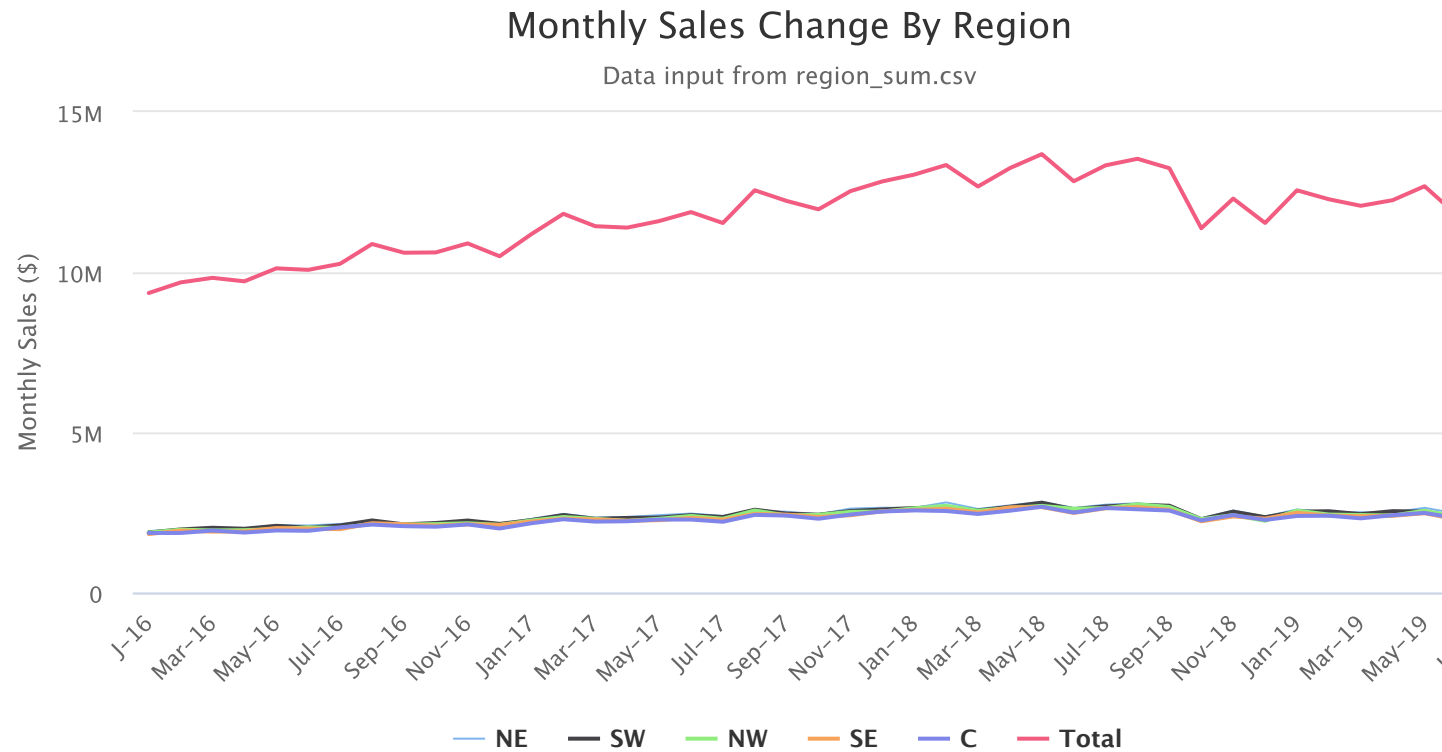


# Data Report By Zhuoyuan Ren

Dear CEO,

My team have finished data visualizations and analysis you desired below. We have figured out the impact potentially caused by BurgerKing's Impossible Burger in the last October and also we have some valuable insights McDonald's can benefit from.



