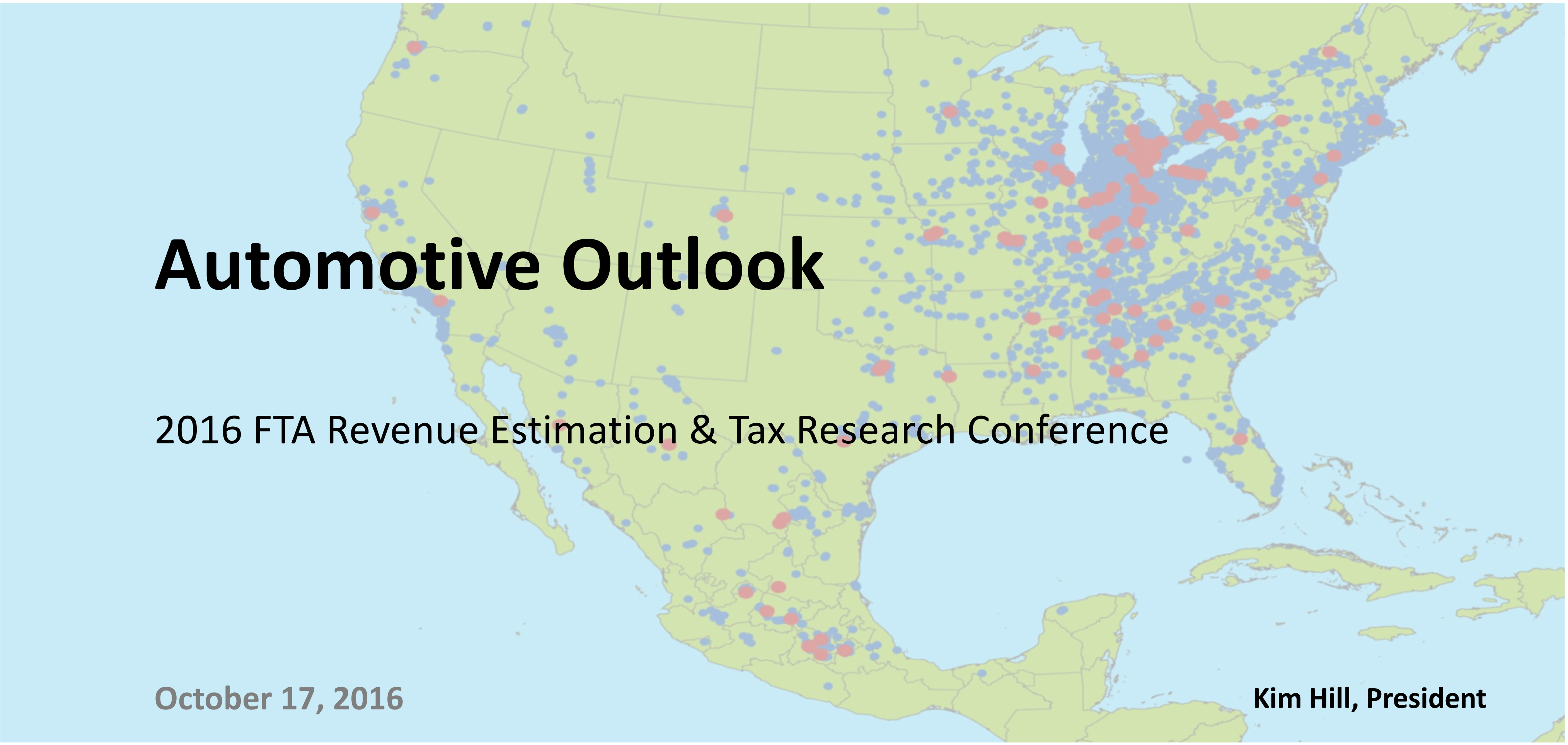


Automotive Outlook

2016 FTA Revenue Estimation & Tax Research Conference

October 17, 2016

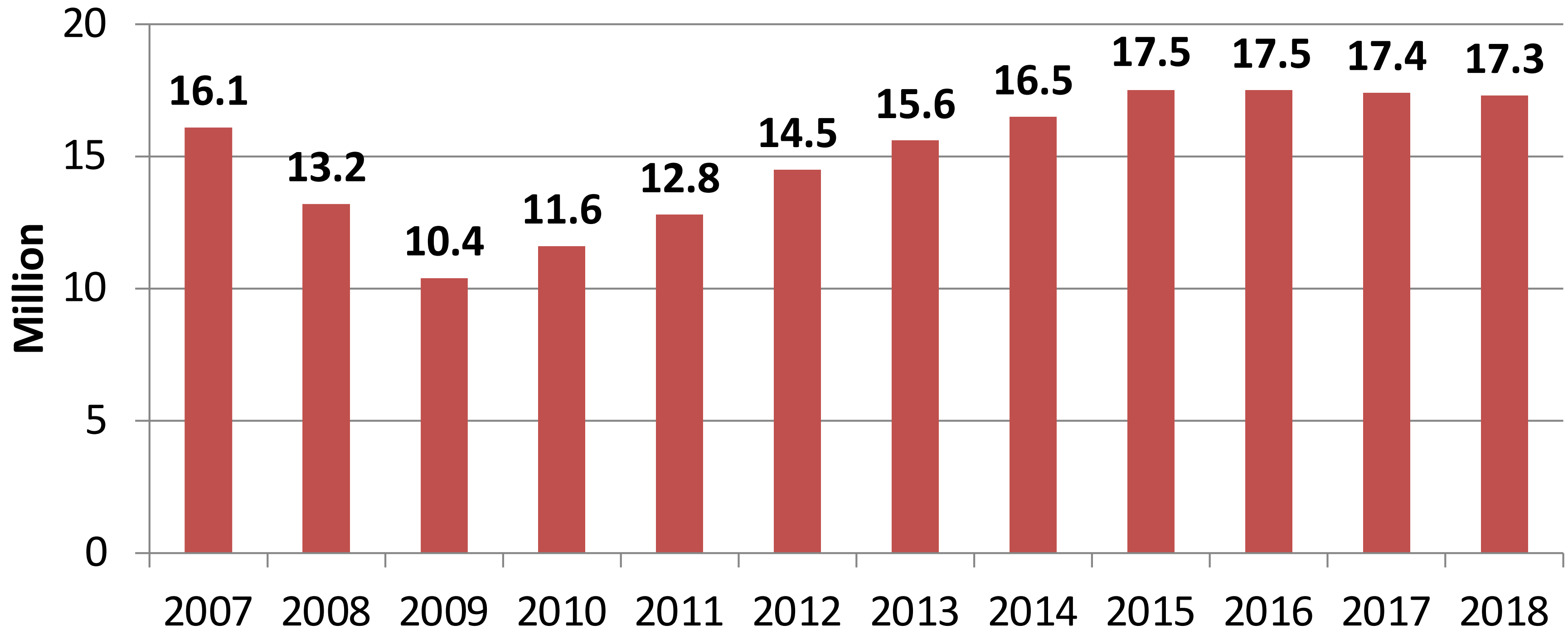
Kim Hill, President

HWA Analytics LLC
Ann Arbor, Michigan

Outlook generally good

- Sales up in September
- Should be very close or exceed 2015's all-time record sales
- Used vehicles may become more appealing soon
- Extended finance terms and high lease rates underscore industry's willingness to assist buyers in getting a new vehicle
- Incentives climbing higher
- Truck-type products are selling well—high margins
- Car-type products being moved out of country—low margins, difficult to build profitably in U.S.

U.S. Sales growing(?)…slowly…or not?



Source: Automotive News, Words Automotive, HWA

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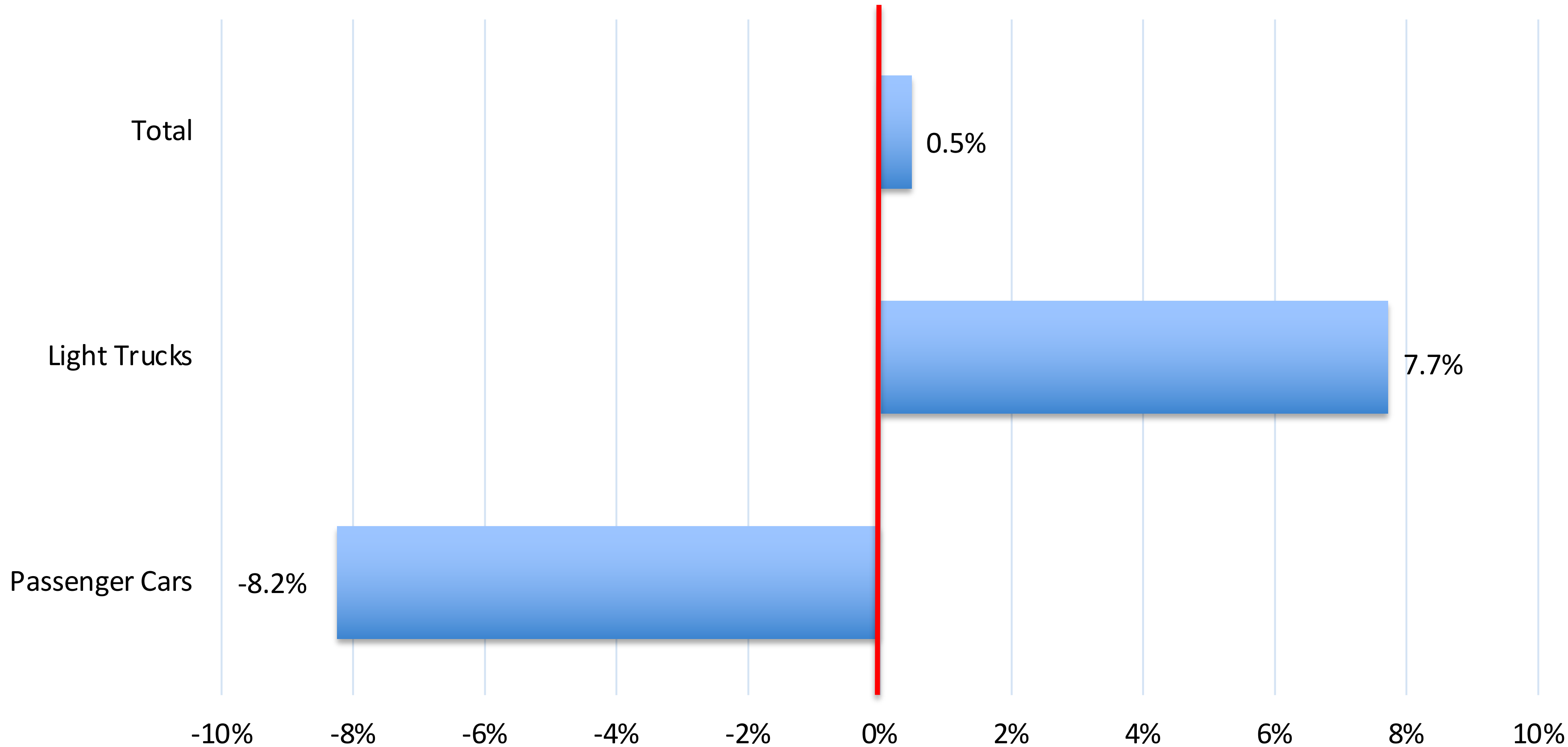
U.S. Light Vehicle Sales
Percent Change YTD Through September: 2016 vs. 2015



