Car Wars 2016-2019: 25th Anniversary

**In-depth study of the US automotive product pipeline**

Car Wars is an annual proprietary study that assesses the relative strength of each automaker's product pipeline in the US. The purpose is to quantify industry product trends and then relate our findings to investment decisions.

**Car Wars thesis and investment relevance**

We believe that the replacement rate drives showroom age, which drives market share, which in turn drives profits and stock prices. OEMs with the highest replacement rate and youngest relative showroom age have generally gained market share from 2000-15 (Table 1). We expect this relationship to hold over our forecast period of model years 2016-19 (Charts 1 and 2). We also expect that the total industry’s profit momentum will be strong as more new models are launched in the next four model years (Chart 3).

**Ten key findings of our study**

1. Product replacement rate and showroom age drive market share shifts.
2. Product activity is solid across the board. This is consistent with a cyclical recovery and should support US auto demand as well as industrywide profits.
3. New vehicle introductions are overweight in the CUV segment, a phenomenon sweeping the globe. This should drive a positive mix shift in MY2016-19.
4. Convergence of product cycles continues at the larger OEMs, but there is some volatility in MY2016-17. Nonetheless, Honda clearly leads.
5. GM product launches for MY2016-19 should support market share and, more importantly, pricing, despite the extreme skepticism of investors.
6. Ford’s solid product cadence remains above average and should at least sustain pricing as it focuses on profit and leverages its global platforms.
7. Chrysler’s launch cadence is slow in MY2016, but picks up materially in MY2017-19. This should be enough to support market share, but appears short of driving targeted share gains.
8. Honda leads all OEMs and is likely to gain share. Toyota’s refresh rate is above average and a focus on Lexus could be a bonus. Other Japanese OEMs, including Nissan, remain at risk of market share losses.
9. Hyundai and Kia pick up the pace in 2016 and then fade in MY2017-19. Combined with a concentration on small cars, this creates risk to market share.
10. The success of suppliers and dealers should be correlated to exposure to OEMs with high replacement rates and low average showroom ages.

Refer to important disclosures on page 44 to 46.
Car Wars

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Executive summary

Car Wars is a proprietary study we conduct every year to assess the relative strength of each automaker’s product pipeline in the US. It was published for the first time in 1991. The study is based on numerous primary and secondary sources, including industry contacts, auto show visits, trade publications, enthusiast magazines, supply chain relationships, our general knowledge of platform strategies, and product cycle planning.

The purpose is to quantify industry product trends and then relate our findings to investment decisions.

The key metrics that we use are the replacement rate (the estimated percentage of an OEM’s sales volume to be replaced with new models or next generation models), average showroom age (the number of years on the market for the average design in an OEM’s showroom), and new model volume mix (the mix of new models by segment during the forecast period for each OEM).

Car Wars thesis

We believe that the replacement rate drives showroom age, which drives market share, which in turn drives profits and ultimately stock prices. Table 2 shows the average annual replacement rate, relative showroom age, and market share change of the largest OEMs between MY2000 and MY2015.

Table 2: Historical replacement rate, showroom age, market share (2000-2015)

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Source: BofA Merrill Lynch Global Research

Although other factors, including mix, pricing, execution, distribution, and brand power, impact market share, we think this data support our thesis that successful new products drive higher market share and profit. Table 3 summarizes our forecasts of these key metrics for MY2016-19 and subsequent estimates of market share shifts. Based on our estimates, it appears that the large market share shifts of the past are unlikely to continue. However, we expect Honda to gain slightly and Nissan and Hyundai/Kia to lose slightly.

Table 3: Forecast replacement rate (MY2016-19e), showroom age (MY2016-19e), and market share change (CY2018 vs. CY2014)

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</table>

Source: BofA Merrill Lynch Global Research
[1] Volume weighted average annual replacement rate, [2] Directional market share forecast is for calendar years 2014 to 2018

The purpose of our Car Wars study is to quantify industry product trends and relate our findings to investment decisions.

Replacement rate and relative showroom age are two of the main drivers of market share gains or losses, and ultimately profit (Tables 2 and 3).
Ten key conclusions

Our measures of replacement rate and showroom age are the major driver of market share gains and losses. Historically, Detroit has replaced its line-up every seven to eight years while the competition has done so about every four to five years. We believe this is one of the main reasons that Ford, GM, and Chrysler lost share in the past.

Product activity is solid across the board. This is consistent with a cyclical recovery and should support US auto demand and industrywide profits.

New vehicle introductions are overweight in the CUV segment. This should drive a positive mix shift in MY2016-19 and industry profits.

Convergence of product cycles continues at the larger OEMs. Historically there has been tremendous discrepancy between the product cycles of US automakers, but the gap is closing. In the upcoming model years most OEMs should have average showroom ages around 2.7 years, with Honda low (1.9 years) and FCA high (3.4 years).

GM product launches should support solid market share and pricing, despite extreme skepticism. GM product launches remain solid in MY2016-2019 even after the K2XX launch. Important upcoming launches include the Malibu and CUV along with a likely acceleration of the next pickup in MY2019.

Ford’s solid product cadence remains above average and should sustain pricing as the company leverages its global platforms. It should be noted that as management remains focused on maximizing profit, market share may be traded for higher prices/profits.

FCA’s launch cadence is slow in MY2016 but picks up materially in MY2017-19, which should be enough to support market share.

