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ANALYST BRIEF

Affordability of Vehicles Under the Current National Program in 2022-2025 for Detroit Three Automakers

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Declining affordability has been cited by opponents of maintaining 2022-25 fuel economy regulations. According to their argument, as manufacturers pass on to their customers the cost of meeting the regulations, vehicle prices will rise, resulting in fewer sales and preventing many middle-class Americans from purchasing new vehicles. This paper addresses the affordability issue, and shows that rising new car and light truck transactions prices reflect automaker strategy and consumer preferences, with regulation-driven cost increases playing a much smaller role.

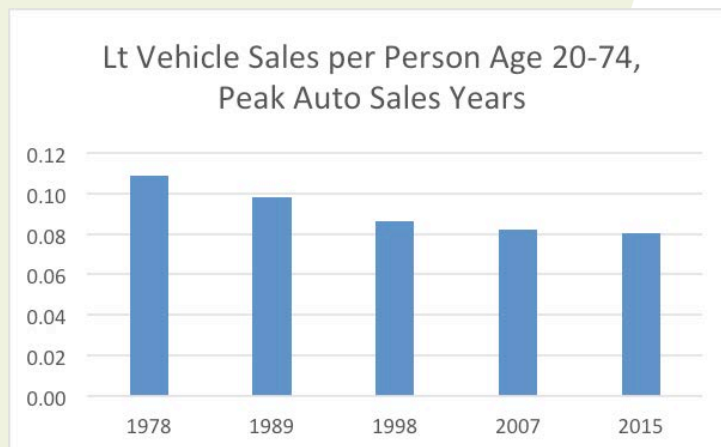
We find that average vehicle selling price has increased significantly in the last several years for a number of reasons, including:

- 1) Trucks are priced at a higher level than cars, so the shift to trucks (including crossovers) has led to higher average prices and with them to record profits for automakers and suppliers.
- 2) A stronger economy has led to stronger demand that supports higher prices.
- 3) Automakers are adding more content to their vehicles, with a greater percentage of their vehicles carrying many more luxury features, not just those that deliver more fuel economy, lower emissions, and enhanced safety, but also those related to comfort, entertainment, and connectivity.
- 4) Most important, buyers of new vehicles are increasingly amenable to these up-contenting trends because their income is increasing and is, on average, 175 percent of the median U.S. household.¹

¹ A recent study of family incomes from 2009-2014 shows that the poorest 90% of households (148.6 million in number) had an average five-year income growth of \$533 each. The best-off 10% (numbering 16.5 million families) averaged a \$41,300 gain, most of that gain concentrated among the best-off 1%.

Historical Background

We begin with some historical background. In 1978, automakers sold 15.2 million new cars and light trucks in the U.S., which at the time was a new annual sales record. In that year, the core driving-age population (ages 20-74) was 141 million. By 2015, the number of core driving age people in the U.S. had grown by 75 million, or 53 percent. But during the same 37-year period, new car and light truck sales grew by just 2.1 million units, or less than 14 percent. Despite that, the real (inflation-adjusted) dollar value of U.S. new car and truck output hit a peak in 2014, and did so again in 2015.



Sources: Census Bureau -- <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>, *Ward's Automotive Reports*

This illustrates that the reductions in the rate of household new vehicle ownership rates has a long history.

Greater Feature Content and Income Inequality

Today's new cars and trucks are quite different from their 1978 counterparts and, for that matter, even from their 2006 counterparts. Simply put, they have much greater feature content, including content that was mandated, or at least encouraged, by government regulations, including seat belts, air bags, adaptive/smart cruise control, and backup cameras. But many features unrelated to regulation have gone from being optional to being nearly universal: automatic transmissions, air conditioning, power windows and door locks, four-wheel disc brakes, cruise control, alloy wheels, six-speaker stereos, CD/MP3 players, and much more.

The addition of so many features to the industry's entire model line-up begs the question as to how concerned it truly is with affordability. The reason for this trend was that upper-middle class and wealthy buyers wanted - indeed, insisted on - these features while low- and lower-middle-income households were becoming a smaller and smaller share of the new vehicle market. After the late 1980s, and particularly after 2000, these households' wages stagnated or fell, with most income gains from economic growth accruing to higher-income families. From 1979-2013, real annual pay grew 15 percent for the bottom 90 percent of earners, but by 138 percent for the top 10 percent.²

² See *Wage Stagnation in Nine Charts*, at <http://www.epi.org/publication/charting-wage-stagnation/>.

