

Factsheet

E-Retail

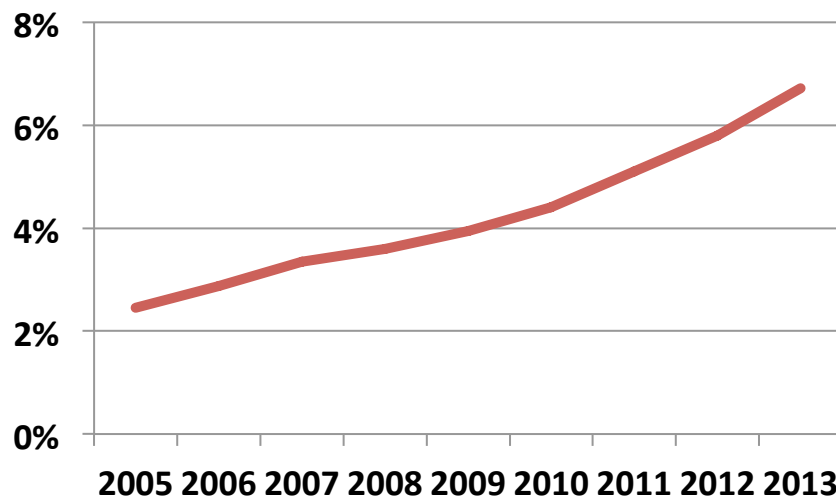
How buying online is changing the way goods move

E-Retail & the U.S. Economy

E-retail is a ‘disruptive innovation;’ i.e. a force that disrupts existing markets and value networks by displacing earlier technology. The term is used in business and technology literature to describe innovations that improve a product or service in ways that the market does not expect, typically first by designing for a different set of consumers in a new market and later by lowering prices in the existing market. The rise of e-retail has potentially big implications for transportation networks.

- **E-Commerce is Transforming Retail** – From 2004 to 2014, annual web-based or ‘e-retail’ sales jumped from \$72 billion to about \$297 billion. E-commerce has experienced a steadily growing share of total retail sales from 2.4% to 7%, as shown below. By 2025, e-commerce could account for more than a quarter of all retail sales, compared to five percent in 2012.¹

Quarterly U.S. Retail E-commerce Sales as a Percent of Total Quarterly Retail Sales (2005 to 2014)



Source: U.S. Census, Quarterly E-Commerce Report

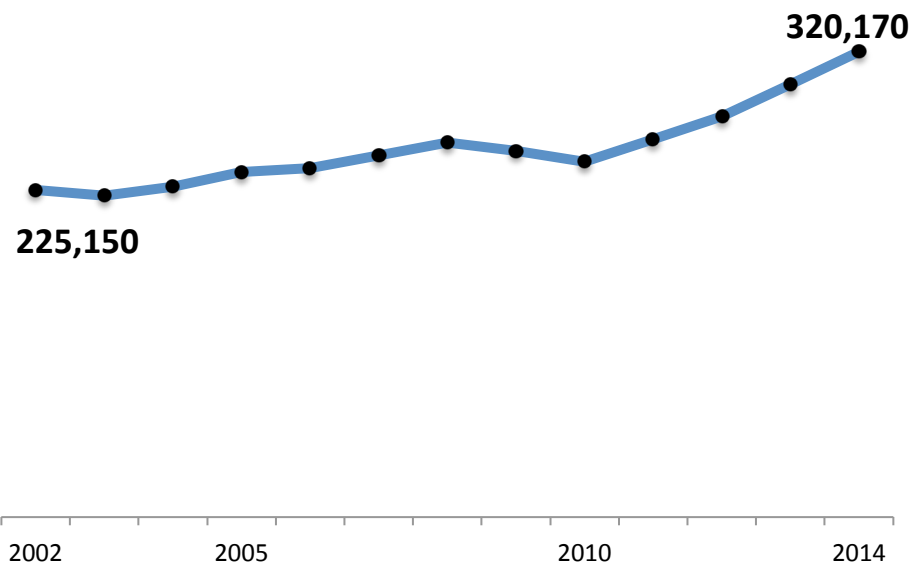
- **Growth in E-Retail is Outpacing Traditional Retail** - Quarterly “click and order” sales are growing about five times quicker than “bricks and mortar” sales, with an

¹ US Census, *Quarterly E-Commerce Report* (Fall 2014) <http://www.census.gov/retail/#ecommerce>

average quarterly growth rate of 4.3% for e-retail compared to 0.8% for traditional retail.

