

STATE OF THE U.S. AUTOMOTIVE INDUSTRY

**Investment, Innovation, Jobs
and America's Economic Competitiveness**

**American Automotive Policy Council
June 2014**

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ACKNOWLEDGEMENTS

This report is meant to serve as a resource for policymakers, researchers and media interested in the state of automotive manufacturing in America and what leadership in this industry means for our nation's economic competitiveness.

The bulk of figures presented here are derived from simple comparisons of each automaker's production, sales, employment and parts purchases in the U.S. and abroad. These are obtained from each automaker's respective annual reports and corporate websites, as well as reports produced by several of the industry's trade groups. For more information about how automakers contribute to America's economy and our global competitiveness, visit our website at www.americanautocouncil.org or the website of the Alliance of Automotive Manufacturers at www.autoalliance.org. For information on America's automotive parts suppliers and their contribution to America's economy, we rely on analysis produced by the Motor & Equipment Manufacturers Association (www.mema.org).

Most of the critical analysis cited in the report has been produced by the Center for Automotive Research (CAR), a nonprofit organization focused on a wide variety of important trends related to the automobile industry and society at the international, federal, state and local levels. CAR's Sustainability & Economic Development Strategies (SEDS) group focuses on the intersection of industry and the public sector. Its Automotive Communities

Partnership helps state and local officials develop public policies that sustain auto communities. We rely heavily on CAR's "job multiplier" analysis; its sales, production and employment forecasts; its estimates of automaker spending on R&D and capital investment; and its analysis of the reach and nature of a typical plant's supply chain. More information about CAR, SEDS and the Automotive Communities Partnership is available at www.cargroup.org.

For data on corporate R&D, we rely on the European Commission's Joint Research Centre's 2013 EU Industrial R&D Investment Scoreboard, which contains economic and financial data for the world's top 2000 companies ranked by their investments in research and development. The rankings also include data on employment, revenue and capital investment. The data are drawn from the latest available companies' financial statements. The rankings and related materials are available at <http://iri.jrc.ec.europa.eu/scoreboard13.html>.

This report also cites findings from a recent study produced by Frank Dubois, Associate Professor of International Business at The American University's Kogod School of Business. For each of the past two years, Dubois has ranked each of the more than 300 vehicle models sold in the U.S., based on where the model's engine, transmission and other parts are produced; where it is assembled; where its HQ is based; and where the R&D that produced the model is performed. His research is available at <http://kogodnow.com/autoindex/>.

INTRODUCTION

This report examines the current state of the U.S. automotive sector and its share of America's manufacturing production, capital investment, innovation and jobs.

We make five points:

1. Automakers contribute a great deal to America's economy, but some contribute more than others;
2. Automakers are doing their share to make America more competitive;
3. Every state is an "auto state";
4. Their investments are contributing to the revival of manufacturing in America; and,
5. In an industry as capital intensive and competitive as autos, public policy matters.

In making these points, we explain how production, investment and employment have rebounded since the financial crisis and are likely to grow through 2016. As part of this, we examine how highly efficient manufacturers, like those in the U.S., can benefit from the industry's shift toward centralized production and global model platforms.

We also compare the economic contributions of America's automakers – Chrysler, Ford and General Motors – with those of their competitors. While most car buyers appreciate just how many Americans Chrysler, Ford and General Motors employ, this report explains why so much of their global workforce is based here.

Finally, we examine how the highly competitive nature of the industry – and the enormous fixed costs that go into producing cars and trucks – combine to give public policy decisions an enormous impact on which automakers grow and where auto jobs are created.

AAPC and its members are optimistic about the future of auto manufacturing in America and all of the research, design, finance, marketing and other related jobs that this industry generates. But the long-term success of any American research lab or assembly plant depends, in part, on how government regulations, global trade agreements, and national currency policies, together, affect an automaker's ability to compete.

EXECUTIVE SUMMARY

Automakers drive the U.S. economy.

Automakers and their suppliers are America's largest manufacturing sector, responsible for 3% of America's GDP.¹ No other manufacturing sector generates as many American jobs.²

They are also America's largest exporters. In fact, over the past five years, automakers have exported more than \$563 billion in vehicles and parts – approximately \$86 billion more than the next largest exporter (aerospace).³

They buy hundreds of billions of dollars worth of American steel, glass, rubber, iron and semiconductors each year. Today, more than 734,000 Americans work for an auto supplier.⁴

They are also among America's largest investors in R&D. The auto sector ranks third, on a global basis, on R&D spending.

Chrysler, Ford and General Motors are in the driver's seat.

Chrysler, Ford and General Motors produce more of their vehicles, buy more of their parts, and conduct more of their R&D in the U.S. than their competitors. As a result, they employ two out of three of America's autoworkers and operate two out of three of America's assembly plants.

Perhaps the best way to appreciate the scale of Chrysler, Ford and General Motors' investment in the U.S. is to consider what would happen if foreign automakers matched their U.S. production, parts purchases and employment rates. The

Chrysler, Ford and General Motors:

- Produce nearly one and a half times more of their vehicles here in the U.S.
- Use nearly twice as much domestic content in their vehicles as their competitors do.

That's why they:

- Employ two out of three U.S. autoworkers.
- Operate two out of three U.S. auto assembly plants.
- Base 8 times more of their global workforce here.

answer? To match Chrysler, Ford and General Motors last year, their competitors would have had to assemble nearly 2 million more cars and trucks here in the U.S. lined up bumper to bumper, those cars would stretch about 6,000 miles.⁵ To match Chrysler, Ford and General Motors' domestic content rate, they would have had to buy another 2 million more cars'-worth-of-parts here.⁶

Automakers are investing to make America more competitive.

Over the past five years alone, Chrysler, Ford and General Motors have invested more than \$28 billion in their U.S. assembly, engine and transmission plants, R&D labs, headquarters offices and other infrastructure that connects and supports them.

Here in the U.S., Chrysler, Ford and General Motors, together, invest more than \$13 billion in R&D every year. Each alone spends more on R&D than some of the world's most famous technology companies.⁷

Every state is an “auto state.”

Last year, Chrysler, Ford and General Motors produced 5.8 million vehicles in the U.S., with the help of more than 200,000 employees, working at more than 180 assembly plants, factories, research labs, distribution centers and other facilities, located in 31 states across 91 Congressional Districts.

They work with more than 10,000 dealerships, which employ another 580,000 workers. Finally, Chrysler, Ford and General Motors' thousands of auto suppliers employ hundreds of thousands of other Americans.

Automaker investments are contributing to the revival of manufacturing in America.

U.S. auto sales have increased by more than 50% since the 2009 financial crisis (from 10.4 million to 15.7 million last year). CAR projects sales will reach or exceed 16.5 million vehicles per year through 2016. Meanwhile, U.S. auto production has nearly doubled during that same period (from 5.8 million vehicles in 2009 to 10.9 million vehicles in 2013). U.S. auto production is expected to reach or exceed 11.5 million vehicles per year through 2016.⁸

CAR estimates automaker and auto supplier employment in the U.S. will increase by more than one-third from 2011 to 2016.⁹

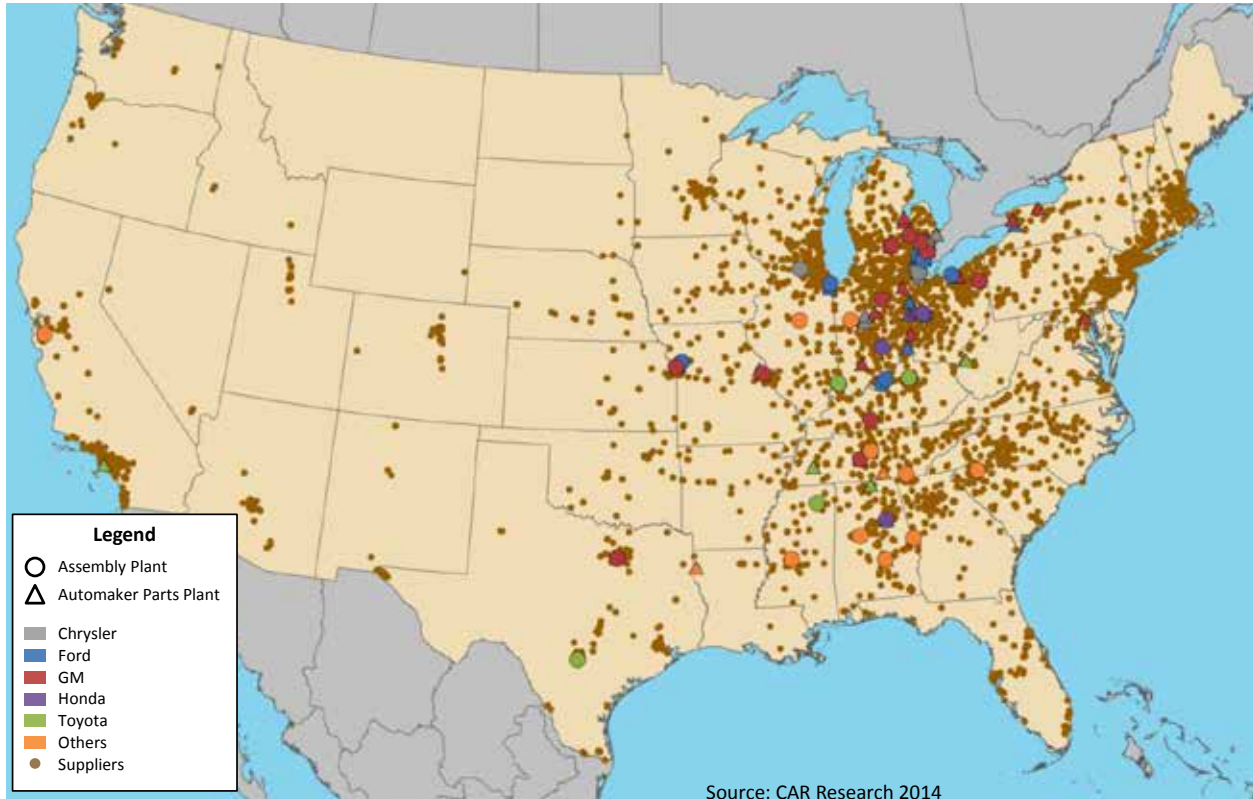
Automakers have responded to new domestic cost advantages by shifting production from other countries to the U.S. Ford has shifted some production of its Fusion sedan from Mexico to Michigan and its Transit van from Turkey to Missouri. General Motors is moving more of its pickup

