The Contributions of Japanese-Brand Automakers to the United States Economy:

2023 Update [+]

Thomas J. Prusa, PhD[*,**]

May 16, 2023

Prepared for
Japan Automobile Manufacturers Association

[+] Updated using end-of-year 2022 data.

[*] Thomas Prusa is Professor of Economics at Rutgers University, New Brunswick, New Jersey. He has provided expert testimony before the U.S. International Trade Commission on many occasions. He has published numerous articles in leading journals and books on trade remedy laws and their impact. He has lectured in conferences and seminars around the world. His research has been featured in *The Wall Street Journal*, *The New York Times*, *The Economist*, and *Investor's Business Daily*. He received his PhD from Stanford University (1988).

[**] All statements, findings, and conclusions in this report are those of the author and do not necessarily reflect those of the Japan Automobile Manufacturers Association.

The Contribution of Japanese-Brand Automakers to the United States Economy: 2023 Update [+]

Thomas J. Prusa, PhD

Executive Summary

For more than four decades, Japanese-brand automakers have been a major contributor in shaping U.S. manufacturing and have generated and supported millions of U.S. jobs. As of late 2022, Japanese-brand automakers directly employed more than 107,000 workers, while their dealer network employed more than 370,000 workers. The consistent *growth* of Japanese-brand automakers' U.S.-based employment is quite remarkable. Whether viewed either over a longer- or shorter-run time span, the direct and indirect employment supported by Japanese-brand automakers and dealers has grown. This growth is especially impressive given the significant COVID-19-induced supply and demand-side challenges over the last three years. Despite these significant obstacles, the contributions to the U.S. economy by Japanese-brand automakers' U.S. operations have increased. Over the last decade, Japanese-brand automakers and dealers have increased their direct employment by 32.5% and 13.7%, respectively. Today, more than 2.29 million U.S. jobs are supported by Japanese-brand automakers' U.S. production facilities, research and development (R&D)/design centers, headquarters, sales/distribution, and dealer networks.

[+] Updated using end-of-year 2022 data.

The key findings of this report are as follows:

- **Automobile Operations-Driven Employment**
  - Japanese-brand automakers directly employ over 107,000 U.S. manufacturing, R&D/design, and other (e.g., headquarters, sales, etc.) workers.
  - Another 499,000 U.S. workers are employed in intermediate goods and parts industries ("automotive supplier network") that supply Japanese-brand automakers' U.S. vehicle production and other facilities.
  - An additional 399,000 U.S. jobs are supported by direct and intermediate employment (often referred to as "spin-off" employment).
  - All told, **more than 1,000,000 U.S. jobs are generated by Japanese-brand automakers' investments in U.S. production facilities, R&D centers and headquarters**.

- **Dealer Network-Driven Employment**
  - Approximately 373,000 U.S. workers are directly employed in the Japanese-brand automakers' dealer network.
  - Another 413,000 U.S. workers are employed in intermediate goods industries associated with the Japanese-brand automakers' dealer network.
  - An additional 503,000 U.S. spin-off jobs are supported by direct and intermediate dealership employment.
  - All told, **almost 1,300,000 U.S. jobs are generated by the Japanese-brand automobile companies' dealer network**.

- In total, the **Japanese-brand automakers' U.S. operations and dealer networks contribute to more than 2.29 million private-sector U.S. jobs**. Japanese-brand automakers remain among the largest job creators in the United States.

I. Introduction

This study updates previous reports on the economic contribution of Japanese-brand automakers to the U.S. economy. Earlier studies estimated the employment and economic impact for 2011 through 2018; this report revises those estimates using 2022 data.

The analysis shows the continued growth and economic impact of Japanese-brand automakers in the United States. This report affirms the findings of the previous studies – namely, that Japanese-brand automakers are an essential source of U.S. jobs and job growth. In 2022 more than 2.29 million American jobs were rooted either directly or indirectly in Japanese-brand automakers' U.S. operations.

