0	\$2,397,282
State Sales Tax	\$829,851	\$5,732,512	\$0	\$6,562,363
Phila & Alleghany County On-Premise Tax	\$78,835	\$750,694	\$0	\$829,529
Total	\$4,563,034	\$10,860,074	\$9,135,000	\$24,558,108

General Business and Personal Taxes From Wine and Grape Industry			
	Federal	State and Local	Total
Business & Personal Taxes	\$327,541,300	\$174,509,600	\$502,050,900

Charitable Contributions

Charitable contributions are calculated as part of the economic impact model itself. The IMPLAN tables show spending per dollar of output for about 544 industry categories, including industries such as civic organizations, and social advocacy organizations. JDA estimated the charitable contributions of the industry by analyzing the impacts in individual and family services, community food, housing, and other relief services, including family services, performing arts companies, museums, historical sites, zoos, and parks, grantmaking, giving, and social advocacy organizations, and labor and civic organizations.

Spending in each of these categories is aggregated together to estimate the charitable contributions attributed to the wine and grape industries in Pennsylvania. It is estimated that about \$3.7 million is contributed by employees and companies in the wine and grape industries to charitable organizations. These contributions lead to about 86 FTE jobs in these non-profit organizations.

Table 11
Charitable Contributions of the Wine and Grape Industries in Pennsylvania 2023

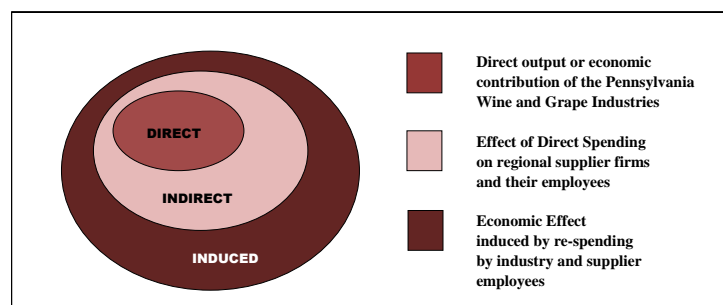
Charitable Sector	Jobs	Wages	Economic Output
Community Services	28	\$1,086,537	\$2,607,064
Labor	24	\$917,584	\$4,916,769
Social Advocacy	17	\$1,141,377	\$4,496,289
Art	12	\$286,613	\$1,269,413
Museums	5	\$246,810	\$517,317
Total	86	\$3,678,921	\$13,806,851

Study Methodology

Model Development

The Economic Impact Study begins with an accounting of the direct employment in the Pennsylvania wine and grape industries. 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 are the sum total of the impact on the local economy. However, a single economic activity leads to a ripple effect wherein 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.

Figure 3
Graphical Description of Economic Impact Modeling



The economic activities of events are linked to other industries in the state and national economies. Activities related to convenience services represent the direct effects on the economy. Indirect impacts occur when these activities require purchases of goods and services such as advertising services or fertilizer from local or regional indirect firms. Additional

induced impacts occur when workers involved in direct and indirect activities spend their wages. The ratio between induced output and direct output is termed the multiplier.

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 indirect sector and of the re-spending in the economy by employees in the industry and its indirect firms. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of this model, only the most conservative estimate of the induced impact has been used.

Model Description and Data

This economic impact analysis was developed by JDA based on data provided by the Pennsylvania Wine Marketing and Research Program (PWMP), Data Axle, the Pennsylvania Liquor Control Board, and Federal and state governments. The analysis utilizes the IMPLAN model in order to quantify the economic impact of the Pennsylvania wine and grape industries on the economy of Pennsylvania, the state's legislative districts and by county.²⁰ 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 winery opening or vineyard sales – 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).²¹

Direct employment for the industry is calculated using data from the PWMP and Data Axle. Where Data Axle data was unavailable, direct employment was replaced with a median calculated by business type (winery, vineyard, etc.). For companies or agencies that are engaged in retailing and wholesaling operations, a break was applied based on the share of Pennsylvania wines sold, gathered from the PLCB.