- **E-Retail's Impact on Employment** - The net impact of e-commerce on employment is unclear. E-retail is clearly creating new jobs in technology, fulfillment centers, and in distribution and delivery, but it may also cannibalize in-store retail jobs. According to the U.S. Census, the number of electronic shopping and mail-order houses establishments grew from 23,697 to 30,185 between 2011 and 2014 and employment in that sector climbed 42 percent between 2002 and 2014 to 320,170 people. In contrast, for the retail trade sector as a whole, which includes traditional "brick and mortar" stores, the number of establishments rose just 0.1 percent, while employment climbed 0.7 percent.²

Electronic Shopping & Mail Order House Employment by Year (2002 to 2014)³



Source: Bureau of Labor Statistics, Occupational Employment Series

- **E-Retail's Economic Impact is Concentrated in Clusters** – According to analysis by the US Census, unlike traditional stores, which are located throughout the country, online shopping establishments and jobs are in concentrated areas.⁴
- **E-Retailers are Adding Warehouse Space Rapidly** - Amid the encroachment of competitors, Amazon is forging ahead with the rollout of distribution centers to tighten its grip on consumers as the nation's e-commerce leader — and the fastest

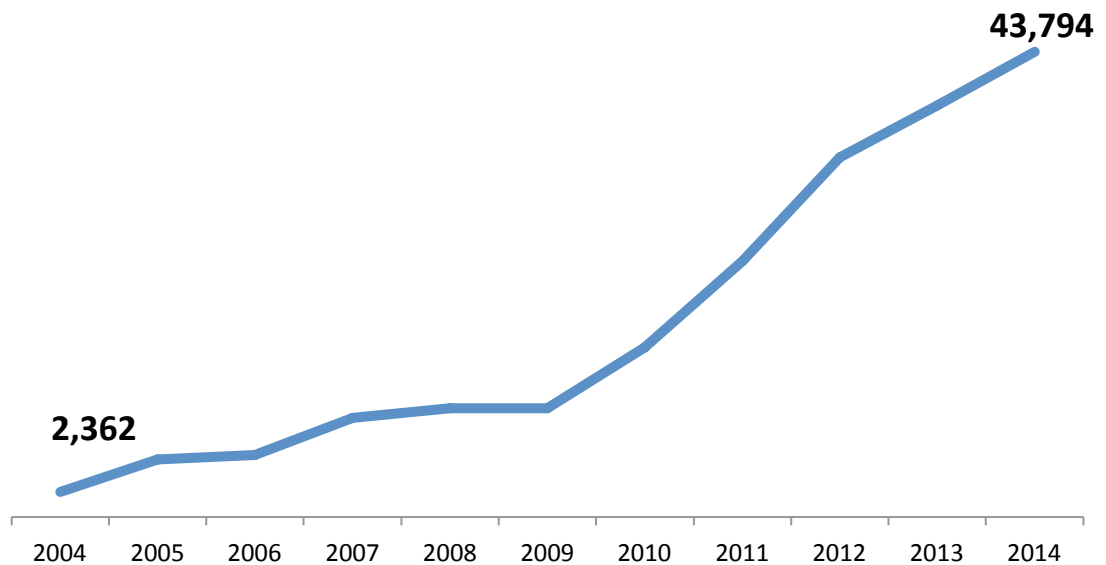
² US Census, *County Business Patterns*: 2012

³ US Census, *Quarterly E-Commerce Report* (Fall 2014) <http://www.census.gov/retail/#ecommerce>

⁴ US Census, *County Business Patterns*: 2012

product deliverer. Amazon spent \$13.9 billion on fulfillment expenses, including 50 new distribution facilities, between 2010 and 2013 alone, Bloomberg reported. Its fulfillment centers are typically about 1 to 1.2 million square foot facilities with something like 1,000 to 1,500 employees.⁵ Big box retailers like Best Buy and Home Depot are rapidly revising their business models to aggressively incorporate e-commerce; their new model involves interaction between a brick and mortar store and e-ordering. E-purchases can be made at home or at the store, and e-commerce returns can be made at a store.

Change in Amazon Warehousing Space - Millions of Square Feet (2004 to 2014)



