



New Insights on Retail E-Commerce

Executive Summary

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The U.S. Census Bureau has been collecting data on retail sales since the 1950s and data on e-commerce retail sales since 1998. As the Internet has become ubiquitous, many retailers have created websites and even entire divisions devoted to fulfilling online orders. Many consumers have turned to e-commerce as a matter of convenience or to increase the variety of goods available to them. Whatever the reason, retail e-commerce sales have skyrocketed and the Internet will undoubtedly continue to influence how consumers shop, underscoring the need for good data to track this increasingly important economic activity.

In June 2017, the Census Bureau released a new supplemental data table on retail e-commerce by type of retailer. The Census Bureau developed these estimates by re-categorizing e-commerce sales data from its existing “electronic shopping” sales data according to the primary business type of the retailer, such as clothing stores, food stores, or electronics stores. This report examines how the new estimates enhance our understanding of where consumers are shopping online and also provides an overview of trends in retail and e-commerce sales. Findings from this report include:

- E-commerce sales accounted for 7.2 percent of all retail sales in 2015, up dramatically from 0.2 percent in 1998.
- E-commerce sales have been growing nine times faster than traditional in-store sales since 1998.
- In 2015, 87 percent of total retail e-commerce sales, or \$294.8 billion, were attributed to electronic shopping and mail order houses, which includes both Internet-only businesses and traditional stores’ online divisions. The new data released by Census shows that nonstore retailers, or businesses with little to no physical store establishments, accounted for 65 percent, or \$192.1 billion, of these sales, while the online and catalog divisions of traditional retailers accounted for the remaining \$102.7 billion.



- When e-commerce sales from electronic shopping and mail order houses are attributed to the primary business activity of their brick-and-mortar stores, e-commerce sales accounted for 18 percent of total sales from electronics and appliance stores, 10 percent from miscellaneous store retailers, and 10 percent from clothing and clothing accessories stores.
- Census data are also available for e-commerce sales by type of product, and these data show that consumers purchase a wide range of products online. In 2015, “other merchandise,” including collectibles, souvenirs, auto parts and accessories, hardware, lawn and garden equipment and supplies, and jewelry, accounted for the largest share of e-commerce sales from online businesses at \$52.9 billion, or 18 percent of all retail e-commerce from these types of businesses. Clothing and clothing accessories accounted for another 18 percent at \$52.1 billion. Online consumers also purchased \$28.9 billion of furniture and home furnishings (10 percent of the total) and \$26.1 billion of electronics and appliances (9 percent).

Introduction

The U.S. Census Bureau has been collecting data on retail sales since the 1950s and data on e-commerce retail sales since 1998. As the Internet has become ubiquitous, many retailers have created websites and even entire divisions devoted to fulfilling online orders. Consumers have turned to e-commerce as a matter of convenience or to increase the variety of goods available to them. Whatever the reason, retail e-commerce growth is skyrocketing and the Internet will undoubtedly continue to impact how consumers shop. The growing importance of online shopping drives the need for good data on this economic activity.

In June 2017, the Census Bureau released new data that provides more detail on the types of retailers that consumers are frequenting online. The Census Bureau developed the new estimates by re-categorizing e-commerce sales from its “electronic shopping” category according to the primary business type of the retailer, such as clothing stores, food stores, or electronics stores. By presenting the data in this new way, retailers, policymakers, and the public can better identify the types of stores where consumers are spending their retail dollars online. This report looks at trends in retail and e-commerce sales and looks at how the new estimates enhance our understanding of online shopping.

Overview of retail sales and retail e-commerce data

The retail sector includes businesses classified in sectors 44 and 45 of the North American Industrial Classification System (NAICS)¹ (See Table 1). The Census Bureau collects sales data on this sector using three different surveys: the Advance Monthly Retail Trade Survey (MARTS); the Monthly Retail Trade Survey (MRTS); and the Annual Retail Trade Survey (ARTS)² and publishes this data by type of business.³ To be included in the surveys, companies must have at least one establishment and sell merchandise to final consumers.⁴

The Census Bureau defines “e-commerce” as the sale of goods and services where the buyer places an order or the price and terms of the sale are negotiated over the Internet, a mobile device (M-commerce), extranet, Electronic Data Interchange, electronic mail, or another comparable online system. Payment may or may not be made online.⁵ E-commerce is not a type of business classified by

¹ For more information on NAICS 44-45, see the Census Bureau Website at: [https://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart_code=44&search=2017 NAICS Search](https://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart_code=44&search=2017%20NAICS%20Search).

² For more information on these surveys, see the Census Bureau Website at: <https://www.census.gov/retail/index.html>. Every five years, the Census Bureau conducts an Economic Census of Retail Trade which is used to benchmark the annual data. For current survey forms, see the Census Bureau Website at: https://www.census.gov/retail/mrts/get_forms.html.

