



Darren Chang

McDonald's Data Report October 2019

Dear Mr. Easterbrook,

The Data Science team and I understand the great pride on the food you serve and the sheer number of people McDonald's is capable of serving. We took this same pride and used the data we were able to collect to derive at some new insights. Data driven approach to evaluate business operations is the future and the insights we discover will help benefit McDonald's future!

My team and I were given two CSV files as data to use for our exploration. The first CSV file we received was the `daily_sales.csv` which is daily sales data from the month of January 2016. The second CSV file we used was `monthly_sales.csv` which is sales data for each month from January 2016 to September 2019. It was not an ideal situation to be only given the daily sales from January of 2016. However, we worked through it! The monthly data provided us with an ability to see the long term trend.

Another interesting aspect of the data besides the given time frames were the attributes. We obtained sales data for Hamburgers, Chicken Fillets, and Fish Fillets. Sales data were further divided by regions: NE, SW, NW, SE, and C. In addition to the main primary question we were trying to solve, this provided us with an opportunity to explore if Burger King's Impossible Burger had any impact in the marketplace.

- McDonald's Data Science Team

Data Visualization and Insights

Impossible Burger's Effect on the Market



Figure 1: Line graph of monthly sales of Hamburgers in the North-East region from January 2016 to September 2019. Vertical blue line indicates the month of October 2018.

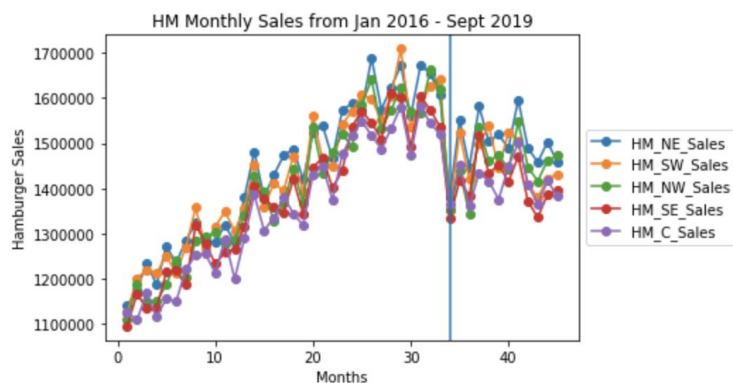


Figure 2: Line graph of monthly sales of Hamburgers in all regions from January 2016 to September 2019. Vertical blue line indicates the month of October 2018.

Figure 1 shows the change in sales for Hamburgers in the North-East region by month from January 2016 to September 2019. The vertical blue line is used to indicate the month of October 2018. There is a huge drop in sales for Hamburgers right on the month of October 2018 which is the same month Burger King released the Impossible Burger. After this drop McDonald's Hamburger sales continue to stay lower than before the month of October 2018. This concludes that the release of the Impossible burger caused our Hamburger sales to drop. To validate this effect I checked this across all our regions and there was a similar drop in all other regions as well Figure 2 shows this.

Insight: In order to compete with Burger King we should also release a new burger since their new burger caused our sales to drop.

Hamburger Sales by Region Trend

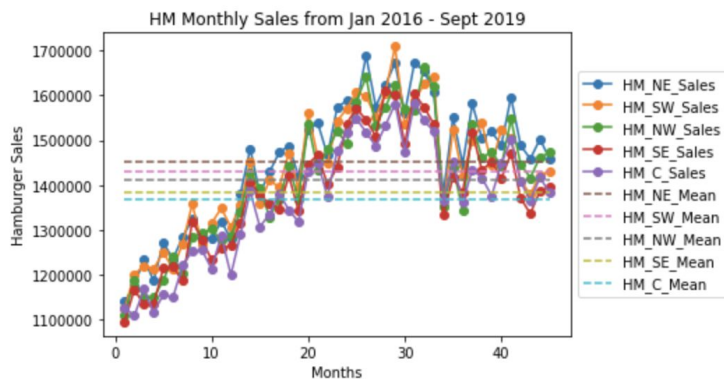


Figure 3: Line graph of monthly sales of Hamburgers in all regions from January 2016 to September 2019 with mean sales by region dotted lines.

