

# Contribution of New-Car Dealerships to the Economies of All 50 States and the United States



3005 Boardwalk Drive  
Ann Arbor, MI 48108  
[www.cargroup.org](http://www.cargroup.org)

**September 2015**

*All statements, findings, and conclusions in this report are those of the authors  
and do not necessarily reflect those of the National Automobile Dealers Association.*



# **Contribution of New-Car Dealerships to the Economies of All 50 States and the United States**

**Center for Automotive Research**

**Report Prepared by:**

Debra Maranger Menk  
Joshua Cregger

**Report Prepared for:**

National Automobile Dealers Association  
McLean, Virginia

**September 2015**



**CONTENTS**

ACKNOWLEDGEMENTS ..... V

SECTION I - BACKGROUND AND INTRODUCTION ..... 1

    New-Car Dealerships in the United States ..... 1

    Recent Developments in the Automotive Market ..... 4

        Recession and Restructuring ..... 4

        Automotive Sales Forecast ..... 5

    Challenges and Opportunities for New-Car Dealerships ..... 6

        Evolving Showroom Design and Sales Technology ..... 6

        Internet Use and Direct Sales ..... 7

        Keeping up with Vehicle Technology ..... 8

        Aging Fleet ..... 10

        Dealership Mergers and Acquisitions ..... 11

SECTION II - ESTIMATES OF THE ECONOMIC CONTRIBUTION OF NEW-CAR DEALERSHIPS TO THE U.S. ECONOMY ..... 13

SECTION III - ESTIMATES OF THE ECONOMIC CONTRIBUTION OF NEW-CAR DEALERSHIPS TO INDIVIDUAL STATE ECONOMIES ..... 16

SECTION IV - ESTIMATES OF THE TAX CONTRIBUTION OF NEW-CAR DEALERSHIPS ..... 18

SECTION V - METHODOLOGY OVERVIEW ..... 22

    The Macroeconomic Model ..... 22

    Methods & Assumptions ..... 22

BIBLIOGRAPHY ..... 24

    References ..... 24

    Selected CAR Publications ..... 28

**LIST OF TABLES AND FIGURES**

Figure 1.1: New-Car Dealerships in the Continental United States ..... 3

Figure 1.2: U.S. Automotive Sales and Forecast, 2007-2018 ..... 6

Figure 1.3: Cost of Recommended Equipment to Repair the Aluminum F-150 ..... 10

Table 2.1: Total Contribution of all New-Car Dealership Operations to the U.S. Economy ..... 14

Table 2.2: Indirect and Expenditure-induced Employment Contribution of U.S. New-Car Dealerships, 2014 ..... 15

Table 3.1: All Jobs for New-Car Dealers by State (Direct, Indirect and Expenditure-induced)..... 17

Table 4.1: Estimated Income Taxes Paid by Direct Dealership Employees and Employees with Indirect and Expenditure-induced Jobs (\$ millions) in 2014 ..... 19

Table 4.2: Corporate Income Taxes and License Fees paid by Dealerships (\$ millions) in 2013 ..... 21

## ACKNOWLEDGEMENTS

The Center for Automotive Research (CAR) would like to thank the National Automobile Dealers Association (NADA) for support of this work.

This study is the result of a group effort. The authors would like to thank our colleagues at CAR for their assistance with this study, in particular, Yen Chen for his input and guidance on economic modeling. Additional research was provided by Michael Schultz while further assistance was provided by Diana Douglass, who contributed greatly to the coordination of the project and the production of this document.





## SECTION I - BACKGROUND AND INTRODUCTION

New-car dealerships are found in nearly every community across the country—in rural and urban areas alike. The omnipresence of auto dealerships in communities across the United States allows for a deep connection between their business operations and civic events. In addition to providing local residents with opportunities to learn about and purchase new vehicles, dealerships support communities through a variety of activities, such as contributing to local charities, assisting with Girl Scout cookie sales, and sponsoring local youth sports teams.<sup>1</sup> More significantly, dealerships contribute to the communities they serve by providing jobs and generating government tax revenues.

This research examines the economic and employment contributions of new-car dealerships in the United States and in each of the 50 states. This paper is organized into several sections:

- Section I provides background on dealerships in the United States and discusses the current automotive market as well as the challenges and opportunities dealerships face.
- Section II features an in-depth quantitative analysis of employment and personal income associated with automotive dealerships at the national level.
- Section III shows the employment contribution of dealerships on a state level.
- Section IV estimates the taxes paid by dealerships and their employees to support state and federal budgets.
- Section V discusses the methodology of the economic modeling used to produce the results discussed in Sections II, III, and IV.

### New-Car Dealerships in the United States

The first automobile sold in the United States was purchased directly from the factory in 1896.<sup>2</sup> As the early automotive industry began to grow in the Great Lakes region and larger firms emerged, the industry needed a distribution system. Automotive companies began selling vehicles through branch offices as well as independent distributors and dealers. Throughout the 1920s, automakers shifted from relying on independent distributors and created franchise agreements with dealers.<sup>3</sup> The new system allowed automakers to have greater control over how their vehicles were sold. Automakers needed “sound, prosperous dealers as business associates” to finance dealership inventory and staff.<sup>4</sup> Dealers carry and maintain varying levels of inventory, which provides automakers with a hedge against cyclical downturns.<sup>5</sup> Further,

---

<sup>1</sup> Crain, Keith. (2009). “Closing Dealerships? Be Careful”. *Automotive News*. September 7, 2009.

<<http://www.autonews.com/article/20090907/RETAIL/309079865/closing-dealerships?-be-careful>>.

<sup>2</sup> Keel, Keith G. (1998). “Auto Retailing: Changing Trends in Jobs and Business.” *Monthly Labor Review*. October 1998. Pages 19-22.

<<http://www.bls.gov/mlr/1998/10/rpt1full.pdf>>.

<sup>3</sup> Rubenstein, James M. (2001). “Making and Selling Cars: Innovation and Change in the U.S. Automotive Industry.” Johns Hopkins University Press. Pages 265-274.

<sup>4</sup> Sloan, Alfred P. (1963). “My Years with General Motors.” Bantam Doubleday Dell Publishing Group, Inc. Pages 279-301.

<sup>5</sup> *Ibid.* Rubenstein (2001).

dealers invest heavily in marketing, parts inventories, vehicle service bays and other efforts that relieve manufacturers from having to make these investments.

By the 1980s, the term “mega-dealer” was coined, and with it, the classic image of “toothy, tire-kicking car salesmen clad in loud sports jackets” was replaced with savvy entrepreneurs who owned dozens of businesses, often spread across multiple states.<sup>6</sup> Between 1970 and 2000, the number of dealerships declined from slightly over 30,000 to slightly over 22,000. As the costs to open and operate an automotive dealership climbed, smaller dealers struggled. More complex vehicles requiring expensive repair equipment also favored larger dealership groups as they could spread the cost of new tools across multiple stores.

In 2014 there were 16,396 new-car dealerships (rooftops)<sup>7</sup> across the country employing more than a million workers. That year, the average dealership employed 64 workers and had a payroll of \$3.5 million.<sup>8</sup> In total, new-car dealerships employed 1,056,000 people. With a rising number of U.S. vehicle sales and a relatively stable number of dealerships, the average dealership throughput (number of vehicles sold per dealership) rose to more than 900 units per dealership in 2014, higher than had ever previously been recorded.<sup>9</sup>

---

<sup>6</sup> Standish, Frederick. (1989). “Rise of the Megadealer Threatens Tire-Kicking Salesman.” Associated Press. January 8, 1989.

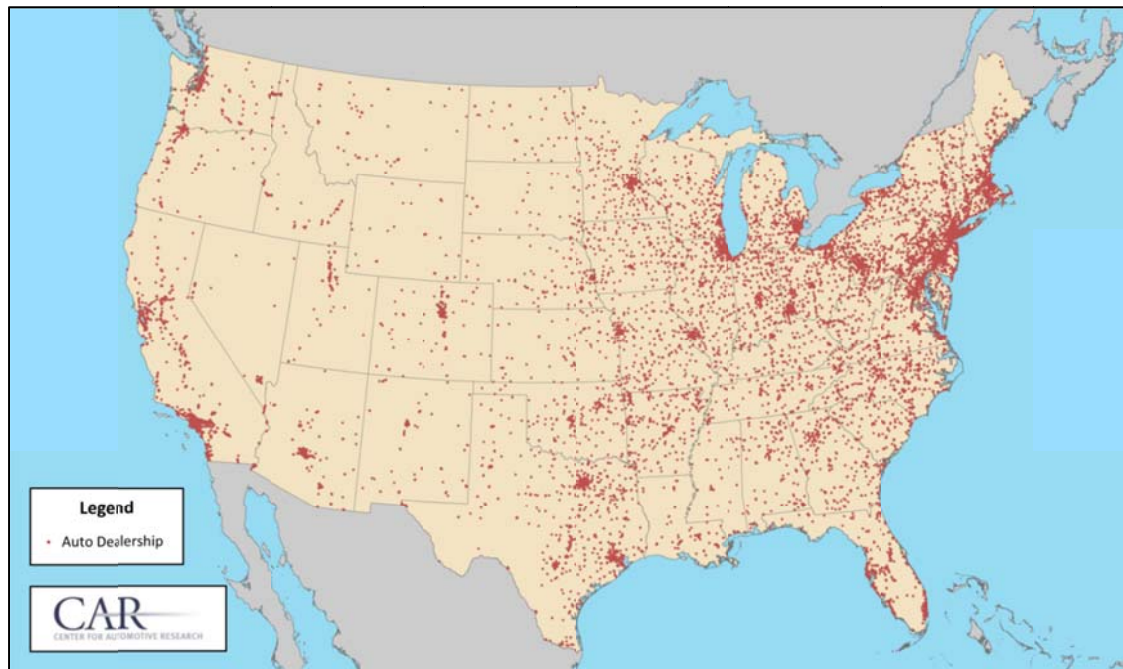
<<http://www.apnewsarchive.com/1989/Rise-of-the-Megadealer-Threatens-Tire-Kicking-Salesman/id-e28dbde097cea7ddfeb57c7ed6163f4>>.