production to the U.S. this year. An industry-wide move toward global model platforms is contributing to this trend. Automakers are centralizing production in high functioning markets, like the U.S., which can now export the same body frame or major component to assembly facilities around the world.¹⁰

In a globally competitive auto industry, public policy matters.

Because the auto industry is so competitive, the profit margin on each vehicle is comparatively small. Because producing cars and trucks is so capital intensive, automakers must maintain scale to remain competitive on costs. For these reasons, trade agreements, tax policy and regulations have an enormous impact on each automaker's competitive status.

AUTOMAKERS CONTRIBUTE A GREAT DEAL TO AMERICA'S ECONOMY, BUT SOME CONTRIBUTE MORE THAN OTHERS.



Scale of the Auto Industry

Last year, Americans bought more than 15 million cars and trucks. Nearly 11 million of those cars and trucks were produced at one of America's 44 automotive assembly plants. Lined up end-to-end, the cars and trucks assembled in the U.S. would stretch 32,500 miles, enough to stretch from the Statue of Liberty to the Golden Gate Bridge and back, six times.¹¹

A typical plant requires more than \$1 billion in start-up capital investment and employs 2,000 to 3,000 workers. Each assembly plant job supports up to 9 to 12 others at suppliers and in the surrounding community.¹² While plant output varies, a single plant producing

200,000 vehicles each year can contribute nearly \$6 billion to America's gross domestic product.

Each vehicle these plants assemble contains 8,000 to 12,000 different components¹³ (and as many as 15,000 individual parts¹⁴). More than 5,600 suppliers produce auto parts in the U.S.¹⁵ Together, they employ more than 734,000 Americans.¹⁶

The components in a typical car or truck contain more than 3,000 pounds of iron, steel, rubber and glass. Because of the size of each vehicle – and the number of these vehicles made each year – automakers are also among the largest buyers of those American raw materials.

Designing each of those 15,000 parts and integrating them into a single vehicle is an enormous engineering challenge. Automakers and suppliers spend about \$18 billion on R&D in the U.S. each year – about \$1,200 per vehicle sold here.¹⁷

Distributing, marketing, selling and servicing those vehicles employs hundreds of thousands of other Americans. Chrysler, Ford and General Motors alone rely on more than 10,000 dealerships, which employ more than 580,000 Americans.

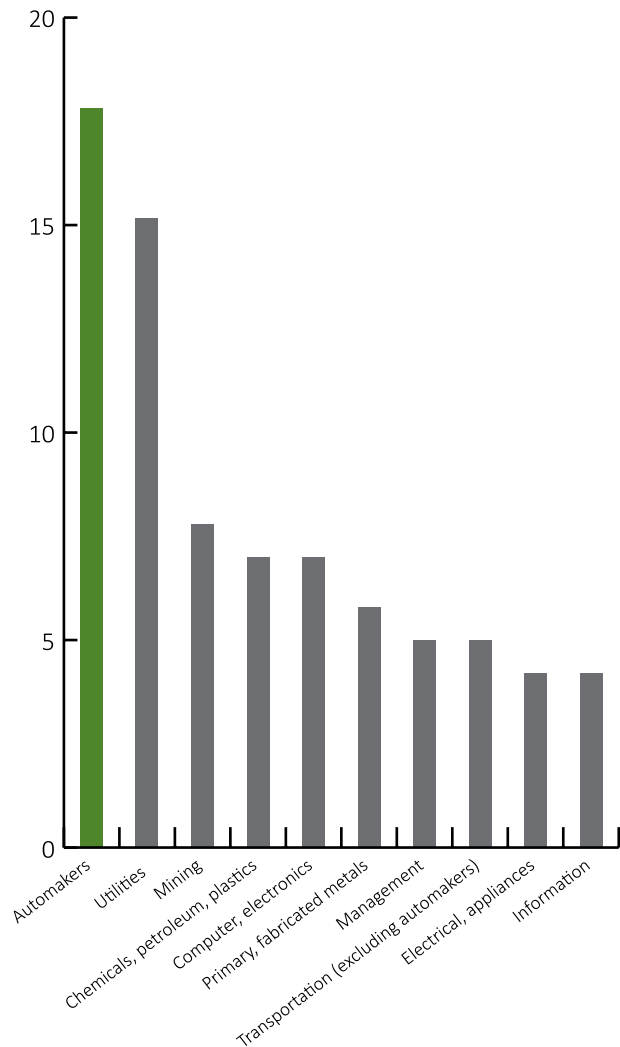
Automakers as Job Multipliers

One way to measure an industry’s economic contribution is to consider the number of workers it employs through its own operations, its suppliers and the other local businesses it supports. Economists refer to this as a sector’s “job multiplier.” Generally speaking, a sector’s multiplier grows relative to its supply chain – the number and costs of the inputs that go into its products. Because the auto supply chain is so large, automaker jobs have the largest multiplier.

Among the leading sources of job multipliers in the U.S. is CAR, which examines how jobs at each step of the automotive value chain (from R&D to suppliers, assembly plants and dealership lots) supports other jobs in the community.

CAR uses its own Regional Economic Impact Model (REMI), customized using proprietary company data on employment and compensation (by region), as well as publicly available data on capital investments. The model generates estimates of the economic contribution associated with the manufacturing operations it is testing. CAR’s REMI model has been used by automakers, their trade groups, and policymakers for more than 20 years.

Industries with Top 10 Highest Job Multipliers (2013)



Chrysler, Ford and General Motors' Production Rate

Another way to measure an automaker's investment in the U.S. is to compare its U.S. production to its U.S. sales. Last year, Chrysler, Ford and General Motors produced 5.8 million vehicles in the U.S. That same year, they sold 7,071,682 vehicles here. In other words, their 2013 U.S. production represented 82% of their 2013 U.S. sales.

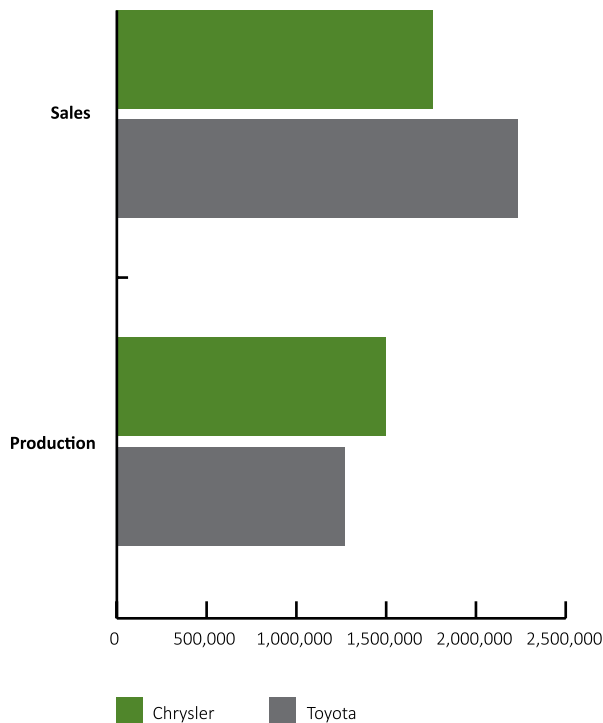
By comparison, foreign automakers' U.S. production represented only 59% of their sales here.¹⁸

As a result, Ford produced approximately 1 million more cars and trucks in the U.S. last year than Toyota or Honda, nearly three

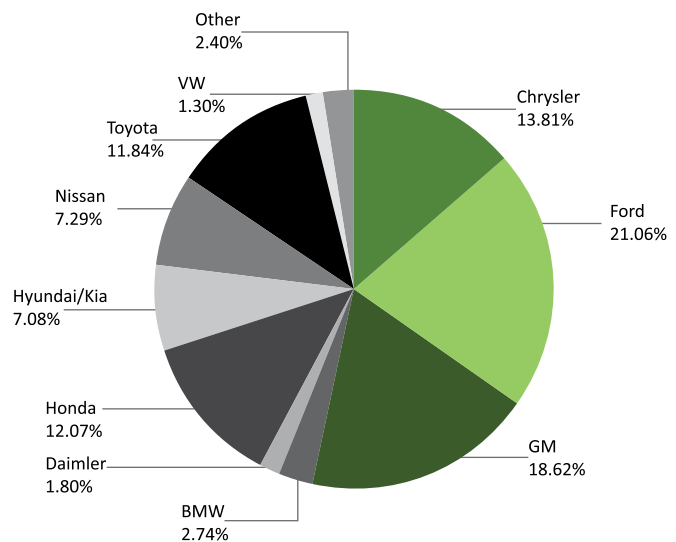
times as many vehicles as Hyundai and Kia, eight times more than BMW and 16 times more than VW. Similarly, Chrysler assembled 213,000 more vehicles in the U.S. in 2013 than Toyota, even though Toyota sold 436,000 more vehicles here.