The IMPLAN model is designed to run based on the input of specific direct economic factors. It uses a detailed methodology (see IMPLAN Methodology section) to generate estimates of the other direct impacts, tax impacts and indirect and induced impacts based on these entries. In the case of this model, direct employment in the Pennsylvania wine and grape industries is a starting point for the analysis. Direct employment is based on data provided to John Dunham & Associates by Data Axle as of October 2023. Data Axle data are recognized nationally as a premier source of micro industry data. Data Axle is the leading provider of business and consumer data for the top search engines and leading in-car navigation systems in North America. Data Axle gathers data from a variety of sources, by sourcing, refining, matching, appending, filtering, and delivering the best quality data. This data is then verified at a rate of almost 100,000 phone calls per day to ensure absolute accuracy.

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. Wages are derived from the U.S. Department of Labor's ES-202 reports. IMPLAN uses this data 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 workers, 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. In short, it includes all income paid to workers by employers.

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 Bureau of Economic Analysis (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.

The model also includes information on income received by the federal, state, and local governments and produces estimates for the following taxes at the federal level: corporate income; payroll, personal income, estate and gift, and excise taxes, customs duties; and fines, fees, etc. State and local tax revenues include estimates of: corporate profits, property, sales, severance, estate and gift and personal income

²⁰ IMPLAN® model, 2021 Data, using inputs provided by the user and IMPLAN Group LLC, IMPLAN System (2023), 16905 Northcross Dr., Suite 120, Huntersville, NC 28078, www.IMPLAN.com.

²¹ 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.

taxes; licenses and fees and certain payroll taxes. JDA calculated consumption-based taxes such as sales taxes and wine excise taxes from its own tax models.

While IMPLAN is used to calculate the state level impacts, Data Axle data provide the basis for legislative district and county level estimates. Publicly available data at the legislative district level is limited by disclosure restrictions, especially for smaller sectors of the economy. Our model therefore uses actual physical location data provided by Data Axle in order to allocate jobs – and the resulting economic activity – by physical address or, when that is not available, zip code. For zip codes entirely contained in a single district, jobs are allocated based on the percentage of total sector jobs in each zip code. For zip codes that are broken by districts, allocations are based on the percentage of total jobs physically located in each segment of the zip code. Physical locations are based on either the actual address of the facility, or the zip code of the facility, with facilities placed randomly throughout the zip code area. All indirect and induced jobs are allocated based on the percentage of a state’s employment in that sector in each of the districts. Again, these percentages are based on Data Axle data.

The data used to develop direct employment figures by sector is described in detail below,

Vineyards

The vineyards that supply winegrapes to the wine and grape industries are vital to the Pennsylvania economy. Individual facility data for each vineyard in Pennsylvania was obtained from 2022 Economic Impact Study of the American Wine Industry conducted by JDA, Data Axle, and other government and industry sources.

Based on the datasets, it is estimated that there are about 13 vineyards in the Commonwealth of Pennsylvania growing both wine grapes and juice grapes on their properties. Data Axle and other publicly available employment figures are used for estimating the jobs in each vineyard. JDA estimates that there are about 125 jobs relating to growing wine grapes and 444 jobs related to growing juice grapes in vineyards in Pennsylvania. These workers earn an estimated \$6.7 million and \$23.7 million, respectively, and generate an estimated \$15.2 million and \$54.2 million in economic activity for the state’s economy.

For the purposes of this study, JDA includes in the vineyard impact both standalone vineyards and vineyards belonging to wineries located at a different location than the winery itself. Vineyards on the winery property were not included in this impact and are instead classified as part of wineries to avoid double counting.

It is important to note that full-time equivalent jobs are not the same as the number of people. Many of the jobs on farms are different than other occupations in that they are not the normal eight hours a day, 40 hours a week kind of activity. Even many owners of small farms operations only work part-time on agricultural activities, and a great majority of labor-intensive vineyard activities (harvesting, pruning, shoot thinning and suckering) are performed by teams of seasonal workers who move from vineyard to vineyard and between agricultural sectors. These workers often only work for a few days or weeks on any given farm.