<sup>7</sup> There are several definitions of a dealership: A dealership can be a franchise, a rooftop, or a company. A franchise is a single brand of vehicle. A rooftop may contain several franchises (i.e., sell several brands), and a company may own several rooftops (dealerships at different addresses).

<sup>8</sup> NADA. (2014). “NADA Data 2014: Annual Financial Profile of America’s Franchised New-Car Dealerships.” NADA Data. National Automobile Dealers Association. May 28, 2014. <[http://www.nada.org/NR/rdonlyres/DF6547D8-C037-4D2E-BD77-A730EBC830EB/0/NADA\\_Data\\_2014\\_05282014.pdf](http://www.nada.org/NR/rdonlyres/DF6547D8-C037-4D2E-BD77-A730EBC830EB/0/NADA_Data_2014_05282014.pdf)>.

<sup>9</sup> Urban Science. (2014). “U.S. Auto Retail Network To Achieve Record Average Sales Per Store For Third Straight Year.” Urban Science. August 2014. <<https://www.urbanscience.com/library/in-the-news/314-us-auto-retail-network-to-achieve-record-average-sales-per-store.html>>.

*Figure 1.1: New-Car Dealerships in the Continental United States*



Source: Center for Automotive Research, January 2015 and Auto Dealer Directory, December 2014

In 2014, total dealership revenues in the United States were \$806 billion, with 57.6 percent of those revenues associated with new vehicles, 31.0 percent with used vehicles, and 11.4 percent with service and parts. The average pretax profit of a dealership was more than \$1 million (2.2 percent of sales) and all three areas (new vehicles, used vehicles, and service and parts) were profitable. Profitability for service and parts peaked in 2008 (car owners were maintaining their vehicles rather than replacing them in the midst of the recession), and have declined in subsequent years, but parts and service still represents the majority of dealership profits.<sup>10</sup>

The North American Industry Classification System (NAICS), which is used to define various sectors in the economy, codes automobile and parts dealers as NAICS 441. Establishments classified in NAICS 441 sell vehicles from retail locations<sup>11</sup>. These establishments typically display vehicles in a showroom, an open lot, or both. Employees include both the sales and support staff as well parts experts and mechanics. NAICS 441 does not include the sale of medium-duty or heavy-duty trucks, which are instead included in wholesale trade, as such vehicles are rarely sold through retail outlets.<sup>12</sup>

Businesses classified under NAICS 441 include:

- NAICS 4411 - Automobile Dealers

<sup>10</sup> Ibid. NADA. (2014).

<sup>11</sup> The NAICS system does not distinguish between franchises, rooftops and companies. Establishments likely report by location, which indicates that NAICS data is estimated to primarily be at the level of 'dealership rooftops'.

<sup>12</sup> Census. (2015). "Monthly Retail Trade and Food Services - NAICS Codes, Titles, and Descriptions." U.S. Census Bureau. Accessed January 15, 2015. <<http://www.census.gov/retail/mrts/www/benchmark/2014/html/naicsdef.html>>.

- NAICS 4412 - Other Motor Vehicle Dealers
- NAICS 4413 - Automotive Parts, Accessories, and Tire Stores

Automobile dealers (NAICS 4411) include establishments selling new and used automobiles and light-duty trucks (e.g., pickup trucks, sport utility vehicles, and vans). Other motor vehicle dealers (NAICS 4412) include establishments selling new and used vehicles other than automobiles and light-duty trucks, such as recreational vehicles, motorcycles, and boats. Automotive parts, accessories, and tire stores (NAICS 4413) include establishments selling new, used, and rebuilt automotive parts and accessories. Some establishments in this classification repair vehicles in addition to selling parts.

### **Recent Developments in the Automotive Market**

U.S. light vehicle sales peaked at 17.4 million in 2000, and sustained annual levels of more than 16 million units through 2007. This unprecedented sales activity was supported by a booming stock market, housing development patterns necessitating increased vehicle ownership, an enhanced sense of personal wealth, and generous vehicle purchasing incentives. By 2008, however, the financial crisis and subsequent recession had already resulted in a sharp contraction of automotive sales; only 13.2 million units were sold that year. The decline continued and in 2009 only 10.4 million units were sold in the United States; such low sales levels had not been seen since the recession in the early 1980s.<sup>13</sup>

Since 2010 the U.S. automobile industry has steadily recovered. Many of the leading economic indicators have come back to pre-crisis levels.<sup>14</sup> Cumulative vehicle sales have registered double-digit growth rates in 2010, 2011, and 2012. In 2014, U.S. auto sales were 16.4 million units, an increase of 5.9 percent compared to sales in 2013.<sup>15</sup>

### *Recession and Restructuring*

While the U.S. automotive industry had been restructuring for many years, the 2009 market crash—and subsequent bankruptcy of two automakers and scores of suppliers—provided impetus for further reductions in the production capacity at many automaker and supplier firms. Even though the bankruptcies of General Motors and Chrysler were structured, their occurrence shook the foundation of the automotive industry to its core. As assembly facility operations slowed and ultimately stopped, the fate of franchised dealerships was closely

<sup>13</sup> Ward's. (2014). "U.S. Sales of Cars and Trucks." Ward's Motor Vehicle Facts & Figures 2014. Ward's Automotive Group, Southfield, Michigan. July 18, 2014.

<sup>14</sup> FRED. (2015). "Federal Reserve Economic Data." Economic Research, Federal Reserve Bank of St. Louis. Accessed January 27, 2015. <<http://research.stlouisfed.org/>>.

<sup>15</sup> Automotive News. (2015). "U.S. Total Vehicle Sales by Make, (Dec. & YTD)." Automotive News Data Center. January 5, 2015. <<http://www.autonews.com/section/datacenter>>.

followed in communities across the nation. According to company restructuring plans, during 2009-2010, approximately 2,000-plus GM and Chrysler dealerships (rooftops) closed.<sup>16</sup>

Even before the financial crisis and subsequent bankruptcies, the number of dealerships (rooftops) in the United States had been declining for decades (from 1988 to 2007, on average, the number of operating dealerships declined by nearly 200 per year).<sup>17</sup> In 2008, there were 19,226 new-car dealerships operating in the United States, but by 2012, the number had declined by 3,177 and only 16,049 dealerships were in operation. Since 2012, the number of dealerships has been expanding, albeit slowly. In 2014, there were 16,396 new-car dealership rooftops in operation.

Dealership consolidation largely reflects the decline of the Detroit Three (Fiat Chrysler Automobiles, Ford Motor Company, and General Motors) market share (from 72 percent in 1999 to 45 percent today). As a result, the Detroit Three automakers need fewer franchises with larger territories than they did in previous years. Import-brand franchise dealers tend to be larger because they have fewer locations and operate dealerships in urban centers.

### *Automotive Sales Forecast*

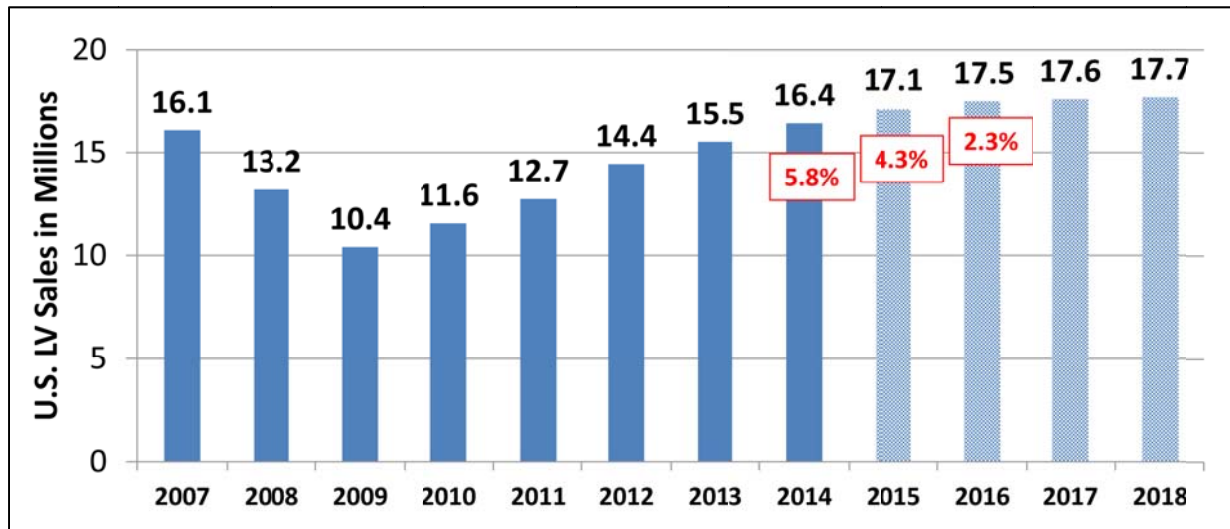
CAR produces an annual vehicle sales forecast based on an econometric analysis of key variables of automotive demand. From 2013 to 2018, sales are forecast to increase by approximately 10.3 percent. Figure 1.2 displays historical and forecasted sales for the U.S. automotive industry. The forecast suggests that automobile sales over the next several years will continue to increase, returning to the long-term trend from 16.9 to 17.3 million units annually.