Median U.S. Household Income, Overall & for New Vehicle Buyers

	2010	2011	2012	2013	2014	2015
Median Income in Constant Dollars of 2010:						
All Households	\$49,276	\$48,614	\$48,701	\$48,848	\$50,085	\$52,371
New Vehicle-Buying Households	\$92,325	\$88,296	\$86,198	\$90,837	\$91,421	\$91,470
Median Income of Households Buying:						
New Cars, in 2010 Dollars	\$86,572	\$81,206	\$79,421	\$84,844	\$84,722	\$82,479
New Framed Trucks, in 2010 Dollars	\$96,351	\$96,542	\$93,165	\$91,862	\$92,996	\$95,603
New CUVs, in 2010 Dollars	\$98,586	\$92,925	\$92,401	\$99,517	\$99,897	\$99,683

Sources: JD Power; US Census <http://www.census.gov/data/tables/2016/demo/income-poverty/p60-256.html>

From 2014 to 2016, sales have been strong, due in part to the pent-up demand that mounted during the Great Recession of 2008 to 2010, when new vehicles sales plunged by more than one-third from prior levels. Yet even as more and more of this pent-up demand has been satisfied, the trim distribution has continued to tilt upward, again suggesting that automakers are much more focused on profits than on the affordability of units sold.

Note that we are not just discussing mix - e.g., more F150s and Escapes, fewer Tauruses and Fiestas. In every segment, high-end variants have been introduced or expanded in the last few years. Most important, sales of higher-trim level models have been increasing significantly faster than overall sales. It is notable that in many cases these trim levels incorporate the more efficient powertrain packages (those delivering higher mileage). Transmissions with more speeds are also offered, in many cases across the board. In short, many of today's more affluent new-vehicle buyers are embracing fuel-saving technologies, viewing them as valued features.

New High-End Trim Levels Offered in Recent Years

Automaker/Model	High Trim Level	Efficient Engine Included
FCA		
Dodge Challenger/Charger	Hellcat	
Chrysler 300	Platinum	3.6 V6
Jeep Cherokee	Overland	3.2 with stop/start
Ram Pickup	Rebel	3.6 V6
Ford		
Fiesta	Titanium, ST, Active	
Focus	RS	2.3 EcoBoost with stop/start
Focus	SE Sport	
C-Max	Titanium	
Fusion	Sport, Platinum, Titanium	2.0 EcoBoost
Explorer	Limited	2.3 EcoBoost
Explorer	Sport	3.5 EcoBoost
Explorer	Platinum	3.5 EcoBoost
Ford F-Series	Platinum and Titanium	
Expedition	Platinum	3.5 EcoBoost
Various Lincolns	Black Label	3.0 Twin Turbo EcoBoost
Lincoln MKC and Navigator	Select and Reserve	2.0 EcoBoost
GM		
Multiple GMC Models	Denali ³	
Canyon & Sierra	All Terrain	
Acadia	All Terrain and Limited	
Some Buick Models	Avenir ⁴	
Chevy Cruze	Premier	1.4 Turbo
Chevy Trax	Premier	
Chevy Colorado	ZR2	
Honda		
Civic	Touring	
CR-V	SE	2.4 I4
Pilot	Elite	3.5 V6
Ridgeline	RTL-E, RLT-T, Black Edition	3.5 V6
Nissan		
Altima	SR	2.5 I4 or 3.5 V6
Maxima	SL, SR and Platinum	3.5 CVT
Versa	SR	
Titan	Platinum	5.6 V8
Toyota		
Avalon	Touring Sport	3.5 V6
Corolla	LE Eco, XLE, XRS	
RAV4	SE, Limited, Platinum	2.5 I4
Lexus RX	F-Sport	3.5 V6
Toyota Highlander	Platinum	3.5 V6
Toyota Tundra	Limited, Platinum, 1794	5.7 V8
VW Passat	R-Line	1.8 Turbo I4

Source: Company Marketing Materials

The following are estimates of the share of the total model line that some of these high end trim levels represent (if there is no entry, then that trim level was not offered in that model year).

³ GMC has the highest average transaction price of any mainstream brand. 30% of its total brand sales are of the high-end Denali versions.

⁴ Buick has just announced the launch of an Avenir sub-brand. Its positioning within Buick will be similar to Denali's positioning within GMC.

