

# The Economic Impact of Ford and the F-Series

September 2020



BCG



Image: Ford.



# Context for this document

## Summary of the study

BCG evaluated the importance of the F-Series and Ford to the US economy through the lenses of employment, GDP, and manufacturing impact, as well as through comparisons to other US companies and products

## Approach

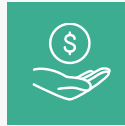
BCG evaluated the impact of the F-Series and Ford across four dimensions:

1. Employment impact at a national and select regional levels
2. Economic impact at a national and select regional levels
3. Ford's current and historical US manufacturing presence
4. Product usage illustrating how the F-Series and Ford support Americans

Source: BCG analysis.



# Our study has uncovered several key economic and employment impacts of Ford and its F-Series production



## Economic and employment impact



## Manufacturing impact



## Usage impact



**13 to 14** US jobs are supported for each direct Ford F-Series employee<sup>1</sup>

This equates to **~500 thousand** total jobs attributable to the F-Series

The F-Series contributes approximately **~\$49 billion** to US GDP, including multiplier effects<sup>2</sup>

F-Series trucks are used by and support up to **13 million** Americans in their daily work

Source: BCG analysis.

<sup>1</sup>Includes dealership employment and impact on local communities.

<sup>2</sup>Multiplier effects include after-sales services and community GDP impact driven by employee responding.



## Manufacturing impact



Ford assembled **2x** as many full-size pickups **in the US** as any competitor in 2019

Ford is the leading US auto manufacturer—responsible for **one in five** vehicles assembled **domestically**

Ford is a **leader** in automotive innovation in terms of **patent quality** and **recency**

The F-150 is the **most American-made** full-size pickup truck (based on an external study)



## Usage impact



The F-Series is **among the most valuable consumer products** in the US

The F-Series is the **most popular vehicle** on the road in the US today...

...and the F-Series is the **highest-selling** vehicle in the US over the last **ten years**

The F-Series is the **best-selling pickup** truck in the world over the last **ten years**

The F-150 is the most popular vehicle on the road in **39 of 50 US** states

Ford is the **most popular** pickup truck in **75%** of commercial vocations



# Contents of this report



Employment  
impact



GDP impact



Manufacturing  
impact



Usage impact

**Employment impact**

GDP impact

Manufacturing impact

Usage impact

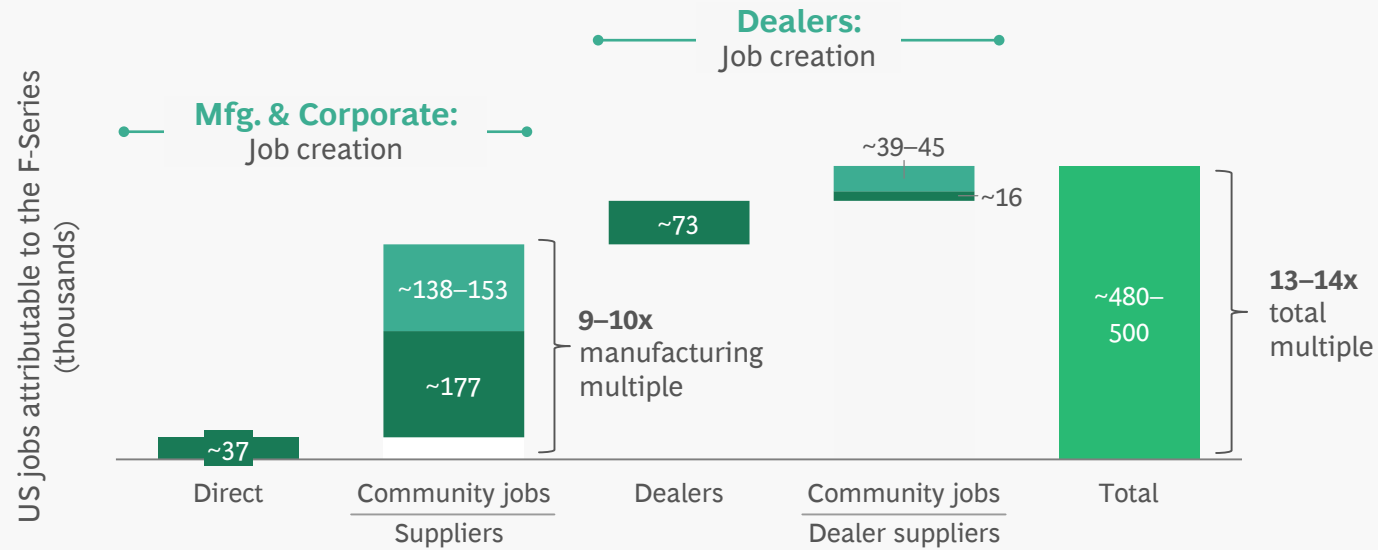


Image: Ford.



## F-SERIES

# The F-Series supports ~500,000 American jobs, representing ~13–14 jobs for every direct Ford employee



E.g. F-Series assembly line staff member, Ford engineer      F-Series supplier machinist, community nurse      Dealer sales staff, vehicle technician      Dealer's accountant, community teacher

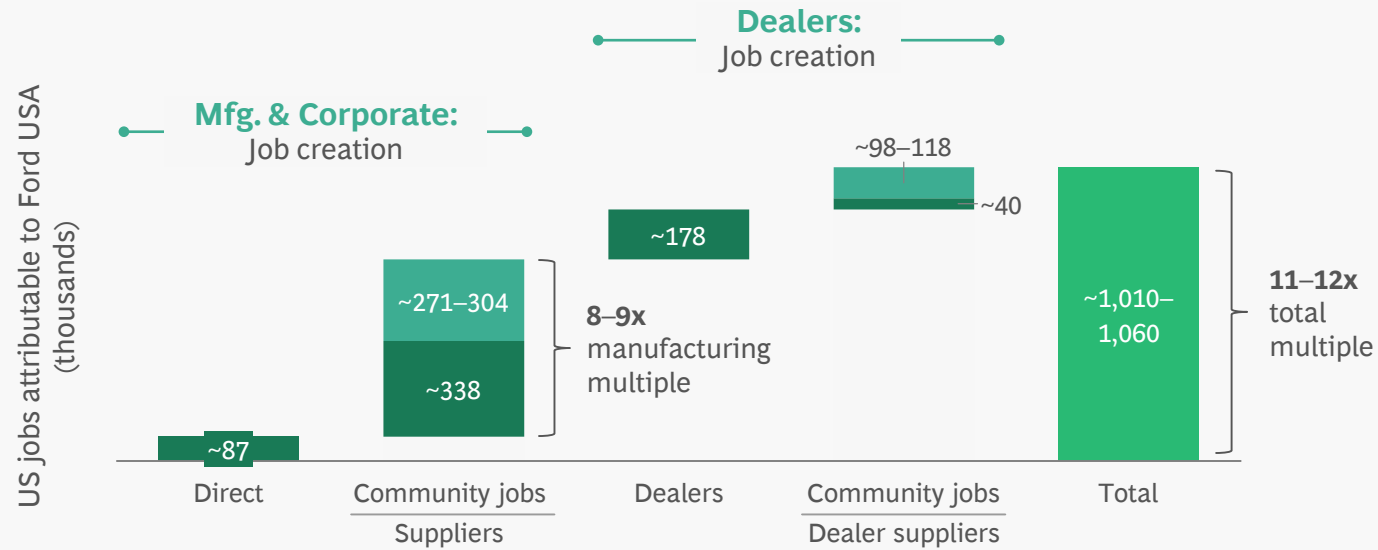
Sources: Bureau of Labor Statistics (2019); F-Series supplier spending (2019); F-Series P&L (2019); F-Series plant-level costs and headcounts (2019); RIMS II ratios (2012 and 2017); Ford government relations (2019); public dealer reports; BCG analysis; image: Ford.

Note: Dealers attributable to F-Series sales are based on state-level F-Series sales volume. Jobs supported exclude any employment impact through truck usage or employment impact resulting from taxes paid.