³ Data on retail sales are available down to the 6-digit NAICS code level for some industries and at a less detailed level for others.

⁴ https://www.census.gov/retail/marts/about_the_surveys.html

⁵ General definition that covers e-commerce collection at the Census Bureau, available at: <https://www.census.gov/retail/definitions.html>. The Census Bureau also publishes data on e-commerce in manufacturing, merchant wholesale trade, and selected service industries in their annual e-stats report. The latest report with 2015 data is available at: <https://www.census.gov/content/dam/Census/library/publications/2017/econ/e15-estats.pdf>.

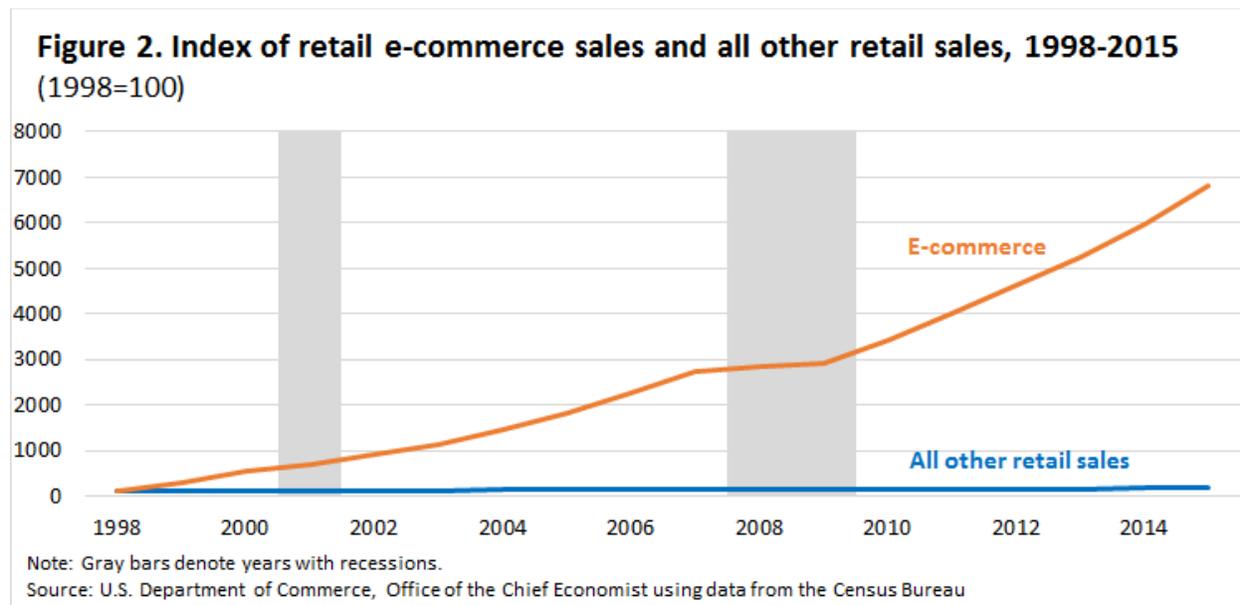
NAICS, but rather a means by which customers can purchase goods. Conceivably, with perhaps the exception of gasoline stations, all of the types of businesses listed in Table 1 could sell goods online.

| Table 1. Industries included in the retail trade sector | |
|--|--|
| NAICS Code | Sector |
| 44-45 | Retail trade |
| | Industries |
| 441 | Motor vehicle and parts dealers |
| 442 | Furniture and home furnishing stores |
| 443 | Electronics and appliance stores |
| 444 | Building material and garden equipment supplies dealers |
| 445 | Food and beverage stores |
| 446 | Health and personal care stores |
| 447 | Gasoline stations |
| 448 | Clothing and clothing accessories stores |
| 451 | Sporting goods, hobby, musical instrument, and book stores |
| 452 | General merchandise stores |
| 453 | Miscellaneous store retailers |
| 454 | Nonstore retailers |
| 4541 | Electronic shopping and mail order houses |
| Source: Census Bureau | |

In 1998, the Census Bureau began collecting and publishing quarterly data on retail e-commerce sales.⁶ The survey forms used to collect this data ask businesses for the value of their e-commerce sales in dollars or as a percentage of total retail sales. Total annual retail sales and e-commerce sales from 1998 through 2015 are shown in Figure 1. In 2015, annual retail sales in the United States totaled \$4.7 trillion. That same year, retail e-commerce sales were estimated to be \$340.4 billion and accounted for 7.2 percent of total retail sales. Although e-commerce sales are a relatively small portion of total retail sales, they have been an important source of sales growth for retailers. In 1998, retail e-commerce sales totaled only \$5.0 billion, or 0.2 percent of the \$2.6 trillion in retail sales that year. From 1998 to 2015, total retail sales grew by \$2.1 trillion—and 16 percent of that increase, or \$335.4 billion, was e-commerce.

