

**2019 Economic Impact Study
of the New York Wine & Grape Industries**

Prepared for:

**Boldly,
NY.** NEW YORK
WINE & GRAPE
FOUNDATION

By



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Contents

Executive Summary2

Economic Impact Results.....4

 Vineyards5

 Wineries.....6

 Wine Wholesalers.....8

 Wine Retailers8

 Grape Juice Manufacturers8

 Grape Juice Wholesalers.....8

 Grape Juice Retailers9

 Tourism.....9

 Research and Education Organizations and Associations10

 Supplier Impacts10

 Induced Impacts11

 Fiscal Impacts.....12

 Charitable Contributions12

Study Methodology.....14

 Vineyards16

 Wineries.....17

 Wine Wholesalers.....17

 Wine Retailers17

 Grape Juice Manufacturers18

 Grape Juice Wholesalers.....18

 Grape Juice Retailers18

 Tourism.....18

 Research and Education Organization and Associations20

 Charitable Contributions20

 IMPLAN20

 IMPLAN Methodology21

Executive Summary

The 2019 New York Wine & Grape Economic Impact Study estimates the economic contributions made by the wine and grape juice industries to the New York economy in 2019. John Dunham & Associates (JDA) conducted this research, which was funded by the New York Wine and Grape Foundation (NYWGF). This work used standard econometric models first developed by the U.S. Forest Service, and now maintained by IMPLAN Group, LLC. Data came from NYWGF, additional industry sources, Alcohol and Tobacco Tax and Trade Bureau (TTB), New York State Liquor Authority (NYSLA), and Infogroup.¹

The study defines the wine and grape industries as: Wine and grape juice manufacturing, wine and grape juice retailing, wine and grape juice wholesaling, wine grape growing, juice grape growing, tourism, wine research and education, and wine related associations in the state of New York.²

The wine industry is composed of three tiers: Manufacturing, wholesale and retail. The first tier of the wine industry is comprised of vineyards which grow wine grapes, and wineries, which use these fruits (as well as fruit from and other states) to produce wine. Once the wine is produced and packaged, it is ready for the second tier of the industry – the wholesalers who sell and distribute to retailers.

The third tier is retailing, which is made up of on-premise retailers such as restaurants, bars, sport stadiums, etc. and off-premise retailers like roadside farm stands, farmers markets, SLA licensed Taste NY retail locations. Wineries in New York also have the ability to distribute to retailers, as well as sell their products directly to the consumer either by shipping the products, or through channels such as tasting rooms and restaurants.

The grape juice industry follows a similar process of manufacturing, wholesaling and retailing. After receiving grapes from vineyards, companies produce grape juice which is then either self-distributed or sold to wholesalers who distribute the product throughout the country. Lastly are the grape juice retailers which could include any business that sells grape juice, such as convenience stores, grocery stores and restaurants.

In addition to the three tiers of the wine and grape juice industries, the study calculates the economic contribution to the state made through the spending of tourists visiting New York's 471 wineries.³

Organizations that help develop the wine and grape industries through education and research have been included in this study. Additionally, associations that promote and market the wine and grape industries are also included.

The study measures various factors of the New York wine and grape industries including the number of jobs, the wages paid to employees, the value added, total output and charitable contributions. In addition, it assesses the economic impact of the suppliers that support the New York 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

¹ Infogroup is 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.

² Throughout this study, all references to the “wine industry” include the production, wholesaling, and retailing of wine and similar vinified products.

³ 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.

industries generates output (and jobs) in hundreds of other industries, often in regions 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 New York. The study calculates the impact at the state, legislative district, and county levels.

The study also estimates taxes paid by the 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. All 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.

Economic Impact Results

The New York wine and grape industries include vineyards, wineries, and wholesalers that distribute products for wineries or grape juice manufacturers, as well as retail establishments that sell wine or grape juice to consumers, such as wine shops, grocery stores, restaurants, and bars. New York wineries and vineyards draw hundreds of thousands of tourists and visitors annually. The economic impact of spending from these visitors is an important aspect of the overall wine and grape industries. Their economic contribution includes spending on lodging, food, transportation, and retail purchases. In addition, the economic impact of research and educational organizations which promote and support the wine and grape industries in New York is included in the study. Overall, the wine and grape industries in New York directly create 71,950 jobs, generating \$2.79 billion in wages. The industries directly generate \$6.65 billion in economic activity in the state.

The New York wine industry provides good jobs, paying an average of about \$38,800 in annual wages and benefits. The total wages generated by direct, indirect, and induced economic activity driven by the wine industry are \$4.59 billion.