Honda leads all OEMs and is likely to gain share. Toyota’s refresh rate is slightly above average, and a focus on Lexus could be a bonus. Other Japanese OEMs including Nissan remain at risk of market share losses.

Hyundai and Kia pick up the pace in MY2016, but then fades putting market share at risk.

The success of suppliers and dealers should be correlated to exposure to OEMs with high replacement rates and low average showroom ages.
Car Wars background

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An independent view 7
Car Wars thesis 8
Purpose of report: quantify industry product trends, market share shifts, and then relate conclusions to investment decisions.

Replacement rate, average showroom age, and new model volume mix are the key metrics we calculate to analyze the OEMs’ product pipeline.

The purpose of Car Wars
Background and purpose

Car Wars is a proprietary study we conduct every year to assess the relative strength of each automaker’s product pipeline in the US. It was first published in 1991. The study is based on numerous primary and secondary sources, including industry contacts, auto show visits, trade publications, enthusiast magazines, supply chain relationships, our general knowledge of platform strategies, and product cycle planning.

The purpose of the report is to quantify industry product trends and then relate findings to investment decisions.

Key metrics

The key metrics that we use include the following:

- **Replacement rate.** One of the simplest and most important ways to measure the strength of an automaker’s product plan: the estimated percentage of its sales volume to be replaced with entirely new models or next generations of existing models.

- **Average showroom age.** The number of years on the market for the average model in an OEM’s showroom (measured on a stand-alone basis and relative to the industry). This is sales volume weighted.

- **New model volume mix.** The mix of new models by segment during the forecast period for each OEM.

Our data collection is continuous, and we have developed a comprehensive database of US product activity going back to 1987 – through two cycle peaks and now two troughs. Once a year, we summarize our findings in a report and on a color poster. This year’s study forecasts activity for the 2016-2019 model years.

An independent view
Relative performance is what counts

Car Wars represents our independent view of automakers’ competitiveness, so it does not necessarily agree with the views of the car companies. It is likely we are missing information on all OEMs. Therefore, despite differences of opinion on any one OEM’s pipeline forecast, we believe that we have an accurate view of its relative position in the market; and in our view, that is what matters when forecasting market share.

“All-new” versus “new and improved”

Readers may find that our data might differ from the announcements OEMs make occasionally about the number of products they plan to launch. This is because our definition of a new product may differ from that of automakers. (New product definitions even vary from company to company.) In Car Wars, we include only products we judge to be all-new or next-generation vehicles – what the industry typically calls a major. We do not include mid-cycle enhancements where only modest changes are made to the vehicle, but do concede there is an increasing focus by many OEMs to make more substantial mid-cycle enhancements that could create some distortions. In addition, we forecast volume based on what we think the average annual volume will be for the product over its entire model life. We do not use company sales targets or peak volumes, which could distort results. Importantly, the sum of our volume forecasts is limited to rational trend levels of US demand.
Replacement rate ▼
Showroom age ▼
Market share ▼
Profitability ▼
Share price

Car Wars thesis

Our thesis is an OEM’s product replacement rate drives showroom age, which drives market share, which in turn drives profits and stock prices. Table 4 shows the average annual replacement rate, relative showroom age, and market share change of the largest OEMs between model years 2000 and 2015. The table shows how the OEMs with the highest replacement rate and youngest showroom age relative to the industry have generally gained market share. Although other factors, including mix, pricing, execution, distribution, brand power, and unforeseen disruptions impact market share, we think this data support our thesis that successful new products drive higher market shares.

Table 4: Historical replacement rate, showroom age, market share (2000-2015)

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Source: BofA Merrill Lynch Global Research
[^1] Volume weighted average annual replacement rate
[^2] Market share change is based on calendar Years 1999-2014

Based on the relative strength of this historical relationship, and taking mix and strategy into account, we forecast directional market share shifts for the major automakers in the US market relative to 2014 levels, which is summarized in Table 5. We will discuss the implications of these shifts in the following sections. Based on our estimates, it appears that the large market share shifts that occurred in the last decade are unlikely to continue.

Table 5: Forecast replacement rate (MY2016-19e), showroom age (MY2016-19e), and market share change (CY2018 vs. CY2014)

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Source: BofA Merrill Lynch Global Research
[^1] Volume weighted average annual replacement rate, [^2] Directional market share forecast is for calendar years 2014 to 2018
## Industry & manufacturer trends

### Industry trends
- New model launches
- Replacement rate
- Average showroom age
- New models by segment

### Manufacturer trends
- Average showroom age
- Cumulative replacement rates
- Near-term dynamics
Industry trends

This section details product trends for the US auto market. The size, homogeneity, relatively rich mix, and the profitability of the US market continue to attract new investments. The accelerating boom of new model launches in the mid-2000s took a slight breather from model years 2009-14, but will likely accelerate as recovery ramps competition intensifies.

New model launch activity solid after a lull

As shown in Chart 3, we expect OEMs to launch 193 new models during our forecast period (MY2016-19), or an average of 48 per year. This rate is about 26% above the average number of models launched per year between 1996 and 2015, underscoring that competition is hot and should support demand.

There are many factors contributing to the acceleration in product, including OEMs’ rush to enter new vehicle segments (CUVs, hybrids, ultra-luxury, etc.), an aggressive push by some OEMs to expand product line-ups (eg, Chrysler following the Fiat combination), as well as the relative richness and size of the US vehicle market. This is helping to drive an industry product pipeline that is overweight the CUV segment, which should drive a positive mix shift in MY2016-19 (Chart 4).

