

|| US INDUSTRY (NAICS) REPORT 33611a

Car & Automobile Manufacturing in the US

Hit the road: Increasing consumer confidence will likely support industry revenue growth

Devin Savaskan | August 2020

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About IBISWorld

IBISWorld specializes in industry research with coverage on thousands of global industries. Our comprehensive data and in-depth analysis help businesses of all types gain quick and actionable insights on industries around the world. Busy professionals can spend less time researching and preparing for meetings, and more time focused on making strategic business decisions that benefit you, your company and your clients. We offer research on industries in the US, Canada, Australia, New Zealand, Germany, the UK, Ireland, China and Mexico, as well as industries that are truly global in nature.

Covid-19

Coronavirus Impact Update

IBISWorld's analysts constantly monitor the industry impacts of current events in real-time – here is an update of how this industry is likely to be impacted as a result of the global COVID-19 pandemic:

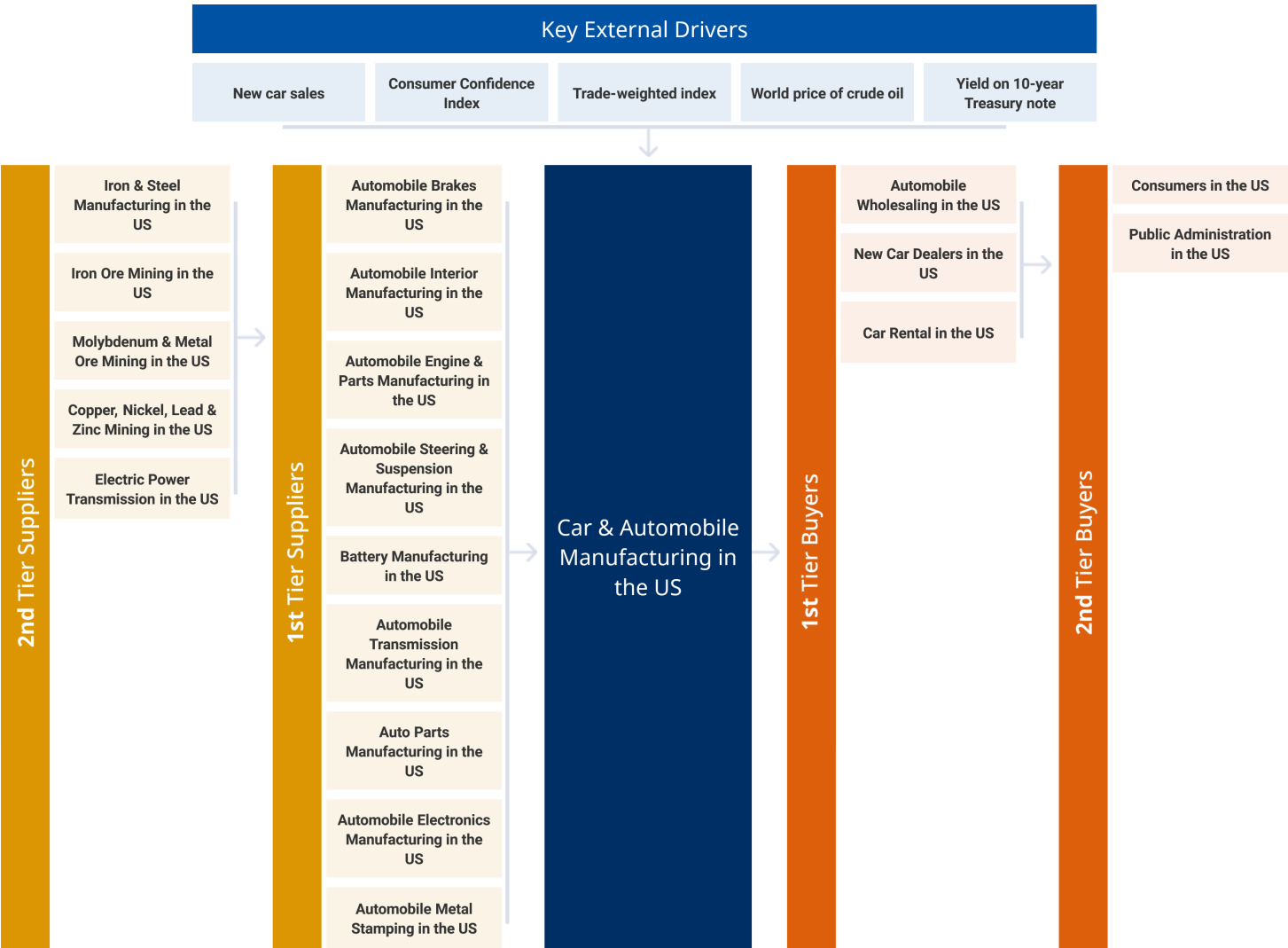
- Revenue for the Car and Automobile Manufacturing industry has been adjusted to decline 38.9% in 2020, due to constricted economy activity expected as a result of the COVID-19 (coronavirus) outbreak. For more detail, please see the Current Performance chapter.
- Automaker restructuring away from industry-relevant vehicles, combined with hindered activity in 2020, is expected to lead to limited industry profitability in 2020. For more detail, please see the Cost Structure Benchmark chapter.
- Anticipated declines in interest rates in 2020 to combat the effect of the COVID-19 (coronavirus) pandemic on the greater economy may help to bolster industry revenue once the virus is contained. For more detail, please see the Demand Determinants chapter.

Note: The content in this report is currently being updated to reflect the trends outlined above.





About This Industry

Industry Definition	Companies in the Car and Automobile Manufacturing industry manufacture cars and automobile chassis. These operators, which are referred to as automakers, typically produce cars, including electric cars, in assembly plants. The manufacturing of light trucks (e.g. vans, pickups and SUVs), heavy trucks and motorcycles is excluded from this industry.
Major Players	<div>Toyota Motor Corporation</div> <div>Tesla Inc.</div> <div>Honda Motor Co. Ltd.</div> <div>Ford Motor Company</div> <div>General Motors Company</div>
Main Activities	<div>The primary activities of this industry:</div> <div>Automobile assembling</div> <div>Automobile chassis manufacturing</div> <div>The major products and services in this industry:</div> <div>Compact and subcompact cars</div> <div>Midsized sedans</div> <div>Large cars</div> <div>Luxury cars</div>

Supply Chain



SIMILAR INDUSTRIES

SUV & Light Truck Manufacturing in the US	Truck & Bus Manufacturing in the US	Truck, Trailer & Motor Home Manufacturing in the US	Tank & Armored Vehicle Manufacturing in the US
 Competitor	 Competitor	 Competitor	 Complementor

RELATED INTERNATIONAL INDUSTRIES

None

Industry at a Glance

Key Statistics

\$61.0bn
Revenue

Annual Growth
2015-2020

-14.9%

Annual Growth
2020-2025

6.1%

Annual Growth
2015-2025



\$244.1m
Profit

Annual Growth
2015-2020

-42.7%

Annual Growth
2015-2025



0.4%
Profit Margin

Annual Growth
2015-2020

-2.5%

Annual Growth
2015-2025



121
Businesses

Annual Growth
2015-2020

-6.7%

Annual Growth
2020-2025

0.0%

Annual Growth
2015-2025



57,548
Employment

Annual Growth
2015-2020

-5.9%

Annual Growth
2020-2025

3.4%

Annual Growth
2015-2025



\$4.7bn
Wages

Annual Growth
2015-2020

-6.9%

Annual Growth
2020-2025

3.9%

Annual Growth
2015-2025



Key External Drivers

% = 2015-2020 Annual Growth

-5.6%

World price of crude oil

1.3%

Consumer Confidence Index

-1.3%

Yield on 10-year Treasury note

1.4%

Trade-weighted index

-3.9%

New car sales

Industry Structure



POSITIVE IMPACT

Industry Assistance
High



MIXED IMPACT

Capital Intensity
Medium

Concentration
Medium

Regulation
Medium

Barriers to Entry
Medium

Competition
Medium



NEGATIVE IMPACT

Life Cycle
Decline

Revenue Volatility
High

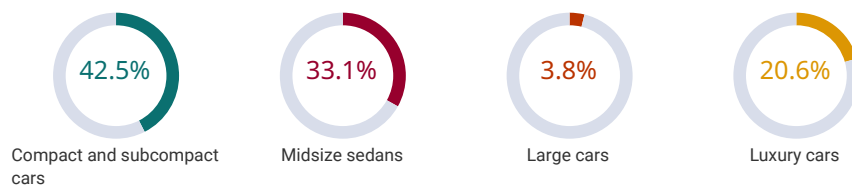
Technology Change
High

Globalization
High

Key Trends

- Lower fuel prices increase general demand for automobiles, benefiting the sector at large
- Many industry operators have taken steps to reduce costs and streamline processes
- Operators will likely generate over two-thirds of their revenue from exporting their products
- Updated standards offer opportunities for further growth in sales of fuel-efficient product lines
- Industry profit growth is anticipated to remain limited over the next five years
- Global trade of industry products is expected to reverse course
- Profit has declined during the period due to restructuring and cratering demand.

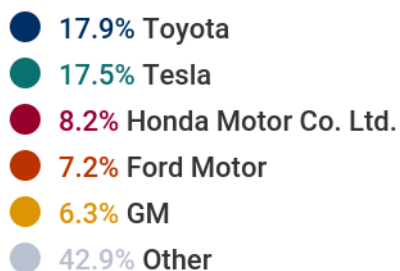
Products & Services Segmentation



Car & Automobile Manufacturing
Source: IBISWorld

Major Players

% = share of industry revenue



Car & Automobile Manufacturing
Source: IBISWorld

SWOT

S STRENGTHS

- High & Steady Level of Assistance
- High Revenue per Employee

W WEAKNESSES

- Decline Life Cycle Stage
- High Volatility
- High Imports
- Low Profit vs. Sector Average
- High Customer Class Concentration
- High Product/Service Concentration
- High Capital Requirements

O OPPORTUNITIES

- High Revenue Growth (2020-2025)
- High Performance Drivers
- Trade-weighted index

T THREATS

- Very Low Revenue Growth (2005-2020)
- Low Revenue Growth (2015-2020)
- Low Outlier Growth
- New car sales

Executive Summary

The Car and Automobile Manufacturing industry has experienced bumpy roads over the five years to 2020.

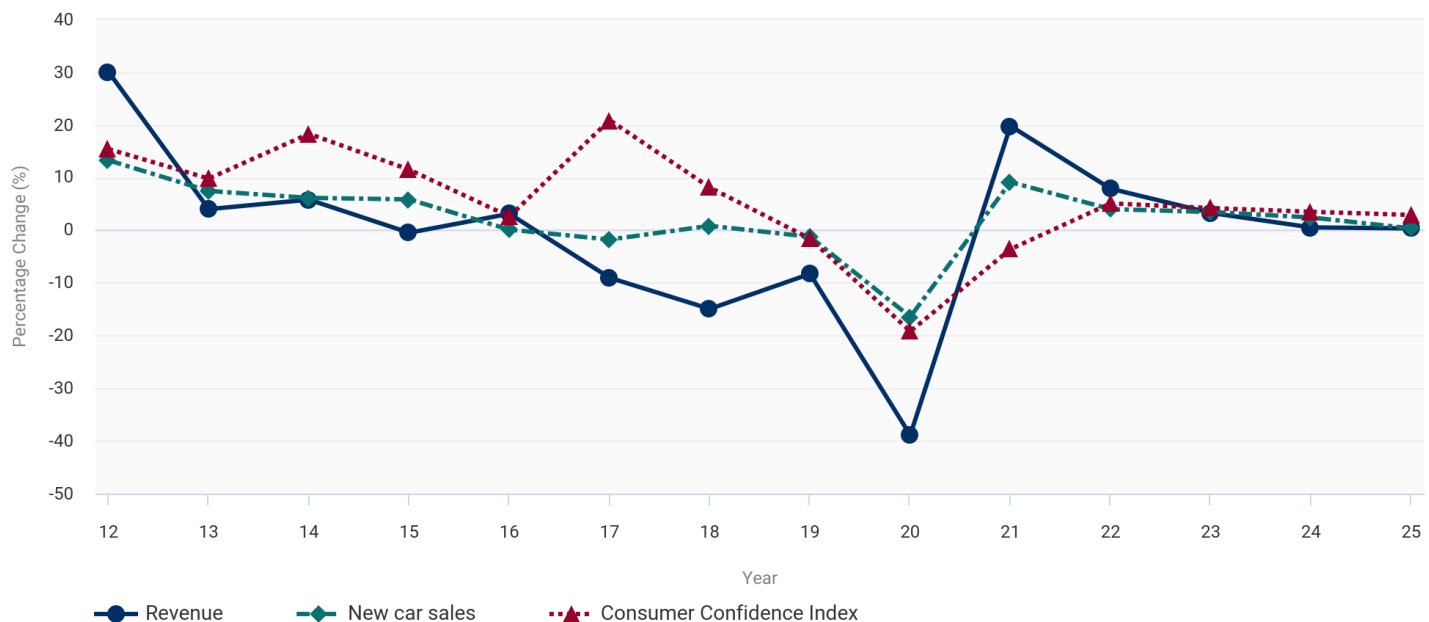
During much of the period, improvements to the economy have helped the auto sector overall. However, declining prices for fuel and crude oil over the past decade have helped bolster demand for light trucks and sport utility vehicles at the expense of compact cars and sedans. Furthermore, automakers' response to changing consumer preferences has been to shift production away from industry-relevant vehicles. In 2017, Fiat Chrysler Automobiles NV halted production of cars and sedans in the United States. In 2018, General Motors Company and Ford Motor Company both announced plans to further restructure operations away from industry-relevant vehicles. As a result, despite positive economic conditions, industry revenue has suffered during the period. In 2020, the COVID-19 (coronavirus) pandemic has deteriorated economic health, and therefore, this decline in revenue has accelerated. Industry revenue has declined at an annualized rate of 14.9% to \$61.0 billion over the five years to 2020, including a decline of 38.9% in 2020 alone.

As consumers become more environmentally conscious, major players have focused operations on the production of hybrid and compact cars. As a result, this product line has increased rapidly in popularity during the period and is set to generate the greatest share of revenue moving forward. As operators continue to tailor-make vehicles to consumer desires, companies within the industry have also attempted to modernize equipment. Wage costs are higher in the United States compared with some foreign countries, making automation an appealing strategy to cut costs. However, offshoring is prevalent in the industry and is expected to negatively affect industry profit growth. Overall, profit has declined during the period due to restructuring and cratering demand.

Over the five years to 2025, industry revenue is expected to return to growth. While operators are expected to continue producing fewer and fewer cars and sedans, industry revenue performance is expected to be aided by reversing economic trends. Anticipated low interest rates and declining unemployment are forecast to bolster consumer sentiment. As confidence in the economy returns, consumers are expected to be more inclined to make expensive discretionary purchases, such as vehicles. Industry revenue is anticipated to grow at an annualized rate of 6.1% to \$82.2 billion over the five years to 2025.

Industry Performance

Key External Drivers 2012–2025



Car & Automobile Manufacturing
Source: IBISWorld

Key External Drivers

New car sales

New car sales are an integral component to the industry. With the US economy improving over most of the five years to 2020, new car sales have grown strongly, as both consumer sentiment and disposable income have grown following the recession. However, due to the COVID-19 (coronavirus) pandemic, new car sales are expected to decrease in 2020.

Consumer Confidence Index

People generally postpone big-ticket purchases, such as new vehicles, when consumer confidence is low. For example, consumer confidence plummeted during the recession, and consequently, the effects flowed upstream to automakers. The Consumer Confidence Index is expected to decrease in 2020, posing a potential threat to the industry.

Trade-weighted index

Exchange rates play an important role in the industry's ability to remain competitive. An appreciation of the US dollar, measured by the trade-weighted index (TWI), typically leads to a decline in exports, which has a negative effect on industry revenue. The TWI is expected to increase in 2020.

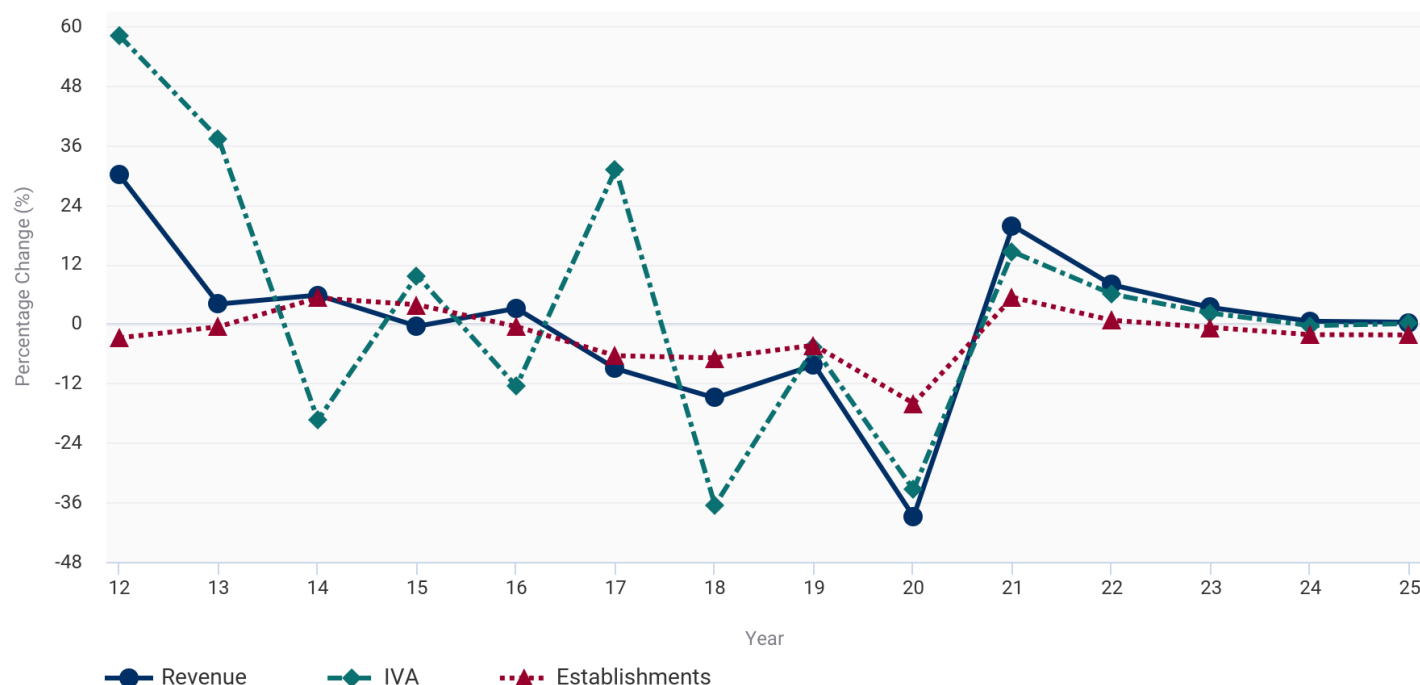
World price of crude oil

The world price of crude oil represents a significant aspect of a vehicle's running cost. The retail price of gasoline has grown rapidly, and this increase has led consumers to rethink their fuel consumption. Consequently, consumers have demanded smaller and more fuel-efficient vehicles, even though domestic automakers have historically focused on larger, less fuel-efficient cars. The world price of crude oil is expected to decrease in 2020.