FORD

# Ford USA supports ~1 million American jobs, representing ~11–12 jobs for every direct Ford employee

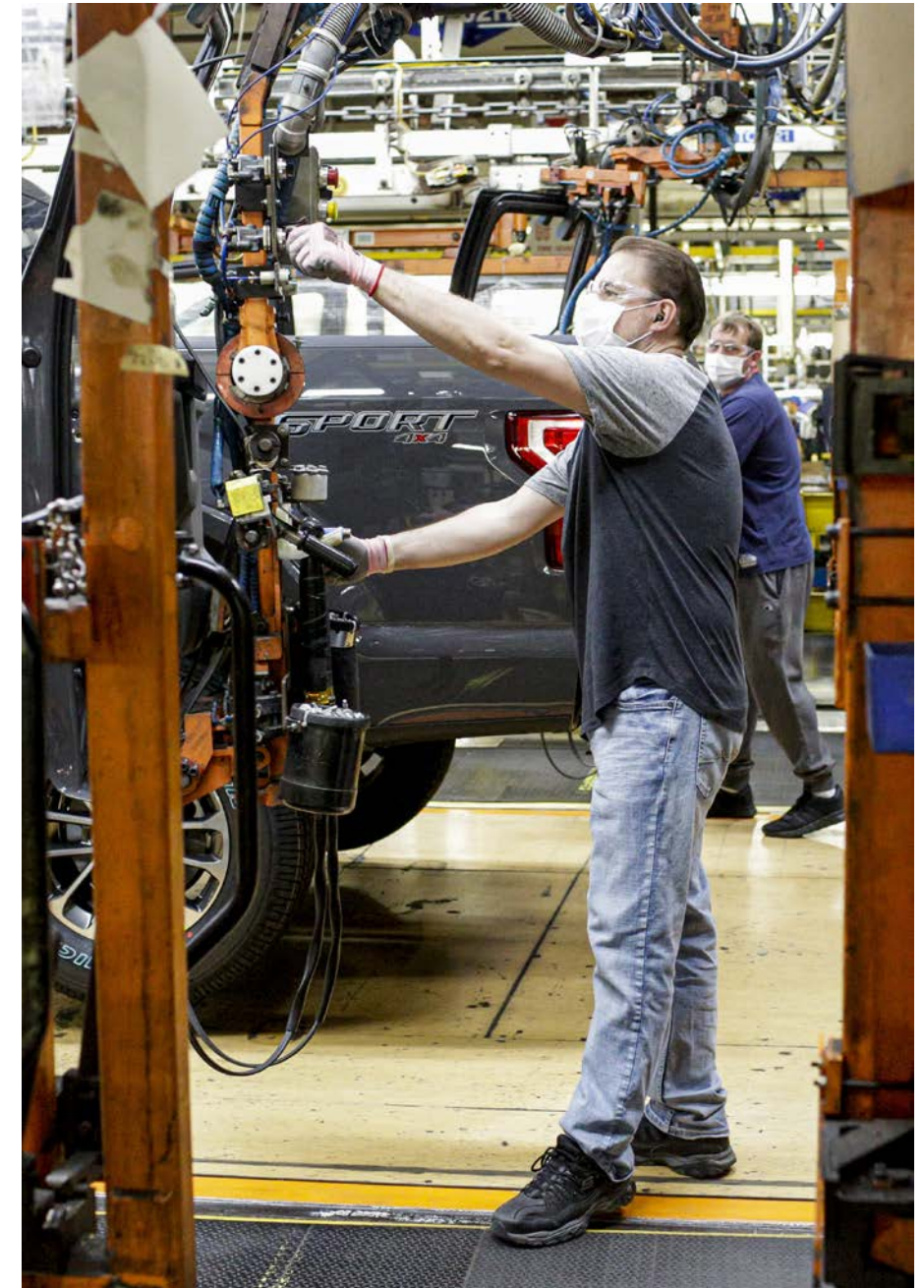


E.g.

Ford assembly line staff member, Ford engineer	Ford supplier machinist, community nurse	Dealer sales staff, vehicle technician	Dealer's accountant, community teacher
------------------------------------------------	------------------------------------------	----------------------------------------	----------------------------------------

Sources: Bureau of Labor Statistics (2019); Ford US supplier spending (2019); Ford US P&L (2019); RIMS II ratios (2012 and 2017); Ford government relations (2019); public dealer reports; BCG analysis; image: Ford.

Note: Jobs supported exclude any employment impact through truck usage or employment impact resulting from taxes paid.





~**17M**<sup>1</sup>  $\times$  **26–35%**  $\times$  **2.1–2.4**  
F-Series on the road estimated in commercial use average truck occupancy

Based on vehicle in operation data

Based on registration information, quantitative analysis, and expert interviews

Based on usage intensity estimates obtained via expert interviews

—  $=$  —  
F-Series trucks are used by and support up to **13M** Americans in their daily work

Representing approximately **8%** of the US labor force

## Workers supported by the F-Series

F-Series trucks support workers in their daily jobs across all major industries, including:

- Construction workers
- Farmers and ranchers
- Independent contractors
- Delivery service people
- Emergency vehicle drivers

F-Series in **commercial use** estimated as those registered to an organization; personal vehicles used commercially, for personal projects (e.g., DIY renovations), or in recreation are in addition to those counted in commercial use

Sources: Expert interviews; BCG analysis.

<sup>1</sup>16.6 million F-Series in operation based on IHS Markit Vehicles in Operation (VIO) in US as of 4/1/20 (see IHS disclaimer).



Employment impact

**GDP impact**

Manufacturing impact

Usage impact

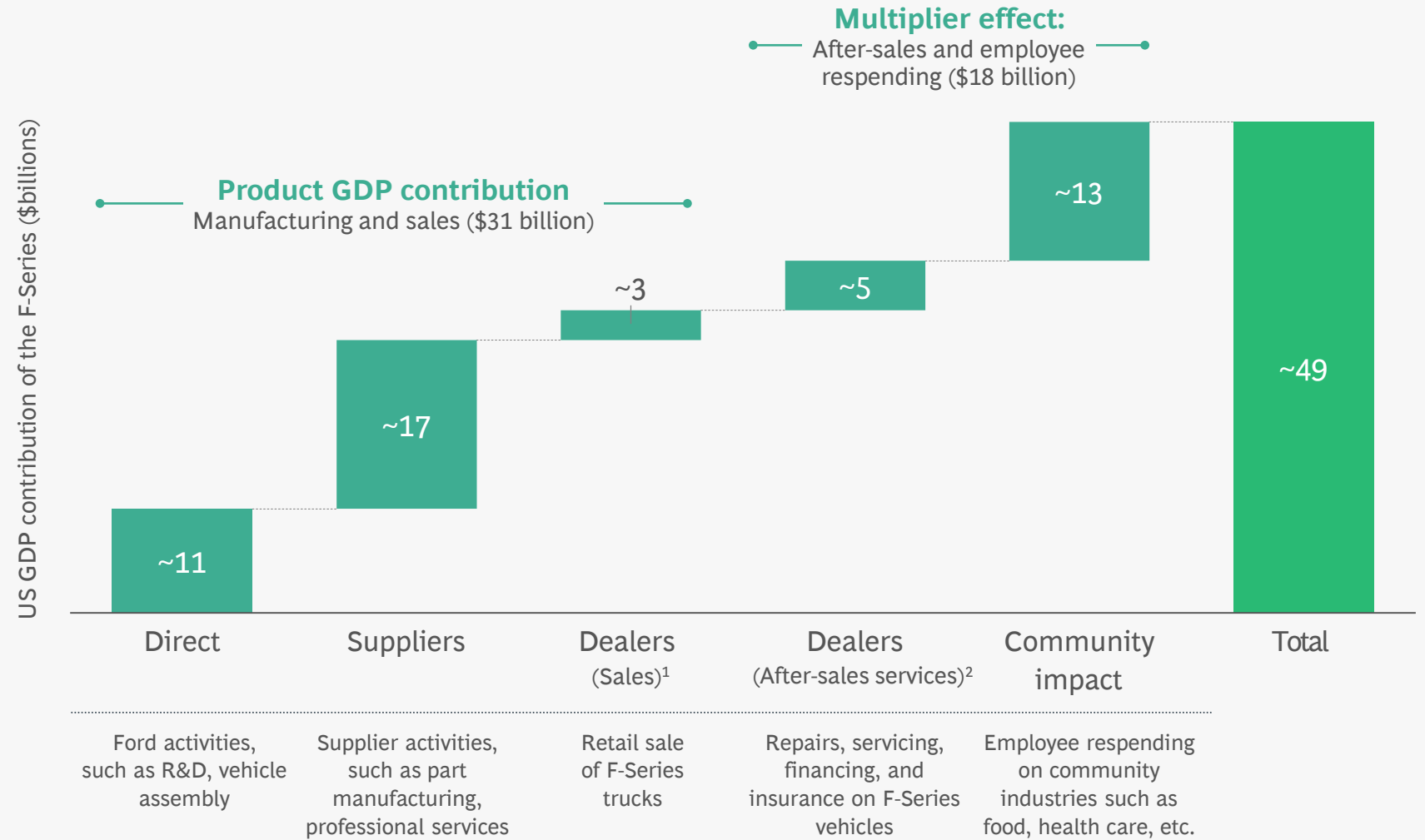


Image: Ford.



## F-SERIES

The F-Series contributes ~\$49 billion to US GDP through production and multiplier effects



Sources: Bureau of Labor Statistics (2019); F-Series supplier spending (2019); F-Series P&L (2019); F-Series plant-level costs and headcounts (2019); RIMS II ratios (2012 and 2017); Ford government relations (2019); public dealer reports; BCG analysis.

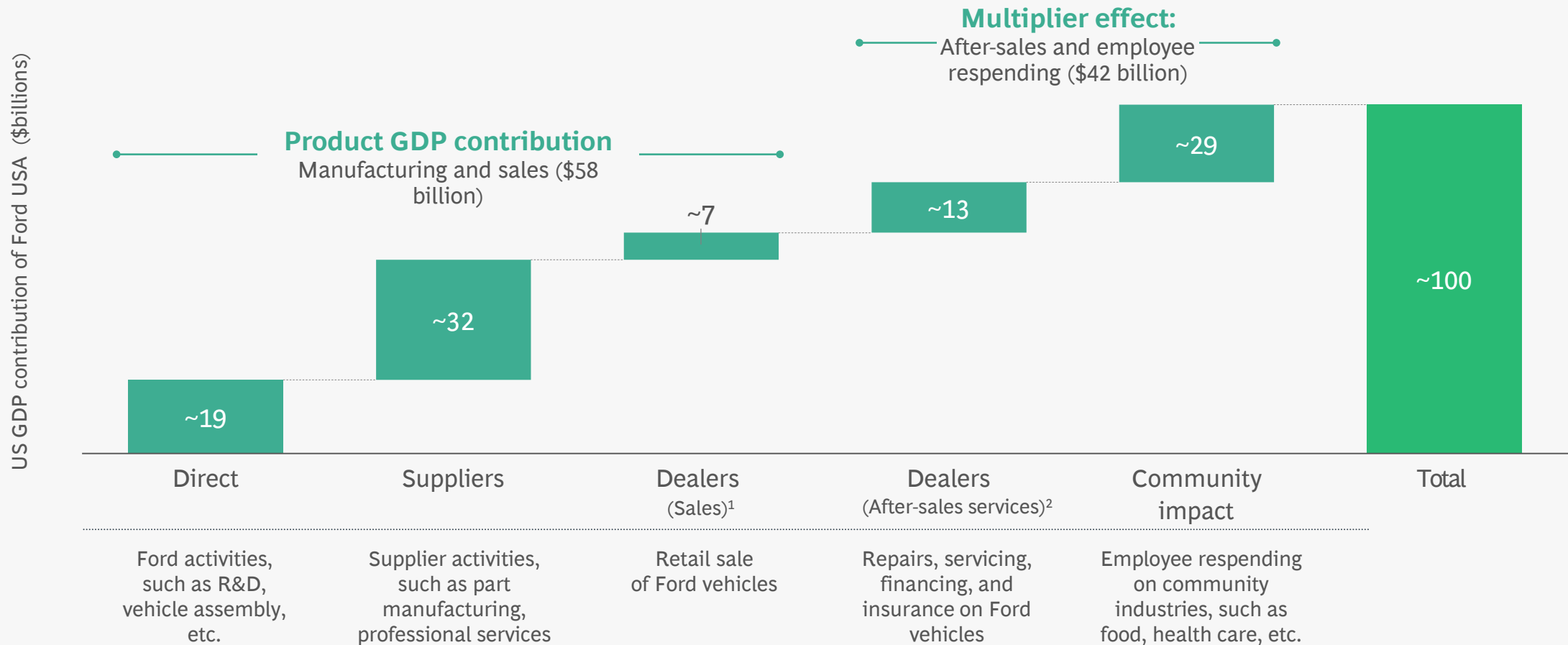
Note: Dealers attributable to F-Series sales are based on state-level F-Series sales volume. Impact is attributable only to vehicle and parts/accessory sales. Excludes fuel economy and Ford credit impact.

