Given the economy dataset, I decided to analyze how McDonald's should act in the future to leverage the insights indicated by the economy information, combined with external data like corporate historical stock price and store distribution.

I divided the analysis into 3 segments as below.

Segment 1: Macro-economic variables

I first examined the overall trend of two major economic variables that I considered most relevant to the operation of McDonald's. CPI will exert a significant impact on McDonald's costs. Economy, composite index of leading economic indicators, is a comprehensive variable in evaluating the macro-economy environment.

According to **Figure 1**, CPI and retail sales show almost the same trend while economic indicators reveals more fluctuations. **Since McDonald's business falls under retail, I recommend CPI a more reliable indicator for McDonald's to predict its industry prosperity and thus to deploy its operation strategy.**

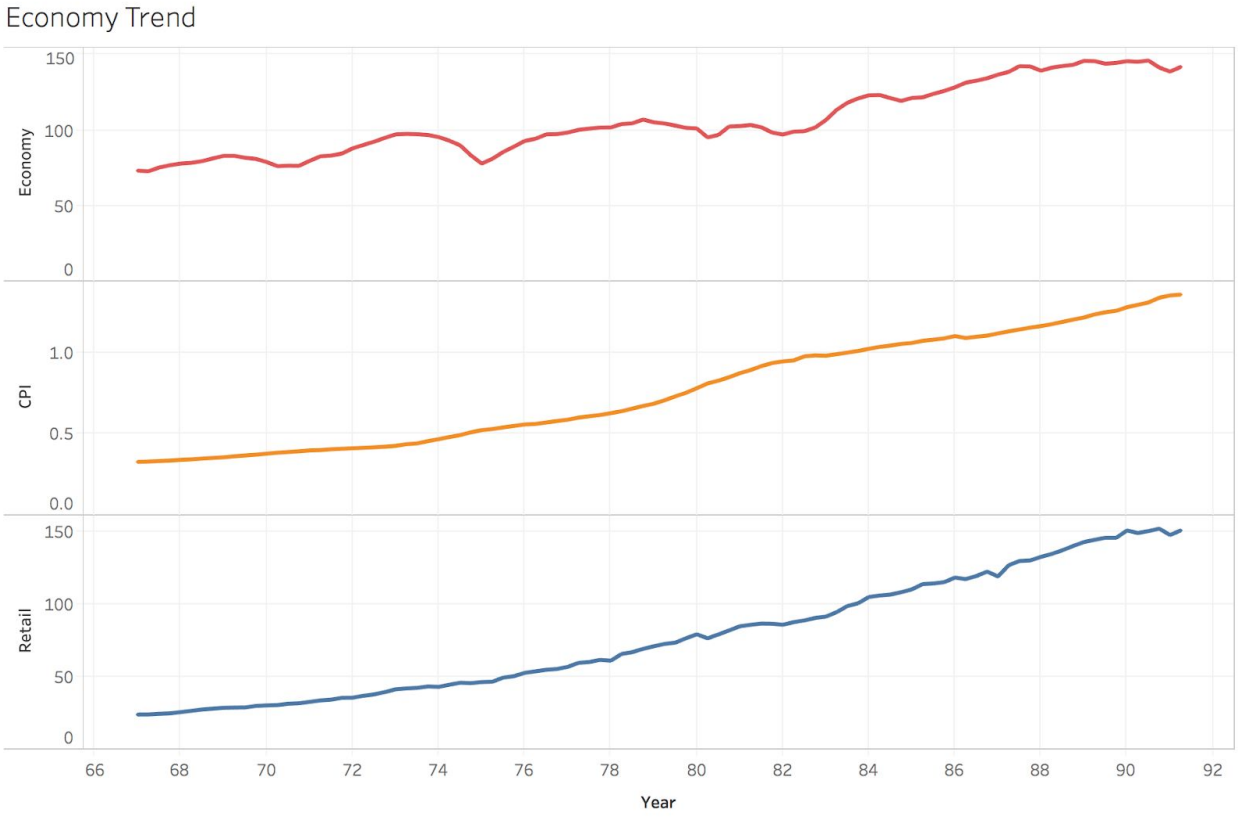

Figure 1

Unemployment rate is also an important indicator because the routine operation of McDonald's store is labor intensive to some extent. The rate will impact the demand and supply of the labor market, and thus the direct operating cost.