The industry product pipeline is overweight the CUV segment, which should drive positive mix.
Replacement rate remains high in MY2016-2019

The replacement rate mirrors the trend in new model launches to a large degree. On average, between 1996 and 2015 the industry replaced about 16% of its volume each year with new models. At this rate, the industry turns over its entire model line about every 6.3 years. Over the next four years, we expect the annual replacement rate will trend higher at about 20%, significantly higher than the historical average level. New volume mix is moving toward CUVs, representing about 32% of new volume launched from MY2016 to MY2019.

In our opinion, the continued strong pace of product activity can be linked to the competitive environment and demand recovery. As with all industries, auto companies can compete through cost leadership, superior product, or product differentiation. For most OEMs, the first strategy has been unachievable, and with the reorganized and restructured Detroit Three it is even tougher to differentiate on cost.

On the second strategy, there has been extreme convergence in quality as all automakers have improved to a relatively common level. That leaves almost all trying to compete by differentiating product. This has resulted in the strengthening pace of new model introductions. As automakers emerge from the trough in the cycle, more are aiming to spur demand by launching fresh product rather than discounting stale models at the expense of margins. Obviously this is still a very competitive environment, but it is far better as supply and demand are much more balanced across the industry.

Chart 5: Replacement rate

The industry replacement rate over the forecast period should remain above the 16% historical average, and should draw consumers into showrooms.

Average showroom age remains low across the board

The age of vehicles on sale in showrooms across the US (Chart 6 on the following page) has been on a steady decline since the early 1990s, as automakers replace aging products more frequently. We attribute this trend to intensifying competition – in part from new entrants – and product line expansion by car companies that have introduced numerous new nameplates. We expect that the industry’s average showroom age will trend lower, averaging about 2.7 years for model years 2016-19, a tick down from an average age of 3.0 years for the last decade.
Competitive pressure, new entrants, and product line expansion will continue to drive down the industry’s average showroom age. However, much lower than 2.7 years consistently appears unlikely.

Although industrywide pricing has been challenged in the past, a relative level of pricing power has emerged, as supply and demand are much more closely balanced.

New model emphasis on Crossovers, accounting for 66 launches over the next four years, or about 31% of total launches.

Intensified competition and the resulting new products are, of course, beneficial for consumers, who will enjoy the choice of new cars and trucks. However, this new product comes at a high cost to the OEMs, which will need to increasingly leverage global platforms and simplify product offerings to remain efficient and competitive. Although industrywide pricing has been challenged in the past, a relative level of pricing power has emerged, as supply and demand are much more closely balanced.

New model segment shift toward Trucks and CUVs
Charts 7 and 8 show the US market’s evolving market shift, based on the number of new models and volume, from traditional Small, Midsize and Large cars to Light Trucks and Crossovers.

Since the MY1997 launch of the Toyota RAV4 and the Honda CR-V, Crossovers have been the fastest growing vehicle segment, which may accelerate in the upcoming model years. 66% of the 193 new models we forecast for 2016-2019, or 32%, will be Crossovers. The extreme focus ranges from more mainstream Detroit Three and Japanese OEM models to numerous new German luxury CUVs such as the Porsche Macan.

Chart 7: 2016e-19e launch mix vs. 2006-15 by volume

Chart 8: New models by segment, simple vehicle count, not volume weighted
Manufacturer trends
Average showroom age converging around 2.7 years

Average showroom age is one way to quantify how intensely competitive the US market has become in the last two decades (Chart 9). Since at least the late 1980s, there has been a significant convergence in average showroom age. We expect an increasing convergence in average showroom age to around 2.7 years, with only slight outliers on either end of the spectrum (FCA at 3.4 years and Honda at 1.9 years).

![Chart 9: Average showroom age by OEM](chart)

We expect an increasing convergence in average showroom age to around 2.7 years.

Cumulative replacement rates appear to drive market share

Comparing cumulative replacement rates is one of the simplest and most effective ways in which we measure the strength of product plan. The replacement rate is the estimated percentage of sales volume to be replaced with entirely new models or next-generation existing models during the period.

Over the next four years, we estimate the industry will replace 80% of its volume based on 2014 industry volumes. We estimate that a relatively low level of disparity in replacement rates will result in smaller market share shifts in the future. This differs greatly from the last few decades, when large shifts were the norm.

![Chart 10: Cumulative replacement rates, % of 2014 CY volume replaced in MY 2016e-19e](chart)
Near-term dynamics imply potential volatility

The next two model years, 2016 and 2017, lead to different conclusions than our typical four-year forecast window, and could result in some volatility for the following reasons:

- Honda’s refresh rate is incredibly high due to important launches, including Pilot, Civic, CR-V, and Odyssey.
- Ford’s replacement rate appears low. However, the 2015 model year launch of the F-150, which is about 25% of Ford’s volume, is in midstream with the benefit to hit in 2H15.
- Hyundai and Kia’s replacement rate is strong in MY2016, but fades dramatically in MY2017-19. In addition, a concentration in small car introductions may pressure market share.

