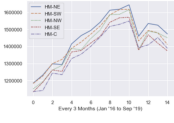
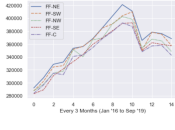
CALVIN TAM'S SUBMISSION FOR HOMEWORK 2 OF DSC 106 (DATA VISUALIZATIONS COURSE) AT THE UNIVERSITY OF CALIFORNIA, SAN DIEGO (BETTER KNOWN AS UCSD) : -)





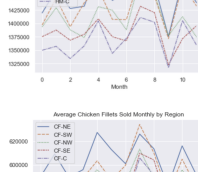
So Mr. CEO, let's just jump right to it. I was able to take a look at the data you supplied me. As you can see from just some preliminary analysis of the monthly data below, we can see that the introduction of the Impossible Burger had some impact on our sales.

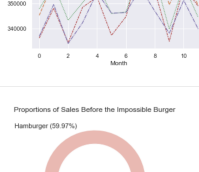
If you look at the first set of charts to our left, I wanted to show you how the sales of each burger changed from January 2016 to now, September 2019. The first row of charts shows the average number of sales per product every three months. Right around the 10th increment (October 2018 - December 2018), there was a stark drop in sale foes all three products. Now just from a simple analyst's opinion, it seems pretty clear that the Impossible Burger has done a number to our sales. Our trajectory in sales was growing quite well before, but it all took a sharp turn after that fateful month.

Right now, before you continue reading, I would highly recommend for McDonald's to consider some more meatless options, like a Veggie Burger. Our sales have seemingly dropped and now plateaued after those darn Burger King geniuses. We should definitely try to roll out a vegetarian option for our customers, and for your company's sake.

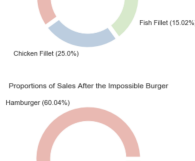
Now, to continue where we left off, if we were to take a look at the average sales by every month in the year, we can see the different trends of sales that each month brings. On the right, I have shown a few line charts depicting the average sales every month for each product. The x-axis is sorted from January to December (0 - 11). If we look just at the hamburgers, we can see that the sales seem to spike around February, May, August, and November. And there are dips between these months. This trend seems to recur amongst all the burgers, and it is pretty consistent amongst all the regions. This trend shows that, basically every three months, we have one month of great sales.

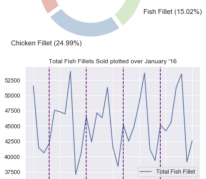
Additionally, we see that the northeastern regions typically do the best in all three products, with southwestern and northwestern regions around 2nd/3rd best. The central and southeastern regions typically do the worst.

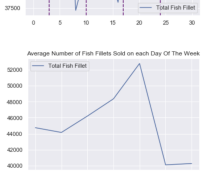




On the bright side, the introduction of the Impossible Burger seems to not have changed the types of burger being sold. By that, if you look at the pie chart below and compare them to the two to the right, you virtually see no difference in the percentages. The proportion of sales from each type of burger did not change, with the majority coming from hamburgers, then chicken fillets, and the least from fish fillets. Personally, this appears to be great news because that is one less thing to think about, knowing that the types of sales are not changing.



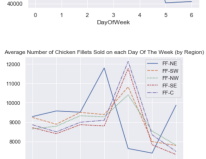




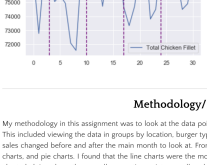
Now looking deeper at the daily sales data, there seems to be a pattern specifically in the fish fillets. We can see that for some reason, the sales on Day 4 (Friday) does the best in the week, with the weekday sales leading up to Friday slowly rising.

My current guess would be that customers are LOVIN' those Fish Friday's, so trying to market for more fish fillet sales on Fridays would be a great idea.

One more unusual thing to note for fish fillet sales is that, the Friday sales happens strictly for all the regions except the northeastern region. The northeastern region seems to be set back one day unusually, almost like they are living in a different world where their Fridays are everyone else's Thursdays. This is likely due to a data entry error or a different time system.



Now looking at the sales of the other two categories, not much else can bee said. The sales don't seem to follow an obvious trend for specific days of the week, with just spikes occurring every few days.



Methodology/ Pitfalls/ Successes

My methodology in this assignment was to look at the data points and group them in all the different possible ways I could think of. This included viewing the data in groups by location, burger type, and the day of the week. Additionally, I wanted to look at how the sales changed before and after the main month to look at. From there, I viewed the data in different ways, including bar charts, line charts, and pie charts. I found that the line charts were the most successful in viewing the different stories within the data, with pie charts helping show the overall proportions picture well and the bar charts not the most successful. My biggest pitfall would be limiting myself to mainly these three modes of visualization. Trying and learning about more would have been better, as well as using different technologies to show the different trends and stories. I mainly used Python's matplotlib and seaborn libraries to do such visualization.