

**The Convenience Services Industry
Economic Impact Study**

**Methodology and Documentation
Prepared for:**



By



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Executive Summary

The 2017 Convenience Services Industry Economic Impact Study estimates the economic contributions made by the convenience services industry to the U.S. economy in 2017. John Dunham & Associates (JDA) conducted this research, which was funded by a grant from the NAMA Foundation. This work used standard econometric models first developed by the U.S. Forest Service and now maintained by IMPLAN Group LLC. Data comes from industry sources, government publications, and Infogroup.

This analysis measures the number of jobs in the convenience services industry, the wages paid to employees, and the total output. In addition, it measures the economic impact of the suppliers that support the convenience services industry, known as the indirect impact, as well as those industries supported by the induced spending of direct and indirect industries.

Industries are linked to each other when one industry buys from another to produce its own products. Each industry in turn makes purchases from a different mix of other industries, and so on. Employees in all industries extend the economic impact when they spend their earnings. Thus, economic activity started by the convenience services industry generates output and jobs in hundreds of other industries, often in states far removed from the original economic activity. The impact of indirect firms, and the induced impact of the re-spending by employees of industry and indirect firms, is calculated using an input-output model of the United States. The study calculates the impact on a national basis, by state, and by Congressional District.

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 vary widely. Direct retail taxes include state and local sales taxes, license fees, and applicable gross receipt taxes. 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.

The convenience services industry is a dynamic part of the U.S. economy, accounting for about \$24.60 billion in output or about 0.13 percent of GDP.¹ It employed approximately 140,475 Americans who earned wages and benefits of about \$7.21 billion.

Members of the industry and their employees paid \$3.50 billion in federal, state and local taxes. This does not include state and local sales taxes or excise taxes that may apply for specific retail services.

Summary Results

The convenience services industry, as defined in this study, includes vending, micro market, office coffee service and pantry services operators, vending machine manufacturers, distributors and brokers. The convenience services industry touches all corners of the United States, employing 60,633 and generating \$2.68 billion in wages. Convenience services businesses directly generate \$10.12 billion in economic activity nationally.

¹ Based on GDP of \$19,134.9 billion. See: Gross Domestic Product by State: Second Quarter 2017, News Release, US Department of Commerce, Bureau of Economic Analysis, November 21, 2017.

Table 1 – Economic Contribution of the Convenience Services Industry

	Direct	Indirect	Induced	Total
Jobs	60,633	34,750	45,092	140,475
Wages	2,681,495,900	\$2,217,533,600	\$2,312,438,200	\$7,211,467,700
Economic Impact	10,122,064,400	\$7,125,913,600	\$7,354,105,500	\$24,602,083,500
State and Local Taxes				\$1,621,034,300
Federal Taxes				\$1,883,455,800

Other firms are related to the convenience services industry as indirect firms. These firms produce and sell a broad range of items and including trucks, machine parts, food products, and all of the merchandise needed to maintain convenience services businesses. In addition, indirect firms provide a broad range of services including personnel services, financial services, advertising services, consulting services, or transportation services. Finally, a number of people are employed in government enterprises responsible for the regulation of the convenience services industry. All told, we estimate that the industry is responsible for 34,750 indirect jobs. These firms generate about \$7.13 billion in economic activity.²

An economic analysis of the convenience services industry will also take additional linkages into account. While it is inappropriate to claim that suppliers to the industry’s indirect firms are part of the industry being analyzed, the spending by employees of the industry, and that of indirect firms whose jobs are directly dependent on the convenience services industry, should be included.³ This spending - on everything from housing, to food, to education and medical care - makes up what is traditionally called the induced impact, or multiplier effect, of the convenience services industry. For 2017, the induced impact of the industry generates 45,092 jobs and \$7.35 billion in economic impact, for a multiplier of 0.73.⁴

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 convenience services industry, the direct taxes paid by firms and their employees provide \$1.88 billion to the Federal Government and \$1.62 billion to state and local governments. These figures do not include state and local sales and excise taxes that might be incurred.