Source: U.S. Census, Quarterly E-Commerce Report

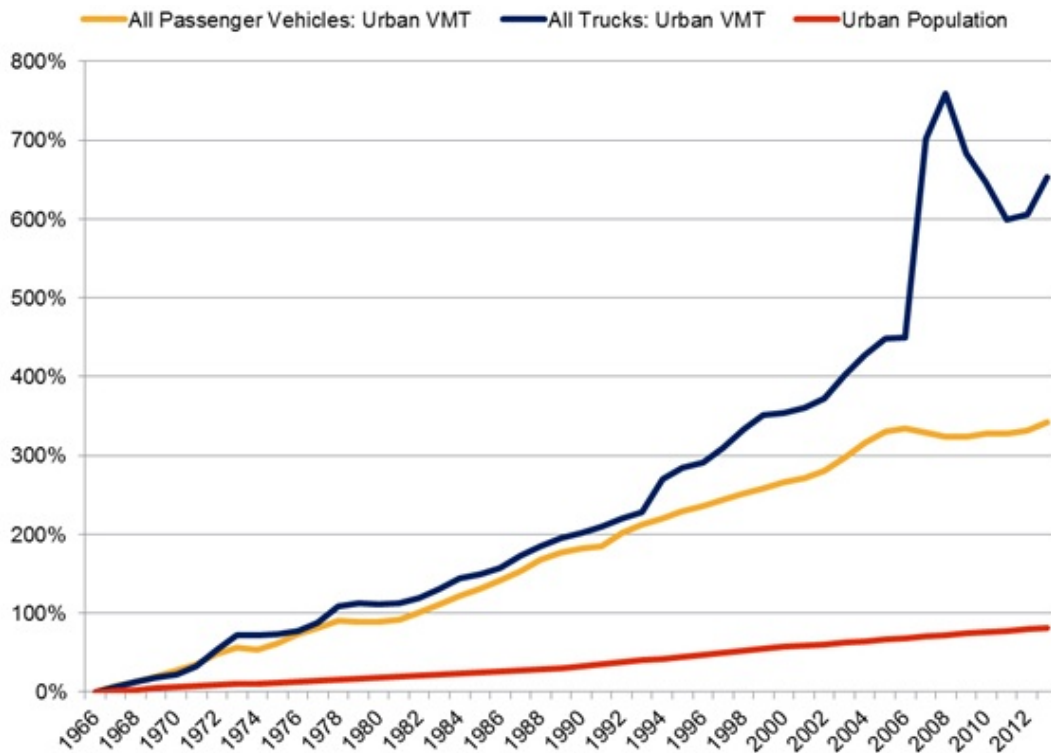
Transportation & E-Retail

The e-commerce economy is characterized by demand for rapid delivery times and heightened service levels, and this will likely drive businesses toward fulfillment platforms that are closer to homes, creating potential for more congestion in populated mega regions. The impacts of e-retail on transportation are still unfolding. Changes in truck travel, driven by new approaches for managing inventory levels, customer service, and delivery locations could become significant drivers in overall logistics costs. The changes, spurred by consumer preferences and technology advances, are happening so quickly that the supporting infrastructure may struggle to keep up:

⁵ <http://www.practicalecommerce.com/articles/74008-Is-Ama-zon-Plan-ni-ng-a-Shi-p-pi-ng-Re-vol-u-ti-o-n>

- New Truck Traffic** - Growth in e-commerce-related truck traffic may or may not be significant – particularly if declining traffic generated by bricks and mortar stores offsets growth related to e-retail. But e-retail is likely to create new temporal and spatial supply chain patterns, characterized by seasonal and daily traffic spikes, growth in ‘last mile’ package deliveries, and new fulfillment centers locations much closer to densely populated urban areas that can deliver on one day or same day delivery promises by retailers. Analysis of FHWA’s VMT data by the Brookings Institute, shown below, suggests urban truck VMT is growing faster than either urban population or total urban VMT; however, the connection to e-retail is unclear.⁶

Comparison of Urban Population and VMT Growth (1966-2013)



⁶ Brookings Institute Blog, posted July 28, 2015: <http://www.brookings.edu/blogs/the-avenue/posts/2015/07/28-e-commerce-jet-city-trucks-tomer>

- **Infrastructure and Operations Needs** - On the transportation side, freight investment will need to be targeted at pinch points and bottlenecks. Those specific sites of congestion deliver disproportionate costs to shippers, which get passed along to consumers, and create supply chain uncertainty. Cities and suburbs will also need modern parking regulations and street design, ensuring trucks can access dense pick-up and delivery locations that won't interfere with local vehicle, bike, and pedestrian traffic. The same applies to the noise and other environmental impacts trucks deliver at a higher relative rate than smaller vehicles. Importance of e-commerce is particularly pronounced at the annual holiday season, when its retail share spikes by close to one percent above the rest of the year. Pronounced seasonality puts special demands on supply chains when on-time delivery is most critical and also requires "surge" hiring, which impacts the location of fulfillment centers
- **Changing Distribution Networks** - Locating fulfillment and sorting centers close to population centers is important, both to be close to customers and to workers, especially during surge periods when a lot of part time workers are needed.
- **Congestion** - Transportation bottlenecks will probably not limit the overall growth trajectory of e-commerce, but they may add additional costs, which will be passed on to consumers. Increased truck traffic and last mile deliveries will add to urban congestion, which will impact all transportation system users. Lack of on-street parking will make customer deliveries more difficult and add to traffic congestion in the largest cities. Off-hour deliveries and other ways to mitigate the impacts of deliveries during peak periods may be expected to rise on the policy agenda of transportation officials.