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, rent paid to landlords, the purchase of packaging materials, the hiring of consultants, drivers, lawyers, and even the creating of government jobs responsible for the regulation or licensing of wine businesses.

People employed by the direct and supplier sectors spend their wages elsewhere in the economy. These expenditures can be captured in businesses such as movie theaters, restaurants, retail shops, health care, and education. In total, the wine and grape juice industries contribute to New York by generating 98,979 full time jobs paying \$4.59 billion in wages and benefits, with total economic activity equaling \$11.49 billion. The overall economic impact of the wine and grape industries in New York is presented in Table 1 below.

Table 1
New York Wine and Grape Industries Economic Impact

	Jobs	Wages	Output
Wine Manufacturing	3,171	\$289,394,700	\$1,202,552,100
Wine Wholesaling	4,129	\$400,729,700	\$1,061,982,600
Wine Retailing	36,552	\$1,211,924,500	\$2,402,176,900
Grape Juice Manufacturing	138	\$9,081,100	\$73,144,100
Grape Juice Wholesaling	20	\$1,928,600	\$5,111,200
Grape Juice Retailing	249	\$7,928,000	\$19,633,400
Associations	68	\$6,690,500	\$16,588,400
Research and Education	24	\$2,958,800	\$7,092,600
Tourism	25,750	\$825,718,900	\$1,796,073,200
Vineyard	1,849	\$33,947,400	\$69,986,500
Total Direct Impact	71,950	\$2,790,302,200	\$6,654,341,000
Total Supplier Impact	11,276	\$867,237,000	\$2,286,163,400
Total Induced Impact	15,753	\$928,104,900	\$2,549,468,300
Total Impact	98,979	\$4,585,644,100	\$11,489,972,700

Vineyards

The production of wine and grape juice begins with the farming of grapes at vineyards. In New York, about 35,000 acres of farmland are used to grow grapes. These vineyards produce about 57,000 tons of wine grapes with a total value of \$37.28 million to be used specifically in the process of making wine. In addition to producing wine grapes, New York is one of the leading producers of juice grapes in the country. Based on data from the USDA, about 128,000 tons of juice grapes, valued at \$29.80 million are produced in the state, as are a small amount of fresh table grapes.⁴

Table 2
Grape Production in New York (2017)

	Acres (est.)	Tons	Percent	Price per Ton	Value	Percent
Wine Grapes	10,668	57,000	30.5%	\$654	\$37,278,000	54.0%
Juice Grapes	23,957	128,000	68.4%	\$225	\$28,800,000	41.7%
Fresh Grapes	374	2,000	1.1%	\$1,500	\$3,000,000	4.3%
Total	35,000	187,000	100.0%	\$369	\$69,078,000	100.0%

It is estimated that vineyards in New York directly employ an estimated 1,849 full-time equivalent (FTE) people growing grapes.⁵ These jobs pay a total of \$33.95 million in wages while contributing \$69.99 million in economic activity to the state. When the total impact of the grape growing industry is included (including supplier and induced jobs), 2,248 jobs depend on the growing of grapes in New York, generating nearly \$53.04 million in wages and over \$118.88 million in economic impact.

Table 3
Economic Impact of Vineyards in New York

	Jobs	Wages	Output
Direct Impact	1,849	\$33,947,400	\$69,986,500
Supplier Impact	216	\$8,318,400	\$19,309,500
Induced Impact	183	\$10,770,000	\$29,583,400
Total Impact	2,248	\$53,035,800	\$118,879,400

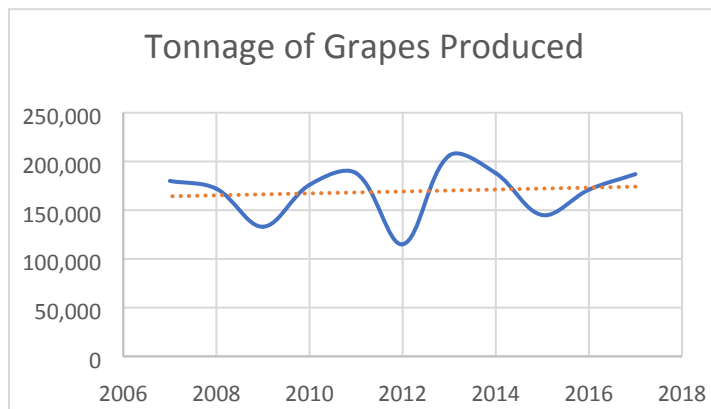
Grape production is not only important to the state's economy, but it is a growing industry. New York is the nation's second-largest Concord grape producer, and home to the oldest and largest Concord grape growing region in the world. Over the last few years, Concord grape production in New York has been growing by about 7,500 tons per year on average.⁶

⁴ *Noncitrus Fruits and Nuts 2017 Summary*, US Department of Agriculture, National Agricultural Statistics Service, - <https://downloads.usda.library.cornell.edu/usda-esmis/files/zs25x846c/bc386n064/rr172065h/NoncFruiNu-06-26-2018.pdf>. The latest data available are for 2017. New York data on acreage are not broken down by grape type; therefore, tonnage is used as a proxy to calculate acreage.

