Grocery Store Price Comparison

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The Business Problem

- The grocery store industry is pretty close to “perfectly competitive”, but there are still some differences across companies in prices, products, and qualities.
- Any one grocery store (in this case, our client) has an acute interest in knowing, across all their products, how they compare to competitors.
- Having an analysis comparing what “you” are offering and what “they” are offering allows for informed changes in pricing schemes or marketing efforts in order to capture that little extra bit of profit margin.

How we “solve” the problem

- This project aims to gather timely data corresponding to the prices of groceries from major competitors websites and looking at how the prices vary across the spectrum.

- **Over the course of 4 weeks**, we collected pricing information from **4 major grocery stores**: Whole Foods, Walmart, Wegmans and Stop and Shop from **5 sections**: Dairy, Fresh Fruit, Fresh Vegetables, Meat, and Seafood

The Tools We Used

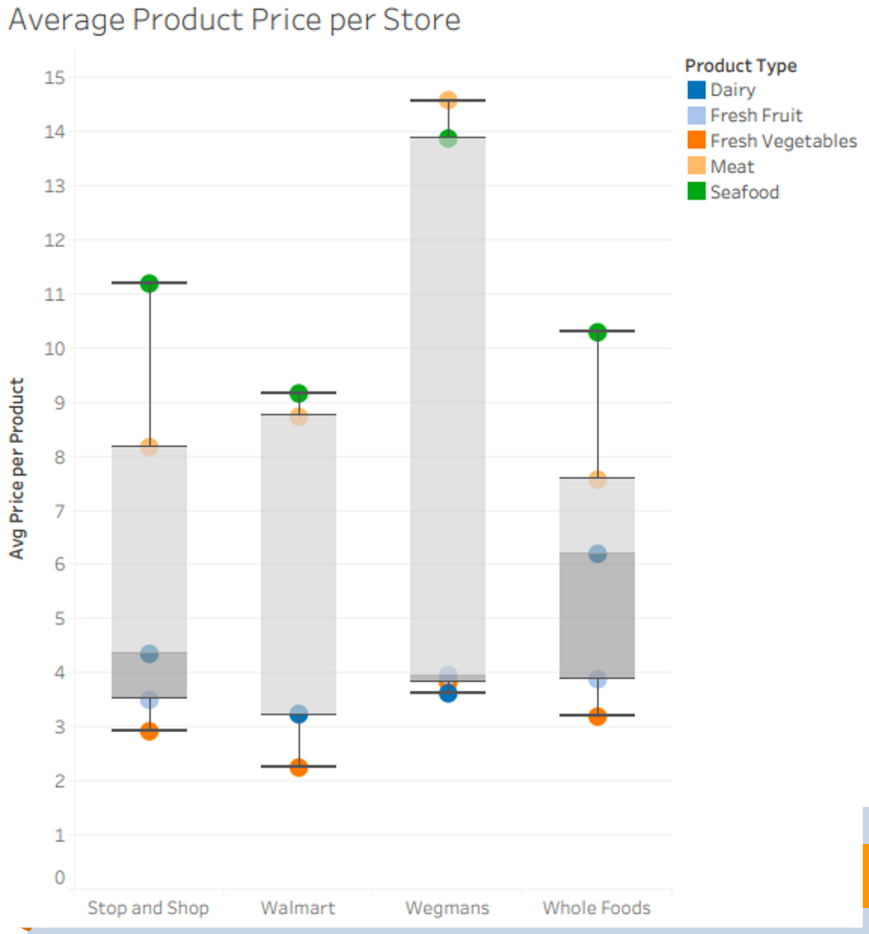
- We used the following web and data analytics tools
  - We initially tried using **BeautifulSoup** alone, but then found that **Selenium** was also required in order to access the websites.
  - **Pandas** to clean up, store and aggregate all of the data that we collected.
  - **Tableau** to put all of our data into concise and clear tables that our client can look at and immediately understand the picture painted by the data.