II. Value of the Japanese-Brand Automakers to the U.S. Economy

The economic performance of the automotive industry, as well as manufacturing more broadly, is essential for the continued development and growth of both the national economy and also regional economies. Manufacturing and automotive industry trends have long been important indicators of the state of the economy, with periods of growth in automotive manufacturing closely linked to periods of growth in the U.S. economy as a whole. Given the size of Japanese-brand automakers, their performance and growth are important indicators for the overall U.S. economy.

Using modeling techniques described in prior work and discussed in the appendix, estimates are derived from the economic contributions associated with the Japanese-brand automakers in the United States.[1] The estimates include both

[1] Thomas J. Prusa, "The Contribution of the Japanese-Brand Automotive Industry to the United States Economy," 2012; See also, Kim Hill, Debra Maranger Menk, Joshua Cregger, and Michael

direct employment, intermediate jobs at parts suppliers and other upstream firms, and spin-off jobs that result from the industry's direct and intermediate activity. The results are presented in three parts: the contributions of Japanese-brand automakers' manufacturing and supporting operations, those associated with Japanese-brand automakers' dealership network, and a combination of the two to represent the total impact of the Japanese-brand automakers in the United States.

A) Manufacturing and Supporting Operations

Summary estimates of the employment contributions of Japanese-brand automotive manufacturing to the private sector of the U.S. economy for 2022 are shown in Table 1.[2] Both blue-collar and white-collar workers employed by the automakers are included in direct employment. The direct employees of automakers include researchers, engineers, managers, and administrative support, as well as workers on the assembly lines. According to data collected by the Japan Automobile Manufacturers Association (JAMA), 107,338 workers were employed in Japanese-brand U.S. automotive manufacturing and related operations (Table 1).[3,4]

Beyond those direct employees working in assembly, stamping, welding, painting, engine, and parts plants, R&D centers, and headquarters, many more workers in intermediate and spin-off jobs are supported through automotive production activities. The intermediate employment category captures the jobs necessary to satisfy demands for the materials and services needed to design, produce, distribute, and sell motor vehicles and is sometimes referred to as the "automotive

Schultz, "Contribution of the Automotive Industry to the Economies of All Fifty States and the United States," Center for Automotive Research, January 2015; Alliance for Automotive Innovation, "The Driving Force: Annual Industry Report", 2022, at https://www.autosinnovate.org/resources/papers-reports/Driving%20Force%20Annual%20Report.pdf; Autos Drive America and the American International Automobile Dealers Association (AIADA), "International Automakers and Dealers in America: Economic Impact Report" 2022, at https://www.autosdriveamerica.org/economic-impact/2022/ADA_2022_8.5X11_national.pdf.

[2] Employment represents the total number of private sector jobs, including the self-employed.

[3] Automakers' contribution employment data to this study included Hino, Honda, Isuzu, Mazda, Mitsubishi, Nissan, Subaru, and Toyota.

[4] As of December 31, 2022.

supplier network." Intermediate employment (suppliers of goods and services) from these automotive manufacturing activities is estimated to be 499,000 jobs, primarily in the industries necessary to produce automobiles – parts manufacturing, primary metal manufacturing, fabricated metal products manufacturing, and plastics and rubber products manufacturing.[5] The sum of direct and intermediate jobs equals 606,338 private sector jobs.

Table 1 also reports the total spin-off jobs effect, also known as the expenditure-induced effect (spending from the people who work in direct and intermediate jobs). The estimate of the expenditure-induced effect is 399,000 jobs which, when added to the 606,338 direct plus intermediate jobs, equals 1,005,338 total jobs.

Total earnings of the 1,005,338 manufacturing-related and supporting operations jobs is more than $87 billion. From this amount nearly $11 billion is paid in personal income taxes, and more than $12 billion is paid in contributions for government social insurance and transfer payments. The U.S. total net disposable income for individuals supported by the Japanese-brand automotive manufacturing industry is estimated at more than $64 billion.

[5] Estimates of intermediate and spin-off employment are rounded to the nearest thousand; income and tax receipt numbers are also rounded. Sub-totals may not sum to total due to rounding.