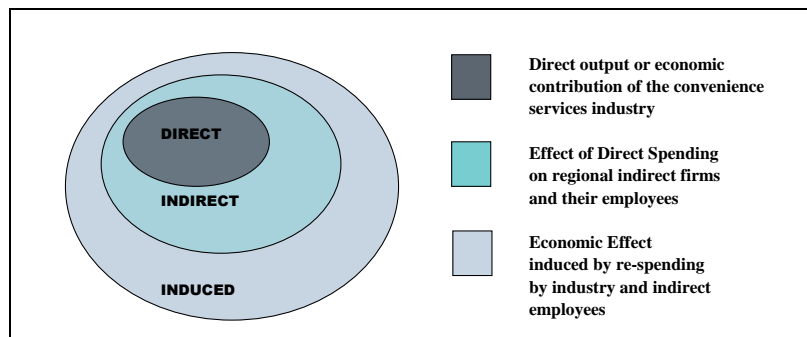
Table 1, above, presents a summary of the total economic impact of the convenience services industry in the United States. Summary tables for the United States, individual states, and congressional districts, are included in the Output Model, which is discussed in the following section.

² In 2017, we have relied on zip code-based employment data supplied by Infogroup, the leading provider of business and consumer data for the top search engines and leading in-car navigation systems in North America. Infogroup gathers data from a variety of sources, by sourcing, refining, matching, appending, filtering, and delivering the best quality data. Infogroup verifies its data at the rate of almost 100,000 phone calls per day to ensure absolute accuracy.

³ These firms would more appropriately be considered as part of the indirect firm’s industries.

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

Economic Impact Modeling – Summary



The Economic Impact Study begins with an accounting of the direct employment in the convenience services industry. 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.

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 merchandising material like vending machine parts 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 the NAMA 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 NAMA, Infogroup, and Federal and state governments. The analysis utilizes the IMPLAN Group, LLC's model in order to quantify the economic impact of the convenience services industry on the economy of the United States, individual states, and congressional districts.⁵ The model adopts an accounting framework through which the relationships between different inputs and outputs across industries and sectors are computed. This model can show the impact of a given economic decision – such as a factory opening or operating a sports facility – on a pre-defined, geographic region. It is based on the national income accounts generated by the US Department of Commerce, Bureau of Economic Analysis (BEA).⁶

⁵ The model uses 2016 input/output accounts.

⁶ 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.

Direct employment for the industry is calculated using Infogroup data. Where Infogroup data was unavailable, direct employment was replaced with a median calculated by state and business type (vending operator, machine manufacturer, broker). For companies that are engaged in convenience services and dining services, a break was applied based on convenience service's activity's percent of total revenue, gathered from various SEC filings available online.

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. In the case of the NAMA model, direct employment in the convenience services is a starting point for the analysis. Direct employment is based on data provided to John Dunham & Associates by Infogroup as of November 2017. 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.

While IMPLAN is used to calculate the state level impacts, Infogroup data provide the basis for Legislative district level estimates. Publicly available data at the congressional district level is limited by disclosure restrictions, especially for smaller sectors of the economy. Our 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 entirely contained in a single congressional district, jobs are allocated based on the percentage of total sector jobs in each zip code. For zip codes that are broken by congressional 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 of the districts. Again, these percentages are based on Infogroup data.

IMPLAN Methodology⁷

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

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

There are three different levels of data generally available in the United States: Federal, state and county. Most of the detailed data 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 by estimating those variables that are not found from any of them. The data is then converted into national input-output matrices (Use, Make, By-products, Absorption and Market Shares) as well as national tables for deflators, regional purchase coefficients and margins.

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

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

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

⁷ This section is paraphrased from IMPLAN Professional: Users Guide, Analysis Guide, Data Guide, Version 2.0, MIG, Inc., June 2000.

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.

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