⁶ E-commerce data are collected from the same sample used for the MRTS. Advance U.S. retail sales are estimated from a subsample of the MRTS sample that is not of adequate size to measure changes in retail e-commerce sales. See Quarterly E-Commerce Methodology for more information, available at: https://www.census.gov/retail/ecommerce/how_surveys_are_collected.html.

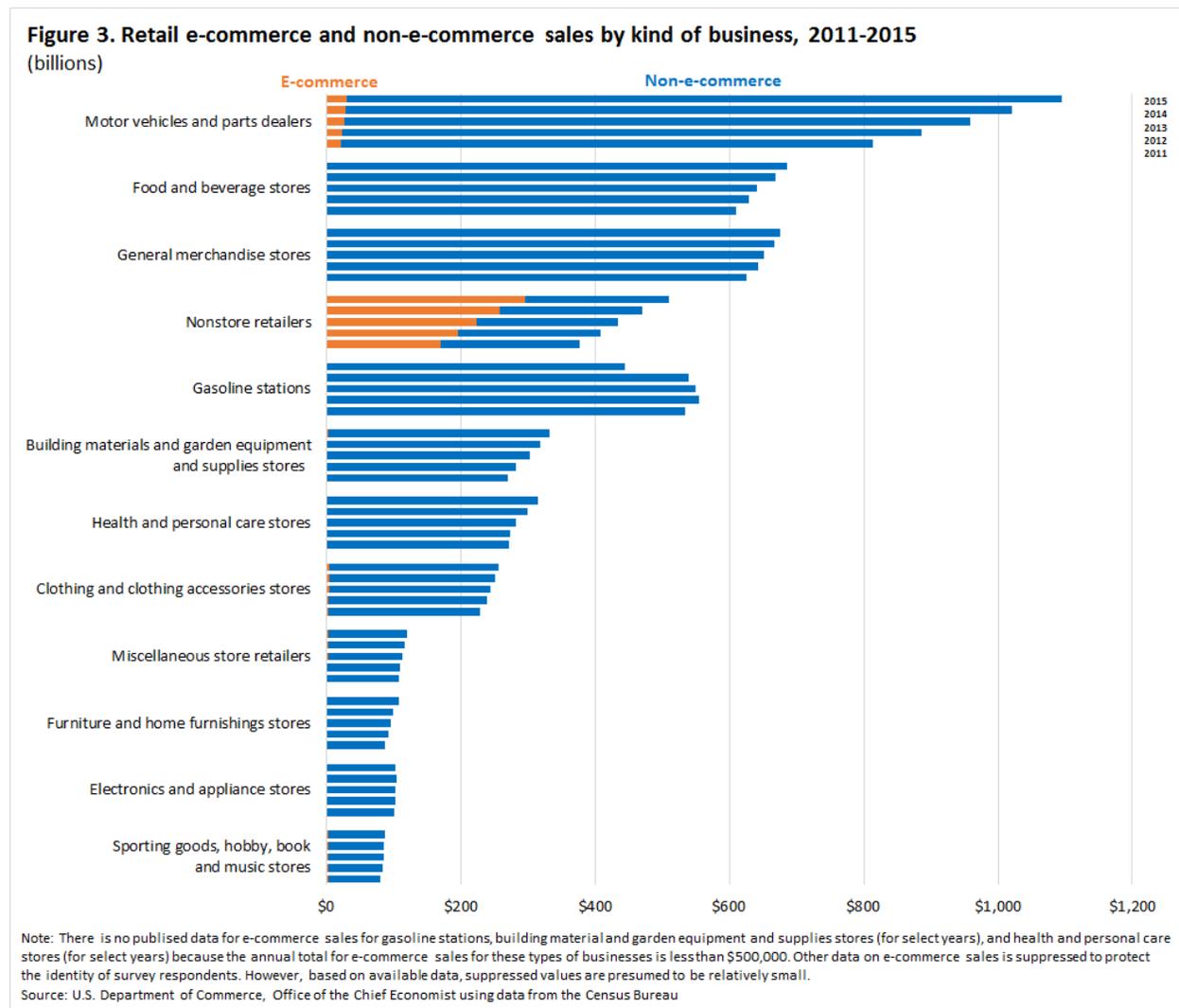
Indexing retail e-commerce sales and all other (or non-e-commerce) retail sales to 1998 (1998=100) clearly shows the exceptional growth of e-commerce compared to traditional brick-and-mortar retail (See Figure 2). The index for non-e-commerce retail sales rose from 100 in 1998 to 170 in 2015, an average of just 3 percent per year. The index for e-commerce sales increased from 100 in 1998 to a whopping 6830 in 2015—an annual growth rate of 28 percent, nine times the growth of all other retail sales.



Retail sales and retail e-commerce sales by type of business

As more consumers move to purchasing more goods online, knowing whether retail purchases are in traditional stores or online will become essential to understanding the U.S. consumer marketplace. The new Census Bureau data on e-commerce sales, discussed in more detail below, provides us with a better picture of these sales across the various retail sales categories.