Table 1: Private Sector Employment Contributions of Japanese-Brand Automobile Manufacturing and Supporting Operations in the United States, 2022

Manufacturing and Supporting Operations	
Employment	
Total (Direct + Intermediate)	606,338
Direct	*107,338*
Intermediate	*499,000*
Spin-off	399,000
Grand Total (Direct + Intermediate + Spin-off)	1,005,338
Compensation ($ billions nominal)	
Compensation	$87.8
Less: transfer payments & social insurance contributions	($12.7)
Less: personal income taxes	($11.0)
Equals private disposable personal income	$64.1

* *Numbers may not add due to rounding*

The job estimates reported in Table 1 allow one to gain an important perspective on the growth of Japanese-brand automakers' U.S. operations over the last decade. By any metric the contributions have grown significantly.[6] Of particular note, direct employment has grown by more than 26,000 jobs since 2012, and the total number of jobs tied to Japanese-brand automotive manufacturing has grown by more than 323,000 over the last decade.

B) Automotive Dealerships

Table 2 reports the estimated employment contributions by Japanese-brand new vehicle dealer operations for 2022. Employment estimates are broken out by direct employment (people employed directly by dealerships); intermediate employment

[6] Thomas J. Prusa, "The Contribution of the Japanese-Brand Automotive Industry to the United States Economy – 2012 update," July 30, 2013.

(people employed by those who provide goods and services, excepting inventory, to dealerships); and spin-off employment (expenditure-induced employment resulting from spending by direct and intermediate employees).

Japanese-brand directly employed (for new vehicle sales) 372,449 workers. As can be seen in Table 2, there are 413,000 intermediate jobs that support direct employment in the industry (suppliers of goods and services, not including motor vehicle inventory). Thus, the total employment (direct and intermediate) generated by Japanese-brand automotive dealerships is 785,449 workers.

The spin-off employment associated with spending by the people who work in the direct and intermediate jobs adds another 503,000 jobs, bringing the total jobs associated with Japanese-brand new vehicle dealer operations in the United States (direct plus intermediate plus spin-off) to more than 1,288,000 jobs.

Total earnings of the 1,288,449 dealer network and supporting operations jobs is $109 billion. From this amount nearly $14 billion is paid in personal income taxes, and more than $15 billion is paid in contributions for government social insurance and transfer payments. The U.S. total net disposable income for individuals supported by the Japanese-brand automotive dealer network is estimated at nearly $80 billion.

Table 2: Private Sector Employment Contributions of Japanese-Brand New Vehicle Dealers (Retail) in the United States, 2022

New Vehicle Dealers	
Employment	
Total (Direct + Intermediate)	785,449
Direct	*372,449*
Intermediate	*413,000*
Spin-off	503,000
Grand Total (Direct + Intermediate + Spin-off)	1,288,449
Compensation ($ billions nominal)	
Compensation	$109.3
Less: transfer payments & social insurance contributions	($15.8)
Less: personal income taxes	($13.9)
Equals private disposable personal income	$79.6

* *Numbers may not add due to rounding*

The jobs numbers reported in Table 2 also show impressive growth of the Japanese-brand automotive dealer network over the last decade. Since 2012 direct employment has grown by nearly 45,000 jobs, and the total number of jobs tied to the Japanese-brand automotive dealer network has grown by more than 600,000 over the last decade.

C) Total Contribution

Combining the estimates for Japanese-brand automakers' manufacturing and supporting operations with the estimates for Japanese-brand automotive dealer operations yields the "bottom line" for the Japanese-brand automakers as a whole. These results for the total U.S. private sector contributions from Japanese-brand automakers' activities are shown in Table 3.

The Japanese-brand automakers and their dealer networks directly employ nearly 480,000 employees – over 107,000 in vehicle production and supporting operations and over 372,000 in their new dealer vehicle networks. In turn, these 480,000 direct jobs support another 912,000 intermediate jobs (such as auto parts, raw and fabricated steel, etc.). All told, nearly 1,391,000 direct and intermediate jobs are rooted in the Japanese-brand automakers' U.S. operations.