In **Figure 2**, I divided the unemployment rate level into several bins and examined how major economy fractions look like within different bins. The result shows that equipment is most sensitive to change of unemployment rate compared with the other fractions. **Therefore, I recommend McDonald's adopt equipment a preceding indicator to predict retail as unemployment rate changes, so as to make operation plans accordingly.**

Figure 2 also shows that retail is not a monotone function of unemployment rate. I further created **Figure 3** to plot unemployment rate against retail sales to see under which unemployment interval did retail perform the best. **Given the pattern, I recommend McDonald's pay more attention to expansion when the unemployment rate is betIen 5% and 7%.**

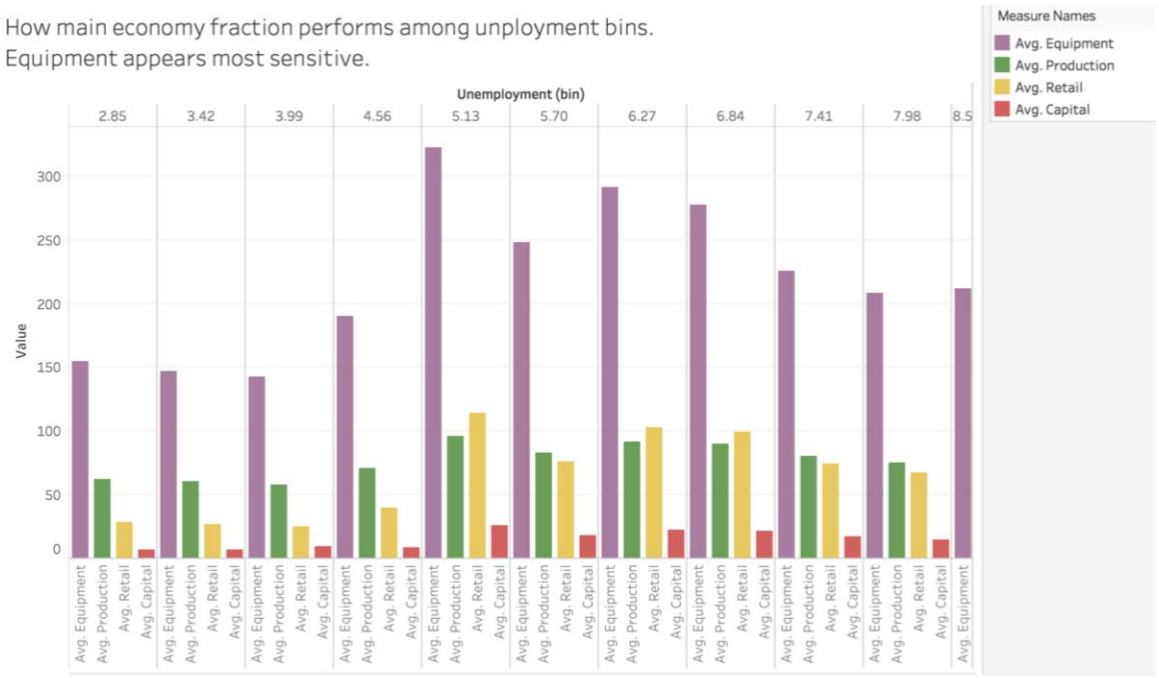

Figure 2

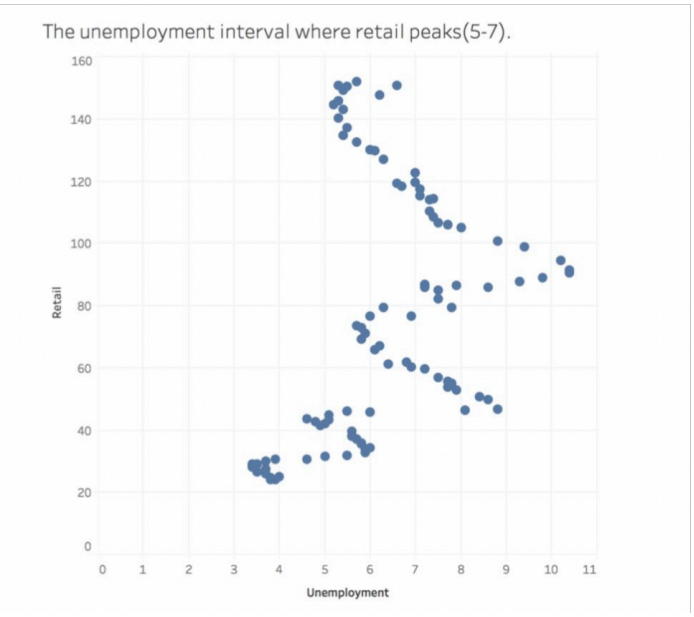