Wineries and Grape Juice Producers

The economic impact of wineries and grape juice producers is based on government licensing data, Data Axle, and government and industry sources.²² Wineries include those that produce their own wines,

²² A large portion of this data was provided by WineAmerica as it had been collected as part of a prior study conducted for that organization.

wineries/production facilities, winery owned retail outposts, facilities contracted to produce wines for other companies, and companies marketing their own wine brand, but not producing the wine itself (so called virtual wineries).²³ Juice producers are mainly large food manufacturers that produce juice grape products in the state.

Based on these combined datasets, it is estimated that there are about 368 active wineries in the State of Pennsylvania. Data Axle employment figures are used for estimating the jobs in each facility. Median job figures were used where employment figures were not available. JDA estimates that there are about 2,178 jobs relating to the production or marketing of wine in Pennsylvania, and 380 jobs related to grape juice production. These workers earn an estimated \$148.2 million and \$27.4 million, respectively, and generate an estimated \$710.9 million and \$224.0 million in economic activity for the state's economy.

Wholesale

Traditionally, most wine is sold through what is called the three-tier system, whereby producers sell to wholesalers, who in turn sell to retailers. In fact, only a small part of the wine produced in Pennsylvania is sold through wholesalers, with most production either sold directly by the wineries, or self-distributed to local licensees. In addition, Pennsylvania is a control state and wine wholesaling is the exclusive purview of the PLCB. According to the PLCB, only 196,938 gallons of Pennsylvania produced wine entered the wholesaling system. This was just 0.76 percent of all wine sold through PLCB warehouses. These small numbers do not suggest that Pennsylvania wine is not widely distributed in the state; however, they do suggest that most of this wine is distributed via the wineries themselves, and as such, the economic impact of most wholesaling activities is included in the winery impact numbers.

FTE jobs are estimated using the value of sold Pennsylvania-produced wine in the wholesaling system, along with IMPLAN and Data Axle.

Retailers

The third tier, retailing, is responsible for selling wine to consumers through on- and off-premise businesses such as restaurants, bars, licensed grocery stores and PLCB Fine Wines & Good Spirits Shoppes. Only the portion of economic activity created by these businesses due to the sale of Pennsylvania produced wine is accounted for in the analysis. Retail sales that are occurring at winery owned facilities such as tasting rooms or restaurants within the winery itself are not included in this impact. These impacts are captured in the winery sector.

The dataset for retail off-stores was compiled from the Pennsylvania Liquor Control Board (PLCB), with a focus on license types allowing entities to sell wine off-premises in Pennsylvania. To estimate employment data, we considered the value of retail off-sales of Pennsylvania-produced wine, and utilized IMPLAN, and Data Axle. PLCB Fine Wines & Good Spirits Shoppes' locations are determined using data from the PLCB's Annual Report, and jobs associated with these shoppes are calculated based on the value of retail sales of Pennsylvania-produced wine within the stores.

IMPLAN Use data and U.S. Department of Commerce – Bureau of Economic Analysis – Personal Consumption Expenditures by Type of Product is used to determine the type of on-premise stores that sell wine as well as the percent of sales at each store type that is due to the sale of wine.

²³ There are companies that are licensed as wineries for marketing purposes only. These companies might consist of just a single individual or small group of individuals who have simply developed a label and have sales agreements with restaurants or distributors. The actual wine is produced under contract with either a larger branded winery, or at a so-called custom crush facility that provides all of the labor and equipment. Both custom crush facilities and the companies that market this wine are included in this analysis as wineries.