<sup>1</sup>Based on vehicle sales accounting for approximately 35% of dealer gross profits.

<sup>2</sup>Does not include services and repairs by non-Ford dealers.

FORD

## Ford USA contributes ~\$100 billion to US GDP through production and multiplier effects



Sources: Bureau of Labor Statistics (2019); Ford US supplier spending (2019); Ford US P&L (2019); RIMS II ratios (2012 and 2017); Ford government relations (2019); public dealer reports; BCG analysis.

Note: Impact is attributable only to vehicle and parts/accessory sales. Excludes fuel economy and Ford credit impact.

<sup>1</sup>Based on vehicle sales accounting for approximately 35% of dealer gross profits.

<sup>2</sup>Does not include services and repairs by non-Ford dealers.



Employment impact

GDP impact

**Manufacturing impact**

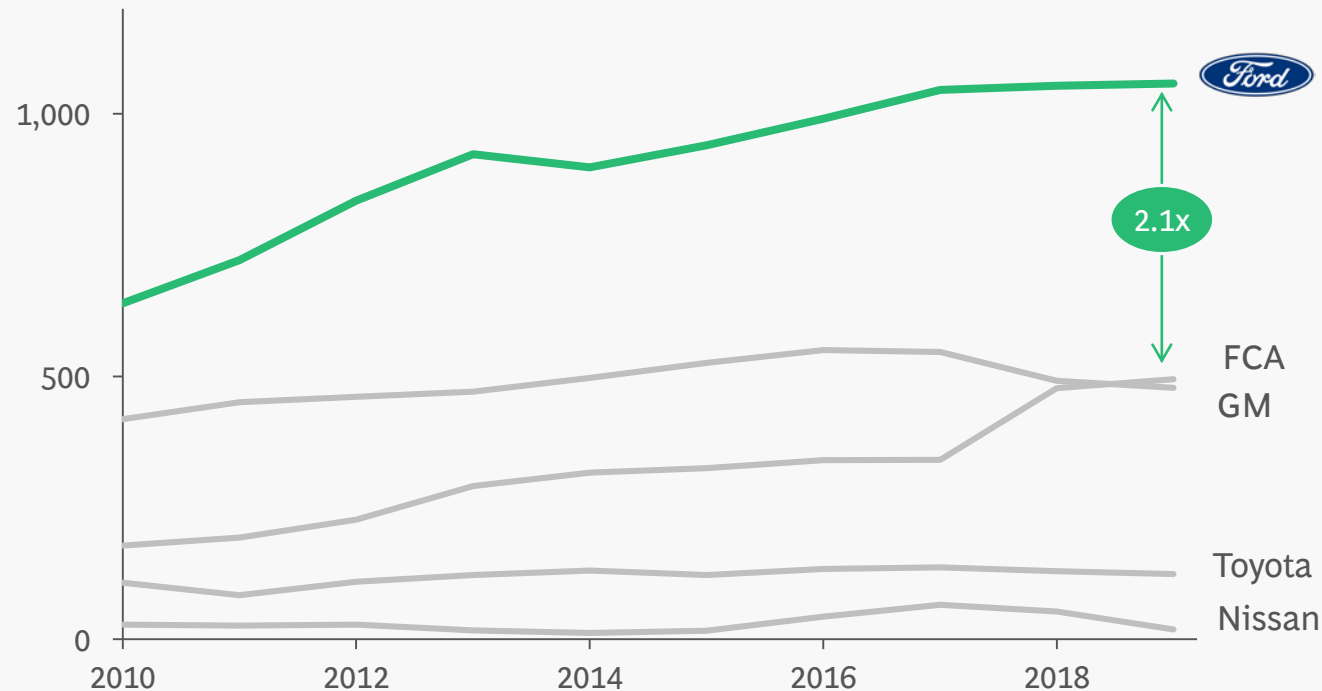
Usage impact



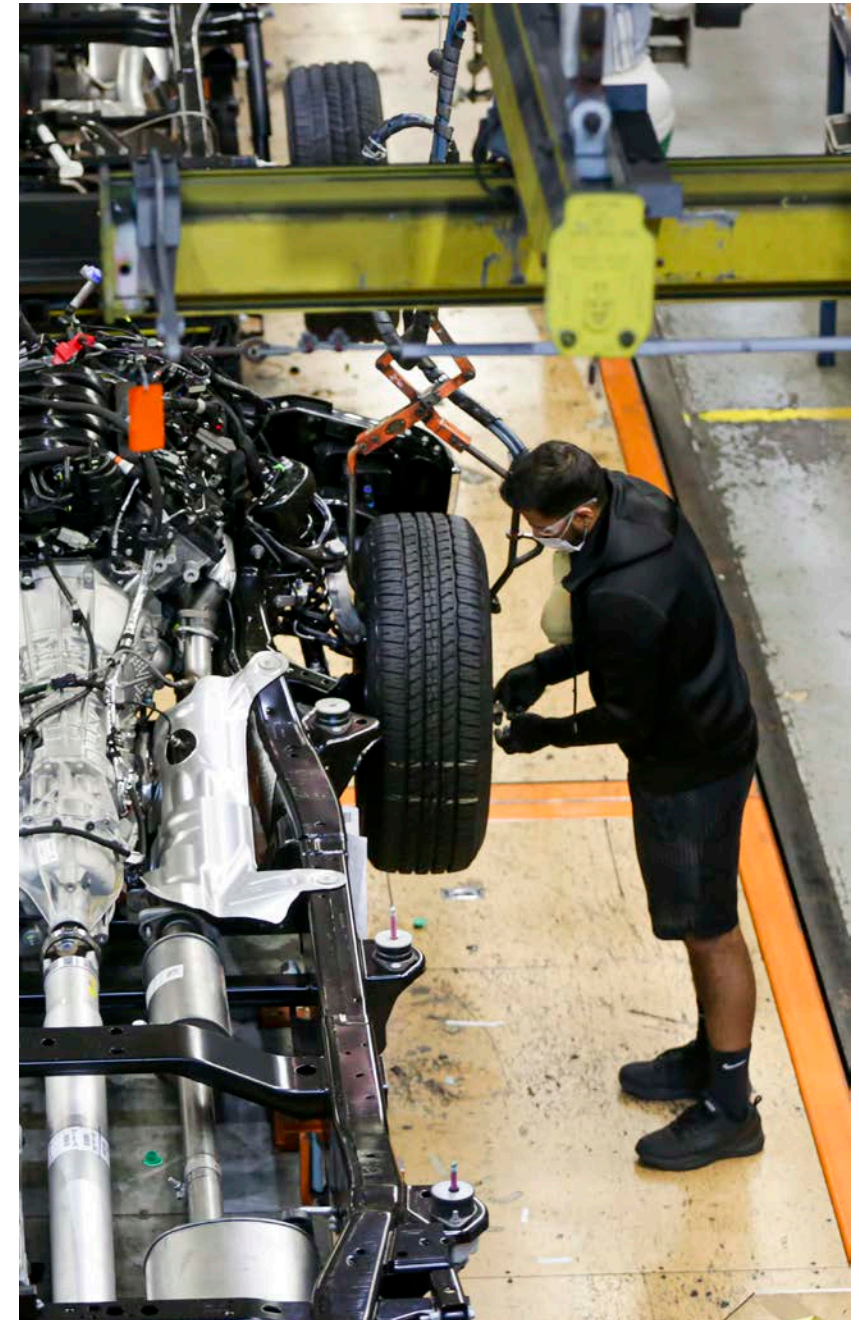
Image: Ford.