Yield on 10-year Treasury note

The yield on the 10-year Treasury note is a proxy for and analogous to the interest rate set by the central bank. As the interest rate decreases, demand for cars rises because it costs consumers less to finance vehicle purchases. The yield on the 10-year Treasury note is expected to decrease sharply in 2020, representing a potential opportunity for the industry.

Industry Performance 2012–2025



Car & Automobile Manufacturing
Source: IBISWorld

Current Performance

Companies in the Car and Automobile Manufacturing industry produce midsize and large sedans, compact and subcompact passenger cars and luxury vehicles.

Over the five years to 2020, the general performance of the automotive sector has been strong, largely due to upward trends of key macroeconomic indicators. Over most of the five years to 2020, increased employment, disposable income and a

favorable stock market have helped foster a generally positive perception of the strength of the US economy. As a result, the Consumer Confidence Index has been strong during most the period. Increased consumer sentiment was further assisted by historically low interest rates. With rates staying low during much of the period, increased financing options and access to credit encouraged consumers to spend money on big-ticket discretionary items such as automobiles. In turn, more Americans purchased vehicles.

However, most vehicles purchased have been sport utility vehicles (SUVs), light trucks and recently popular crossovers. Declining oil prices during much of the period has helped shift consumer preferences away from compact cars and sedans. As demand for industry-relevant vehicles declined, manufacturers have begun to alter production schedules. Domestic automakers have begun focusing higher percentages of production on trucks, neglecting cars. Over the five years to 2020, every major domestic automaker has reduced vehicle production of sedans and compact cars. In 2017, Fiat Chrysler Automobiles NV (Fiat Chrysler) exited the industry entirely, opting to use all US manufacturing plants for light trucks and SUVs. In 2018, Ford Motor Company (Ford) announced further restructuring of operations away from sedans, while General Motors Company (GM) announced the closure of five plants used to produce industry-relevant vehicles.

While a structural decline was already in place despite positive macroeconomic conditions, the economy is expected to plunge in 2020, accelerating the decline in industry revenue. In 2020, the COVID-19 (coronavirus) pandemic is anticipated to stifle macroeconomic activity across the United States. As infection rates and deaths have increased, affected state governments began to implement policies to combat the spread of coronavirus. This included stay-at home orders being implemented and restricting which businesses are able to remain operational. As a result, business investment and consumer sentiment have dried up, and many US citizens have filed for unemployment at staggering rates as nonessential businesses shut down. As unemployment increases and macroeconomic activity becomes stunted, US consumers have experienced a drop in disposable income and have become less likely to make large discretionary purchases, such as industry-relevant sedans and compact cars. As a result, new car sales are expected to decline 29.9% in 2020. Furthermore, while manufacturing operations have been largely considered essential, many industry companies opted to temporarily idle plants to combat losses or due to fear of the virus spreading in an industry establishment. While enhanced federal stimulus and a reduction in interest rates have been implemented to combat any negative economic effect, this is unlikely to offset reduced demand for automobiles. As a result, industry revenue has declined an annualized 14.9% to \$61.0 billion over the five years to 2020, including a decline of 38.9% in 2020 alone. Effects of the coronavirus pandemic and automaker restructuring has led industry profit to decline over the past five years.

Fuel prices and consumer preference

Fuel prices have a particularly complex relationship with the industry.

Over the five years to 2020, the world price of crude oil has experienced sharp declines, which has left crude prices at near historic lows. High gasoline prices are often detrimental to industry operators; if consumers consider fuel prices to be too high, they may be more likely to seek alternative forms of transportation. These

alternative options include public transportation, bicycles, walking and ride-sharing, each of which reduces demand for vehicles. Overall, lower fuel prices increase general demand for automobiles, benefiting the sector at large.

However, while low gasoline prices generally aid industry operators, they may also shift consumer tastes away from industry products. When gasoline prices are high, as they were early during the period, consumers tend to opt for smaller, more fuel-efficient compact cars and sedans compared with gas guzzling vans and trucks. Companies such as Toyota Motor Corporation (Toyota) were positioned to benefit from this trend because of their focus on compact vehicles. Other companies, such as GM, Ford and Fiat Chrysler, failed to adapt to the trend and remained focused on their core products, including pick-up trucks and SUVs. However, when fuel prices decline, US consumers are more inclined to purchase trucks, vans and SUVs, products that fall outside of the industry. This relationship between consumer tastes and fuel prices has drastically hurt industry revenue. Fiat Chrysler has ultimately exited the industry entirely, while Ford and GM have rapidly worked to restructure to satisfy consumer preferences. This development has been damaging to industry revenue overall. While crude prices are expected to moderately rebound over the coming years, it will likely only accelerate a demand for SUVs and crossovers as opposed to industry-relevant products.

Restructuring

Industry profit, measured as earnings before interest and taxes, has fallen during the period, accounting for 0.4% of revenue in 2020, down from 2.9% in 2015.

While this sharp contraction has been accelerated due to the effects of the coronavirus pandemic, profit has consistently declined over the past five years. For over a decade, industry-relevant vehicles were less profitable than light truck alternatives. This reality has been a further reason for a shift in production and facility output for major automakers, which, in turn, has continued to strain industry profitability. Furthermore, automakers generally have contended with low profit in recent years as they began to increase expenditures on research and development of electric or autonomous vehicles.

Many industry operators have taken steps to reduce costs and streamline processes. American producers, such as GM and Fiat Chrysler, have historically been less efficient than their foreign counterparts because the industry is heavily influenced by union labor. A significant share of industry workers belong to the United Automobile Workers (UAW) union, and these workers have relatively high wages for the broader manufacturing sector. In addition, these workers carry substantial bargaining power, which has led to numerous work stoppages.

Over the five years to 2020, operators have made a concerted effort to reduce wages and improve efficiency. The same is true for foreign manufacturers with facilities in the United States. Nevertheless, to keep up with product innovations and advancements, many automakers have increasingly invested in research and development and automation. Plant closures have also occurred over the past five years. Many operators have moved vehicle production to Canada, Mexico and other foreign nations in an effort to lower costs. Additionally, other automakers have worked to restructure operations to better meet consumer preference. GM

announced in 2020 that it planned to close five plants that produce industry-relevant vehicles. Due to the effects of the coronavirus pandemic on the economy, automakers' concern for cost reduction is expected to be exacerbated. In 2020, a substantial amount of industry plants will likely close, and many workers may be out of work. Overall, the number of industry establishments has declined an annualized 7.0% to 131 locations over the five years to 2020. Subsequently, industry wages have fallen an annualized 6.9% to \$4.7 billion during the same period.

Global landscape

| Trade is an integral part of the industry.

In 2020, industry operators will likely generate over two-thirds of their revenue from exporting their product lines overseas. This is despite exports declining 15.8% in 2020 alone as global demand for automobiles decreases. US automakers ship their products globally, but most industry exports are destined for Canada, China, Germany and Belgium. As a result, the value of industry exports has decreased at an annualized rate of 5.0% to \$39.3 billion over the five years to 2020. Meanwhile, imports are expected to satisfy 87.3% of domestic demand in 2020, despite the value of imports declining 18.6% in 2020 alone due to disrupted supply chains and declining domestic demand for cars. The value of industry imports has decreased at an annualized rate of 4.0% to \$149.4 billion over the five years to 2020. Most foreign automobiles are sourced from Japan, which is the home of the largest auto producer, Toyota, along with Nissan Motor Company Ltd. and Honda Motor Co. Ltd. In 2020, Japan accounts for 23.7% of industry imports.

Historical Performance Data										
Year	Revenue	IVA	Estab.	Enterprises	Employment	Exports	Imports	Wages	Domestic Demand	New car sales
	(\$m)	(\$m)	(Units)	(Units)	(Units)	(\$m)	(\$m)	(\$m)	(\$m)	(Million)
2011	95,789	7,126	178	160	58,375	50,962	147,383	4,636	192,209	13.0
2012	124,570	11,272	173	159	69,285	47,138	170,905	5,790	248,338	14.8
2013	129,558	15,486	172	157	74,056	49,951	174,510	6,157	254,116	15.9
2014	137,081	12,482	181	163	75,408	54,894	173,146	6,313	255,332	16.9
2015	136,434	13,701	188	171	78,185	50,836	183,632	6,661	269,230	17.8
2016	140,702	11,974	187	168	82,360	49,382	189,978	6,908	281,298	17.9
2017	127,998	15,713	175	158	90,890	47,531	192,499	7,905	272,966	17.6
2018	108,879	9,968	163	148	81,872	43,363	184,661	6,920	250,177	17.7
2019	99,853	9,486	156	143	78,002	46,723	183,554	6,543	236,684	17.4
2020	61,023	6,313	131	121	57,548	39,337	149,421	4,662	171,107	12.2

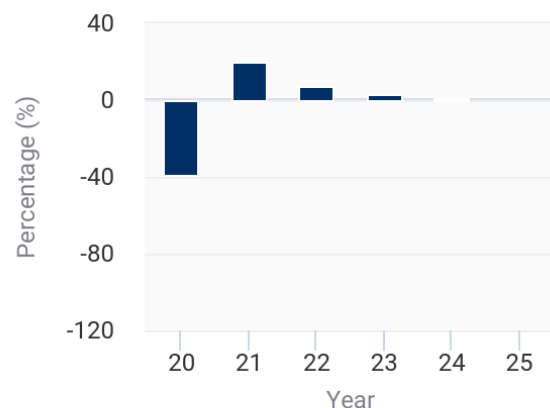
Industry Outlook

Outlook

Over the five years to 2025, revenue for the Car and Automobile Manufacturing industry is anticipated to rebound from the lows of 2020 and the COVID-19 (coronavirus) pandemic.

Revenue growth during the outlook period will most likely be the result of the reversing trends of key macroeconomic industry conditions. For example, the national unemployment rate, which increased significantly in 2020, is expected to fall over the next five years. Furthermore, sustained low interest rates will likely bolster industry revenue performance. As interest rates remain low and potential future fiscal stimulus is implemented, consumers will likely be further incentivized to spend money rather than save it as borrowing costs decrease and access to credit is expanded. As confidence in the economy returns, consumers are expected to be more likely to purchase big-ticket goods, such as vehicles, resulting in renewed industry demand. However, while industry revenue is anticipated to return to growth, this increase will likely be limited, as automakers are still expected to shift production to focus on light trucks. Overall, industry revenue is anticipated to grow an annualized 6.1% to \$82.2 billion over the five years to 2025.

Industry Outlook
2020–2025



Car & Automobile Manufacturing
Source: IBISWorld

Fuel prices and regulations

Corporate Average Fuel Economy (CAFE) requirements set by the Obama administration in July 2011 were made to encourage automakers to restructure their vehicle product lines to meet the industry standard average fuel economy of 54.5 miles per gallon (mpg) by 2025 for all industry product.

However, the Trump administration has recently frozen CAFE requirements at 2020 levels, setting the standard at 37.0 miles per gallon. The plan sets fuel-efficiency standards to improve in annual increments. Though automakers will likely incur higher production costs in meeting these goals, updated standards also offer opportunities for further growth in sales of the industry's fuel-efficient product lines. In recent years, consumers have favored hybrid and fuel-efficient compact and subcompact models, which will likely continue to drive demand for fuel-efficient vehicles over the next five years. Furthermore, the recent reduction in regulations may help operators reduce costs. However, California is currently in a legal battle with the current administration in the hopes of maintaining stricter vehicle mileage

requirements within the state. This battle has divided automakers and could have long lasting implications on the emissions policies followed by the industry; refer to the Regulation and Policy section of this report for more information. While fuel prices are anticipated to grow over the coming years, they are not expected to reach heights anywhere near that of the five years to 2020. Automakers are expected to particularly expand production of SUVs and crossovers over the next five years to increase profit, which declined sharply in 2020.

Costs and capacity

While growing, industry profit growth is anticipated to remain limited over the next five years.

This constraint on industry profitability is only expected to be exacerbated as operators continue to focus on light trucks and crossovers, as opposed to industry-relevant vehicles. Production schedules for automakers enable quick responses to demand shifts, as the actual assembly process takes less than 20.0 hours depending on factory size. Furthermore, car manufacturing plant closures are expected to take place during the outlook period. More closures of plants that produce industry-relevant vehicles may occur as sedans and compact cars continue to offer constrained profit opportunities to automakers. As a result, the number industry establishments is anticipated to grow marginally, rising at an annualized rate of 0.2% to 132 facilities over the five years to 2020. Nonetheless, as the economy is set to recover, consumers are more likely to release pent up demand by buying vehicles including industry goods. To meet this rising demand, industry employment is forecast to increase, rising at an annualized rate of 3.4% to 67,906 workers over the five years to 2025.

Trade and threats

Over the five years to 2025, global trade of industry products is expected is also expected to reverse course.

Global supply chains are expected to normalize, and global demand for vehicles is expected to renew as economies improve across the world. As a result, IBISWorld expects the value of exports to increase an annualized 3.9% to \$47.6 billion over the five years to 2025. Meanwhile, the value of imports is also expected to benefit, increasing at an annualized rate of 1.4% to \$160.3 billion during the same period.

While these developments will likely help industry operators, uncertainty surrounding trade policies may disrupt this opportunity. The current administration is considering the possibility of placing tariffs on foreign vehicles. If implemented, this will likely cause sharp retaliatory tariffs that could disrupt international trade for the entire industry. Furthermore, high concentration of trade to Canada and Mexico makes the future of NAFTA particularly important to industry operators. The principals of NAFTA have created an easy to deliver export destination for industry products. Industry goods, such as midsize, large and luxury cars, can be expensive to ship due to the size and weight of such products, making the ease of conducting trade with Canada and Mexico integral to the strength of trade revenue for the industry. Fortunately, if approved, the recently signed United States-Mexico-Canada Agreement is expected to keep most of NAFTA's industry-relevant principles intact.

Performance Outlook Data

Year	Revenue	IVA	Estab.	Enterprises	Employment	Exports	Imports	Wages	Domestic Demand	New car sales
	(\$m)	(\$m)	(Units)	(Units)	(Units)	(\$m)	(\$m)	(\$m)	(\$m)	(Million)
2020	61,023	6,313	131	121	57,548	39,337	149,421	4,662	171,107	12.2
2021	73,105	7,231	138	127	64,723	42,475	159,588	5,311	190,219	16.4
2022	78,859	7,665	139	128	67,745	44,290	158,075	5,593	192,643	17.6
2023	81,453	7,830	138	126	68,784	46,388	161,510	5,699	196,574	17.9
2024	81,885	7,802	135	123	68,468	46,482	157,477	5,684	192,881	18.0
2025	82,171	7,808	132	121	67,906	47,616	160,313	5,650	194,868	18.0

Industry Life Cycle

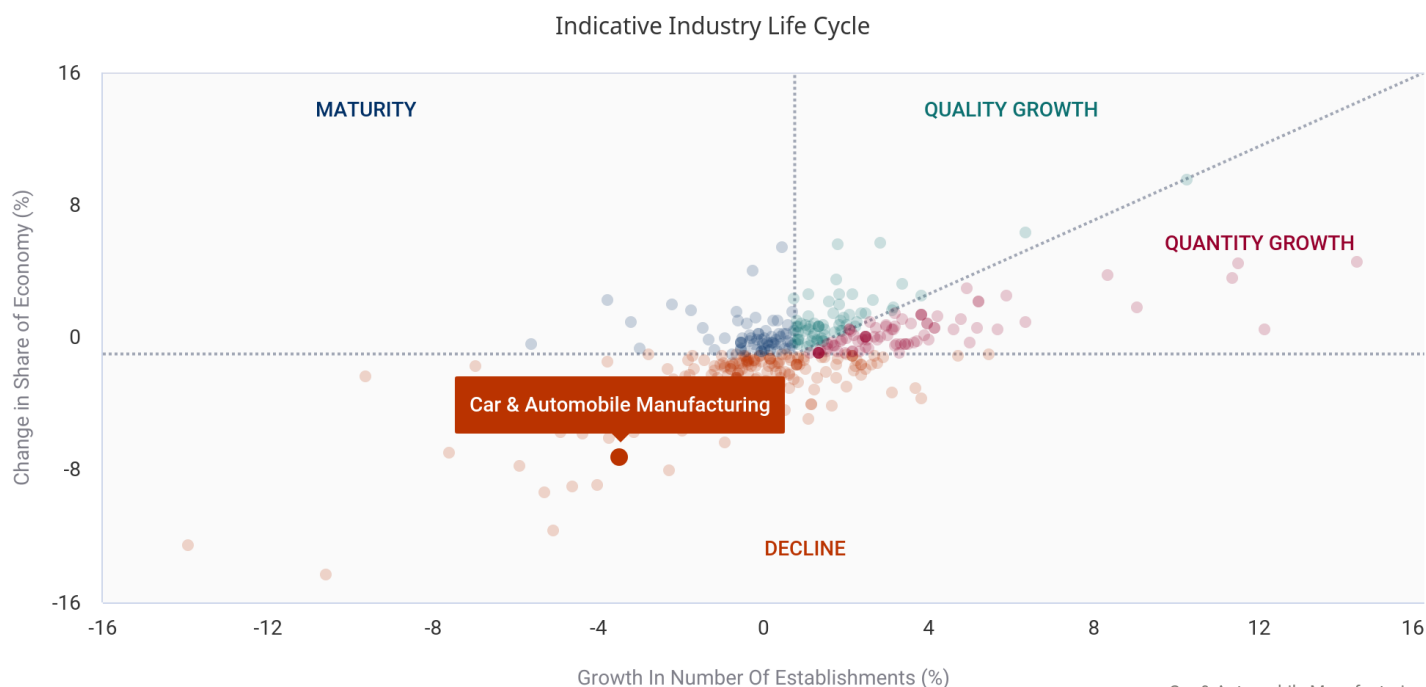
The life cycle stage of this industry is **⚠️ Decline**

LIFE CYCLE REASONS

IVA has declined while the overall economy has increased

The number of industry establishments has declined

Industry products are widely accepted



The Car and Automobile Manufacturing industry is in the declining stage of its life cycle. Industry value added (IVA), which measures of an industry's contribution to the overall economy, is expected to decrease at an annualized rate of 5.5% over the 10 years to 2025. Comparatively, US GDP has grown at an annualized rate of 1.5% during the same period. Decreasing IVA is one sign of an industry in decline; however, it is not the only one being exhibited in this industry.