Wine Tourism

One of the important elements of the impact of wineries on the Pennsylvania economy is their attractiveness to tourists. Every year, hundreds of thousands of people visit wine growing regions across the state in part to visit (or even stay at) wineries, learn about wine and sample different wines. In order to estimate the economic impact of these visits it was first necessary to calculate the number of visitors to the state's 368 wineries. This was done at the county level based on an econometric model that used detailed data calculated by key wine producing counties as a means of estimating visitors per winery. A function was developed that estimated the number of visits per winery based on the number of wineries in each of the 62 counties in Pennsylvania that produce wine. This relies on the idea of economic clustering, which suggests that a larger grouping of wineries would attract more visitors to each winery than a smaller grouping. The tendency of locational clustering of similar types of firms has been documented by economists since at least the beginning of the twentieth century. British academic Stephen Brown described the rule of 'retail compatibility,' which explains how retail businesses, such as restaurants, know that two compatible firms in close proximity will show an increase in business volume directly proportionate to the incidence of consumer interchange between them.²⁴ This concept was confirmed by a study by Andrei Rogers who found that the clustered spatial pattern exhibited by consumer goods retailers appears to contradict a common hypothesis that these stores tend to repel one another.²⁵

While Rogers suggests that population densities have a lot to do with the clustering, there is significant economic theory that suggests that the tendency of activities to cluster is related more to competitive characteristics than to generalized demographic characteristics.²⁶

Using this model JDA calculates that a winery existing alone in a county would receive just over 2,0040 visitors in a year, and that the number of annual tourist visitors would rise linearly at a rate of about 5 additional visits per year for each additional winery in the county. As such, a county with 5 wineries would see roughly 10,260 visits, while one with 20 wineries would report over 41,800.

Multiplying the number of visits across the 62 counties in Pennsylvania with wineries gives a total of nearly 25.2 million unique tourist visits. These are people specifically visiting the Pennsylvania wine producing counties with wineries. The bulk of these are local visitors attending an event, having dinner or just stopping by to purchase a bottle of wine. No state specific data are available to estimate the number of wineries each individual visitor goes to on a trip, however, an extensive survey of wineries in Napa California, suggests each person visits on average about 3.3 wineries, so dividing visits by 3.3 gives an estimate of almost 7.7 million actual wine related visitors going to wineries across the state.²⁷

Once the number of visitors was calculated, spending propensities using data as broken into 24 industries based on percentages derived from the US Department of Commerce, Bureau of Economic Analysis.²⁸

²⁴ See: DeFranco, Laurence, William Lilley III, and John Dunham, *The Case of the Transient Taxpayer: How Tax-Driven Price Differentials for Commodity Goods Can Create Improbable Markets*, Business Economics, July 1998.

²⁵ See: Rogers, Andrei, *A Stochastic Analysis of the Spatial Clustering of Retail Establishments*, Journal of the American Statistical Association, December 1965.

²⁶ See: Braid, Ralph, *Spatial Price Competition with Consumers on a Plane, at Intersections, and Along Main Roadways*, Journal of Regional Science, Vol 33, No. 2, 1993.

²⁷ See: *2014 Napa Valley Visitor Profile: Report of Findings*, prepared by Destination Analysisists for Visit Napa Valley, March 2015, at <http://sodacanyonroad.org/docs/Napa%20Valley%202014%20Visitor%20Profile%20Study%20-%20Final%20Report%20of%20Findings.pdf>. These were the only data available on visits per person that we have been able to find.

²⁸ U.S. Travel and Tourism Satellite Accounts, US Department of Commerce, Bureau of Economic Analysis, at: http://www.bea.gov/industry/tourism_data.htm. The following categories were used in the analysis: Traveler accommodations, food services and drinking places, domestic passenger air transportation services, international passenger air transportation services, passenger rail transportation services, passenger water transportation services, interurban bus transportation, interurban charter bus transportation, urban transit systems and other transportation services, taxi service, scenic and sightseeing transportation services, automotive rental, other vehicle rental, automotive repair services, parking lots and garages, highway tolls, travel arrangement and

These were in turn, combined into aggregate categories for processing with the IMPLAN model. As such, rather than basing the direct tourism impact on jobs (as with the rest of the study), it is based on estimated visitor spending on key tourism categories.

Research and Education

The research and education sector is defined as organizations which are engaged in applied research and educational programs that facilitate the development and advancement of knowledge that enable wineries, grape growers, and other wine-related industries to improve and protect the quality of their goods and services.

Data for wine research and educational organizations were provided by the Penn State Extension program.