⁵ 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.

⁶ *Noncitrus Fruits and Nuts 2017 Summary*, US Department of Agriculture, National Agricultural Statistics Service, - <https://downloads.usda.library.cornell.edu/usda-esmis/files/zs25x846c/bc386n064/rr172065h/NoncFruiNu-06-26-2018.pdf>. The latest data available are for 2017.

Figure 1
New York Grape Production by Year⁷



Wineries

Approximately 30 percent of the grapes grown New York vineyards are used to make wine at local wineries. Wineries in the state may grow wine grapes and other fruits in their own vineyards and orchards or they may purchase wine grapes or fruit juice from growers located in other states. Wineries then continue the vinification process which may include crushing, pressing, and fermenting the grapes, aging and bottling and cellaring the wine. Wineries in New York 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 are not included in the wholesale and retail economic impacts in order to avoid double counting. New York's 471 wineries employ almost 3,171 people (FTE jobs) and pay more than \$289.39 million in wages and benefits. These firms directly generate \$1.20 billion in economic activity in the state.

Even though most of the state's wineries are small, New York is a leading producer of American wine. Based on data from the US Department of Treasury, New York is the 3rd largest wine producing state, with nearly 28.10 million gallons vinified in 2017.⁸ This is equivalent to about 3 percent of the nation's production.

⁷ *Quickstats Database*, US Department of Agriculture, National Agricultural Statistics Service, Available at: <https://quickstats.nass.usda.gov>

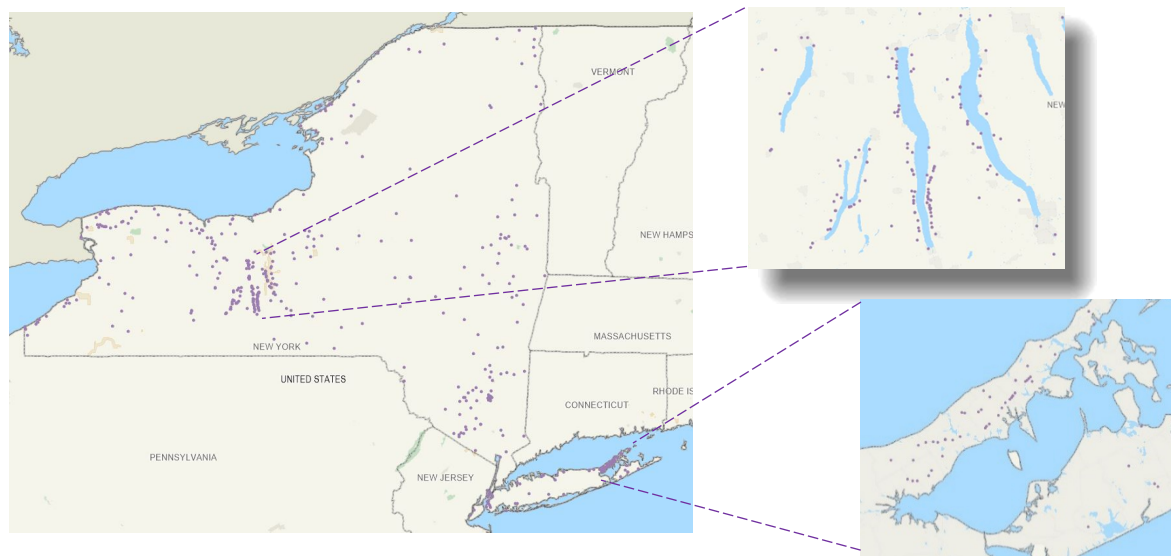
⁸ *Statistical Report – Wine*, Year End Report 2017, US Department of Treasury, Alcohol And Tobacco Tax And Trade Bureau, April 27, 2018. 2017 is the last year for which data are available. A correction was made to the report to account for an error in reported production in Georgia.