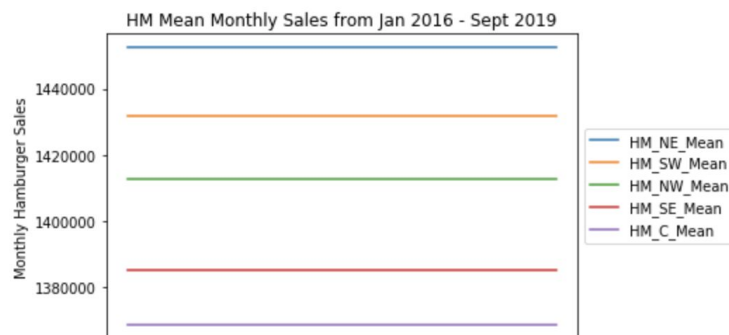


Figure 4: Hamburger mean sales line by region from January 2016 to September 2019.

Figure 3 is the same graph as Figure 2 however I added in the mean sales for each region by month over the years. Figure 4 highlights the mean sale lines created in Figure 3 in order to reduce clutter. This way we can clearly see that the sales by region goes North East, South West, North West, South East, and Center.

Insight: By understanding which regions have more sales we can focus on advertising our brand more in regions with higher sales to get more customers.

Fish Fillet Daily Sales Trend

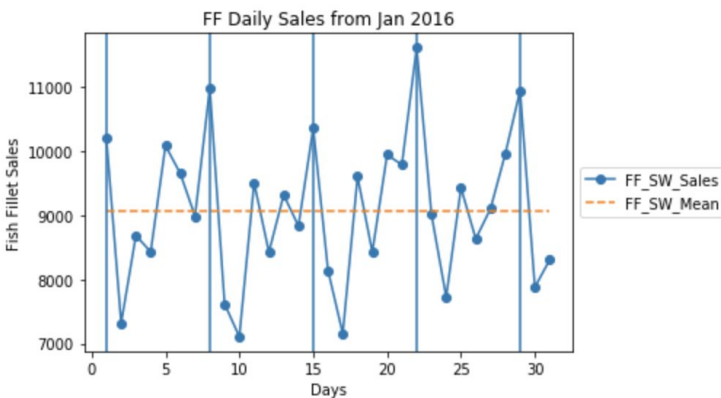


Figure 5: Line graph of daily sales of Fish Fillet in the South West region from January 2016. Vertical blue lines indicate a Friday.

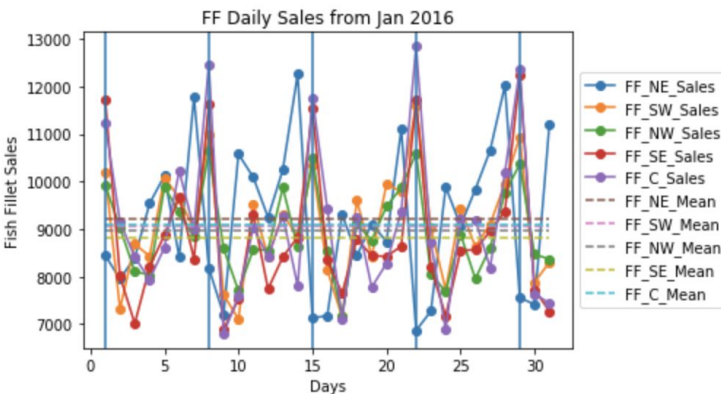


Figure 6: Line graph of daily sales of Fish Fillet in all regions from January 2016. Vertical blue lines indicate a Friday.

Figure 5 shows the daily sales for Fish Fillet in the South West region from the month of January 2016. The vertical blue lines are used to indicate the Fridays of the month. There is a spike in sales for Fish Fillet every Friday. To validate this trend I checked this across all our regions and there was a similar spike in all other regions on Fridays as well, Figure 6 shows this.

Insight: Fish Fillets are very popular on Fridays. We can use this to our advantage we need to find the root cause for this trend and try to extend it to other days.