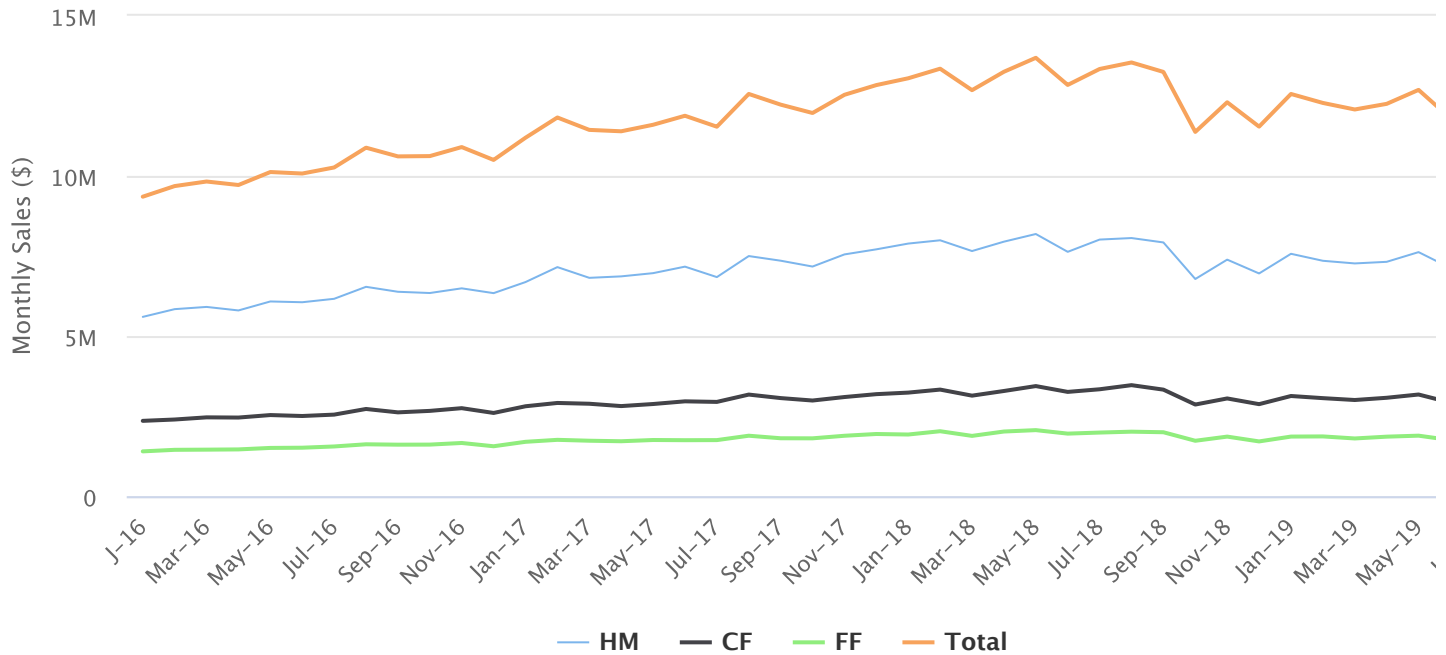
First Let's see how Monthly Sales changed over time since January 2016.

We can obviously find a huge decrease in monthly Sales from September 2018 to October 2018, the time period when Burger King first introduced their "Impossible Buger". The Sales dropped from \$13247269 to \$11374035, the biggest difference between two consecutive months. Even a year later now, our Total Monthly Sales have not recovered to the level of the last September. So it is reasonable to assume the market responded to the Impossible Burger fairly well and Burger King took away a part of our market share.

Looking closely into how each of our five regions responded to the Impossible Burger, we have not found that a particular region suffered a significantly bigger or smaller decrease in Monthly Sales than the others.