Table 4
Wine Production by State (2017)

State	Still Wine	Vermouth	Natural Wines	Sparkling Wines	Total Production
California	716,309,505	473,533	24,099,637	31,090,188	771,972,863
Washington	44,824,096	2,368	8,678	534,409	45,369,551
New York	28,172,209	327,269	250,521	3,114,679	31,864,678
Oregon	13,602,710	3,799	1,379	113,640	13,721,528
Pennsylvania	12,277,544	1,304	13	12,052	12,290,913
Ohio	5,054,566	1,867	401,245	7,436	5,465,114
Michigan	3,389,454	3,077	115,816	129,651	3,637,998
Texas	2,614,607	-	-	-	2,614,607
North Carolina	2,352,073	45,465	120,174	732	2,518,444
Kentucky	2,462,440	-	-	-	2,462,440
Virginia	2,337,979	17,778	-	-	2,355,757
Vermont	2,035,115	-	-	-	2,035,115
New Jersey	1,560,678	6,422	3,722	73,507	1,644,329
Florida	1,598,342	6,001	-	-	1,604,343
All Others	11,068,820	8,924	180,239	472,171	11,730,154
Total	849,660,138	897,807	25,406,731	35,723,960	911,688,636

There are a wide range of American and hybrid grapes grown in New York with the predominant varieties being Concord and Catawba used for grape juice and accounting for 80 percent of vineyard production.⁹ The remaining 20 percent is comprised of the vitis vinifera varieties that produce Cabernet Franc, Merlot, Sauvignon Blanc and the acclaimed Riesling, which is primarily produced the Finger Lakes.¹⁰ There are four major wine-growing regions (American Viticultural Areas) in New York: Lake Erie AVA, Finger Lakes AVA, Hudson River Region AVA, and Long Island AVA.

Figure 2
Location of New York Wineries



⁹ *Inside New York Wine Country*, Wine Folly, 2016, <https://winefolly.com/review/guide-to-new-york-wine-country/>

¹⁰ *Discover New York Grapes*, New York Wine & Grape Foundation, <https://www.newyorkwines.org/grapes>

Wine 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 New York is sold through wholesalers, with most production either sold directly by the wineries, or self-distributed to local licensees. Considering that New York wineries produced upwards of 28.1 million gallons in 2017, only about 37 percent of wine produced in the state is sold through New York wholesaling establishments. The majority of New York wine is self-distributed, and as such, the economic impact of most wholesaling activities is included in the winery impact numbers. Wine wholesalers directly employ 4,129 people, paying them \$400.73 million in wages, and generating \$1.06 billion in economic activity in New York.

Wine Retailers

The third tier, retailing, is responsible for selling wine to consumers through on- and off-premise businesses such as restaurants, bars, licensed liquor stores and wine shops. In New York, the wine industry creates 36,552 jobs in the on- and off-premise retail and hospitality sectors. These jobs pay about \$1.21 billion in wages and contribute \$2.40 billion in economic activity to the state.

Table 5
Economic Impact of Wine Retailers in New York

	Jobs	Wages	Output
On-Premise Retail	30,485	\$1,011,580,900	\$1,968,701,800
Off-Premise Retail	6,067	\$200,343,500	\$433,475,000
Total Direct Impact	36,552	\$1,211,924,400	\$2,402,176,800

Grape Juice Manufacturers

Not all grapes go into wine productions. Roughly 68 percent of New York grapes are used by grape juice manufacturers. These businesses then continue the juicing process which may include concentrating, crushing, pressing, and juicing grapes, and bottling the juice. Many grape juice producers in New York may distribute their product themselves to retailers and other stores. The impact of these activities is included in the grape juice manufacturing impact and are not included in the wholesale and retail economic impacts in order to avoid double counting. New York's 19 grape juice producers employ almost 138 people (FTE jobs) and pay more than \$9.08 million in wages and benefits. These firms directly generate \$73.14 million in economic activity in the state.

Grape Juice Wholesalers

For the grape juice manufacturers that do not self-distribute their product, they hire wholesalers to distribute grape juice to retailers. Grape juice wholesalers employ 20 people and pay roughly \$1.93 million in wages and benefits. These grape juice wholesalers are also directly responsible for \$5.11 million in economic activity in New York.

Grape Juice Retailers

Grape juice retailing includes on- and off-premise sales from the purchase of grape juice at restaurants or diners to the purchase of bottles at grocery stores and convenience stores. These retailers directly employ 249 full time employees paying them \$7.93 million in wages and benefits. They directly generate \$19.63 million in economic output in the entire state.

The grape juice industry itself is very important to the New York economy. Mostly concentrated in the Lake Erie Concord belt, grape juice manufacturers, wholesalers and retailers provide 407 jobs, paying \$18.94 million and generating nearly \$97.89 million in economic activity. All told the grape juice industry in New York is responsible for 688 jobs, paying almost \$39.28 million in wages. Over \$154.22 million in economic activity in New York is due to the grape juice industry.