Figure 3

Segment 2: Interest rate variables

In this segment, I checked the impact of four rates because cost of capital is crucial to McDonald's operation. I first examined the seasonal fluctuations in **Figure 4** and decided the influence is minor. **Therefore, I did not examine seasonality separately in our following analysis**.

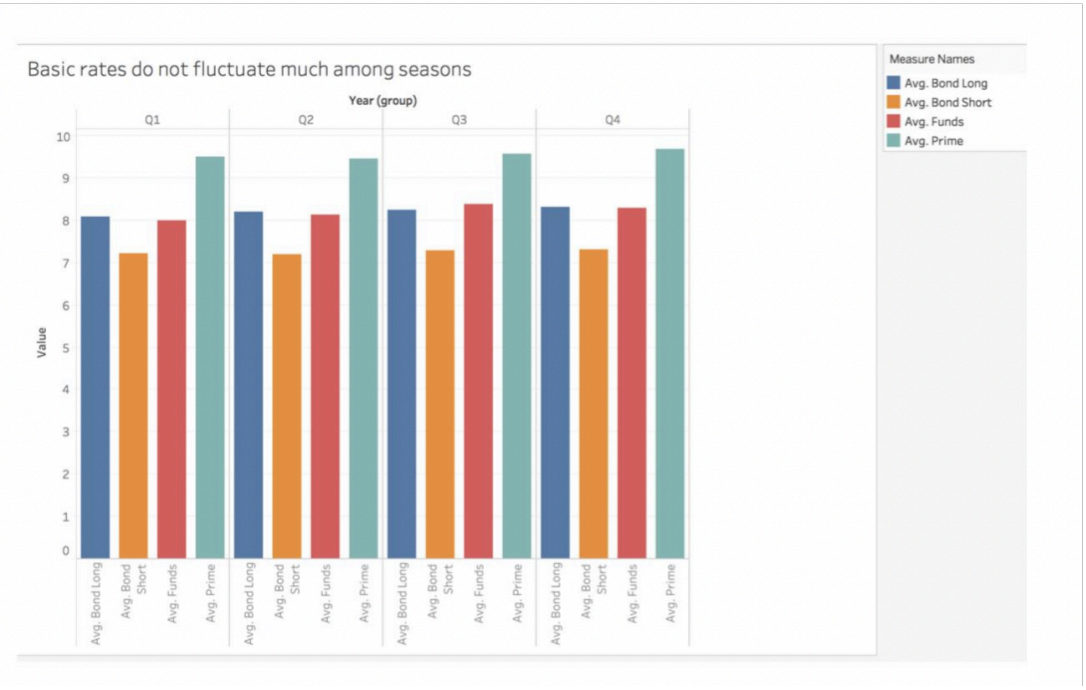

Figure 4

Figure 5 plots retail against different rate combos. Optimal range of retail is reached when the four rates are within approximately 5%-10%. **McDonald's can apply the finding on the range to forecast the retail index and design its business strategy accordingly.**

Figure 5

Segment 3: McDonald's corporate-level analysis

Figure 6 shows the total revenue of McDonald's in the last 10 years. Negative growth occurred continuously from year 2014 to 2017.

