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 products and companies.

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**

13 to 14 US jobs are supported for each direct Ford F-Series employee\(^1\)

This equates to \(~500,000\) total jobs attributable to the F-Series.

The F-Series contributes approximately \(~$49\) billion to US GDP, including multiplier effects\(^2\).

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

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Source: BCG analysis.

\(^1\)Includes dealership employment and impact on local communities.

\(^2\)Multiplier effects include after-sales services and community GDP impact driven by employee respending.
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)

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

Source: BCG analysis.
Contents of this report

1. Employment impact
2. GDP impact
3. Manufacturing impact
4. Usage impact

Images: Ford.
Employment impact

GDP impact

Manufacturing impact

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

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

<table>
<thead>
<tr>
<th></th>
<th>US jobs attributable to Ford USA (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>~87</td>
</tr>
<tr>
<td>Community jobs</td>
<td>-271–304</td>
</tr>
<tr>
<td>Suppliers</td>
<td>-338</td>
</tr>
<tr>
<td>Dealers</td>
<td>-178</td>
</tr>
<tr>
<td>Job creation</td>
<td>-98–118</td>
</tr>
<tr>
<td>Manufacturing multiple</td>
<td>-40</td>
</tr>
<tr>
<td>Total</td>
<td>-1,010–1,060</td>
</tr>
<tr>
<td></td>
<td>11–12x total multiple</td>
</tr>
</tbody>
</table>

**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.
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 trucks on the road
- Estimated in commercial use
- Average truck occupancy

\[ \approx 17,000,000 \times 26\% \times 2.1 - 2.4 \times \frac{13,000,000}{17,000,000} = 8\% \]

Representing approximately 8% of the US labor force

Sources: Expert interviews, BCG analysis.

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

GDP impact

Manufacturing impact

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

Product GDP contribution:
- Manufacturing and sales (~$31 billion)
- After-sales and employee respending (~$18 billion)

Multiplier effect:
- After-sales and employee respending (~$18 billion)

US GDP contribution of the F-Series (~$49 billion)

- Direct (~$11 billion)
- Suppliers (~$17 billion)
- Dealers (Sales) (~$3 billion)
- Dealers (After-sales services) (~$5 billion)
- Community impact (~$13 billion)
- Total ~$49 billion

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.

1Based on vehicle sales accounting for approximately 35% of dealer gross profits.
2Does not include services and repairs by non-Ford dealers.
Ford USA contributes ~$100 billion to US GDP through production and multiplier effects

<table>
<thead>
<tr>
<th></th>
<th>US GDP contribution of Ford USA ($billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>~19</td>
</tr>
<tr>
<td>Suppliers</td>
<td>~32</td>
</tr>
<tr>
<td>Dealers (Sales)¹</td>
<td>~7</td>
</tr>
<tr>
<td>Dealers (After-sales services)²</td>
<td>~13</td>
</tr>
<tr>
<td>Community impact</td>
<td>~29</td>
</tr>
<tr>
<td>Total</td>
<td>~100</td>
</tr>
</tbody>
</table>

Product GDP contribution Manufacturing and sales ($58 billion)

Multiplier effect: After-sales and employee responding ($42 billion)

~1 Based on vehicle sales accounting for approximately 35% of dealer gross profits. Excludes fuel economy and Ford credit impact.
~2 Does not include services and repairs by non-Ford dealers.

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.
Employment impact

GDP impact

Manufacturing impact

Usage impact
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

% of US vehicle assembly

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM</td>
<td>18</td>
<td>20</td>
<td>19</td>
<td>18</td>
<td>16</td>
<td>1,677</td>
</tr>
<tr>
<td>FCA</td>
<td>15</td>
<td>13</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td>1,420</td>
</tr>
<tr>
<td>Toyota</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>1,195</td>
</tr>
<tr>
<td>Honda</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>1,205</td>
</tr>
<tr>
<td>Others¹</td>
<td>25</td>
<td>25</td>
<td>26</td>
<td>25</td>
<td>28</td>
<td>2,926</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>2,170</strong></td>
<td><strong>2,170</strong></td>
<td><strong>2,170</strong></td>
<td><strong>2,170</strong></td>
<td><strong>2,170</strong></td>
<td><strong>10,593</strong></td>
</tr>
</tbody>
</table>

Sources: Based on IHS Markit CYE 2019 US Light Vehicle Production data (see IHS disclaimer); BCG analysis;
Image: Ford.
¹Including 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

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.

1The 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.

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

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

4Excludes HD models (Silverado VIN=1 models scored 71 on the Made in America Index, not shown).

5Ram 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.

6The 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.

**Freshness**

is a measure of a company's patents' recency.

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

1As 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).

2Measured 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.
### Illustrative examples

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

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

Ford is a leader in patent family citations and number of future of mobility patents.

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.

