

The 2015 Economic Impact Study of the Recreation Vehicle Industry

Methodology



Prepared for

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Executive Summary

The Economic Impact Study of the Recreation Vehicle Industry estimates the economic contributions made by the recreation vehicle industry to the U.S. economy in 2015. John Dunham & Associates (JDA) conducted this research, which was funded by the Recreation Vehicle Industry Association (RVIA). This work used standard econometric models first developed by the U.S. Forest Service, and now maintained by the IMPLAN Group LLC. Data came from the RVIA and its partner organizations, industry sources, the Federal Government and Dun & Bradstreet, Inc. (D&B).

The study defines the recreation vehicle industry as: all companies involved in the manufacture, sale, rental, repair, storage, and service of recreation vehicles. The recreation vehicle aftermarket industry is also included, as well as the financing and insurance of recreation vehicle purchases. Lastly, the study also estimates the economic impact recreation vehicle travel, destinations, and other use occasions.

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 recreation vehicle industry generates output (and jobs) in hundreds of other industries, often in sectors and 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.

“Economic output” is a general measurement of economic impact. It is a broad and comparative measure of the economic contribution of an industry. In general, economic output represents the value of industry production calculated in terms of producer prices. Output differs depending on the industry being measured. In the case of retail and wholesale industries, output does not represent sales. It is instead similar to the accounting measure of gross margin.

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. The recreation vehicle industry pays 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 recreation vehicle industry is a dynamic part of the U.S. economy, accounting for about \$49.7 billion in total economic output or roughly 0.28 percent of GDP.¹ The recreation vehicle industry directly or indirectly employed approximately 289,852 Americans in 2015. These workers earned over \$15.8 billion in wages and benefits, and paid \$5.7 billion in federal, state and local business taxes.

¹ Based on GDP of \$ 18,060.2 billion. See: *National Income and Product Accounts Gross Domestic Product, Third Quarter 2015 (Third Estimate)*, News Release, US Department of Commerce, Bureau of Economic Analysis, December 25, 2015.

Summary Results

The Economic Impact Study of the Recreation Vehicle Industry measures the economic impact of recreation vehicle manufacturers, dealers, rentals, repairers, and service providers. In addition to these, aftermarket activities are also accounted for, as well as financing and insurance. Lastly, recreation vehicle tourism, including travel, destinations, and other use occasions are included. The industry contributes about \$49.7 billion in economic output or 0.28 percent of GDP and, through its production and distribution linkages, impacts firms in 426 of the 440 sectors of the US economy.²

Other firms are related to the recreation vehicle industry. These firms provide a broad range of goods and services, including equipment, raw materials, 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 sector. All told, we estimate that the recreation vehicle industry is responsible for 60,562 indirect jobs. These firms generate about \$10.5 billion in economic activity.

An economic analysis of the recreation vehicle industry will also take additional linkages into account. While it is inappropriate to claim that suppliers to the indirect firms are part of the industry being analyzed,³ the spending by employees of the industry and those of indirect firms whose jobs are directly dependent on the recreation vehicle industry should surely be included. This spending on everything from housing, to food, to entertainment and medical care makes up what is traditionally called the “induced impact” or multiplier effect. In other words, this spending, and the jobs it creates is induced by the recreation vehicle industry. The induced impact of the sector is estimated to be nearly \$12.1 billion, and generates 73,682 jobs, for a multiplier of 0.45.⁴

An important part of an impact analysis is the calculation of the contribution of the industry to the public finances of the community. In the case of the recreation vehicle industry, the traditional business taxes paid by the firms and their employees provide \$5.7 billion in revenues to the federal, state and local governments.

Table 1 below presents a summary of the total economic impact of the recreation vehicle industry in the United States. Summary tables for each state are included in the Output Model, which is discussed in the following section.

Table 1 – Economic Contribution of the Recreation Vehicle Industry

	Direct	Indirect	Induced	Total
Jobs (FTE)	155,608	60,562	73,682	289,852
Wages	\$7,884,734,100	\$4,000,410,400	\$3,904,456,000	\$15,789,600,500
Economic Impact	\$27,035,197,600	\$10,534,686,600	\$12,132,985,700	\$49,702,869,900
Taxes				\$5,660,950,700

² Economic sectors based on IMPLAN sectors.