Industry output has decreased despite overall economic improvements and rising consumer confidence during much of the period. Old stalwarts of the industry, such as compact vehicles and midsize sedans, have done poorly in light of shifting consumer preference. Meanwhile, new vehicle options are also being introduced to meet consumers' changing preferences which are not industry-relevant. When coupled with brand consolidation, the result is more inefficient vehicles being phased out as businesses restructure to meet consumer preference. This is expected to accelerate over the coming years as automakers attempt to spur revenue and profit growth following the downturn caused by the COVID-19 (coronavirus) pandemic.

Another indicator that this industry is in decline is the number of establishments declining during the period, which is expected to decrease at an annualized rate of 3.5% over the 10 years to 2025. While the number of establishments declining during the period often means that an industry is consolidating, it is not the case of the Car and Automobile Manufacturing industry. More and more automakers in the United States have closed plants that produce industry-relevant sedans and compact cars in favor of SUVs and crossovers. This trend is expected to continue moving forward, and may accelerate as companies continue to shift production away from the industry.

Products and Markets

Supply Chain

KEY BUYING INDUSTRIES

1st Tier

Automobile Wholesaling in the US

New Car Dealers in the US

Car Rental in the US

2nd Tier

Consumers in the US

Public Administration in the US

KEY SELLING INDUSTRIES

1st Tier

Automobile Brakes Manufacturing in the US

Automobile Interior Manufacturing in the US

Automobile Engine & Parts Manufacturing in the US

Automobile Steering & Suspension Manufacturing in the US

Battery Manufacturing in the US

Automobile Transmission Manufacturing in the US

Auto Parts Manufacturing in the US

Automobile Electronics Manufacturing in the US

Automobile Metal Stamping in the US

2nd Tier

Iron & Steel Manufacturing in the US

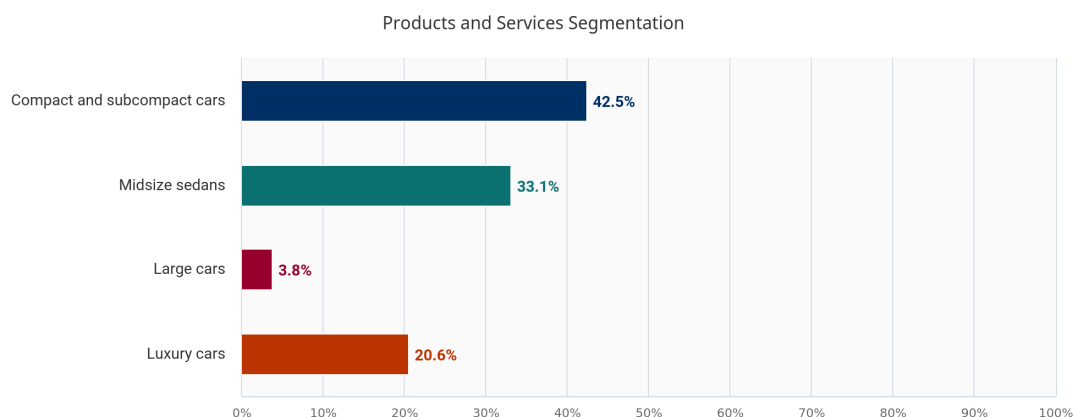
Iron Ore Mining in the US

Molybdenum & Metal Ore Mining in the US

Copper, Nickel, Lead & Zinc Mining in the US

Electric Power Transmission in the US

Products and Services



2020 INDUSTRY REVENUE

\$61.0bnCar & Automobile Manufacturing
Source: IBISWorld

To address consumers' changing preferences over the five years to 2020, operators in the Car and Automobile Manufacturing industry have improved their product portfolios.

Fuel efficiency has become a top design concern for manufacturers, with more car models featuring hybrid-electric drivetrains, smaller forced-induction engines and more advanced transmissions, delivering fuel economy gains.

Midsize sedans

Midsize sedans are the mainstay of the industry.

Over the past 20 years, midsize and compact car sales have gained market share over full-size cars as consumer preferences changed. Demand for this segment over the five years to 2020 has been supported by high gas prices early during the period, which prompted consumers to prefer midsize, more fuel-efficient cars rather than large cars or SUVs. Midsize cars offer better fuel efficiency than full-size vehicles without sacrificing too much cargo or passenger room. Popular midsize vehicles include the Honda Civic, the Toyota Corolla and the Toyota Camry. In addition, hybrid-electric drivetrains are now commonly available as an upgrade option for midsize cars. However, this segment has slightly declined as a share of revenue over the past five years, as consumers have become increasingly fond of crossover vehicles, which are sport utility vehicles built on car-based platforms. Moreover, in response to volatile oil prices, compact and subcompact cars are becoming a more popular option in recent years. In 2020, midsize sedans are expected to account for 33.1% of revenue.

Compact and subcompact cars

Compact and subcompact cars offer exceptional fuel economy, but offer limited legroom and smaller engine options.

Most cars in this segment come with four-cylinder engines, although six-cylinder V6 engines are available as well. Compact cars on sale today include the Ford Focus, Chevrolet Cruze and Toyota Corolla. Subcompact cars on sale today include the Ford Fiesta, Chevrolet Sonic, Hyundai Accent and the Toyota Yaris. This segment has expanded rapidly as a share of revenue over the past five years due to the incorporation of high-efficiency engines with superior fuel efficiency. Furthermore, industry operators have shifted operations to focus on the innovation and production of such vehicles to capitalize on consumers increased environmental concerns, and to get ahead of emission regulations. This product line is likely to surpass midsize sedans in terms of revenue generation in the upcoming years. In 2020, this segment accounts for 42.5% of revenue.

Luxury cars

Unlike the other product segments of this industry, luxury cars can range in size from subcompacts to full-size cars.

Some automakers specialize in luxury cars. All other automakers produce their luxury cars with significant parts sharing from similar mass-market models. For example, the Ford Fusion shares its chassis and many drivetrain components with the luxury Lincoln MKZ. Luxury cars on sale today include the Cadillac CTS, BMW 528i and the Lexus GS 350. This segment also includes sports cars. Sports cars feature larger performance engines and stiffer suspensions than other cars, emphasizing an entertaining driving experience. This segment has increased as a share of revenue over the past five years, as income levels has increased. Luxury cars account for 20.6% of revenue in 2020.

Large cars

Large cars are similar to midsize cars, though they are generally longer and offer more legroom.

Due to the similarity of this segment to the more popular midsize category, it has declined as a share of revenue over the five years to 2020. This is mainly due to high oil prices during much of the period, and the growing popularity of crossover vehicles, which do not fall within the scope of this industry. Crossover vehicles have increasingly supplanted large cars, as they offer similar or better passenger and storage space with the added benefit of a high driving position. This has limited the appeal of large cars over the past five years. Full-size vehicles on sale today include the Ford Taurus, Chevrolet Impala, Chrysler 300 and the Toyota Avalon. In 2020, large cars account for 3.8% of revenue.

Demand Determinants

Traditionally, vehicles prices, including cars produced in the Car and Automobile Manufacturing industry, have been considered the most significant factor in deciding whether or not to buy a new car.

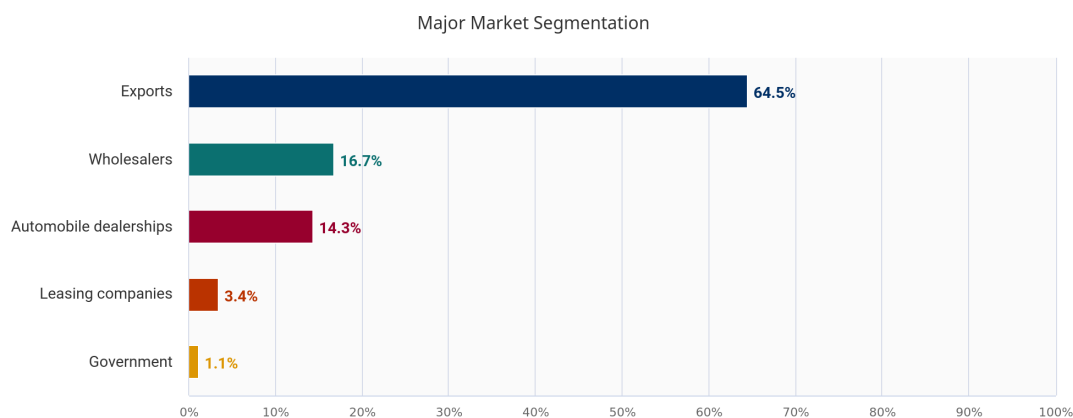
Now, the focus has turned to the costs of running a vehicle and its effect on the environment.

Price still plays an important role, particularly the cost to finance a vehicle. As interest rates remain low, consumers have an added incentive to finance big-ticket items such as cars. Consumer sentiment also plays an important role in determining significant consumer investments, such as a house or a car. When consumers are optimistic about their financial position, they are more likely to spend their income. During recessions, households are pessimistic about the future and tend to tighten their belts and postpone unnecessary expenses until times are better. Demand for motor vehicles is also highly dependent on population growth because individuals make up the majority of car and automobile users. Demand for cars and automobiles rises when the age of the population, particularly consumers above the driving age, grows.

Fuel prices also have an effect on demand for vehicles, as lower prices at the pump encourage more people to invest in personal or family cars. However, lower fuel prices may also encourage some car buyers to consider SUVs or light trucks, which are not part of this industry. This means fuel prices have a mixed effect on demand, though overall, declining fuel prices tend to benefit sales. At the same time, the environmental benefits of higher fuel-economy vehicles can push some buyers toward smaller and more economical options, or vehicles with hybrid drives. The importance of this feature has climbed substantially over the five years to 2020.

In 2020, many drivers of demand have negatively affected the industry as a result of the COVID-19 (coronavirus) pandemic. As stay-at-home orders have been put in place and nonessential businesses closed, macroeconomic activity has largely grinded to a halt. Consumer and business sentiment and aggregate spending is expected to fall in 2020, while trade restrictions are also expected to affect export levels. Many operators have opted to halt production due to virus concerns and fears of accumulating large swaths of unsellable inventory. As more and more US citizens experience unemployment, disposable income contracts, which is expected to limit consumers' purchases of large items, such as an automobile. Moving forward, anticipated low fuel prices may further shift consumer demand to safer SUVs and crossovers once auto demand returns. Low interest rates and injection of stimulus in the form of fiscal policy may help to bolster some demand.

Major Markets



2020 INDUSTRY REVENUE

\$61.0bn

Car & Automobile Manufacturing
Source: IBISWorld

Operators in the Car and Automobile Manufacturing industry use a variety of distribution channels to sell their vehicles to the public. Car dealerships and wholesalers sell vehicles primarily to consumers and businesses.

Wholesalers

Wholesalers are the largest domestic market segment of this industry and are expected to account for 16.7% of industry revenue in 2020. Wholesalers buy large volumes of identical vehicles from automakers. They then sell vehicle fleets to businesses, such as taxi services, rental companies and dealerships. Demand from wholesalers is driven by business investment and gasoline prices. Dealerships buy vehicles from wholesalers to supplement inventories; wholesalers provide faster delivery than directly purchasing from automakers. While most cars are eventually sold through a car dealership, car dealers do not order their entire inventory directly from the manufacturer because of long delivery times and uncertain demand for specific models. This segment has remained a stable share of revenue over the five years to 2020.

Exports

A significant portion of vehicles produced in the United States are shipped abroad. Over 40.0% of exported industry goods are destined Canada and Mexico. Leasing companies and government agencies also make up integral markets for industry operators. Global automakers tend to produce distinct vehicle lines or vehicle types in different factories throughout the world. However, demand for different types of vehicles is fairly geographically dispersed. This means that exports are an important part of the industry, and estimated to account for 64.5% of revenue in 2020. While exports have decreased in value over the past five years, they have increased as a share of revenue.

Automobile dealerships

Automobile dealerships are expected to account for 14.3% of revenue in 2020. Dealers sell the clear majority of their vehicles directly to consumers. Automobile dealerships as a share of revenue has increased over the past five years, bolstered by low interest rates. As interest rates remain at historically low levels, consumers

are more apt to finance new vehicle purchases, lifting this segment's share of overall revenue higher.

Leasing companies and the government

Government agencies, including local and federal law enforcement, account for 1.1% of revenue in 2020, remaining a stable share of revenue during the period. Vehicle leasing companies, including automaker subsidiaries and independent companies, lease vehicles to consumers and businesses used as either commercial vehicles or rentals for day to day use. These companies typically purchase their fleet either directly from automakers or from independent wholesalers. Overall, these companies are expected to account for an estimated 3.4% of industry revenue in 2020, remaining a stable share of revenue over the past five years.

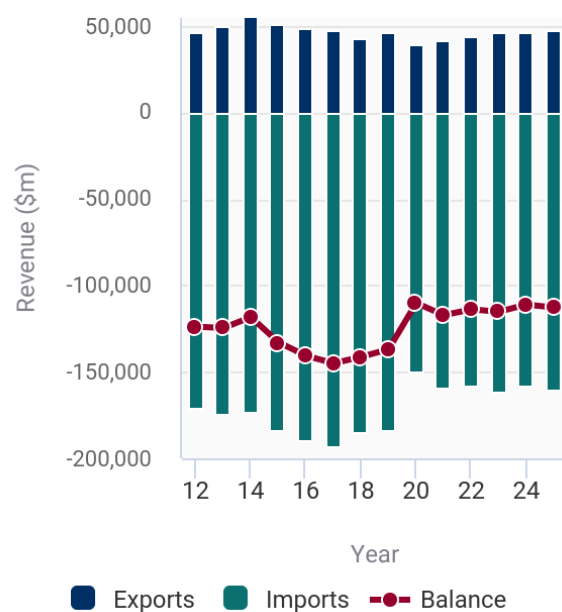
International Trade

Exports in this industry are ▲ High and Decreasing

Imports in this industry are ▲ High and Decreasing

International trade is a very important aspect of the Car and Automobile Manufacturing industry. In 2020, imports are expected to satisfy 87.3% of domestic demand, while exports are expected to generate 64.5% of industry revenue. The United States is one of the largest vehicle marketplaces in the world and is home to some of the largest global automakers. Since 1993, trade-flow patterns of cars across the United States have grown increasingly complex because of the elimination of trade barriers under NAFTA. NAFTA makes it easier for automakers to run their North American operations as if their supply chains did not cross borders, and it is common practice for cars destined for sale in the United States to be assembled in Mexico or Canada from US-produced components. This practice tends to inflate import and export statistics between the United States, Mexico and Canada.

Industry Trade Balance



Car & Automobile
Manufacturing in the US
Source: IBISWorld

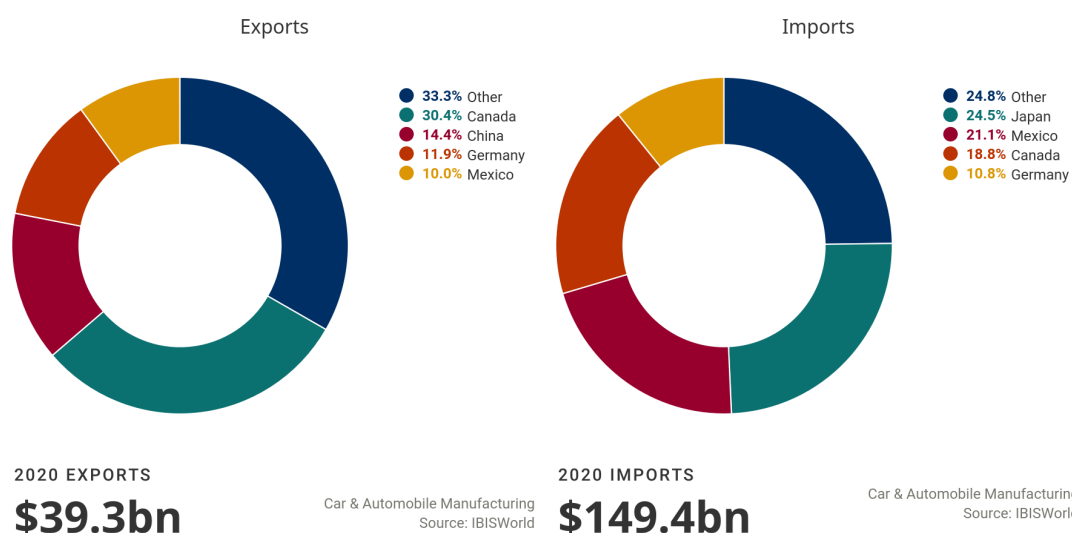
Imports

In 2020, Japan, Mexico, Canada and Germany are expected to be the four main sources for US imports, accounting for a respective 23.7%, 21.6%, 19.8% and 9.6%

of imports in 2020. The prevalence of imports from Canada and Mexico is primarily due to the incentives outlined in the NAFTA treaty. Locating assembly plants in Mexico helps automakers reduce labor costs, since the US automotive manufacturing labor force is highly unionized by the United Automobile Workers (UAW) union. Imports from Japan and Germany generally rise and fall in line with the performance of their largest automakers. Japan's largest automakers with a US presence are Toyota Motor Corporation, Honda Motor Co. Ltd. and Nissan Motor Company Ltd. Germany's largest automakers with a US presence are Volkswagen AG, Daimler AG and Bayerische Motoren Werke AG, also known as BMW. Overall, the value of industry imports has fallen at an annualized rate of 4.0% to \$149.4 billion over the five years to 2020. This includes an anticipated decline of 18.6% in 2020 alone, as international trade flow and global supply chains are largely affected by the COVID-19 (coronavirus) pandemic.