To produce more vehicles, automakers need more plants. General Motors operates as many plants as Toyota, Honda, Nissan, Hyundai, Kia and Subaru, combined. Similarly, Chrysler operates as many assembly plants as BMW, Mercedes, Hyundai, Kia and VW combined.

Chrysler Sells Fewer Vehicles in the U.S. than Toyota, But Produces More Vehicles Here



OEMs' Share of U.S. Auto Production (2013)

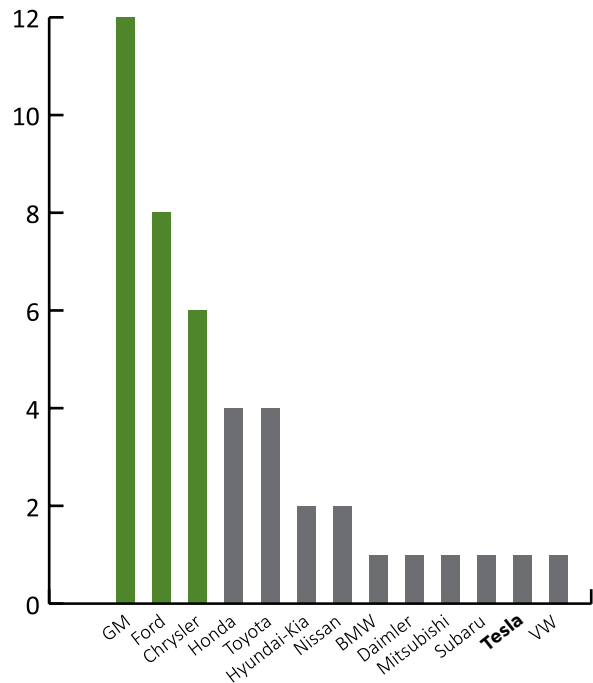


The Difference: Six New U.S. Assembly Plants, Producing A Line of New Cars 6,000 Miles Long

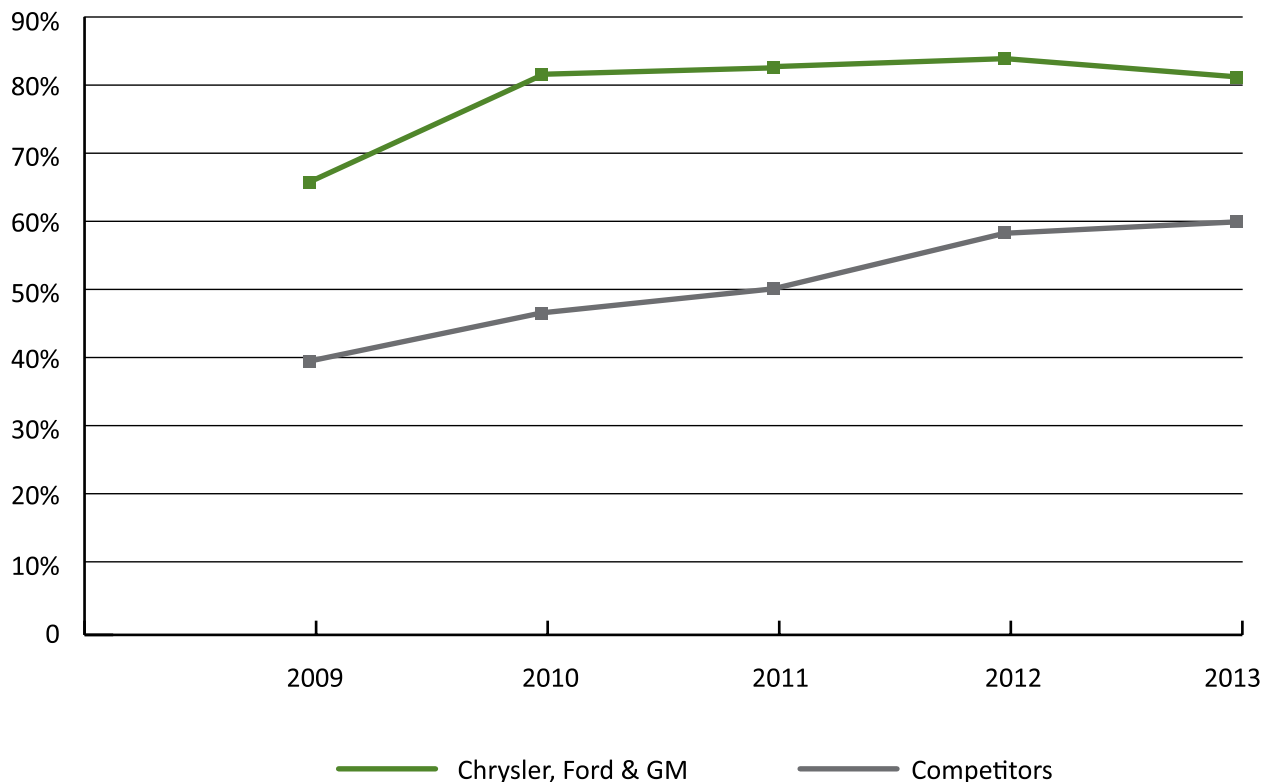
Because the auto industry is so big, the difference between Chrysler, Ford and GM's 82% U.S. production rate and their competitors' 59% U.S. production rate represents millions of jobs and billions in capital investment. In order to match Chrysler, Ford and General Motors' U.S. production rate last year, foreign automakers would have needed to assemble nearly 2 million more vehicles here last year.¹⁹

To build 2 million more vehicles, foreign automakers would have to build six plants or more, each employing approximately 3,000 Americans, and supporting tens of thousands of other workers.²⁰

Total U.S. Assembly Plants by OEM



U.S. Production as a % of U.S. Sales (2009-2013, sales-weighted)