Shares of Selected New High-End Trim Variants

Company	Brand	Nameplate	Trim	MY13	MY14	MY15	MY16
Chrysler	Chrysler	Chrysler 300	Limited			15.0%	25.0%
Chrysler	Chrysler	Chrysler 300	Platinum			12.0%	20.0%
Chrysler	Dodge	Durango	Limited		20.0%	20.0%	20.0%
Chrysler	Dodge	Ram Pickup	Rebel				5.0%
Chrysler	Jeep	Cherokee	Overland				5.0%
Chrysler	Jeep	Compass	Overland	7.5%	7.5%	7.5%	7.5%
Ford	Ford	Edge	Limited	30.0%	30.0%	15.0%	
Ford	Ford	Edge	Titanium			15.0%	30.0%
Ford	Ford	Explorer	Platinum				7.5%
Ford	Ford	Fiesta	Titanium	30.0%	25.0%	22.0%	22.0%
Ford	Ford	Ford F Series	Titanium				10.0%
Ford	Ford	Fusion	Titanium	20.0%	17.5%	15.0%	15.0%
Ford	Lincoln	Continental	Black Label				20.0%
Ford	Lincoln	MKC	Select			30.0%	30.0%
Ford	Lincoln	MKC	Reserve			30.0%	30.0%
GM	Chevy	Cruze	Premier				15.0%
GM	Chevy	Malibu	Premier				20.0%
GM	Chevy	Volt	Premier				60.0%
GM	GMC	Acadia	All Terrain				5.0%
GM	GMC	Acadia	Denali	30.0%	30.0%	30.0%	27.5%
GM	GMC	Acadia	Limited				10.0%
GM	GMC	Canyon	All Terrain				10.0%
Honda	Honda	Civic	EX-T				10.0%
Honda	Honda	Civic	Touring				20.0%
Honda	Honda	CR-V	Touring			15.0%	15.0%
Honda	Honda	Pilot	Elite				12.5%
Hyundai	Hyundai	Santa Fe	SE Ultimate			15.0%	12.0%
Hyundai	Hyundai	Santa Fe	Limited Ultimate			10.0%	8.0%
Nissan	Nissan	Altima	SR				30.0%
Nissan	Nissan	Maxima	SL			5.0%	20.0%
Nissan	Nissan	Maxima	SR			5.0%	20.0%
Nissan	Nissan	Murano	SL		25.0%	25.0%	25.0%
Nissan	Nissan	Murano	Platinum		20.0%	20.0%	20.0%
Nissan	Nissan	Titan	Platinum			2.0%	10.0%
Toyota	Toyota	Camry	XSE			17.0%	17.0%
Toyota	Toyota	Corolla	LE Eco				15.0%
Toyota	Toyota	Corolla	XLE				15.0%
Toyota	Toyota	Corolla	XRS				10.0%
Toyota	Toyota	RAV4	SE				25.0%

Source: Baum and Associates North American Production Forecast

This rising level of feature content across nearly all segments makes clear that its value is recognizable to the customer, which allows the automaker to charge directly for it. The resulting higher pricing results in higher per-unit profit for the automakers.

In many cases, suppliers that are providing this content also profit from its application on more and more vehicles. Automakers recognize that they can mark up additional supplier-provided content, which allows many suppliers to negotiate improved pricing.

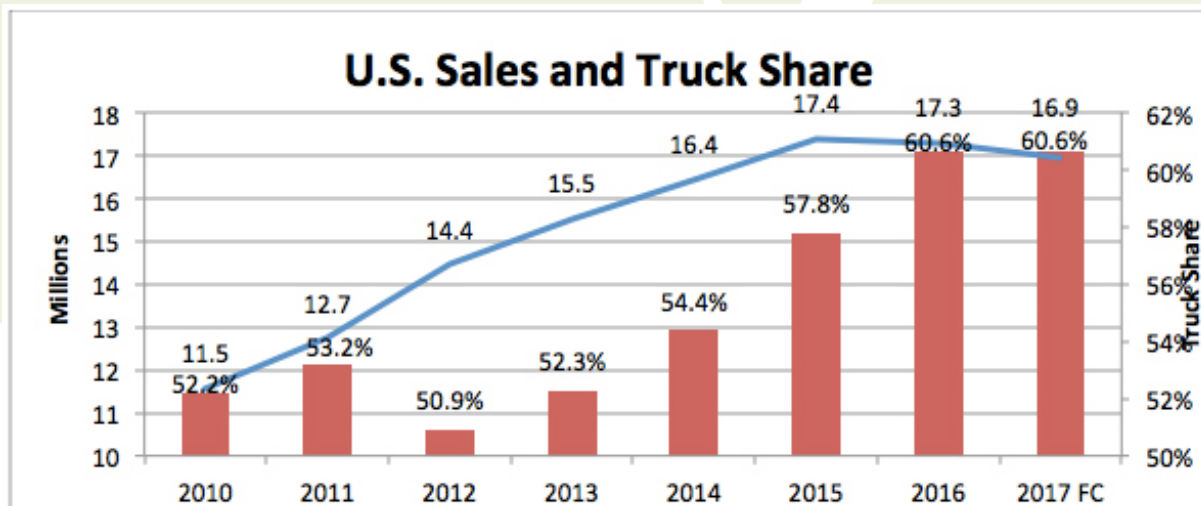
Rising Sale of Trucks and Crossovers

As one would expect, the tilt of the U.S. new vehicle market toward higher-income buyers is clearly reflected in the data on transaction price per new vehicle rising from \$28,133 in 2009 to \$34,230 in 2016 (current dollars).