Table 3 also reports the total spin-off jobs effect, which includes the expenditure-induced effect (spending from the people who work in the direct and intermediate jobs). The estimate of the expenditure-induced effect is 902,000 jobs. By combining this figure with the direct plus intermediate jobs, this study estimates that Japanese-brand automobile companies have a total employment effect of 2,293,787 jobs.

Table 3: Private Sector Employment Contributions of Japanese-Brand Automakers' U.S. Operations, 2022

	Manufacturing & Supporting Operations	New Vehicle Dealers	Total
Employment			
Total (Direct + Intermediate)	606,338	785,449	1,391,787
Direct	*107,338*	*372,449*	*479,787*
Intermediate	*499,000*	*413,000*	*912,000*
Spin-off	399,000	503,000	902,000
Grand Total (Direct + Intermediate + Spin-off)	1,005,338	1,288,449	2,293,787
Compensation ($ billions nominal)			
Compensation	$87.8	$109.3	$197.1
Less: transfer payments & social insurance contributions	($12.7)	($15.8)	($28.5)
Less: personal income taxes	($11.0)	($13.9)	($24.9)
Equals private disposable personal income	$64.1	$79.6	$143.7

* *numbers may not add due to rounding*

III. Concluding Comments

This study highlights the continued economic impact of Japanese-brand automakers' U.S. manufacturing and supporting operations. Consistent with the findings from our previous studies, we again find that Japanese-brand automakers' economic contributions grew in 2022: today, more than 2.29 million U.S. jobs are tied to Japanese-brand automakers.

JAMA members' steady and robust job growth in the United States – both direct employment and also the overall employment tied to JAMA members' activities – is quite remarkable for a variety of reasons. First, the onset of the COVID-19 pandemic brought with it two major supply shocks to the U.S. automotive industry, which led to major declines in production, sales, and international trade for 2020 and 2021[7] (USITC, 2022). The first of these shocks—nationwide factory shutdowns––brought production to a short-lived but drastic halt in early 2020 (with over 90 percent of domestic automotive production temporarily shutting down). The second shock, the shortage of automotive semiconductor chips, created a more prolonged drag on production that continued into 2021. COVID-19 also disrupted automobile demand for much of 2020 and 2021. Yet, despite what is hopefully a once-in-a-hundred-year pandemic, employment reported by Japanese-brand automakers increased by approximately 13,700 manufacturing jobs compared to the previous study, which was conducted in 2018 (the most recent previous study). More generally, when combining the total jobs impact from both the manufacturing/supporting operations and dealership data, the estimates show the Japanese-brand automakers' U.S. operations in 2022 account for an additional several hundred thousand U.S. jobs than they did in 2018.

Second, when compared with broad job trends in the overall economy, the job growth tied to the Japanese-brand automakers is particularly impressive. In Figure 1, we plot the workers directly employed by Japanese-brand automakers in the U.S. (e.g., manufacturing, R&D/design, headquarters, sales, etc.). For comparison, we also plot total manufacturing employment (as reported by the U.S. Government).[8] We normalize both data series, so the value for 2012 is 100.[9] As