Chart 11: 2-year cumulative replacement rates, % of 2014 CY volume replaced in MY16e-17e

The next two model years, 2016 and 2017, lead to different conclusions than our typical four-year forecast window, and could result in some volatility.
# Company analysis

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**General Motors Company**

**Conclusion:** We expect GM product cadence should remain solid in model years 2016-2019 as the company launches the new Malibu and Mid and Large CUVs. It will then hits a slight lull in MY2018, but swings hard in MY2019 with the all new Chevrolet Silverado and GMC Sierra. This is acceleration of the trucks is a response to competitive pressures. In total, we expect product activity to solidly support market share and pricing through MY2016-19 and prove the skeptics wrong.

**Chart 12: GM replacement rate vs. industry**

GM's replacement rate should average about 20% over the next four years, which is at the industry average. Important launches early in the window include the Malibu and CUVs. Late in the window the large pickup launches appear to have been materially accelerated.

**Chart 13: New model volume mix**

GM's mix is still skewed toward trucks due to the acceleration of the large pickup launch in MY2019. However, prior to that, CUVs dominate new launches, including the Chevrolet Equinox, GMC Terrain, Cadillac XT5, Chevrolet Traverse, GMC Acadia, Buick Enclave, and Cadillac XT7.

**Chart 14: Average showroom age (years)**

Relative showroom age hovers around the industry average as GM focuses on a streamlined brand portfolio. This should bode well for market share and pricing at least through MY2019.
### Table 6: General Motors US product pipeline 2016e-19e

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<td>GMC Acadia - Mid CUV</td>
<td>Chevrolet Traverse - Mid CUV</td>
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<td>Buick Enclave - Mid Lux CUV</td>
<td>Buick Encore - Small Lux CUV</td>
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<td>Chevrolet Express - Van</td>
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% of volume replaced : 23%  % of volume replaced : 20%  % of volume replaced : 5%  % of volume replaced : 31%

Source: BofA Merrill Lynch Global Research

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**Exhibit 1: 2016 Cadillac CT6**

Source: General Motors

**Exhibit 2: 2016 Chevrolet Malibu**

Source: General Motors

**Exhibit 3: 2016 Chevrolet Volt**

Source: General Motors

**Exhibit 4: 2017 Buick LaCrosse (Avenir concept shown)**

Source: General Motors
Ford Motor Company

Conclusion: Ford’s product cadence should allow it to at least sustain market share and pricing. Increasingly leveraging global platforms has enabled the relatively consistent strength of Ford’s product launches. However, as management remains focused on maximizing profit, market share may be traded for higher prices/profits. It should be noted that the benefits of the model year 2015 F-150 launch will not be realized until 2H 2015, so despite a low replacement in MY2016, Ford is likely to have a very strong 2H 2015-1H 2016.

Chart 15: Replacement rate

Source: BofA Merrill Lynch Global Research

Chart 16: New model volume mix

Source: BofA Merrill Lynch Global Research

Chart 17: Average showroom age (years)

Source: BofA Merrill Lynch Global Research

Ford’s estimated replacement rate for MY2016-19 is 21%, which is just above the industry average of 20%. This is impressive given the MY2015 launch of the F-150 and should support market share and pricing.

Ford’s replacement hits a relative low in MY2016, but will reaccelerate meaningfully in MY2017-19. In that timeframe the majority of Ford’s launches are in the CUV segment, which along with the benefits of the recently launched F-150 and the upcoming Super Duty should drive materially improved mix.

Ford’s average age has dropped just below the industry average and should stay there at least through MY2019 as it simplifies its product cadence and leverages global platforms.
## Table 7: Ford US product pipeline 2016e-19e

<table>
<thead>
<tr>
<th></th>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford Edge</td>
<td>F-Series Super Duty - Large Pickup</td>
<td>Ford Escape - Mid CUV</td>
<td>Lincoln Aviator - Large Lux CUV</td>
<td>Lincoln Navigator - Large Lux SUV</td>
</tr>
<tr>
<td>Lincoln MKX</td>
<td>Ford Expedition - Large SUV</td>
<td>Lincoln MKA - Sedan</td>
<td>Ford Explorer - Large CUV</td>
<td>Ford Navigator - Large Lux CUV</td>
</tr>
<tr>
<td>Mid Lux CUV</td>
<td>Lincoln Navigator - Large Lux SUV</td>
<td>Ford Focus - Sedan</td>
<td>Ford C-CUV - Mid CUV</td>
<td>Ford MKZ - Sedan</td>
</tr>
<tr>
<td></td>
<td>Lincoln Continental - Sedan</td>
<td>Ford Fiesta - Sedan &amp; Hatchback</td>
<td>Ford C-Max - Small CUV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lincoln MKM - Coupe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of volume replaced</td>
<td>8%</td>
<td>15%</td>
<td>28%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Source: BofA Merrill Lynch Global Research

### Exhibit 5: 2016 Ford Edge

Source: Ford Motor Company

### Exhibit 6: 2016 Lincoln MKX

Source: Ford Motor Company

### Exhibit 7: 2017 Ford GT

Source: Ford Motor Company

### Exhibit 8: 2017 Lincoln Continental (concept shown)

Source: Ford Motor Company
FCA

Conclusion: FCA has a material lull in its product cadence in MY2016, but reaccelerates in MY2017-19. This should be enough to maintain market share, but meaningful gains that are targeted appear unlikely. The Ram pickup (MY2018) and minivan (MY2017) launches skew mix toward Light Trucks, but FCA is also over indexed to CUVs. This bodes well for mix in MY2017-19.