Table 6
Economic Impact of Grape Juice in New York

	Jobs	Wages	Output
Grape Juice Manufacturing	138	\$9,081,100	\$73,144,100
Grape Juice Wholesaling	20	\$1,928,600	\$5,111,200
Grape Juice Retailing	249	\$7,928,000	\$19,633,400
Total Direct Impact	407	\$18,937,700	\$97,888,700
Total Supplier Impact	159	\$13,118,100	\$36,498,000
Total Induced Impact	122	\$7,220,900	\$19,835,600
Total Impact	688	\$39,276,700	\$154,222,300

Tourism

New York's wineries and vineyards attract visitors from across the state and across the country. These visitors not only create business for the wineries and vineyards, but they also spend millions on lodging, food, transportation, and other retail purchases. JDA estimates that about 1.43 million people made over 4.71 million visits to New York's wineries and vineyards while spending \$2.60 billion which generated a direct economic impact of \$1.8 billion. In addition to direct spending in tourist locations associated with wineries and vineyards, the supplier and induced impacts of this spending has created another \$1.33 billion in economic activity in other parts of the New York economy. The economic activity created by these visitors directly generates about 25,750 FTE jobs, paying about \$825.72 million in wages, and contributing \$1.80 billion in economic activity to the state.

Table 7
Economic Impact of Tourism in New York

	Jobs	Wages	Output
Direct Impact	25,750	\$825,718,900	\$1,796,073,200
Supplier Impact	2,828	\$217,113,600	\$599,686,100
Induced Impact	4,482	\$264,265,800	\$725,958,200
Total Impact	33,060	\$1,307,098,300	\$3,121,717,500

Research and Education Organizations and Associations

The wine and grape industries in New York are also supported by research and education organizations which are involved in applied research and educational programs to protect and improve grape cultivation as well as wine related industries. Cornell University runs the largest program through its Cooperative Extension with locations throughout the state. Also helpful to these industries are wine and grape associations which help market and organize grape growers, wine producers and others. Together with research and education institutions, these organizations are responsible for spreading sound business practices as well as promoting new, innovative techniques to further the development of the New York wine industry. Approximately 92 people were employed in New York based research and education organizations and other grape associations, receiving about \$9.65 million in wages and generating \$23.68 million in economic activity. Once supplier and induced effects were added to this sector, overall the economic impact of wine and grape research and education services reaches about \$44.36 million. And this does not include the valuable benefits that come from better viticulture and vinification activities.

Table 8
Economic Impact of Wine Research, Education & Associations in New York

	Jobs	Wages	Output
Research and Education	24	\$2,958,800	\$7,092,600
Associations	68	\$6,690,500	\$16,588,400
Direct Impact	92	\$9,649,300	\$23,681,000
Supplier Impact	54	\$4,630,000	\$10,724,900
Induced Impact	64	\$3,623,000	\$9,952,400
Total Impact	210	\$17,902,300	\$44,358,300

Supplier Impacts

The supplier impact created by the wine and grape industries 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 industries, government jobs are created in government agencies (like the State Liquor Authority) responsible for the regulation of wine and vineyard related businesses. An estimated 11,276 supplier jobs overall are created by the wine and grape industries, paying \$867.24 million in wages and generating about \$2.29 billion in economic activity.

Table 9
Supplier Impact of the Wine and Grape Industries in New York

Sector	Jobs	Wages	Output
Agriculture	1,062	\$21,394,800	\$43,954,500
Mining	16	\$1,299,200	\$2,197,600
Construction	221	\$15,406,800	\$38,294,700
Manufacturing	379	\$27,075,000	\$136,033,900
Transportation and Communication	1,277	\$121,773,200	\$427,652,600
Wholesaling	779	\$75,654,600	\$200,494,000
Retailing	249	\$11,107,000	\$23,211,100
Finance, Insurance and Real Estate	1,844	\$122,068,100	\$583,278,200
Travel and Entertainment	671	\$24,332,100	\$53,354,100
Business and Personal Services	4,426	\$412,530,700	\$718,923,600
Government	352	\$34,595,500	\$58,769,100
Other	0	\$0	\$0
Supplier Impact	11,276	\$867,237,000	\$2,286,163,400

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 New York 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 created 15,753 jobs, paying \$928.10 million in wages and generating about \$2.55 billion in economic activity.