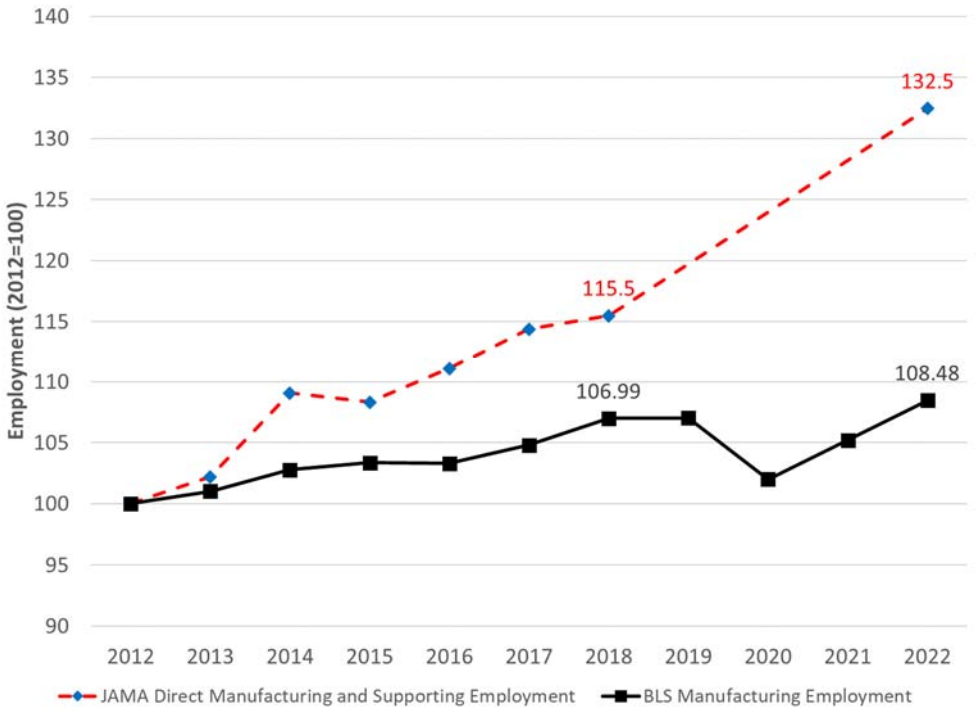
[7] David Coffin, Dixie Downing, Jeff Horowitz, and Greg LaRocca, "The Roadblocks of the COVID-19 Pandemic in the U.S. Automotive Industry," U.S. International Trade Commission Office of Industries, Working Paper ID-091, June 2022.

[8] U.S. Bureau of Labor Statistics, All Employees, Manufacturing [MANEMP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MANEMP, April 15, 2023.

[9] Given that an employment study was not performed with 2019, 2020, or 2021 data, the figure simply plots a line between 2018 data (the most recent previous study) and 2022 data.

seen, direct employment by Japanese-brand automakers has grown by more than 32% since 2012. By contrast, overall U.S. manufacturing employment has increased by about 8.5% over the same period. The visual evidence is quite clear: Japanese-brand automakers are leading U.S. manufacturing employment growth and strengthening the country's automotive production base.

Figure 1: Growth in JAMA Direct Manufacturing and Supporting Employment vs. Overall U.S. Manufacturing Employment



An important lesson from this series of "contributions" studies is that Japanese-brand automakers' activities in the U.S. go far beyond the factory floor. Most obviously, there is direct employment in automobile dealerships. As described above, there are also thousands of intermediate and spin-off jobs generated by Japanese-brand automotive dealership activities in the U.S.

In every respect, the last decade has been a very strong period for both the Japanese-brand automobile companies as well as the overall U.S. economy. That said, as the comparison with the BLS official employment statistics has shown, Japanese-brand automakers, in particular, are playing a leading role in the growth of the U.S. economy.

Exhibit – Study Methodology

This study provides estimates of the economic contribution associated with Japanese-brand automakers in the United States. The estimates include both direct employment, intermediate jobs at parts suppliers and other upstream firms, and spin-off jobs that result from the industry's direct and intermediate activity.

Previous versions of this study were based on economic modeling techniques developed by the Center for Automotive Research (CAR) in conjunction with data from CAR, *Ward's Automotive*, the National Automobile Dealers Association (NADA), JAMA, and other public sources. This year's report is based on a more recent economic model analysis conducted by IMPLAN. The CAR and IMPLAN models are similar input-output models; they both allow one to estimate job multiplier effects. Data for new vehicle dealerships is sourced from NADA and JAMA; the dealership employment data is used to estimate the impact of the Japanese-brand automakers' U.S. new dealer networks.