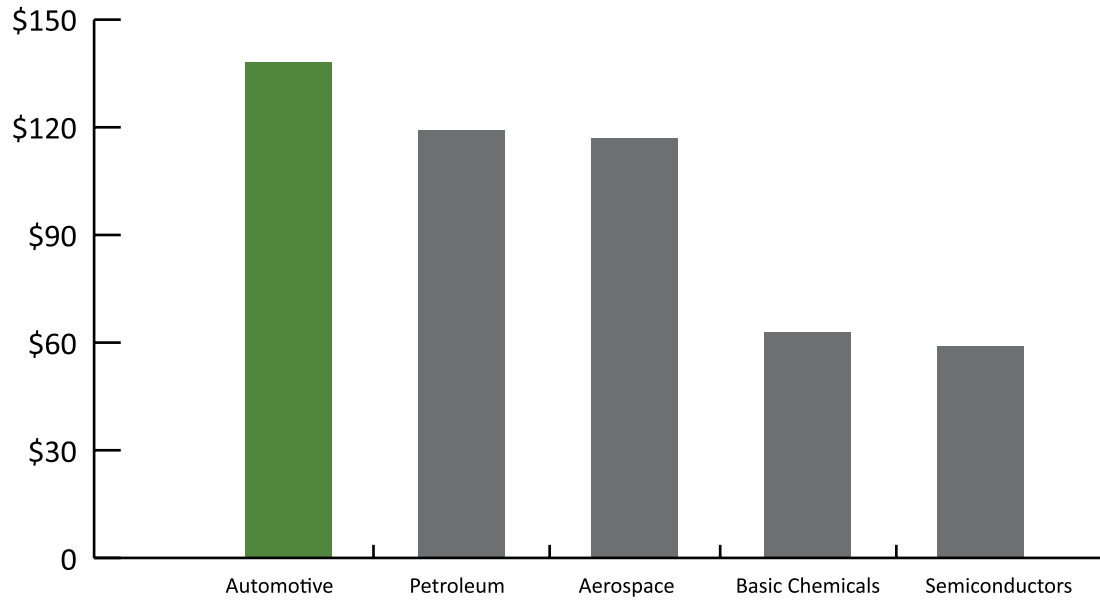


America's Biggest Exporters

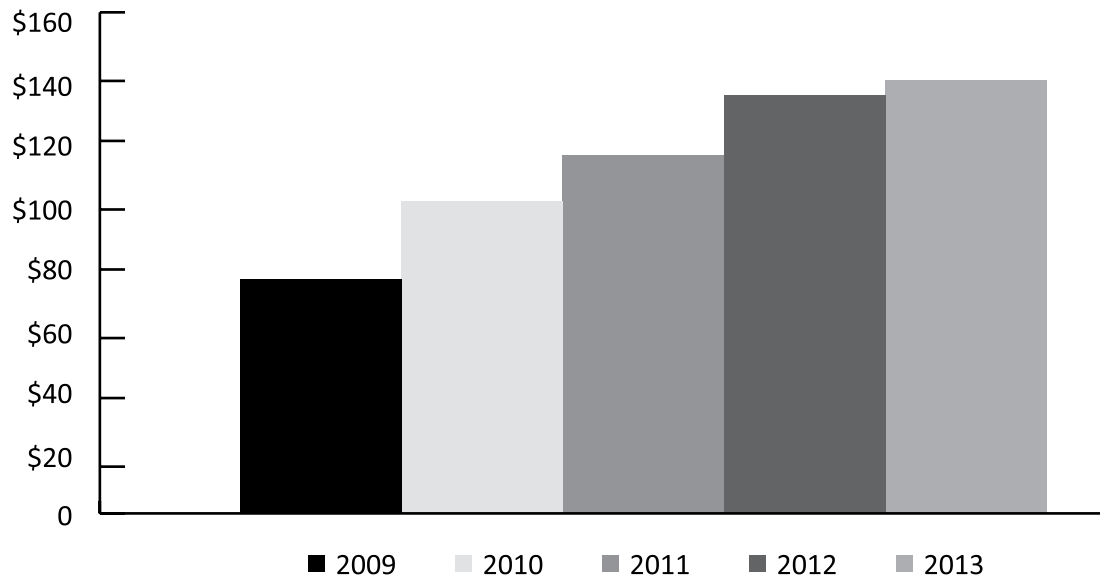
Automakers and suppliers are America's largest exporters, beating the next best performing industry by more than \$86 billion over the past five years.²¹

In 2013, Chrysler, Ford and General Motors exported nearly 1 million American-made vehicles to more than 100 different foreign markets.

Top Five U.S. Exporters (2013, in billions)



Automaker and Supplier Exports (in billions)



AUTOMAKERS ARE INVESTING TO MAKE AMERICA MORE COMPETITIVE

Capital Investment

Automakers assemble more than 85 million new cars and light trucks each year, worldwide. Building new plants and maintaining their existing ones requires hundreds of billions of dollars of investment each year.

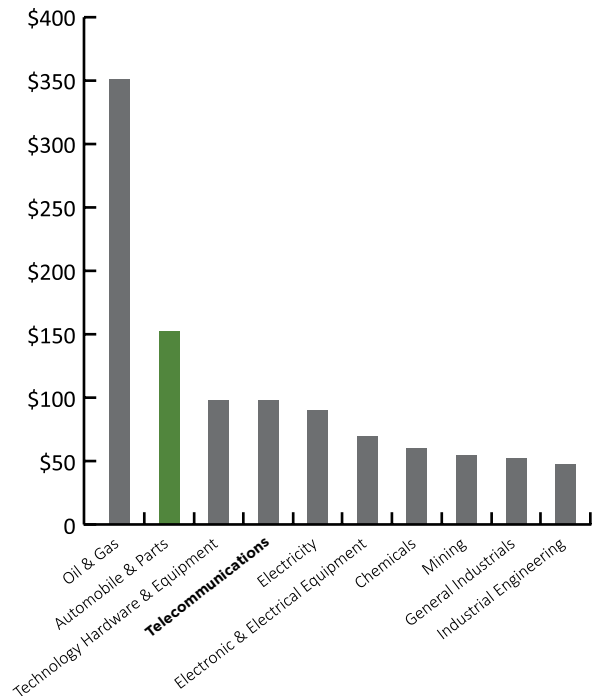
A recent study by the European Commission examined the capital investment (plants and equipment) by more than 2,000 of the world's leading companies. It found that automakers and suppliers spent more on capital investment than technology hardware producers, telecommunications companies, electrical utilities, chemical manufacturers and mining companies.²²

Chrysler, Ford and General Motors' Capital Investments

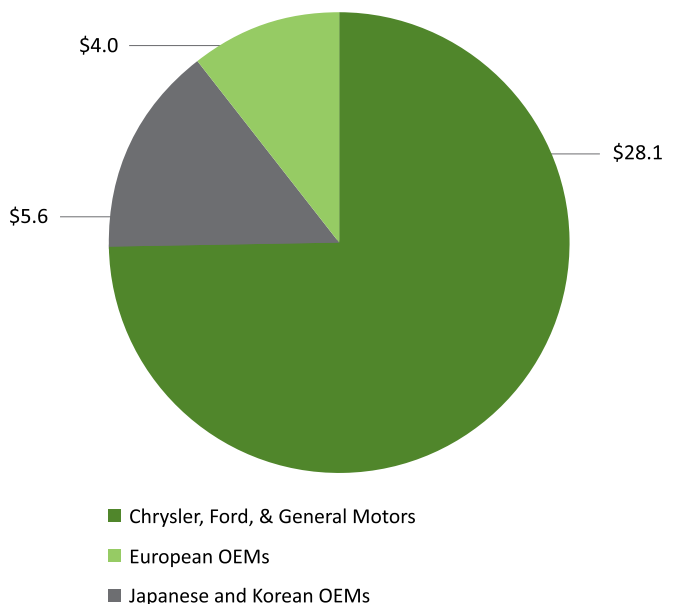
Over the past five years alone, automakers have invested \$38 billion in their U.S. assembly, engine and transmission plants, R&D labs, headquarters offices and other infrastructure that connects and supports them.²³

Chrysler, Ford and General Motors made more than \$28 billion of those \$38 billion in investments (about 75%). Their investment in U.S. facilities is five times greater than all Japanese and Korean automakers combined. Together, Toyota, Honda, Nissan, Isuzu, Subaru, Suzuki, Mazda, Mitsubishi and

Top 10 Industries for Capital Investment, in Billions (2012)



U.S. Capital Investment, in Billions (2009-2013)

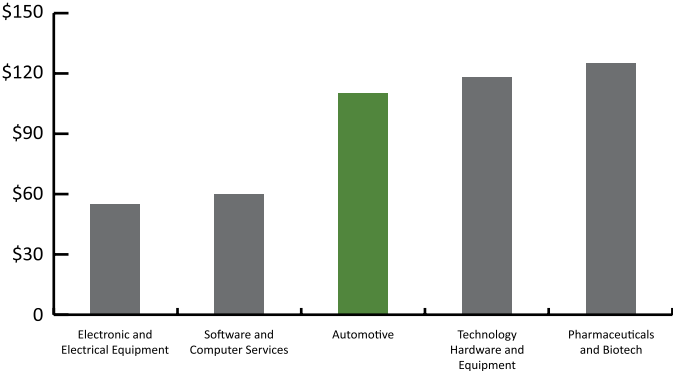


Hyundai-Kia invested only \$5.6 billion during this same five-year period. American automakers' investment is seven times greater than the combined investments of the three major European automakers competing in the U.S. (BMW, Mercedes and VW). Together, they invested only \$4.0 billion over the past five years.

Building a new plant costs about \$1 billion. Expanding a plant to allow for multiple platform production, or to take advantage of new process improvements, can cost several hundred million dollars. Both investments create jobs and help maintain America's competitive advantage, but the new plant will generate hundreds of headlines, while existing plant improvements tend to go unnoticed.

Chrysler, Ford and General Motors operate 28 assembly plants nationwide. They also operate more than 150 other factories, research labs, distribution centers and other facilities, located in 31 states across 91 Congressional Districts.

Top Five Industries for R&D Spending (2012, in billions)



Research & Development

Designing and producing autos is a massive engineering challenge, which is why automakers invest approximately \$120 billion in R&D each year – more than software, electronics, chemicals, aerospace, defense, and oil & gas producers.²⁴

Independent Study Demonstrates American-Made Matters

American University's Kogod School of Business ranked each of the more than 300 models sold in the U.S., based on where the model's engine, transmission and other parts are produced; where it is assembled; where its HQ is based; and where the R&D that produced the model is performed.

These rankings show a steep curve, with models from Chrysler, Ford and General Motors dominating the top of the curve.

C/F/GM (Green) dominate top of rankings. 8 of 10 earn 50+ points.

Foreign automakers (Grey) dominate bottom of rankings. 2/3 earn 4 points or less.

Legend: █ = Chrysler/Ford/GM █ = Foreign Competitors

While R&D spending slowed during the 2009 fiscal crisis, it has rebounded strongly. Between 2012 and 2013, auto R&D increased by \$7 billion.²⁵

In the U.S., automakers and suppliers invested approximately \$18 billion last year developing alternative fuels, advanced powertrains, new materials and better sensors. That represents approximately \$1,200 of R&D for each car sold last year, on average.

For this work, they are awarded approximately 5,000 U.S. patents each year.²⁶ In fact, Ford has earned more than 100 new patents for a single one of its new models: the 2015 F-150 pickup.