# Ford assembled twice as many full-size pickups in the US as any competitor in 2019

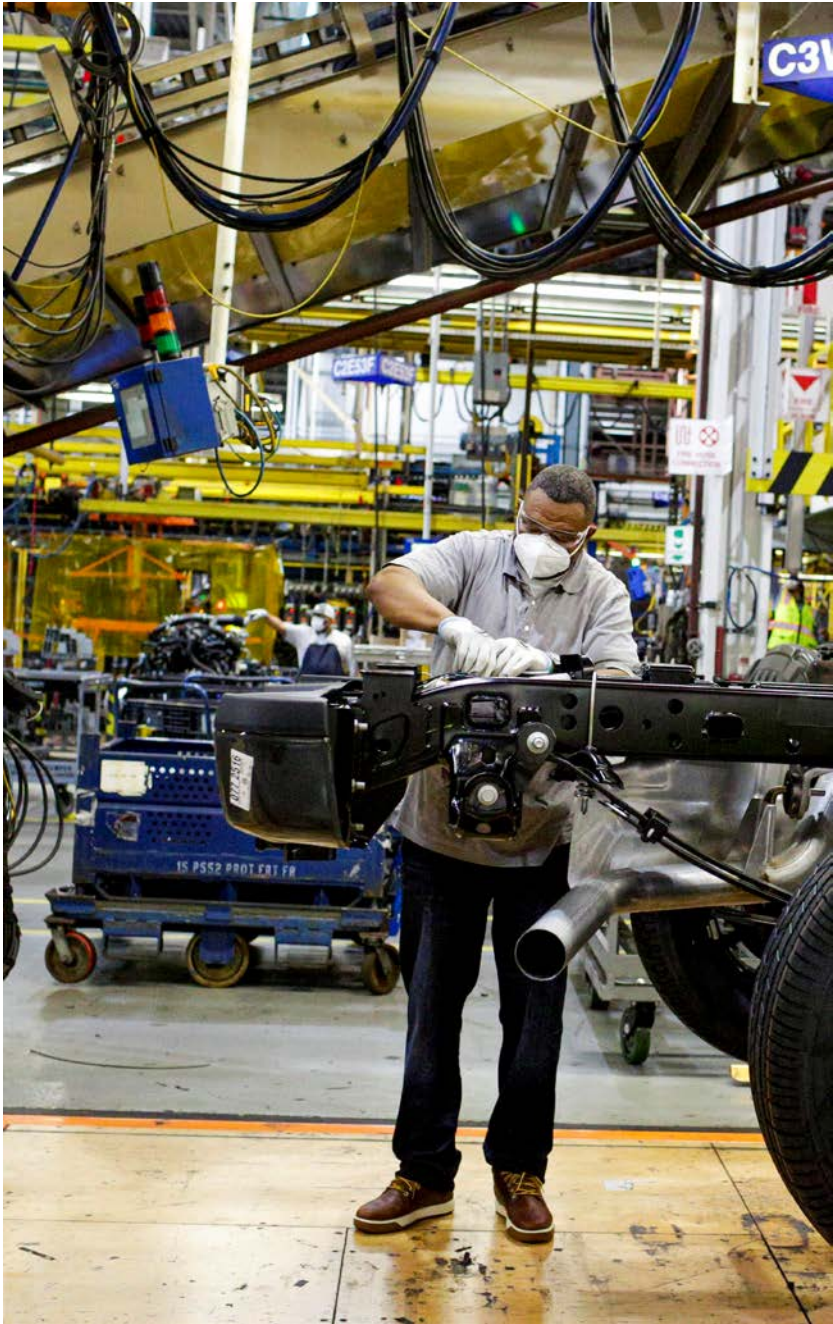
Full-size pickup trucks assembled in the US (thousands)



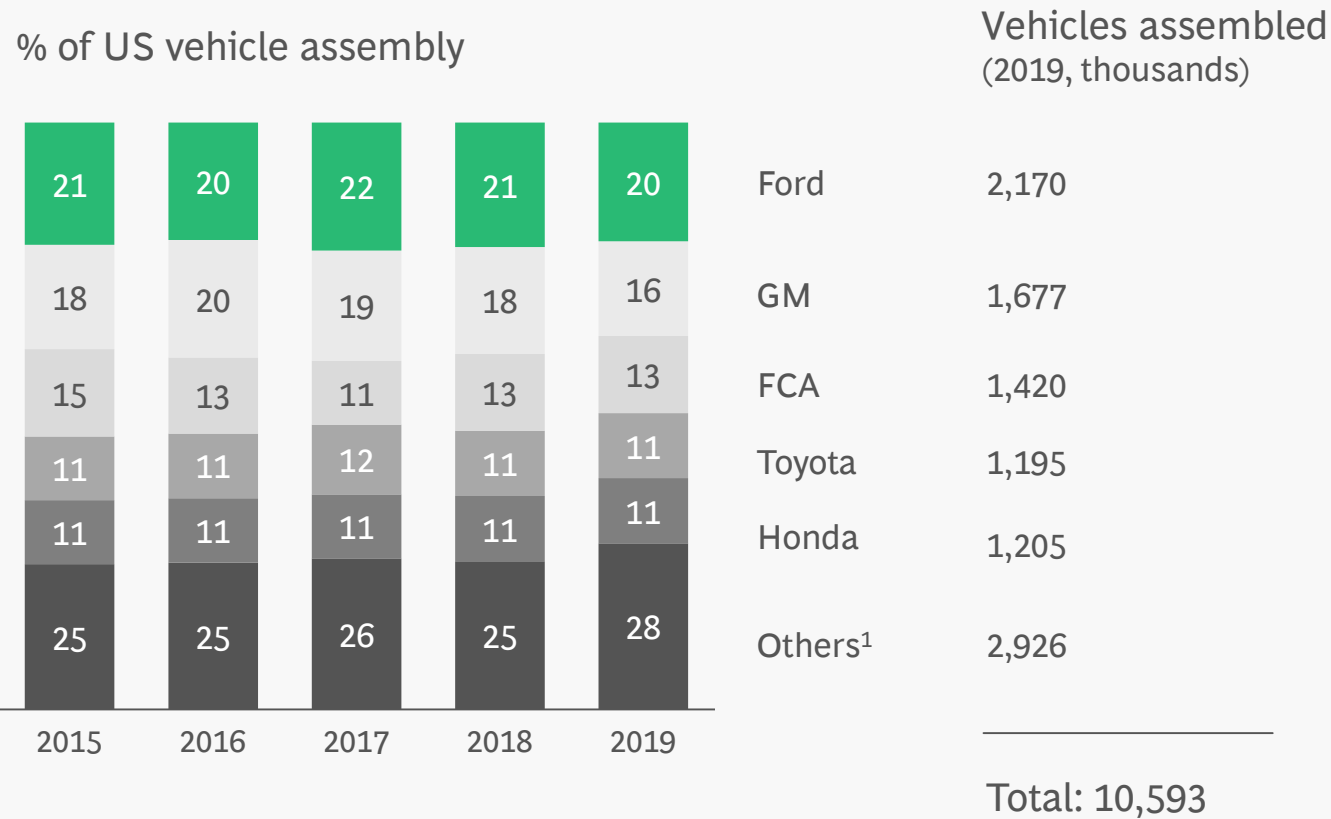
Sources: Based on IHS Markit CYE 2019 US Light Vehicle Production data (see IHS disclaimer); BCG analysis; image: Ford.  
Note: GM pickup truck brands include Sierra and Silverado.







## Ford is responsible for one in five vehicles assembled in the US



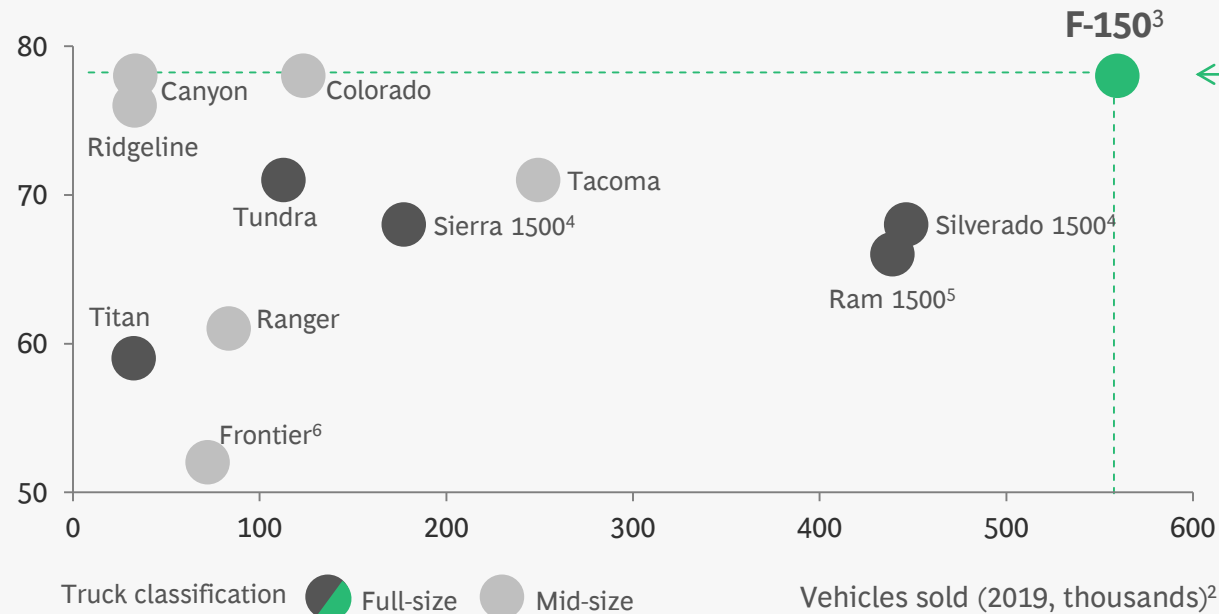
Sources: Based on IHS Markit CYE 2019 US Light Vehicle Production data (see IHS disclaimer); BCG analysis; image: Ford.

<sup>1</sup>Including BMW, Daimler, Geely, Hyundai, Karma Automotive, Mercedes-Benz, Navistar, Renault-Nissan-Mitsubishi, Kia, Tesla, Volkswagen.

# An external study confirms the F-150 is the most American-made full-size pickup

American University's 2019 Made in American Auto Index found that the F-150 is the most American-made full-size pickup

Kogod Made in America Index<sup>1</sup>



The F-150 leads the industry both in number of vehicles sold and as the most American-made truck<sup>2</sup>

Sources: Made in America Auto Index (Kogod School of Business at American University); BCG analysis; image: Ford.

Note: Ford F-150, Chevrolet Colorado, and GMC Canyon all earned a Made in America score of 78/100. Excludes Jeep Gladiator.

<sup>1</sup>The Kogod Made in America Auto Index, developed by the Center for Automotive Research, evaluates vehicles' domestic content based on seven criteria using publicly available data: profit margin, labor, location of research and development, inventory capital, engine construction, transmission construction, and body chassis construction.