FCA’s average replacement rate over the next four model years is about 22%, which is above the industry average of 20%. This should support FCA’s current market share, but is unlikely to drive material share gain targets.

Not surprisingly, Chrysler’s mix is skewed toward trucks as a result of the minivan launch in MY2017, as well as the Ram pickup and Wrangler in MY2018.

Chrysler’s average showroom age is currently well above the industry average. However, with major launches in MY2017-19 it will drop to just below the industry average at the end of our forecast window. This is a result of the replacement of older models like the Ram pickup, Wrangler, and minivans.
## Table 8: FCA US product pipeline 2016e-19e

<table>
<thead>
<tr>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiat 500X - Small CUV</td>
<td>Dodge Journey - Mid CUV</td>
<td>Chrysler Pacifica - Large CUV</td>
<td>Jeep Grand Wagoneer - Large CUV</td>
</tr>
<tr>
<td>Dodge Charger - Sedan</td>
<td>Jeep Patriot - Small CUV</td>
<td>Jeep Grand Cherokee - Large CUV</td>
<td>Chrysler D-CUV - Mid CUV</td>
</tr>
<tr>
<td>Chrysler Town &amp; Country - Minivan</td>
<td>Jeep Wrangler - MiC U</td>
<td>Ram 1500 - Large Pickup</td>
<td>Ram 2500/3500 - Large Pickup</td>
</tr>
<tr>
<td>Chrysler 100 - Sedan</td>
<td>Dodge Journey - Sedan</td>
<td>Dodge Horizon - Sedan &amp; Hatchback</td>
<td>Dodge SRT Viper - Convertible</td>
</tr>
<tr>
<td>Dodge Dart - Sedan</td>
<td></td>
<td></td>
<td>Chrysler 300 - Sedan</td>
</tr>
</tbody>
</table>

% of volume replaced: 6% % of volume replaced: 28% % of volume replaced: 34% % of volume replaced: 22%

Source: BofA Merrill Lynch Global Research

### Exhibit 9: 2016 Fiat 500X

![2016 Fiat 500X](image1)

Source: FCA US LLC

### Exhibit 10: 2017 Dodge Journey (2015 model shown)

![2017 Dodge Journey](image2)

Source: FCA US LLC

### Exhibit 11: 2017 Chrysler 100 (possibly based on Alfa Giulietta shown)

![2017 Chrysler 100](image3)

Source: FCA Italy S.p.A

### Exhibit 12: 2017 Dodge Dart

![2017 Dodge Dart](image4)

Source: www.allpar.com
**Toyota Motor Corporation**

**Conclusion:** Toyota on average is slightly ahead of the industry average refresh rate, which combined with a focus on Lexus bodes well for market share. This is driven by the replacement of almost all of its high volume products including the Tacoma, Prius, Sienna, Camry, Rav4, Tundra, and Corolla.

**Chart 21: Replacement rate**

Source: BofA Merrill Lynch Global Research

**Chart 22: New model volume mix**

Source: BofA Merrill Lynch Global Research

**Chart 23: Average showroom age (years)**

Source: BofA Merrill Lynch Global Research

---

Toyota’s average replacement should average about 21% over the next four years, which is above the industry average of 20%. The combination of the Lexus RX, Toyota Tacoma, and Prius support MY2016, while the all-important Camry and Corolla should drive out-performance in MY2018-19.

Toyota’s new model mix is skewed toward Mid/Large cars over the next four years due to the launch of the Prius (MY2016) and Camry (MY2018). It is also slightly over indexed to trucks because of the launch of the Tacoma (MY2016), Sienna (MY2017), and Tundra (MY2019).

Toyota’s strong historical cadence and consistency over the next four years should keep its average age around the increasingly competitive industry average.
### Table 9: Toyota product pipeline 2016e-19e

<table>
<thead>
<tr>
<th></th>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lexus RX - Mid Lux CUV</td>
<td>Toyota 4Runner - Mid SUV</td>
<td>Lexus LS - Sedan</td>
<td>Toyota RAV4 - Small CUV</td>
</tr>
<tr>
<td></td>
<td>Toyota Tacoma - Small Pickup</td>
<td>Toyota Sienna - Minivan</td>
<td>Toyota Camry - Sedan</td>
<td>Toyota Tundra - Large Pickup</td>
</tr>
<tr>
<td></td>
<td>Toyota Prius - Hatchback</td>
<td>Toyota Yaris - Sedan &amp; Hatchback</td>
<td>Scion iC - Coupe</td>
<td>Lexus GX - Mid Lux SUV</td>
</tr>
<tr>
<td></td>
<td>Scion iM - Hatchback</td>
<td>Toyota Corolla - Sedan</td>
<td>Lexus ES - Sedan</td>
<td>Lexus GS - Sedan</td>
</tr>
<tr>
<td></td>
<td>Scion iA - Sedan</td>
<td></td>
<td>Lexus CT - Hatchback</td>
<td>Toyota Avalon - Sedan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% of volume replaced</th>
<th>% of volume replaced</th>
<th>% of volume replaced</th>
<th>% of volume replaced</th>
</tr>
</thead>
<tbody>
<tr>
<td>21%</td>
<td>9%</td>
<td>21%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Source: BofA Merrill Lynch Global Research

---

**Exhibit 13: 2016 Lexus RX**

Source: Toyota Motor Sales, U.S.A., Inc.