Source: Automotive News

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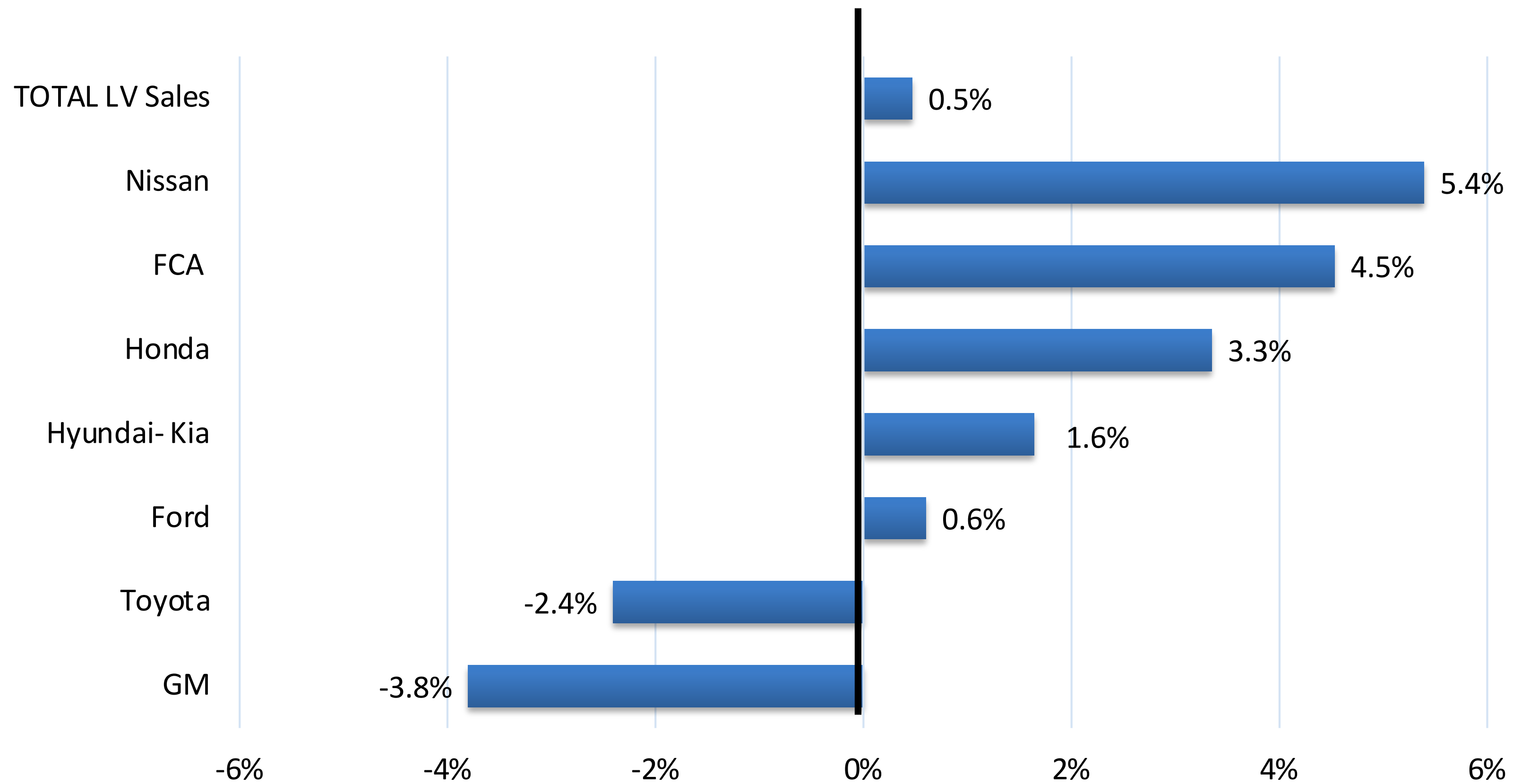
Percent Change in Sales of Light Vehicles Per OEM: YTD Through September: 2016 vs. 2015



Source: Automotive News;

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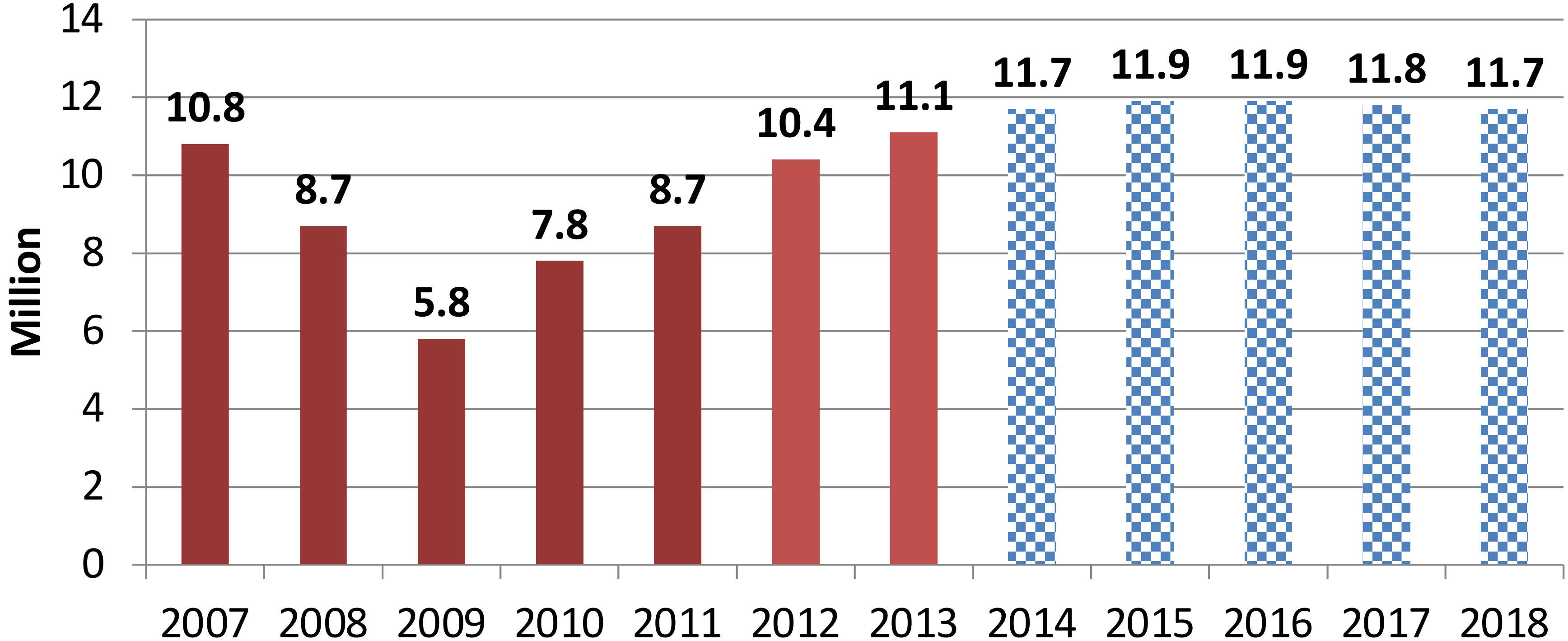
U.S. Vehicle Production remains steady



Source: Wards, Auto News

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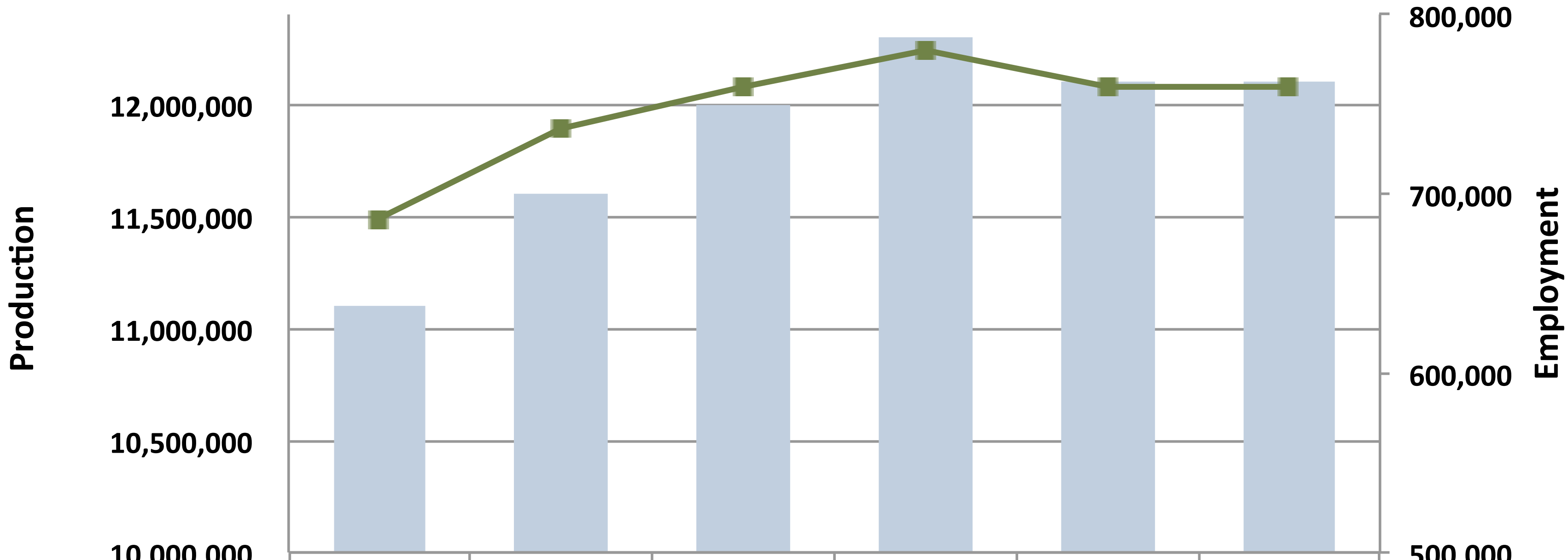
U.S. Employment tied to production

It's not what it used to be—now, more production, fewer workers



	2013	2014	2015	2016	2017	2018
Vehicle Production	11,100,000	11,600,000	12,000,000	12,300,000	12,100,000	12,100,000
Automotive Employment	686,100	736,000	760,000	780,000	760,000	760,000

Source: Automotive News, BLS, HWA

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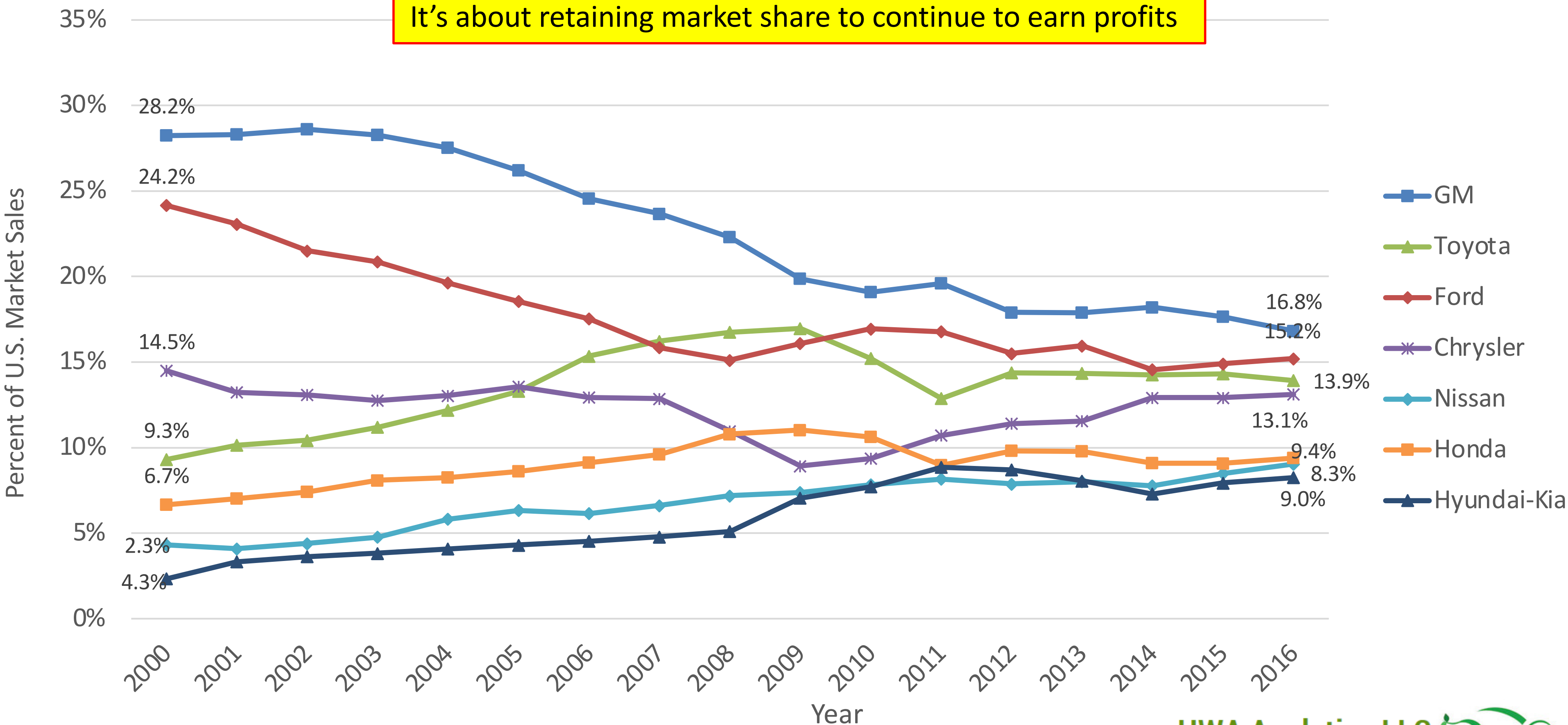
U.S. Market Share 2000 – 2016 YTD