## Monthly Sales Change By Food Item

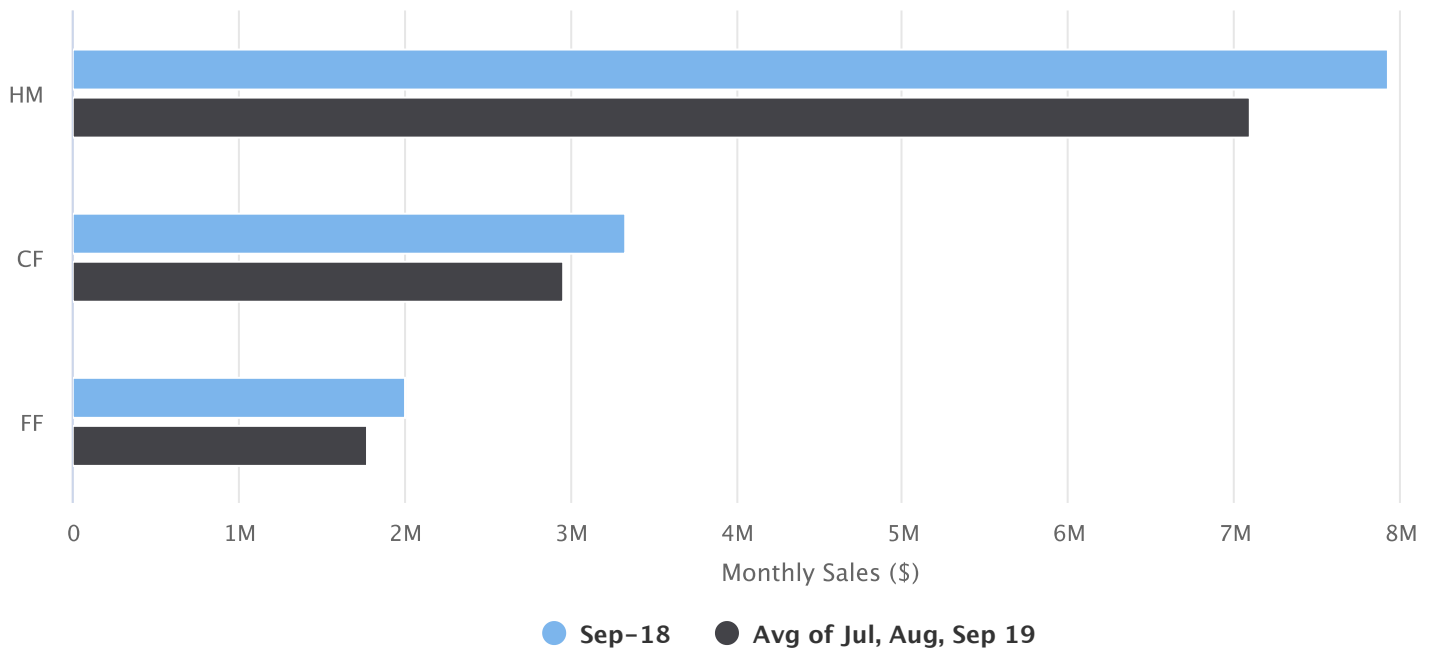
Data input from burger\_sum.csv



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## Menu Items Sales Now and Then

Data input from burger\_compare.csv



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Now, let's look at the data from another dimension, how different Menu Items responded.