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

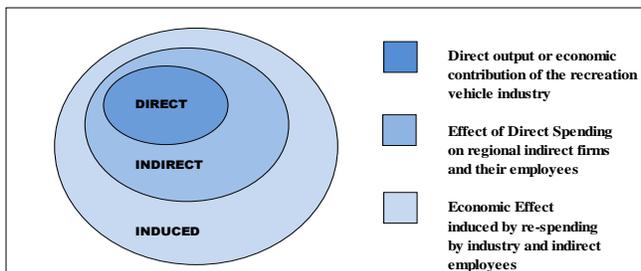
⁴ Often economic impact studies present results with very large multipliers – as high as 4 or 5. These studies invariably include the firms supplying the indirect industries as part of the induced impact. John Dunham & Associates believes that this is not an appropriate definition of the induced impact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

Output Model

John Dunham & Associates (JDA) produced the economic impact study for the RVIA. The analysis consists of several components, each of which will be described in the following sections of this document. These include data, models, calculations and outputs. These components were linked together into an interactive system that allows the RVIA to examine the links between the various parts of the industry and to produce detailed output documents on an as-needed basis. As such, there is no book – no thick report – outlining the impact of the industry, but rather a system of models and equations that can be continuously queried and updated.

Economic Impact Modeling – Summary

The Economic Impact Study of the Recreation Vehicle Industry begins with an accounting of the direct employment in the recreation vehicle industry. The data come 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, one economic activity always leads to a ripple effect whereby other sectors and industries benefit

from this initial spending. This inter-industry effect of an economic activity can be assessed using multipliers from regional input-output modeling.

The economic activities of events are linked to other industries in the state and national economies. The activities the recreation vehicle industry performs such as the manufacturing, sales, rentals, repairs, services, aftermarket sales and services, and financing and insuring of RVs, and RV use related expenditures account for the direct effects on the economy. Regional (or indirect) impacts occur when these activities require purchases of goods and services such as real estate, equipment or electricity from local or regional suppliers. Additional, induced impacts occur when workers involved in direct and indirect activities spend their wages. The ratio between induced economic and direct impact is termed the multiplier. The framework in the chart above illustrates these linkages.

This method of analysis allows the impact of local 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 suppliers. This induced impact is the most controversial part of economic impact studies and is often quite inflated. In the case of the recreation vehicle industry model, only the most conservative estimate of the induced impact has been used.

Data

Employment in all of the previously listed facets of the recreation vehicle industry is the base starting point for the analysis. This analysis is based on data provided by multiple industry sources, Dun &

Bradstreet, Inc. (D&B) and the Federal Government. Facility level data is gathered from industry sources and D&B and cross-checked against each other. A description of the specific data sources for each aspect of the recreation vehicle industry model follows.

RV Manufacturing/Supplier

Recreation vehicle manufacturers are defined as companies which assemble towable RVs such as travel trailers, truck campers, and park model RVs, and motorized RVs such as motor homes and sport utility RVs. Using data provided by RVIA, RV Business, and D&B, JDA identified about 228 facilities which are classified as recreation vehicle manufacturers. Included in this segment are facilities which are assembling RVs as well as facilities which are directly owned by RV manufacturers and are manufacturing components to be used to build RVs. Jobs data were estimated using D&B data, company annual reports, and RVIA data. JDA estimated that RV manufacturers directly employed approximately 30,759 workers in the United States.

Recreation vehicle suppliers are defined as manufacturers of components used to assemble RVs. These include components ranging from nuts and bolts to refrigerators and wood flooring. The economic impact of these companies is estimated using indirect impact data from IMPLAN. JDA estimates that RV supplier companies employed approximately 13,108 workers in the United States.

RV Dealers

Recreation vehicle dealers are defined as companies that sell RVs to the consumer. These companies may be providing other RV services such as rentals and repairs in addition to selling RVs. Data from the Recreation Vehicle Dealers Association, the RVIA, and D&B was used to identify facilities in the United States which meet the aforementioned definition. Jobs are estimated using data from D&B. It is estimated that RV dealers employed approximated 29,785 workers in the United States.

RV Rentals

The recreation vehicle rentals sector is defined as companies which rent out RVs to consumers. The operations can range from facilities that are located in or near campgrounds to small family run operations which rent out a few RVs. Facilities which were already included in the RV dealers sector were excluded in this sector in order to avoid double counting. Data from the Recreation Vehicle Rental Association, RVIA, and D&B were used to identify facilities which were providing this service. Jobs in this sector were estimated using D&B data. It is estimated that approximately 1,547 people are employed in the RV rentals sector.

RV Service and Repair

The recreation vehicle service sector is defined as companies which service and repair as its primary function. Included are independent repair shops and mobile services that specialize in RV repair. Companies which were already included in the RV dealers or RV rentals sectors were excluded from this sector in order to avoid double counting. Data from the RVIA and D&B were used to identify facilities which meet this definition. It is estimated that the RV service sector provides as many as 1,463 jobs in the United States.