**Exhibit 14: 2016 Scion iA**

Source: Toyota Motor Sales, U.S.A., Inc.

**Exhibit 15: 2016 Scion iM**

Source: Toyota Motor Sales, U.S.A., Inc.

**Exhibit 16: 2016 Toyota Tacoma**

Source: Toyota Motor Sales, U.S.A., Inc.
Honda Motor Company

Conclusion: Honda should be the biggest market share gainer over the next four years. The only hurdle may be capacity constraints, which means that pricing should benefit. Honda hitting the sweet spot of its product cadence is not a fluke. It is a function of Honda’s consistent focus on a well-planned-out, 4-5 year product redesign cycle on a simplified two-brand lineup.

After a brief lull in MY2014-15, Honda is hitting the sweet spot in its product cadence over the next four years. Honda’s product cadence accelerates with majority of its large volume products refreshed, including the Civic, Pilot, CR-V, Odyssey, Accord, Acura RDX, and Acura MDX. Yes, it is a lot.

Honda’s new product is skewed toward CUVs and Mid/Large Cars. This along with a strong cadence bodes well for market share and pricing.

Honda’s focused product cadence keeps its showroom age one of the freshest in the industry.
### Table 10: Honda product pipeline 2016e-19e

<table>
<thead>
<tr>
<th></th>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Honda Pilot - Mid CUV</td>
<td>Honda CR-V - Small CUV</td>
<td>Acura RDX - Small CUV</td>
<td>Acura MDX - Mid CUV</td>
</tr>
<tr>
<td></td>
<td>Honda HR-V - Small CUV</td>
<td>Honda Ridgeline - Small Pickup</td>
<td>Acura CDX - Small CUV</td>
<td>Acura RL - Sedan</td>
</tr>
<tr>
<td></td>
<td>Acura NSX - Coupe</td>
<td>Honda Odyssey - Minivan</td>
<td>Acura ILX - Sedan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Honda Civic - Sedan, Coupe &amp; Hatchback</td>
<td>% of volume replaced : 36%</td>
<td>% of volume replaced : 29%</td>
<td>Source: BofA Merrill Lynch Global Research</td>
</tr>
<tr>
<td></td>
<td>% of volume replaced : 29%</td>
<td>% of volume replaced : 28%</td>
<td>% of volume replaced : 4%</td>
<td></td>
</tr>
</tbody>
</table>

Source: BofA Merrill Lynch Global Research

### Exhibit 17: 2016 Honda Pilot

Source: American Honda Motor Co., Inc.

### Exhibit 18: 2016 Honda Civic

Source: American Honda Motor Co., Inc.

### Exhibit 19: 2016 Acura NSX

Source: American Honda Motor Co., Inc.

### Exhibit 20: 2016 Honda HR-V

Source: American Honda Motor Co., Inc.
Nissan is at risk of losing market share in MY2016-17 as its replacement rate lags the industry, but this may reverse in MY2018-19.

Nissan appears to be over indexed to Small and Mid/Large Cars while a relative under exposure to new CUV models is a risk. Key product launches include the Maxima, Altima, and Sentra.

Nissan's average showroom age remains below the industry average due to a high level of launches in MY2012-14 and a reacceleration in MY2018-19.
### Table 11: Nissan product pipeline 2016e-19e

<table>
<thead>
<tr>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nissan QX50 - Small Lux CUV</td>
<td>Nissan Micra - Small CUV</td>
<td>Nissan Juke - Small CUV</td>
<td>Infiniti QX70 - Mid Lux CUV</td>
</tr>
<tr>
<td>Nissan Titan - Large Pickup</td>
<td>Infiniti QX80 - Large Lux SUV</td>
<td>Nissan NV - Van</td>
<td>Infiniti QX60 - Mid Lux SUV</td>
</tr>
<tr>
<td>Infiniti Q60 - Coupe</td>
<td>Nissan Armada - Large SUV</td>
<td>Nissan Quest - Minivan</td>
<td>Nissan Pathfinder - Mid CUV</td>
</tr>
<tr>
<td>Nissan Maxima - Sedan</td>
<td>Infiniti Q70 - Sedan</td>
<td>Infiniti EV - Sedan</td>
<td>Infiniti GTR - Coupe</td>
</tr>
<tr>
<td>Nissan Z - Coupe &amp; Convertible</td>
<td>Nissan Versa - Hatchback</td>
<td>Nissan Altima - Sedan &amp; Coupe</td>
<td>Nissan Sentra - Sedan</td>
</tr>
<tr>
<td>Nissan Versa - Hatchback</td>
<td>Nissan Leaf - Sedan &amp; Coupe</td>
<td>Nissan Cube - Hatchback</td>
<td>% of volume replaced : 19%</td>
</tr>
</tbody>
</table>

% of volume replaced : 8%
% of volume replaced : 16%
% of volume replaced : 30%

Source: BofA Merrill Lynch Global Research
European OEMs

Conclusion: We expect market share for European OEMs to slip slightly over the next four years, with an average replacement of 18%, which is below the industry average of 20%. It should be noted that VW is slightly better at 19%, but is still below average. The German luxury OEMs are mixed.

