

What Happened to the Retail Industry in the U.S.?

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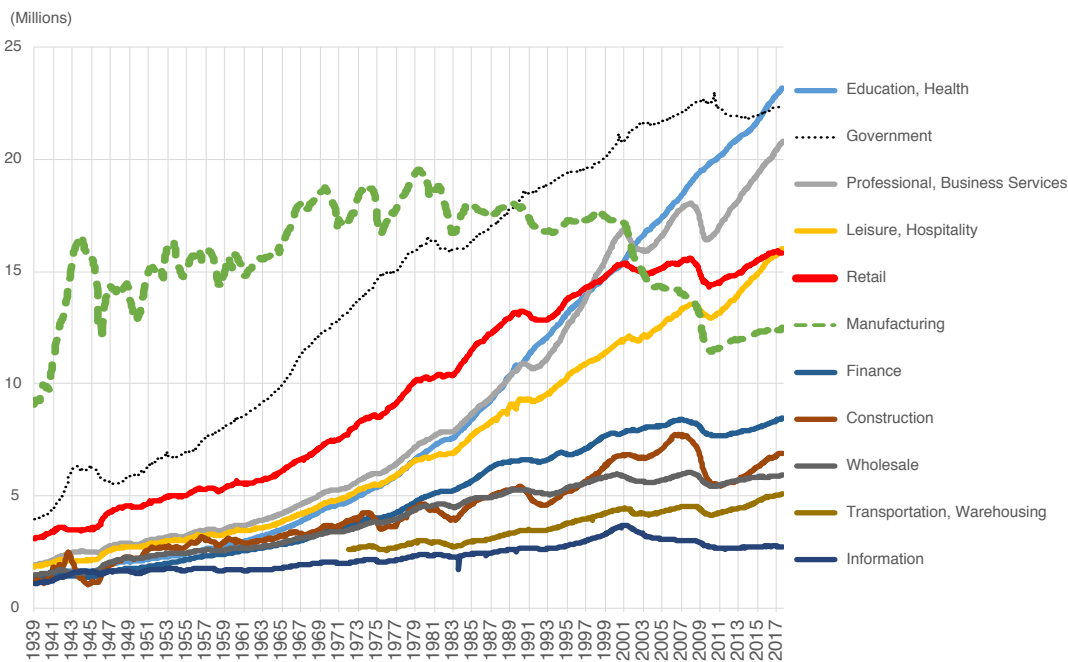
During the continued economic expansion, employment in the retail trade industry in the U.S. declined by 29,000 (-0.2%) from a year ago. What is happening? The possible answer could be that advances in e-commerce and on-line/mobile shopping have finally reached the tipping point and have started turning the brick-and-mortar retail industry upside down. Although technology's advances, such as computers, robots, and artificial intelligence, have been replacing human labor across all sectors for a long time, its impact on the retail sector cannot be overlooked because it is such a big sector in terms of number of workers.

Figure 1 displays sector payroll employment since 1939. It shows that some industry jobs have very different dynamics than others. The most dramatic is the manufactur-

ing sector (the green dash line). Until 1990, the manufacturing sector was the largest employer in the U.S., providing working-class Americans a well-paid middle-class life. Now it is the 6th largest sector, with a loss of 7 million jobs over the past four decades due to technology and globalization.

Until 1997, the retail industry had always been the second largest private-sector employer in the U.S. Now it has dropped to the 4th largest, following (1) education and health services, (2) professional and business services, and (3) leisure and hospitality. Although retail's employment is not yet as devastated as manufacturing's, it is possible that retail will become the next shrinking sector over the next few decades if online shopping and cashier-less stores like Amazon Go continue to increase in popularity.