RV Storage

JDA collected data from RVUSA.com and D&B to identify 1,870 RV storage facilities in the USA. This figure includes several different types of storage facilities, including dedicated RV storage facilities, RV and boat storage facilities, general storage facilities that store RVs, and self-storage facilities that accept RVs for storage. Because many facilities are storing many different types of vehicles and objects, not every employee at these locations could be attributed to RV storage alone. JDA estimated that, in 2015, RV storage accounted for 1,901 jobs at these 1,870 facilities.

RV Aftermarket

The RV Aftermarket is defined as those companies that distribute aftermarket parts and products to the recreation vehicle industry. Facility data for the aftermarket portion for the recreation vehicle industry was collected from the Recreational Vehicle Aftermarket Association (RVAA) and cross-checked with Dun & Bradstreet records. JDA identified 58 RV aftermarket facilities. JDA estimates that, in 2015, these 58 facilities accounted for 1,511 jobs in the United States.

Financing and Insurance

Most RVs are financed, and their operation on public roads requires that they are insured. Therefore, the operations of financing and insuring RVs are an important component of the industry. In order to determine the impact of the finance and insurance sectors, JDA used data on the number of recreation vehicles in operation from IHS Global Inc. This data identified the number of RV's by type and by state. Based on these data it was estimated that about 270,000 RV units were sold in the past year. These figures are broken out by state and multiplied by average RV prices by type from the RVIA's 2014 survey of Lenders' Experiences to provide estimates of total sales by state. From this an average sales price per unit was calculated. This same survey provides data on the number of new and used RV loans made as well as the average amount financed. Using these ratios it is possible to calculate the total amount of RV financing which was estimated to be just under \$12.9 billion.

Financing is provided by banks, credit unions, dealers and other financial entities. Using data from the Survey of Lenders' Experiences, the Bureau of Economic Analysis and IMPLAN we were able to determine that about 6 percent of the output in the relevant sectors came from RV financing. This percentage was applied to job counts across zips provided by Dun & Bradstreet, and these were summed to the direct job numbers for the finance sector.

In the case of insurance, a similar methodology was used to calculate the value of all RVs on the road using sales data from IHS Global Inc. from 1987 to 2015. These data were annualized and broken across states. They were then discounted across 20 years at a 4 percent discount rate. Prices were assumed to rise according to CPI across the period. This calculation creates a discounted value to be insured across vehicle type and state.

Data on actual insurance costs is difficult to obtain. The Insurance Information Institute has data on the average cost of automobile insurance across states, and these data were used to create a cost index, where the relative cost of RV insurance was assumed to mirror the relative cost of automobile insurance. The cost of insuring the average RV was taken from RVersOnline.org.

As with the financing model, the discounted value of insurance as a percentage of total insurance industry output (0.139 percent) was applied to insurance industry job counts across zips provided by Dun & Bradstreet, and these were summed to the direct job numbers for the insurance sector

RV Owners' Clubs

Using data supplied by the RVIA, and supplemented with data collected by D&B, JDA identified 121 RV owners' clubs in the United States. JDA did not include owners' clubs that were officially owned by RV manufacturers in this section of the analysis, because employment at those owners' clubs is already taken into account in the RV manufacturing sector of the analysis. JDA estimates that the 121 RV owners' clubs employed 438 people in 2015.

RV Publications

Using data supplied by the RVIA, and supplemented with data collected by D&B, JDA identified 17 RV publications in the United States, ranging from trade publications to trade publications to campground directories and pricing guides. JDA estimates that the 17 RV publications employed 99 people in 2015.

RV Associations

Using data supplied by the RVIA, and supplemented with data collected by D&B, JDA identified 56 RV association facilities in the United States, ranging from RV campground associations to RV dealer associations to general industry associations, and more. JDA estimates that the 56 RV publications employed 291 people in 2015.

Campgrounds

JDA collected data from numerous sources to compile a list of private, state, and federal campgrounds. Data on federal campgrounds was collected from the Recreational Information Database provided by Recreation.gov, as well as provided directly by the National Park Service (NPS) and the United States Forest Service (USFS). Data on state campgrounds was collected from the fifty different official state websites. Data on private campgrounds was supplied by the National Association of RV Parks & Campgrounds (ARVC) and D&B. JDA cross-checked the data sources against each other and also researched the specific campground locations to confirm that each location allowed recreation vehicles. JDA included all campgrounds that allow recreation vehicles, which can range from remote campgrounds with no hookups to large recreation vehicle resorts. JDA estimates that there are 16,750 recreation vehicle accessible campgrounds in the United States, and that recreation vehicle use accounts for 45,150 jobs at these campgrounds.