Charitable Contributions

Charitable contributions are calculated as part of the economic impact model itself. The IMPLAN tables show spending per dollar of output for about 540 industry categories, including industries such as civic organizations, and social advocacy organizations. JDA estimated the charitable contributions of the industry by analyzing the impacts in individual and family services, community food, housing, and other relief services, including rehabilitation services, performing arts companies, museums, historical sites, zoos, and parks, grantmaking, giving, and social advocacy organizations, and labor and civic organizations.

Economic output in each of these categories is aggregated together to estimate the charitable contributions attributed to the wine and grape industries in Pennsylvania.

IMPLAN

The IMPLAN model is designed to run based on the input of specific direct economic factors. It uses a detailed methodology (see IMPLAN Methodology section) to generate estimates of the other direct impacts, tax impacts and indirect and induced impacts based on these entries.

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. Wages are derived from data from the U.S. Department of Labor's ES-202 reports that are used by IMPLAN to provide annual average wage and salary establishment counts, employment counts, and payrolls at the county level. Since this data only covers payroll employees (those eligible for unemployment insurance), they are modified to add information on those who are not, such as: independent workers, agricultural employees, and construction workers. 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 as well. They include all income paid to workers by employers.

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.

reservation services, motion pictures and performing arts, spectator sports, participant sports, gambling, all other recreation and entertainment, gasoline, retail Sales, food stores.

The model also includes information on income received by the federal, state, and local governments, and produces estimates for the following taxes at the federal level: corporate income, payroll, personal income, estate and gift, excise taxes, customs duties, and fines, fees, etc. State and local tax revenues include estimates of corporate profits, property, sales, severance, estate and gift and personal income taxes as well as licenses, fees, and certain payroll taxes.

State sales, excise and other consumption taxes were calculated based on data from the PLCB outlining total Pennsylvania wine sales volume data from 2023 (the latest available) and state and federal excise and sales tax rates as of the beginning of 2023. PLCB markups on PA wine sales are also included in the revenues, as are federal excise taxes from bulk wine sales.

IMPLAN Methodology²⁹

Input-output analysis, for which Wassily Leontief received the 1973 Nobel Prize in Economics for, 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. IMPLAN gathers these data, converts them 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 are available at the county level, but 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 estimating variables that are not found in the merged data. The data are 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 are converted using margins derived from the BEA Input-Output model. Margins represent the difference between producer and consumer prices. As such, the margins for any good add up to one.

Deflators, which account for relative price changes during different time periods, are derived from the Bureau of Labor Statistics (BLS) Growth Model. The BLS model is mapped to the 546 sectors of the IMPLAN model. Where data are missing, deflators from BEA's Survey of Current Businesses are used.

²⁹ This section is paraphrased from IMPLAN Professional: Users Guide, Analysis Guide, Data Guide, Version 2.0, MIG, Inc., June 2000.

Finally, the Regional Purchase Coefficients (RPCs) – essential to the IMPLAN model – 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 546 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 until extensive testing takes place.

Comparisons with Prior Studies

John Dunham & Associates (JDA) conducted economic impact studies of the Pennsylvania Wine & Grape Industries in both 2018 and 2023. Although the scope of the study was almost the same, there are some differences in the definition of the study between the two years. In the 2018 study, both wineries and cideries were included in the direct impact. In contrast, the 2023 study refined its approach by narrowing the focus within the winery impact analysis, including both wineries and only those cideries that produce both cider and wine.

Notably, the 2018 study did not include the economic impact analysis of grape juice producers. These impacts were added into the 2023 analyses.

Table 12 on the following page presents these comparisons.