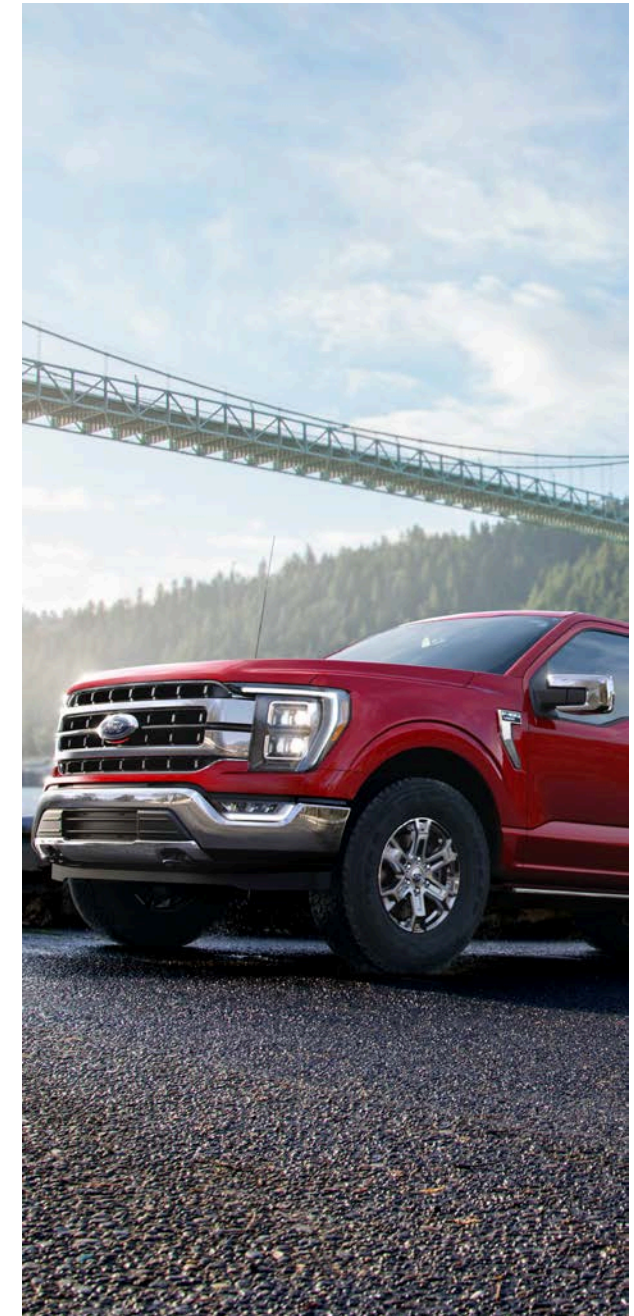
<sup>2</sup>Based on IHS Markit US Total New Vehicle Registrations (full-size pickup and mid-size pickup) CY 2019 (see IHS disclaimer).

<sup>3</sup>F-150 classified as a full-size truck; excludes Super Duty, DOHC, and DSI models.

<sup>4</sup>Excludes HD models (Silverado VIN=1 models scored 71 on the Made in America index, not shown).

<sup>5</sup>Ram includes both Classic and non-Classic models, with an average score of 65 shown; the Classic model scored 73.5, and the non-Classic model scored 58.5 on the Made in America Index.

<sup>6</sup>The average of the 4- and 6-cylinder models is shown (which scored 59 and 45, respectively, on the Made in America index).



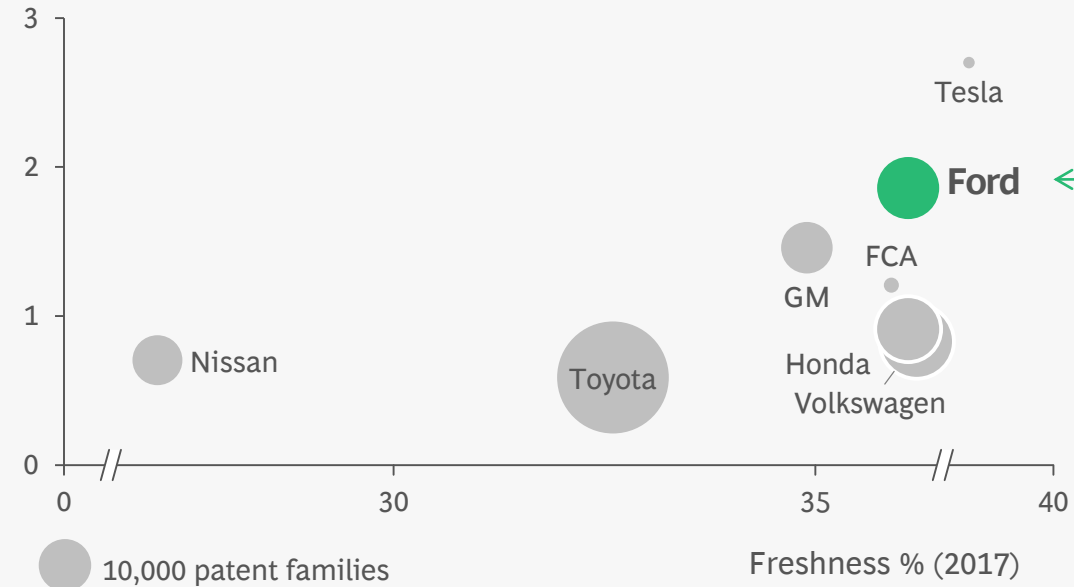




# Ford is a leader in the automotive industry for combined quality and recency of patent filings

**Average Competitive Impact™** is a measure of a patent's economic value<sup>1</sup>

Average Competitive Impact™



Ford is a leader in the auto industry in both patent Competitive Impact and Freshness

**Freshness** is a measure of a company's patents' recency<sup>2</sup>

Sources: LexisNexis PatentSight; BCG Center for Growth & Innovation Analytics; image: Ford.

Note: Competitive Impact™, Technology Relevance™, and Market Coverage™ are trademarks of LexisNexis PatentSight.

<sup>1</sup>As measured by a patent's Technology Relevance™ and Market Coverage™; Competitive Impact™ is stated relative to other patents in the same field (e.g., a value of three means that the patent is three times as important as the average patent in the field).

<sup>2</sup>Measured as the number of patent filings since 2017 divided by the number of patents filed since 2013; analysis based on ~114,000 patent families belonging to Fiat Chrysler Automobiles, Ford Motor Company, General Motors Company, Honda Motor Company, Nissan Motor Company, Toyota Motor Corp., and Volkswagen Group filed since 2013.



# Ford's IP is supporting innovation across industries



Ford patents are cited in innovative new products across industries, from agriculture to biopharma

From 2013 through 2017, Ford's patents were cited

**~23,000**

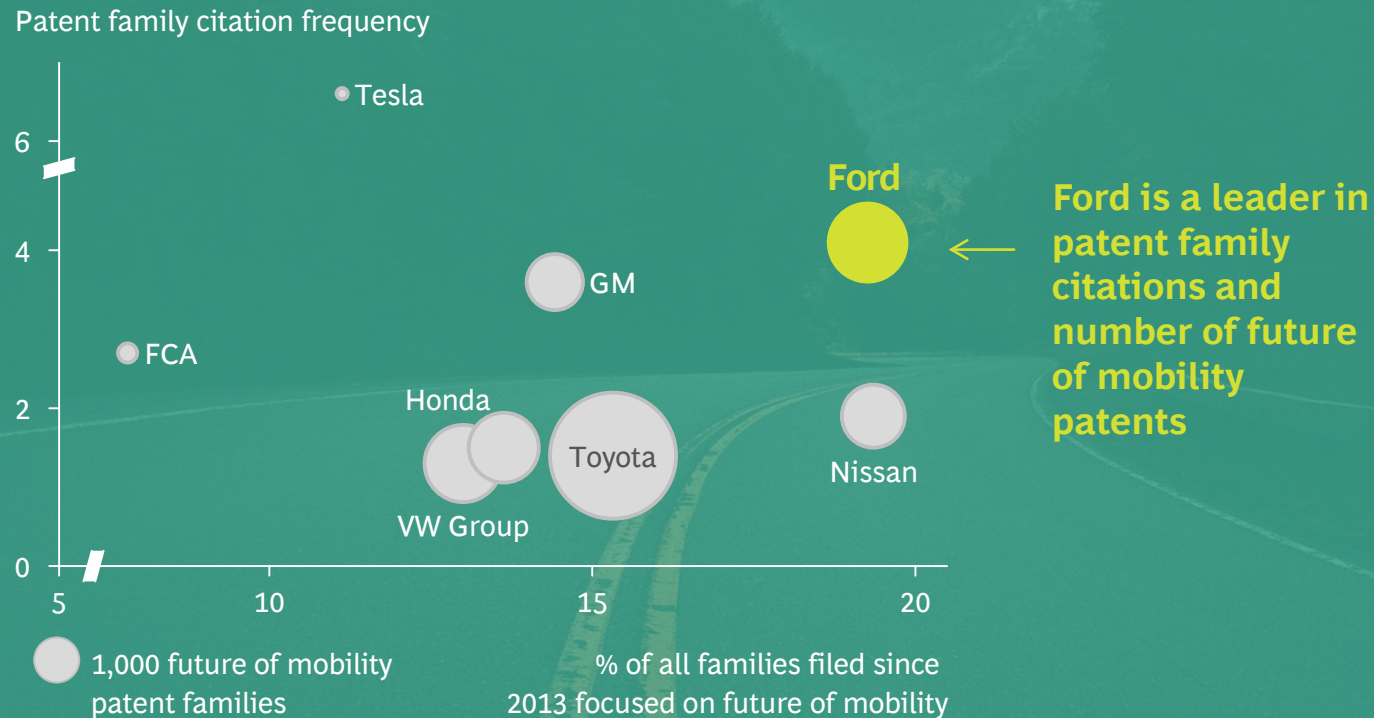
times across different industries

## Illustrative examples

Industry				
	<b>Aircraft monitoring</b>	<b>Surgical robotics</b>	<b>Exercise machine</b>	<b>Vision technology</b>
Citing patent	Aircraft-operating-data monitor provides integrated view of asset health	System for controlling articulating arm as part of confidence-based robot-assisted surgery system	Exercise program based on real-world routes, including video display and topographical simulation	Machine learning program analyzes body language to improve interaction between humans and robots
Industry				
	<b>Medtech devices</b>	<b>Health care/ pharmacy</b>	<b>Audio technology</b>	<b>Home automation</b>
Citing patent	Medical treatment device and method for stimulating neurons of a patient	Controlled release of peptide formulations to deliver treatment solutions to administration devices	Voice-activated virtual assistant used to retrieve and deliver information to the user using a wireless earpiece	Detection and mitigation of harmful gases via integration with home automation systems

# Ford is investing in the future of mobility

**Future of mobility** patents include autonomous and electric vehicles, artificial intelligence, machine vision, internet of things, connected vehicles, and additive manufacturing, among others



Sources: LexisNexis PatentSight; BCG Center for Growth & Innovation Analytics.