It’s about retaining market share to continue to earn profits



Source: Automotive News; HWA Research

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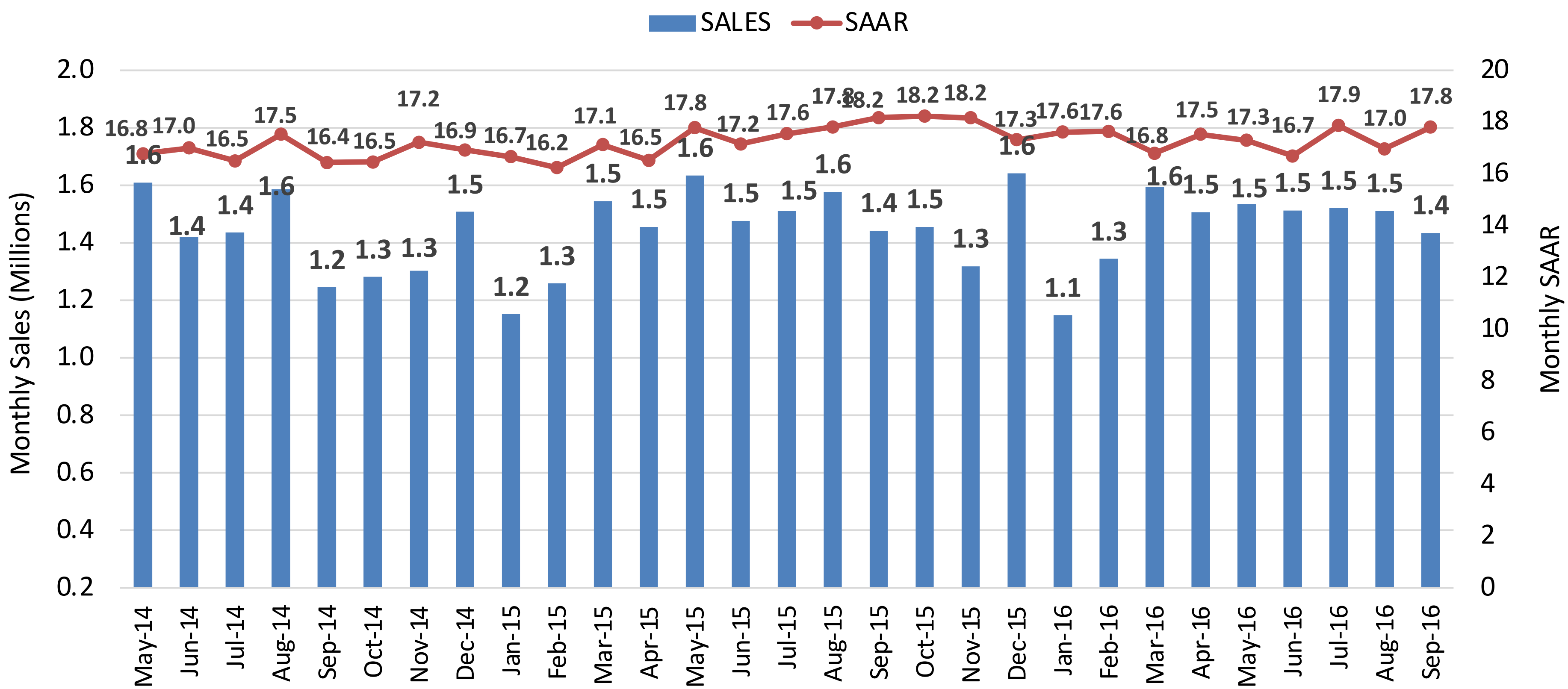
U.S. Light Vehicle Monthly Sales and SAAR



Some strength still in sales growth, but may not eclipse last year's all-time record sales

Source: Automotive News

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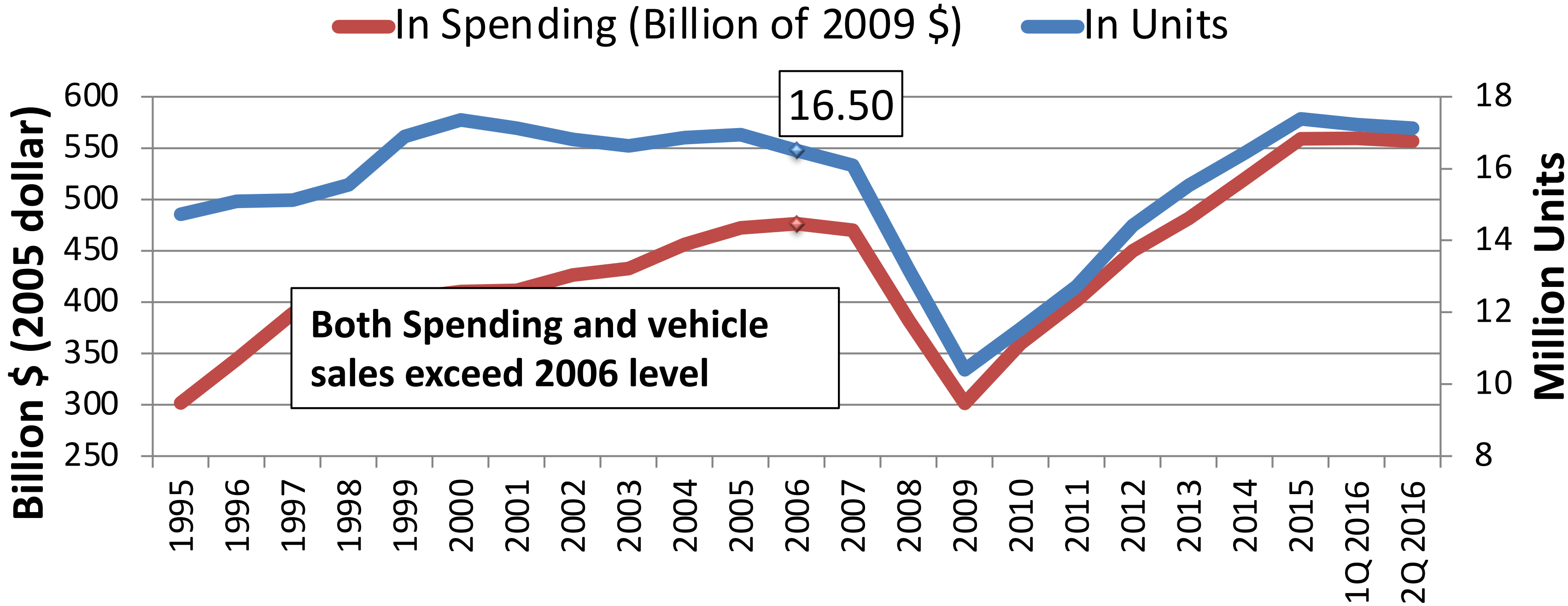
Sales Are Back



Bubble economy helped sales 99-06; recession took wind out 08-10; post recession growth and efficiencies 11-present

Source: BEA, Table 7.2.6B. Real Motor Vehicle Output, Chained Dollars

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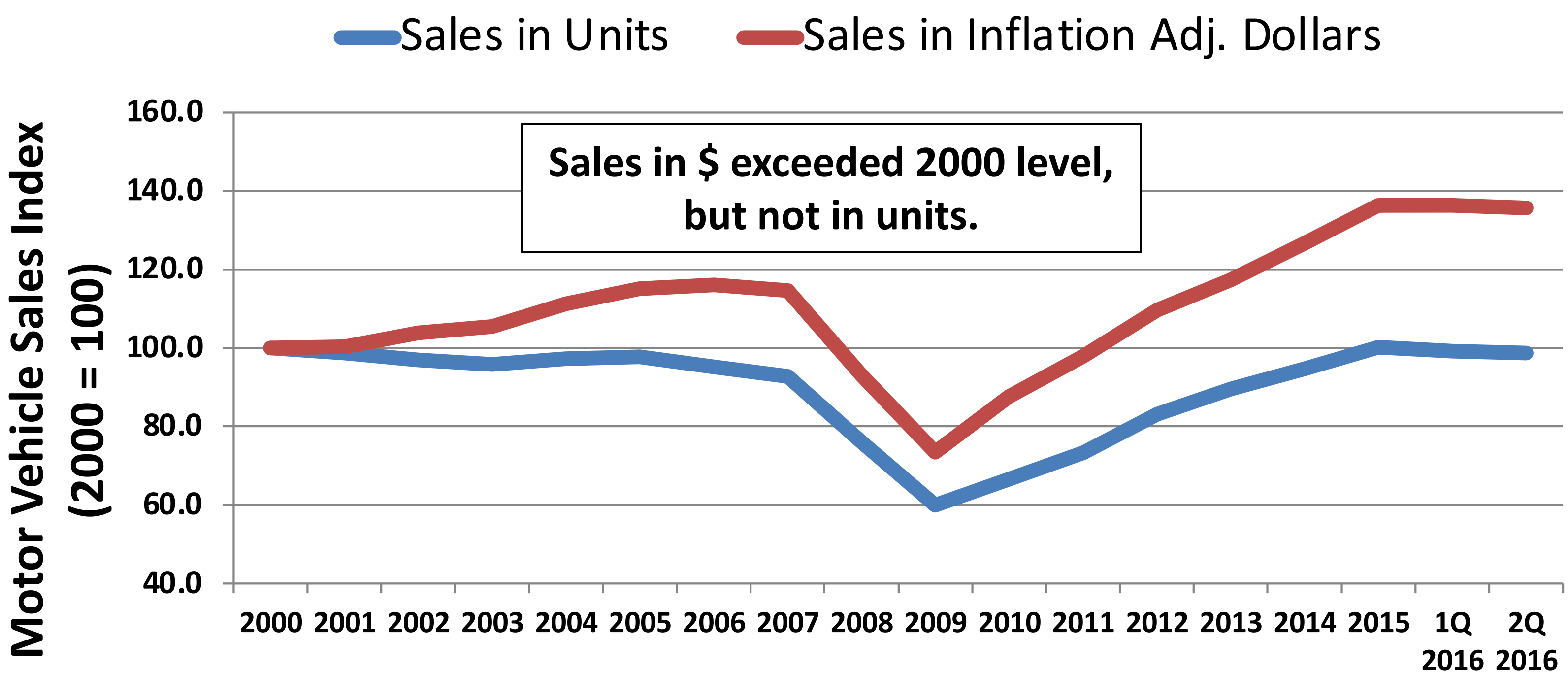
Sales are back: Motor Vehicle Sales Index (2000 = 100)



Indexed against 2000 (record year at time), sales are just below, but revenues far surpass—with fewer workers…

Source: BEA, Table 7.2.6B. Real Motor Vehicle Output, Chained Dollars

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2016 U.S. Sales Forecasts (millions)

CAR CENTER FOR AUTOMOTIVE RESEARCH	17.5	(9/16)
Kelley Blue Book THE TRUSTED RESOURCE	17.6	(9/16)
NADA NATIONAL AUTOMOBILE DEALERS ASSOCIATION	17.7	(8/16)
TRUECAR	17.4	(9/16)
WARDSAUTO	17.5	(9/16)
IHS GLOBAL INSIGHT	17.5	(9/16)
LMC AUTOMOTIVE	17.4	(9/16)

Sources: Various

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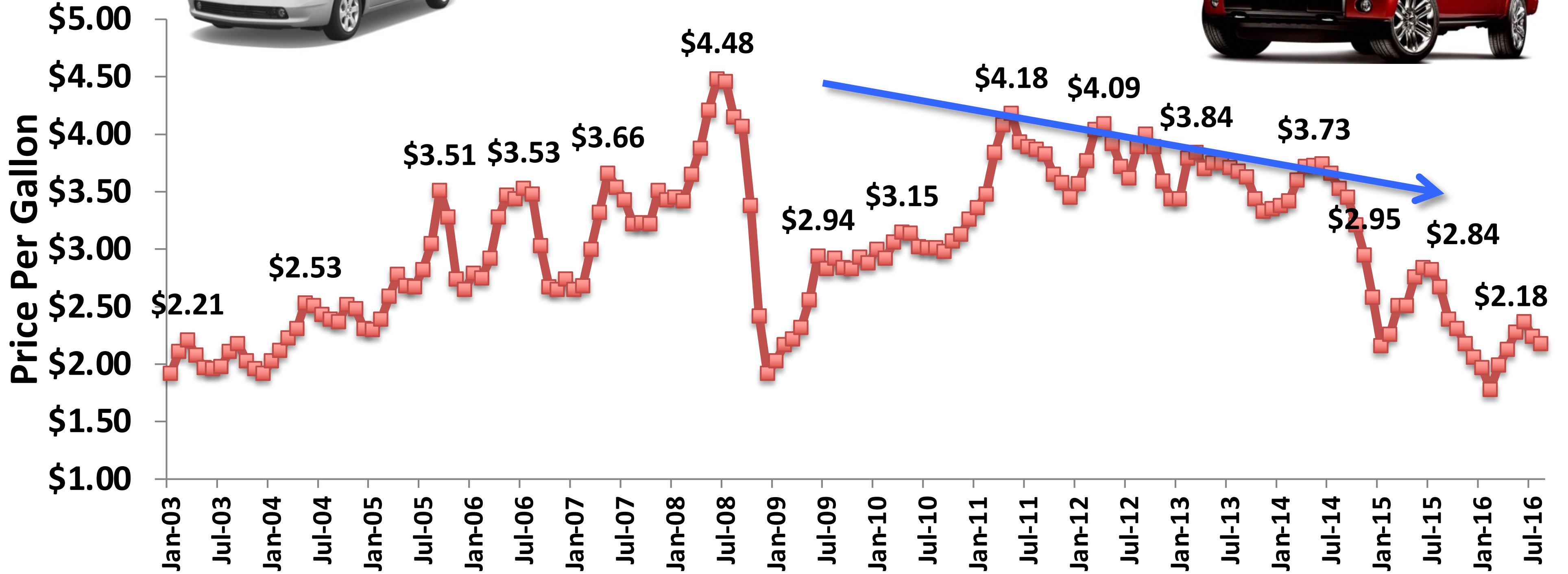
Low gas price affecting mix