---

<sup>16</sup> Hill, Kim, Debra Maranger Menk, Joshua Cregger and Michael Schultz. (2015) "Contribution of the Automotive Industry to the Economies of All Fifty States and the United States." Center for Automotive Research. January 22, 2015. <<http://www.cargroup.org/?module=Publications&event=View&pubID=113>>.

<sup>17</sup> NADA. (2006). "NADA Data 2006: Economic Impact of America's New-Car and New-Truck Dealers." NADA Data. National Automobile Dealers Association. May 17, 2006. <[https://www.nada.org/NR/rdonlyres/538D2699-BF00-4C73-A162-7A4FBBAC62E0/0/NADA\\_Data\\_2006pdf.pdf](https://www.nada.org/NR/rdonlyres/538D2699-BF00-4C73-A162-7A4FBBAC62E0/0/NADA_Data_2006pdf.pdf)>. and NADA. (2013). NADA Data 2013: State-of-the-Industry Report." NADA Data. National Automobile Dealers Association. July 1, 2013. <[http://www.nada.org/NR/rdonlyres/1B512AC7-DCFC-472C-A854-6F5527931A2F/0/2013\\_NADA\\_Data\\_102113.pdf](http://www.nada.org/NR/rdonlyres/1B512AC7-DCFC-472C-A854-6F5527931A2F/0/2013_NADA_Data_102113.pdf)>.

Figure 1.2: U.S. Automotive Sales and Forecast, 2007-2018



Source: Center for Automotive Research, May 2015

### Challenges and Opportunities for New-Car Dealerships

New-car dealerships are facing many new business challenges and new opportunities. Evolving technology both inside and outside of the vehicle has resulted in new sales and marketing techniques as well as a greater role in providing education and support for customers. Technology has also increased competition as consumers are more informed and can more easily comparison-shop. The increasing age of the average vehicle on the road has brought with it more opportunities for the parts and service department, but dealerships also need to compete with independent repair shops to win customers.

#### *Evolving Showroom Design and Sales Technology*

While there has been much discussion of customers researching and even purchasing vehicles online, the traditional brick-and-mortar showroom is still important, but it is adapting to changes in culture and technology.<sup>18</sup> Dealers updating their facilities or constructing new buildings are incorporating new technologies and other features into their designs. Innovative dealerships work to provide their customers with a seamless transition from the dealership's digital presence online to its physical presence on the showroom floor. A major focus has been to expedite transaction times and create a more customer-friendly environment.<sup>19</sup> With steadily increasing sales and revenues, some dealerships are undergoing major renovations and including new types of facilities such as play areas or restaurants. In other cases, automakers are pressuring dealerships to re-model or re-build stores to present more a cohesive image

<sup>18</sup> LaReau, Jamie (2015). "Dealership of the Future Adds Tech, Comfort and Cuts Time." *Automotive News*. January 19, 2015. <<http://www.autonews.com/article/20150119/RETAIL06/301199993/dealership-of-the-future-adds-tech-comfort-and-cuts-time>>.

<sup>19</sup> Barkholz, David. (2014). "The Elusive 60-minute Transaction." *Automotive News*. June 16, 2014. <<http://www.autonews.com/article/20140616/RETAIL07/306169981/the-elusive-60-minute-transaction>>. And Wilson, Amy. (2014). "Sonic 'Delighted' with Rollout of New Retail Plan: Exec Sees Faster Deals, Higher Share." *Automotive News*. July 28, 2014. <<http://www.autonews.com/article/20140728/RETAIL/307289968/sonic-delighted-with-rollout-of-new-retail-plan>>.

among dealerships carrying the same brand. Newer and remodeled dealership facilities are designed to be neat, clean, orderly, and functional rather than large and opulent.<sup>20</sup>

Dealers are integrating more technology into their operations. For example, large flat-screen displays offer an alternative to traditional signage, though they may require special consideration in the design of a showroom (e.g., higher ceilings).<sup>21</sup> Screens are flexible and can be used to display a variety of content, such as brand logos, commercials, special deals, brand-driven images, and vehicle model information. Several dealerships are integrating online services and mobile device applications into their operations. Examples of such technologies include iPads, mobile applications for both sales personnel and customers, online credit applications, and software to match lenders with customers.<sup>22</sup> At the 2015 North American International Auto Show, Ford demonstrated Bluetooth beacon technology which can transmit information on nearby vehicle models to a customer's mobile device. In the near future, Ford will deploy this beacon technology in a pilot study the company is conducting at five Ford and three Lincoln dealerships.<sup>23</sup> While not yet available, dealerships may one day have access to driving simulators, which would allow customers to "test drive" vehicles without leaving the dealership.<sup>24</sup>

### *Internet Use and Direct Sales*

While many dealerships have benefitted from the use of online marketing and mobile applications, consumers armed with mobile devices can comparison-shop from the floor of the dealership showroom. Connectivity and the Internet allow consumers to be more informed when purchasing motor vehicles, resulting in downward pressure on vehicle sales prices.<sup>25</sup> Consumers are also able to compare financing and insurance options while at the dealership, limiting profits in another area of new car sales.

Third-party websites have proliferated by promising the consumer more vehicle price and transaction transparency. Consumers may view these sites as providing unbiased information; furthermore, these sites often provide a way for consumers to share and review dealerships, buying experiences and vehicles. Traditionally, dealership websites were a frustrating maze of 'clicks' with the singular aim of enticing consumers to provide their contact information. AutoNation, which sells nearly two percent of all new vehicles and is the largest dealership

---

<sup>20</sup> Ibid. LaReau, Jamie (2015).

<sup>21</sup> Ibid. LaReau, Jamie (2015).

<sup>22</sup> Barkholz, David. (2014). "Software Systems Cut Wait Times -- If They Talk." *Automotive News*. June 16, 2014. <<http://www.autonews.com/article/20140616/OEM06/306169982/software-systems-cut-wait-times-if-they-talk>>. And Ibid. Wilson, Amy. (2014).

<sup>23</sup> Bunkley, Nick. (2015). "Ford Tests 'Beacons' to Beam Info to Shoppers." *Automotive News*. January 19, 2015. <<http://www.autonews.com/article/20150119/RETAIL/301199942/ford-tests-beacons-to-beam-info-to-shoppers>>.

<sup>24</sup> Ibid. LaReau, Jamie (2015).

<sup>25</sup> Wilson, Amy. (2015). "Pressures on Franchise System Put Retailers in a Bunker Mentality." *Automotive News*. January 19, 2015. <<http://www.autonews.com/article/20150119/RETAIL06/301199988/pressures-on-franchise-system-put-retailers-in-a-bunker-mentality>>.

group in the U.S., is investing \$100 million to develop its web presence and win customers back from third-party websites.

The Internet is also a potential tool for automakers wanting to directly sell to their customers. Start-up automaker Tesla Motors has been in the news due to the company's push to sell vehicles through small, company-owned showrooms and online orders. Tesla, to date, has operated under a direct sales model. This represents a significant departure from the traditional structure of automotive sales in the United States. Currently, Tesla operates showrooms where customers may speak with associates and learn about Tesla vehicles, but are unable to discuss pricing or place orders: customers must purchase their vehicle through the company's website.

As Tesla seeks to establish itself as a mainstream, mass-market vehicle manufacturer, its direct sales model has been challenged by state dealership associations and franchise laws. In many state legislatures and courthouses, Tesla has fought against state automobile dealer associations over whether the company's sales tactics are in violation of state franchise laws.

Legal proceedings have varied, settling for or against Tesla in different states. Some governments have passed new laws to reinforce the dealership model, while others have enacted legislation to specifically permit direct sales – often carefully crafted to apply only to Tesla (e.g., only companies selling battery electric vehicles, with less than 5,000 in-state sales per year may engage in direct sales). Many dealers worry that other automakers may pursue their own factory stores if Tesla is allowed to continue direct sales.<sup>26</sup> In December 2014, for example, Volvo announced that it would launch web sales in the near future.<sup>27</sup> Elon Musk (of Tesla) has said that he would adopt the dealership franchise model once sales of Tesla vehicles reach critical mass.<sup>28</sup> As noted earlier, a dealership franchise system provides automakers with, in effect, a business partner who carries inventory, which can create a much needed financial buffer for automakers during sales downturns.

### *Keeping up with Vehicle Technology*

Advanced vehicle technology has implications for automotive dealerships. Advanced vehicle technologies include infotainment systems, alternative powertrain vehicles, and advanced materials; these present new challenges, opportunities, and roles for automobile dealerships. Dealerships must invest in training for their employees and equipment in order to sell, troubleshoot, and repair vehicles with these new technologies. For automakers, this dealership investment allows the automaker considerable flexibility to continue to develop new products

---

<sup>26</sup> Ibid. Wilson, Amy. (2015).

<sup>27</sup> Frost, Laurence. (2014). "Volvo to Launch Online Car Sales in Marketing Shift." Reuters. December 15, 2014. <<http://www.reuters.com/article/2014/12/15/us-volvo-internet-idUSKBN0JTOD020141215>>.