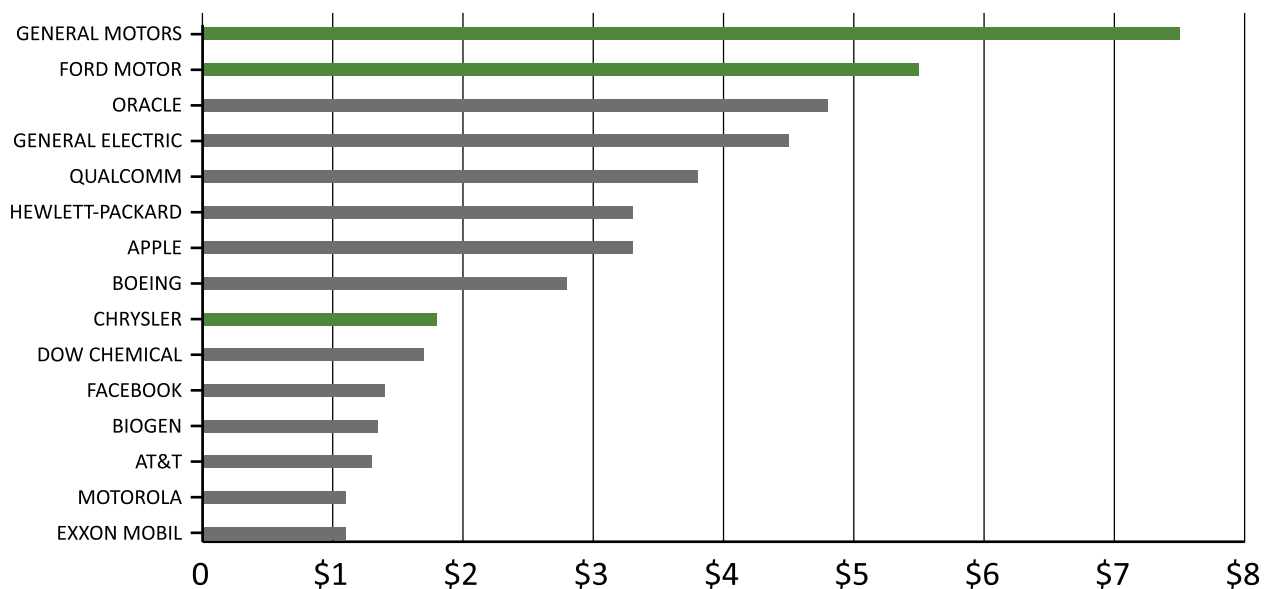
Much of auto R&D is focused on in-vehicle electronics, which can represent as much as half of the cost of a new vehicle. To appreciate the scale and significance of auto R&D, consider several findings from CAR's

recent report, "Just How High-Tech is the Automotive Industry?" For example: A new smart phone contains one microprocessor, while a new car or truck contains about 60. These microprocessors manage 100 or more sensors located throughout the vehicle, connected by as much as a mile of wiring. Just as important, a microprocessor in a smart phone is expected to last about three years, while autos are expected to last 12 years or more.²⁷

Over the past decade, automaker R&D has driven braking technology from anti-lock brakes (which help a driver break faster) to electronic stability control (which keeps a vehicle moving safely when the driver has lost control), to experimental automated emergency steering systems (which control braking, steering and throttle).²⁸

Meanwhile, research into the use of new materials, better joining (welding, fasteners, adhesives) and fabrication could reduce the vehicle body weight by 10% to 20% by 2020.²⁹

GM, Ford and Chrysler's Annual R&D vs. Other Leading Innovators (2012, in billions)



Automaker Jobs

Automakers, their suppliers, their dealerships and the local businesses that support them are responsible for more than 8 million U.S. jobs. No manufacturing sector employs more Americans.³⁰

Chrysler, Ford and General Motors Employment

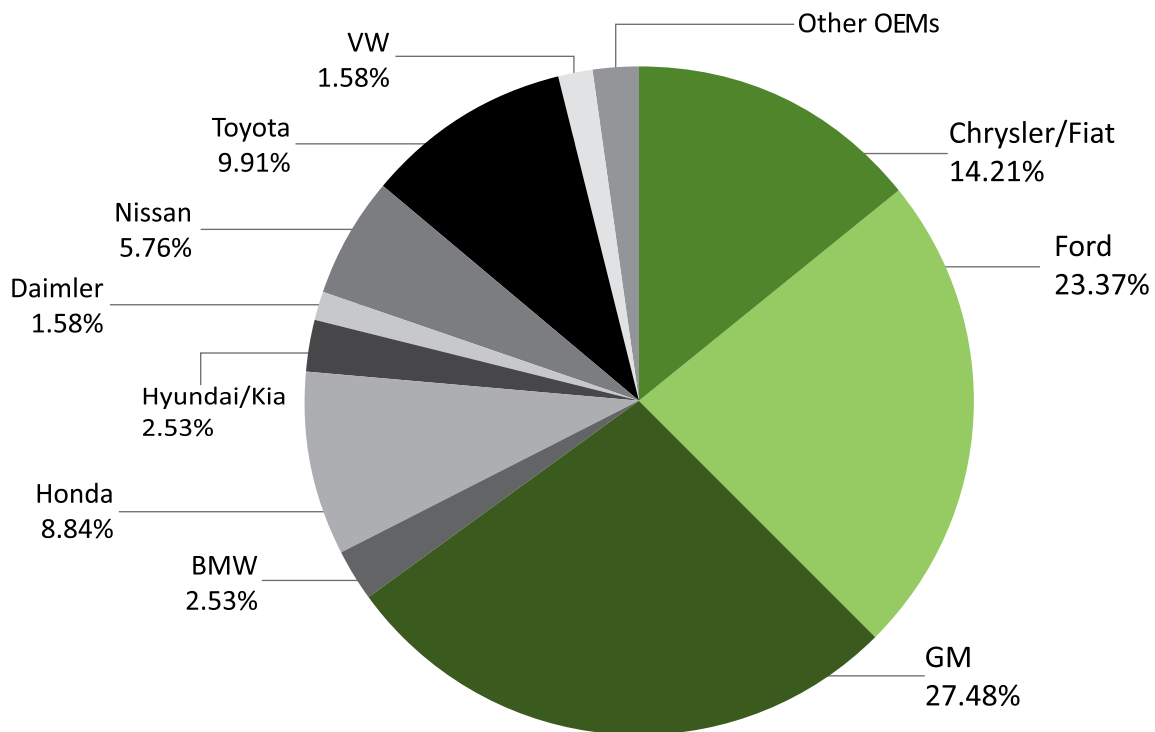
Together, the 16 major automakers competing in the U.S. employ about 300,000 Americans. Chrysler, Ford and General Motors employ more than 200,000 of these Americans.³¹

The fact that Chrysler, Ford and General Motors account for 65% of U.S. auto jobs is remarkable, because they account for only 45% of U.S. market share.

The reason for this disparity is simple. Chrysler, Ford and General Motors produce more of their vehicles here, conduct more of their research here, and buy more of their parts here. As a result, they have based eight times more of their global workforce in the U.S. than their competitors.

To appreciate just how much having an automaker's global headquarters in your country matters, consider VW. VW employs about 5,000 Americans (1% of its total workforce). By comparison, 45% of VW's employees are based in Germany, the company's home market. At Ford, 41% of its workforce is based here, and that includes tens of thousands of engineering, finance, marketing and other management jobs.

U.S. Employment (YE 2013)



EVERY STATE IS AN “AUTO STATE”

The Auto Supply Chain

More than 5,600 auto parts suppliers operate in the U.S.³² Together, they employ more than 734,000 Americans.³³

Approximately two-thirds of every vehicle’s parts content is produced by suppliers. For every worker employed by an automaker, two and a half other workers are employed by parts suppliers.

Many supplier jobs are in R&D. In fact, suppliers accounted for approximately 40% of the \$18 billion in auto R&D conducted in the U.S. each year.³⁴

Suppliers are the biggest reason why every state is an “auto state.” For example, 220 U.S. auto suppliers manufacture parts for hybrid, plug-in hybrid and electric battery vehicle components. They operate across 23 different states.³⁵

A state that hosts one or more assembly plants can support more than 100 different suppliers. For example, Texas and California host 106 and 160, respectively.

Chrysler, Ford and General Motors’ National Footprint

For their part, Chrysler, Ford and General Motors operate more than 180 assembly plants, factories, research labs, distribution centers and other facilities. These are located in 31 states across 91 Congressional Districts. Their auto dealerships employ more than 580,000 other Americans.

Case Study

A Michigan assembly plant supports 24,000 jobs and \$1.8 billion in wages in other states, largely because more than half of its U.S. suppliers operate outside Michigan.

Ford’s Michigan Assembly Plant employs 5,000 workers, but its operations support another 43,000 jobs at parts suppliers and the local businesses that support them. Half of those 48,000 jobs – and nearly half of the \$3.6 billion in annual wages Michigan Assembly generates – are located outside Michigan.