Data Breakdown

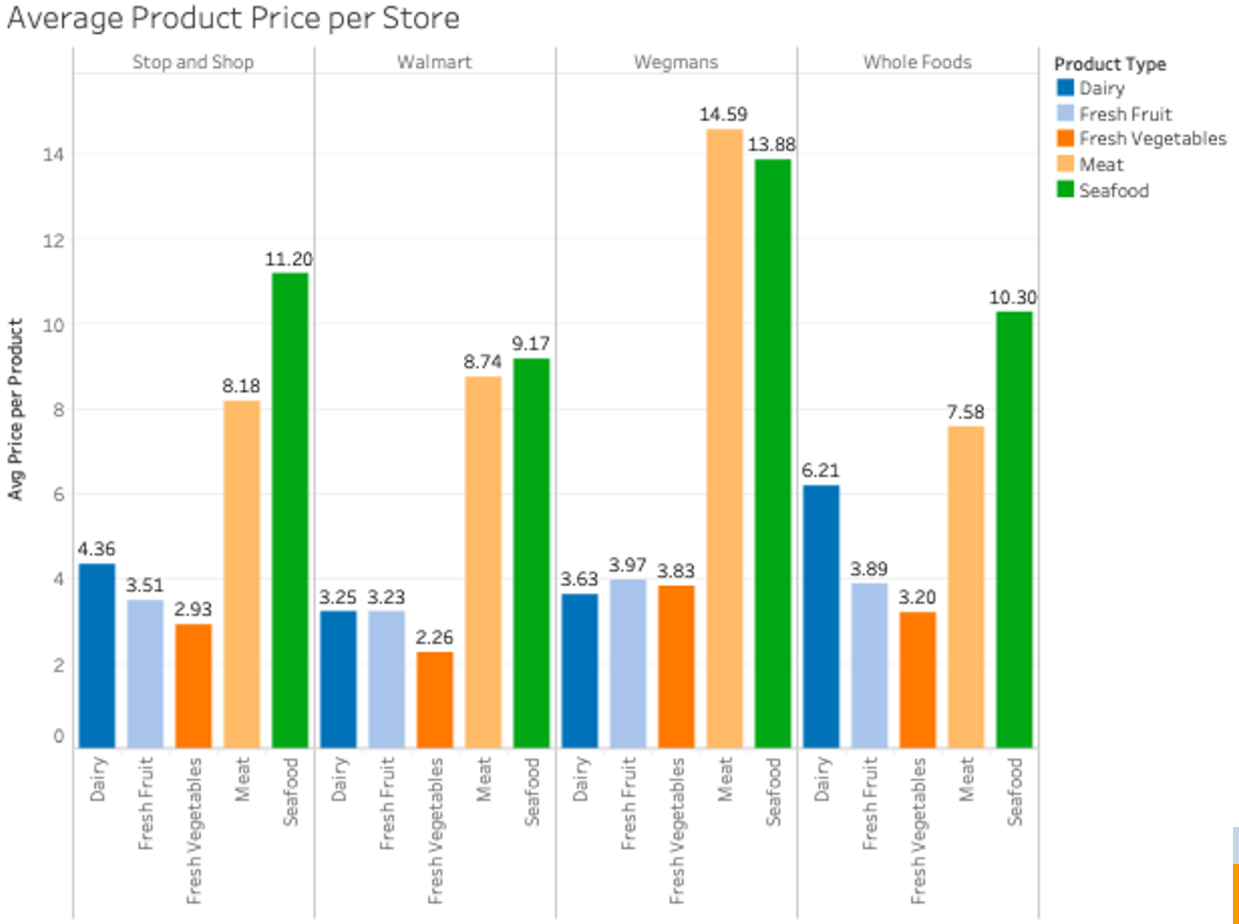
	Product Type					
Store	Dairy	Fresh Fruit	Fresh Vegetables	Meat	Seafood	Grand Total
Stop and Shop	14,196	3,480	3,480	2,518	2,063	25,737
Walmart	4,921	3,057	2,950	6,044	2,980	19,952
Wegmans	6,159	1,605	329	2,866	1,433	12,392
Whole Foods	5,800	3,427	5,800	2,951	3,537	21,515
Grand Total	31,076	11,569	12,559	14,379	10,013	79,596

Count of Product Name broken down by Product Type vs. Store.