<sup>28</sup> Ward's. (2014). "Dealers Dig in to Defend Auto-Financing System." Ward's Automotive Yearbook 2014. Ward's Automotive Group, Southfield, Michigan. June 1, 2014.



without having to make investments in new marketing or service efforts to support the new vehicles.

As automakers install ever more complicated infotainment systems and other technologies, the role of dealerships will continue evolving to include more education for new-vehicle buyers. For many brands, customers testing infotainment systems frequently require support for even basic tasks such as entering destinations for navigation services, making a phone call, or finding a radio station.<sup>29</sup>

Other new vehicle technologies, such as alternative powertrains and advanced materials, create new challenges for dealership service departments. Repair technicians may require specialized training and certification to work on vehicles containing new technologies. For instance, workers repairing electric (hybrid, plug-in hybrid, and battery electric) vehicles require additional skills beyond those needed to work on conventional powertrain vehicles. Workers must be familiar with high-voltage electrical systems, lithium-ion batteries, and electric generators.<sup>30</sup> While dealerships and repair shops struggle with a shortage of properly-trained technicians, local community colleges are developing programs to meet these new skills needs.<sup>31</sup>

Dealerships may also need to purchase expensive equipment in order to service vehicles containing new technologies. In early 2014, repair shops preparing for the release of the aluminum body Ford F-150 reported costs of \$70,000 or more per work station to cover the cost of equipment such as rivet guns, welding equipment, hand tools, vacuum cleaners for aluminum dust, and barriers to separate steel and aluminum work areas (see Figure 1.3).<sup>32</sup> Advanced materials also present new opportunities for dealerships – especially for finance and insurance departments – which may be able to sell more specialized policies, such as paintless dent removal policies for vehicles with aluminum body panels.<sup>33</sup>

---

<sup>29</sup> SPD and Gamivation. (2014). "Reboot: Developing a New Automotive Dealer Experience for Connecting Drivers to their In-car Technologies." SPD and Gamivation. October 2014. <<http://rebootwhitepaper.gamivation.com/SBD%20Gamivation%20Dealer%20Whitepaper%20Final.pdf>>.

<sup>30</sup> Hamilton, James (2012). "Electric vehicle careers: On the road to change." Occupational Outlook Quarterly, Office of Occupational Statistics and Employment Projections, Bureau of Labor Statistics, U.S. Department of Labor. Summer 2012. <<http://www.bls.gov/careeroutlook/2012/summer/art02.pdf>>.

<sup>31</sup> CAR. (2011). "Automotive Technology: Greener Jobs, Changing Skills – Educational Needs Report." Center for Automotive Research. May 2011. <<http://www.drivingworkforcechange.org/reports/education.pdf>>.

<sup>32</sup> Wernle, Bradford. (2014). "Large Ford stores say cost of aluminum body shop will surpass \$70,000." Automotive News. March 3, 2014. <<http://www.autonews.com/article/20140303/RETAIL/140229852/large-ford-stores-say-cost-of-aluminum-body-shop-will-surpass-70000>>.

<sup>33</sup> Henry, Jim. (2014). "Aluminum Wave Could Boost Dent-repair Policies." Automotive News. December 23, 2014. <[http://www.autonews.com/article/20141223/FINANCE\\_AND\\_INSURANCE/312239995/aluminum-wave-could-boost-dent-repair-policies](http://www.autonews.com/article/20141223/FINANCE_AND_INSURANCE/312239995/aluminum-wave-could-boost-dent-repair-policies)>.

Figure 1.3: Cost of Recommended Equipment to Repair the Aluminum F-150

**Aluminum repair starter kit**

Equipment Ford recommends dealers and independent shops buy to repair aluminum F-150

- 1** Rubberized curtains to isolate work area: **\$1,678**
- 2** MIG (metal inert gas) welder: **\$7,994**
- 3** Fume extractor: **\$3,329**
- 4** Dust collection system: **\$10,125**
- 5** Aluminum spot weld station: **\$7,950**
- 6** Aluminum rivet gun: **\$7,729**

Source: Ford

PHOTOS BY BRADFORD WERNLE

Source: Wernle, 2014

### Aging Fleet

According to IHS Automotive, the average vehicle on the road in the United States was 11.4 years old at the beginning of 2014.<sup>34</sup> The company has forecast that the average age of vehicles will remain the same through 2015, but will increase to 11.7 years by 2019. Analysts have attributed the rising age of registered vehicles in the United States to economic conditions and the higher quality of modern vehicles.<sup>35</sup> Some analysts have suggested that vehicle scrappage

<sup>34</sup> Culver, Michelle. (2014). "Average Age of Vehicles on the Road Remains Steady at 11.4 years, According to IHS Automotive: U.S. Vehicles in Operation (VIO) Hits Record Levels at More than 252 Million; Scrappage Rate Declines Significantly." IHS Press Release. June 9, 2014. <<http://press.ihs.com/press-release/automotive/average-age-vehicles-road-remains-steady-114-years-according-ihs-automotive>>.

<sup>35</sup> Ibid. Culver, Michelle. (2014).

rates will accelerate in the near future, increasing demand for new vehicles and lowering average vehicle age.<sup>36</sup>

Understanding consumer behavior and vehicle age is important for decision makers in the automotive aftermarket and service industries, because an aging vehicle fleet has implications for parts inventories as well as sales and service activities. During the recession, the rapidly aging fleet created greater demand for products and services to maintain older vehicles. Purchases of suspension, steering, and electrical parts increased as older vehicles became responsible for a greater share of U.S. repair purchases.<sup>37</sup>

Changes in average vehicle age are consequential for automotive dealerships, because dealers make a large portion of profits from their parts and service departments.<sup>38</sup> Much of that work is related to newer vehicles (e.g., warranty and recall work), because older vehicles are more likely to go to independent repair shops for maintenance work.<sup>39</sup> The aging vehicle fleet, in conjunction with lower sales levels during and following the 2008-2009 recession, has resulted in fewer late-model vehicles visiting dealerships for service. In an attempt to draw in customers, many dealerships have emphasized services for older vehicles, such as maintenance, service contracts, tire replacement, dent-and-ding repair, and oil change services.<sup>40</sup> Dealerships face stiff competition in these areas from competing dealers as well as independent repair shops. Going forward, the types of repairs called for by the fleet may change. The average 2002 model year vehicle had 237 problems per 100 vehicles, while the average 2010 model year vehicle saw 126 – a decrease of nearly 47 percent. However, more recent model years have shown an uptick in the number of problems reported, primarily due to customer frustrations with vehicle software.

### *Dealership Mergers and Acquisitions*

In the past few years, mergers and acquisitions of dealerships have picked up as automotive sales recovered following the recession and dealership profits improved. Most of the investment came from existing dealers and groups purchasing smaller dealerships and groups.<sup>41</sup> Recently, however, investors external to automotive retailing have shown interest in purchasing dealerships.

---

<sup>36</sup> CAR. (2014). "Onwards and Upwards? The Sales Forecast Workshop." CAR Management Briefing Seminars Session. August 5, 2014. <[http://www.cargroup.org/assets/files/2014\\_mbs\\_pdfs/2014\\_car\\_mbs\\_brochure\\_v4.pdf](http://www.cargroup.org/assets/files/2014_mbs_pdfs/2014_car_mbs_brochure_v4.pdf)>.

<sup>37</sup> Mitchell, Ellen. (2012). "As Average Vehicle Age Soars, So Does the Aftermarket." Automotive News. April 18, 2012. <<http://www.autonews.com/article/20120418/RETAIL05/120419884/1132>>.

<sup>38</sup> Ibid. NADA. (2014).

<sup>39</sup> Wilson, Amy. (2012). "Surviving the service trough: Fewer car sales during the slump mean less repair revenue now." Automotive News. May 21, 2012. <<http://www.autonews.com/article/20120521/RETAIL07/305219968/1147>>.

<sup>40</sup> Ibid. Wilson, Amy. (2012).

<sup>41</sup> Automotive News. (2015). "New Players Are Changing Rules of Retailing Game." Automotive News. February 2, 2015. <<http://www.autonews.com/article/20150202/RETAIL/302029944/new-players-are-changing-rules-of-retailing-game>>.

In March 2015, Warren Buffett's Berkshire Hathaway purchased the Van Tuyl Group, the nation's fifth-largest dealership group.<sup>42</sup> The Van Tuyl Group was renamed Berkshire Hathaway Automotive. Buffett said that in addition to the 78 dealerships purchased from Van Tuyl, the dealership group is planning to purchase more stores. The deal is estimated at \$4 billion or more.<sup>43</sup> Buffett's entry into the automotive retail market could attract more buyers and accelerate the consolidation of dealerships. Such consolidation can lead to economies-of-scale and reduce costs as administrative operations, such as regulatory compliance, human resources, and financing, are shared across a larger number of facilities.<sup>44</sup>

More recently, other outside investors have indicated interest in entering the market. In January, media sources indicated that George Soros' firm, Soros Fund Management, was looking spend \$1 billion to purchase or partner in a large dealership group.<sup>45</sup> Several other investors, including family funds, private equity funds, and investment banks, are currently looking to invest in dealership groups.

---

<sup>42</sup> Wilson, Amy and Arlena Sawyers. (2014). "Dealership Consolidation Is Coming -- But How Fast and How Much?" *Automotive News*. October 13, 2014. <<http://www.autonews.com/article/20141013/RETAIL/310139950/dealership-consolidation-is-coming-but-how-fast-and-how-much>>.