	2009	2010	2011	2012	2013	2014	2015	Jan-Sept 2016
New vehicle selling price	\$28,133	\$29,930	\$30,982	\$31,194	\$32,035	\$32,824	\$33,456	\$34,230

Source: National Automobile Dealers Association

In addition to increased feature content driving prices higher, the shift to trucks (including crossovers), which are more expensive, has led to higher average prices and with them to record profits for automakers and suppliers.



Source: Ward's Automotive Reports and Baum and Associates

While the record profits that the automakers are making owe significantly to the shift to trucks and crossovers, they also reflect higher residual values on their vehicles, due in part to the greater feature content of these vehicles.

Regulatory Impact on Jobs and Auto Dealers

Opponents of government regulation of fuel economy, emissions, and safety frequently choose to back up their questionable case by warning that such regulation threatens jobs. Strikingly, the UAW and other unions have often made the opposite argument - that regulation often results in innovation, investment, and *more* jobs. Strong growth at many U.S. suppliers of fuel-saving technologies - among them BorgWarner, Bosch, Continental, Eaton, Delphi, and Owens Corning, to name just a few - convinces us that the unions are right and the trade associations are wrong.

There is also no evidence that dealers have suffered from the switch from a 1978-style mass market dominated by base-model vehicles to today's higher-content mix.

True, thanks to automakers' market power, dealers make no more on new vehicles today than they did seven years ago. But as the new vehicle-buying population has gotten smaller and wealthier, dealers have successfully followed their less wealthy customer base into the used-car segment.

	2009	2010	2011	2012	2013	2014	2015	Jan-Sept 2016
Retail gross profit per new vehicle	\$2,044	\$2,078	\$2,264	\$2,226	\$2,112	\$2,124	\$2,115	\$2,062
Retail net profit per new vehicle	\$(308)	\$(204)	\$ (31)	\$ 51	\$ 3	\$ (10)	\$ (22)	\$(179)
Retail gross profit per used vehicle	\$2,169	\$2,236	\$2,372	\$2,370	\$2,383	\$2,418	\$2,439	\$2,466
Retail net profit per used vehicle	\$ 157	\$ 198	\$ 203	\$ 183	\$ 177	\$ 164	\$ 132	\$ 166

Source: National Automobile Dealers Association

Selling new vehicles is a necessary activity for car dealers, but not a very profitable one. Even with strong sales in recent years, net profit on the sale of new cars and light trucks remains slightly negative. While there are many reasons for this result, a key cause is the narrowing of the difference between the transaction price and the invoice price, the latter of which is, of course, set by the automaker. Hence, the dealers' complaint with respect to pricing should be focused more on the automakers rather than the regulators. As shown above, used vehicle sales are much more profitable for automobile dealers.

Summary

The impact of the fuel economy regulations on the overall financial success of the automotive industry is just one of a number of factors that affect pricing. It is our view that the cry of declining affordability - and particularly its alleged link to fuel economy regulations - is not persuasive:

- 1) New car purchases have shifted upmarket due in large part to growing income inequality that favors upper-middle class and upper-income buyers who have the means and the interest to buy a higher-priced product.
- 2) Automakers understand this trend and have modified their offerings to emphasize higher price/higher trim level products that provide them higher profitability.
- 3) The global trend in the auto industry to sell more crossovers and fewer cars is by far the most important factor in the increase in new vehicle prices.⁵

Are today's new cars and trucks less affordable for households at, near, and below the median? Absolutely. But that reflects changes in the U.S. income distribution and the profit maximization strategies of the automakers, which have chosen to restrict production capacity and drive the market toward higher-margin, higher-trim level products. Fuel economy rules are simply today's convenient bogeyman to blame for long-term trends in the American consumer marketplace.

⁵ In September, more than 60 percent of new vehicles sold were CUVs or framed trucks, about 10 percentage points higher than two years earlier. Despite that, the average fuel economy of model year 2016 vehicles and light trucks was 25.3 mpg, up 5.1 mpg from 2007, which is when researchers Michael Sivak and Brandon Schoettle of the University of Michigan Transportation Research Institute began tracking the data.

About the Authors

Alan Baum is Principal of Baum & Associates, an automotive forecasting and research consultancy. Prior to its launch, he was an analyst and forecaster with the state of Michigan, IRN, and The Planning Edge. Dan Luria is an independent industry analyst whose career included eight years in the UAW Research Department and 28 years as VP and Research Director at the Michigan Manufacturing Technology Center. Since 1990, Baum & Luria have collaborated on a respected quarterly forecast of North American vehicle, engine, and transmission sales and production. This affordability analysis was commissioned by Ceres.