This is due to the fact that more than half of the plant’s 179 U.S.-based tier one suppliers are located outside Michigan. For example, a single supplier in Virginia produced \$117 million worth of powertrain components in 2011, while a single supplier in Illinois produced \$72 million worth of wheel, tire and brake components. Given that production at the plant has increased by more than half since 2011, it is likely that sales at those suppliers have grown by a similar amount.

Case study taken from CAR’s Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy.

A Steep Curve On “Domestic Content”

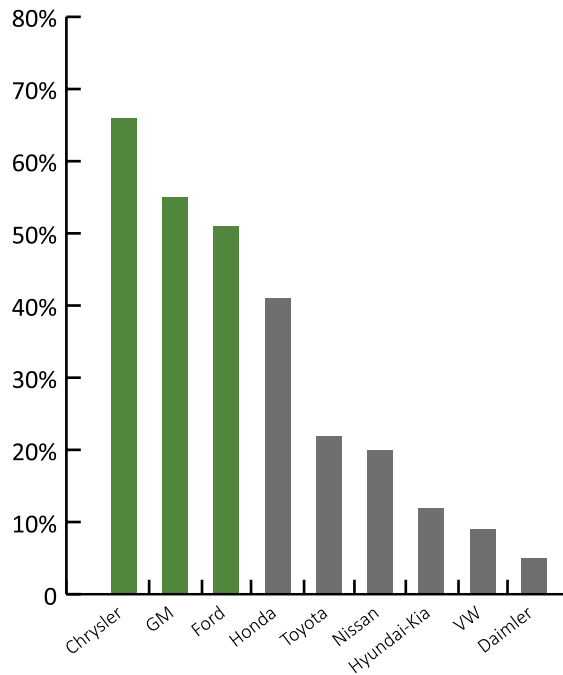
Automakers sell more than 300 different models in the U.S. Those models contain anywhere from 80% to 0% “domestic content” (American- or Canadian-made parts, as defined by the American Automotive Labeling Act (AALA)).

While American auto suppliers produce hundreds of billions of dollars worth of parts each year, they are used in a comparatively small portion of American vehicles. Only one in four models contains 60% or more domestic content. More than half of them contain less than 10% domestic content. And one in four contains none.

From a domestic content perspective, cars and trucks offer a steep curve. Chrysler, Ford and General Motors dominate the top. Seven of 10 of their models contain 60% or more domestic content. By comparison, seven out of 10 of their competitors’ models

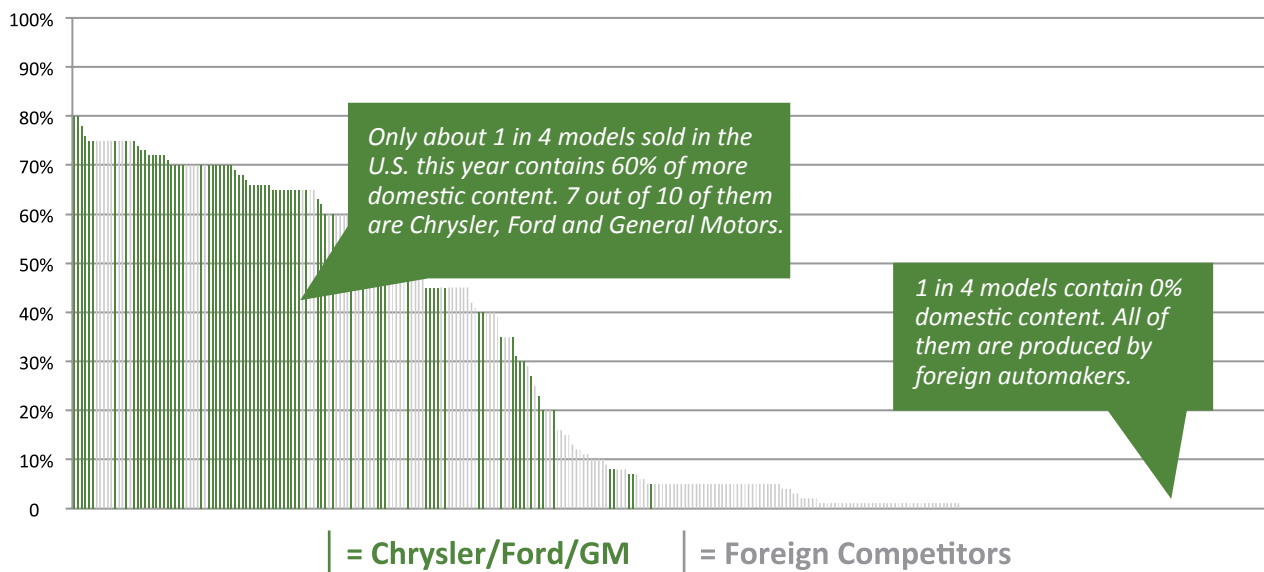
contain 5% or less domestic content. Some foreign manufacturers score better than others. For example, Honda’s domestic content matches its domestic competitors, while even the U.S. assembled models from BMW contain 20% or less domestic content.

Average AALA Score (2014 MY)



2014 AALA Scores

7 out of 10 C/F/GM models contain 60% or more domestic content. 7 out of 10 foreign automaker models contain 5% or less.



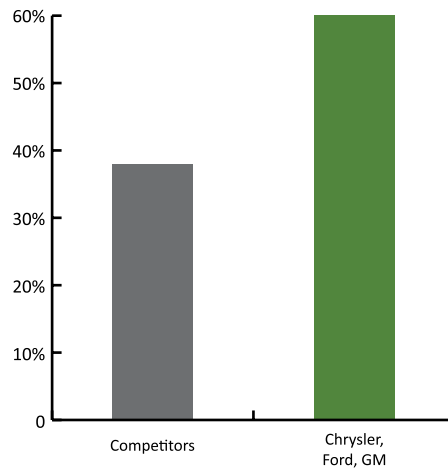
Chrysler, Ford and General Motors Use of Domestic Content

On a sales-weighted basis, Chrysler, Ford and General Motors use 60% more domestic content, per vehicle, than foreign automakers.

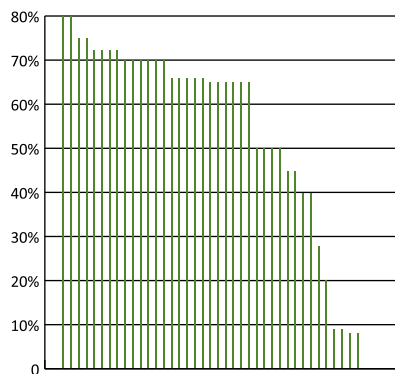
Nine fleet comparisons below help explain the difference. These charts show the percent of domestic content for each model sold by Chrysler, Ford, General Motors, VW, BMW, Mercedes, Honda, Hyundai-Kia and Toyota. The German manufacturers each operate an assembly plant in the U.S., but none of those plants produce a vehicle with 50% or more domestic content. Only three out of 27 Hyundai-Kia models have more than 50% domestic content. Twenty-six of Toyota's 40 models score 10% or less. Only 11 score 50% or more. Only Honda comes

close to Chrysler, Ford and General Motors. 60% of its models (12 of 20) score 50% or more. At Chrysler, Ford and General Motors, 74% of their models contain 50% or more domestic content.

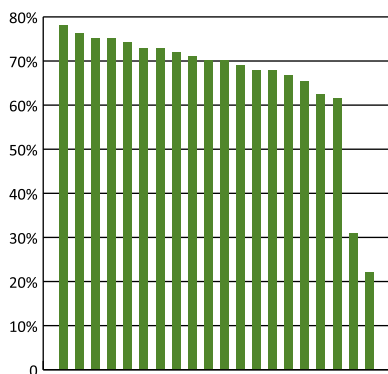
Sales-Weighted AALA Average (2014MY)