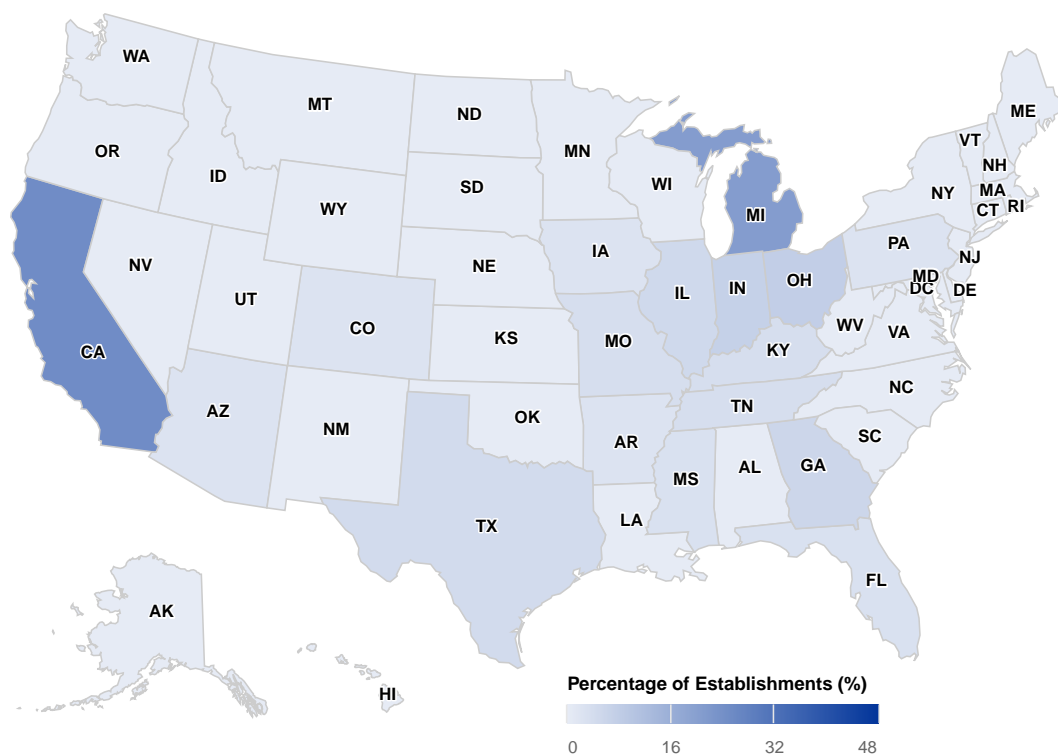
Exports

In 2020, the four main destinations of automobile exports are Canada (29.0%), Germany (16.3%), Belgium (10.4%) and China (9.2%). As with imports, Canada's dominance in exports is primarily due to the NAFTA treaty. The bulk of US automakers' manufacturing capacity is in the Great Lakes region, on both the US and Canadian sides of the border. China and Belgium have also both rapidly grown as export markets for US-made automobiles. China has become a more popular export destination due to its rapidly growing affluence during most of the period, which has radically changed life styles and the standard of living. This also makes the strength of the Chinese economy a key determinant of overall industry trends. Meanwhile, Mexico, which is typically a top export destination, has become less popular in recent years due to trade tensions. Overall, the value of industry exports has fallen at an annualized rate of 5.0% to \$39.3 billion over the five years to 2020. During most of the period, this decline has been the result of an appreciating US dollar. When the US dollar appreciates, domestic goods becomes more expensive, and therefore, less desirable. However, in 2020, exports are anticipated to decline 15.8% as global demand for automobiles plunge as economies are ravaged by the coronavirus pandemic.



Business Locations

Business Concentration in the United States



Car & Automobile Manufacturing in the US
Source: IBISWorld

The largest share of establishments for the Car and Automobile Manufacturing industry are located in the Great Lakes region, which accounts for 39.7% of locations in 2020. Some of the largest industry operators, such as General Motors Company (GM), Ford Motor Company (Ford) and Fiat Chrysler Automobiles NV, all have headquarters located in Michigan. These three companies are often referred to as the Big Three, or the Detroit Three. The recession wreaked havoc on the Big Three, forcing GM and Chrysler Group LLC into bankruptcy and Ford to make drastic cutbacks. Consequently, these companies closed several plants as these companies restructured themselves out of loss-making performances. However, the number of establishments in the region has improved in recent years as these companies have subsequently recovered, boosted by strong financial performances. However, the COVID-19 (coronavirus) pandemic has hurt revenue and profit for these companies due to supply chain disruption.

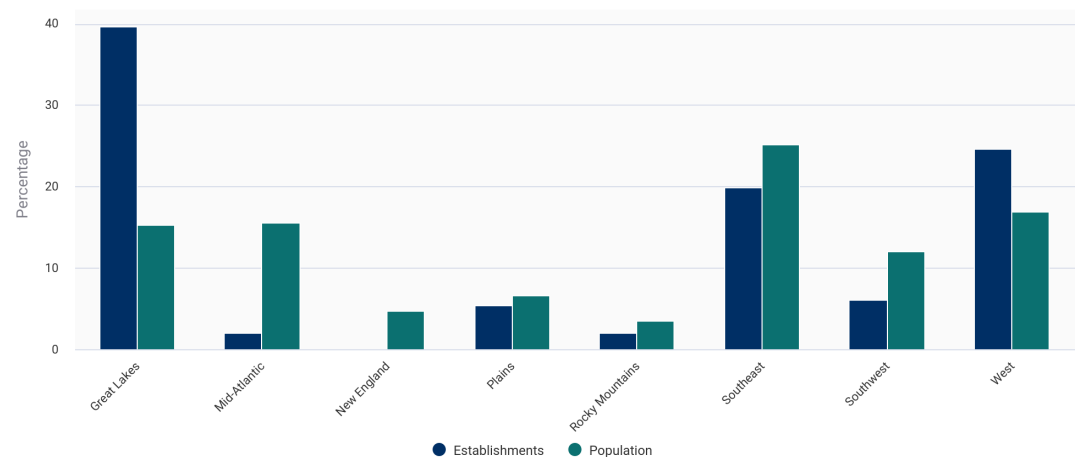
The second automotive hub in the United States is the West Region, accounting for 24.7% of industry establishments in 2020. Many automakers have joint ventures and plants in California due to the facilities being located close to a manufacturing hub. California alone accounts for 16.8% of industry establishments in 2020, the most of any state. The smaller Japanese and South Korean companies also have headquarters in Southern California. New United Motor Manufacturing Inc.

(NUMMI), a joint venture between GM and Toyota Motor Corporation (Toyota), is located in California, but was shut down prior to the five years to 2020. NUMMI has since been purchased by electric car start-up Tesla Inc. and began production of industry-relevant vehicles in late 2011. It has since become a major industry player.

The third automotive hub in the United States is the Southeast region, which accounts for 19.9% of industry locations in 2020. This region is primarily home to Japanese manufacturers. Toyota's manufacturing plants are mainly located in Alabama, Kentucky and West Virginia; Honda is based in Alabama; and Nissan is in Tennessee. The Southeast region's importance in the industry has been growing along with its automakers. Additionally, this region is home to the largest segment of the US population, accounting for 25.7% in 2020.

These three automotive hub regions are expected to gain greater concentration over the coming years, as domestic demand for new vehicles continues to trend higher. They are expected to be located in these regions. However, many industry operators are expected to expand in other countries, which may hinder domestic expansion. For example, industry operators that establish a presence in Mexico are able to benefit from lower labor costs.

Distribution of Establishments vs Population



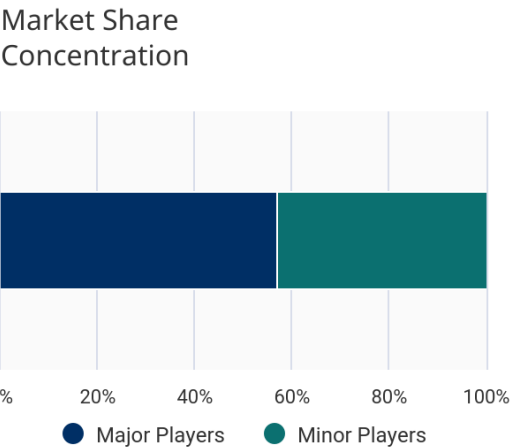
Car & Automobile Manufacturing
Source: IBISWorld

Competitive Landscape

Market Share Concentration

Concentration in this industry is ⊖ **Medium**

The Car and Automobile Manufacturing industry has moderate market share concentration, with the top four companies accounting for an estimated 50.8% market share in 2020. IBISWorld expects that the companies with the highest market share will likely be those that can most effectively balance affordability; technological advancement, particularly with engines and entertainment; and attractive vehicle styling. Furthermore, the companies that are able to find the appropriate balance of car and sedan production when these types of vehicles are losing favorability among consumers. Particularly, Tesla Inc. (Tesla) is anticipated to continue to gain market share as more traditional automakers abandon sedan manufacturing in the United States. As Tesla has enhanced production and gained revenue it has helped keep industry market share largely stable. Industry concentration has declined since the start of the period primarily due to Fiat Chrysler Automobiles NV (Fiat Chrysler) exiting the industry. In 2016, Fiat Chrysler announced it would no longer produce cars and sedans in the United States, instead focusing solely on SUVs, light trucks and crossovers.



Car & Automobile Manufacturing
Source: IBISWorld

Key Success Factors

IBISWorld identifies 250 Key Success Factors for a business. The most important for this industry are:

Strong supply chain links: Relationships with suppliers and good distribution channels are important. Manufacturers need to be able to access parts on a timely basis to ensure the smooth flow of production. Good distribution channels are needed to minimize supply chain costs.

Establishment of export markets: Development of export markets is crucial in an industry where the domestic demand is shrinking.

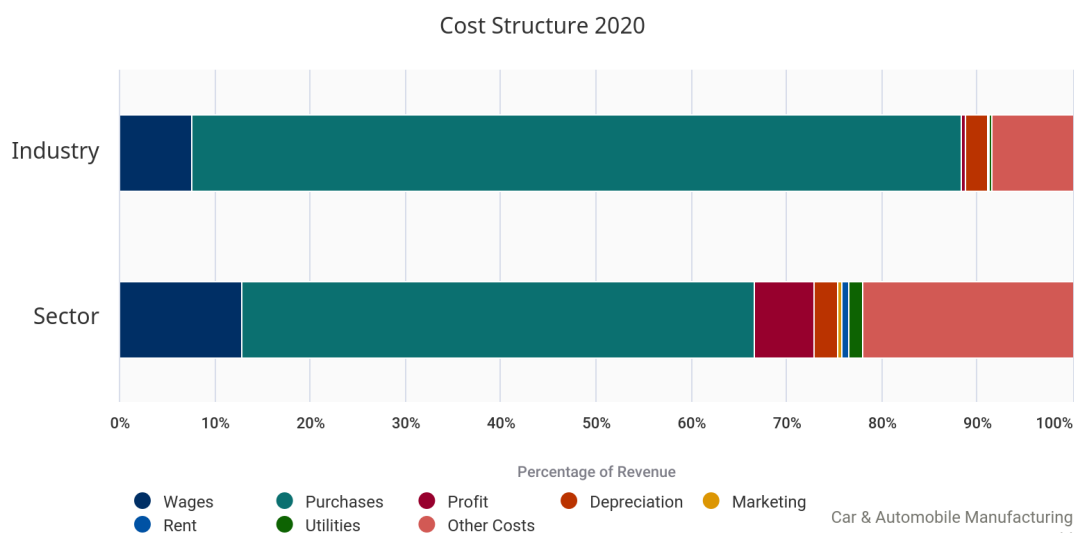
Use of most efficient work practices: Good industrial relations through a motivated workforce ensure the smooth running of a production plant. Work stoppages can be costly to automakers and good industrial relations can hedge manufacturers against that type of risk.

Optimum capacity utilization: Idle plants are costly. Maximizing capacity utilization is an important cost advantage.

Access to the latest available and most efficient technology and techniques: The degree of investment in technological improvements and product development is important. In the current environment, the development of fuel-efficient, hybrid and alternative fuel vehicles is crucial for competitive purposes.

Ability to negotiate with workers' union: The workers' union has strong bargaining power, which can lead to work stoppage and higher labor costs.

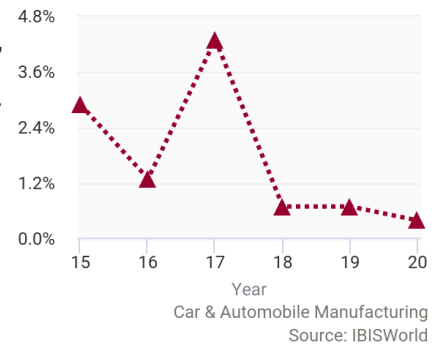
Cost Structure Benchmarks



Profit

In 2020, profit, measured as earnings before interest and taxes, accounts for 0.4% of revenue, down from 2.9% in 2015. As automobile production in the United States has shifted away from sedans, industry profit has weakened. However, industry profitability has been further constrained due to declining consumer sentiment and disposable income, which has resulted in declining car sales. Industry profit is slim compared with similar industries. Profit for operators in the SUV and Light Truck Manufacturing industry (IBISWorld report 33611b) are generally higher, so most manufacturers prefer to sell vehicles in that category rather than industry-relevant products.

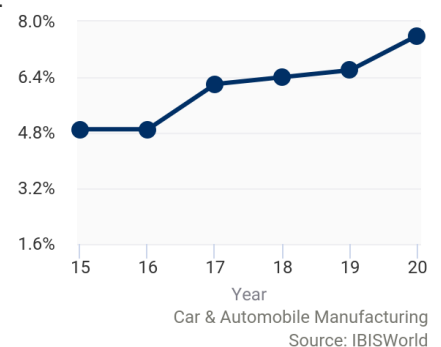
Profit as a Share of Revenue 2015-2020



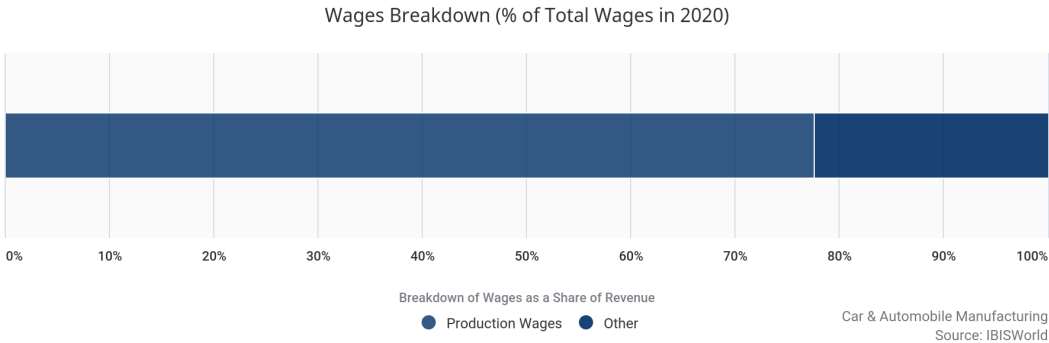
Wages

Wage costs make up the second-largest cost for industry operators, accounting for an estimated 7.6% of revenue in 2020. The three domestic automakers have struggled to maintain profitability under very expensive labor union contracts, which include defined benefit pensions and limits to operators' ability to fire union workers, and average wages tend to be highly inflated in this industry as a result. Wages as a share of revenue has increased over the five years to 2020 despite an expected decline in 2020 alone.

Wages as a Share of Revenue 2015-2020



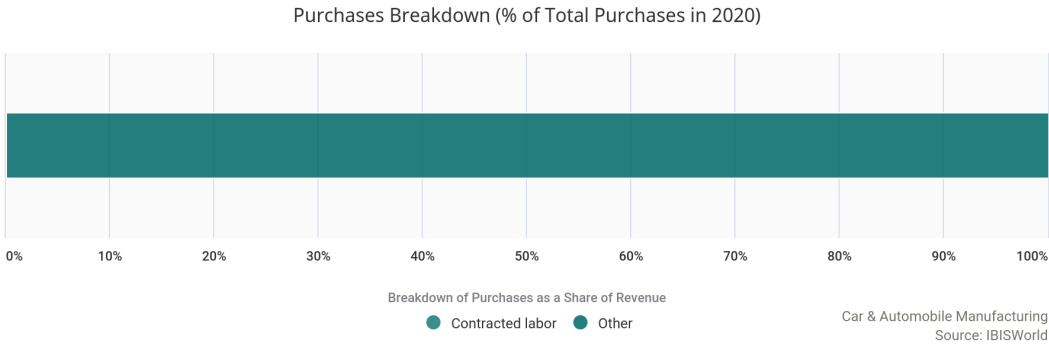
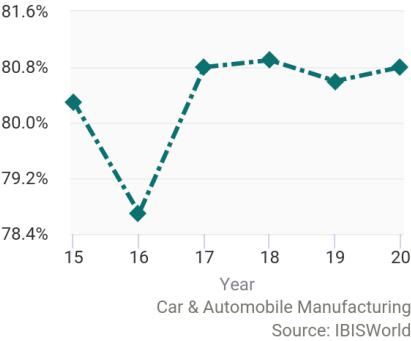
The long-term relationship between the automakers and the United Automobile Workers (UAW) union, which remains in question, will likely play a tremendous role in the future success of this industry. Manufacturers that continue signing labor contracts favoring the UAW will likely struggle to compete with nonunion manufacturers, which will likely be able to offer mass-market small cars with lower prices or higher quality than unionized competitors.



Purchases

Automobile manufacturing requires a large array of components from parts suppliers, ranging from engines and transmissions to radiators and electronics. Generally, companies in this industry perform the final assembly and design of vehicles, and as a result, purchase costs account for 80.8% of revenue in 2020. Companies contain cost fluctuations by purchasing parts under contract with suppliers, which usually include provisions mandating annual price decreases. Automakers typically have very long-term relationships and contracts with a handful of large automotive suppliers. This helps these companies keep purchase costs share of revenue relatively stable. These provisions have actually hurt operator revenue in 2020, as many were forced to continue purchasing parts, despite shifting production schedules.

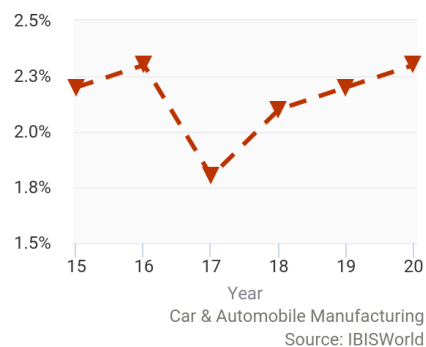
Purchases as a Share of Revenue 2015-2020



Depreciation

Innovation includes both updating product lines with new technologies to maintain consumer interest and updating production process technologies to reduce operating and wage costs. Overall, depreciation costs have remained relatively stable over the past five years, accounting for 2.3% of industry revenue in 2020.

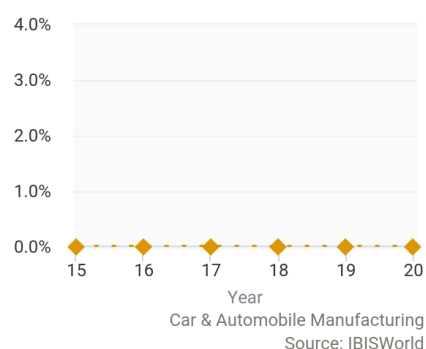
Depreciation as a Share of Revenue 2015-2020



Marketing

While automakers manufacture and distribute vehicles, they generally do not advertise their specific manufacturing processes. Therefore, marketing does not account for a share of revenue in 2020.