According to **Figure 7** as I zoom into this period**,** cost and revenue dropped simultaneously from 2014 to 2017. Considering cost reduction is not sustainable if McDonald's seeks to maintain its current profit level, **I recommend a positive and aggressive approach to ease its income statement dilemma - seek new store opportunities to boost revenue**. I will illustrate our logic to decide on which regions to focus in the following paragraphs.

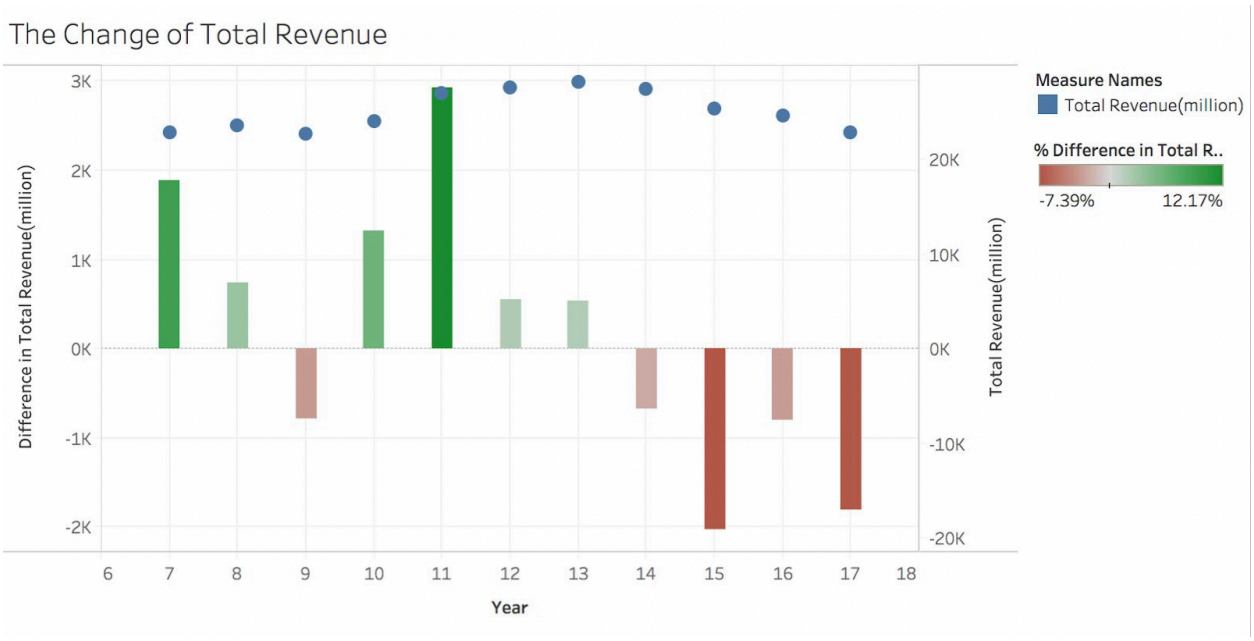

Figure 6

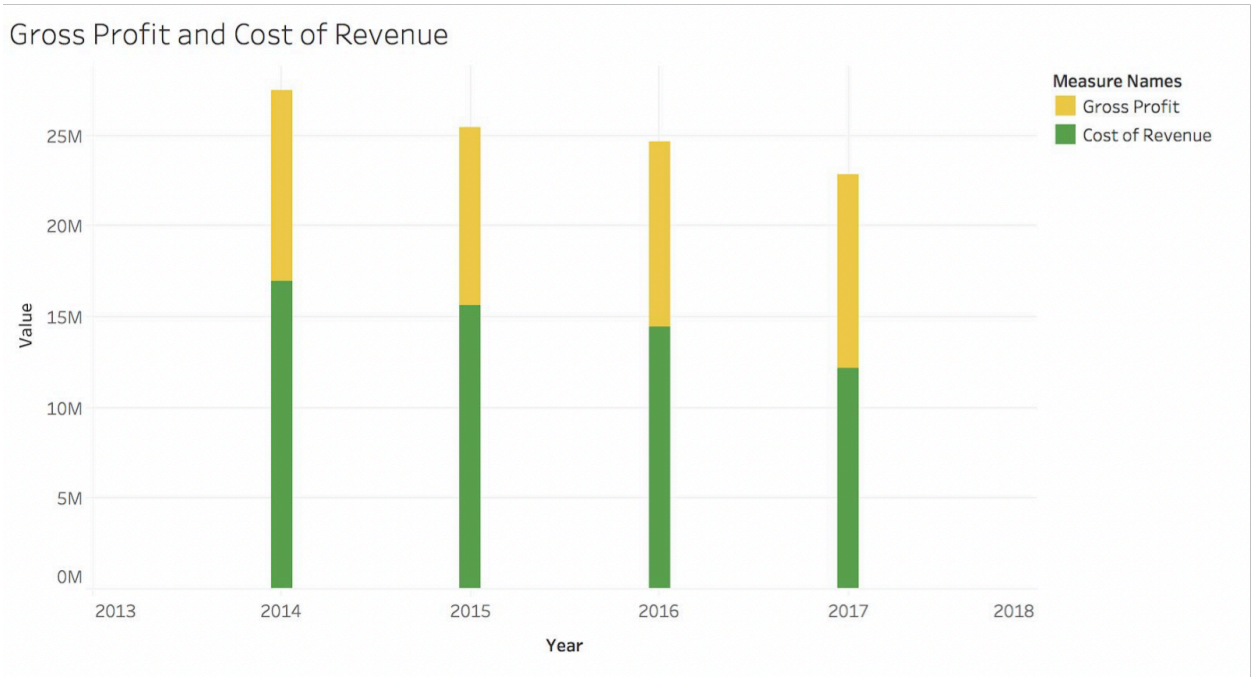

Figure 7

Taking a close look at the distribution of Mcdonald's stores (**Figure 8**), I found most stores are gathered in the east area of the US. Combined with the population plot (**Figure 10**), I found **California, Texas, and Florida** the top 3 states with more population while feIr stores than other states. In addition, the unemployment rate (**Figure 9**)of the 3 states are relatively high, indicating that the labor costs are likely to be low. **Thus, I recommend Mcdonald's to open more stores in the listed states first.**