Table 10
Induced Impact of the Wine and Grape Industries in New York

Sector	Jobs	Wages	Output
Agriculture	60	\$1,358,400	\$4,306,200
Mining	8	\$678,500	\$1,143,500
Construction	158	\$11,091,600	\$28,189,800
Manufacturing	164	\$12,526,500	\$80,588,400
Transportation and Communication	645	\$59,921,500	\$254,568,500
Wholesaling	433	\$41,983,900	\$111,262,300
Retailing	2,439	\$98,768,100	\$231,159,800
Finance, Insurance and Real Estate	1,487	\$129,963,500	\$823,485,300
Travel and Entertainment	2,307	\$74,964,200	\$189,462,800
Business and Personal Services	7,369	\$455,783,700	\$772,295,500
Government	193	\$20,579,900	\$42,838,500
Other	490	\$20,485,100	\$10,167,700
Induced Impact	15,753	\$928,104,900	\$2,549,468,300

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 in New York, the business taxes paid by firms and their employees provide \$1.07 billion to the federal government and \$1.12 billion to state and local governments. In addition, the consumption of wine in New York generated an estimated \$58.97 million in federal tax revenues and \$179.37 million in state and local tax revenues. These consumption taxes include excise taxes and state sales taxes.¹¹

Table 11
Fiscal Impact of the Wine and Grape industries in New York

Tax Type	Federal	State/Local	Total
Individual Income	\$425,395,165	\$178,387,707	\$603,782,872
Social Security/Social Insurance	\$463,739,851	\$13,186,858	\$476,926,709
Property		\$448,734,839	\$448,734,839
Business/Employee Paid Sales Taxes		\$351,194,224	\$351,194,224
Corporate Income	\$95,948,596	\$36,138,917	\$132,087,513
Other Personal and Business Taxes	\$89,310,288	\$92,839,990	\$182,150,278
Total Business Taxes	\$1,074,393,900	\$1,120,482,535	\$2,194,876,435
Federal Excise Taxes	\$58,970,024		\$58,970,024
State Excise Taxes		\$20,319,179	\$20,319,179
State Sales Taxes		\$159,055,193	\$159,055,193
Local Sales Taxes		\$0	\$0
Total Consumption Taxes	\$58,970,024	\$179,374,373	\$238,344,397
Total Taxes	\$1,133,363,924	\$1,299,856,908	\$2,433,220,832

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 530 industry categories, including industries such as religious organizations, 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, religious organizations, 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 New York. Using total of direct, supplier and induced impact, JDA estimates that about \$78.15 million is contributed by employees and companies in the wine and grape industries to charitable organizations. These contributions lead to about 1,117 FTE jobs in these non-profit organizations.

¹¹ Local sales taxes are extremely difficult to calculate due to the large number of taxing jurisdictions.

Table 12
Charitable Contributions of the Wine and Grape Industries in New York

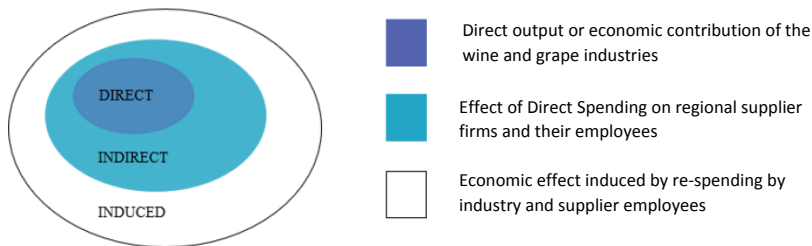
Charitable Sector	Jobs	Wages	Economic Output
Community Services	545	\$19,060,200	\$26,907,900
Arts	126	\$6,734,700	\$19,700,600
Religious	277	\$16,226,800	\$5,892,700
Social Advocacy	67	\$4,965,800	\$13,849,400
Labor	102	\$4,938,200	\$11,803,300
Total	1,117	\$51,925,700	\$78,153,900

Study Methodology

Model Development

The Economic Impact Study begins with an accounting of the direct employment in the New York wine and grape industries. The data comes from NYWGF, additional industry sources, TTB, NYSLA, and Infogroup. 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 economy. Activities related to wine and grape products 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 state 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 New York Wine and Grape Foundation, Infogroup, TTB, NYSLA and other industry sources. The analysis utilizes the IMPLAN model in order to quantify the economic impact of the New York wine and grape industries on the economy of New York, the state's legislative districts and counties.¹² 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

¹² The model uses 2016 input/output accounts.

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).¹³

Direct employment for the industry is calculated using data from the NYWGF and Infogroup. Where NYWGF and Infogroup data was unavailable, direct employment was replaced with a median calculated by business type (winery, vineyard, etc.). In instances where jobs numbers were deemed inaccurate, estimates were used based on physical size of the facility and information provided by the businesses such as annual gallons of wine produced.