Figure 1 Sector Payroll Employment in the U.S. from 1939 to August 2017



Source: Federal Reserve Economic Data

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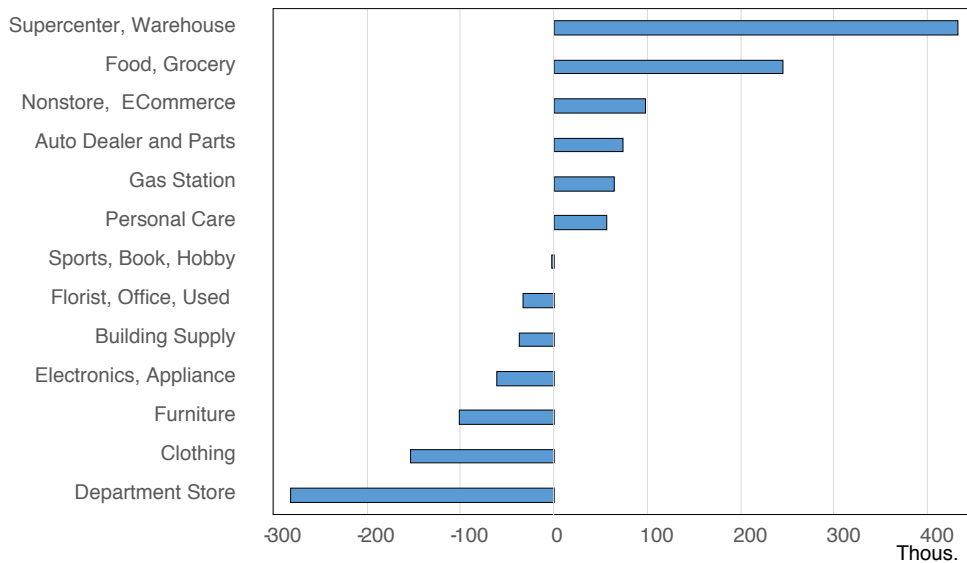
Subsector Employment Change in the U.S. Retail Industry 2007 to 2016

Now, let's take a closer look at retail employment change over the past decade by subsector. From 2007 to 2016, total retail employment increased by 300,000, or by 2%, to 15,820,000 in 2016. It translates to an annual 0.2% growth rate, less than half of the 0.5% growth in total in-

dustry employment. Despite this lukewarm growth in total retail employment, the subsector employment changes tell a more nuanced story.

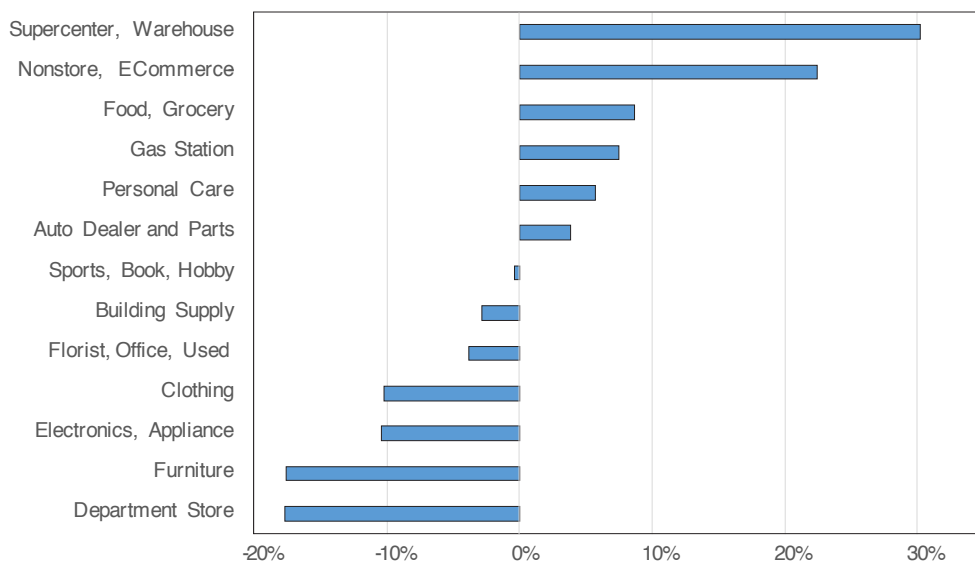
Figure 2 shows retail subsector employment change from 2007 to 2016. The biggest job creator is supercenters, like Walmart, with a 432,000-job increase. The second is food and grocery stores, such as Whole Foods and Trader

Figure 2 Subsector Employment Change in the U.S. Retail Industry from 2008 to 2016 (Thousand)