- Sales of trucks and other vehicles in relation to gas prices
- Sales of EVs impacted

Gasoline Prices (Real)
January ‘03 – Aug. ‘16



Source: EIA

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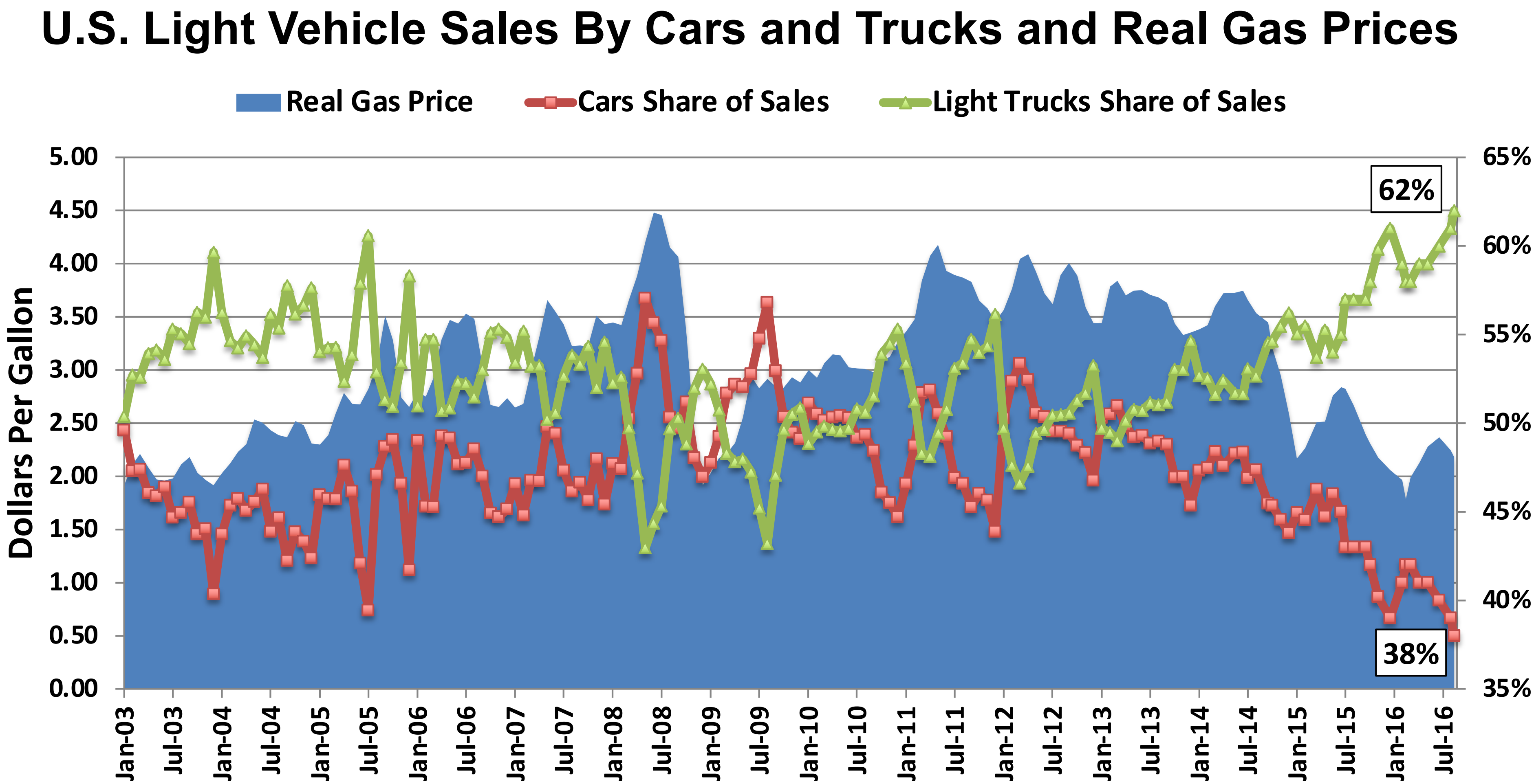

Source: EIA and BEA

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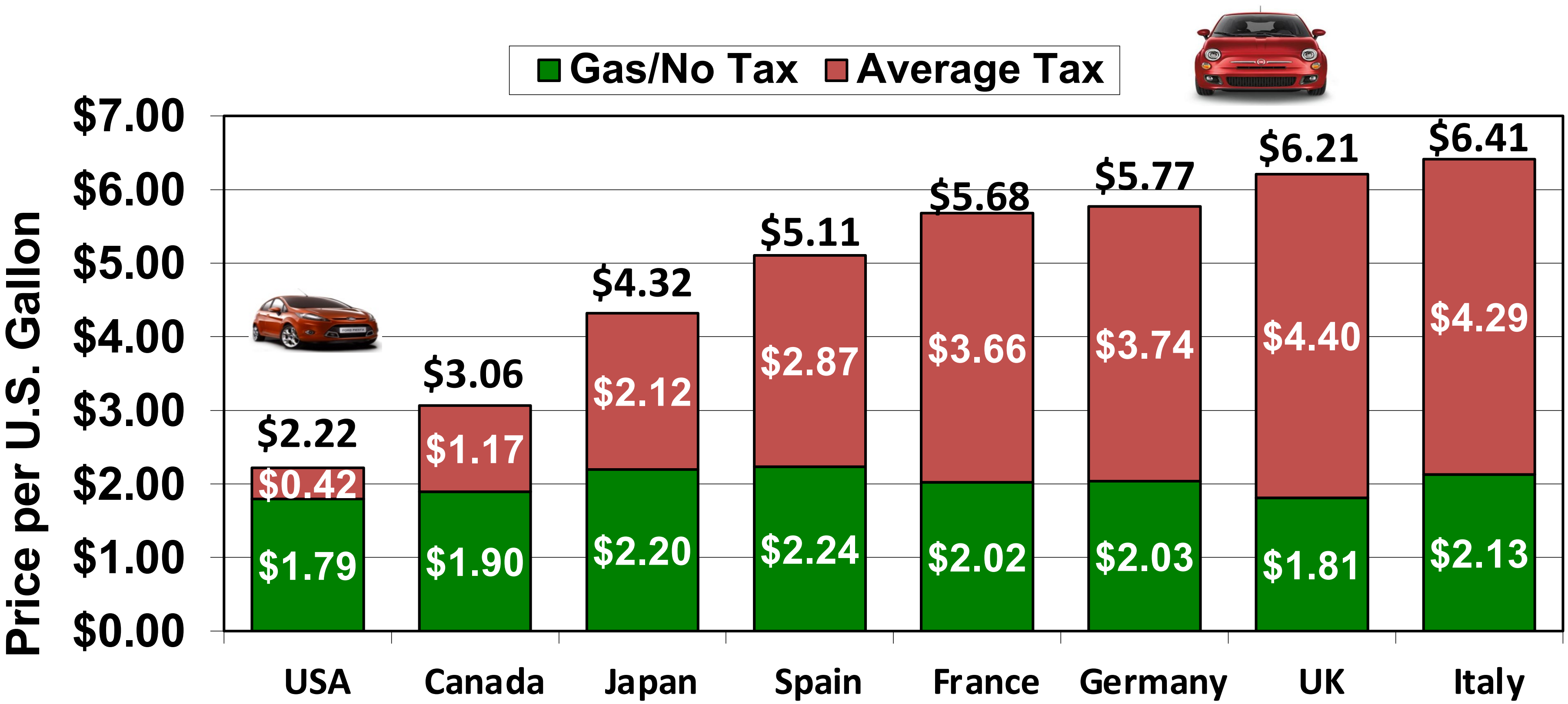
Average End User Gasoline Prices per Gallon (USD)



*Total not matching sum of Gas/No Tax and Average Tax due to rounding errors
Source: Energy Information Administration, international Energy Agency

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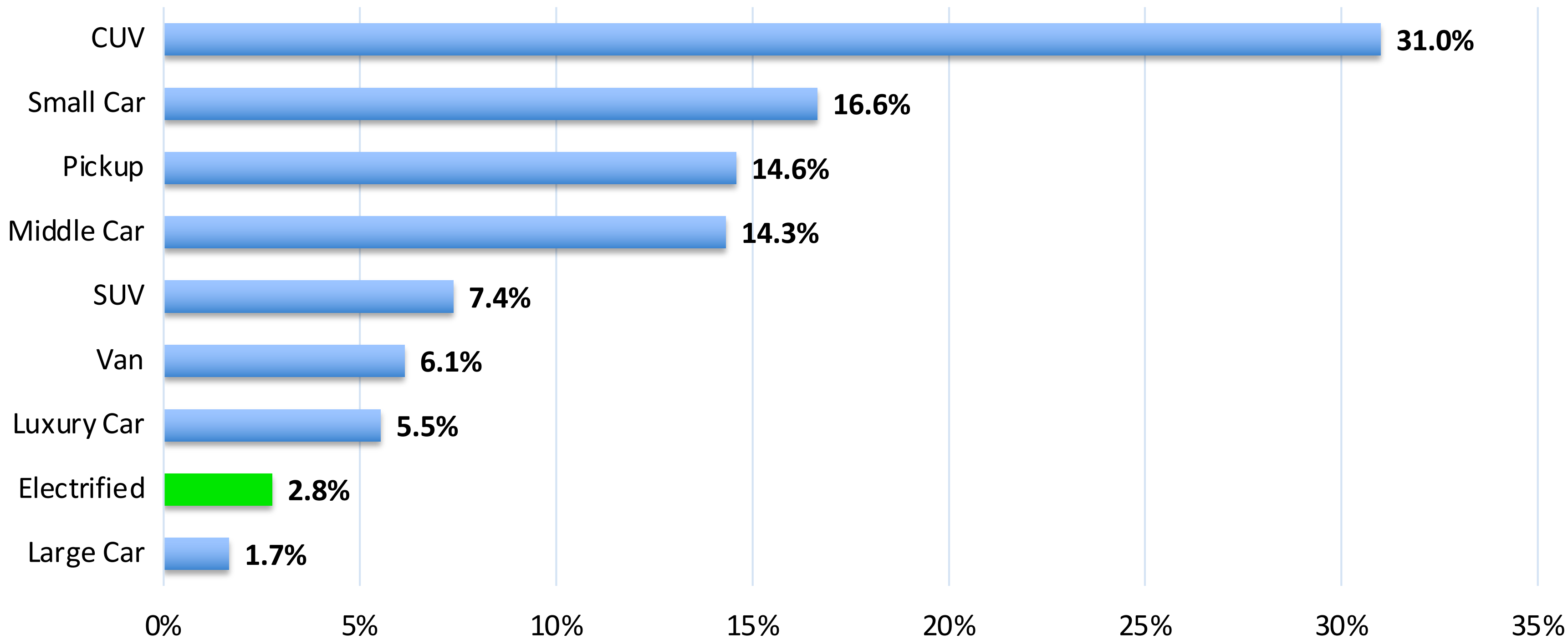
Market Share: Segment Breakdown
U.S. Light Vehicles Sales
August YTD 2016



Note: Electrified Segment consists of BEVs, HEVs and PHEVs; all other segments are sales exclusive of Hybrid models