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 supplier and induced impacts based on these entries. In the case of this model, direct employment in the New York wine and grape industries is a starting point for the analysis. Direct employment is based on data provided to John Dunham & Associates by NYWGF as of August 2019 and Infogroup as of July 2019. Infogroup data are recognized nationally as a premier source of micro industry data. Infogroup is 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. 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 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, Infogroup 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. This model therefore uses actual physical location data provided by Infogroup in order to allocate jobs – and the resulting economic activity – by physical address or when that is not available, zip code. For zip codes contained in a single

¹³ 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.

geography, jobs are allocated based on the total sector jobs in each zip. 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 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 geography. Again, these percentages are based on Infogroup data.

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

Vineyards

The vineyards that supply grapes to the wine and grape industries are vital to the New York economy. Individual facility data for each vineyard in New York was not available to use in the economic impact study; therefore, data used to estimate the economic impact of vineyards came from the United States Department of Agriculture.

Estimating the impact of vineyards was done by using data from the *Noncitrus Fruits and Nuts 2017 Summary*¹⁴ to estimate acreage, quantity and value of wine grapes grown in New York, while the *2012 Census of Agriculture* was used to help estimate the acreage by counties in New York.¹⁵

Vineyards that were part of a winery operation may be double counted since there is no data available to separate independent vineyards from vineyards which are owned and operated by a winery.

JDA estimates that there are almost 11,000 acres of farmland in New York being used to grow an estimated 57,000 tons of wine grapes worth about \$37.28 million. New York is also a major producer of juice grapes – with close to 24,000 acres being used to grow an estimated 128,000 tons of juice grapes worth about \$28.80 million. In order to tend to New York vineyards, an estimated 1,849 full-time equivalent jobs are needed.

It is important to note that full-time equivalent jobs are not the same as number of people. FTE jobs are estimated using the value of wine grapes grown and IMPLAN.

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.

Due to the seasonal nature of vineyard work, one full-time equivalent farm job is equal to the work performed by 4.2 actual farm workers, with an average farm worker performing about 450 hours of labor in the industry (compared with about 1900 hours for a full-time worker in a non-agricultural occupation).¹⁶

¹⁴ *Noncitrus Fruits and Nuts 2017 Summary*, US Department of Agriculture, National Agricultural Statistics Service, - <https://downloads.usda.library.cornell.edu/usda-esmis/files/zs25x846c/bc386n064/rr172065h/NoncFruiNu-06-26-2018.pdf>.

¹⁵ *2012 Census Publications*. US Department of Agriculture - NASS, Census of Agriculture - Publications - 2012, agcensus.usda.gov/Publications/2012/.

¹⁶ US Department of Agriculture, 2012 Census, USDA, National Agriculture Statistics Service. Farm jobs statistics are measured differently than non-agricultural jobs as most workers are either seasonal or hourly. Many agricultural employees are seasonal workers who move from vineyard to vineyard over the planting and harvest period.

Wineries

The economic impact of wineries is based on data from New York Wine and Grape Foundation, Federal Alcohol and Tobacco Tax and Trade Bureau, New York State Liquor Authority, Infogroup, and industry sources. Wineries include those that produce their own wines, 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).¹⁷

Based on these combined datasets, it is estimated that there are about 471 active wineries in the State of New York. Infogroup employment figures are used to estimate the jobs in each facility. Median job figures were used where employment figures were not available. In instances where jobs numbers were deemed inaccurate, estimates were used based on the physical size of the facility and information provided by businesses such as annual gallons of wine produced. JDA estimates that there are about 3,171 jobs relating to the production or marketing of wine in New York. These workers earn an estimated \$289.39 million and generate an estimated \$1.20 billion in economic activity for the state's economy.

Wine 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 New York is sold through wholesalers, with most production either sold directly by the wineries, or self-distributed to local licensees.

Data for these wholesale activities comes from Alcohol Wholesaler Permit Lists from the US Department of the Treasury Alcohol and Tobacco Tax and Trade Bureau, Infogroup, New York State Liquor Authority, and the Wine and Spirits Wholesalers of America (WSWA).

Wine 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 wine shops. Only the portion of economic activity created by these businesses due to the sale of New York 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's premises are not included in this impact. These impacts are captured in the winery sector.

Employment data were gathered at the zip code level from Infogroup, The Economic Census of Retail Trade by Product Line¹⁸ and U.S. Department of Commerce – Bureau of Economic Analysis – Personal Consumption Expenditures by Type of Product¹⁹ is used determine the type of off-premise stores that sell wine as well as the percent of sales at each store type that is due to the sale of wine.

¹⁷ 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.

¹⁸ *2012 Economic Census - Retail Trade: Subject Series - Product Lines: Product Lines Statistics by Industry for the U.S. and States: 2012*, United States Census Bureau.