Note: Analysis based on 18,000 active and inactive patent families relating to the future of mobility belonging to FCA, Ford, GM, Honda, Nissan, Tesla, Toyota, and VW Group filed since 2013. Competitive Impact™ is a trademark of LexisNexis PatentSight.

**1 in 5** of Ford's patent families since 2013 are focused on the future of mobility

Ford has filed **84%** more future of mobility patents than FCA and GM combined



Employment impact

GDP impact

Manufacturing impact

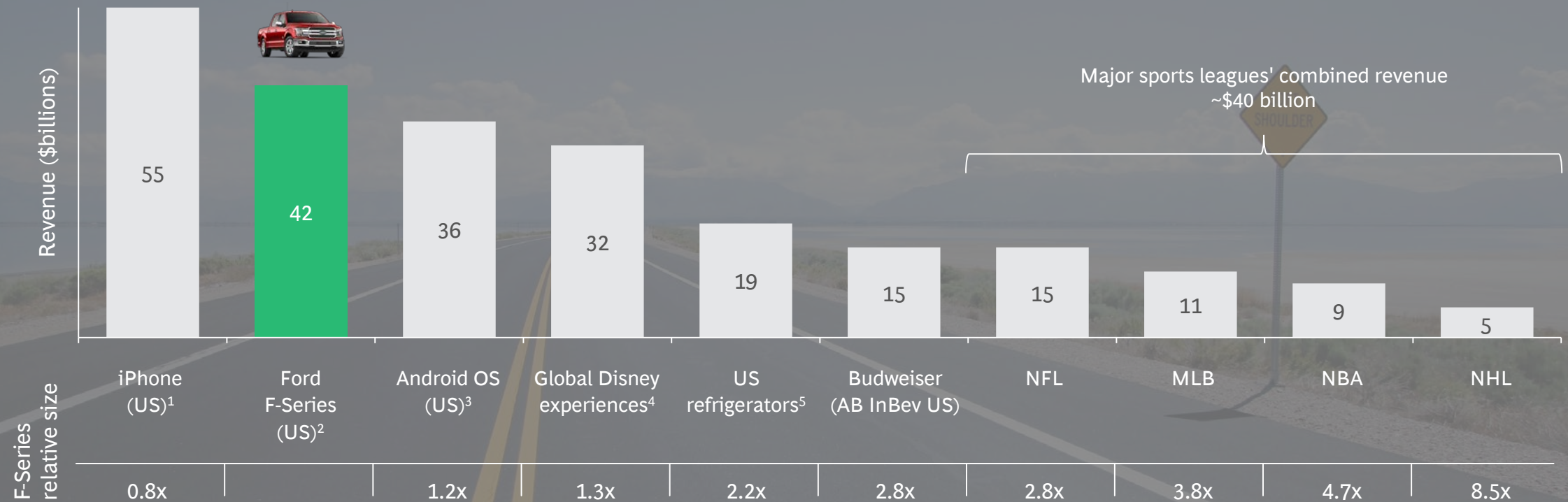
**Usage impact**



Image: Ford.



# The F-Series is among the largest US consumer products—bigger than Android and combined major sports leagues



Sources: Company financial statements; Google legal disclosures; *Forbes*; IDC; Euromonitor; *Chicago Tribune*; BCG analysis.

Note: Company financials are last fiscal year. Product list is not exhaustive and focuses on select products.

<sup>1</sup>IDC Quarterly Mobile Phone Tracker, 2019.

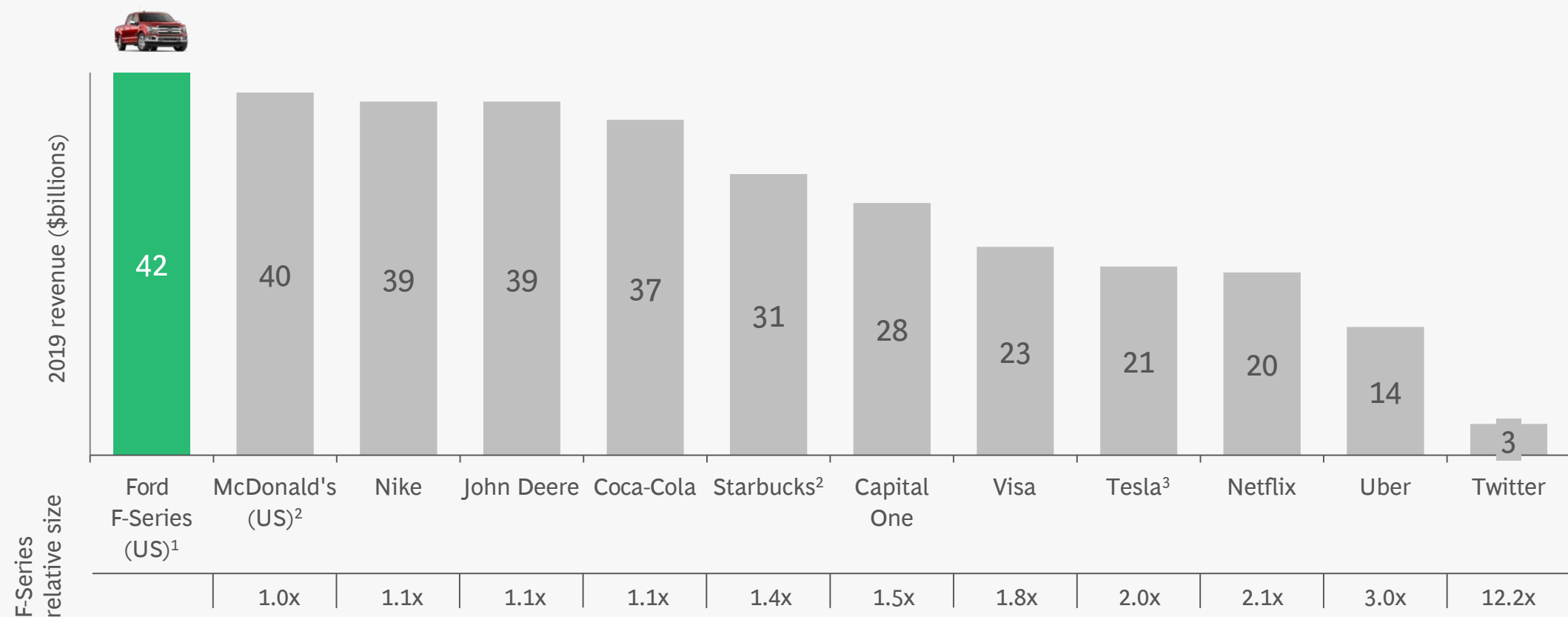
<sup>2</sup>F-Series North American total sales of ~\$49 billion.

<sup>3</sup>Operating system revenue (not device sales) estimated based on 2016 revenue using user growth as a proxy.

<sup>4</sup>Disney Parks, Experiences and Products segment includes Disney theme parks and resorts, cruises and merchandise licensing, and retail revenue.

<sup>5</sup>Euromonitor Appliances and Consumer Electronics Market Size Report, 2019.

# The F-Series alone generated more revenue than many recognizable companies in 2019



Sources: Company financial statements; BCG analysis.

Note: Company financials are taken from last fiscal year, and company list is not exhaustive and focuses on select companies.

<sup>1</sup>F-Series North American total sales of ~\$49 billion.

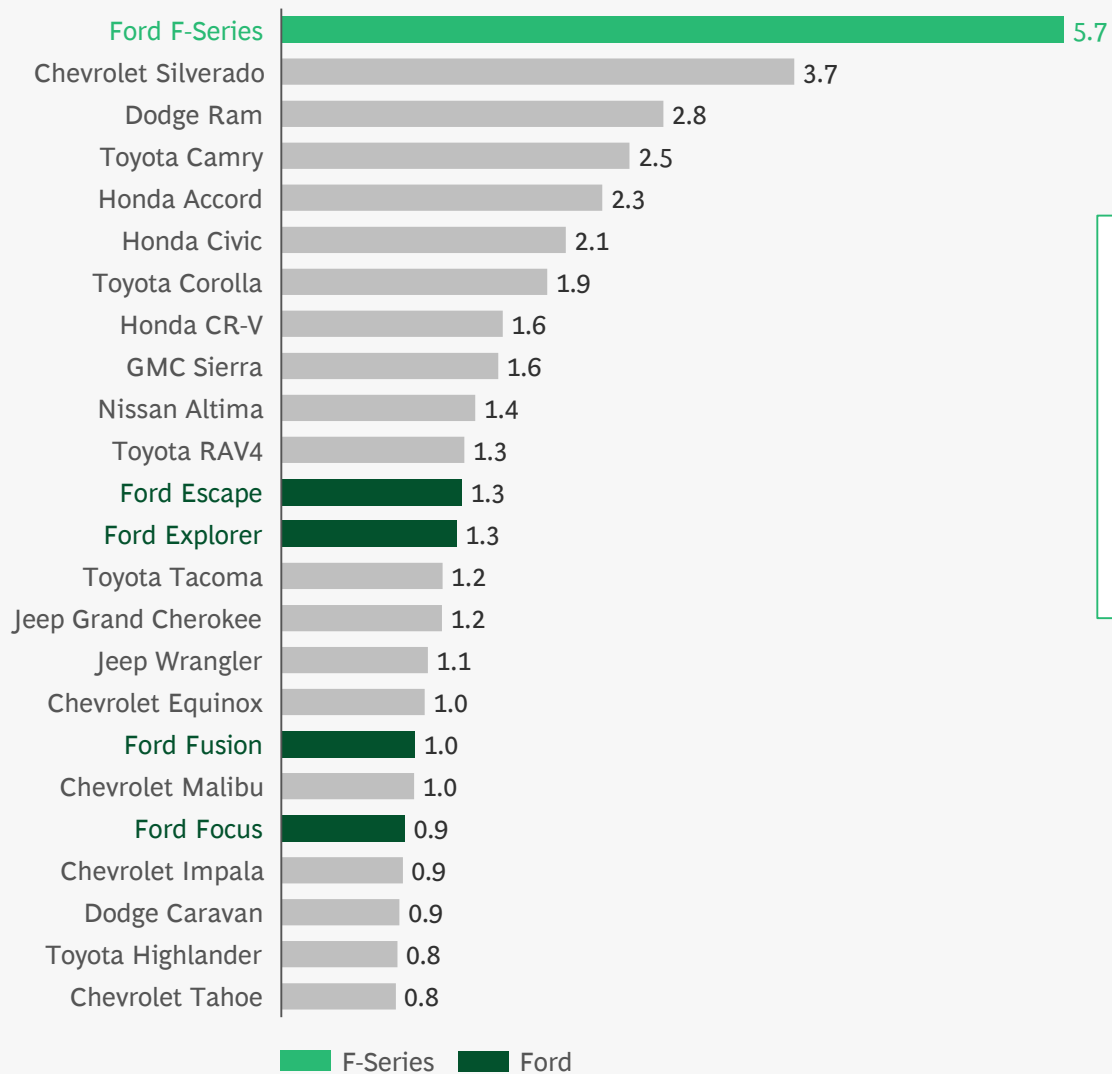
<sup>2</sup>Includes franchise revenues.