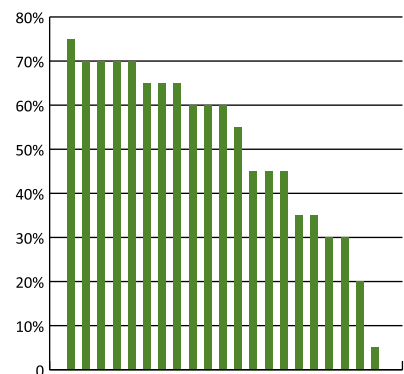
General Motors



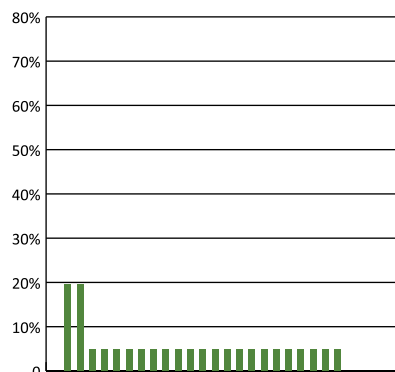
Chrysler



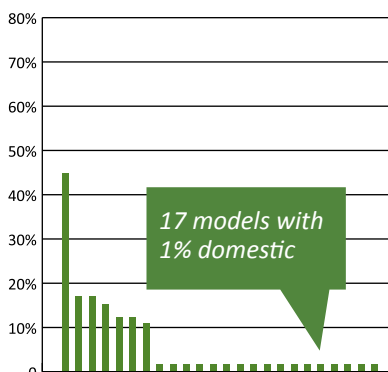
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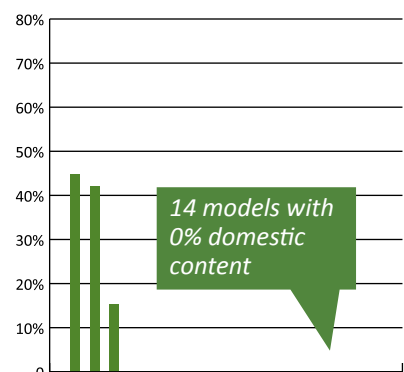
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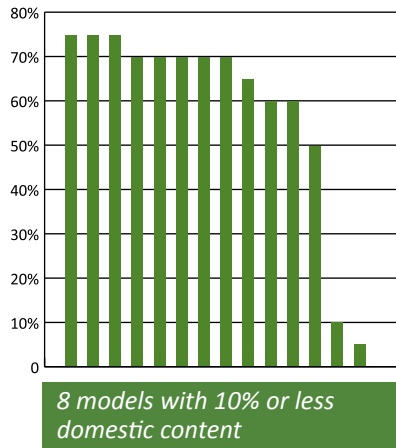
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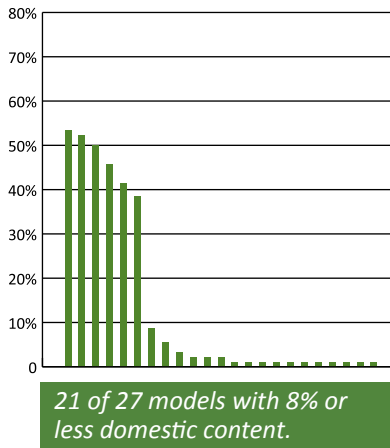
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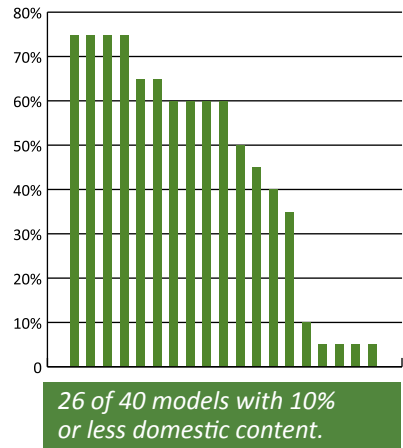
Honda



Hyundai-Kia



Toyota

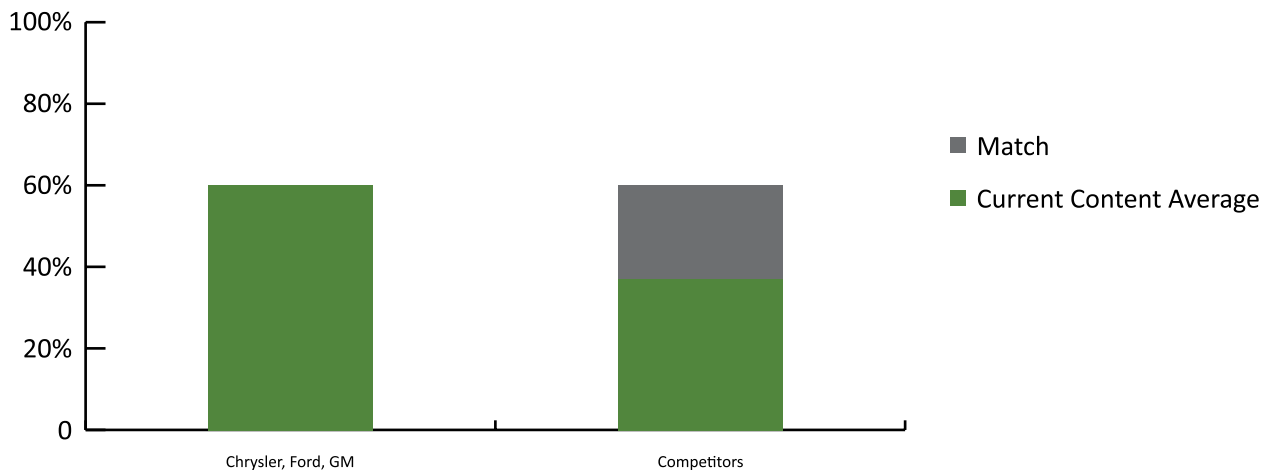


The Difference: Dozens of New U.S. Supplier Plants, Producing 2 Million Cars' Worth of Parts

To appreciate the scale of this difference, consider what would happen if foreign automakers matched Chrysler, Ford and

General Motors' record. Had foreign automakers increased their use of domestic content to match Chrysler, Ford and General Motors' content rate (from 37% to 60%), they would have insourced the equivalent of nearly 2 million cars worth of parts last year.

To Match C/F/GM Parts Purchases Last Year, Competitors Would Have Had to Purchase 2 Million Vehicles' Worth of Domestic Parts



OUR INVESTMENTS ARE CONTRIBUTING TO THE REVIVAL OF MANUFACTURING ACROSS AMERICA

Auto Sales, Production and Employment Rebound

The auto sector was hit hard by the recession and the resulting credit crunch. As auto sales rebounded, they contributed greatly to the ongoing recovery. U.S. economic growth has averaged 2.2% per year since the end of the recession (the second quarter of 2009). Approximately 10% of that growth was produced by the auto sector.

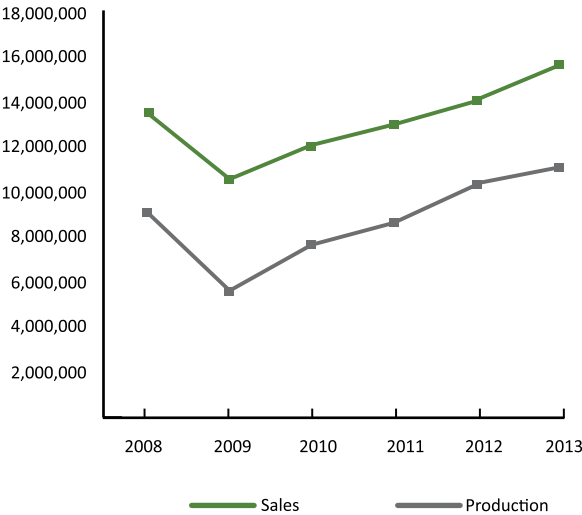
U.S. sales have increased by nearly half since the financial crisis (from 10.4 million in 2009 to 15.6 million last year). CAR projects sales will reach or exceed 16.5 million vehicles per year through 2016.³⁶

During that same period, U.S. auto production has nearly doubled (from 5.8 million vehicles produced in 2009 to 10.9 million vehicles last year). U.S. auto production is expected to reach or exceed 11.5 million vehicles per year through 2016.³⁷

Automakers are operating second shifts at most of their plants, and some have added third shifts. As a result, CAR predicts that automotive employment will increase by more than one-third from 2011 to 2016, a compound growth rate of 6.1%.³⁸

Surprisingly, U.S. auto sales increased by double digits from 2010 through 2013, even though GDP has grown by less than 3% each year. Historically, only a GDP growth rate of

Rebound in U.S. Sales and Production



4% or more would support sales increases of this kind.³⁹

Production Shifting to U.S.

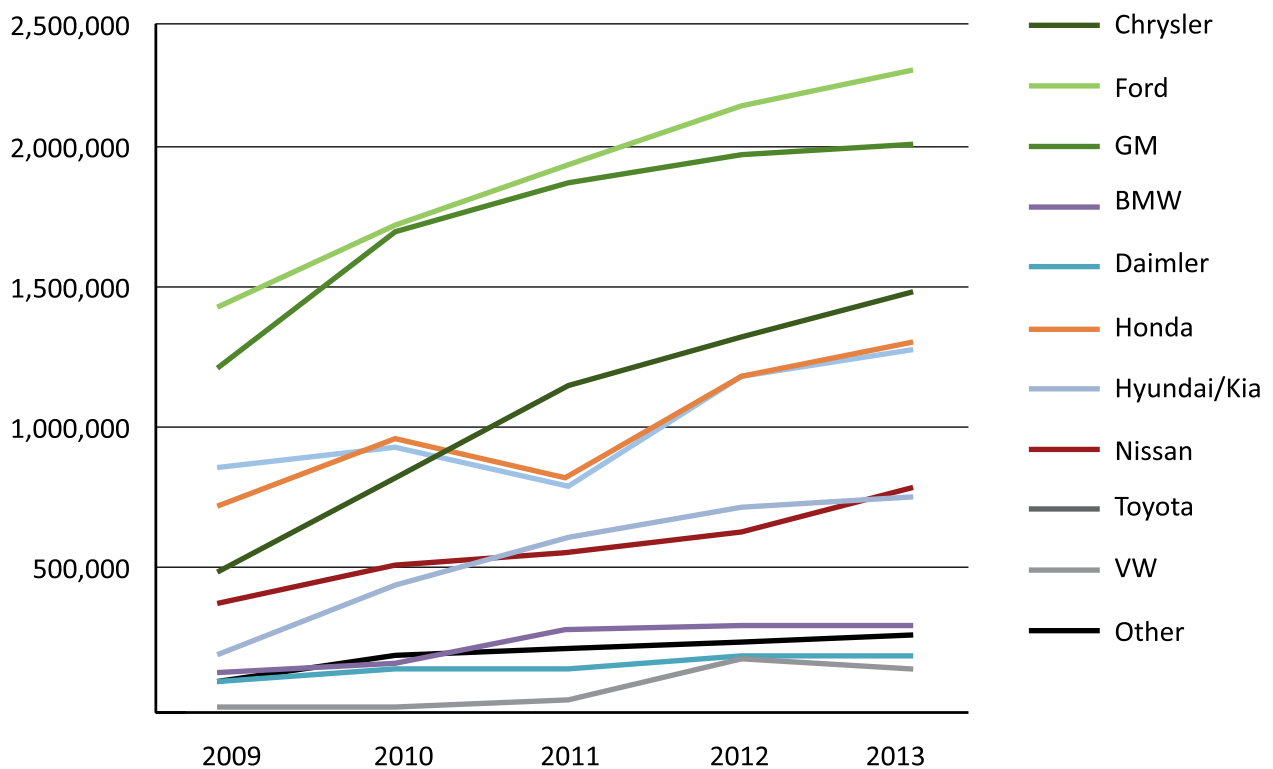
Recently, many automakers have responded to new domestic cost advantages by shifting production from other countries to the U.S. Ford has shifted some production of its Fusion sedan from Mexico to Michigan and its Transit van from Turkey to Missouri. General Motors is moving more of its pickup production to the U.S. this year.