¹⁹ *Table 2.4.5U Personal Consumption Expenditures by Type of Product*, U.S. Department of Commerce – Bureau of Economic Analysis.

Grape Juice Manufacturers

The economic impact of grape juice manufacturers is based on data from Infogroup, and United States Department of Agriculture (USDA). These manufacturers include any facility that produces grape juice on site. After researching each company to determine what juice they produce and distribute, the businesses that work with only grape juice were separated. For companies making and distributing multiple kinds of juice, a percentage derived from USDA consumption data was used to break out grape jobs.

Based on these combined datasets, it is estimated that there are about 19 active grape juice manufacturers in the State of New York. Infogroup employment figures are used to estimate the jobs in each facility. Median job figures were used where employment figures were not available. In instances where jobs numbers were deemed inaccurate, estimates were used based on the physical size of the facility and job information provided by businesses on their website. JDA estimates that there are about 138 jobs relating to the production or marketing of grape juice in New York. These workers earn an estimated \$9.08 million and generate an estimated \$73.14 million in economic activity for the state's economy.

Grape Juice Wholesalers

Many grape juice manufacturers producers sell to wholesalers, who in turn sell to retailers. There are private wholesalers in New York that work with grape juice producers and sell to local restaurants and other sales establishments. Data for these wholesale activities comes from Infogroup, and United States Department of Agriculture (USDA).

Grape Juice Retailers

Employment data were gathered at the zip code level from Infogroup, The Economic Census of Retail Trade by Product Line²⁰ and U.S. Department of Commerce – Bureau of Economic Analysis – Personal Consumption Expenditures by Type of Product²¹ is used determine the type of stores that sell grape juice as well as the percent of sales at each store type that is due to the sale of grape juice. For retailers that sell multiple kinds of juice, a percentage derived from USDA consumption data was used to break out grape jobs.

IMPLAN uses 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 stores that sell grape juice as well as the percent of sales at each store type that is due to the sale of grape juice.

Tourism

One of the important elements of the impact of wineries on the New York 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 471 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

²⁰ 2012 Economic Census - Retail Trade: Subject Series - Product Lines: Product Lines Statistics by Industry for the U.S. and States: 2012, United States Census Bureau.

²¹ Table 2.4.5U Personal Consumption Expenditures by Type of Product, U.S. Department of Commerce – Bureau of Economic Analysis.

62 counties in New York 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.²² 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.²³

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.²⁴

Using this model JDA calculates that a winery existing alone in a county would receive just under 10,350 visitors in a year, and that the number of annual tourist visitors would rise linearly at a rate of about 10 additional visits per year for each additional winery in the county. As such, a county with 5 wineries would see just roughly 51,930 visits, while one with 20 wineries would report nearly 210,820.

Multiplying out the number of visits across the 62 counties in New York with wineries gives a total of nearly 1.43 million unique visits. These are people specifically visiting the New York 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 3.2 wineries, so dividing visits by 3.2 gives an estimate of just over 1.43 million actual wine related visitors going to wineries across the state.²⁵

Once the number of visitors was calculated, spending propensities using data as broken into 25 industries based on percentages derived from the US Department of Commerce, Bureau of Economic Analysis.²⁶ 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.

²² 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.

²³ See: Rogers, Andrei, *A Stochastic Analysis of the Spatial Clustering of Retail Establishments*, Journal of the American Statistical Association, December 1965.

²⁴ 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.

²⁵ See: *2014 Napa Valley Visitor Profile: Report of Findings*, prepared by Destination Analysts 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.

²⁶ 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 reservation services, motion pictures and performing arts, spectator sports, participant sports, gambling, all other recreation and entertainment, gasoline, retail Sales, food stores.

Research and Education Organization and Associations

The research and education sector is defined as organizations which are involved 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. Also included in this portion of the study are wine and grape associations that promote and market vineyards and grape related manufacturers.

Data for wine research and educational organizations, and associations were provided by the New York Wine and Grape Foundation.

Charitable Contributions

Charitable contributions are calculated as part of the economic impact model itself. The Bureau of Economic Analysis NIPA tables show spending per dollar of output for about 530 industry categories, including industries such as religious organizations, 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, religious organizations, 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 New York.

IMPLAN

The IMPLAN Group 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.

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 and excise taxes were calculated based on total wine sales volume data from 2018 (the latest available) and state and federal excise and sales tax rates as of the beginning of 2018.

IMPLAN Methodology²⁷

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 this 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 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, 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 536 sector IMPLAN model.

²⁷ This section is paraphrased from IMPLAN Professional: Users Guide, Analysis Guide, Data Guide, Version 2.0, MIG, Inc., June 2000.

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.