<sup>3</sup>Excludes energy generation and storage and services segments.



The F-Series is  
the most popular  
vehicle on the  
road in the  
US today

Share of vehicles in operation (%)

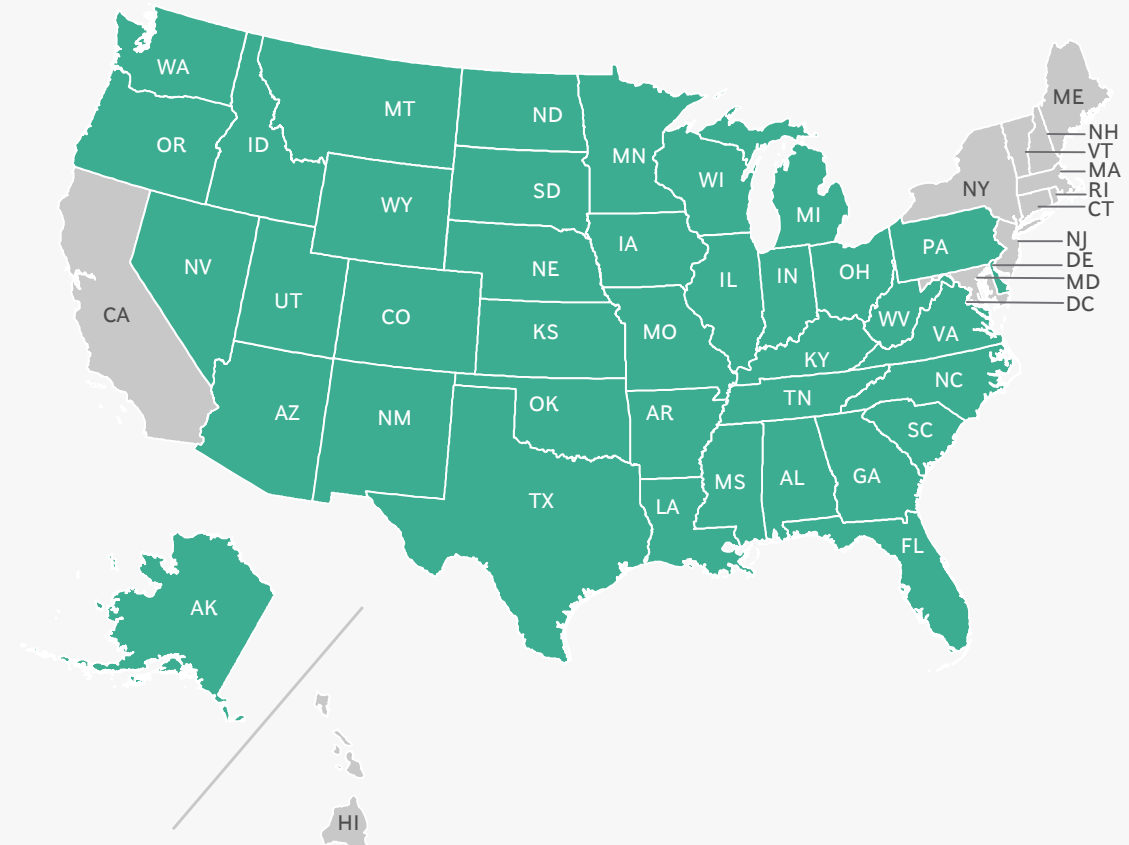
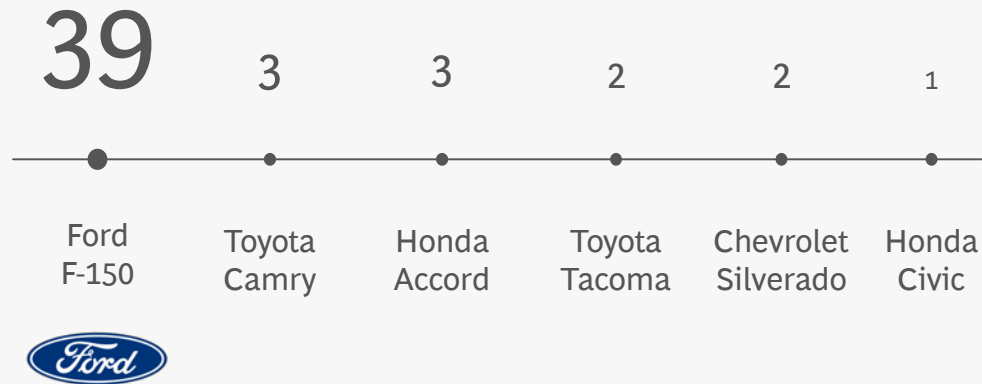


Combined,  
**F-Series trucks**  
account for ~**16.6**  
**million**, or ~**6%**,  
of vehicles on the  
road

Sources: Based on IHS Markit Vehicles in Operation (VIO) vehicles still on the road in the US as of 4/1/20 (see IHS disclaimer);  
BCG analysis; image: Ford.  
Note: Dodge Ram includes both Dodge and Ram trucks, including light-duty vehicles (GVW 1-3) only.