RV Tourism

Much of the impact of RV tourism is already subsumed into the other sectors of this model. For example, spending at campgrounds is included as part of the Campground sector. But other spending by RV enthusiasts on items like fuel, food, and activities is an important part of the industry's impact on the economy. What makes this impact difficult to determine is that it is spread widely across the country as RV operators drive from location to location. In order to calculate this spread a geographic model was used that spreads impact out around the major destinations and attractions. This was done by overlaying a 190 mile band around each campground, sports arena, major festival and NASCAR track in the country. This distance represented the average distance that people planned to travel to a campground in the US

from the 2015 North American Camping Report. Campground bands were weighted by the employment in each campground as a proxy for size. The bands were then aggregated by zip code and indexed across states and an overall index was developed as a function of campgrounds, festivals, tracks, arenas, the number of registered RVs in a state and the number of vacation homes in a state as a proxy for overall tourism. The index was then applied to overall spending figures for: Fees, Food & Beverage, Equipment, Movies and Arts, Spectator Sports, Participant Sports, Gaming, Other Recreation, Camping Gear and Gasoline. Category spending figures were from either the 2015 North American Camping Report, or from the US Department of Commerce, Bureau of Economic Analysis Tourism Satellite Accounts for 2014. Individual spending was then allocated across the number of RV tourists derived from the 2015 North American Camping Report and then aggregated by state.

Model Description

The analysis utilizes the IMPLAN Model in order to quantify the economic impact of the recreation vehicle industry on the economy of the United States.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

Every economic impact analysis begins with a description of the industry being examined. In the case of the recreation vehicle industry model, the study defines the recreation vehicle industry as all companies involved in the manufacture, sale, repair, storage, and service of recreation vehicles, the recreation vehicle aftermarket industry, the financing and insurance of recreation vehicle purchases, and recreation vehicle travel, destinations, and other use occasions.

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 the Economic Impact Study of the Recreation Vehicle Industry, employment in all of the previously listed aspects of the recreation vehicle industry is the base starting point for the analysis. Facility data for recreation vehicle industry facilities were compiled from multiple industry sources and D&B.

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, 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. It includes all income paid to workers by employers.

⁵ The model uses 2012 input/output accounts.

⁶ RIMS II is a product developed by the U.S. Department of Commerce, Bureau of Economic Analysis as a policy and economic decision analysis tool. IMPLAN was originally developed by the US Forest Service, the Federal Emergency Management Agency and the Bureau of Land Management. It was converted to a user-friendly model by the Minnesota IMPLAN Group in 1993.

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, 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, physical location data compiled from the multiple aforementioned sources and Census data provide the basis for Congressional District level estimates. The model uses actual physical location data in order to allocate jobs – and the resulting economic activity – by physical address, or when that is not available, zip code. For zips entirely contained in a single Congressional District, jobs are allocated based on the percentage of total sector jobs in each zip. For zips that are broken by Congressional Districts, allocations are based on the percentage of total jobs physically located in each segment of the zip. 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. These percentages are based on Dun and Bradstreet 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 IMPLAN Group LLC gathers this data, converts it into a consistent format, and estimates the missing components.

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

The IMPLAN Make matrix represents the production of commodities by industry. The Bureau of Economic Analysis (BEA) Benchmark I/O Study of the US Make Table forms the bases of the IMPLAN model. The Benchmark Make Table is updated to current year prices, and rearranged into the IMPLAN sector format. The IMPLAN Use matrix is based on estimates of final demand, value-added by sector and

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

total industry and commodity output data as provided by government statistics or estimated by IMPLAN. The BEA Benchmark Use Table is then bridged to the IMPLAN sectors. Once the re-sectoring is complete, the Use Tables can be updated based on the other data and model calculations of interstate and international trade.

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

Deflators, which account for relative price changes during different time periods, are derived from the Bureau of Labor Statistics (BLS) Growth Model. The 224 sector BLS model is mapped to the 440 sectors of the IMPLAN model. Where data are missing, deflators from BEA's Survey of Current Businesses are used.

Finally, one of the most important parts of the IMPLAN model, the Regional Purchase Coefficients (RPCs) must be derived. IMPLAN is derived from a national model, which represents the "average" condition for a particular industry. Since national production functions do not necessarily represent particular regional differences, adjustments need to be made. Regional trade flows are estimated based on the Multi-Regional Input-Output Accounts, a cross-sectional database with consistent cross interstate trade flows first developed in 1977. These data are updated and bridged to the 440 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.