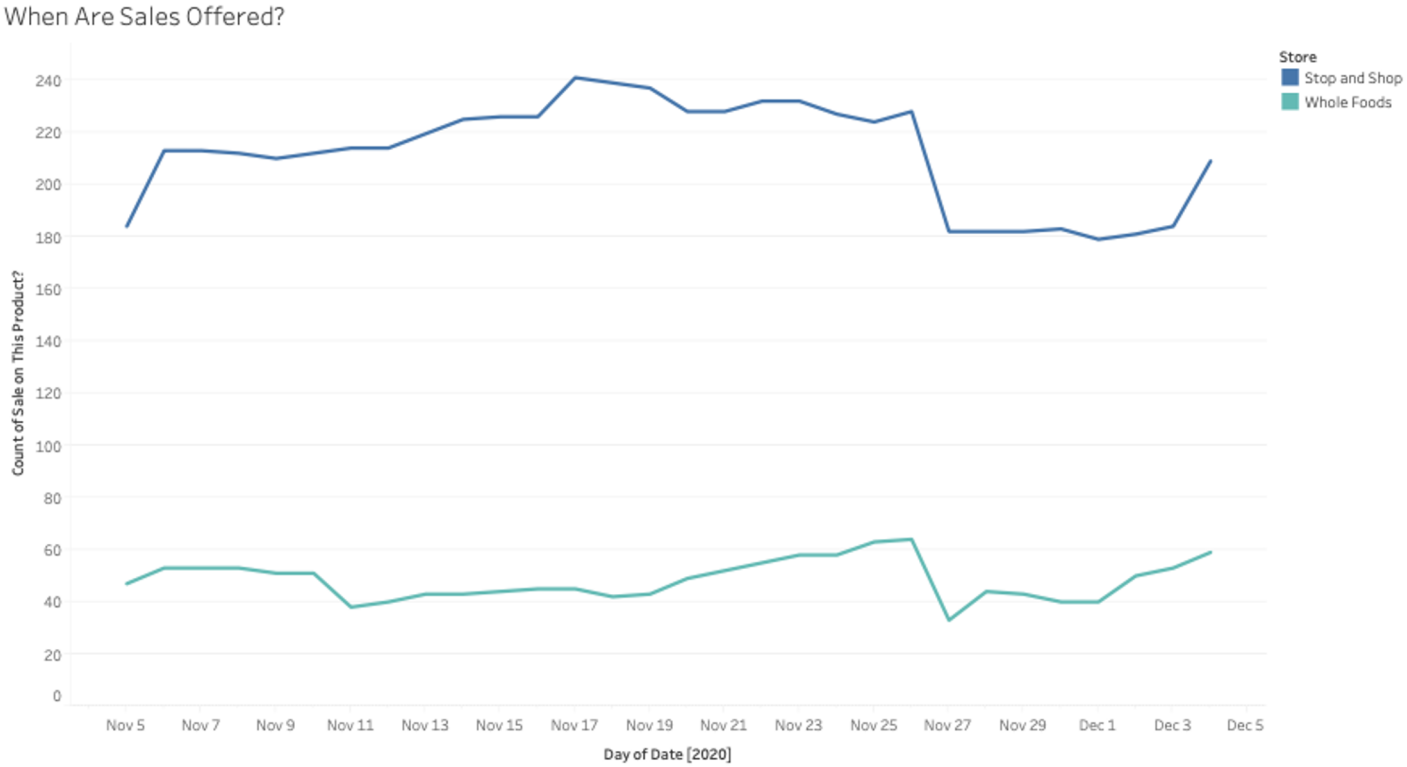
Average Product Price per Store 1



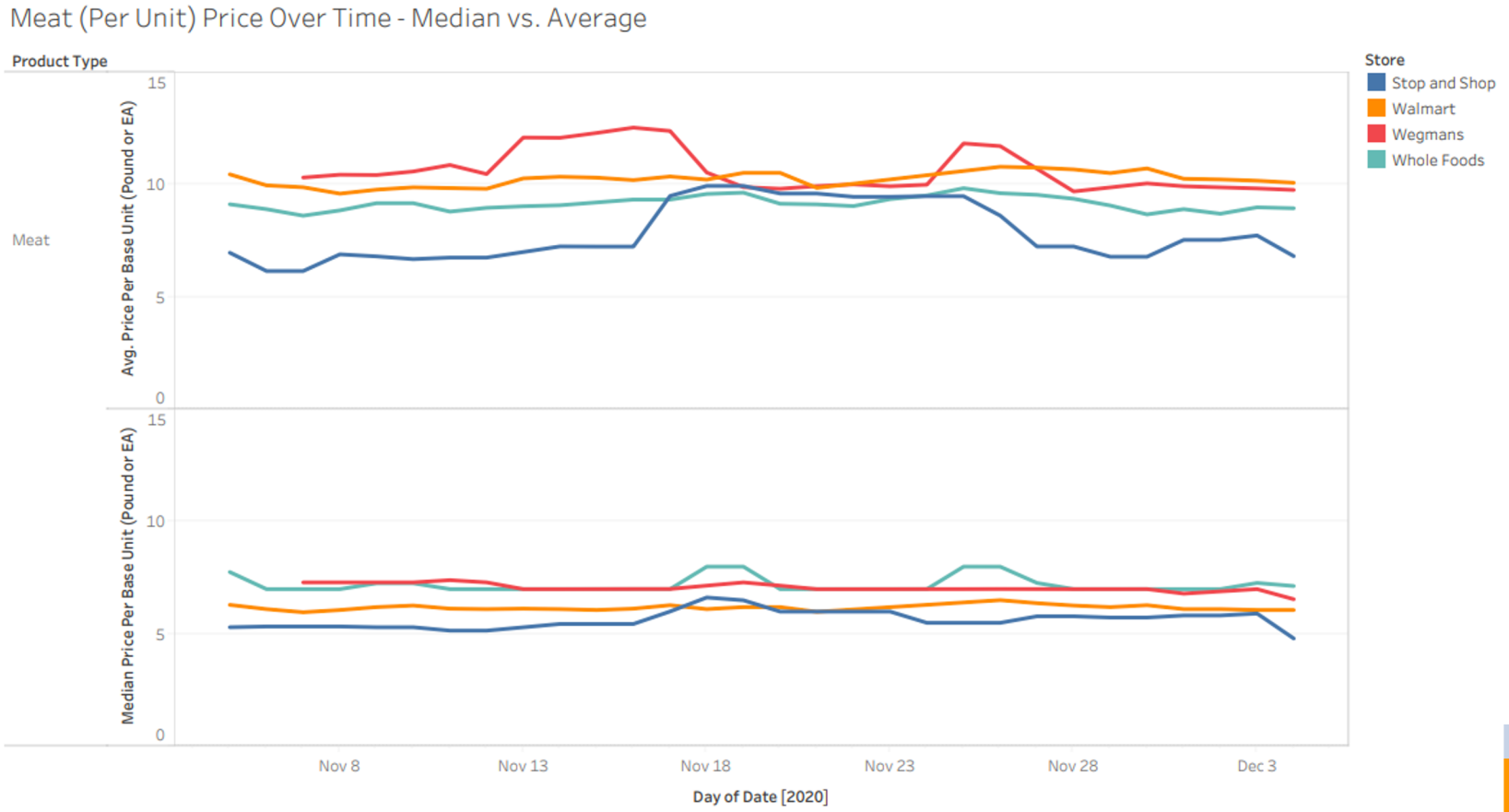
Average Product Price per Store 2



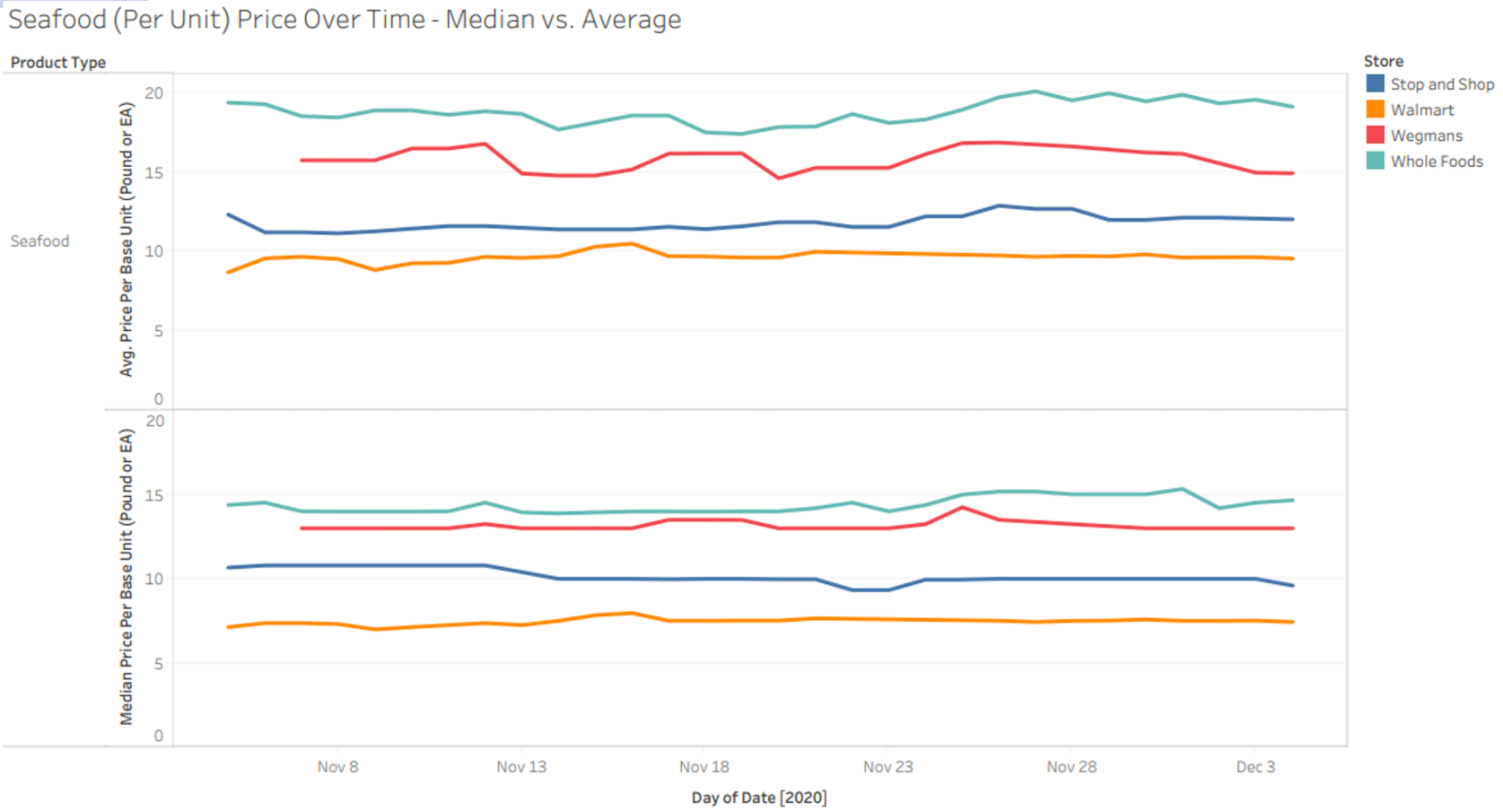
When Are Sales Offered?



Meat (Per Unit) Price Over Time



Seafood (Per Unit) Price Over Time



Connecting Price to Strategy

Throughout this project we were also looking for a few things to potentially tie together both price and strategy for each store. These three factors could very easily influence both as it relates to each store:

- Location
- Branding
- Popularity

1. These are our own personal opinions not based on proven fact.

Short Summary

From our month-long data analysis, we learned that

- **Whole Foods** constantly had the highest price per unit in Dairy and the lowest sale.
- **Walmart,** on the other hand, had the lowest price per unit on most of the sections.
- **Wegman** has the highest average prices for seafood and meat.
- Last but not least, the number of products on Sale reached a high point on Thanksgiving day and dramatically dropped during the recess.

Suggestions

- We would have to suggest the pricing strategy goes either the **Walmart** route, or follow the **Whole Foods** footprint. To further back up this point, both Walmart and Whole Foods were ranked in the Top 10 Grocers by revenue for 2019 (1 and 10 respectively) so they must be doing something right.

Future Research (What Could be Done Better)

In the future, if performing this research project again, we would recommend:

- Conduct the crawling process for **at least 2 months** to better understand the market research
- As most websites cannot only use Beautiful Soup, **try to use Selenium first**
- Adapt the code to track **real time data**, or crawl the website **at the same time** each day
- Find other stores that contain **out of stock** and **on sale** data
- Focus on one specific region to **narrow on geographic scope**

THANKS!