Figure 3 displays previously available annual retail sales data for 2011 through 2015, broken down by retail e-commerce (in orange) and non-e-commerce sales (in blue) based on the data that had been previously available. Each year, consumers spent the most money, around a fifth of all retail spending, at motor vehicles and parts dealers. Food and beverage stores and general merchandise stores each accounted for around 15 percent of retail sales. From 2011 to 2014, gasoline stations ranked fourth, but with recent declines in gasoline prices, sales at gasoline stations fell by 17.6 percent in 2015, pushing this category into the number 5 spot.



Nonstore retailers (NAICS 454) are establishments such as mail-order houses, vending machine operators, home delivery sales, door-to-door sales, party plan sales, electronic shopping, and sales through portable stalls (e.g., street vendors, except food).⁷ In 2015, nonstore retailers' sales totaled \$509.3 billion, of which \$433.7 billion came from a subgroup of this industry, electronic shopping and mail order houses (NAICS 4541). The electronic shopping and mail order houses subgroup includes businesses without traditional brick-and-mortar locations, but it also includes businesses which have developed a separate online division within the company and do not fulfill online orders directly from physical store locations—an exception to this is when stores offer online ordering with in-store or curbside pick-up; because customers order online, the sales would be classified under electronic shopping and mail order houses.⁸ For example, if a clothing store fulfills online orders from a warehouse and also sells clothes at the local shopping mall, its e-commerce orders would be classified under electronic shopping and mail order houses (NAICS 4541) while its mall store sales would be classified under the primary business activity, which is clothing and clothing accessory stores (NAICS 448). This is similar to how companies would split reporting between two distinct brick-and-mortar divisions, such as a company that owns both grocery stores and gasoline stations, for example.

Because most retailers have in fact developed online divisions within their businesses, virtually all e-commerce sales, as shown in Figure 3, are counted in this NAICS category rather than the primary business activity of their brick-and-mortar stores.⁹ In fact, because of the way Census classifies a businesses' e-commerce sales, it appears that most of the retail segments displayed in Figure 3 have virtually no e-commerce sales at all. Therefore, for all business types except nonstore retailers, e-commerce sales appeared to account for 3 percent or less of retail sales each year from 2011 through 2015.

The new Census Bureau estimates released in June provide a better picture of actual e-commerce sales across the various retail sales categories. The new estimates attribute the e-commerce sales of traditional retailers with online divisions to the primary type of business of the parent company rather than as sales by electronic shopping and mail order houses (See Figure 4).¹⁰ This allows data users to see what portion of electronic shopping sales are from the various types of businesses with brick-and-mortar establishments and separate online divisions, versus from mail order houses and companies that sell online but don't have brick-and-mortar presences.¹¹

⁷ For the entire description of NAICS 454, see: <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=454&search=2017> NAICS Search.

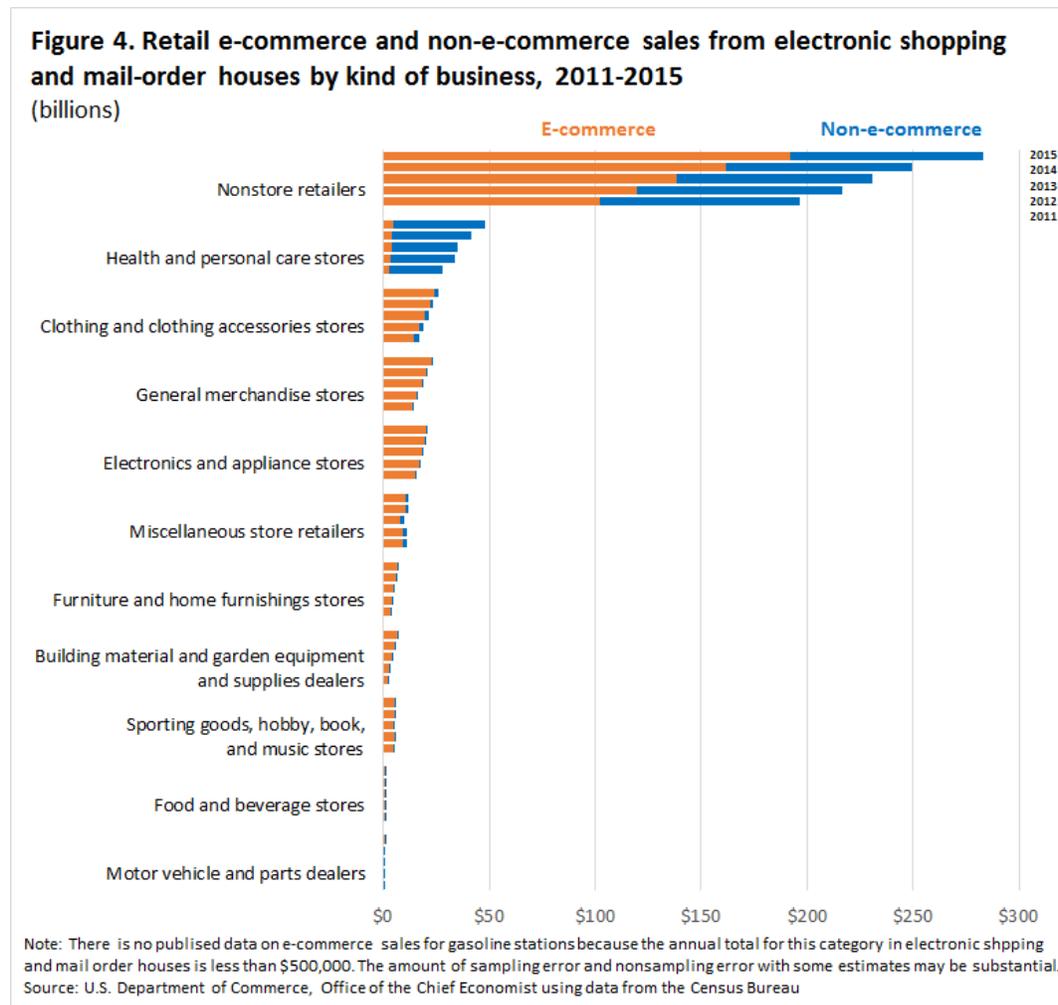
⁸ Information taken from MRTS FAQs, available at: https://www.census.gov/retail/mrts_general_faqs.html.