Source: Ward's Automotive Reports, HybridCars.com

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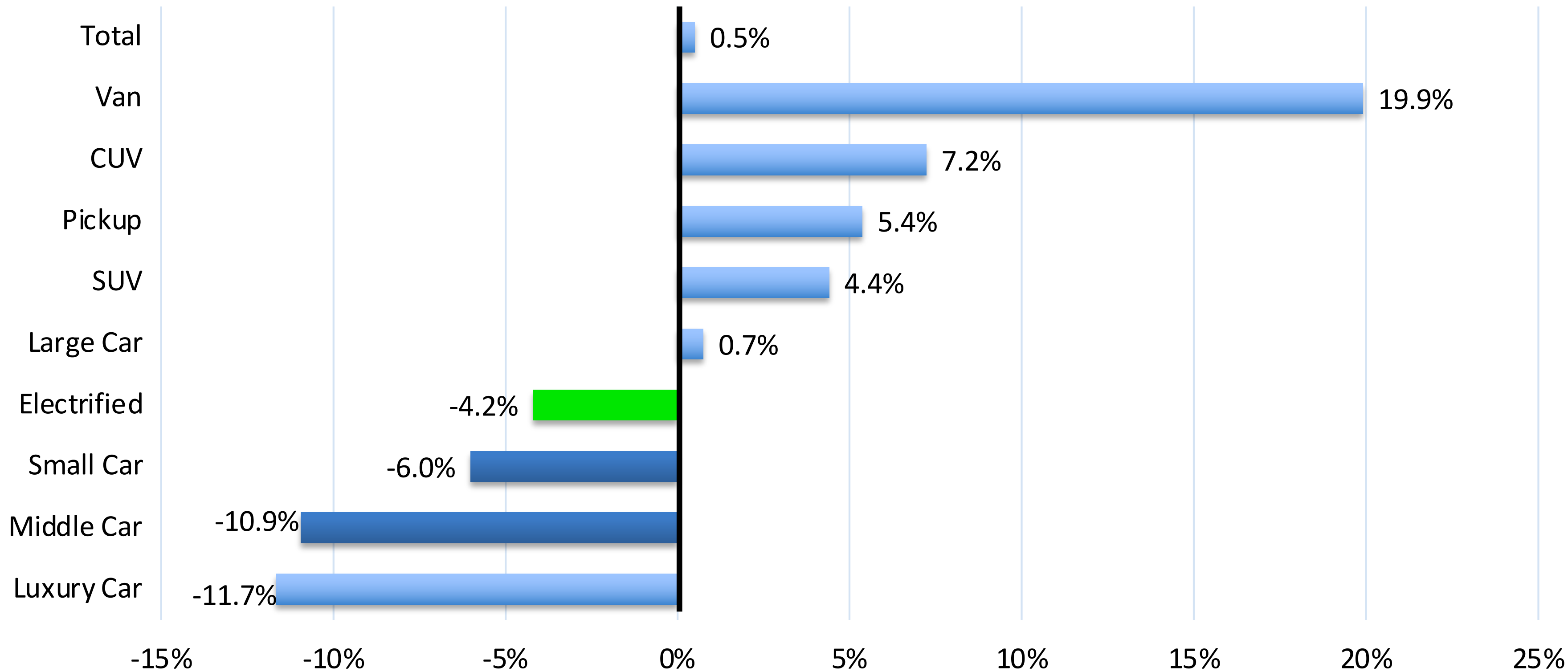
Segment Breakdown
U.S. Light Vehicles Sales Percent Change
August YTD: 2016 vs. 2015



Note: Electrified Segment consists of BEVs, HEVs and PHEVs; all other segments are sales exclusive of Hybrid models

Source: Ward's Automotive Reports, HybridCars.com

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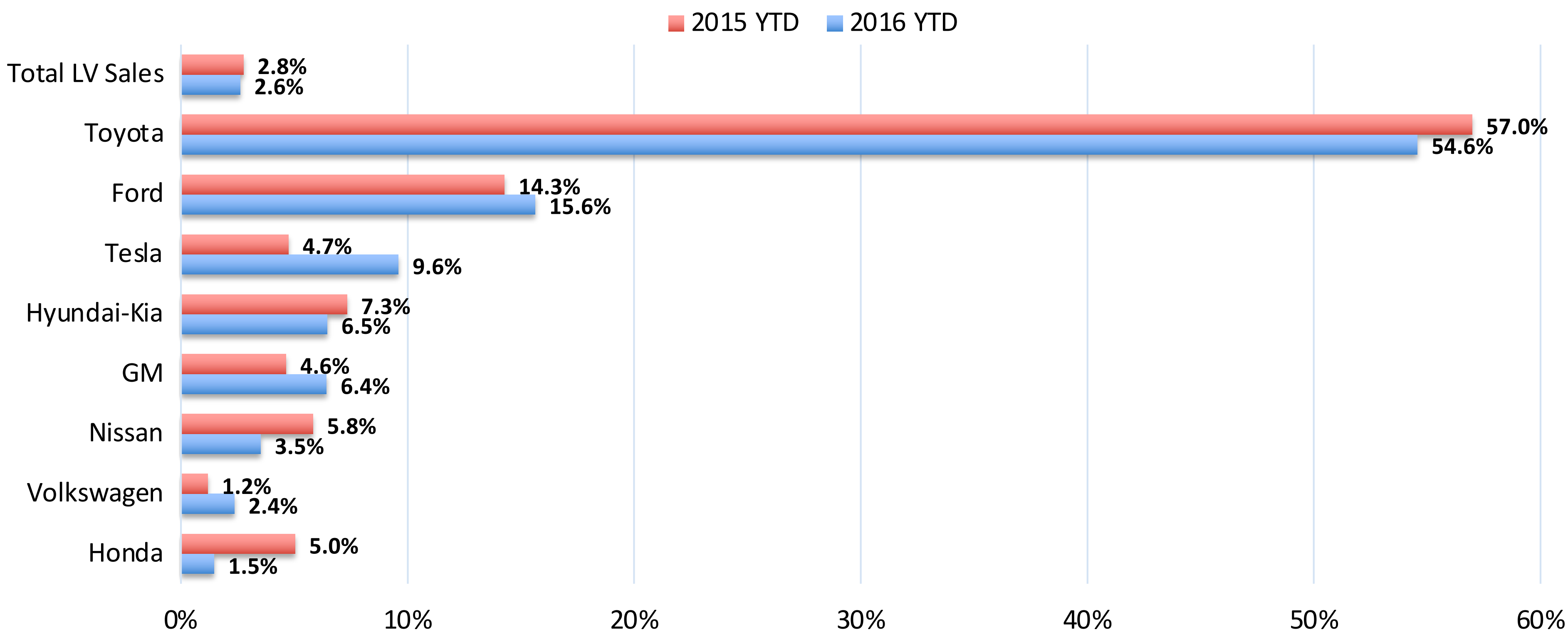
Market Share of U.S. Electrified Light Vehicle Sales and Selected OEM Share of U.S. Electrified Sales August YTD 2016 vs. August YTD 2015



Note: Electrified Light Vehicles consist of BEV, HEV and PHEV

Source: Wards Automotive Reports, HybridCars.com

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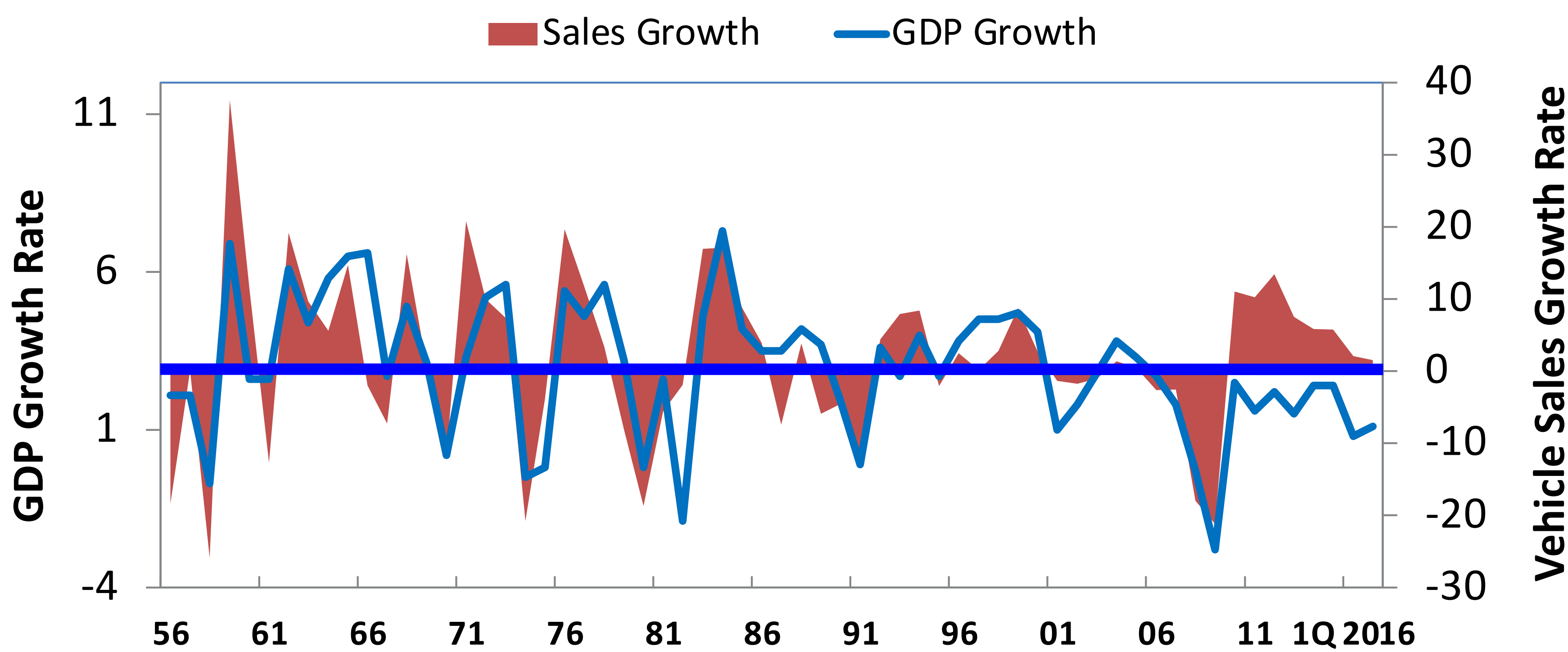
U.S. GDP Growth Rate and Vehicle Sales Growth Rate 1956 – 2Q 2016



Source: Bureau of Economic Analysis

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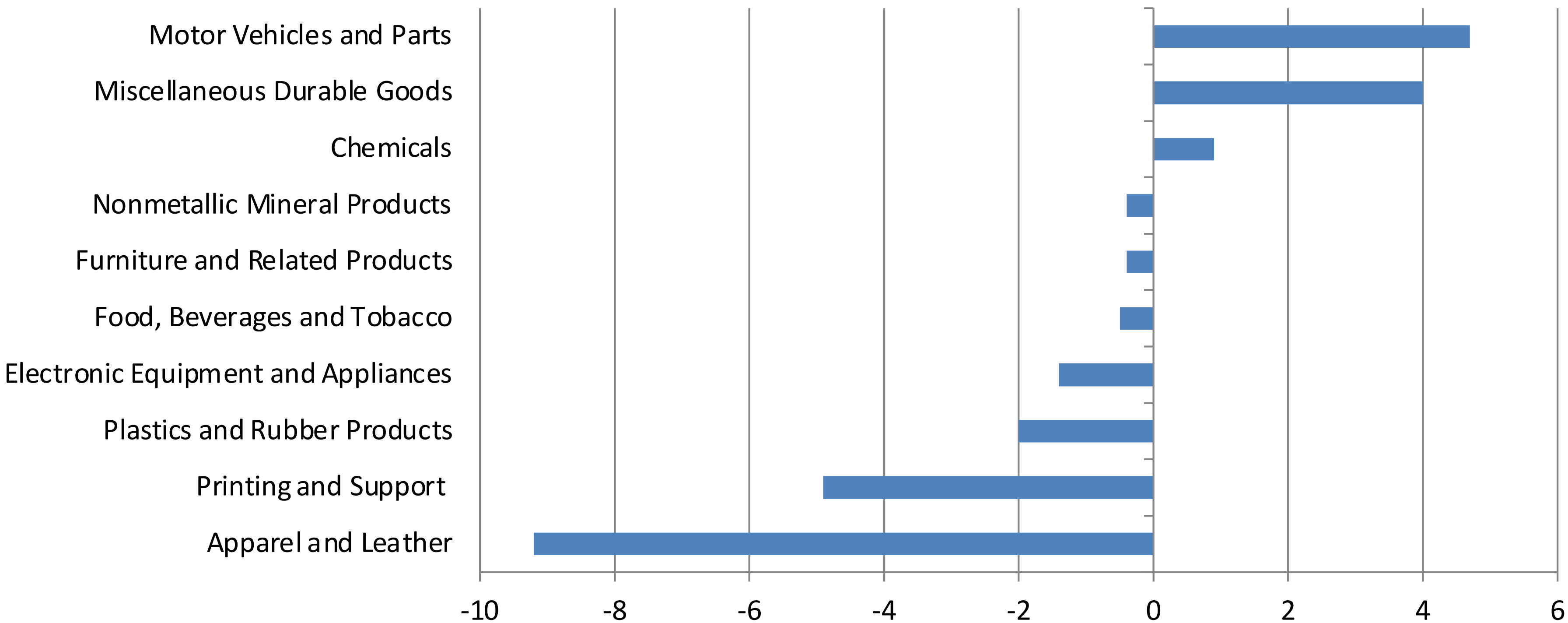
Top 10 Sectors for Year-over-Year Manufacturing Production Growth (Aug. 2015 to Aug. 2016)



Source: Federal Reserve Economic Research and Data, G.17 Industrial Production and Capacity Utilization, Market and Industry Group Summary