One challenge of this study is that the automobile industry has deep upstream and downstream connections. The economic implications of the automotive industry's activities extend beyond people directly employed in the industry due to the complex manufacturing supply network with many tiers of suppliers across a wide array of industries. A few of the more obvious industries supported by automotive manufacturing include motor vehicle parts, primary and fabricated metal, plastics, and rubber products. Outside of manufacturing, the automotive industry supports jobs in professional and technical services, administration services, wholesale and retail trade, transportation and warehousing, finance and insurance, and management of companies.

The IMPLAN (Impact M for Planning) system is the primary modeling tool behind the economic modeling approach used in this paper. The Input-Output (I-O) modeling approach embodies the fact that all industries, households, and government in the economy are connected through buy-sell relationships. Therefore

a given economic activity supports a ripple of additional economic activity throughout the economy. The IMPLAN modeling system uses annual, regional data to map these relationships so one can predict how specific economic changes will impact a given regional economy or estimate the effect of past or existing economic activity.

To estimate the total employment provided by parts suppliers, motor vehicle manufacturers, and new vehicle dealership operations, IMPLAN developed a state-level model with over 500 sectors representing private industries as well as government enterprises and administrative government sectors. The state-level impacts are aggregated to produce an estimate for the national economy.

As is standard in these types of input-output macro models, trade and production flows across industries are calibrated to allow one to calculate direct and indirect employment effects. For example, the model's inputs include measures of how much plastic, rubber, steel, aluminum, electronic components, etc. are used per vehicle. In addition, the model is calibrated to include measures of employment in each of the related industries. Changes in automobile production will trigger changes in demand for the various inputs and workers.

Employment estimates are broken out by direct employment (people employed directly by automakers and dealerships), intermediate employment (people employed by suppliers to the motor vehicle industry), and spin-off employment (expenditure-induced employment resulting from spending by direct and intermediate employees).

Employment was classified into detailed job categories for the model — motor vehicle and motor vehicle parts manufacturing; management of companies; professional, scientific, and technical services; securities, commodity contracts, and investments; warehousing and storage; administrative services, facilities, and support services, and wholesale trade.

The direct employees of automakers include researchers, engineers, managers and administrative support, as well as workers on the assembly lines. Because the actual manufacturing of parts and assembly of vehicles draws on a deep supply chain for components and materials, manufacturing jobs have large upstream and downstream employment effects.

Our intermediate employment measure includes jobs in numerous manufacturing and non-manufacturing industries. Manufacturing is divided into durable goods and non-durable goods and includes items such as parts manufacturing, primary metal manufacturing, fabricated metal products manufacturing, and plastics & rubber products manufacturing. Non-manufacturing industries include administration and services, finance and insurance, management, professional and technical services, retail and wholesale trade, and transportation and warehousing.

The intermediate category captures the employment necessary to satisfy manufacturers' demands for the materials and services needed to design, produce and sell motor vehicles. This is often referred to as the automotive supplier network. This supply network consists of Tier 1 suppliers who supply parts and services directly to vehicle manufacturers, along with the lower-tier suppliers who supply the basic materials and services up to the Tier 1 group. Some of these companies supply basic commodities and can be several steps removed from the vehicle design and manufacturing process and serve multiple industries.

Spin-off jobs are associated with motor vehicle and parts manufacturing operations. These are expenditure-induced jobs created as a result of spending by the people employed in the direct and intermediate categories. Said differently, when employees use their paychecks to purchase goods (for example: electronics equipment, clothing, food, and even new automobiles), employment is created to supply their demands.

New auto dealerships also have large economic effects. Similar in spirit to the input-output model derived for automobile production, the economic model captures

the interconnections from new auto sales throughout the economy. As with automotive production, the job impact includes direct, intermediate, and spin-off jobs. Categories related to intermediate and spin-off jobs include office administrative & business support services; facilities support services; accounting, tax preparation, bookkeeping, and payroll services; advertising and related services; architectural, engineering, and related services; computer systems design and related services; legal services; finance, insurance; transportation and warehousing; truck transportation; and warehousing and storage.