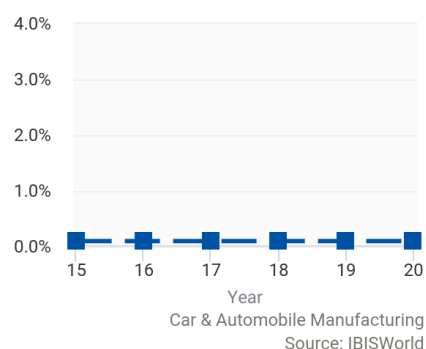
Marketing as a Share of Revenue 2015-2020



Rent

Most operators own their equipment and facilities. Therefore, rental costs account for 0.1% of revenue in 2020.

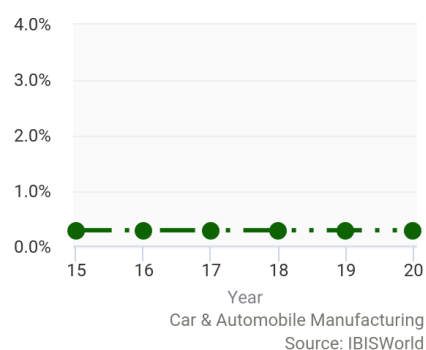
Rent as a Share of Revenue 2015-2020



Utilities

Utility costs, such as electricity, have remained steady during the period, comprising an estimated 0.3% of industry revenue in 2020.

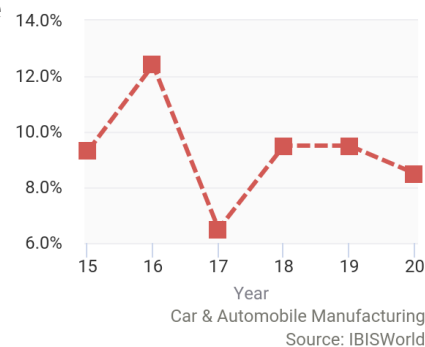
Utilities as a Share of Revenue 2015-2020



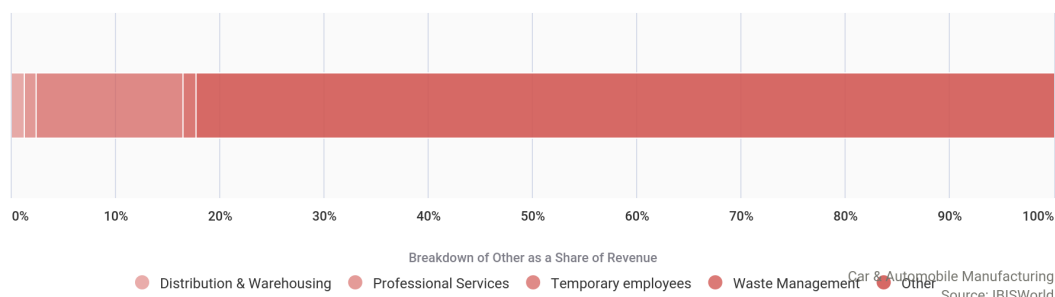
Other Costs

Other costs associated with this industry include research and development (R&D) and general machine and building maintenance. Industry operators have increased research and development as they attempt to innovate more quickly and efficiently than their competitors. Auto manufacturers invest in R&D to engineer new technologies to obtain a competitive advantage. Overall, other expenses account for an estimated 8.5% of industry revenue in 2020.

Other Costs as a Share of Revenue 2015-2020



Other Breakdown (% of Total Other in 2020)



Basis of Competition

Competition in this industry is ⊖ Medium and Increasing

Internal competition

Operators in the Car and Automobile Manufacturing industry compete primarily on the basis of price, fuel economy, reliability, styling and utility.

Business customers and consumers place different weights on each trait; businesses tend to emphasize utility and reliability, while consumers are more concerned with price and styling. Automakers periodically redesign a vehicle's styling, typically every five years, but only occasionally change the vehicle's mechanics. Recently redesigned cars typically sell in significantly higher volumes, so automakers with a relatively fresh product lineup tend to outperform automakers that are lacking new vehicle styles. In some cases, a redesigned vehicle can sell worse than the outgoing model, which can be a disastrous outcome for an automaker that has invested large amounts of time and money in a new product.

Industry customers choose their vehicle purchases on the basis of price. Each car class has a premium subcategory, resulting in a range of prices. For example, pricing for the midsize Ford Fusion sedan starts at just over \$20,000, while the midsize Lincoln MKZ pricing starts at \$35,000, even though the vehicles are very similar. The two vehicles are marketed to different market segments, with the luxury sedan being differentiated based on more expensive interior materials and styling.

Over the five years to 2020, business customers and consumers have become increasingly concerned with fuel economy. Consumers have pushed manufacturers to offer more fuel-efficient drivetrain options. Ford Motor Company is in the process of moving its entire vehicle lineup from traditional naturally aspirated engines to smaller forced-induction engines, and the resulting vehicles have similar performance to outgoing naturally aspirated models, but boast significantly higher fuel economy. Moreover, manufacturers are expanding their offerings of hybrid-electric, electric and clean diesel engines to improve fuel economy.

Reliability is a pervasive concern of all vehicle shoppers. These concerns were more pressing a decade ago when domestic automakers noticeably lagged behind Toyota Motor Company and Honda Motor Co. Ltd. in reliability. Enhanced quality control procedures and superior manufacturing equipment have since mitigated the disparity.

External competition

The industry's primary external competitor is the SUV and Light Truck Manufacturing industry (IBISWorld report 33611b). Falling fuel prices tend to benefit sales of larger vehicles slightly more than sales of smaller and more efficient ones.

As a result, declining fuel costs may have mixed effects on consumers' vehicle preferences, especially as more SUVs and light trucks include forced-induction and hybrid drives. Moreover, SUVs and light trucks typically yield higher returns than smaller passenger vehicles, and may be more highly promoted by automakers.

In addition, this industry experiences substantial external competition from foreign manufacturers. Imports are estimated to account for over 80.0% domestic demand, putting increased pressure on US automakers. While the quality and range of automobiles produced by the domestic industry targets many downstream markets, foreign producers also provide desirable and affordable offerings. Additionally, many global manufacturers devote entire facilities to single vehicle lines, meaning they must export and import various models throughout the world to satisfy demand. Accordingly, the value of the US dollar, as measured by the trade-weighted index, plays a large role in international trade and import demand.

Barriers to Entry

Barriers to entry in this industry are ☹ Medium and Steady

With a high level of capital requirements and rapid technological change, the Car and Automobile Manufacturing industry is extremely difficult for new entrants to break into. Generally, manufacturing cars is a capital-intensive enterprise requiring sophisticated manufacturing facilities and robust supply chains. Production facilities use specialized equipment and substantial floor space. In addition, prospective automakers

Barriers to entry checklist		
Competition	Medium	☹
Concentration	Medium	☹
Life Cycle Stage	Decline	⚠
Technology Change	High	⚠
Regulation & Policy	Medium	☹
Industry Assistance	High	✔

need proprietary or licensed vehicle designs and an experienced workforce. Vehicles are made from thousands of separate parts, so sufficient volumes of reliable supplies typically require long-term contracts with several parts supply companies.

New industry entrants must comply with strict regulatory standards for safety and environmental concerns. These standards are subject to periodic revisions, which may require additional research and development. Research and development expenses can be reduced by forming a partnership with an existing automaker, as many foreign manufacturers have done. In addition, partnerships can be used to secure design and branding intellectual property, which is of immense benefit. Brand awareness and image is a major factor for many buyers, and a significant barrier to entry for any new companies. Moving forward, regulations regarding a sanitary work environment and costs associated with employee health screenings and maintenance may be additional barrier to potential market entrants.

Industry Globalization

Globalization in this industry High and Increasing

Globalization is a major force in the Car and Automobile Manufacturing industry. Toyota Motor Corporation, a Japanese based automaker, holds the highest market concentration. Meanwhile, other foreign-owned companies, such as Honda Motor Co. Ltd. and Nissan Motor Company Ltd., are key operators in the US market. At the same time, US-based automakers, such as Ford Motor Company (Ford), General Motors Company (GM) and Fiat Chrysler Automobiles NV, generate a large portion of their revenue from sales made outside of the United States. Finding an efficient business model to operate in this globalized industry environment is a key aspect of any automaker's success.

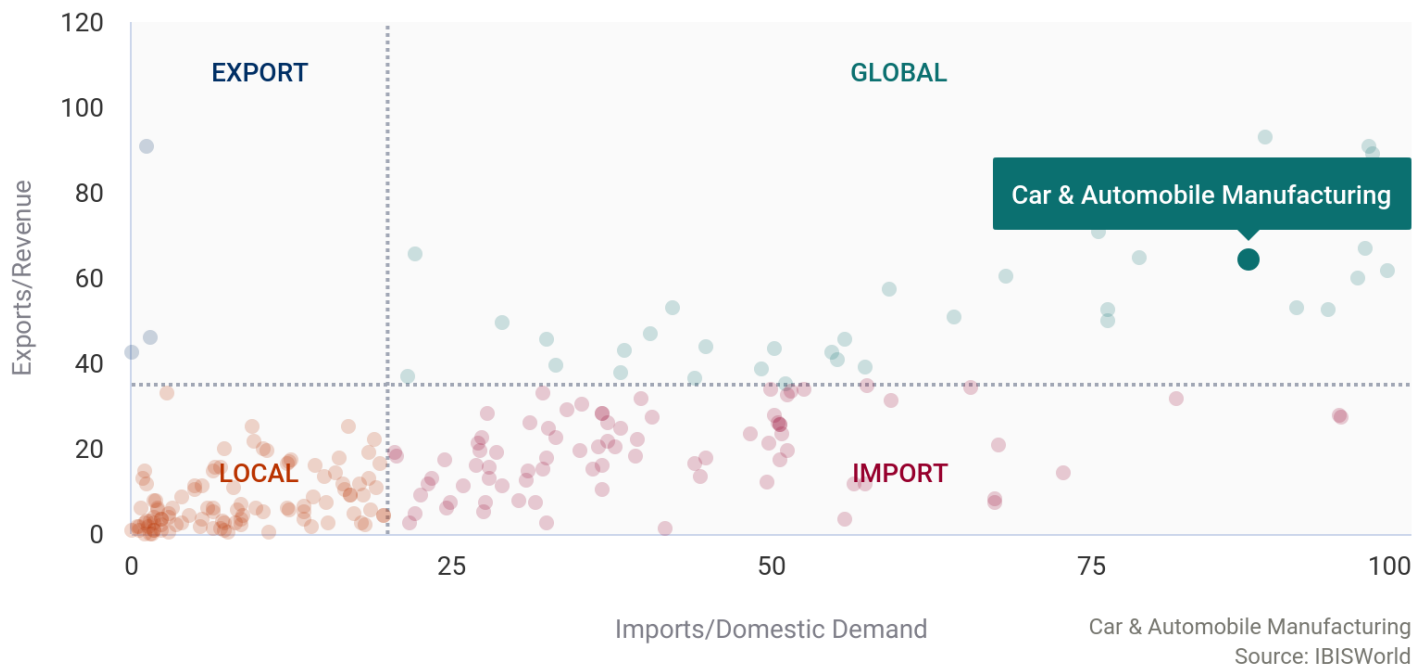
Since 2005, Ford has focused on this concern with its "One Ford" initiative, which streamlined vehicle design and platform sharing across Ford's global operations, which helps the company save on manufacturing costs and leverage its size. Prior to the "One Ford" initiative, Ford models in Europe and the United States would routinely have different styling, chassis platforms and engines, even for similarly sized vehicles. The 2011 Ford Focus was the first modern Ford that is synchronized between United States and European models, though the European model still has more engine options than the US model due to European regulatory structures that favor diesels over gasoline engines.

GM, the largest US-based automaker, has had a successful joint venture in China since 1997. GM's China joint venture is with Shanghai Automotive Industry Corporation (SAIC), one of the five largest automakers in China. Under the joint venture, SAIC manufactures Chevrolet, Buick and Cadillac vehicles for the Chinese market. The joint venture's design department is playing an increasingly prominent role in GM's global design following GM's 2009 bankruptcy, primarily due to the breakout success of Buick designs in China. The 2011 Buick Regal and Lacrosse designs were the result of that joint venture.

International trade is also a major component of this industry. Exports are expected to generate 64.5% of revenue in 2020, up from 37.3% 2015. Imports are estimated to fulfill 87.3% of domestic demand in 2020. This obviously puts immense pressure on domestic producers to compete with foreign offerings on both price and quality.

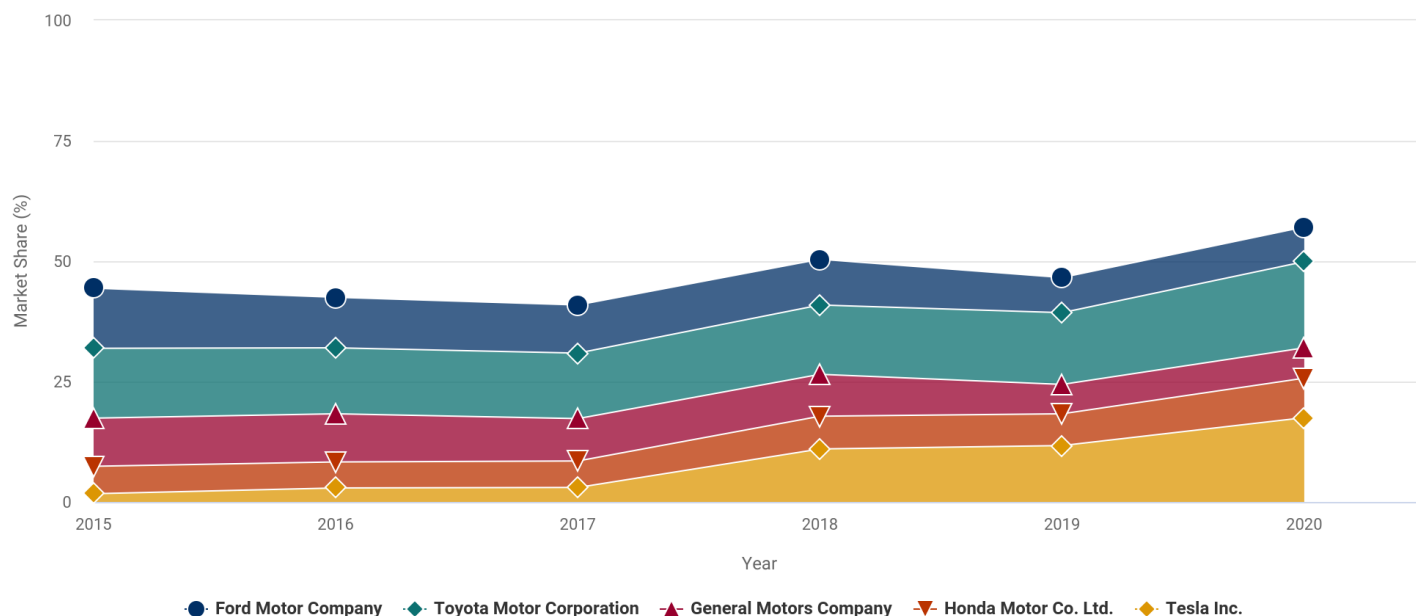
In turn, the value of the US dollar, as determined by the trade-weighted index, has a significant effect on import penetration and export volume. As the dollar appreciates, imported vehicles become less expensive to domestic buyers, while exported goods become more expensive and less appealing on domestic markets. Despite this, recent protectionist US trade policies call into question the long-term globalization level of the industry. The potential for future tariffs on automobiles may weaken industry globalization moving forward. Nonetheless, if approved by Congress, the recently signed United States-Mexico-Canada Agreement (USMCA) will likely grant domestic automakers some assurance down the road. Despite the high significance of trade, imports and exports are anticipated to fall sharply in 2020 as a result of disrupted supply chains and plunging global demand for autos in the wake of the COVID-19 (coronavirus) pandemic.

Trade Globalization 2020



Major Companies

Major Players and Their Market Share 2015–2020



Car & Automobile Manufacturing in the US
Source: IBISWorld

Major Players

TOYOTA MOTOR CORPORATION

Market Share: 17.9%

Toyota Motor Corporation (Toyota) is headquartered in Japan, and its North American operations are based in Torrance, CA. Toyota employs more than 360,000 workers in its 67 manufacturing facilities across the globe, and the company's vehicles are sold in more than 170 countries. In fiscal 2019 (year-end March), Toyota generated \$277.3 billion in global revenue (latest data available). The company has had a strong presence in the United States, and while the company originated in Japan, Toyota is currently the largest producer of passenger cars in the United States.

Toyota Motor Corporation



Although Toyota has performed well in the United States over the five years to 2020, its success has not come without drawbacks. Toyota endured its most significant operational complications over the past five years, following the Great East Japan Earthquake prior to the current period. The damage caused production to halt at most of the company's Japanese plants and created a parts shortage that spread across its global network of production facilities. Furthermore, the company has

been plagued by vehicle recalls, recalling more than 1.0 million vehicles in early 2017.

The Toyota Prius, first launched in Japan in 1997, was the first mass-produced hybrid gasoline-electric car and has been a major success for Toyota. Toyota uses its signature Hybrid Synergy Drive (HSD) technology in some of its cars and SUVs, and has limited licensing arrangements for the HSD technology, such as in the Nissan Altima hybrid. The innovative technologies used in the car, including regenerative braking by using the force of braking to help recharge the battery, contribute to the car receiving a 50.0 miles-per-gallon rating from the US Environmental Protection Agency. Toyota is expected to capitalize on its head start in the race for alternatively fueled vehicles by making its HSD technology less costly to produce, which could enable Toyota to expand use of such technology across its product offerings.

Financial performance

Toyota has managed to maintain its dominant status in the automotive market because of its commitment to new vehicle technology. Toyota has increasingly focused on newer small passenger vehicles, and emphasizing fuel economy in its industry-relevant vehicles, which will likely aid overall sales. The company has recently cemented itself as the largest producer of cars in the United States due in part to the popularity of Toyota's sedans in the US market. According to 2019 data from *Mark Lines*, the Toyota Camry and Corolla model cars were the first- and third-highest selling industry-relevant cars in the United States in 2019 (latest data available). However, Toyota's industry-relevant sales are not expected to be immune to overall industry trends. In fiscal 2015, more than 50.0% of Toyota's sales stemmed from industry-relevant vehicles. In fiscal 2020, more than 30.0% of sales are industry-relevant. Toyota's industry-relevant revenue has decreased at an annualized rate of 9.6% to \$10.9 billion over the five years to fiscal 2021. Toyota is anticipated to experience its sharpest industry revenue decline in 2020, due to weakened auto demand resulting from the COVID-19 (coronavirus) pandemic. Additionally, the company's industry-relevant operating income has also declined during the period.

