**Technical Findings – Starbucks vs Donut Donuts**

***Almond Milk Availability vs Income Bracket***

**Questions:**

1. Is there a direct correlation of almond milk availability at Dunkin Donuts stores relative to income bracket?

2. Can we derive a data model to highlight a relationship between an independent variable of income and a dependent variable in the form of % of almond milk availability in Dunkin Donuts stores?

3. Lastly, what other conclusions can be drawn that can help a Dunkin Donuts business drive their business growth model as it relates to almond milk availability at their certain stores?

**Findings:**

For the findings, two separate plots were used in analysing almond milk availability at Dunkin Donuts stores vs income bracket. A bar plot was used to give a visual of the proportional relationship of the increase in income bracket that has a direct effect on almond milk availability. Said differently, when we increase the independent variable of income, we see a corresponding of increase in almond milk availability in Dunkin Donuts stores. As an illustration, when income bracket is between $70K - $80K, 8 of 10 stores would have almond milk in their menu. The conclusion that can be drawn is the higher the income, the greater likelihood you will find almond milk availability at the stores.

A scatter plot with linear regression is introduced to show not only the correlation of almond milk availability relative to income bracket but using linear regression as a data model to reveal the best fit line. This type of data model is crucial for driving the strategic business growth in Dunkin Donuts food and drinks offerings. This is used by Sales and Marketing in determination of ad campaigns and promotion strategies. The same can be said for Purchasing and Supply Chain where they can use this data model in determining how much almond milk to purchase and use the data to negotiate an optimal price point with their vendors supplying almond milk. Lastly, the data model can be used by Finance team in performing forecasting and budgeting at the SKU level. The forecasted data can be used to underscore any variances and next year’s budget can be projected based on the data model where growth is targeted at certain stores where there are higher income brackets.

***Stores vs Population/Income Density***

**Questions:**

1. Does Starbucks target in areas with higher income while Dunkin Donuts target in areas with lower income?

**Findings:**

The store count per population bar chart shows that as income increases, the number of Starbucks stores increase as well. However, there is one exception. The store locations drop significantly in areas with income of 70k-80k. But the areas with the highest income do have the largest number of stores. Whereas, Dunkin Donuts has most of stores located in areas with income of 50k to 80k and has the least number of stores in areas with income of 30k-40k. Compared to Starbucks, Dunkin Donuts has even fewer stores in the lowest income areas.

***longitudinal dependence***

**Questions:**

1. What is the geographical dependence of Starbucks and Dunkin Donuts locations?

**Findings:**

A scatter plot of store location against average state longitude reveals a clear and strong correlation between longitude and store count for each store. This is confirmed by the general knowledge that Starbucks was founded and remains a strong presence on the West coast, while Dunkin Donuts is more popular on the East coast. Each store's popularity wanes as it approaches the other's territory. This geographical trend is very strong and could easily bias the other results. Dunkin Donuts has a larger stake in the East coast, where there is a higher density of small but densely populated states, many of which tend to have a higher average GDP. By contrast, Starbucks popularity on the West coast is focused on just a few large states and is quickly dampened by low populations past the Rocky Mountains. This could skew the data when comparing store count to income or population across the whole country.