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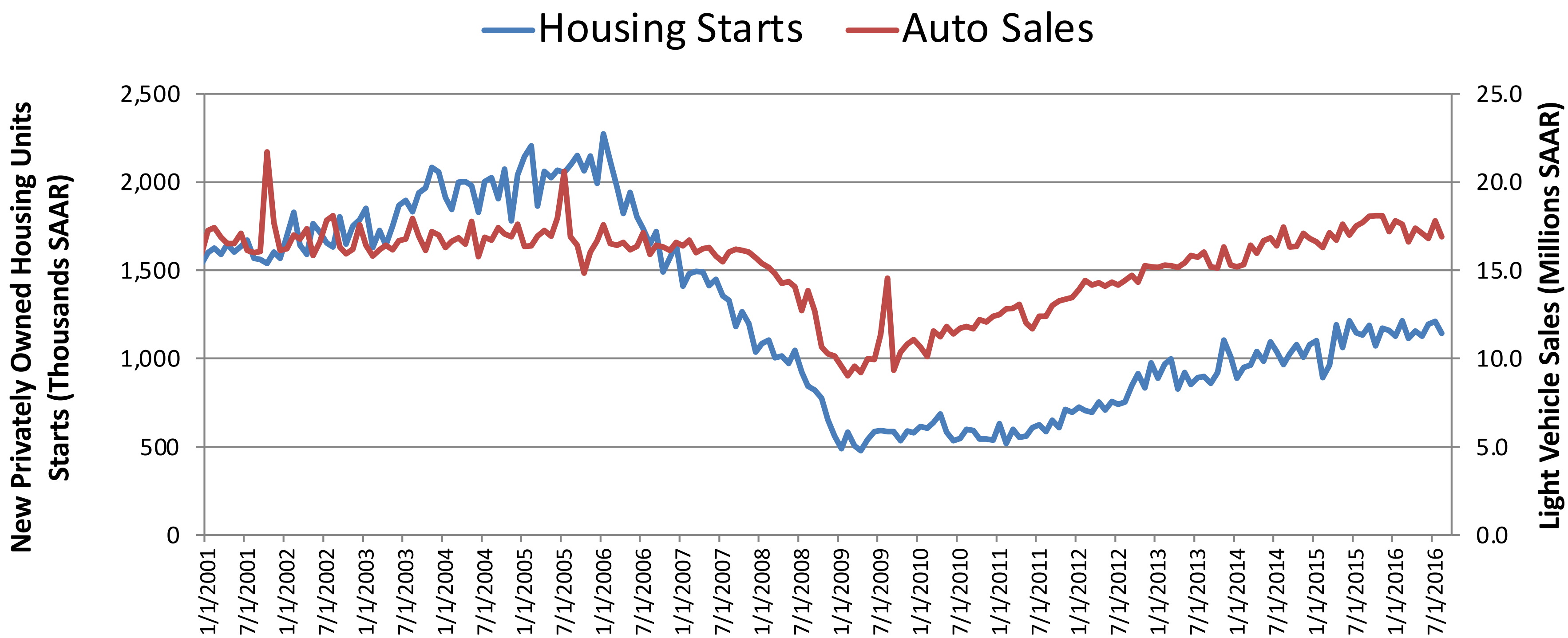
U.S. Housing Starts and Auto Sales



Since Q3 2007, housing starts and auto sales have been in lockstep…

Source: American Housing Survey for the United States, U.S. Census Bureau; BEA, HWA analysis

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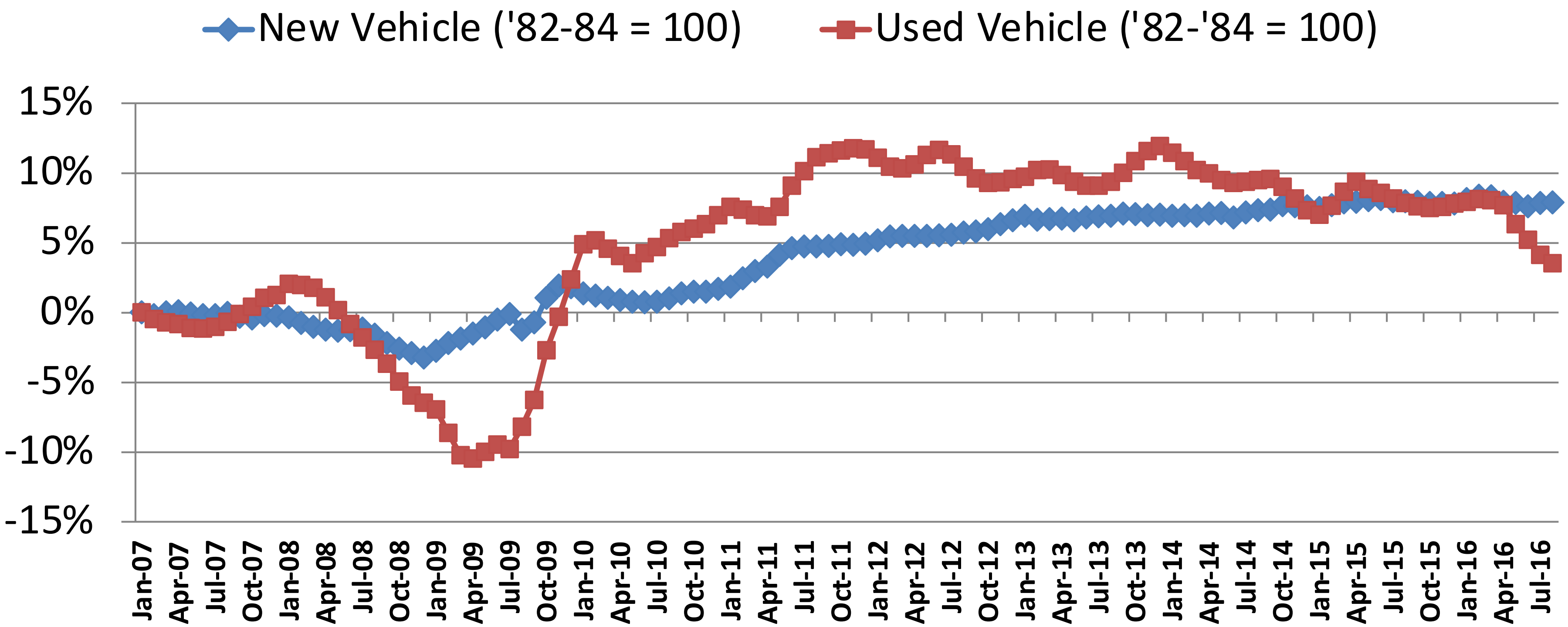
Changes from Jan '07: CPI-New Vehicle and CPI-Used Vehicle



Time to look at a used vehicle? Could affect new sales—look for increased incentives

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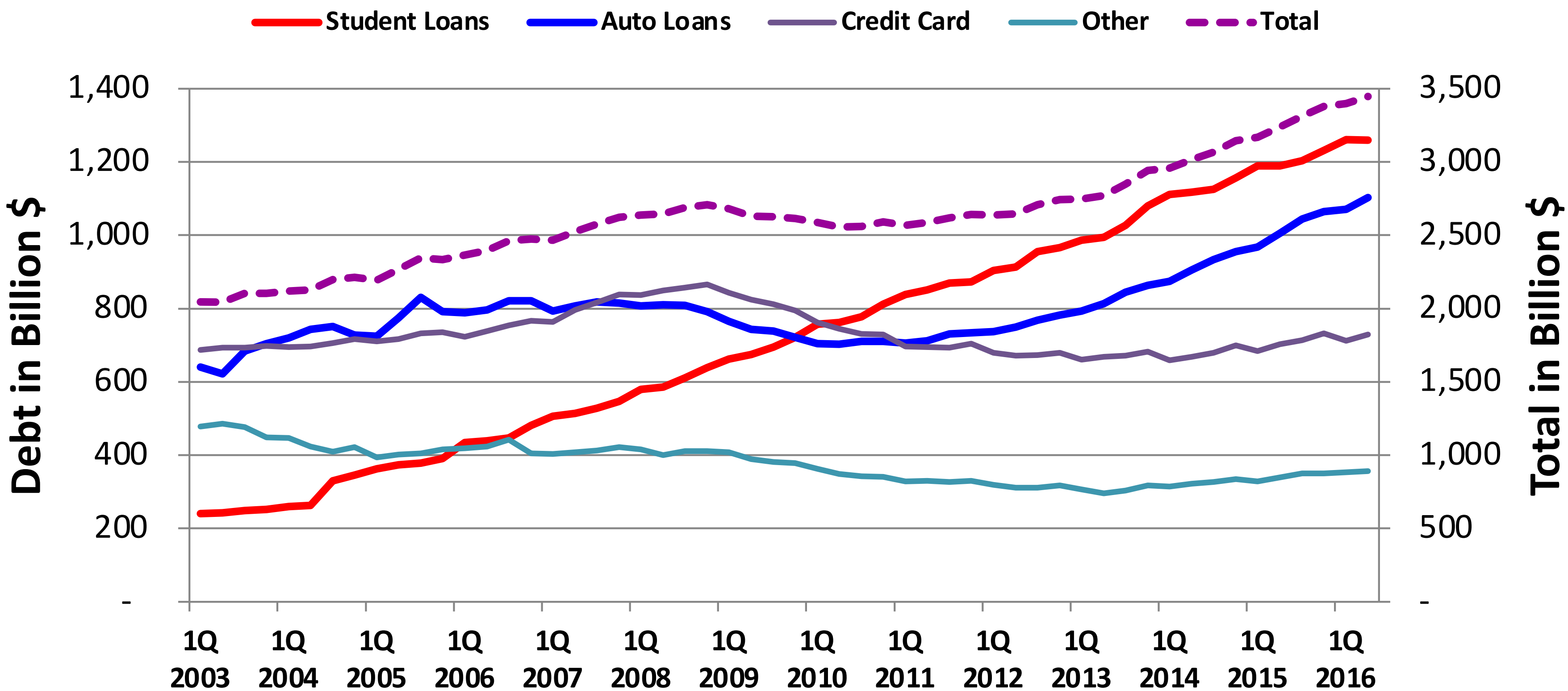
Source: BLS

Households Are Carrying More Debt*



Something has to give—how many people will choose to give up the car?

*Excludes mortgage and home equity line of credit

Source: FRBNY Consumer Credit Panel/Equifax

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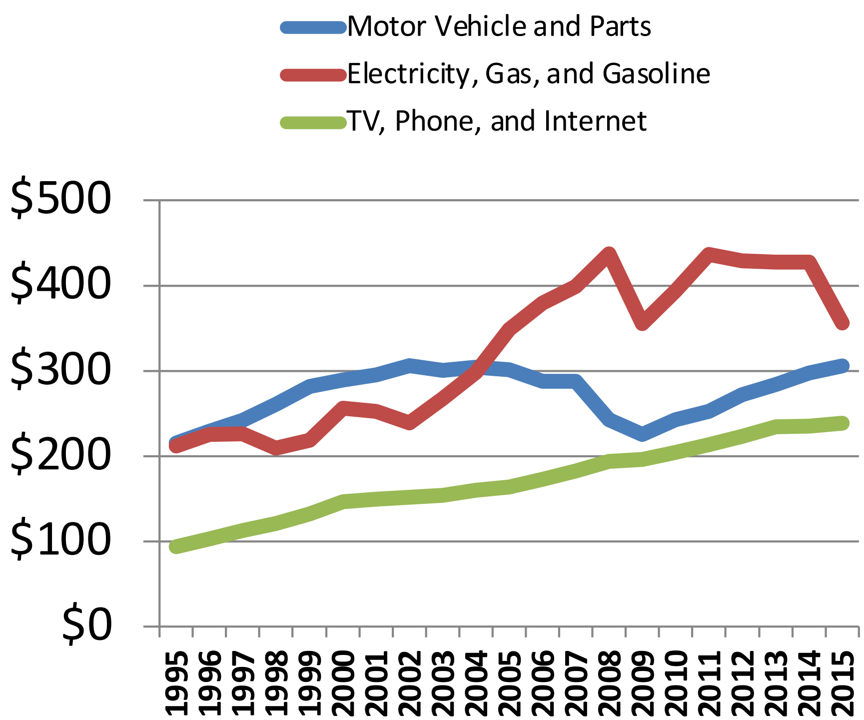
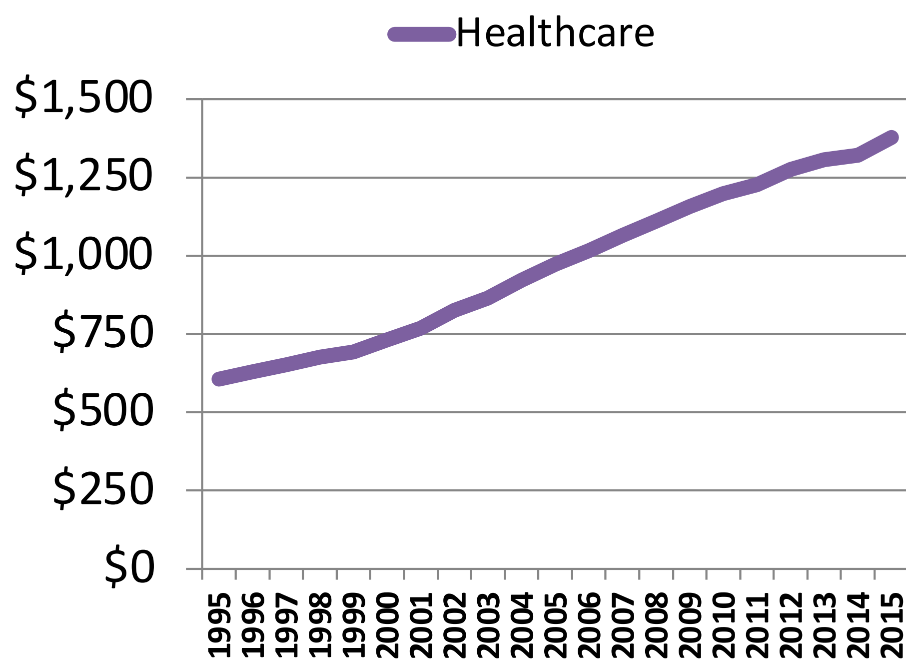
Auto Getting Crowded Out? Household Monthly Expenditure

What is Discretionary?