⁹ In 2015, out of total e-commerce sales of \$340.4 billion, \$294.8 billion, or 86.6 percent were in NAICS 4541.

¹⁰ Supplemental U.S. Sales—Total and E-commerce Sales by Primary Business Activity—2011-2015, available at: <http://www2.census.gov/retail/releases/current/arts/supecommerce4541.xls>.

¹¹ For companies with separate store and e-commerce components as described above, the new supplemental e-commerce table reallocates the sales of the NAICS 4541 component to the primary 3-digit NAICS code of the brick-and-mortar component of the company. Companies without a brick-and-mortar component remain classified under NAICS 454. For more information about the new supplemental table and data limitations, see Latest Annual Retail Trade Report, Supplemental U.S. Sales—Total and E-commerce Sales by Primary Business Activity—2011-2015, Explanatory Material, available at: http://www2.census.gov/retail/releases/current/arts/sup_ec_tech_doc.doc.

In 2015, \$294.8 billion, or 68 percent of all retail sales from electronic shopping and mail order houses, were e-commerce sales, up from 57 percent in 2011. Because of the new estimates, we now know that, as shown in Figure 4, \$192.1 billion of these e-commerce sales in 2015 can be attributed to retailers that almost exclusively sell items online or through means other than traditional stores.¹² Consumers purchased the remaining \$102.7 billion online but from all of the other business types presented in Figure 4 that also had brick-and-mortar stores. In addition, for all of the types of retailers shown in Figure 4, with the exception of nonstore retailers and health and personal care stores, about 90 percent or more of sales through electronic shopping and mail order houses were e-commerce sales in 2015.¹³