European OEM average replacement rates are about 18% over the next four years, below the industry average of 20%. This highlights potential risk of market share being flat to down through MY2019.

Numerous luxury brands such as Mercedes, BMW, Porsche, and Audi lead to a natural skew toward luxury cars.

European OEMs have an average age of about 2.8 years over the next four years, which is just above the industry average of 2.7 years.
### Table 12: European OEM product pipeline 2016e-19e

<table>
<thead>
<tr>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Audi Q7</strong> - Large Lux CUV</td>
<td><strong>Audi Q5</strong> - Mid Lux CUV</td>
<td><strong>BMW X3</strong> - Mid Lux CUV</td>
<td><strong>Mercedes-Benz GL-Class</strong> - Large Lux CUV</td>
</tr>
<tr>
<td><strong>Mercedes-Benz GLE Coupe</strong> - Mid Lux CUV</td>
<td><strong>Audi Q6</strong> - Mid Lux CUV</td>
<td><strong>Porsche Cayenne</strong> - Mid Lux CUV</td>
<td><strong>MINI Countryman</strong> - Small CUV</td>
</tr>
<tr>
<td><strong>BMW X1</strong> - Small Lux CUV</td>
<td><strong>Volkswagen CrossBlue</strong> - Mid CUV</td>
<td><strong>Volkswagen Touareg</strong> - Mid CUV</td>
<td><strong>BMW X7</strong> - Lux SUV</td>
</tr>
<tr>
<td><strong>BMW 7 Series</strong> - Sedan</td>
<td><strong>Volkswagen Tiguan</strong> - Small CUV</td>
<td><strong>Audi A7</strong> - Wagon &amp; Sedan</td>
<td><strong>Audi A6</strong> - Wagon &amp; Sedan</td>
</tr>
<tr>
<td><strong>Audi A4</strong> - Wagon &amp; Sedan</td>
<td><strong>Mercedes-Benz GLC-Class</strong> - Small Lux CUV</td>
<td><strong>Mercedes-Benz CLA</strong> - Sedan</td>
<td><strong>Audi A8</strong> - Sedan</td>
</tr>
<tr>
<td><strong>Smart ForTwo</strong> - Hatchback</td>
<td><strong>Audi A5</strong> - Coupe</td>
<td><strong>BMW Z4</strong> - Sedan</td>
<td><strong>BMW 3 Series</strong> - Sedan</td>
</tr>
<tr>
<td><strong>BMW 5 Series</strong> - Sedan</td>
<td><strong>Audi R8</strong> - Coupe</td>
<td><strong>Porsche Cayman</strong> - Coupe</td>
<td><strong>BMW 6 Series</strong> - Coupe &amp; Convertible</td>
</tr>
<tr>
<td><strong>Porsche Panamera</strong> - Sedan</td>
<td><strong>Mercedes-Benz E-Class</strong> - Sedan</td>
<td><strong>Porsche Boxster</strong> - Convertible</td>
<td><strong>Mercedes-Benz CLS-Class</strong> - Sedan</td>
</tr>
<tr>
<td><strong>Volkswagen CC</strong> - Sedan</td>
<td><strong>BMW 5 Series</strong> - Sedan</td>
<td><strong>Volkswagen Jetta</strong> - Wagon &amp; Sedan</td>
<td><strong>Porsche 911</strong> - Coupe &amp; Convertible</td>
</tr>
<tr>
<td></td>
<td><strong>Porsche Panamera</strong> - Sedan</td>
<td></td>
<td><strong>Volkswagen Passat</strong> - Wagon &amp; Sedan</td>
</tr>
<tr>
<td></td>
<td><strong>Volkswagen Beetle</strong> - Hatchback &amp; Convertible</td>
<td></td>
<td><strong>Volkswagen Beetle</strong> - Hatchback &amp; Convertible</td>
</tr>
</tbody>
</table>

| % of volume replaced : 9%                                               | % of volume replaced : 20%                                             | % of volume replaced : 18%                                             | % of volume replaced : 24%                                             |

Source: BofA Merrill Lynch Global Research

---

**Exhibit 25: 2016 Audi Q7**

Source: Audi USA

**Exhibit 26: 2016 Mercedes-Benz GLE Coupe**

Source: Mercedes-Benz USA, LLC

**Exhibit 27: 2016 BMW 7 Series**

Source: BMW of North America, LLC

**Exhibit 28: 2016 BMW X1**

Source: BMW of North America LLC
The average replacement rate of 17% over the next four years is below the industry average of 20%.

Hyundai and Kia’s mix is skewed heavily toward Small Cars, which exacerbates market share risk in an increasing and richening demand environment.