Source: Personal Consumption Expenditures by Type of Product, Bureau of Economic Analysis; U.S. Census

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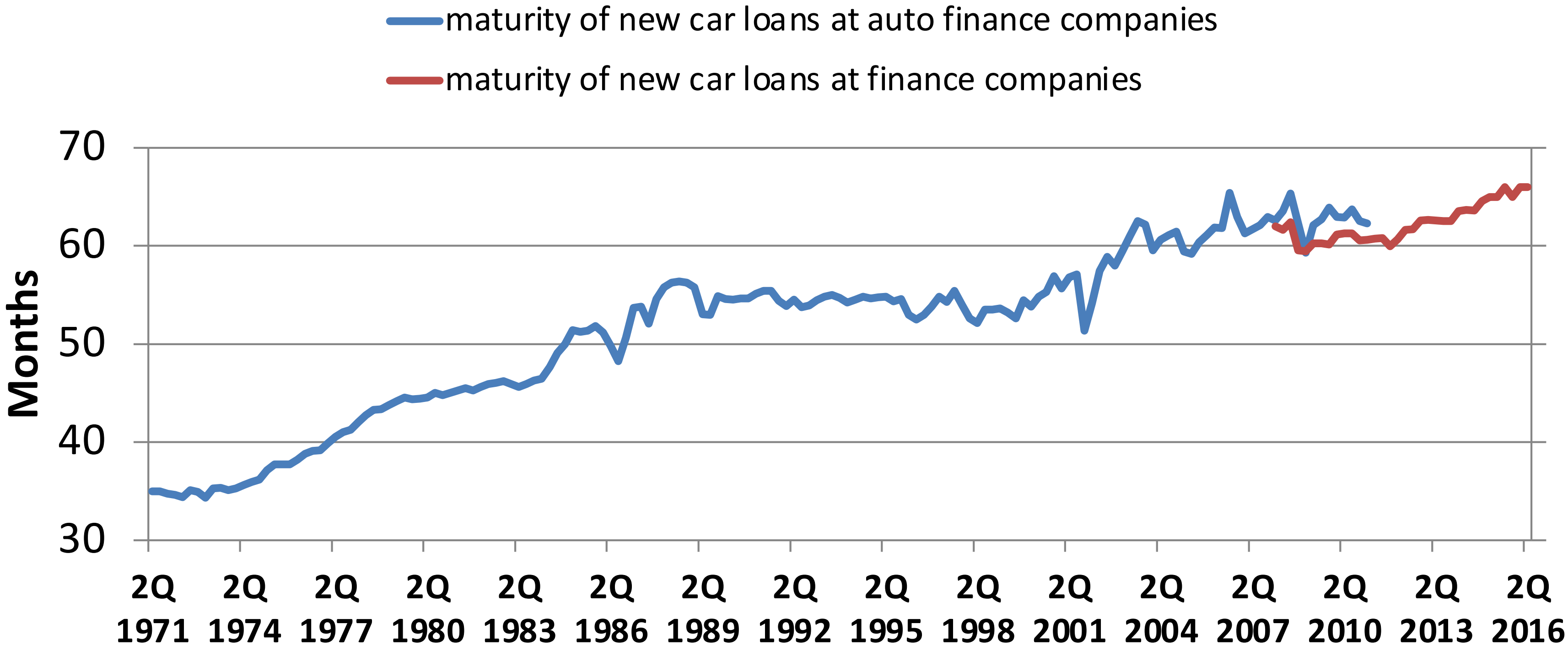
Weighted Average New Car Loans Maturity
1971 – 2Q 2016



Source: Federal Reserve Economic Research and Data, G.19 Consumer Credit

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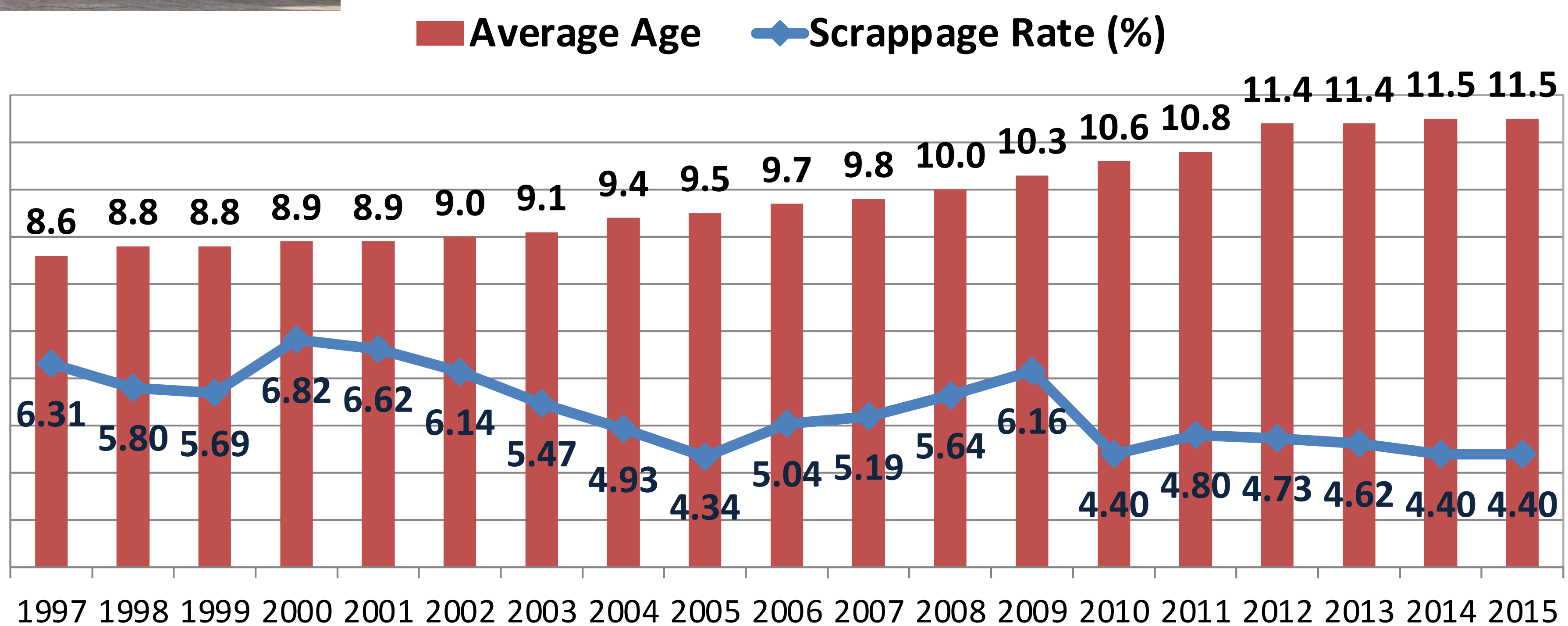
They are Getting Old . . .
U.S. Light Vehicle Age and Vehicle Scrappage Rate*



*Vehicle scrappage rate includes heavy duty trucks and buses.
Data as of July 1 each calendar year prior to 2009. Data as of Oct. 1 for 2009 and as of Dec. 31 for 2010 and after.
Source: IHS Automotive via Ward's Motor Vehicle Facts and Figures

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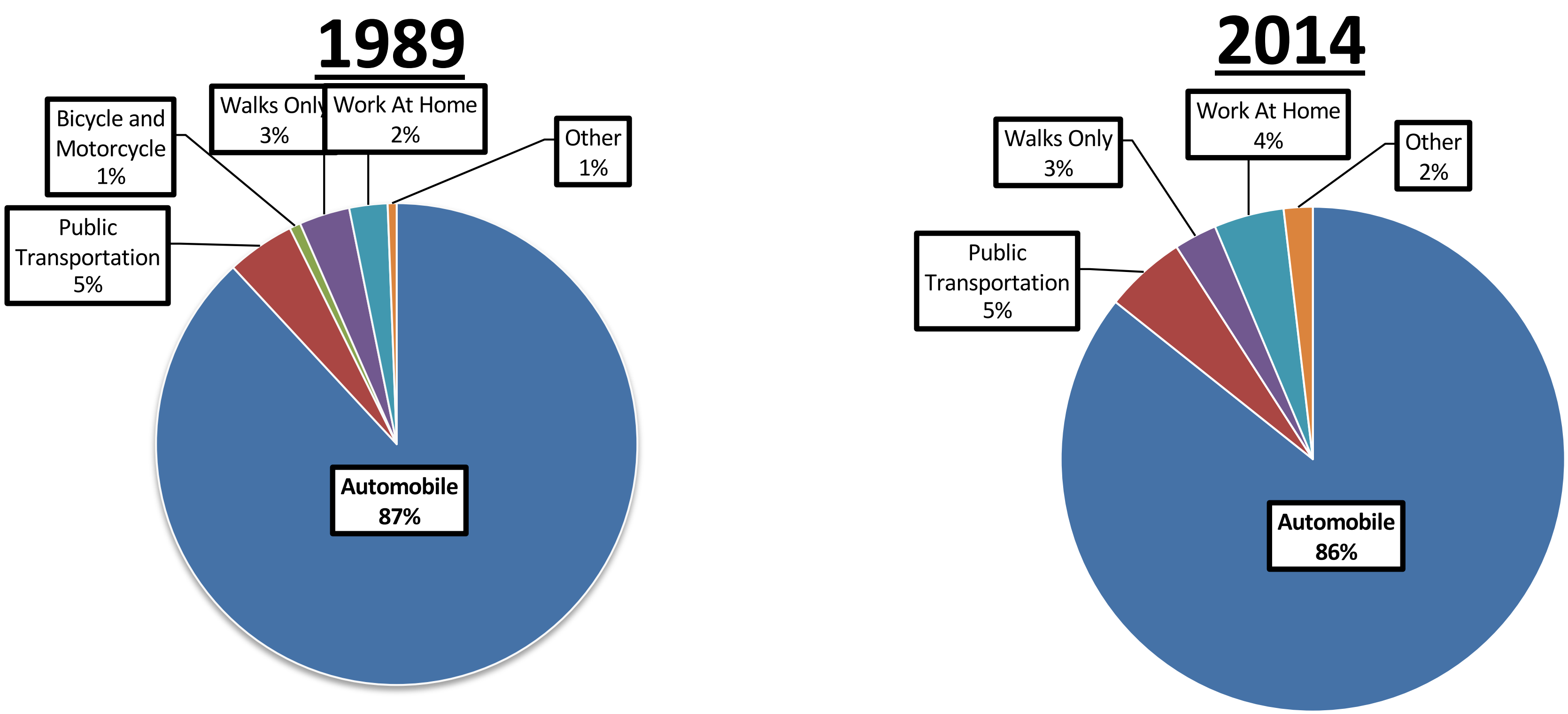
U.S. Principal Means of Transportation to Work 89&14



Source: U.S. Department of Housing and Urban Development, American Housing Survey, 1989 , U.S. Census Bureau
U.S. Department of Commerce, American Community Survey, 2011, U.S. Census Bureau