Toyota Motor Corporation (US industry-specific segment) - financial performance*

Year**	Revenue (\$m)	Growth (% change)	Operating Income (\$m)	Growth (% change)
2015-16	17845.4	N/C	1793.1	N/C
2016-17	19726.1	10.5	2040	13.8
2017-18	18343.7	-7.0	1781.9	-12.7
2018-19	19306	5.2	1797.4	0.9
2019-20	18068.3	-6.4	1722.9	-4.1
2020-21	16254	-10.0	1670.5	-3.0

Source: Annual report and IBISWorld

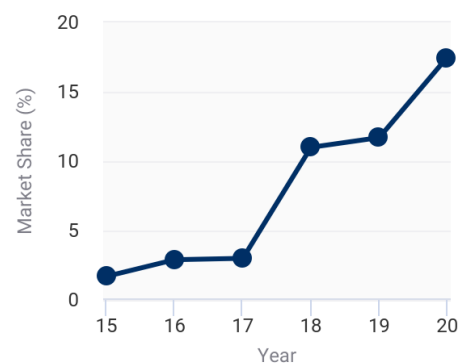
Note: *Estimates; **Year-end March

TESLA INC.

Market Share: 17.5%

Founded in 2003, Tesla Inc. (Tesla) is an automaker that specializes in the production of all electric vehicles. The company also manufactures electric powertrain components for automakers, such as Toyota, battery energy storage from home to grid scale and solar panels and solar roofs. Tesla operates a multitude of production facilities, including plants located in California, Nevada, the Netherlands and China. While most of Tesla's vehicle and components manufacturing occurs domestically, some final products are assembled abroad closer to end markets. The company is headquartered in Palo Alto, CA, and employs over 15,000 workers worldwide. In 2019, the company generated \$24.6 billion in global revenue (latest data available).

Tesla Inc.



Tesla has created a niche market with its all-electric vehicles. In 2020, Tesla has manufactured four vehicle models with two of them, the Model S luxury-sedan and Model 3, which is considered industry-relevant. Over the coming years, the company is also set to produce its new Roadster sport sedan, marketed as the quickest car in the world. The viability of electric vehicles has been heavily criticized due to the lack of current electric vehicle infrastructure, but the company is nonetheless expected to expand operations. Due to the high costs required to develop electric vehicles, Tesla has yet to post a full year of company profitability. However, due to its recent surge in production and demand, the company experienced three consecutive quarters of profitability.

Financial performance

Tesla's industry-relevant revenue has increased rapidly, rising at an annualized rate of 38.4% to \$10.7 billion over the five years to 2020. The company began the period only producing its Model S sedan manufacturing, producing more than 50,000 units. Over the following years, Tesla has continued to expand its overall manufacturing capacity while also introducing two new model types to its assembly line. In 2018, its surge in capacity and output, particularly in the production of its Model 3, helped Tesla emerge as a major industry player. The company's industry-relevant revenue increased more than 200.0% as Model 3 production increased from 2,685 units in 2017 to more than 150,000 units in 2018. The output of the Model 3 nearly doubled in 2019, which helped Tesla produce and sell more than 350,000 industry-relevant vehicles that year. Tesla's rising market share during the period has been largely due to its reliance on sedans while most automakers shift production to SUVs and crossovers. Moving forward, Tesla's US-based manufacturing apparatus and consistent output of its Model's S and Model 3 may make it the largest industry player. Tesla's industry-relevant revenue is anticipated to decline 7.2% in 2020 due to struggles resulting from the COVID-19 (coronavirus) pandemic. Additionally, the company's industry-relevant operating income has increased during the period.

Tesla Inc. (US industry-specific segment) - financial performance*				
Year	Revenue (\$m)	Growth (% change)	Operating Income (\$m)	Growth (% change)
2015	2104.3	N/C	-372.9	N/C
2016	3810.8	81.1	-363.1	2.6
2017	3604.6	-5.4	-500.3	-37.8
2018	11544.4	220.3	-208.7	58.3
2019	11500.9	-0.4	-32.3	84.5
2020	10673.4	-7.2	333.7	1133.4

Source: Annual report and IBISWorld

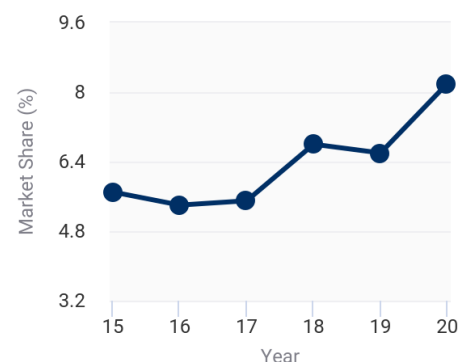
Note: *Estimates

HONDA MOTOR CO. LTD.

Market Share: 8.2%

Honda Motor Co. Ltd. (Honda) is Japan's second-largest automaker and the world's largest motorcycle manufacturer. The company is headquartered in Tokyo, with its North American operations based in Torrance, CA. Honda currently employs over 200,000 people in its assembly plants in 15 different countries. In fiscal 2019 (year-end March), Honda generated \$143.9 billion in global revenue from all of its operating segments.

Honda Motor Co. Ltd.



Honda is noted for its unusually high spending on research and development, which accounts for an estimated 5.0% of revenue. Honda's research efforts have resulted in major developments in robotics, jet-engine design and numerous automotive technologies. Honda was one of the first automakers to mass-produce engines with variable valve timing, which can significantly increase an engine's fuel efficiency or power output. Honda was also the first automaker to offer a hybrid vehicle, the Honda Insight, but it did not achieve the commercial success of its rival, the Toyota Prius. In the United States, Honda sells vehicles under the Honda and Acura brands. Among driving enthusiasts, Honda has developed a reputation for excellence in engineering. Despite being known for its engine designs, Honda has never produced a V8 for passenger vehicles. In Japan, cars are taxed according to engine displacement, which encourages automakers to make smaller engines more powerful. Honda's top-of-the-line engines are therefore V6 engines with variable valve timing.

Financial performance

Honda's industry-relevant revenue has decline at an annualized rate of 6.8% to \$5.0 billion over the five years to fiscal 2021. During this period, fluctuations in currency exchange rates and increased demand for SUVs and trucks have negatively affected revenue growth. In fiscal 2017, the company experienced low demand for passenger vehicles, specifically the Honda Accord, in the United States, which hampered revenue growth. The largest decline has occurred in 2020, as industry-relevant revenue has dropped 23.0% as demand for new cars plummets as a result of the COVID-19 (coronavirus) pandemic. However, decreased competition within the industry has alleviated pressure on Honda's car sales and has helped bolster its

market share. According to 2019 data from *Mark Lines*, the Honda Civic model car was the second-highest selling industry-relevant car in the United States in 2019 (latest data available). Additionally, the company's industry-relevant operating income has declined during the period.

Honda Motor Co. Ltd. (US industry-specific segment) - financial performance*				
Year**	Revenue (\$m)	Growth (% change)	Operating Income (\$m)	Growth (% change)
2015-16	13610.6	N/C	469.2	N/C
2016-17	13062.1	-4.0	784.4	67.2
2017-18	12837.6	-1.7	696.6	-11.2
2018-19	13,046.6	1.6	596.4	-14.4
2019-20	11569.0	-11.3	491.0	-17.7
2020-21	10086.2	-12.8	-204.1	N/C

Source: Annual report and IBISWorld

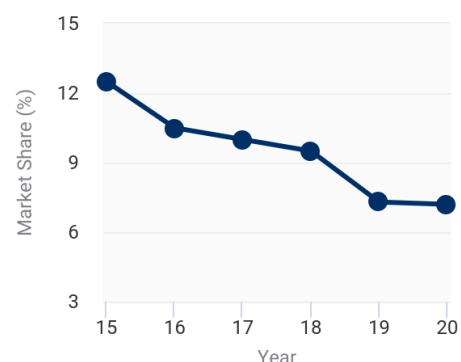
Note: *Estimates; **Year-end March

FORD MOTOR COMPANY

Market Share: 7.2%

Ford Motor Company (Ford) is an American automaker based in Dearborn, MI. Ford operates in the United States under the Ford and Lincoln brands, while also owning a small share of Mazda Motor Corporation in Japan and Aston Martin Lagonda Global Holdings PLC in the United Kingdom. The company operates 66 plants worldwide, employing about 202,000 people. Ford was the only one of America's Big Three automakers that successfully endured the 2009 financial crisis without the assistance of a government bailout or filing for Chapter 11 bankruptcy protection. Since the then, Ford had carried its momentum to solid growth while many of its peers continued to struggle. In 2019, Ford's industry-relevant automotive sector generated \$143.6 billion in global revenue (latest data available). However, the effect of the COVID-19 (coronavirus) pandemic is expected to negatively affect Ford's profit.

Ford Motor Company



Similar to its peers, Ford has heavily relied on truck and SUV sales over the past decade. This shift to SUV and truck production has been further encouraged by generally low and falling oil prices over the five years to 2020. Underinvestment in smaller car designs has led to significant lag before car sales could recover, even after the company decided to switch to a more car-focused model. The "One Ford" initiative put the company in a slightly better position than its competitors because Ford was already well on its way to introducing cars, such as the European-designed Ford Focus and Fiesta. More recently, Ford's attention on the SUV and light-truck markets has benefited the company, though this revenue has come at the expense of its passenger car sales.

Ford, similar to almost every other major automaker, has made it clear that production will likely continue to refocus to high margin light trucks and SUVs. In April 2018, the company outlined a plan to boost profit by dropping the production

of traditional sedan models in the United States. In November 2019, Ford announced plans to reshuffle workers at several US plants to meet rising demand for pickup trucks and large SUVs. Currently, car sales account for 10.0% of Ford's total revenue, down from 30.0% in 2015. Similar to other players, Ford's industry-relevant revenue has suffered from declining consumer interest as the company has shifted production schedules to meet demand.

Financial performance

Ford's industry-relevant revenue has fallen at an annualized rate of 22.3% to \$4.4 billion over the five years to 2020. The company's industry-relevant revenue has heavily relied on the success of its midsize Fusion, the compact Focus and the sporty Mustang. Over the past five years, Ford's market share has declined as the sales and production of its sedans and midsize cars have plunged. This is because sales of the company's SUVs and trucks have outperformed passenger vehicles across the United States. Moreover, Ford has increased the number of SUVs and light trucks in its product portfolio in recent years and is expected to continue doing so moving forward, pressuring industry-relevant revenue growth. However, Ford's industry-relevant revenue is anticipated to 37.9% in 2020 as new car sales and company production is disrupted due to the effect of the coronavirus pandemic on the greater economy. The effect of the pandemic is further expected to lead to the company's operating income, measured as earnings before interest and taxes, to decline 163.6% in 2020.

Ford Motor Company (US industry-specific segment) - financial performance*

Year	Revenue (\$m)	Growth (% change)	Operating Income (\$m)	Growth (% change)
2015	6996.2	N/C	342.8	N/C
2016	7054.7	0.8	213.3	-37.8
2017	6694.0	-5.1	330.1	54.8
2018	6540.9	-2.3	148.7	-55.0
2019	8753.8	33.8	2.6	-98.3
2020	4280.1	-51.1	-1.3	N/C

Source: Annual report and IBISWorld

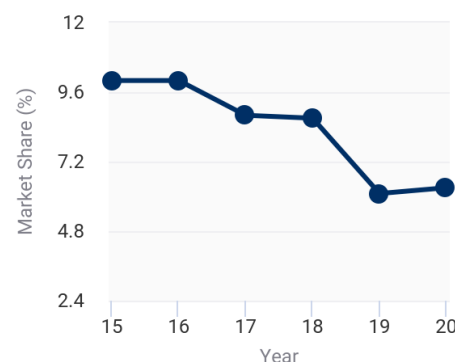
Note: *Estimates

GENERAL MOTORS COMPANY

Market Share: 6.3%

General Motors Company (GM), headquartered in Detroit, is one of the world's largest automakers. GM is one of the Big Three domestic automakers based in the Great Lakes region. GM operates manufacturing facilities and distribution networks in Europe, Asia, Africa, Australia, North America and South America. The company operates in 157 countries, employing about 180,000 people. In 2019, GM generated \$137.2 billion in revenue from its global operations (latest data available). Prior to the five years to 2020, GM filed for bankruptcy and experienced multibillion-dollar losses. The company's bankruptcy

General Motors Company



led to restructuring that eliminated plant assets and parts of its workforce. With optimized production capacity and reduced labor costs, GM can now profitably produce small vehicles and increasingly fuel-efficient trucks.

In November 2018, GM announced major restructuring plans that aims to shift its production focus to light trucks and electric vehicles. GM idled five North American plants in 2019. The company is set to discontinue production of various car models and lay off 14,000 workers, which is an estimated 15.0% of the automaker's salaried workforce. The company also announced its plans to eliminate 25.0% of its leadership team in an attempt to streamline decision making. GM is expected to cease production of vehicles such as the Chevrolet Cruze, the Cadillac CT6 and the Buick LaCrosse, which are considered industry-relevant. The company is expected to further shift production to light trucks and SUVs, which will likely hurt its industry-relevant revenue moving forward. The company has also recently experienced a 40-day strike from the United Auto Workers union, which resulted in a new labor contract. This deal is anticipated to rise company wage costs over the five years to 2025.

In early 2020, GM decided to stop the manufacturing of new automobiles altogether due to the COVID-19 (coronavirus) pandemic. This was largely due to fear of unprecedented inventory of unsold vehicles as the result of crippled demand. GM, similar to Ford, had instead sought ways to adjust its manufacturing schedules to help produce and provide needed medical equipment, such as ventilators, to state governments that have been hit hardest by the pandemic. While auto production resumed in late May, output is expected to be drastically tapered.

Financial performance

GM's industry-relevant revenue has decreased at an annualized rate of 21.0% to \$3.8 billion over the five years to 2020. Sales of the company's SUVs and light trucks have been the major driver of revenue growth. While GM is expected to release several more vehicles with alternate fuel engines or electric propulsion, product innovation and affordable pricing has not been enough to bolster demand for passenger vehicles. Each year, cars and sedans have made up less and less of company sales, accounting for 10.8% of sales in 2020, down from 32.2% in 2015. As fuel prices have declined, consumer preference has shifted to SUVs and light trucks, incentivizing GM to focus operations on these high-margin vehicles. This shift away from industry-relevant vehicles has resulted in double digit declines in revenue during most of the period. In 2020, industry-relevant revenue is anticipated to fall 35.8% as macroeconomic conditions deteriorated and demand for new vehicles is expected to decline due to the effect of the coronavirus pandemic on consumer sentiment and disposable income. Additionally, the company's industry-relevant operating income has drastically declined over the past five years.

General Motors Company (US industry-specific segment) - financial performance*

Year	Revenue (\$m)	Growth (% change)	Operating Income (\$m)	Growth (% change)
2015	15947	N/C	650.7	N/C
2016	13433.1	-15.8	782.1	20.2
2017	10475.5	-22.0	623.2	-20.3
2018	8637.9	-17.5	261.1	-58.1
2019	5808.0	-32.8	232.0	-11.1
2020	3216.5	-44.6	-28.7	N/C

Source: Annual report and IBISWorld

Note: *Estimates

Other Players

FIAT CHRYSLER AUTOMOBILES NV

Formerly Chrysler Group LLC (Chrysler), Fiat Chrysler Automobiles NV (Fiat Chrysler) was formed following Fiat's acquisition of the MI-based automaker. Chrysler has been the smallest of the Big Three domestic automakers, selling vehicles under the Chrysler, Dodge, Ram and Jeep brands. However, the company has traditionally been more dependent on light trucks and SUVs than Ford or GM. For example, Fiat Chrysler has planned to phase out the Chrysler 2000 and Dodge Dart to better meet market demand for pickup trucks and SUVs. In 2016, the company's passenger vehicles accounted for an estimated 30.0% of sales; however, that same year, the company announced that it planned to cease manufacturing industry-relevant vehicles in the United States. In 2017, the company either closed all its US-based car manufacturing facilities or converted them to produce light trucks. In 2020, Fiat Chrysler does not generate any industry-relevant revenue.

NISSAN MOTOR COMPANY LTD.

Nissan Motor Company Ltd. (Nissan) is one of Japan's largest automakers and was founded in 1933. The company first came to the United States in 1958 and established Nissan Motor Corporation USA in 1960. Nissan operates in this industry under the Nissan and Infiniti brands, while also handling operations for its NISMO performance and motorsports divisions. Similar to other major automakers, Nissan has expanded operations in the United States and has continuously focused on the introduction of fuel-efficient vehicles. In 2020, similar to most major automakers, Nissan has experienced weakened demand and stifled production due to the effect of the COVID-19 (coronavirus) pandemic on the economy. This has caused Nissan to halt production in many of its plants, including two in the United States. IBISWorld estimates that Nissan will generate \$2.4 billion in industry-relevant revenue in 2020. An estimated 50.0% of Nissan's sales are composed of industry-relevant vehicles.

TESLA INC.

Founded in 2003, Tesla Inc. (Tesla) is an automaker that specializes in the production of all electric vehicles. The company also manufactures electric powertrain components for automakers, such as Toyota, battery energy storage from home to grid scale and solar panels and solar roofs. Tesla operates a multitude of production facilities, including plants located in California, Nevada, the Netherlands and China. While most of Tesla's vehicle and components manufacturing occurs domestically, some final products are assembled abroad closer to end markets. The company is headquartered in Palo Alto, CA, and employs over 15,000 workers worldwide. In 2019, the company generated \$24.6 billion in global revenue (latest data available).