Source: Bureau of Labor Statistics

Figure 3 Subsector Employment Growth Rate in the U.S. Retail Industry from 2007 to 2016



Sources: Bureau of Labor Statistics

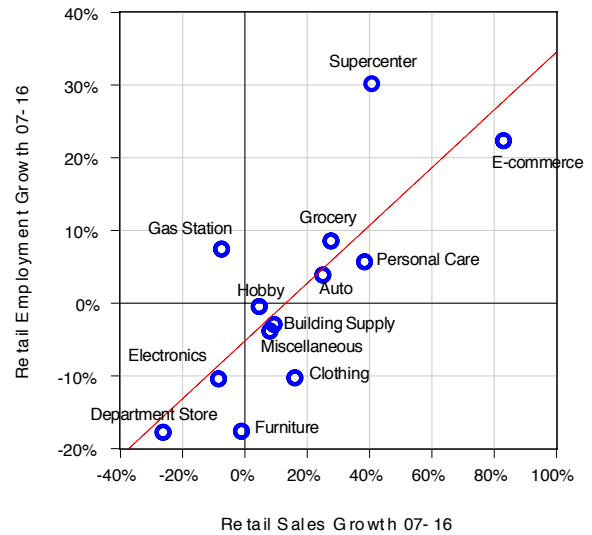
Joe's, with a 245,000-job increase. Third is the brick-and-mortar retail killer: nonstore and e-commerce retailers, such as Amazon, which saw a 98,000-job increase. In contrast, the biggest job-losing sector in retail is department stores, with a loss of 282,000 jobs, followed by clothing stores' loss of 154,000 jobs, furniture stores' 100,000, and electronic and appliance stores' 61,000.

The statistics reflect our collective experience over the years as we have seen downsizing and closures of department, clothing, and electronics stores in malls. Over the past decade, only supercenters and grocery stores have remained intact under the competition with e-commerce. Figure 3 presents the subsector employment growth rate from 2007 to 2016. In terms of percentage change, the supercenters and e-commerce providers are the two biggest winners while department stores and furniture stores are the biggest losers.

Figure 4 exhibits the correlation between the retail sector sales growth and sector employment growth from 2007 to 2016. It makes sense to see a positive relationship between the sector's revenue growth and its payroll growth. We expect to see a high-growth sector hiring more employees.

Figure 5 exhibits the employment size of retail subsectors. The largest subsector is grocery, which hired 3.1 mil-

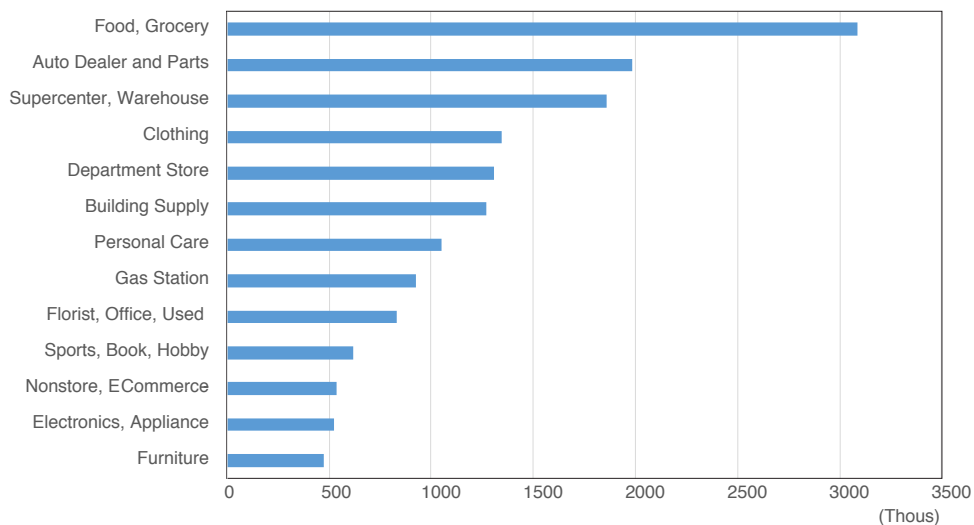
Figure 4 The Correlation Between Retail Sector Sales Growth and Sector Employment Growth from 2007 to 2016



Source: Bureau of Labor Statistics and Federal Reserve Economic Data

lion Americans, followed by auto dealers and parts, which employed 2 million people, and supercenters, which hired 1.9 million people. On the other hand, e-commerce, the great retail disrupter, only employed 0.5 million.