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.
Employment impact

GDP impact

Manufacturing impact

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

<table>
<thead>
<tr>
<th>Product</th>
<th>Revenue ($billions)</th>
<th>F-Series relative size</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPhone (US)</td>
<td>55</td>
<td>0.8x</td>
</tr>
<tr>
<td>Ford F-Series (US)</td>
<td>42</td>
<td>1.2x</td>
</tr>
<tr>
<td>Android OS (US)</td>
<td>36</td>
<td>1.3x</td>
</tr>
<tr>
<td>Global Disney experiences</td>
<td>32</td>
<td>2.2x</td>
</tr>
<tr>
<td>US refrigerators (AB InBev US)</td>
<td>19</td>
<td>2.8x</td>
</tr>
<tr>
<td>Budweiser (AB InBev US)</td>
<td>15</td>
<td>2.8x</td>
</tr>
<tr>
<td>NFL</td>
<td>15</td>
<td>3.8x</td>
</tr>
<tr>
<td>MLB</td>
<td>11</td>
<td>4.7x</td>
</tr>
<tr>
<td>NBA</td>
<td>9</td>
<td>8.5x</td>
</tr>
<tr>
<td>NHL</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

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.

1IDC Quarterly Mobile Phone Tracker, 2019.
2F-Series North American total sales of ~$49 billion.
3Operating system revenue (not device sales) estimated based on 2016 revenue using user growth as a proxy.
4Disney Parks, Experiences and Products segment includes Disney theme parks and resorts, cruises and merchandise licensing, and retail revenue.
The F-Series alone generated more revenue than many recognizable companies in 2019

<table>
<thead>
<tr>
<th>Company</th>
<th>2019 Revenue ($billions)</th>
<th>F-Series relative size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford (US)</td>
<td>42</td>
<td>1.0x</td>
</tr>
<tr>
<td>McDonald’s (US)²</td>
<td>40</td>
<td>1.1x</td>
</tr>
<tr>
<td>Nike</td>
<td>39</td>
<td>1.1x</td>
</tr>
<tr>
<td>John Deere</td>
<td>39</td>
<td>1.1x</td>
</tr>
<tr>
<td>Coca-Cola</td>
<td>37</td>
<td>1.4x</td>
</tr>
<tr>
<td>Starbucks²</td>
<td>31</td>
<td>1.5x</td>
</tr>
<tr>
<td>Capital One</td>
<td>28</td>
<td>1.8x</td>
</tr>
<tr>
<td>Visa</td>
<td>23</td>
<td>2.0x</td>
</tr>
<tr>
<td>Tesla³</td>
<td>21</td>
<td>2.1x</td>
</tr>
<tr>
<td>Netflix</td>
<td>20</td>
<td>3.0x</td>
</tr>
<tr>
<td>Uber</td>
<td>14</td>
<td>12.2x</td>
</tr>
<tr>
<td>Twitter</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

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.
¹F-Series North American total sales of ~$49 billion.
²Includes franchise revenues.
³Excludes energy generation and storage and services segments.
The F-Series is the most popular vehicle on the road in the US today.

Combined, F-Series trucks account for ~16.6 million, or ~6%, of vehicles on the road.
The F-150 is the most popular vehicle on the road in 39 of 50 US states

Number of states as best-selling vehicle

<table>
<thead>
<tr>
<th>Ford F-150</th>
<th>Toyota Camry</th>
<th>Honda Accord</th>
<th>Toyota Tacoma</th>
<th>Chevrolet Silverado</th>
<th>Honda Civic</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Sources: Based on IHS Markit Vehicles in Operation (VIO) in the US as of 4/1/20 (see IHS disclaimer); BCG analysis.
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)

F-Series sales are greater than those of the Camry and Corolla combined

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.

1Includes HD models.
2Includes Ram 1500, 2500, and 3500.
3Includes Camry Classic, Gracia, and Solara.
4Includes 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 2010–2019¹ (thousands)

<table>
<thead>
<tr>
<th>OEM 1 Car</th>
<th>OEM 2 Car</th>
<th>F-Series</th>
<th>OEM 1 Car</th>
<th>GM FS trucks²</th>
<th>Ford Focus</th>
<th>OEM 1 Car</th>
<th>OEM 2 Car</th>
<th>OEM 1 Car</th>
<th>OEM 2 Car</th>
<th>OEM 3 SUV</th>
<th>Ram trucks²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>9,124</td>
<td></td>
<td>5,117</td>
<td>5,841</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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

²Ram 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.
Ford is the most popular pickup truck across commercial vocations

Fleet market share\(^1\) (sizes proportional)

- **40%** Ford
- **25%** Nearest competitor
- **35%** All others

% of 2019 new commercial pickup registrations by vocation\(^2\)

- **Mining**: 11%, Ford 59%
- **Utility services**: 18%, Ford 51%
- **Government**: 11%, Ford 47%
- **Emergency vehicles**: 14%, Ford 42%
- **Petroleum**: 18%, Ford 40%
- **Construction**: 21%, Ford 35%
- **Manufacturing**: 21%, Ford 35%
- **Agriculture**: 22%, Ford 35%
- **Specialized hauling**: 19%, Ford 33%
- **Hazardous materials**: 11%, Ford 33%
- **Bus transportation**: 17%, Ford 31%
- **Forestry**: 14%, Ford 28%

Sources: Cox Automotive Research; BCG analysis.

\(^1\)Data from 2018.

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