<sup>43</sup> LaReau, Jamie and Amy Wilson. (2015). "Moguls, Superrich Families and Private-Equity Titans Prowl for Dealerships." *Automotive News*. February 2, 2015. <<http://www.autonews.com/article/20150202/RETAIL07/302029922/moguls-superrich-families-and-private-equity-titans-prowl-for>>.

<sup>44</sup> Ibid. Wilson, Amy and Arlena Sawyers. (2014).

<sup>45</sup> Ibid. LaReau, Jamie and Amy Wilson. (2015).

## *SECTION II - ESTIMATES OF THE ECONOMIC CONTRIBUTION OF NEW-CAR DEALERSHIPS TO THE U.S. ECONOMY*

The tables in this section detail the estimated employment contributions to the economies of each of the 50 states, and the country as a whole, by new-car dealers in the United States. The dealership operations considered in this study do not include those dealerships which sell only used vehicles. Likewise, stand-alone repair shops are not included in this study. For dealerships that sell both new and used vehicles, total employment at these dealerships (that is, the employment resulting from selling or repairing both new and used vehicles) is included in this study.

Employment estimates are broken out by direct employment (people employed directly at dealerships), indirect employment (people employed by companies that provide goods and services to dealerships), and expenditure-induced employment resulting from spending by direct and indirect employees. To reiterate, direct employees are those people who work at dealerships. Indirect and expenditure-induced employment provides jobs for the people who work for companies that supply dealerships or jobs that are created as a result of dealership or supplier employee spending. Indirect and expenditure-induced jobs, as a combination, are considered to be 'downstream' jobs or 'spin-off' jobs.

Employment and income estimates are derived from analyses using a regional economic model, supplied by Regional Economic Models, Inc. (REMI), of Amherst, Massachusetts. The model and methodology used will be discussed in depth in the last section of the study. The employment and compensation data used to perform the research were provided by both automakers and the National Automobile Dealers Association or gathered through publicly available data; the indirect and spin-off effects were generated by the model. The remaining data on the U.S. economy, the automotive industry and U.S. dealerships were collected by CAR from a wide variety of publicly available sources and are listed in the references. Direct employment data include sales, finance, management, service and repair job classifications. All employment numbers cited below are rounded; income and tax receipt numbers are also rounded.

Table 2.1 sums the combined effects from all new-car dealership retail operations. Summing the direct employment from all operations (1,056,000), indirect employment (310,000) and expenditure-induced employment (870,600), more than 2.2 million jobs are supported or directly provided by the industry to the U.S. economy. Comparing total employment to direct employment produces an overall employment multiplier of 2.1.<sup>46</sup> This means that there is slightly more than one additional job in the U.S. economy for every job at an auto dealership. New-car dealerships comprise 1.5 percent of all private sector employment in the United States.

---

<sup>46</sup> The multiplier is determined by dividing the total employment contribution by the number of direct employees:  $(2,236,850 / 1,056,200) = 2.1$ .

*Table 2.1: Total Contribution of all New-Car Dealership Operations to the U.S. Economy*

<b>Economic Impact, 2014</b>	<b>New-Car Dealerships</b>
Employment	
Direct Employment	1,056,000
Indirect	310,000
<b>Total (Direct + Indirect)</b>	<b>1,366,000</b>
Expenditure-induced employment	870,600
<b>Total (Direct + Indirect + Expenditure-induced)</b>	<b>2,236,600</b>
Multiplier	2.1
Compensation (\$billions nominal)	143.8
Less: Social Security contributions	-19.3
Less: personal incomes taxes	-15.9
Equals private disposable personal income (\$billions nominal)	108.6
Contribution as % of total private-sector employment	1.5

*Source: Center for Automotive Research, 2015*

Total compensation for all 2.2 million private sector jobs is \$144 billion. From this amount, nearly \$16 billion is paid for personal income taxes and \$19 billion in other public contributions, such as FICA. Net disposable income for these workers totals nearly \$109 billion.

Information on U.S. new-car dealerships was supplied both by each of the major automakers operating in the United States and the National Automobile Dealers Association.<sup>47</sup>

New-car dealership jobs include a variety of occupations. Direct employees at dealerships include people who work in finance, management, sales, vehicle repair and other vehicle service occupations. Likewise, supplier jobs created by the dealership network include a variety of occupations, because auto dealerships buy parts, other goods and materials and services from many industries.

Table 2.2 offers a more detailed look at the indirect and expenditure-induced employment associated with new-car dealerships. In the indirect employment category, there are 310,000 jobs spread across numerous manufacturing and non-manufacturing industries. Expenditure-induced jobs are those jobs that are supported by the spending of direct and indirect employees. These jobs are also found in a variety of industries.

<sup>47</sup> Automakers contribution employment data to this study included BMW, Chrysler, Ford, General Motors, Honda, Hyundai, Kia, Mazda, Mercedes, Mitsubishi, Nissan, Subaru, Toyota, and Volkswagen.

*Table 2.2: Indirect and Expenditure-induced Employment Contribution of U.S. New-Car Dealerships, 2014*

<b>Economic Impact</b>	<b>Indirect</b>	<b>Expenditure-induced</b>
<b>Manufacturing</b>	16,200	58,900
Durable Goods Manufacturing	9,500	36,300
Non-durable Goods Manufacturing	6,700	22,600
<b>Non-Manufacturing</b>	293,800	811,700
Administration and Services	75,700	53,300
Finance and Insurance	46,900	90,700
Management of Companies	14,700	11,300
Professional and Technical Services	39,400	31,600
Retail Trade	12,900	160,800
Transportation and Warehousing	11,700	23,700
Wholesale Trade	19,800	25,200
Other Services	59,000	268,700
Other Non-Manufacturing	13,700	146,400
<b>Total</b>	310,000	870,600

*Source: Center for Automotive Research, 2015*

The bulk of employment in the indirect category is in the non-manufacturing sector, totaling nearly 300,000 jobs. Industries of note in the non-manufacturing category are professional and technical services employing 39,400, administration and services, 75,700 jobs, wholesale trade, 19,800 jobs, and finance and insurance, 46,900 jobs.

Table 2.2 also shows there are 870,600 total expenditure-induced jobs associated with auto dealerships. These jobs are supported or created as a result of spending by the people employed in the direct and indirect categories. As could be expected, a large portion of the expenditure-induced jobs are also in the non-manufacturing sector of retail trade, which employs 160,800 people. When employees use their paychecks to purchase goods (for example: electronics equipment, clothing, food, and even new automobiles), employment is created to supply their demands.

The direct, indirect, and expenditure-induced jobs associated with U.S. new-car dealerships account for 1.5% of employment in the entire U.S. economy and nearly 1% of total U.S. compensation.

### *SECTION III - ESTIMATES OF THE ECONOMIC CONTRIBUTION OF NEW-CAR DEALERSHIPS TO INDIVIDUAL STATE ECONOMIES*

New-car dealerships are found in nearly every community across the country—in rural and urban areas alike. The omnipresence of auto dealerships in communities across the United States allow for a deep connection between their business operations, civic causes and charitable giving. “If there were a competitive event to measure the philanthropy of businesses in America, the local car dealer would always take the top prize. If you go to a Little League or youth hockey game or any other locally organized sporting event, the sponsors always seem to be local auto dealers.”<sup>48</sup>

New-car dealership employment contribution in one state is not attributable only to the dealerships in that state, but is also supported by supplier (indirect) activities in nearby states. As a result, employment multipliers are not calculated for individual states. Employment multipliers apply to the national economy and are not applicable to, nor can be derived from, any one state’s economy.

---

<sup>48</sup> Ibid. Crain. (2009).



*Table 3.1: All Jobs for New-Car Dealers by State (Direct, Indirect and Expenditure-induced)*