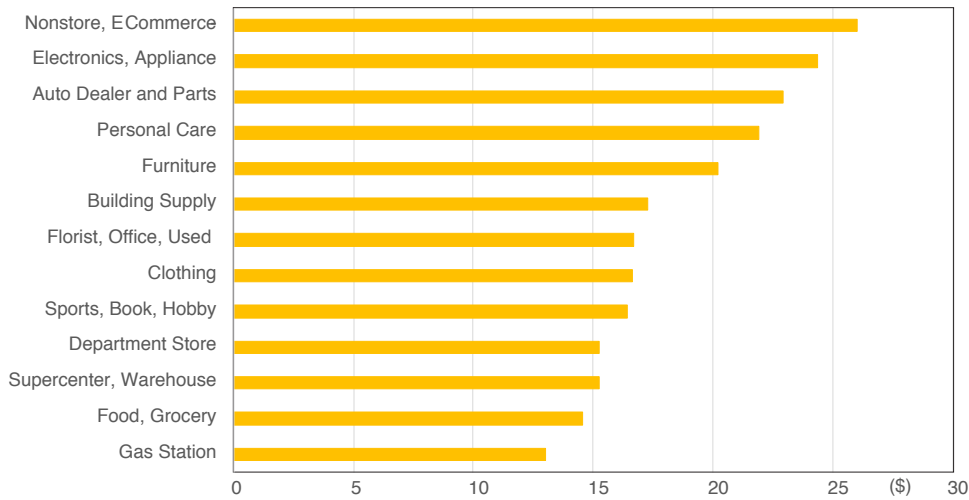
Figure 5 Subsector Employment in the U.S. Retail Industry in 2016 (Thousand)



Source: Bureau of Labor Statistics

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Figure 6 Subsector Average Hourly Earnings in the U.S. Retail Industry in 2016



Sources: Bureau of Labor Statistics

Figure 6 shows the average hourly earnings for retail subsectors. By and large, we can see that the higher the requirement of skills and knowledge for the job, the higher the earnings will be. The nonstore and e-commerce subsector has the highest average hourly wage at \$26, followed by electronics and appliance’s \$24, and auto dealers and parts’ \$23. In contrast, gas stations have the lowest average wage at \$13, followed by grocery’s \$14.6, and supercenter and department stores’ \$15.3.

Subsector Employment Change in the U.S. Retail Industry from August 2016 to August 2017

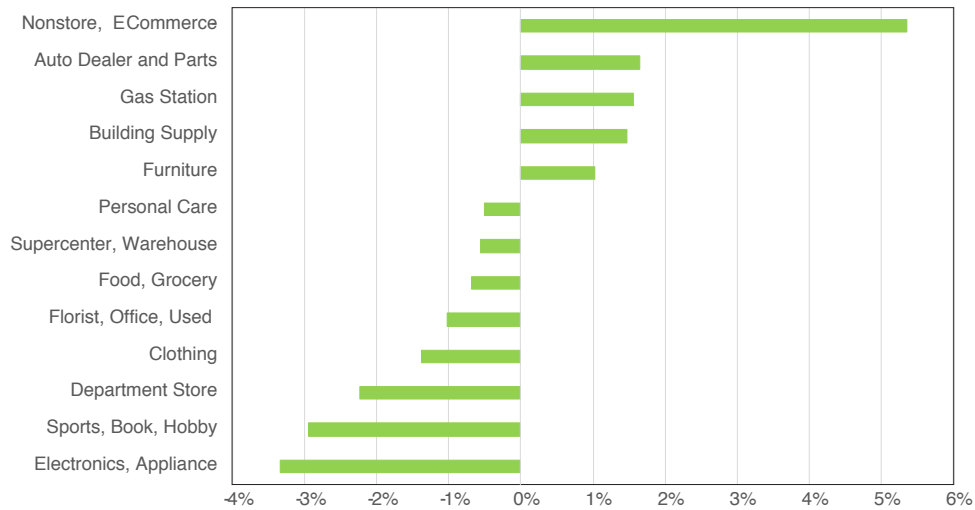
Now, let’s take a closer look at retail employment growth over the past year (August 2016 to August 2017) by its subsector as shown in Figure 7. The biggest winner is now, unsurprisingly, nonstore/e-commerce with an impressive year-over-year 5.3% growth. The second one is the auto dealers and parts stores and gas stations. The long-lasting automobile boom has been extended by low oil prices and