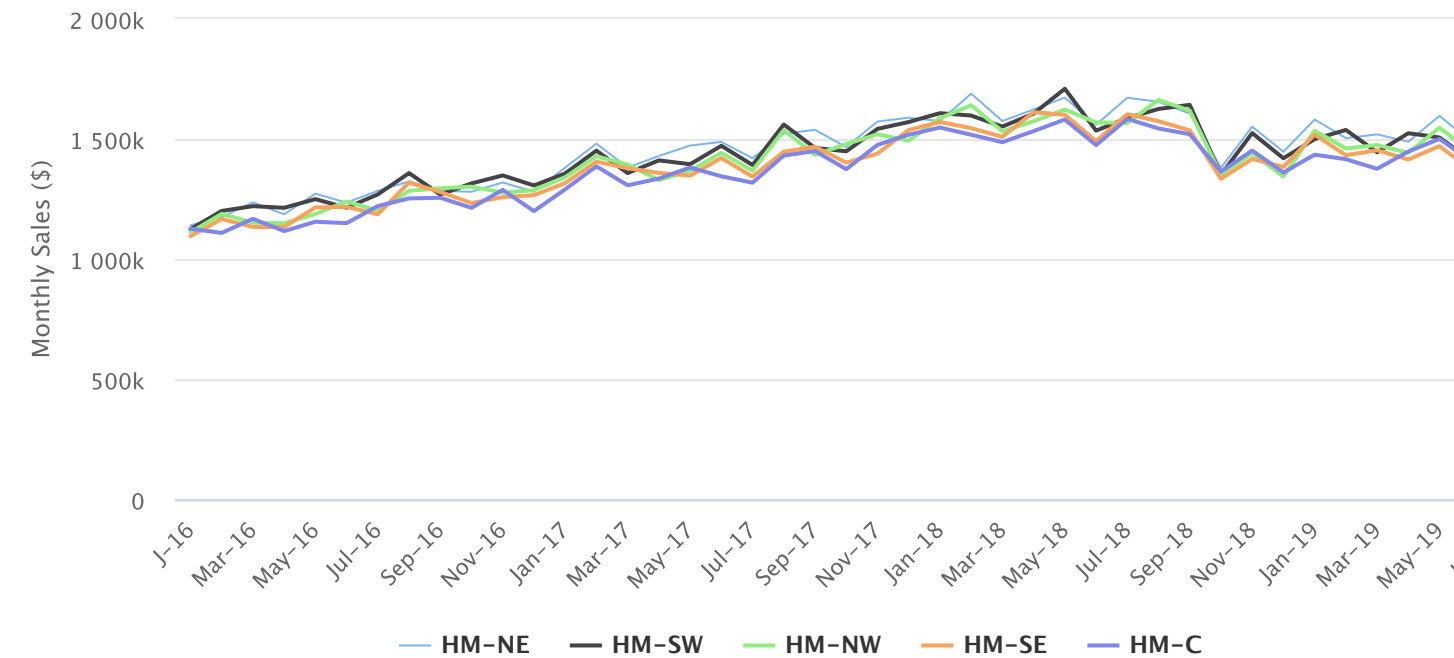
For the first graph, although we can detect some decrease from Sep 2018 to Oct 2018 in Chick Fillet's and Fish Fillet's Monthly Sales, the decreases are fairly small and the CF and FF sales have gradually recovered since then. So let's not focus on the Impossible Burger's impacts on our Chicken Fillets and Fish Fillets.

Our Hamburgers suffered the most significant drop from Sep 2018 to Oct 2018. The Hamburger Monthly Sales changed from \$7.92M to \$6.78M, the largest change between any two consecutive Monthly Sales in our dataset.

So I think Impossible Burger is the main competitor for our Hamburgers. So let's dig into how each regions'