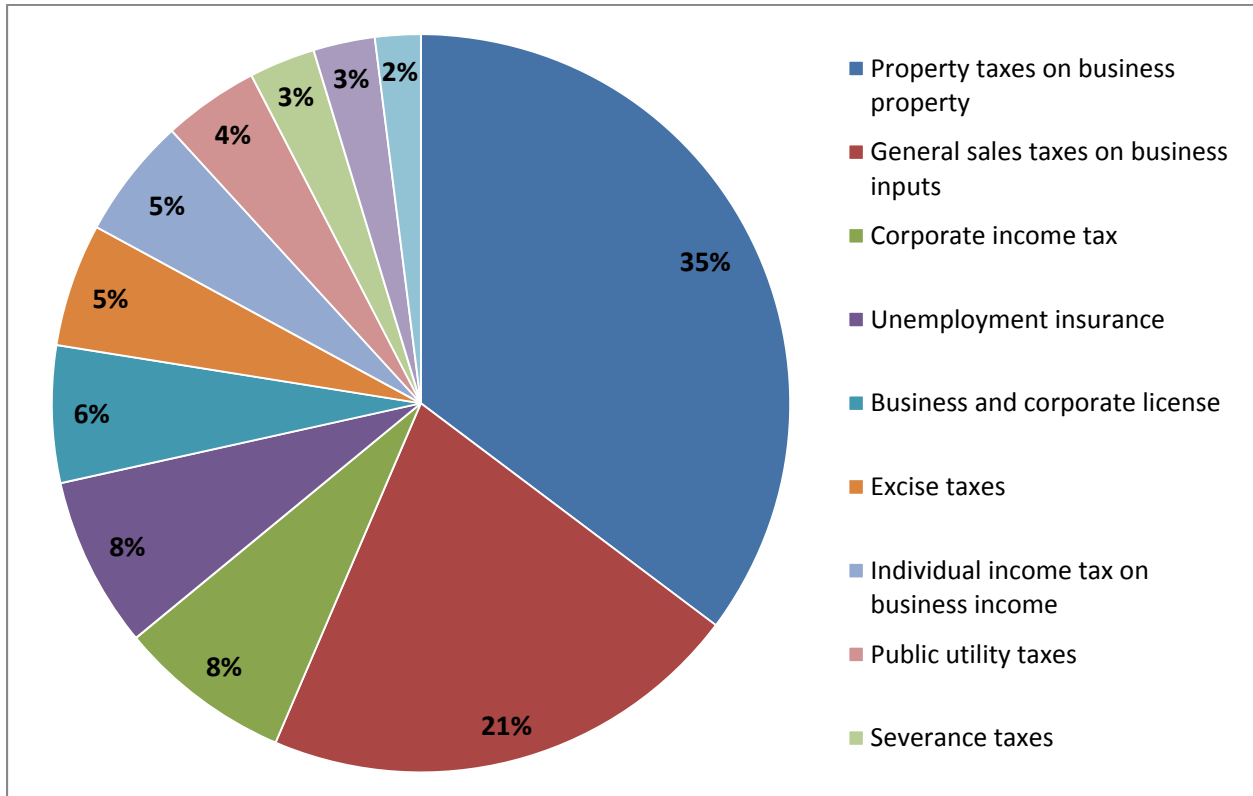
<b>State</b>	<b>Direct</b>	<b>Indirect</b>	<b>Expenditure-Induced</b>	<b>TOTAL</b>
Alabama	14,271	3,402	12,865	30,537
Alaska	2,192	534	2,155	4,881
Arizona	22,608	6,916	17,158	46,683
Arkansas	8,783	1,904	8,142	18,829
California	113,596	43,347	85,029	241,972
Colorado	17,741	6,169	15,938	39,848
Connecticut	13,588	3,298	10,620	27,506
Delaware	4,132	642	1,094	5,868
District of Columbia	200	44	162	407
Florida	73,997	23,602	56,486	154,085
Georgia	31,922	9,704	28,561	70,187
Hawaii	4,215	755	1,932	6,902
Idaho	5,427	1,166	4,064	10,657
Illinois	43,587	14,945	37,422	95,954
Indiana	21,154	5,471	19,651	46,277
Iowa	11,922	2,402	10,089	24,413
Kansas	9,922	2,183	8,593	20,698
Kentucky	12,402	2,761	12,037	27,200
Louisiana	15,688	4,141	14,329	34,157
Maine	5,691	1,352	5,321	12,364
Maryland	22,060	4,626	17,181	43,867
Massachusetts	22,846	6,922	17,960	47,728
Michigan	35,835	10,620	28,114	74,569
Minnesota	18,919	6,040	15,162	40,121
Mississippi	7,083	1,414	7,221	15,719
Missouri	21,488	5,519	18,260	45,267
Montana	4,000	976	3,948	8,924
Nebraska	6,996	1,631	6,031	14,658
Nevada	8,593	1,228	1,402	11,223
New Hampshire	7,019	1,314	3,678	12,010
New Jersey	30,555	7,480	26,619	64,654
New Mexico	7,016	1,677	6,640	15,333
New York	48,437	18,510	45,988	112,934
North Carolina	32,092	8,309	26,397	66,798
North Dakota	3,816	1,340	7,099	12,256
Ohio	41,049	11,591	33,069	85,710
Oklahoma	16,194	3,473	11,612	31,279
Oregon	12,232	3,651	9,590	25,473
Pennsylvania	47,178	11,370	37,732	96,280
Rhode Island	3,002	593	1,831	5,426
South Carolina	14,633	3,253	13,774	31,660
South Dakota	3,857	858	3,126	7,841
Tennessee	17,433	4,827	18,296	40,555
Texas	97,650	34,955	80,612	213,217
Utah	8,749	3,216	8,930	20,895
Vermont	3,080	1,085	5,752	9,917
Virginia	28,999	6,310	22,838	58,147
Washington	21,064	5,644	14,563	41,271
West Virginia	6,145	827	4,951	11,923
Wisconsin	22,917	5,454	17,779	46,150
Wyoming	2,226	614	2,773	5,613
<b>TOTAL U.S.</b>	<b>1,056,201</b>	<b>310,065</b>	<b>870,580</b>	<b>2,236,846</b>

Source: Center for Automotive Research, 2015

## SECTION IV - ESTIMATES OF THE TAX CONTRIBUTION OF NEW-CAR DEALERSHIPS

The business activities of dealerships contribute significant tax revenues to federal, state and local governments. Figure 4.1 illustrates the many types of taxes either collected by dealerships or generated as a result of dealership business activities.

Figure 4.1: State Tax Revenues from Businesses by Type of Tax, 2012



Source: Phillips et al. 2013

The graph shown in Figure 4.1 illustrates the many types of taxes either collected by dealerships or generated as a result of dealership business activities.

There are 11 main types of tax revenues states collect from businesses.<sup>49</sup> This section of the report provides estimates for two of the categories – employee federal, state and local income taxes and corporate income tax and license fees – paid by dealerships, their employees and employees with indirect or expenditure-induced employment.

To calculate an estimate for personal income taxes paid by employees of automobile dealerships, CAR researchers relied on REMI, an economic input-output model. The analysis used a dynamic, inter-industry model developed by Regional Economic Models, Inc. (REMI) for industry- and region-specific impact analysis. Table 4.1 (below) shows the estimated amount of income taxes by state generated as a result of direct, indirect, and expenditure-induced

<sup>49</sup> Phillips, Andrew, Robert Cline, Caroline Sallee, Michelle Klassen, and Daniel Sufranski. (2013). "Total State and Local Business Taxes: State-by-State Estimates for Fiscal Year 2012." Ernst & Young LLP. Prepared for the Council on State Taxation. July 2013. <<http://www.cost.org/workarea/downloadasset.aspx?id=84767>>.

employment in new-car dealerships. An estimated total of \$19.3 billion in federal, state and local income taxes was paid by these employees in 2014.

*Table 4.1: Estimated Income Taxes Paid by Direct New-Car Dealership Employees and Employees with Indirect and Expenditure-induced Jobs (\$ millions) in 2014*

State	Federal	State	Total
Alabama	\$184	\$8	\$192
Alaska	\$3	\$0	\$3
Arizona	\$319	\$13	\$332
Arkansas	\$111	\$6	\$117
California	\$2,465	\$212	\$2,677
Colorado	\$335	\$20	\$355
Connecticut	\$362	\$66	\$427
Delaware	\$353	\$22	\$375
Florida	\$921	\$0	\$921
Georgia	\$450	\$31	\$480
Hawaii	\$10	\$0	\$10
Idaho	\$18	\$0	\$18
Illinois	\$822	\$66	\$888
Indiana	\$304	\$18	\$322
Iowa	\$150	\$6	\$156
Kansas	\$140	\$9	\$148
Kentucky	\$170	\$12	\$181
Louisiana	\$199	\$12	\$211
Maine	\$20	\$1	\$21
Maryland	\$441	\$68	\$509
Massachusetts	\$547	\$65	\$612
Michigan	\$541	\$29	\$570
Minnesota	\$346	\$28	\$374
Mississippi	\$93	\$4	\$97
Missouri	\$298	\$16	\$314
Montana	\$17	\$0	\$17
Nebraska	\$93	\$3	\$97
Nevada	\$199	\$0	\$199
New Hampshire	\$73	\$0	\$73
New Jersey	\$805	\$89	\$894
New Mexico	\$22	\$0	\$23
New York	\$1,613	\$224	\$1,838
North Carolina	\$436	\$30	\$466
North Dakota	\$30	\$0	\$31
Ohio	\$629	\$57	\$687
Oklahoma	\$198	\$9	\$208
Oregon	\$198	\$10	\$208
Pennsylvania	\$808	\$64	\$872
Rhode Island	\$18	\$2	\$20
South Carolina	\$178	\$9	\$187
South Dakota	\$24	\$0	\$24
Tennessee	\$257	\$0	\$257
Texas	\$1,391	\$0	\$1,391
Utah	\$121	\$4	\$124
Vermont	\$7	\$0	\$7
Virginia	\$541	\$51	\$593
Washington	\$323	\$0	\$323
West Virginia	\$81	\$5	\$86
Wisconsin	\$337	\$28	\$364
Wyoming	\$5	\$0	\$5
<b>Total</b>	<b>\$18,004</b>	<b>\$1,299</b>	<b>\$19,303</b>

Source: Center for Automotive Research, 2015

As shown in Table 4.2, corporate income taxes paid to states by new-car dealerships are estimated to be nearly \$1 billion. To estimate corporate income taxes paid, the total auto dealer revenues for each state were calculated as a percent of each state's total gross state product (GSP). The total state revenues collected from corporate income taxes and corporate license fees were next multiplied by the percent of state-level GDP by auto dealerships relative to the GSP for each state.