therefore benefits these auto-related subsectors. The building supply and furniture stores reversed their long-term decline in the past year mostly due to the continued recovery of housing markets all over the country.

Comparing Figures 7 and 3, we can see that electronics and appliance stores, sports, book, and hobby stores, department stores, and clothing stores all continue the trend of declining employment over the past year. It is alarming to see that grocery stores, supercenters, and personal care stores, which have been pillars of retail growth in the past decade, have dropped to join the shrinking subsectors in terms of employment. That is the main reason for declining retail employment even during a period of business expansion. Even though we have spectacular growth in the e-commerce sector (Figure 7), we must remember it is a fairly small subsector (Figure 5), so its strong surge is not going to compensate for the job destruction in brick-and-mortar employment.

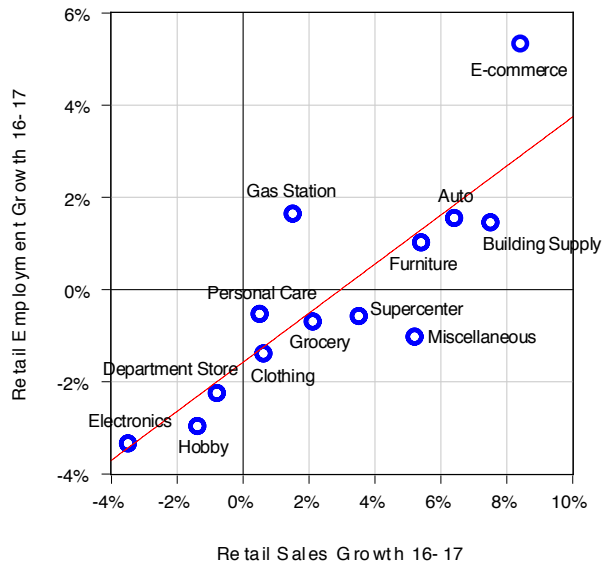
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Figure 7 Subsector Employment Growth Rate in the U.S. Retail Industry from August 2016 to August 2017



Sources: Bureau of Labor Statistics

Figure 8 The Correlation Between Retail Sector Sales Growth and Sector Employment Growth from August 2016 to August 2017



Sources: Bureau of Labor Statistics and Federal Reserve Economic Data

Figure 8 presents the correlation between retail sector sales growth and sector employment growth from August 2016 to August 2017. Similar to Figure 4, unsurprisingly, we find a positive correlation between retail’s sales and employment over the past year.

The Wholesale Sector

Some might wonder why the jobs created by Amazon fulfillment centers across the country do not make more of a difference in employment numbers. The answer is because those jobs are not counted in the retail sector, but in the wholesale sector. U.S. wholesale employment declined by 148,000 (2.5%, from 6 million to 5.86 million) from 2007 to 2016 but increased by 68,000 (1.2%) from August 2016 to August 2017.