Table 12
Comparison Between 2018 and 2023 Studies

Employment	2018			2023		
	Total	Wine	Juice	Total	Wine	Juice
Vineyards	639	198	441	569	125	444
Wineries	1,499	1,499	-	2,178	2,178	-
Grape Juice Production	-	-	-	380	-	380
Wholesale	2	2	-	5	5	-
Retail On	102	102	-	148	148	-
Retail Off	28	28	-	43	43	-
Tourism	3,456	3,456	-	7,420	7,420	-
Research and Education	14	14	-	13	13	-
Charitable Contributions	55	55	-	86	-	-
Supplier	2,048	-	-	4,404	-	-
Induced	1,889	-	-	5,930	-	-
Total	9,732	5,354	441	21,176	9,932	824

Wages	2018			2023		
	Total	Wine	Juice	Total	Wine	Juice
Vineyards	\$10,433,658	\$3,227,926	\$7,205,732	\$30,319,100	\$6,660,600	\$23,658,500
Wineries	\$31,701,688	\$31,701,688	-	\$148,180,400	\$148,180,400	-
Grape Juice Production	-	-	-	\$27,377,400	-	\$27,377,400
Wholesale	\$190,015	\$190,015	-	\$503,000	\$503,000	-
Retail On	\$2,431,152	\$2,431,152	-	\$5,151,200	\$5,151,200	-
Retail Off	\$1,217,085	\$1,217,085	-	\$1,638,000	\$1,638,000	-
Tourism	\$110,329,656	\$110,329,656	-	\$303,501,200	\$303,501,200	-
Research and Education	\$1,437,993	\$1,437,993	-	\$1,571,200	\$1,571,200	-
Charitable Contributions	\$1,880,406	\$1,880,406	-	\$3,678,921	\$3,678,921	-
Supplier	\$140,532,500	-	-	\$346,751,700	-	-
Induced	\$93,348,000	-	-	\$376,021,100	-	-
Total	\$393,502,153	\$152,415,921	\$7,205,732	\$1,244,693,221	\$470,884,521	\$51,035,900

Economic Output	2018			2023		
	Total	Wine	Juice	Total	Wine	Juice
Vineyards	\$25,288,173	\$7,823,560	\$17,464,613	\$69,395,800	\$15,245,100	\$54,150,700
Wineries	\$418,264,930	\$418,264,930	-	\$710,913,100	\$710,913,100	-
Grape Juice Production	-	-	-	\$224,002,300	-	\$224,002,300
Wholesale	\$529,780	\$529,780	-	\$2,075,300	\$2,075,300	-
Retail On	\$5,041,747	\$5,041,747	-	\$12,403,200	\$12,403,200	-
Retail Off	\$3,967,182	\$3,967,182	-	\$3,773,500	\$3,773,500	-
Tourism	\$320,228,570	\$320,228,570	-	\$747,068,100	\$747,068,100	-
Research and Education	\$3,664,996	\$3,664,996	-	\$3,482,800	\$3,482,800	-
Charitable Contributions	\$3,020,873	\$3,020,873	-	\$13,806,851	\$13,806,851	-
Supplier	\$375,172,700	-	-	\$998,510,800	-	-
Induced	\$271,792,100	-	-	\$1,020,168,700	-	-
Total	\$1,426,971,051	\$762,541,638	\$17,464,613	\$3,805,600,451	\$1,508,767,951	\$278,153,000

About John Dunham & Associates

John Dunham & Associates (JDA) is a leading economic consulting firm specializing in the economics of fast-moving issues. JDA is an expert at translating complex economic concepts into clear, easily understandable messages for a wide range of audiences. JDA's clients have included a wide variety of businesses and organizations, including some of the largest Fortune 500 companies in America, such as:

- Altria
- Diageo
- Feld Entertainment
- Forbes Media
- MolsonCoors
- Verizon
- Wegmans Stores

John Dunham is a professional economist with over 35 years of experience. He holds a Master of Arts degree in Economics from the New School for Social Research as well as a Master of Business Administration from Columbia University. He also has a professional certificate in Logistics from New York University. Mr. Dunham has worked as a manager and an analyst in both the public and private sectors. He has experience in conducting cost-benefit modeling, industry analysis, transportation analysis, economic research, and tax and fiscal analysis. As a senior economist for Philip Morris, he developed tax analysis programs, increased cost-center productivity, and created economic research operations. He has presented testimony on economic and technical issues in federal court and before federal and state agencies.

Prior to Phillip Morris John was an economist with the Port Authority of New York and New Jersey, the Philadelphia Regional Port Authority, and the City of New York's Department of Ports & Trade.