*Table 4.2: Corporate Income Taxes and License Fees Paid by New-Car Dealerships in 2013*

<b>State</b>	<b>Corporate Income Taxes and License Fees</b>
Alabama	\$14,535,950
Alaska	\$2,192,304
Arizona	\$27,015,354
Arkansas	\$8,826,795
California	\$169,168,428
Colorado	\$13,828,514
Connecticut	\$15,627,150
Delaware	\$4,909,410
Florida	\$62,359,770
Georgia	\$29,234,040
Hawaii	\$2,753,312
Idaho	\$5,261,696
Illinois	\$59,264,040
Indiana	\$23,073,600
Iowa	\$17,694,747
Kansas	\$9,059,924
Kentucky	\$9,132,617
Louisiana	\$15,750,270
Maine	\$6,041,742
Maryland	\$25,379,145
Massachusetts	\$29,425,440
Michigan	\$19,934,640
Minnesota	\$22,038,632
Mississippi	\$5,927,401
Missouri	\$19,063,000
Montana	\$4,328,775
Nebraska	\$8,638,716
Nevada	\$0
New Hampshire	\$8,826,400
New Jersey	\$47,876,400
New Mexico	\$10,473,392
New York	\$65,514,966
North Carolina	\$32,612,712
North Dakota	\$3,507,269
Ohio	\$0
Oklahoma	\$24,649,680
Oregon	\$11,316,888
Pennsylvania	\$62,498,839
Rhode Island	\$4,049,100
South Carolina	\$10,281,700
South Dakota	\$0
Tennessee	\$20,271,680
Texas	\$0
Utah	\$7,123,600
Vermont	\$3,312,881
Virginia	\$23,803,560
Washington	\$0
West Virginia	\$6,030,640
Wisconsin	\$22,371,536
Wyoming	\$0
<b>Total</b>	<b>\$994,986,653</b>

Source: Center for Automotive Research, 2015

## *SECTION V - METHODOLOGY OVERVIEW*

The estimates in this report of the indirect and expenditure-induced employment associated with direct employment at new-car dealerships are produced using a dynamic, inter-industry model developed by Regional Economic Models, Inc. (REMI). The REMI model is designed for industry- and region-specific contribution analysis. The major interactions between primary data input and model structure are described below.

### *The Macroeconomic Model*

To estimate the total employment and compensation provided by new-car dealership operations, the research team at CAR used a 51-region, 169 industry sector model developed by REMI to capture effects in all 50 U.S. state economies, the District of Columbia and the U.S. national economy. The model provides a baseline forecast of regional and national economies. Various economic scenarios are then input into the model and simulations based on the new data are calculated by the model. Changes from the baseline are measured using results from these simulations. Underlying demographic and industry-specific information for every region are contained in the baseline forecast.

Trade flows, migration patterns and commuter flows connect each state economy, allowing for dynamic multi-regional analysis. Simulation results can be interpreted as the new economic equilibrium (given a change to the baseline) and are the product of multiple structural equation iterations across the state economies. A simulation begins with the user inputting a direct change to the baseline economy. Once this change is entered into the model, new vectors of transactions between businesses are calculated along with consumer purchases of goods and services. These vectors may change as estimated household income increases or decreases under the new scenario being modeled. The model reports the economic changes from the baseline in a number of variables, with the most easily understood being employment.

The dynamic multi-regional character of the REMI model is a defining element not found in other commercial contribution analysis models and enables CAR to produce the results contained in this study. In essence, the model can simulate economic contributions that may occur in any one state resulting from changing the levels of employment in any or all of the other states.

### *Methods & Assumptions*

The general analytical method is to run simulations for new-car dealership operations by subtracting dealership employment from the baseline regional economies at the state level. This counter-factual technique allows for the separation of economic activity from the aggregate economy, and permits the capture of economic contributions from continued

employment in the sectors of interest for any given time period. In general, the difference between the baseline forecast and the simulation represents the economic contribution of the dealers. All simulation results are relevant to the economic conditions of calendar year 2014.

## BIBLIOGRAPHY

### References

- Auto Dealer Directory. (2014). "Car Dealers in America." Auto Dealer Directory. Accessed December 16, 2014. <<http://www.autodealerdirectory.us/>>.
- Automotive News. (2015). "New Players Are Changing Rules of Retailing Game." Automotive News. February 2, 2015. <<http://www.autonews.com/article/20150202/RETAIL/302029944/new-players-are-changing-rules-of-retailing-game>>.
- Automotive News. (2015). "U.S. Total Vehicle Sales by Make, (Dec. & YTD)." Automotive News Data Center. January 5, 2015. <<http://www.autonews.com/section/datacenter>>.
- Barkholz, David. (2014). "Software Systems Cut Wait Times -- If They Talk." Automotive News. June 16, 2014. <<http://www.autonews.com/article/20140616/OEM06/306169982/software-systems-cut-wait-times-if-they-talk>>.
- Barkholz, David. (2014). "The Elusive 60-minute Transaction." Automotive News. June 16, 2014. <<http://www.autonews.com/article/20140616/RETAIL07/306169981/the-elusive-60-minute-transaction>>.
- BEA. (2014). Bureau of Economic Analysis, U.S. Department of Commerce. <<http://bea.gov/>>.
- BLS. (2014). Bureau of Labor Statistics, U.S. Department of Labor. <<http://www.bls.gov/>>.
- BLS. (2014). "Employment, Hours, and Earnings from the Current Employment Statistics survey (National)." Bureau of Labor Statistics. <<http://www.bls.gov/ces/data.htm>>.
- Bunkley, Nick. (2015). "Ford Tests 'Beacons' to Beam Info to Shoppers." Automotive News. January 19, 2015. <<http://www.autonews.com/article/20150119/RETAIL/301199942/ford-tests-beacons-to-beam-info-to-shoppers>>.
- CAR. (2011). "Automotive Technology: Greener Jobs, Changing Skills – Educational Needs Report." Center for Automotive Research. May 2011. <<http://www.drivingworkforcechange.org/reports/education.pdf>>.



- CAR. (2014). "Onwards and Upwards? The Sales Forecast Workshop." CAR Management Briefing Seminars Session. August 5, 2014.  
<[http://www.cargroup.org/assets/files/2014\\_mbs\\_pdfs/2014\\_car\\_mbs\\_brochure\\_v4.pdf](http://www.cargroup.org/assets/files/2014_mbs_pdfs/2014_car_mbs_brochure_v4.pdf)>.
- Census. (2013). "State Government Tax Collections: 2013." United States Census Bureau, U.S. Department of Commerce. March 2013.  
<[http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=STC\\_2013\\_STC003&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=STC_2013_STC003&prodType=table)>.
- Census. (2014). "County Business Patterns." United States Census Bureau, U.S. Department of Commerce. <<http://www.census.gov>>.
- Census. (2015). "Monthly Retail Trade and Food Services - NAICS Codes, Titles, and Descriptions." U.S. Census Bureau. Accessed January 15, 2015.  
<<http://www.census.gov/retail/mrts/www/benchmark/2014/html/naicsdef.html>>.
- Consumer Reports. (2014). "Independent Shops Outshine Dealership Repair Centers in Consumer Reports Car Repair Satisfaction Survey." Consumer Reports. January 22, 2015.  
<<http://pressroom.consumerreports.org/pressroom/2015/01/over-three-quarters-of-customers-that-haggled-were-successful-in-negotiating-a-discount-yonkers-ny-consumer-reports-late.html>>.
- Crain, Keith. (2009). "Closing Dealerships? Be Careful". Automotive News. September 7, 2009. <<http://www.autonews.com/article/20090907/RETAIL/309079865/closing-dealerships?-be-careful>>.
- Culver, Michelle. (2014). "Average Age of Vehicles on the Road Remains Steady at 11.4 years, According to IHS Automotive: U.S. Vehicles in Operation (VIO) Hits Record Levels at More than 252 Million; Scrappage Rate Declines Significantly." IHS Press Release. June 9, 2014. <<http://press.ihs.com/press-release/automotive/average-age-vehicles-road-remains-steady-114-years-according-ihs-automotive>>.
- FRED. (2015). "Federal Reserve Economic Data." Economic Research, Federal Reserve Bank of St. Louis. Accessed January 27, 2015. <<http://research.stlouisfed.org/>>.
- Frost, Laurence. (2014). "Volvo to Launch Online Car Sales in Marketing Shift." Reuters. December 15, 2014. <<http://www.reuters.com/article/2014/12/15/us-volvo-internet-idUSKBNOJT0D020141215>>.

- Hamilton, James (2012). "Electric vehicle careers: On the road to change." Occupational Outlook Quarterly, Office of Occupational Statistics and Employment Projections, Bureau of Labor Statistics, U.S. Department of Labor. Summer 2012.  
<<http://www.bls.gov/careeroutlook/2012/summer/art02.pdf>>.
- Henry, Jim. (2014). "Aluminum Wave Could Boost Dent-repair Policies." Automotive News. December 23, 2014.  
<[http://www.autonews.com/article/20141223/FINANCE\\_AND\\_INSURANCE/312239995/aluminum-wave-could-boost-dent-repair-policies](http://www.autonews.com/article/20141223/FINANCE_AND_INSURANCE/312239995/aluminum-wave-could-boost-dent-repair-policies)>.
- Hill, Kim, Debra Maranger Menk, and Adam Cooper. (2010). "Contribution of the Automotive Industry to the Economies of all Fifty State and the United States." Center for Automotive Research. Prepared for the Alliance of Automobile Manufacturers, the Association of International Automobile Manufacturers, the Motor and Equipment Manufacturers Association, the National Automobile Dealers Association, and the American International Automobile Dealers Association. April 2010.  
<<http://www.cargroup.org/?module=Publications&event=View&pubID=16>>.
- Hill, Kim, Debra Maranger Menk, and Joshua Cregger. (2015). "Assessment of Tax Revenue Generated by the Automotive Sector for the Year 2013." Center for Automotive Research. January 22, 2015. <<http://www.cargroup.org>>.
- Hill, Kim, Debra Maranger Menk, Joshua Cregger and Michael Schultz. (2015) "Contribution of the Automotive Industry to the Economies of All Fifty States and the United States." Center for Automotive Research. January 22, 2015.  
<<http://www.cargroup.org/?module=Publications&event=View&pubID=113>>.
- Keel, Keith G. (1998). "Auto Retailing: Changing Trends in Jobs and Business." Monthly Labor Review. October 1998. Pages 19-22. <<http://www.bls.gov/mlr/1998/10/rpt1full.pdf>>.
- LaReau, Jamie. (2015). "Dealership of the Future Adds Tech, Comfort and Cuts Time." Automotive News. January 19, 2015.  
<<http://www.autonews.com/article/20150119/RETAIL06/301199993/dealership-of-the-future-adds-tech-comfort-and-cuts-time>>.
- LaReau, Jamie and Amy Wilson. (2015). "Moguls, Superrich Families and Private-Equity Titans Prowl for Dealerships." Automotive News. February 2, 2015.  
<<http://www.autonews.com/article/20150202/RETAIL07/302029922/moguls-superrich-families-and-private-equity-titans-prowl-for>>.