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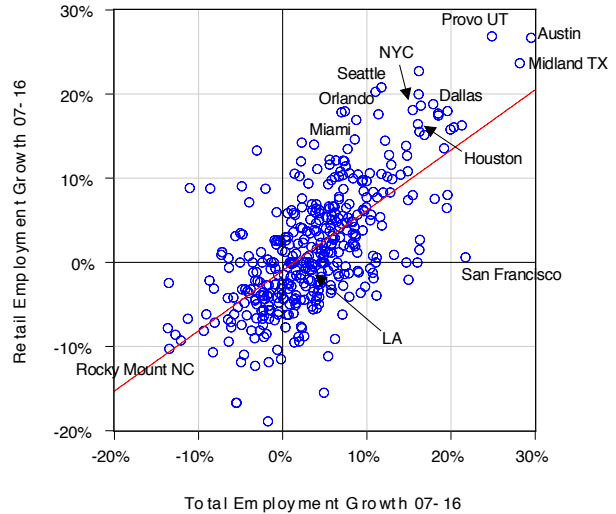
Retail Employment Growth in 393 Metros in the U.S. from 2007 to 2016

Now let's examine retail employment growth over the past decade across 393 metros¹ in the U.S. Figure 8 exemplifies the correlation (the red line) of employment growth of a metro between retail employment growth (vertical axis) and the total economy's (horizontal axis) from 2007 to 2016. It is not surprising to see a positive correlation between retail and total job growth. It makes sense that a growing metro, in terms of economy and employment, will have more workers and more income, which will produce a higher demand for local goods and services: thus, retail employment growth.

However, it is interesting to see that some metros have a higher growth rate in retail employment than in total employment. For instance, over the past decade, the total employment growth in New York City is 15%, while its retail growth is 18%. Orlando's total job growth is 11%, while its retail job growth is 18%. Miami's total job growth is 7%, while its retail job growth is 10%. Seattle's total job growth is 11%, while its retail job growth is a stunning 20%. You may guess the reason for that: Amazon is headquartered in Seattle.

On the other hand, we see some metros have a lower growth rate in retail than in the whole industry. For example, San Francisco's total job growth is 22%, while its retail job growth is only a paltry 0.6%! Los Angeles's total job

Figure 9 The Correlation of Employment Growth from 2007 to 2016 Between Retail and Total Industry Among 393 Metros in the U.S.



Sources: Bureau of Labor Statistics

growth is 3%, while its retail job growth is -0.9%. Are there any reasons behind these dispersions in terms of retail over total job growth among metros? Or is this dispersion just a random occurrence across the country? Unfortunately, we have not found all the answers at the time of this report.

Retail job growth	=	0.01	+	0.63	Total job growth	-	0.41	Retail / total job in 2007
		(0.7)		(15)		(-2.7)		
(t-statistics in parenthesis)		+	0.21	(2.3)	Leisure & hospitality	+	0.05	Florida
		+	0.08	(2.8)	Arkansas	+	0.05	Utah
Adjusted R squared		+	0.04	(2.1)	Louisiana	+	0.04	Texas
0.55		+	0.06	(2.2)	Oklahoma	+	0.04	North Carolina
Observations		-	0.04	(-1.8)	Maryland	-	0.04	Ohio
375						(-2.8)		

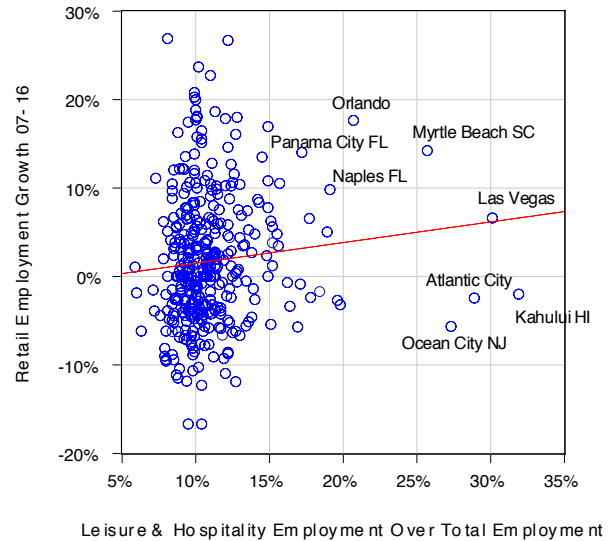
1. Some metros have overlapped areas. For example, in the data, we have L.A. MSA (both L.A. County and Orange County) and L.A. County and Orange County separately.