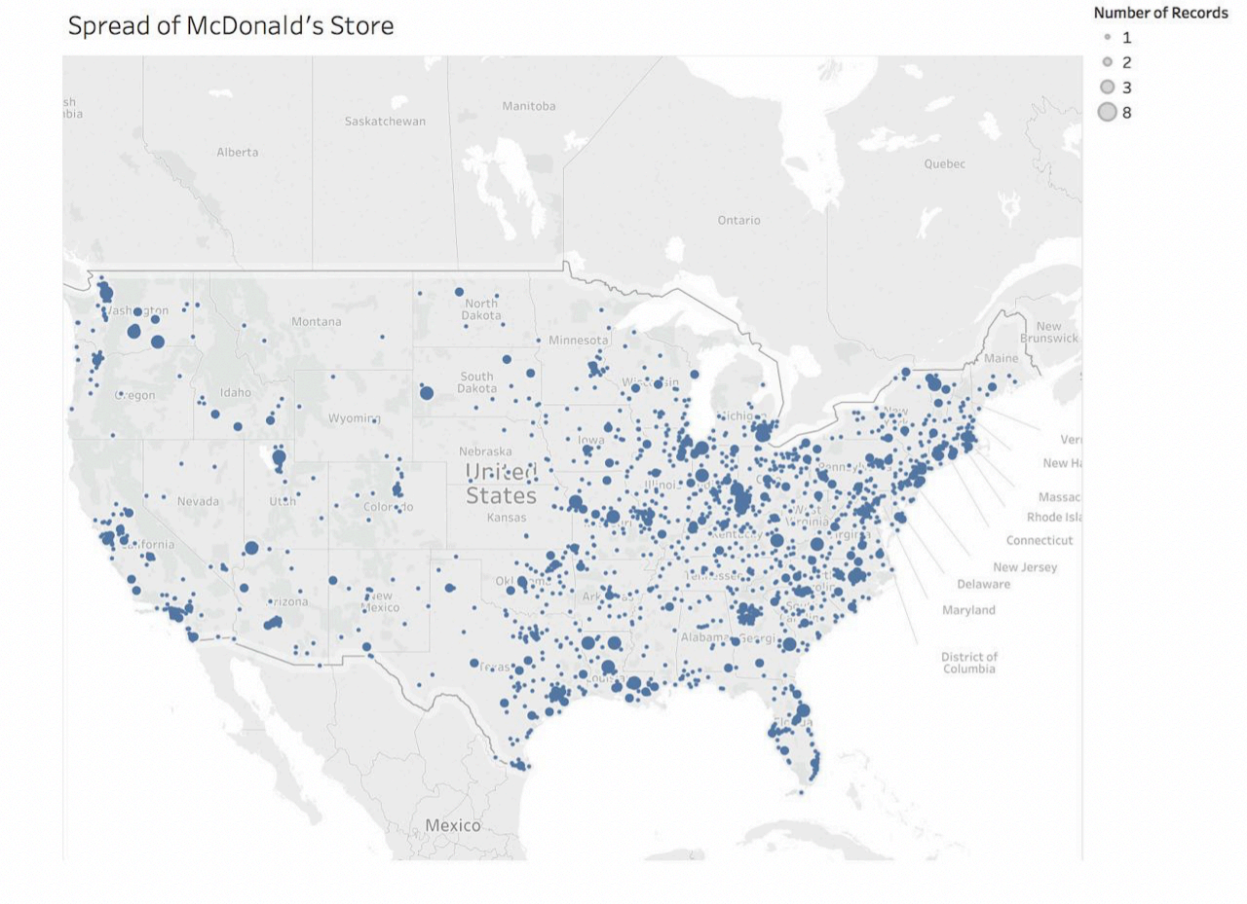

Figure 8

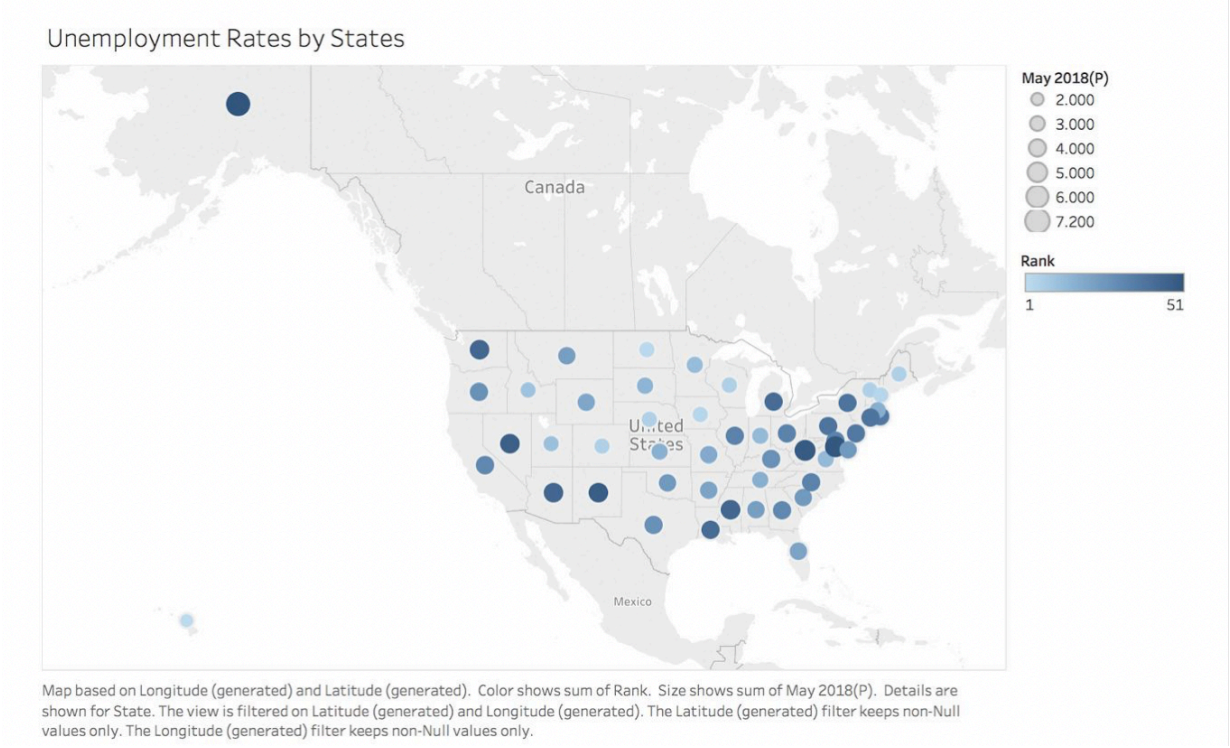

Figure 9

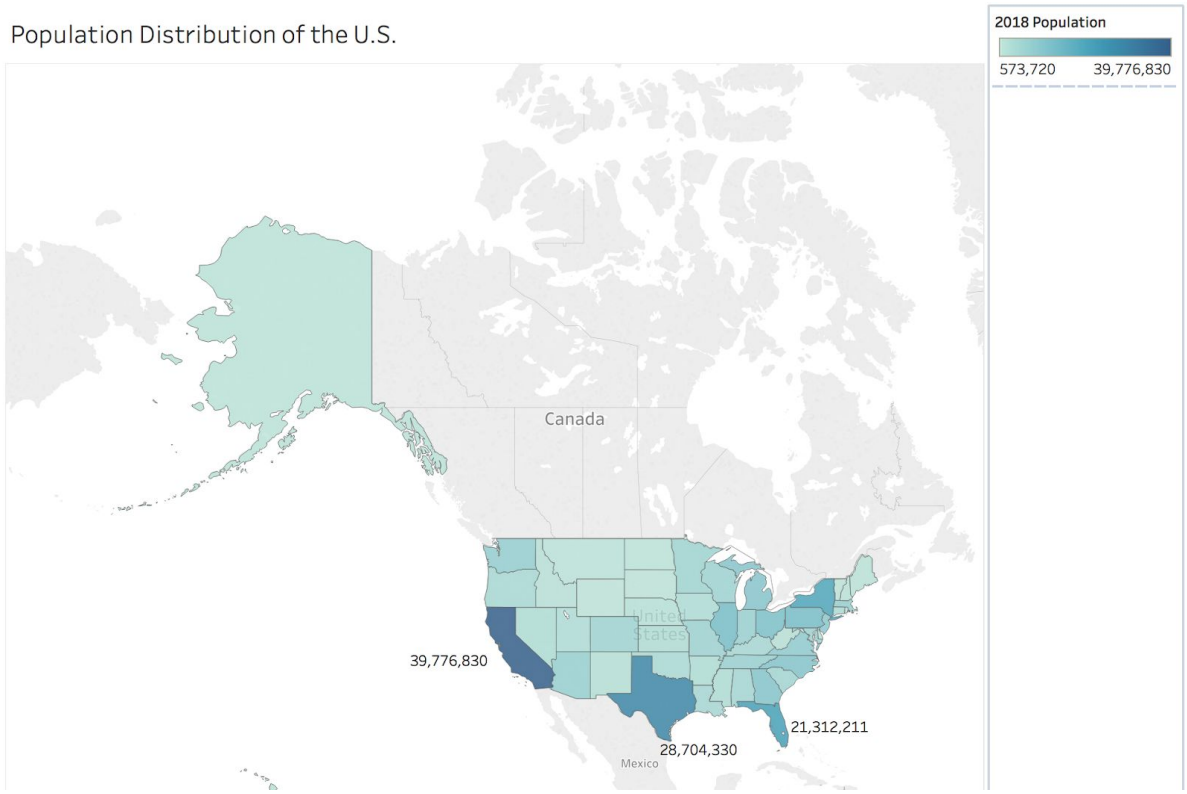

Figure 10

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Population of the U.S.

https://www.kaggle.com/lucasvictor/us-state-populations-2018

Distribution of McDonald's Stores

https://www.kaggle.com/jihyeseo/visualization-of-mcdonald-etc