Average showroom age for Hyundai and Kia vacillates right around the industry average at about 2.7 years for MY2016-19, but does finish slightly above.
### Table 13: Korean OEMs US product pipeline 2016e-19e

<table>
<thead>
<tr>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyundai Tucson - Small CUV</td>
<td>Kia Sportage - Mid CUV</td>
<td>Hyundai Santa Fe - Mid CUV</td>
<td>Kia Cadenza - Sedan</td>
</tr>
<tr>
<td>Kia Sorento - Small CUV</td>
<td>Hyundai Equus - Sedan</td>
<td>Hyundai Azera - Sedan</td>
<td>Hyundai Accent - Sedan &amp; Hatchback</td>
</tr>
<tr>
<td>Kia Optima - Sedan</td>
<td>Kia Forte - Sedan</td>
<td>Kia Rio - Sedan &amp; Hatchback</td>
<td>Kia Soul - Hatchback</td>
</tr>
<tr>
<td>Hyundai Elantra - Sedan</td>
<td></td>
<td>Hyundai Veloster - Hatchback</td>
<td></td>
</tr>
<tr>
<td>% of volume replaced : 34%</td>
<td>% of volume replaced : 9%</td>
<td>% of volume replaced : 12%</td>
<td>% of volume replaced : 15%</td>
</tr>
</tbody>
</table>

Source: BofA Merrill Lynch Global Research

---

**Exhibit 29: 2016 Hyundai Tucson**

![2016 Hyundai Tucson](source)

Source: Hyundai Motor Company

**Exhibit 30: 2016 Kia Sorento**

![2016 Kia Sorento](source)

Source: Kia Motors America, Inc.

**Exhibit 31: 2016 Hyundai Elantra**

![2016 Hyundai Elantra](source)

Source: Hyundai Motor Company

**Exhibit 32: 2016 Kia Optima**

![2016 Kia Optima](source)

Source: Kia Motors America, Inc.
### Other OEMs

#### Table 14: Other OEMs US product pipeline 2016e-2019e

<table>
<thead>
<tr>
<th>2016e</th>
<th>2017e</th>
<th>2018e</th>
<th>2019e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mazda CX-9 - Large CUV</td>
<td>Jaguar XQ - Mid Lux CUV</td>
<td>Subaru Tribeca - Mid CUV</td>
<td>Volvo XC70 - Small CUV</td>
</tr>
<tr>
<td>Tesla Model X - Mid Lux CUV</td>
<td>Land Rover LR5 - Mid Lux CUV</td>
<td>Land Rover Evoque - Small Lux CUV</td>
<td>Mazda CX-5 - Small CUV</td>
</tr>
<tr>
<td>Volvo XC90 - Mid CUV</td>
<td>Volvo XC60 - Small CUV</td>
<td>Jaguar C-CUV - Small Lux CUV</td>
<td>Mitsubishi Outlander Sport - Small CUV</td>
</tr>
<tr>
<td>Mazda CX-3 - Small CUV</td>
<td>Jaguar XJ - Coupe &amp; Convertible</td>
<td>Tesla Model 3 - Sedan</td>
<td>Subaru Forester - Small CUV</td>
</tr>
<tr>
<td>Jaguar XF - Sedan &amp; Coupe</td>
<td>Subaru Impreza - Wagon, Sedan &amp; Coupe</td>
<td></td>
<td>Mazda 2 - Hatchback</td>
</tr>
<tr>
<td>Mazda Miata - Convertible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volvo S80 - Sedan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mazda 2 - Hatchback</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: BofA Merrill Lynch Global Research

---

#### Exhibit 33: 2016 Volvo XC90

Source: Volvo Cars North America, LLC

#### Exhibit 34: 2016 Tesla Model X

Source: Tesla Motors

#### Exhibit 35: 2016 Mazda CX-3

Source: Mazda North American Operation

#### Exhibit 36: 2016 Jaguar XF

Source: Jaguar Land Rover North America, LLC
Implications for suppliers & dealers
Proprietary technology trumps all for suppliers, in our view, though exposure to profitable and growing OEMs is extremely important for their growth, profitability, and returns.

Implications for suppliers
Proprietary technology trumps all for suppliers, in our view, though exposure to profitable and growing OEMs is extremely important for the growth, profitability, and returns of suppliers. Therefore, assuming all else equal, suppliers most exposed to OEMs with the highest replacement rates and lowest average age are at an advantage. At the highest level this is a positive sign for most Tier I suppliers, whose exposure is relatively diversified (Chart 36).

Chart 36: Supplier Exposure to OEMs – 2014

Source: Company filings

Implications for dealers
Similar to suppliers, and assuming all else equal, dealers that are most exposed to the OEMs with the highest replacement rates and lowest average age are best off, in our view. This should translate into better new car sales and earnings growth in the short term, and, importantly, feeds into the recurring parts and service profit stream in the long term as units in operation grow. Chart 37 summarizes the public groups' new vehicle exposures by brand.

Chart 37: Dealer exposure to OEMs – 2014

Source: Company filings
Appendix
The mix of industry new model launches is fairly balanced. However there is significant variation among automakers based on different points in their product cycles.

New models continue to comprise a large portion of the total number of models offered in the US.

Even among the segments there is a general convergence around an average showroom age between two and three years.
Important Disclosures

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. VOLATILITY RISK RATINGS, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. INVESTMENT RATINGS reflect the analyst’s assessment of a stock’s: (i) absolute total return potential and (ii) attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). There are three investment ratings: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm’s guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

<table>
<thead>
<tr>
<th>Investment rating</th>
<th>Total return expectation (within 12-month period of date of initial rating)</th>
<th>Ratings dispersion guidelines for coverage cluster*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy</td>
<td>≥ 10%</td>
<td>≤ 70%</td>
</tr>
<tr>
<td>Neutral</td>
<td>≥ 0%</td>
<td>≤ 30%</td>
</tr>
<tr>
<td>Underperform</td>
<td>N/A</td>
<td>≥ 20%</td>
</tr>
</tbody>
</table>

* Ratings dispersions may vary from time to time where BofA Merrill Lynch Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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