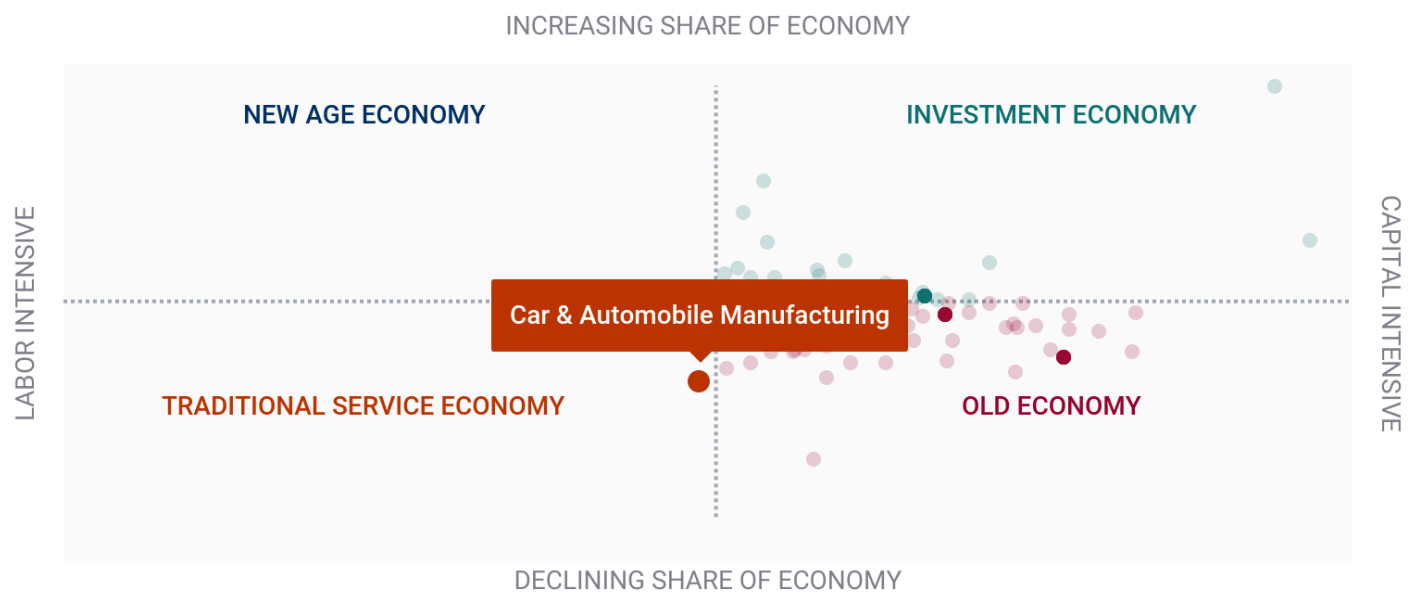
Tesla has created a niche market with its all-electric vehicles. In 2020, Tesla has manufactured four vehicle models with two of them, the Model S luxury-sedan and Model 3, which is considered industry-relevant. Over the coming years, the company is also set to produce its new Roadster sport sedan, marketed as the quickest car in

the world. The viability of electric vehicles has been heavily criticized due to the lack of current electric vehicle infrastructure, but the company is nonetheless expected to expand operations. Due to the high costs required to develop electric vehicles, Tesla has yet to post a full year of company profitability. However, due to its recent surge in production and demand, the company experienced three consecutive quarters of profitability.

Tesla's industry-relevant revenue has increased rapidly, rising at an annualized rate of 40.7% to \$2.6 billion over the five years to 2020. The company began the period only producing its Model S sedan manufacturing, producing more than 50,000 units. Over the following years, Tesla has continued to expand its overall manufacturing capacity while also introducing two new model types to its assembly line. In 2018, its surge in capacity and output, particularly in the production of its Model 3, helped Tesla gain significant market share. The company's industry-relevant revenue increased more than 200.0% as Model 3 production increased from 2,685 units in 2017 to more than 150,000 units in 2018. Tesla's rising market share during the period has been largely due to its heavier focus on sedans compared with most automakers. Tesla's industry-relevant revenue is anticipated to decline only 0.8% in 2020 due to struggles resulting from the COVID-19 (coronavirus) pandemic. This relatively minor decline can be attributed to the fact that overall company revenue is expected to grow, largely on the back of non-industry relevant revenue (for instance, revenue derived from preorders and early manufacture of the forthcoming Cybertruck, which is not an industry vehicle, or solar energy products).

Operating Conditions

Costs of Growth: Targeting Capital vs. Labor



Car & Automobile Manufacturing in the US
Source: IBISWorld

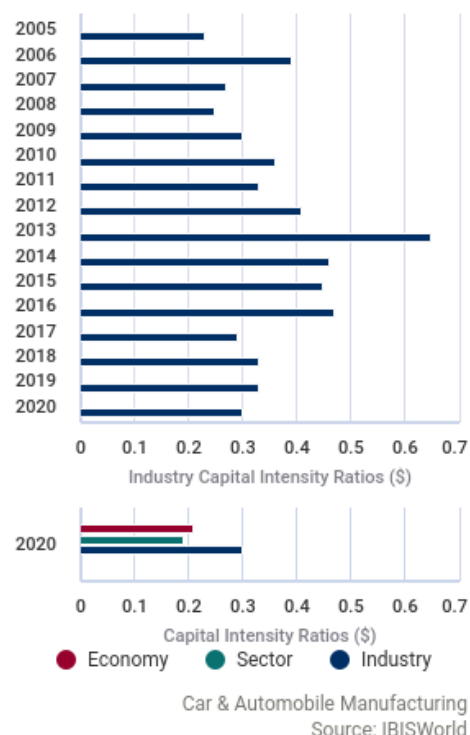
Capital Intensity

The level of capital intensity is ⊖ **Medium**

Assembly plants in the Car and Automobile Manufacturing industry are highly automated production lines fitted with high-tech machinery and equipment. Companies in this industry must spend large sums on their plants and equipment, with periodic reinvestment in the case of equipment failure. For every \$1.00 spent on labor, the average industry operator will invest nearly \$0.30 in capital equipment in 2020. This is one of the most capital-intensive manufacturing industries, due to the complexity of automation machinery and the large capital investments needed to achieve economies of scale.

Additionally, this industry employs a substantial labor force. Although the ratio of capital investment to labor expenditure is quite high, wage costs account for a significant share of revenue, consuming 7.6% in 2020. Profit is fairly low in this industry, meaning fluctuations in labor compensation rates have the potential to significantly affect profitability. For this reason, automation trends have increased over the five years to 2020.

Capital Intensity Ratios



Technology And Systems

Potential Disruptive Innovation: Factors Driving Threat of Change

Level	Factor	Disruption	Description
⚠ Very High	Market Concentration	Very Likely	A ranked measure of the largest core market for the industry. Concentrated core markets present a low-end market or new market entry point for disruptive technologies to capture market share.
⚠ High	Rate of Innovation	Likely	A ranked measure for the number of patents assigned to an industry. A faster rate of new patent additions to the industry increases the likelihood of a disruptive innovation occurring.
⊖ Moderate	Ease of Entry	Potential	A qualitative measure of barriers to entry. Fewer barriers to entry increases the likelihood that new entrants can disrupt incumbents by putting new technologies to use.
✅ Very Low	Innovation Concentration	Very Unlikely	A measure for the mix of patent classes assigned to the industry. A greater concentration of patents in one area increases the likelihood of technological disruption of incumbent operators.

Level	Factor	Disruption	Description
✓ Very Low	Rate of Entry	Very Unlikely	Annualized growth in the number of enterprises in the industry, ranked against all other industries. A greater intensity of companies entering an industry increases the pool of potential disruptors.

The industry has a high rate of new patent technologies but limited concentration. This higher rate of new technologies creates a greater pool of potential disruptors. The range of patenting technologies is broad, which limits the threat of disruptions niche areas. A lack of concentration in patent types creates an environment where incumbent companies are more likely to have sustaining innovations in more areas.

Industry operators are exposed to a low rate of new entrants and a moderate level of entry barriers. This combination of factors creates an environment where entry trends are not a key threat of disruption.

The major markets for this industry are highly concentrated, which implies that the market has a focus on key customer segments. This presents an opportunity for strategic entrance into lower-end markets or unserved markets for innovations to take on a disruptive trajectory.

While major operators in the Car and Automobile Manufacturing industry have adapted and adopted as quickly as possible to technology, there is no denying that the introduction of electric and autonomous vehicles has disrupted the landscape of the industry.

In recent years, increasing environmental consciousness from consumers and increased regulations have pressured automakers to more seriously develop and use electric batteries in vehicles. This endeavor has drastically altered automakers' cost structure and production schedules.

While automakers struggle to produce more electric vehicles, they have also struggled to stay in-line with competitors in terms of autonomous technology. Self-driving technology originated outside the purview of industry operations. While this technology could change vehicle travel, it has currently changed automakers' balance sheets and partnerships. Industry operators have boosted research and development expenditure to stay updated. Due to the immense capital required, many automakers have entered partnerships with one another to share the burden of cost and pool resources. Partnerships have also been made between automakers and big-tech firms. Furthermore, the expenses required for the development of these types of vehicles may result in strained industry profitability over the coming years. Once autonomous technology is the norm, these partnerships could potentially dictate the future structure of the industry. However, as the effect of the COVID-19 (coronavirus) pandemic is anticipated to cripple industry profit, the development of electric and autonomous vehicles may be stalled.

The level of technology change is **△ High**

Over the five years to 2020, the Car and Automobile Manufacturing industry has displayed a high level of technological change, mostly in the form of lighter, more fuel-efficient sedans and coupes.

On the manufacturing side, modern vehicle design processes make heavy use of computer-assisted design software, enabling an initial concept to be developed in days rather than months. The latest vehicle assembly plants are automated, with most labor performed by specially designed robotic arms. In December 2009, General Motors Company (GM) passed an industry milestone by announcing it would begin operating three of its assembly plants on a 24-hour basis. Traditionally, these factories operate with two eight-hour production shifts and one eight-hour resupply shift. GM plans to adjust its production processes to permit single stages of the assembly line to be resupplied independently during production. With its position as the one of the top two largest automakers worldwide, GM can be a standard-bearer on this new production style.

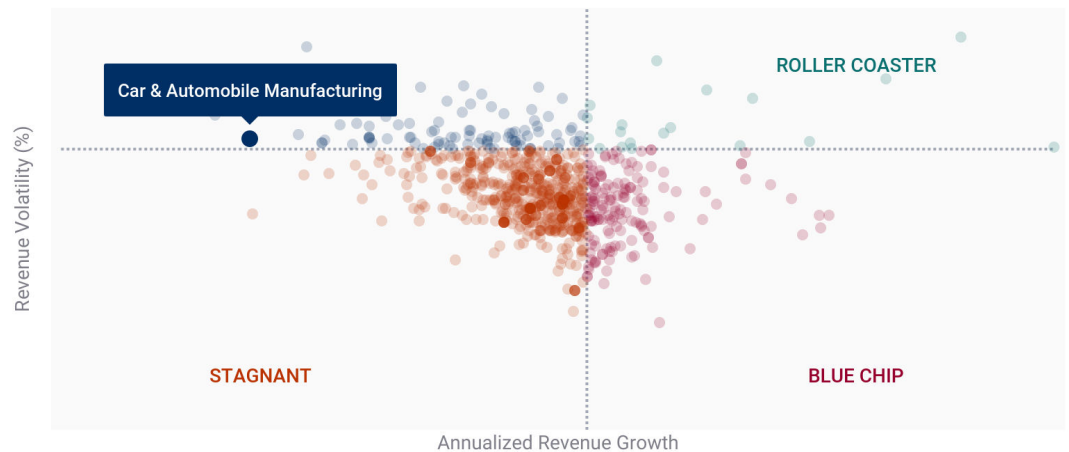
The largest technological change in industry products has been more widespread availability of green technologies. Each year, many automakers are reintroducing vehicle makes and platforms to include hybrid, diesel or electric versions. For example, GM introduced the Chevrolet Volt for model year 2013, the company's flagship electric vehicle. The introduction of the Volt gave way for other electric vehicles in the United States such as the Nissan Leaf and the Ford Focus Electric. Additionally, the ever-expanding availability of hybrid and clean diesel vehicles has also experienced new automakers dip into the green vehicle market with models such as the Volkswagen Passat Diesel and the Kia Optima Hybrid. Though success of electric vehicles is still uncertain, the increased production of all green vehicles shows a general trend that the industry is heading in.

Generally, automakers are heavily involved in the research and development of vehicle technologies, including electric, hybrid-electric and fuel cell vehicles. Cars and trucks are host to an ever-increasing array of electronic gadgets typically designed with a supply company. Spending on research is an important component of an automaker's long-term business strategy. Automakers constantly race to innovate new technologies that improve the ease, cost or safety of driving. These technologies could change the industry when they become commercially viable. However, the sheer expense required for these vehicles production may be troublesome for major industry players.

Revenue Volatility

The level of volatility is ⚠️ **High**

Volatility vs. Growth



Car & Automobile Manufacturing
Source: IBISWorld

Note: Revenue growth and decline reflective of 5-year annualized trend. Y-axis is in logarithmic scale. Y-axis crosses at long-run GDP. X-axis crosses at high volatility threshold.

Over the five years to 2020, the Car and Automobile Manufacturing industry has exhibited a high level of revenue volatility, despite a near consistent trend of decline.

The type of new models introduced during a given period can influence sales trends dramatically. The introduction of new models with innovative features and styles gives consumers the incentive to upgrade cars more regularly. This is also applicable when complements, such as gasoline, are priced affordably. However, during periods of high gasoline prices, consumers tend to shy away from SUVs and light trucks in favor of smaller, more fuel-efficient cars, which benefits the industry. While fuel prices have been volatile during the period, consumer taste has largely shifted from industry-relevant sedans and compact cars, to light trucks and SUVs. As a result, many industry enterprises have begun either halting operations or restructuring manufacturing away from cars and sedans in favor of popular SUVs and crossovers. However, the most amount of revenue volatility was due to the effect of the COVID-19 (coronavirus) pandemic on the economy in 2020. As manufacturing halted and demand dried up, new car sales are anticipated to sharply decline, leading to industry revenue to decline.

Regulation & Policy

The level of regulation is ☹️ **Medium** and is Increasing

Operators in the Car and Automobile Manufacturing industry are required to comply with government regulations regarding safety, fuel consumption and pollution control.

Federal law requires that a manufacturer recall a vehicle if it finds a defect that poses an unreasonable risk to safety. The National Highway Traffic and Safety Administration (NHTSA) compiles complaints from consumers and can prod a manufacturer to recall a vehicle; this is a rare occurrence, as automakers are keen to preemptively recall products. However, the NHTSA formalized a recall of vehicles using defective Takata airbag inflators in 2014, with efforts to replace the parts continuing until 2014. This recall represents the largest in US automotive history, and was expected to take over four years to complete. Though regulators are focused on the airbag supplier, automakers bear a substantial responsibility to rectify the issue. Buyback programs and civil penalties have driven up addition costs for US operators.

Since 2004, the NHTSA has ranked vehicles for risk of rollovers, using a percent-risk rating system. Light trucks and SUVs with a high center of gravity are the most prone to rollover. Since 2006, automakers have advertised vehicle safety ratings with stickers on new vehicles. All vehicle window stickers display the star ratings awarded by the NHTSA for frontal, side and rollover crash-safety test ratings.

Chicken tax

| A 1963 law imposes a 25.0% tax on imported light trucks.

The law was originally intended as retaliation to a European tax on US chicken imports, though the law has not been repealed since. NAFTA created exemptions for Canada and Mexico, but complete trucks manufactured elsewhere are still subject to the tax. Manufacturers circumvent the tax by importing vehicles in nearly complete kits, known as complete knockdowns. These kits are shipped to US assembly facilities where workers reassemble the vehicle. In late November 2019, President Trump floated the possibility of imposing a similar tax on imported cars to boost waning US production of this type of vehicle.

Emissions issues

| An estimated 25.0% of greenhouse gases generated in the United States are attributable to car and truck exhausts, attracting the interest of environmental groups and government agencies.

In August 2004, California released its plan to reduce greenhouse gas emissions from cars and trucks by about 30.0% by requiring costly technology to control air pollution in new cars. The California Air Resources Board indicated that the initial phase between 2009 and 2012, the plan calls for regulation requiring technology to reduce emissions 25.0% for cars and light trucks, and 18.0% for larger trucks and sport utility vehicles. When it was fully implemented in 2018, the recommended regulation reduced emissions by up to 34.0% for cars and light trucks and by 25.0% for larger vehicles. California accounts for about 14.0% of the US auto market.

In April 2007, the US Supreme Court ruled that the Environmental Protection Agency (EPA) has the authority to regulate vehicle emissions that are contributing to global warming. The decision will likely have far-reaching consequences for the automobile sector, which had supported the Bush administration's argument that the EPA did not have the right to regulate tailpipe emissions under the Clean Air Act. Automakers were worried that the EPA would push for more drastic emissions

standards with their expanded power. When emissions regulations change, automakers must invest into new technology, which affects costs significantly. Technological innovations also come at the cost of profit, as automakers find it challenging to manufacture vehicles fitted with new technology without taking losses.

Fuel economy

The Corporate Average Fuel Economy (CAFE) regulations for United States automotive manufacturers were first set by Congress in 1975.

These regulations were created to help improve the average fuel economy of both cars and light trucks. In May 2009, the President Obama announced plans to change the average miles per gallon for an automakers fleet of vehicles. In 2016, light trucks were to average 30.0 miles per gallon. In July 2011, President Obama updated the CAFE regulations through an agreement with 13 automakers that meant to increase the average fuel economy of all cars and light trucks to 54.5 miles per gallon (mpg) by model year 2025. Companies that joined the President on this proposal include major players in the SUV and Light Truck Manufacturing industry (IBISWorld report 33611b), Ford Motor Company (Ford), General Motors Company (GM), Fiat Chrysler Automobiles NV (Fiat Chrysler) and Toyota Motor Corporation (Toyota).

However, auto manufacturers expressed concerns about the initial investment it would take to adhere to the standards presently in place. As a result, in August 2019, the Trump administration announced its intentions to freeze the CAFÉ standards at 2020 levels, reducing the long-term standard to 37.0 mpg. However, this decision has been met with resistance from California, which has sought to circumvent this freeze by imposing stricter emissions rules than that of the federal government, rules that are more in line with mileage requirements of the previous administration. In September 2019, the EPA announced it would revoke California's waiver, stating that "there will be one, and only one, set of national fuel economy and greenhouse gas emission standards for vehicles." This move has led to a legal showdown and divided many automakers. In late October 2019, GM, Fiat Chrysler and Toyota announced that they are joining the side of the administration, while Ford, Volkswagen AG, Honda Motor Co. Ltd. and Bayerische Motoren Werke AG, also known as BMW, have previously stated support for mileage requirements imposed by California.

Overall, CAFE standards are expected to increase research and development costs for automakers. However, this recent policy shift should help mitigate these costs for operators. Furthermore, this drop in the regulatory threshold should aid help reduce costs for truck producers, as trucks generally have worse fuel economies than cars and sedans.

Stay-at-home orders

In March 2020, the COVID-19 (coronavirus) pandemic began to strongly affect the United States.