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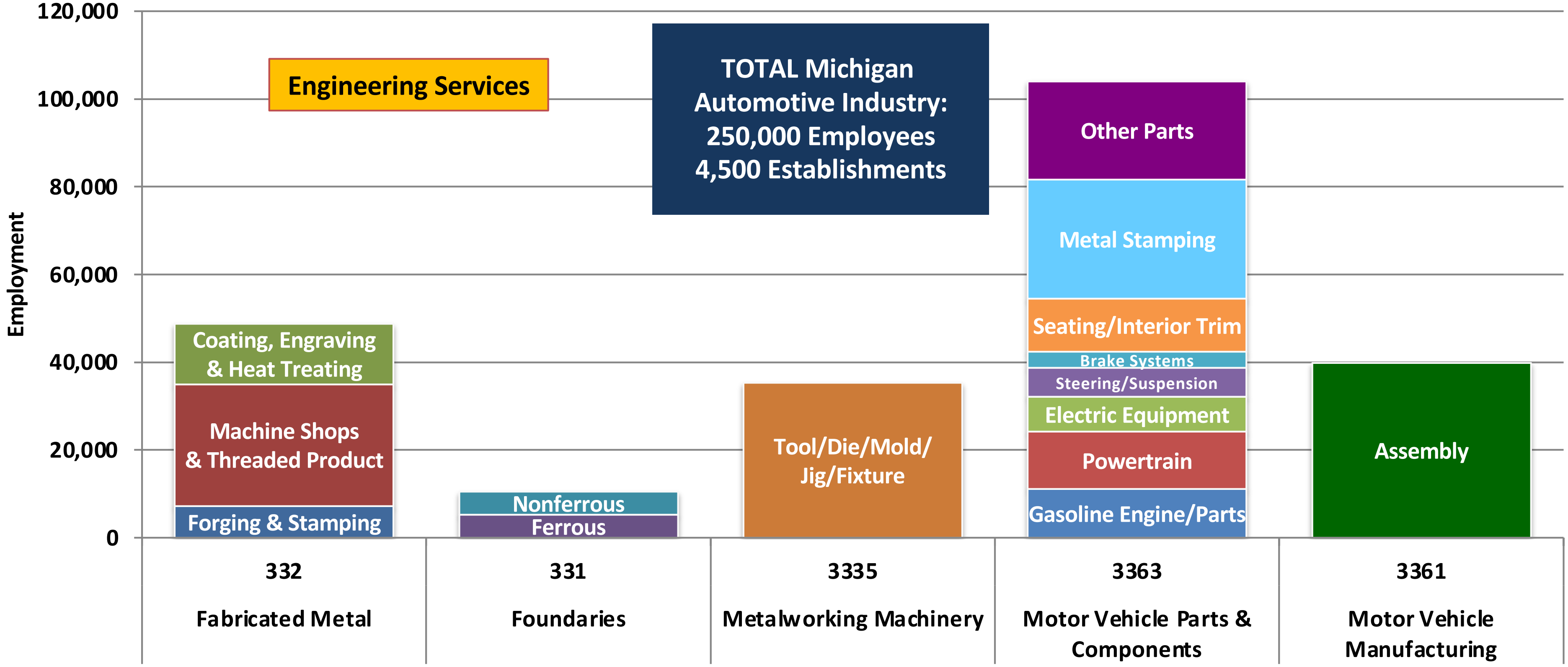
Auto Manufacturing—That was then….



Source: U.S. Department of Labor, Bureau of Labor Statistics, QCEW

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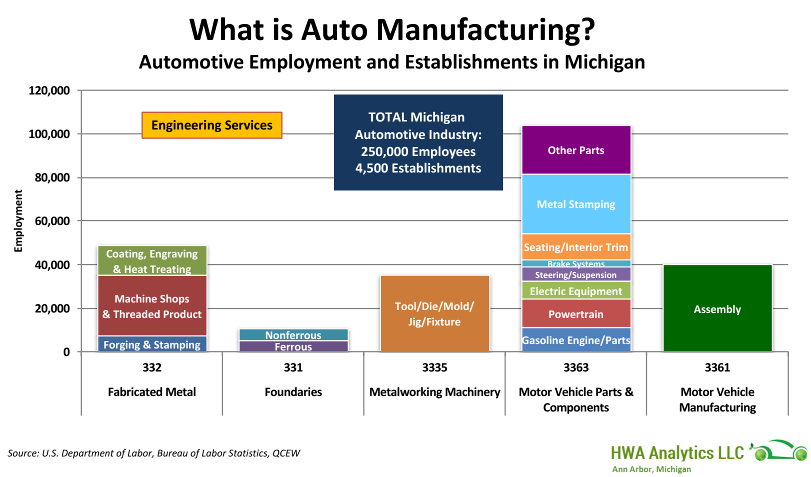
This is now…



- *America's automakers are among the largest purchasers of raw materials such as aluminum, copper, iron, lead, plastics, rubber, textiles, vinyl, steel and computer chips. Additionally, the industry has a significant influence on many other sectors, such as:*
- *Computers and semi-conductors,*
- Professional and Technical Services
- Administration and Services
- Wholesale Trade
- Retail Trade
- Transportation and Warehousing
- Finance and Insurance
- Management of Companies
- Legal
- Vehicle IT Platforms
- Advanced driver assistance systems
- Dedicated short range communications
- Autonomous vehicle operating systems
- Collision avoidance
- Connected vehicle services
- Connected vehicle ecosystem
- Navigation
- Systems integration
- Information technologies
- Passive safety
- Sensors
- Proximity sensors
- Microprocessors
- Embedded processors
- Testing services
- Software systems
- Artificial intelligence
- Deep learning
- Autonomous cars
- Haptic touch control
- Haptic feedback technology
- Gesture and motion detection systems
- Human-machine interface—HMI
- Speech recognition technology—
- Machine learning
- After-market autopilot systems
- Radar
- Lidar—light-based radar
- GPS
- EV charging systems
- Antenna systems
- Onboard communications
- Computer vision systems
- Vehicle cameras
- Simulation systems

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OEM-Tech Partnerships

Apple—invested $1 billion in Didi (ride-hailing app)
Audi—Qualcomm, Nvidia
Baidu—Chinese search giant and BMW
BMW—Intel, Mobileye, Moovit, Scoop, Zendrive, Zirx, Baidu, Nvidia
Daimler Truck, Volvo Truck, DAF, Iveco, Scania, MAN—truck platooning
Daimler—subsidiary, Moovel acquired MyTaxi, acquired RideScout
Delphi—self-driving technology in an Audi
Ford—Smart Mobility Plan (no details yet), rumored partnering with Google
GM—Lyft, Cruise Automation, Carnegie-Mellon
Google—FCA: test fleet to include 100 Pacifica minivans
Honda—Nvidia, no formal partner announced yet
Hyundai—no partner named yet, focusing on AI, connectivity, and autonomous
Jaguar-Land Rover—autonomous, no partner named
Mercedes—autonomous technology, partnering with Nvidia
Microsoft—Volvo (autonomous vehicle R&D), Toyota (robotics, AI, self-driving vehicle)
Nissan/Renault—Toyota (intelligent maps), autonomous vehicles
Nvidia—computing platform for autonomous vehicles, partnering with Audi, Tesla, Mercedes, Volvo, Honda, BMW, Fiat, and others
PSA Group (Peugeot, Citroen, and DS)—autonomous and near-autonomous
Tata Elixsi (division of TATA group)—autonomous parking valet
Tesla—autonomous vehicles, severed ties with Mobileye, potentially acquiring SolarCity, Nvidia
Toyota—autonomous vehicles, partnering with Stanford, MIT, University of Michigan, Microsoft, Nissan/Renault, Uber (undisclosed investment)
Uber—autonomous vehicles, mapping technology, partnering with Carnegie-Mellon, University of Arizona, acquired deCarta (mapping startup) and mapping assets from Microsoft, has retrofitted Ford Fusions (unclear if Ford is participating)
VW—autonomous research, ride sharing (with Gett--$300 million)
Volvo—autonomous vehicles, partnering with Microsoft, looking at "various partnerships", Nvidia

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Contributions

- Nationally, 6-8 multiplier—entire company/industry
- Assembly plant—10 or higher
- In-state, between 3-5 multiplier (automotive states—14)
- $500 billion compensation, $70 billion tax revenue, nationally
- Jobs supported throughout entire economy—direct, indirect and induced

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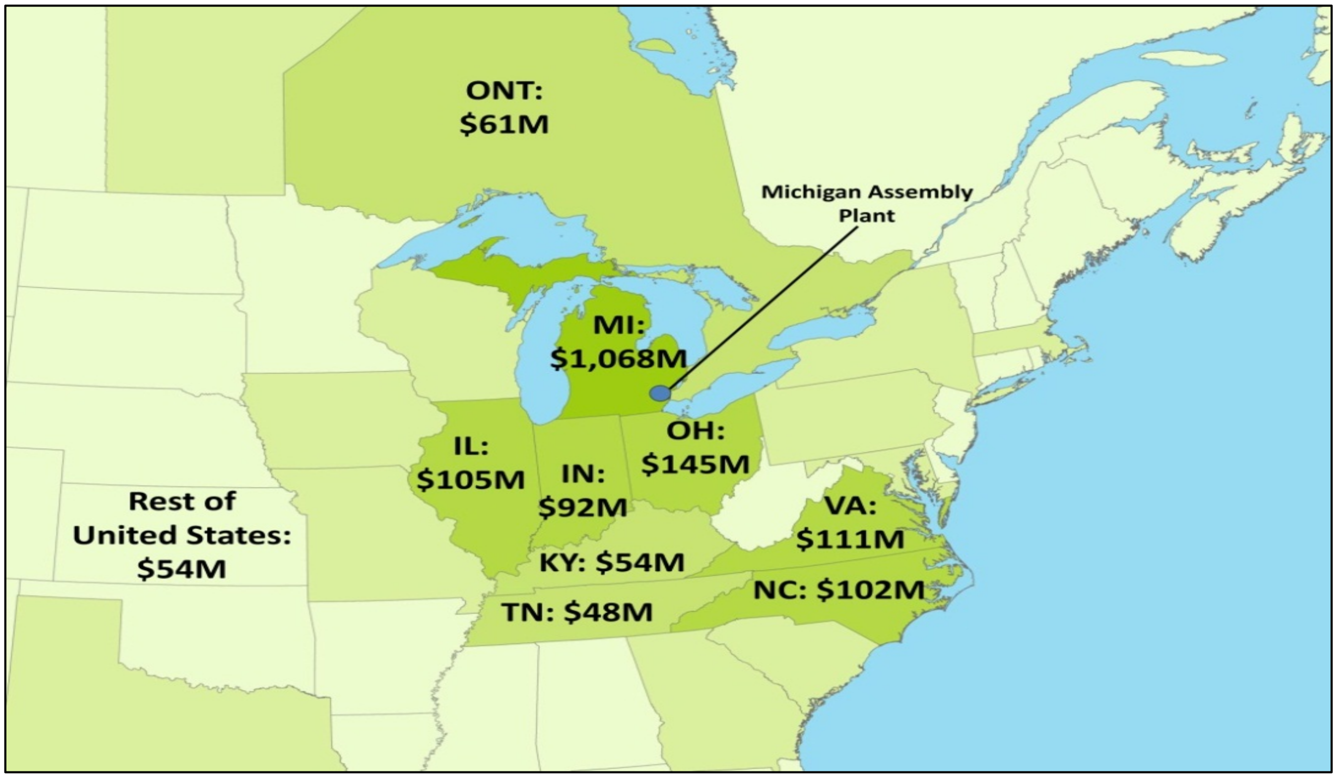
One assembly plant spends a lot of $$



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Total of All Estimated Taxes and Fees, 2013

Tax Category		State ($M)	Federal ($M)
Sales Tax Revenues ($ Millions)	New Vehicles	21,997	
	Used Vehicles	12,084	
	Parts/Services	4,831	
Use Tax Revenues ($ Millions)	Fuel	40,135	36,000
	Title/Registration	23,304	
	Driver License	2,513	
Business Taxes ($ Millions)	Manufacturers	762	
	Dealerships	995	
State and Local Employee Personal Income Taxes ($ Millions)	Automaker	1,352	21,883
	Supplier	1,192	20,485
	Dealer	1,108	18,332
ALL TAXES PAID TO GOVERNMENT ($ Millions)	AUTO SECTOR	**$ 110,273**	**$ 96,700**
	TOTAL	$ 846,214	
	% AUTO	13%	

The production, sale, maintenance, and use of an automobile contribute to state coffers

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Shift in manufacturing

- Most new investments occurring at existing plants in U.S.—and now Canada
- Major MX investments-10 new announced—and counting
- Ontario, Canada mixed bag: currency exchange, higher wages, tough union, distance—recently agreements with FCA, GM could improve situation
- Retention of existing facilities becomes main priority in states across the country and in Canada
- U.S. plants building trucks, vans, SUVs, CUVs, are in solid position. Car plants are losing their product (CR-V to Indiana-out of MX; Chrysler 200, Liberty to go away—move RAM, more Wrangler, Cherokee; Focus to MX—Ranger, Bronco to arrive; additional Silverado final stage mfg. to Oshawa—more room at Ft. Wayne
- More new investment, more production of high margin vehicles, more revenues for auto companies, less workers…

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A Look Forward

- Auto sales rebounded in September—where to next?
- Mexico is a big play
  - Major investment in vehicle production facilities
  - FCA moving small, less profitable vehicles there, large trucks etc., into U.S.
  - Ford moving Focus out of MI to MX, GM Sonic next?
- Canada/union is trying to push back
  - Subsidize new investment in existing facilities—contracts ratified with GM, FCA
- Alternative fuel vehicles are tough sell
  - Without stiff regulations, mandates
  - Less than $2.50/gal gas
- Market plateau above 17 million annual units leaves plenty of room for success
- Big profit vehicles remain in U.S.
- Some manufacturers are already relying heavily on incentives and or fleet sales, which don't bode well long term

Thank you

kimhill@hwa-analytics.com
734-355-1740

HWA Analytics LLC
Ann Arbor, Michigan