Part of this change relates to reductions in the U.S.'s labor and energy costs, but an industry-wide move toward global model platforms is also a factor. Throughout the automotive industry, automakers are

reducing their research, development and production costs by building their models from a smaller number of body platforms. They are also centralizing production of those platforms. In such cases, more efficient and innovative markets, like the U.S., can gain volume, by exporting the same body frame or major component to

assembly facilities around the world.⁴⁰ Moreover, as new platform hubs grow, foreign auto suppliers may build new plants in the U.S. to serve them. Nine out of 10 of the world's largest automakers and 46 of the world's top 50 global automotive suppliers have opened R&D facilities in Michigan alone.⁴¹

Total U.S. Production: 2009-2013



IN AN INDUSTRY AS COMPETITIVE AND CAPITAL-INTENSIVE AS AUTOS, PUBLIC POLICY MATTERS

The long-term success of any American research lab or assembly plant depends, in part, on how government regulations, global trade agreements, and national currency policies, together, affect an automaker's ability to compete.

Case Study: Currency Manipulation

Currency exchange rates can be as important a determinant of trade outcomes as the quality of a particular good or service traded. Some governments work with their central banks and other partners to manipulate their currency's value in order to provide their exporters an unfair competitive advantage. By undervaluing their currency, they boost exports and impede imports.

While International Monetary Fund (IMF) rules prohibit the manipulation of exchange rates to gain an unfair competitive advantage, the lack of enforceability of these rules has limited their impact.

The United States is currently negotiating the Trans-Pacific Partnership (TPP) with eleven other countries: Canada, Mexico, Peru, Chile, New Zealand, Australia, Brunei, Singapore, Malaysia, Vietnam and Japan. The AAPC has called for the inclusion of strong and enforceable rules against currency manipulation in the TPP. Given the fact that several countries involved in the negotiations, especially Japan, and other

countries that have expressed an interest in joining the agreement, like South Korea, are known currency manipulators, it is critical that the final agreement include enforceable provisions to prevent trade-distorting currency interventions.

There is strong support in the U.S. Congress for addressing managed exchange rates in U.S. trade agreements, including the TPP. In June 2013, 230 Republican and Democratic members of the U.S. House of Representatives sent a letter to President Obama, which stated:

“As the United States continues to negotiate the Trans-Pacific Partnership, it is imperative that the agreement address currency manipulation.”

In September 2013, 60 Republican and Democratic Senators sent a similar letter to Jack Lew, Secretary of the Treasury, and Michael Froman, United States Trade Representative. The letter states:

“We agree with the Administration's stated goal that the Trans-Pacific Partnership (TPP) has 'high standards worthy of a 21st century trade agreement.' To achieve this, however, we think it is necessary to address one of the 21st century's most serious trade problems: foreign currency manipulation.”

As Paul Volcker, former Secretary of the Treasury, has explained, “In five minutes, exchange rates can wipe out what it took trade negotiators ten years to accomplish.” A recent study by the Peterson Institute for International Economics found that as many as 5 million American jobs could be lost due to foreign currency manipulation.

To ensure that the TPP and all our trade agreements live up to their potential and to address the trade distorting effects of currency manipulation, it is critical that the U.S. include strong and enforceable currency manipulation disciplines in these agreements.

Case Study: International Safety Standards

U.S. manufacturers operate under the Federal Motor Vehicle Safety Standards (FMVSS), while European manufacturers follow Economic Commission for Europe (ECE) standards. Both achieve high safety and environmental performance and outcomes. By accepting both of these equally robust sets of standards, the U.S., EU and other countries could encourage a more efficient and competitive automotive industry by:

- Reducing numbers of prototypes needed for testing and evaluation;
- Eliminating redundant testing and calibration that have no added consumer or environmental benefit;
- Reducing record keeping, data process and oversight resources;
- Reducing administration/retrofitting costs for consumers relocating between countries; and,
- Moving transportation of automobiles and auto parts across international borders more efficiently.

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- ³United States Department of Commerce, International Trade Administration (2014).
- ⁴Motor & Equipment Manufacturers Association. Moving America Forward (2013).
- ⁵Result calculated by multiplying foreign automakers' 2013 U.S. sales by American automakers' 2013 U.S. production as a percent of sales rate.
- ⁶Result calculated by multiplying foreign automakers' 2013 U.S. sales by American automaker's sales-weighted domestic content average for the 2013 model year.
- ⁷The 2013 EU Industrial R&D Investment Scoreboard. European Commission IRI (2013).
- ⁸U.S. Vehicle Sales, Production, & Employment Outlook. McAlinden, Sean, Dr., and Yen Chen (January 2014).
- ⁹U.S. Vehicle Sales, Production, & Employment Outlook. McAlinden, Sean, Dr., and Yen Chen (January 2014).
- ¹⁰For a more complete examination of this trend, see Economic Contribution of the Ford Motor Company Michigan Assembly Plant to Michigan Economy.
- ¹¹Assumes autos are 190 inches each (approximate size of popular mid-sized sedans).
- ¹²For a more complete analysis of "job multipliers" see reports from CAR's Sustainability & Economic Development Strategies group.
- ¹³Motor & Equipment Manufacturers Association website (2014).
- ¹⁴Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. Hill, Kim, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013).
- ¹⁵The Effect on the U.S. Economy of the Successful Restructuring of General Motors. McAlinden, Sean P., and Debra M. Menk (2013). Page 4.
- ¹⁶Motor & Equipment Manufacturers Association, Moving America Forward (2013).
- ¹⁷Just How High-Tech Is the Automotive Industry? Kim Hill, Bernard Swiecki, Debra M. Menk and Joshua Creeger (January 2014). Page 1.
- ¹⁸In 2013, foreign automakers sold 8,510,454 cars and trucks in the U.S. and produced 5,052,666 cars and trucks here, for a U.S. production rate of 59%.
- ¹⁹To match Chrysler, Ford and General Motor's 82% U.S. production rate, foreign automakers would have had to produce 1,937,821 more cars and trucks here (moving from 5,052,666 out of 8,510,454 sold, to 6,990,487 out of 8,510,454 sold).
- ²⁰Assuming each plant produced 300,000 vehicles, it would require 6.5 plants to produce 1,937,821 vehicles. Plants capable of producing 300,000 vehicles per year employ 3,000 to 4,000 workers. New plants require \$1 to \$2 billion in capital investment.
- ²¹United States Department of Commerce, International Trade Administration (2014).
- ²²The 2013 EU Industrial R&D Investment Scoreboard. European Commission IRI (2013).
- ²³Center for Automotive Research analysis (2013).
- ²⁴EU R&D Scoreboard | The 2013 EU Industrial R&D Investment Scoreboard. 2013 ed. Washington: European Commission, 2013.
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- ³⁰Hill, Kim, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz. Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. March 2013.
- ³¹Automaker employment (both in the U.S. and globally) is obtained from their respective annual reports and corporate websites, as well as reports from the trade groups they support.
- ³²The Effect on the U.S. Economy of the Successful Restructuring of General Motors. Sean McLinden and Deb Menk (2013). Page 4.
- ³³Motor & Equipment Manufacturers Association. Moving America Forward (2013).
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- ³⁵Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. Kim Hill, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013).
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- ³⁷U.S. Vehicle Sales, Production, & Employment Outlook. Sean McAlinden, Yen Chen (January 2014). Page 4.
- ³⁸Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. Kim Hill, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013). Page 40.
- ³⁹After the Bailout: Future Prospects for the U.S. Auto Industry. Sean McLinden and Yen Chen (January 2013). Page 14.
- ⁴⁰Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. Kim Hill, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013).
- ⁴¹Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy. Kim Hill, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013).