HM Monthly Sales Change By Region

Data input from HM\_region.csv

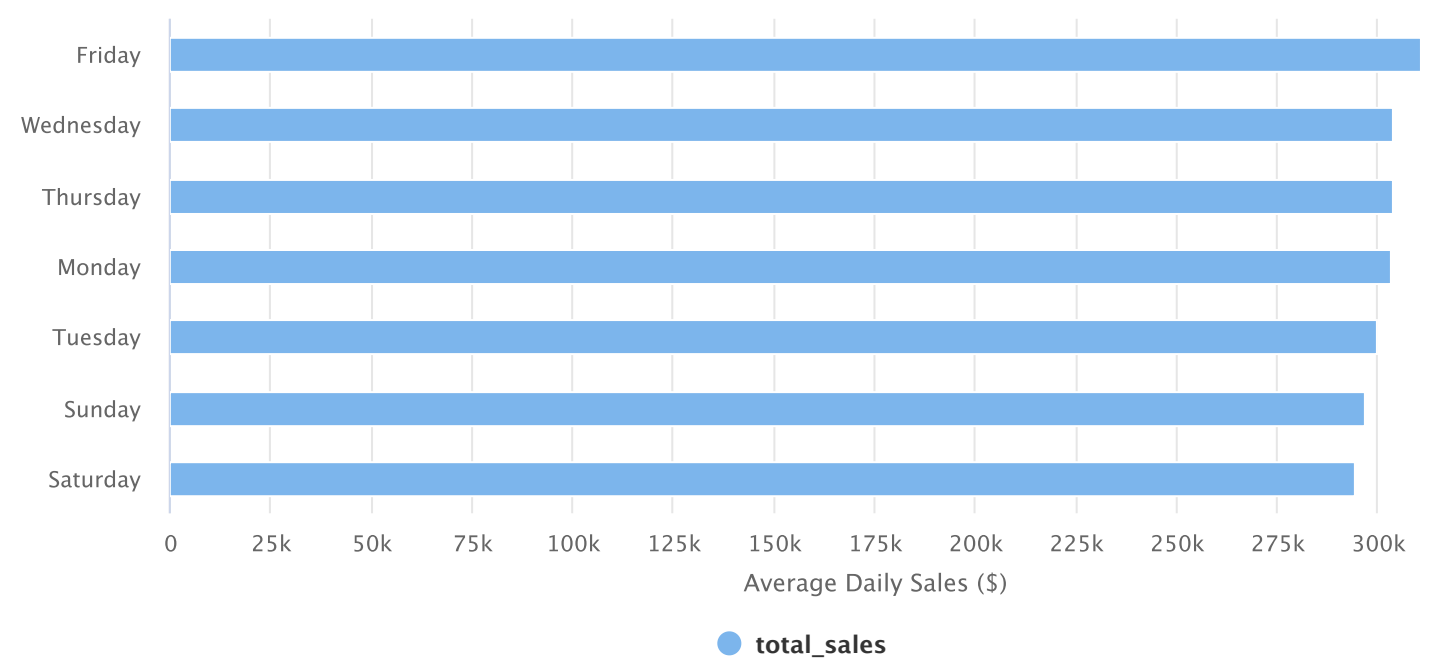


From Sep 2018 to Oct 2018, NE and SW and NW suffered similar amount of decreases in their Hamburger sales, all larger than the decreases in SE's and Center's HM sales.

So other than creating a new food item to fight Impossible Burger for market share, I would suggest we have some discount events or combos for Hamburgers, primarily in regions including NE, SW, and NW.

Average Sales of Each Day of Week By Region in January 2016

Data input from weekday\_sale.csv



Now, let's look at the daily data in January 2016.

Comparing the average daily sales of each day of the week in Jan 2016, we can tell that the five weekdays' average daily sales are ahead of Saturday and Sunday. It is reasonable for us to assume that people would more likely to choose McDonald' when they go to the school or work. It is more convinient and fast to come to eat at a fast food restuarant and unfortunately we become less appealing when constomers have more time and choices during weekends. So if we are planning on some discount events, we should choose to launch them on weekends. Therefore we can be more competitive with other restuarants during weekends.

In Conclusion:

Problems Found:

- Burger King's Impossible Burger indeed took away a considertable part of our market share since the last October.
- Especially our Hamburgers sales have been impacted most heavily
- More specifically, Hamburgers in NE, SW, NW suffered higher drops than the SE and Center areas.
- Our sales during weekends are not as competitive as during weekdays.

Insights Found:

- Our Sales are higher during Weekdays rather than during Weekends.

Suggestions:

- Since Impossible Burgers are mainly influencing our HM sales, we could try to update the flavors or recipes of our Hamburgers.
- We can hold discounts events for Hamburgers, primarily in regions including NE, SW, NW.
- We can hold discounts events on weekends to enhance our competitiveness during weekends.