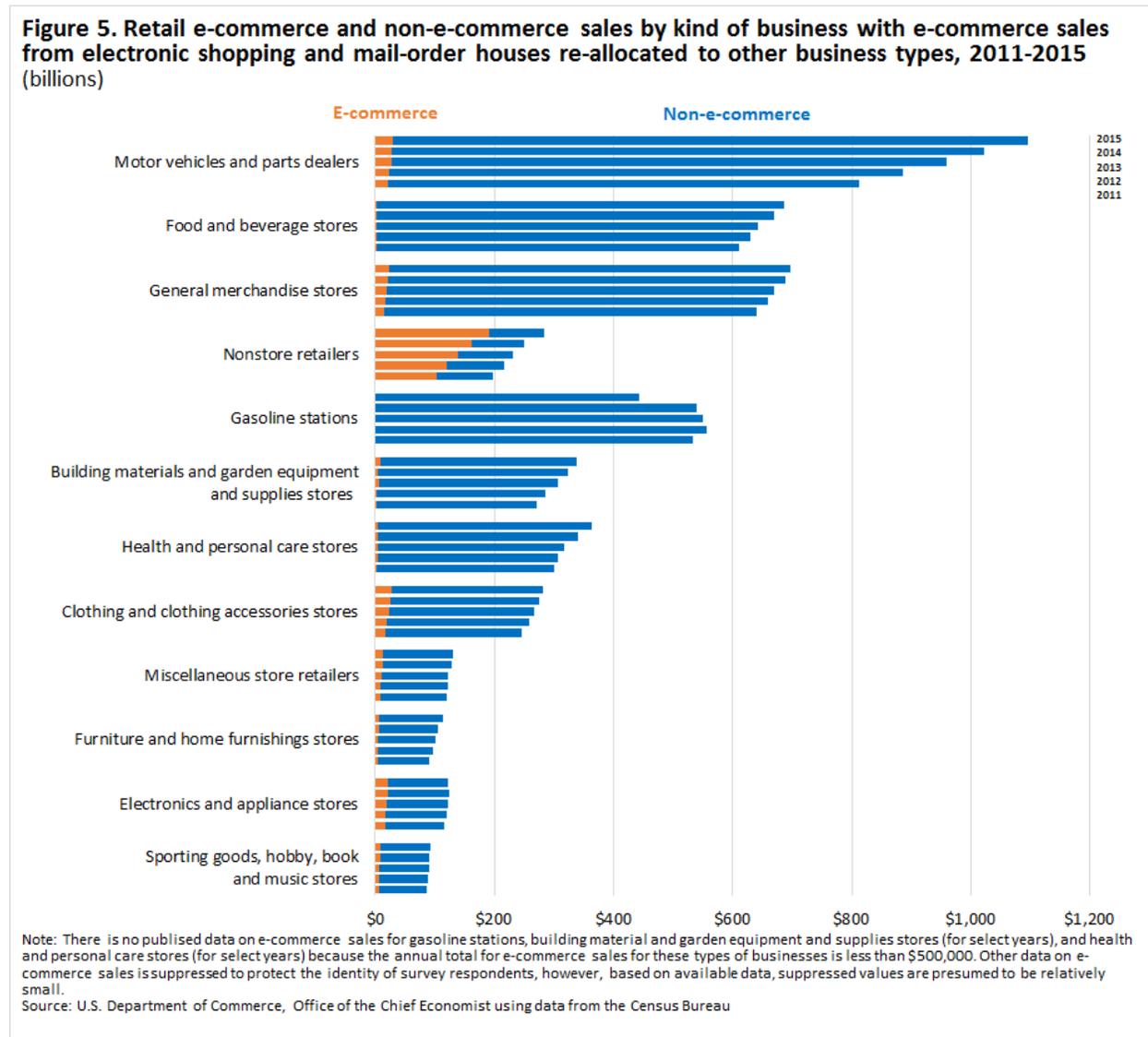


¹² The survey sample was not designed to produce NAICS 4541 estimates by primary business activity. Therefore, the amount of sampling error and nonsampling error with some estimates may be substantial. In addition, the variance estimation method has limitations when being applied to the supplemental e-commerce estimates. As a result, the produced measures of reliability in the supplemental table and Figure 4 may underestimate the sampling variability. The U.S. Census Bureau recommends that individuals use these estimates with caution, as sampling error and nonsampling error could affect the conclusions drawn from the estimates.

¹³ The value of non-e-commerce sales from electronic shopping and mail order houses attributed to health and personal care stores are likely mail order prescription services.



Figure 5 incorporates the data from electronic shopping and mail order houses that are allocated to retailers with traditional brick and mortar stores back into the overall retail sales data from Figure 3. Although the majority of retail sales from the electronic shopping and mail order houses category remains within nonstore retailers, the reallocation of the remaining sales boost, to some degree, the e-commerce share of sales in other types of businesses, as can be seen by the now-visible orange bars for the other business types in Figure 5.



Recall that before this reallocation, e-commerce sales accounted for 3 percent or less of retail sales in every type of business, except for nonstore retailers, each year from 2011 through 2015. However, after the reallocation, e-commerce sales accounted for 14 percent of retail sales from electronics and appliance stores in 2011. This share increased to 18 percent by 2015. In clothing and clothing accessories stores, the share of e-commerce sales after the reallocation was 7 percent in 2011 and up to 10 percent in 2015. Other retailers who had significant e-commerce sales were: miscellaneous store retailers (10 percent e-commerce sales in 2015); sporting goods, hobby, book and music stores (8 percent); and furniture and home furnishings stores (6 percent). The reallocation of the retail sales data