- Mitchell, Ellen. (2012). "As Average Vehicle Age Soars, So Does the Aftermarket." *Automotive News*. April 18, 2012.  
<<http://www.autonews.com/article/20120418/RETAIL05/120419884/1132>>.
- NADA. (2006). "NADA Data 2006: Economic Impact of America's New-Car and New-Truck Dealers." NADA Data. National Automobile Dealers Association. May 17, 2006.  
<[https://www.nada.org/NR/rdonlyres/538D2699-BF00-4C73-A162-7A4FBBAC62E0/0/NADA\\_Data\\_2006pdf.pdf](https://www.nada.org/NR/rdonlyres/538D2699-BF00-4C73-A162-7A4FBBAC62E0/0/NADA_Data_2006pdf.pdf)>.
- NADA. (2013). "NADA Data 2013: State-of-the-Industry Report." NADA Data. National Automobile Dealers Association. July 1, 2013.  
<[http://www.nada.org/NR/rdonlyres/1B512AC7-DCFC-472C-A854-6F5527931A2F/0/2013\\_NADA\\_Data\\_102113.pdf](http://www.nada.org/NR/rdonlyres/1B512AC7-DCFC-472C-A854-6F5527931A2F/0/2013_NADA_Data_102113.pdf)>.
- NADA. (2014). "NADA Data 2014: Annual Financial Profile of America's Franchised New-Car Dealerships." NADA Data. National Automobile Dealers Association. May 28, 2014.  
<[http://www.nada.org/NR/rdonlyres/DF6547D8-C037-4D2E-BD77-A730EBC830EB/0/NADA\\_Data\\_2014\\_05282014.pdf](http://www.nada.org/NR/rdonlyres/DF6547D8-C037-4D2E-BD77-A730EBC830EB/0/NADA_Data_2014_05282014.pdf)>.
- Rubenstein, James M. (2001). "Making and Selling Cars: Innovation and Change in the U.S. Automotive Industry." Johns Hopkins University Press. Pages 265-274.
- Sloan, Alfred P. (1963). "My Years with General Motors." Bantam Doubleday Dell Publishing Group, Inc. Pages 279-301.
- SPD and Gamivation. (2014). "Reboot: Developing a New Automotive Dealer Experience for Connecting Drivers to their In-car Technologies." SPD and Gamivation. October 2014.  
<<http://rebootwhitepaper.gamivation.com/SBD%20Gamivation%20Dealer%20Whitepaper%20Final.pdf>>.
- Standish, Frederick. (1989). "Rise of the Megadealer Threatens Tire-Kicking Salesman." Associated Press. January 8, 1989. <<http://www.apnewsarchive.com/1989/Rise-of-the-Megadealer-Threatens-Tire-Kicking-Salesman/id-e28dbde097cea7ddfefd57c7ed6163f4>>.
- Urban Science. (2014). "U.S. Auto Retail Network To Achieve Record Average Sales Per Store For Third Straight Year." Urban Science. August 2014.  
<<https://www.urbanscience.com/library/in-the-news/314-us-auto-retail-network-to-achieve-record-average-sales-per-store.html>>.
- Ward's. (2014). "Dealers Dig in to Defend Auto-Financing System." Ward's Automotive Yearbook 2014. Ward's Automotive Group, Southfield, Michigan. June 1, 2014.

Ward's. (2014). "U.S. Sales of Cars and Trucks." Ward's Motor Vehicle Facts & Figures 2014. Ward's Automotive Group, Southfield, Michigan. July 18, 2014.

Wernle, Bradford. (2014). "Large Ford stores say cost of aluminum body shop will surpass \$70,000." Automotive News. March 3, 2014.  
<<http://www.autonews.com/article/20140303/RETAIL/140229852/large-ford-stores-say-cost-of-aluminum-body-shop-will-surpass-70000>>.

Wilson, Amy. (2012). "Surviving the service trough: Fewer car sales during the slump mean less repair revenue now." Automotive News. May 21, 2012.  
<<http://www.autonews.com/article/20120521/RETAIL07/305219968/1147>>.

Wilson, Amy. (2014). "Sonic 'Delighted' with Rollout of New Retail Plan: Exec Sees Faster Deals, Higher Share." Automotive News. July 28, 2014.  
<<http://www.autonews.com/article/20140728/RETAIL/307289968/sonic-delighted-with-rollout-of-new-retail-plan>>.

Wilson, Amy. (2015). "Pressures on Franchise System Put Retailers in a Bunker Mentality." Automotive News. January 19, 2015.  
<<http://www.autonews.com/article/20150119/RETAIL06/301199988/pressures-on-franchise-system-put-retailers-in-a-bunker-mentality>>.

Wilson, Amy and Arlena Sawyers. (2014). "Dealership Consolidation Is Coming -- But How Fast and How Much?" Automotive News. October 13, 2014.  
<<http://www.autonews.com/article/20141013/RETAIL/310139950/dealership-consolidation-is-coming-but-how-fast-and-how-much>>.

### *Selected CAR Publications*

Hill, Kim, Debra Maranger Menk, and Joshua Cregger. (2012). "Assessment of Tax Revenue Generated by the Automotive Sector." Center for Automotive Research. Prepared for the Alliance of Automobile Manufacturers. April 2012.  
<<http://www.cargroup.org/?module=Publications&event=View&pubID=38>>.

McAlinden, Sean P., Kim Hill, David Cole, and Debra Maranger Menk. (2009). "Contribution of Honda to the Economies of Seven States and the United States." Center for Automotive Research. Prepared for American Honda Motor Co., Inc. January 2009.

McAlinden, Sean P., Kristen Dziczek, and Debra Maranger Menk. (2008). "CAR Research Memorandum: The Impact on the U.S. Economy of a Major Contraction of the Detroit Three Automakers." Center for Automotive Research. November 4, 2008.

- Hill, Kim and Debra Maranger Menk. (2008). "Contribution of a Vehicle Infrastructure System to the Economy of Michigan: Economic and Industrial Impacts Update and Benefit-Cost Analysis." Center for Automotive Research. Prepared for Michigan Department of Transportation. June 2008.
- McAlinden, Sean P. and Debra Maranger Menk. (2008). "Country of Origin: Is this Vehicle Domestic or Import? The U.S. Domestic Content Measurement Programs, 2008." Center for Automotive Research. Prepared for Toyota Motor North America, Inc. April 2008.
- Hill, Kim. (2007). "How Automakers Plan Their Products: A Primer for Policymakers on Automotive Industry Business Planning." Center for Automotive Research. Prepared for the Environmental Defense Fund. July 2007.
- Hill, Kim and Debra Maranger Menk. (2007). "Contribution of Toyota Motor North America to the Economies of Sixteen States and the United States, 2006." Center for Automotive Research. Prepared for Toyota Motor North America. October, 2007.
- Hill, Kim and Debra Maranger Menk. (2007). "Contribution of the Motor Vehicle Supplier Sector to the Economies of the United States and Its 50 States." Center for Automotive Research. Prepared for the Motor and Equipment Manufacturers Association. January 2007.
- Hill, Kim. (2007). "Evaluation of Economic Impacts of the State of Michigan's Vehicle Infrastructure Integration Program." Center for Automotive Research. Prepared for Michigan Department of Transportation. September 2007.
- Hill, Kim. (2007). "Contribution of Toyota Motor North America to the Economies of Sixteen States and the United States in 2006." Center for Automotive Research. Prepared for Toyota Motor North America, Inc. October 2007.
- McAlinden, Sean P., et al. (2003). "Economic Contribution of the Automotive Industry to the U.S. Economy – An Update." Center for Automotive Research. Prepared for the Alliance of Automobile Manufacturers, Fall 2003.
- Hill, Kim. (2002). "Michigan Automotive Research & Development Directory, 1st Edition." Center for Automotive Research. Prepared for the Michigan Economic Development Corporation. October 2002.

CAR. (2001). "Contribution of the Automotive Industry to the U.S. Economy in 1998: The Nation and Its Fifty States." Institute of Labor and Industrial Relations and the Office for the Study of Automotive Transportation, University of Michigan and the Center for Automotive Research. Prepared for the Alliance of Automobile Manufacturers, Inc. and the Association of International Automobile Manufacturers, Inc. Winter 2001.