We did use a simple regression (from period 2007 to 2016) plus some significant state dummy variables to begin to tackle the question, but our results were inconclusive. The most important factor to predict the retail job growth is the total job growth with a positive coefficient. The second factor is the ratio of retail jobs over total jobs in 2007 with a negative coefficient, meaning that a metro with a higher ratio of retail jobs to total jobs (relatively larger retail sector in 2007) will have a lower retail job growth over the next decade, and vice versa. It is a reasonable mean-reverting process.

The third factor is the employment size of the leisure and hospitality sector (over the total employment) of a metro. When a metro attracts more tourists, it is more likely that local stores will benefit from tourist consumption. Figure 10 shows a slightly positive correlation between the employment growth of the retail sector and the size of leisure and hospitality sector for 375 metros from 2007 to 2016.

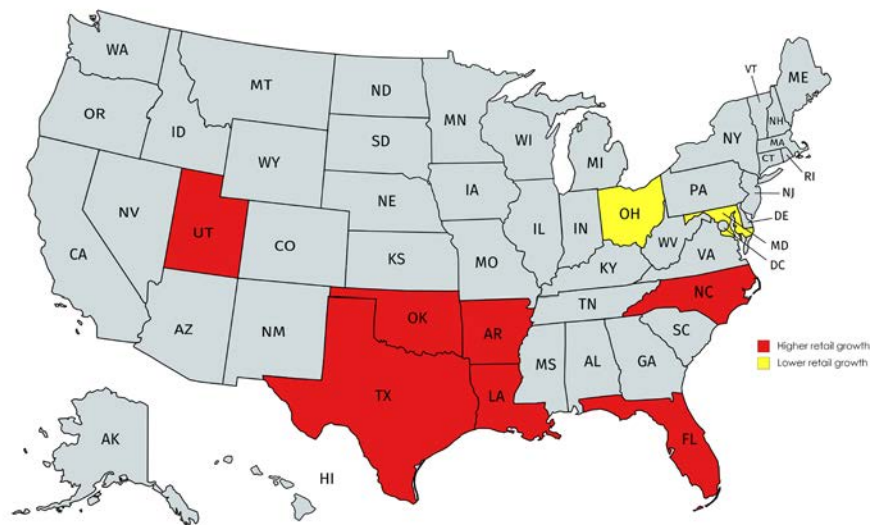
In the regression, we also add a couple of state dummies with statistical significance. Arkansas, Utah, Louisiana, Florida, Oklahoma, Texas, and North Carolina have positive signs, meaning that in these states, retail employment growth is much higher than total employment growth on average from 2007 to 2016, also shown in Figure 11 in red. On the other hand, Maryland and Ohio have negative signs, meaning that in these states, retail employment growth is much lower than its total growth, shown in Figure 11 in yellow.

Figure 10 The Correlation of Retail Employment Growth from 2007 to 2016 and Size of Leisure and Hospitality in 2016 Among 375 Metros in the U.S.



Sources: Bureau of Labor Statistics

Figure 11 The States with Unusually High (Red) and Low (Yellow) Ratios of Retail Employment Over Total Employment Growth



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It is still unclear if there is a pattern behind these states to explain why some states have much higher retail growth while some have much lower. One possible reason is demographics. For instance, Florida might have an unusually high growth of retail employment because retirees living there with pensions tend to shop brick-and mortar stores more than the average American.

Conclusions

The takeaways of the report are as follow:

- With the rise of e-commerce and online shopping, at sites such as Amazon, the sales and employment of the brick-and-mortar retail industry have been hobbled over the past decade. And the disruptive trend may continue in the near future.
- Under the competition of e-commerce, some retail sectors were undermined more seriously than others. From 2007 to 2016, department stores have lost 18% of jobs and 25% of sales. Furniture stores and electronics stores were also buffeted in the past decade. On the other hand, supercenters like Walmart have been very resilient. Auto dealers and parts and gas stations maintain growth amid the auto boom and low oil prices. Food and grocery stores' growth remains steady.
- A metro with high economic growth will of course see robust retail employment growth. A metro with a larger size of tourism industry will see more robust retail growth. A metro with a smaller retail size to begin with will see a higher retail growth.