# The F-150 is the most popular vehicle on the road in 39 of 50 US states

Number of states as best-selling vehicle

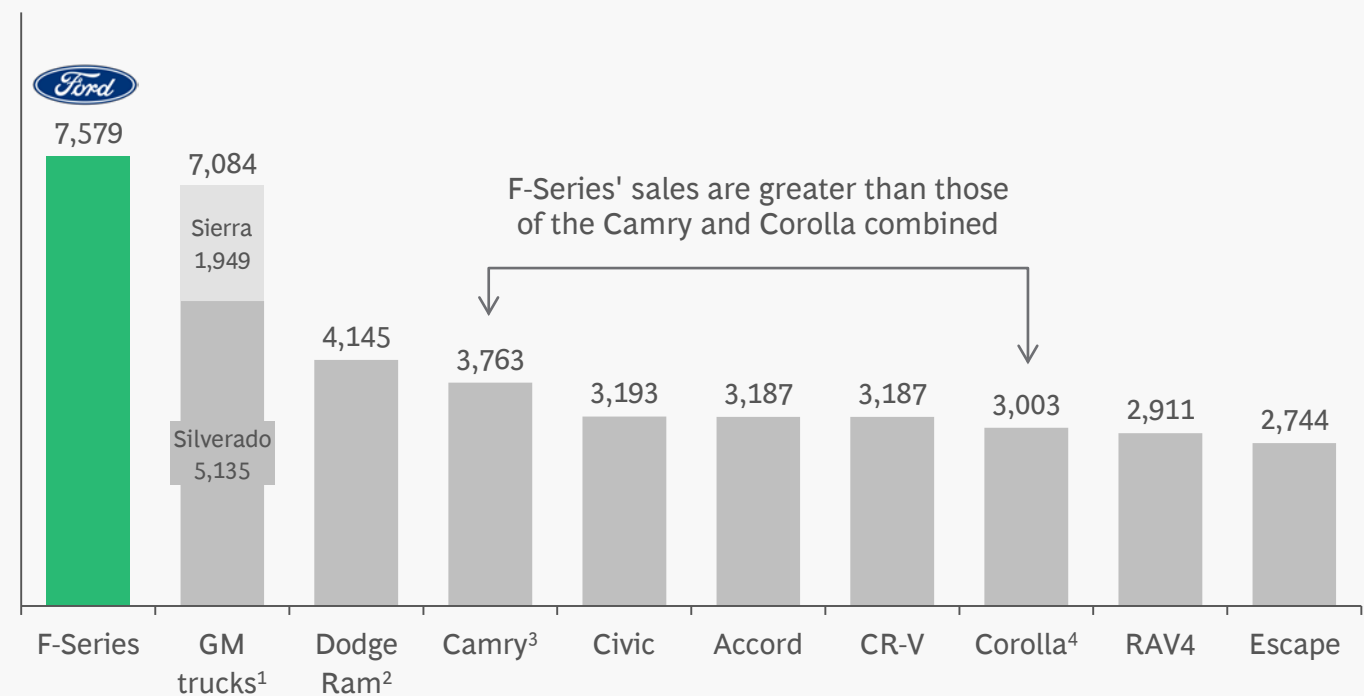






# The F-Series is the highest-selling vehicle in the US over the last ten years

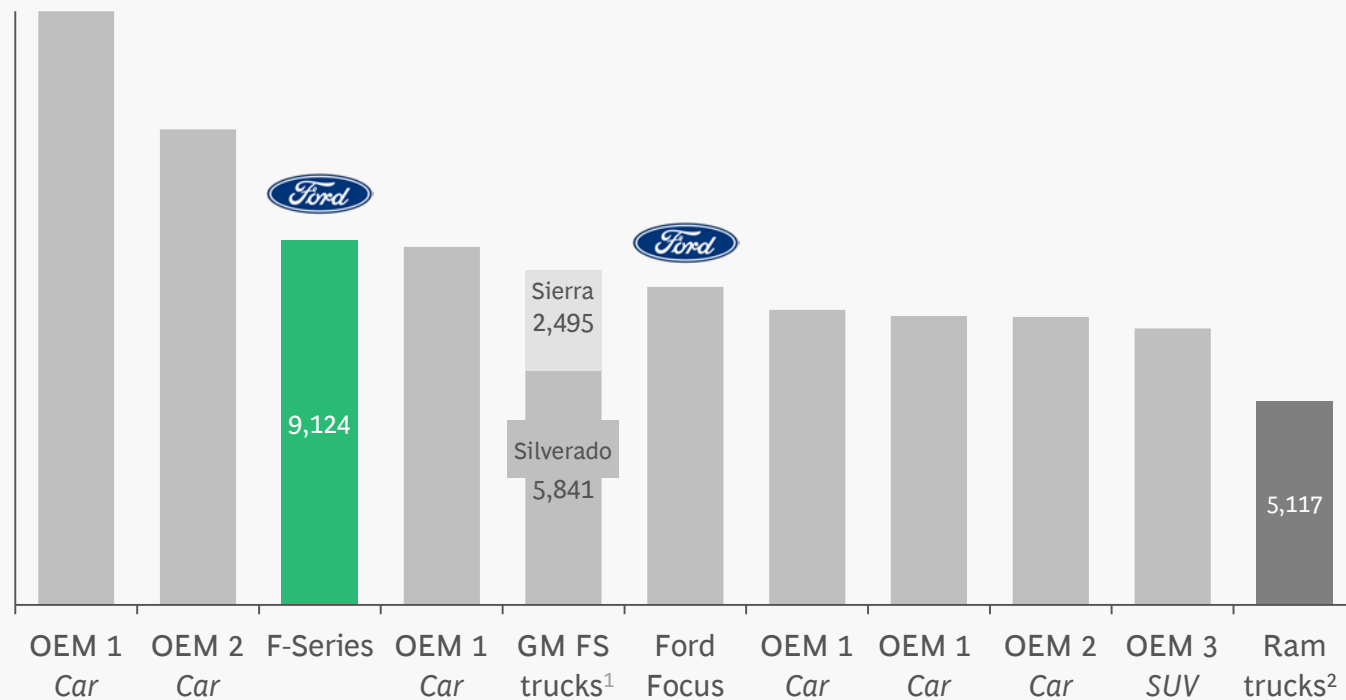
Top ten vehicles sold in the US 2010–2019 (thousands)



Sources: Based on cumulative IHS Markit US Total New Vehicle Registrations CY 2010–2019 as of April 30, 2020 (see IHS disclaimer); BCG analysis; image: Ford.  
<sup>1</sup>Includes HD models.  
<sup>2</sup>Includes Ram 1500, 2500, and 3500.  
<sup>3</sup>Includes Camry Classic, Gracia, and Solara.  
<sup>4</sup>Includes Corolla Cross and EX models.

# The F-Series is the best-selling pickup truck in the world over the last ten years

Global top ten vehicles sold between 2010–2019<sup>1</sup> (thousands)



Sources: Based on cumulative IHS Markit Global New Vehicle Registration data CY 2010–2019, which is compiled from government and other sources and captures 95% of global new vehicle volumes in more than 80 countries as reported in June 2020 (see IHS disclaimer); BCG analysis; image: Ford.

<sup>1</sup>General Motors full-size pickups include both Sierra and Silverado trucks and their associated HD models.

<sup>2</sup>Ram not among the top-selling vehicles and is shown here for comparison purposes only; Ram trucks include Dodge and Ram trucks, including Ram 1500, 2500, and 3500.

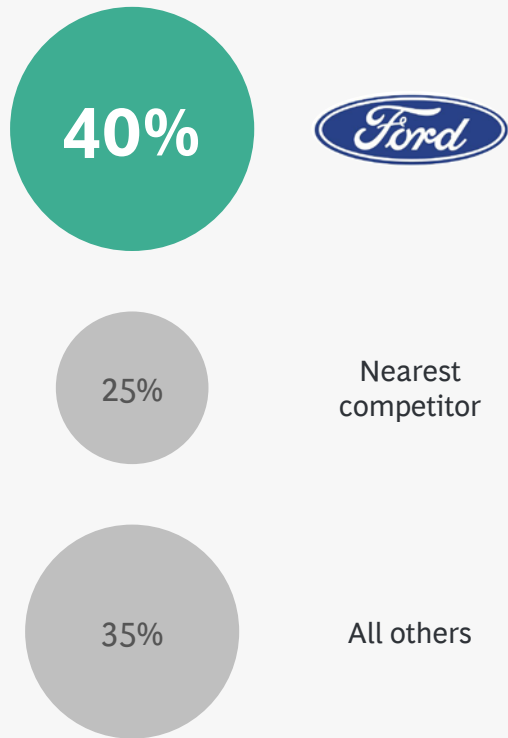


F-Series among top three selling vehicles globally

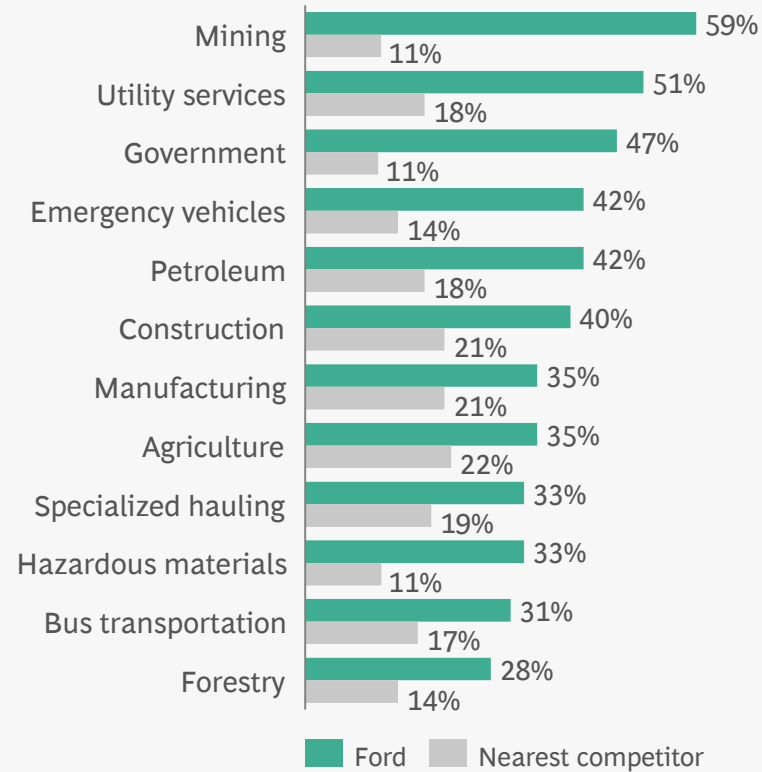


# Ford is the most popular pickup truck across commercial vocations

Fleet market share<sup>1</sup>  
(sizes proportional)



% of 2019 new commercial pickup registrations by vocation<sup>2</sup>

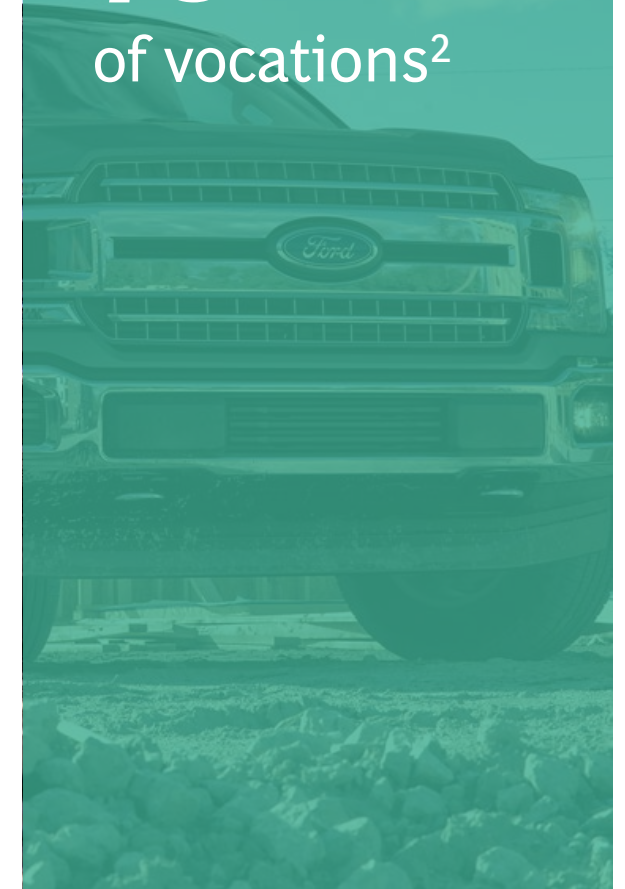


Sources: Cox Automotive Research; BCG analysis.

<sup>1</sup>Data from 2018.

<sup>2</sup>Based on IHS Markit CY 2019 US TIPNet registrations by vocation, excluding registrations to individuals (see IHS disclaimer); illustrative vocations shown (not exhaustive).

Ford is the most popular truck in  
**75%**  
of vocations<sup>2</sup>



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