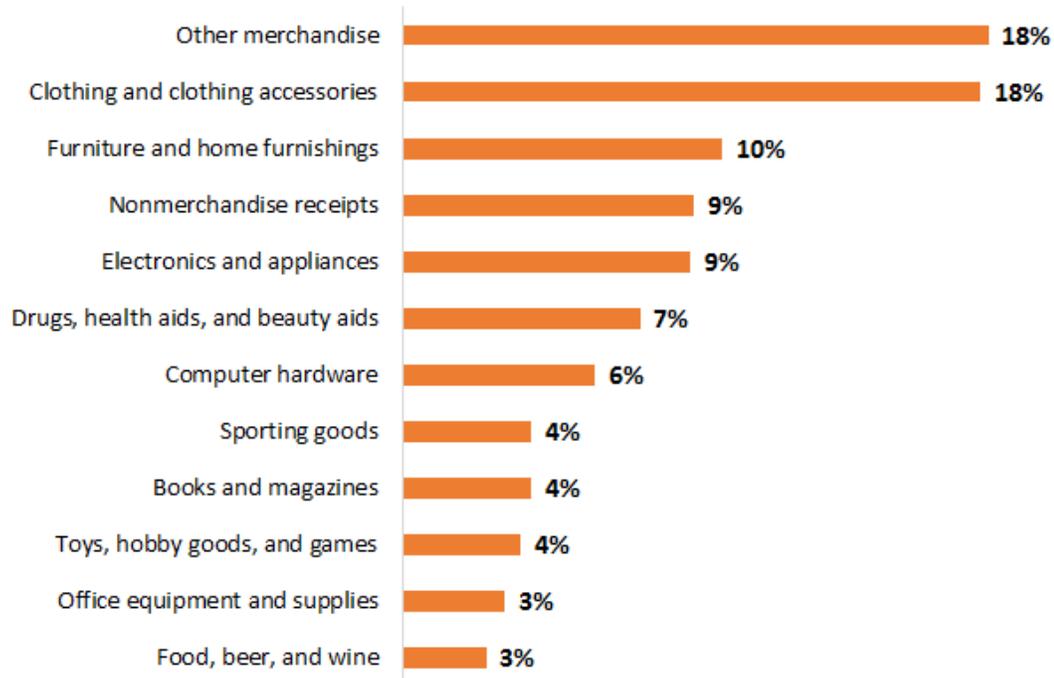


from electronic shopping and mail order houses to other business types shows that e-commerce is an important, and growing, method for consumer purchases for many types of retailers, not just nonstore retailers.

Retail e-commerce sales by merchandise line

While Figures 4 and 5 give us a better sense of the extent to which various types of stores are selling online, they only provide limited information about the types of products that are purchased online. It is safe to assume that online sales from clothing and clothing accessories stores mainly involve clothing items, but there is no safe assumption about the type of products involved in the online sales of electronic shopping businesses (included in NAICS 4541) that sell almost exclusively over the Internet.¹⁴ As an additional resource on retail e-commerce, the Census Bureau, since 1999, has been collecting and

Figure 6. Retail e-commerce sales from electronic shopping and mail order houses by merchandise line, 2015
(percent of total)



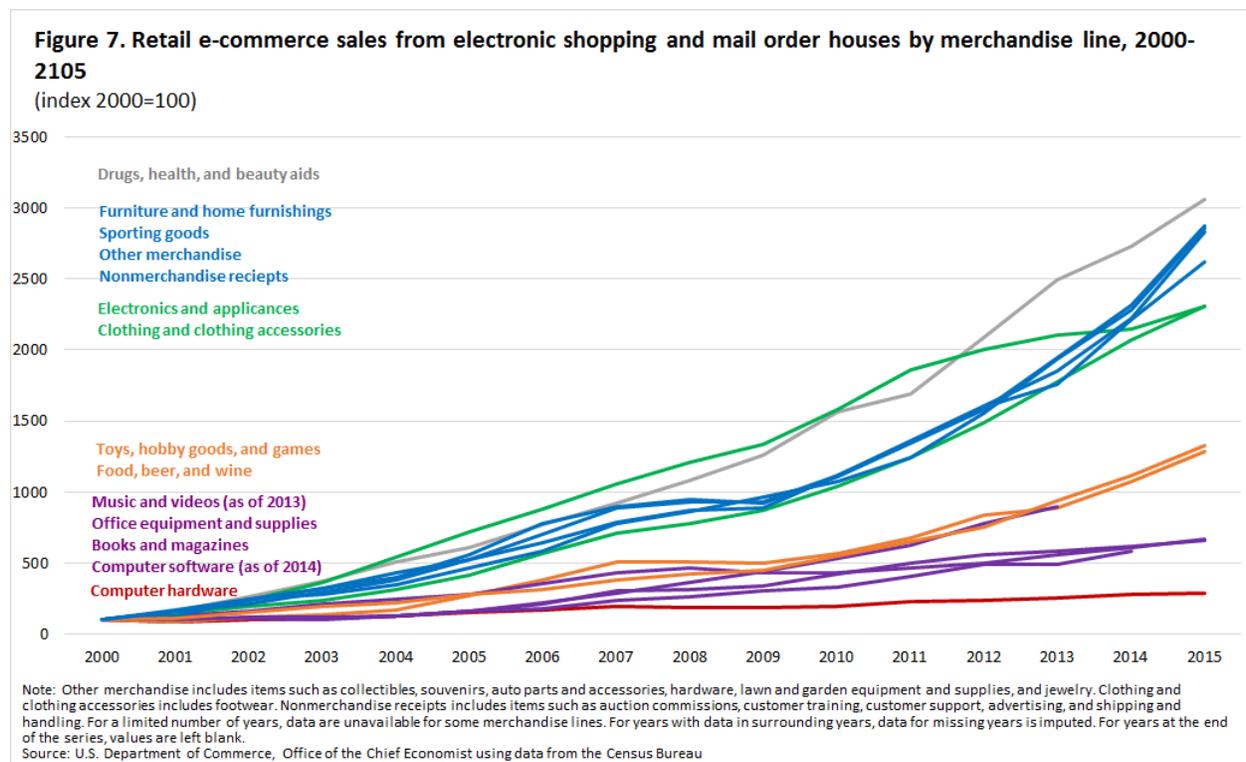
Note: Other merchandise includes items such as collectibles, souvenirs, auto parts and accessories, hardware, lawn and garden equipment and supplies, and jewelry. Clothing and clothing accessories includes footwear. Nonmerchandise receipts includes items such as auction commissions, customer training, customer support, advertising, and shipping and handling. Data are suppressed for computer software and music and videos due to data quality concerns. Merchandise lines presented here represent 94 percent of sales recorded by the Census Bureau.