As infection rates and deaths increased, state governments implemented stricter and stricter policies regarding citizen movement and business operations as means of combating the virus. While businesses deemed essential range from grocery stores, pharmacies to some manufacturers and government workers, these policies have largely resulted in a screeching halt to how the normal US economy functions. As a result of this economic shutdown, the unemployment rate in the US has skyrocketed and consumer confidence plummeted. These policies have led many industry operators to cut workforces or idle plants altogether. The Big Three domestic automakers, halted US production for nearly two months. During most of this period, original equipment manufacturers shifted production schedules to manufacture medical equipment, such as ventilators, to fight the virus. Recently, auto manufacturers have begun to reopen facilities and return to relative normalcy. With that said, total vehicle output is expected to be stifled as industry operators attempt to avoid accumulating large swaths of unsellable inventory. Moving forward, state governments are anticipated to ease restrictions and slowly reopen the economy. However, the effect on demand on automobiles and fears of future outbreaks will likely directly stifle the industry throughout 2020.

Industry Assistance

The level of industry assistance is  **High** and is Steady

Companies in the Car and Automobile Manufacturing industry are frequent beneficiaries of government assistance.

Automakers have a powerful lobbying presence, which often results in policies that favor the industry. In recent years, these policies have centered on research subsidies and the highly publicized bailout of General Motors Company (GM) and Chrysler Group LLC (Chrysler), which is now currently Fiat Chrysler Automobiles NV. In addition to these high-profile cases, government agencies at all levels are required to purchase vehicles produced by a domestic automaker.

The federal government subsidizes research on alternatively fueled vehicles on an ad hoc basis. In 2004, the Department of Energy (DoE) provided \$350.0 million in assistance to stimulate science and research projects into hydrogen fuel cells, which produce no pollutants or greenhouse gases but are expensive to produce. GM, Chrysler and Ford Motor Company (Ford) each participated. In 2009, the DoE gave out \$2.4 billion in grants for the development of batteries, parts and programs for electric vehicles. The money has not been completely dispersed, but GM and Chrysler received \$100.0 million and \$70.0 million, respectively.

While tariffs for the SUV and Light Truck industry (IBISWorld report 33611b) features some odd quirks, such as the 25.0% "chicken tax" tariff on imported pickup trucks, this industry has relatively lower protective measures. Most vehicles have a 2.5% ad valorem tariff regardless of origin. The Trans-Pacific Partnership is anticipated to alter the current tariff structure with respect to Asian manufacturers, potentially removing tariffs completely. This could have an effect on the pricing of domestically produced vehicles, and in turn, profit of US-based operators.

Potential tariffs

In March 2018, President Trump signaled a desire to place tariffs on imported cars, trucks and auto parts.

The Commerce Department is currently investigating whether auto imports are a threat to national security. If so, the President would be able to implement tariffs under Section 232 of the Trade Expansion Act of 1962. The President used the same provision when implementing tariffs on imported steel and aluminum, key industry inputs, earlier this year. Since then, President Trump has signaled an openness of placing Auto tariffs on imported vehicles from Europe and Asian sources. He has not yet done so. However, increased tariffs on steel and aluminum had increased industry input prices, driving up costs in recent years. These costs have fallen recently due to demand plunges.

NAFTA to USMCA

If approved by Congress, the recently signed United States-Mexico-Canada Agreement (USMCA) should apply further assistance to US manufacturing.

This agreement is set to replace NAFTA, and while Canada and Mexico is expected to still be exempt from tariffs on industry goods, operators are expected to be assisted in other ways. For example, by 2023, it will be required that 40.0% of auto products must be made by workers earning a minimum of \$16.00 per hour. This principle was put in place to help protect auto manufacturing jobs from low wage competition in Mexico. Unless Mexico increases its minimum nearly 300.0% by 2023, this development should limit the number of transmission manufacturing jobs being outsourced. While helping workers, this policy may increase wage and overall costs for domestic operators.

Key Statistics

Industry Data

Year	Revenue	IVA	Estab.	Enterprises	Employment	Exports	Imports	Wages	Domestic Demand	New car sales
	(\$m)	(\$m)	(Units)	(Units)	(Units)	(\$m)	(\$m)	(\$m)	(\$m)	(Million)
2011	95,789	7,126	178	160	58,375	50,962	147,383	4,636	192,209	13.0
2012	124,570	11,272	173	159	69,285	47,138	170,905	5,790	248,338	14.8
2013	129,558	15,486	172	157	74,056	49,951	174,510	6,157	254,116	15.9
2014	137,081	12,482	181	163	75,408	54,894	173,146	6,313	255,332	16.9
2015	136,434	13,701	188	171	78,185	50,836	183,632	6,661	269,230	17.8
2016	140,702	11,974	187	168	82,360	49,382	189,978	6,908	281,298	17.9
2017	127,998	15,713	175	158	90,890	47,531	192,499	7,905	272,966	17.6
2018	108,879	9,968	163	148	81,872	43,363	184,661	6,920	250,177	17.7
2019	99,853	9,486	156	143	78,002	46,723	183,554	6,543	236,684	17.4
2020	61,023	6,313	131	121	57,548	39,337	149,421	4,662	171,107	12.2
2021	73,105	7,231	138	127	64,723	42,475	159,588	5,311	190,219	16.4
2022	78,859	7,665	139	128	67,745	44,290	158,075	5,593	192,643	17.6
2023	81,453	7,830	138	126	68,784	46,388	161,510	5,699	196,574	17.9
2024	81,885	7,802	135	123	68,468	46,482	157,477	5,684	192,881	18.0
2025	82,171	7,808	132	121	67,906	47,616	160,313	5,650	194,868	18.0

Annual Change

Year	Revenue	IVA	Estab.	Enterprises	Employment	Exports	Imports	Wages	Domestic Demand	New car sales
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
2011	11.7	-16.2	-11	-12	-2	21.0	5.46	-1.94	4.80	10.8
2012	30.0	58.2	-3	-1	19	-7.51	16.0	24.9	29.2	13.3
2013	4.00	37.4	-1	-1	7	5.96	2.10	6.33	2.33	7.45
2014	5.80	-19.4	5	4	2	9.89	-0.79	2.53	0.48	6.14
2015	-0.48	9.76	4	5	4	-7.40	6.05	5.50	5.44	5.85
2016	3.12	-12.6	-1	-2	5	-2.86	3.45	3.71	4.48	0.11
2017	-9.03	31.2	-6	-6	10	-3.75	1.32	14.4	-2.96	-1.77
2018	-14.9	-36.6	-7	-6	-10	-8.77	-4.08	-12.5	-8.35	0.85
2019	-8.29	-4.84	-4	-3	-5	7.74	-0.60	-5.44	-5.39	-1.60
2020	-38.9	-33.4	-16	-15	-26	-15.8	-18.6	-28.8	-27.7	-29.9
2021	19.8	14.5	5	5	13	7.97	6.80	13.9	11.2	33.9
2022	7.87	5.99	1	1	5	4.27	-0.95	5.30	1.27	7.72
2023	3.28	2.15	-1	-2	2	4.73	2.17	1.88	2.04	1.53
2024	0.53	-0.36	-2	-2	-0	0.20	-2.50	-0.27	-1.88	0.43
2025	0.34	0.07	-2	-2	-1	2.43	1.80	-0.59	1.03	0.29

Key Ratios

Year	IVA/Revenue	Imports/Demand	Exports/Revenue	Revenue per Employee	Wages/Revenue	Employees per estab.	Average Wage
	(%)	(%)	(%)	(\$'000)	(%)		
2011	7.44	76.7	53.2	1,641	4.84	328	79,418
2012	9.05	68.8	37.8	1,798	4.65	400	83,574
2013	12.0	68.7	38.6	1,749	4.75	431	83,144
2014	9.11	67.8	40.0	1,818	4.61	417	83,723
2015	10.0	68.2	37.3	1,745	4.88	416	85,198
2016	8.51	67.5	35.1	1,708	4.91	440	83,881
2017	12.3	70.5	37.1	1,408	6.18	519	86,972
2018	9.16	73.8	39.8	1,330	6.36	502	84,516
2019	9.50	77.6	46.8	1,280	6.55	500	83,885
2020	10.3	87.3	64.5	1,060	7.64	439	81,004
2021	9.89	83.9	58.1	1,130	7.27	469	82,060
2022	9.72	82.1	56.2	1,164	7.09	487	82,563
2023	9.61	82.2	57.0	1,184	7.00	498	82,848
2024	9.53	81.6	56.8	1,196	6.94	507	83,013
2025	9.50	82.3	57.9	1,210	6.88	514	83,208

Industry Financial Ratios

Liquidity Ratios	April 2018 - March 2019 by company revenue						
	April 2015 - March 2016	April 2016 - March 2017	April 2017 - March 2018	April 2018 - March 2019	Small (< \$10m)	Medium (\$10m-50m)	Large (> \$50m)
Current Ratio	1.5	1.4	1.4	1.3	1.1	1.4	1.3
Quick Ratio	0.6	0.5	0.5	0.5	0.4	0.5	0.6
Sales / Receivables (Trade Receivables Turnover)	10.6	9.8	12.3	12.0	14.1	13.9	9.1
Days' Receivables	34.4	37.2	29.7				
Cost of Sales / Inventory (Inventory Turnover)	4.4	4.3	4.5	3.7	3.1	3.6	4.0
Days' Inventory	83.0	84.9	81.1				
Cost of Sales / Payables (Payables Turnover)	13.8	13.9	11.7	10.2	10.9	9.7	10.0
Days' Payables	26.4	26.3	31.2				
Sales / Working Capital	15.4	16.4	11.4	11.6	40.5	8.9	12.1
Coverage Ratios							
Earnings Before Interest & Taxes (EBIT) / Interest	16.5	5.3	6.4	3.3	-3.1	9.1	4.9
Net Profit + Dep., Depletion, Amort. / Current Maturities LT Debt				2.0			
Leverage Ratios							
Fixed Assets / Net Worth	0.3	0.5	0.5	1.1	1.6	0.8	1.1
Debt / Net Worth	1.8	2.9	2.3	4.3	6.8	4.3	4.7
Tangible Net Worth	31.9	28.1	27.5	16.7	5.9	20.5	20.6
Operating Ratios							
Profit before Taxes / Net Worth, %	38.0	32.5	23.6	30.6		29.0	38.7
Profit before Taxes / Total Assets, %	9.9	6.6	5.1	5.2	-7.0	6.0	7.5
Sales / Net Fixed Assets	23.0	17.3	18.3	18.1	18.0	21.6	9.5
Sales / Total Assets (Asset Turnover)	2.2	2.0	2.0	1.9	2.0	2.0	1.8
Cash Flow & Debt Service Ratios (% of sales)							
Cash from Trading	17.6	20.1	18.4	15.6		18.3	13.8
Cash after Operations	5.9	5.0	4.9	5.1		2.6	5.1
Net Cash after Operations	5.0	6.5	4.6	3.0		0.7	4.9
Cash after Debt Amortization	1.4	0.3	0.1	-0.8		-1.5	2.9
Debt Service P&I Coverage	5.2	2.5	2.4	1.0		0.9	
Interest Coverage (Operating Cash)	13.2	8.9	7.5	2.1		1.1	
Assets, %							
Cash & Equivalents	7.4	8.9	7.5	7.5	9.4	7.6	6.3
Trade Receivables (net)	22.1	19.0	19.6	18.5	13.8	20.5	20.0
Inventory	40.2	40.7	40.2	40.1	39.7	43.5	37.2
All Other Current Assets	2.0	1.4	4.1	3.8	4.8	1.9	4.9
Total Current Assets	71.6	70.1	71.4	69.9	67.7	73.5	68.3
Fixed Assets (net)	17.4	20.7	16.2	17.8	21.6	12.9	19.6
Intangibles (net)	4.0	4.1	7.0	7.1	2.2	10.4	7.5
All Other Non-Current Assets	7.0	5.1	5.3	5.2	8.6	3.2	4.7
Total Assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total Assets (\$m)	1,118.7	1,706.7	1,851.9	2,191.7	51.5	288.8	1,851.4
Liabilities, %							
Notes Payable-Short Term	17.8	9.4	11.6	16.2	16.3	21.9	11.0
Current Maturities L/T/D	1.3	3.3	2.8	2.9	6.1	1.3	2.1
Trade Payables	15.7	16.0	15.5	19.5	19.9	21.3	17.7
Income Taxes Payable	0.0	0.0	0.0	0.1	0.0	0.1	0.1
All Other Current Liabilities	18.5	22.5	19.4	15.8	19.6	8.5	19.8
Total Current Liabilities	53.3	51.1	49.5	54.5	61.9	53.0	50.7
Long Term Debt	8.3	11.1	11.5	13.2	23.9	7.3	11.4
Deferred Taxes	0.0	0.2	0.4	0.1	0.1	0.2	0.1
All Other Non-Current Liabilities	2.5	5.3	4.2	8.4	6.1	8.7	9.7
Net Worth	35.9	32.2	34.5	23.8	8.1	30.9	28.1
Total Liabilities & Net Worth (\$m)	1,118.7	1,706.7	1,851.9	2,191.7	51.5	288.8	1,851.4
Maximum No. of Statements Used	33.0	34.0	48.0	57.0	15.0	20.0	22.0

Source: RMA Annual Statement Studies, rmahq.org. RMA data for all industries is derived directly from more than 260,000 statements of member financial institution's borrowers and prospects.



Additional Resources

Additional Resources

International Organization of Motor Vehicle Manufacturers

<http://www.oica.net>

WardsAuto

<http://www.wardsauto.com>

Alliance of Automobile Manufacturers

<http://www.autoalliance.org>

US Census Bureau

<http://www.census.gov>

Industry Jargon

DOMESTIC INTERNATIONALS

Japan-based automakers operating in the United States, which include Toyota Motor Corporation, Nissan Motor Company and Honda Motor Co. Ltd.

HYBRID

A car that runs on an electric battery combined with a gasoline engine to be more fuel-efficient than a standard car.

SPORT UTILITY VEHICLE (SUV)

An automotive vehicle similar to a station wagon, but built on a light-truck chassis.

THE BIG THREE

The three biggest domestic automakers in the United States, including General Motors Company, Ford Motor Company and Fiat Chrysler Automobiles NV.

Glossary Terms

BARRIERS TO ENTRY

High barriers to entry mean that new companies struggle to enter an industry, while low barriers mean it is easy for new companies to enter an industry.

CAPITAL INTENSITY

Compares the amount of money spent on capital (plant, machinery and equipment) with that spent on labor. IBISWorld uses the ratio of depreciation to wages as a proxy for capital intensity. High capital intensity is more than \$0.333 of capital to \$1 of labor; medium is \$0.125 to \$0.333 of capital to \$1 of labor; low is less than \$0.125 of capital for every \$1 of labor.

CONSTANT PRICES

The dollar figures in the Key Statistics table, including forecasts, are adjusted for inflation using the current year (i.e. year published) as the base year. This removes the impact of changes in the purchasing power of the dollar, leaving only the "real" growth or decline in industry metrics. The inflation adjustments in IBISWorld's reports are made using the US Bureau of Economic Analysis' implicit GDP price deflator.

DOMESTIC DEMAND

Spending on industry goods and services within the United States, regardless of their country of origin. It is derived by adding imports to industry revenue, and then subtracting exports.

EMPLOYMENT

The number of permanent, part-time, temporary and seasonal employees, working proprietors, partners, managers and executives within the industry.

ENTERPRISE

A division that is separately managed and keeps management accounts. Each enterprise consists of one or more establishments that are under common ownership or control.

ESTABLISHMENT

The smallest type of accounting unit within an enterprise, an establishment is a single physical location where business is conducted or where services or industrial operations are performed. Multiple establishments under common control make up an enterprise.

EXPORTS

Total value of industry goods and services sold by US companies to customers abroad.

IMPORTS

Total value of industry goods and services brought in from foreign countries to be sold in the United States.

INDUSTRY CONCENTRATION

An indicator of the dominance of the top four players in an industry. Concentration is considered high if the top players account for more than 70% of industry revenue. Medium is 40% to 70% of industry revenue. Low is less than 40%.

INDUSTRY REVENUE

The total sales of industry goods and services (exclusive of excise and sales tax); subsidies on production; all other operating income from outside the firm (such as commission income, repair and service income, and rent, leasing and hiring income); and capital work done by rental or lease. Receipts from interest royalties, dividends and the sale of fixed tangible assets are excluded.

INDUSTRY VALUE ADDED (IVA)

The market value of goods and services produced by the industry minus the cost of goods and services used in production. IVA is also described as the industry's contribution to GDP, or profit plus wages and depreciation.

INTERNATIONAL TRADE

The level of international trade is determined by ratios of exports to revenue and imports to domestic demand. For exports/revenue: low is less than 5%, medium is 5% to 20%, and high is more than 20%. Imports/domestic demand: low is less than 5%, medium is 5% to 35%, and high is more than 35%.

LIFE CYCLE

All industries go through periods of growth, maturity and decline. IBISWorld determines an industry's life cycle by considering its growth rate (measured by IVA) compared with GDP; the growth rate of the number of establishments; the amount of change the industry's products are undergoing; the rate of technological change; and the level of customer acceptance of industry products and services.

NONEMPLOYING ESTABLISHMENT

Businesses with no paid employment or payroll, also known as nonemployers. These are mostly set up by self-employed individuals.

PROFIT

IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company's profitability. It is calculated as revenue minus expenses, excluding interest and tax.

REGIONS

West | CA, NV, OR, WA, HI, AK

Great Lakes | OH, IN, IL, WI, MI

Mid-Atlantic | NY, NJ, PA, DE, MD

New England | ME, NH, VT, MA, CT, RI

Plains | MN, IA, MO, KS, NE, SD, ND

Rocky Mountains | CO, UT, WY, ID, MT

Southeast | VA, WV, KY, TN, AR, LA, MS, AL, GA, FL, SC, NC

Southwest | OK, TX, NM, AZ

VOLATILITY

The level of volatility is determined by averaging the absolute change in revenue in each of the past five years. Volatility levels: very high is more than $\pm 20\%$; high volatility is $\pm 10\%$ to $\pm 20\%$; moderate volatility is $\pm 3\%$ to $\pm 10\%$; and low volatility is less than $\pm 3\%$.

WAGES

The gross total wages and salaries of all employees in the industry.

IBISWorld helps you find the industry information you need – fast

With our trusted research covering thousands of global industries, you'll get a quick and intelligent overview of any industry so you can get up to speed in minutes. In every report, you'll find actionable insights, comprehensive data and in-depth analysis to help you make smarter, faster business decisions. If you're not yet a member of IBISWorld, contact us at +1-800-330-3772 or info@IBISWorld.com to learn more.

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