Source: U.S. Department of Commerce, Office of the Chief Economist using data from the Census Bureau

¹⁴ Data on retail sales by merchandise line are only available for electronic shopping and mail order houses. Therefore, while the merchandise line data provide insight to what consumers are buying online, the majority of the retail sales data published by Census are by indicator business type, making the merchandise line data not directly comparable.

publishing data on total sales and e-commerce sales by merchandise line, or type of good, for electronic shopping and mail order houses.¹⁵ Figure 6 displays the e-commerce sales of electronic shopping and mail order houses by the type of product consumers purchase online, as opposed to the types of retailer selling online.

Purchases of clothing and clothing accessories (including footwear) and “other merchandise,” each with 18 percent of the total, are the categories accounting for the largest shares of total online purchases from electronic shopping and mail order houses. While “other merchandise” includes a variety of items such as jewelry, lawn equipment, and collectibles, the clothing and clothing accessories category provides more insights about online purchases. In 2015, online consumers purchased \$52.1 billion of clothing and clothing accessories online from electronic shopping and mail order houses.¹⁶ These shoppers purchased another \$4.1 billion in merchandise from clothing and clothing accessories retailers (shown in Figure 3, but difficult to see because of the relatively small value).



¹⁵ U.S. Electronic Shopping and Mail-Order Houses (NAICS 4541) - Total and E-commerce Sales by Merchandise Line (1999-2015) available at: <http://www2.census.gov/retail/releases/current/arts/ecommerce4541.xls>.

¹⁶ Figure 4 shows \$24.2 billion in online sales reallocated from electronic shopping and mail order houses to clothing and clothing accessories stores in 2015. This total varies greatly from the \$52.1 billion in clothing and clothing accessories purchased online as reported in the merchandise line data. This is likely partially due to the fact that consumers can purchase clothing and clothing accessories from stores other than clothing stores. For example, consumers can also purchase clothing and clothing accessories from general merchandise stores, sporting goods stores, and potentially other types of retailers. Additionally, any clothing purchased from online-only retailers would be captured in the nonstore retailer category.



Figure 7 shows the growth of e-commerce sales from electronic shopping and mail order houses by merchandise line since 2000 (index 2000=100). All of the merchandise lines have experienced relatively high growth. The lowest growth occurred in the sales of computer hardware, as is shown by the red index line in Figure 7. However, even this index increased from 100 in 2000 to 289 in 2015, as e-commerce sales of these goods increased from \$4.2 billion to \$17.5 billion.¹⁷ The lines at the top of the chart (in gray, blue, and green) show the merchandise lines with the highest growth in e-commerce sales from electronic shopping and mail order houses. The most impressive is the index for the online sales of drugs, health, and beauty aids, which grew from 100 (\$0.7 billion) in 2000 to 3063 (\$21.5 billion) in 2015.

Conclusion

In the United States, most consumer purchases still take place in brick-and-mortar stores; according to the latest Census data, e-commerce sales account for 7.2 percent of all retail sales. However, consumer preferences for how they purchase goods are changing—and quickly. E-commerce sales are growing rapidly and consumers are using the Internet to purchase everything from food to clothing to cars. As these changes take place in the economy, the Census Bureau, and the Department of Commerce more broadly, are working to improve the data available on e-commerce and other topics related to the digital economy.

The new estimates on e-commerce by type of business is a positive step in that direction. The Census Bureau's ability to present existing data in a new way provides new insights on the amount of e-commerce sales generated from online divisions of brick-and-mortar retailers so that retailers, policymakers, and other data users can make more informed decisions. As a next step, the Census Bureau is working to provide additional detail on sales by type of business in its quarterly retail e-commerce sales data release.

¹⁷ Computer hardware accounted for 36 percent of retail goods sold through e-commerce in 1999. In 2015, this merchandise line accounted for just 6 percent of retail e-commerce sales.

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