2024

Conagra Project Report 3

Data-Driven Analysis to Increase Conagra's Market Share in the Frozen Meat Substitute Market

Authors:

Aishwarya Adiki - AXA180100

Sri Sai Sudhamsu Boyapati - SXB230054

Qiaozhi Fu - QXF210001

Ru Shuang Huang - RXH220009

Shamina Raja Mohamad - SXR230017

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Conagra's Gardein: Making the Frozen Meat Substitute Market Great Again

A comprehensive report compiling the data and strategies that Conagra can use to revitalize a downward market, pioneer change in the frozen meat substitute category, and seize the opportunity to overtake competitors while the race to the top has slowed down.

I. Introduction

The plant-based meat market is experiencing rapid growth, with projections to expand from "USD 7.9 billion in 2022 to USD 15.7 billion by 2027, at a CAGR of 14.7%."[1] This surge is fueled by increasing health awareness, dietary preferences toward plant-based foods, and environmental considerations. The market encompasses a variety of sources, including soy, wheat, and pea, with products ranging from burger patties to sausages and meatballs, catering to different consumer preferences across global regions. Key drivers include governmental support and significant investments in the sector, whereas high product prices and taste perception challenges remain constraints.

The primary objective of this report is to explore strategies for enhancing the market share of Gardein, a leading producer of plant-based meat alternatives, by focusing on key product attributes such as flavor, form, price, and the source of meat alternatives. However, there exist additional, less visible factors that could influence the sales of plant-based meat alternatives. These include the attractiveness of marketing, branding, packaging, and regional dietary preferences.

These factors will be assessed using the data provided to the team by Conagra, followed by descriptions of any relevant analyses and visualizations drawn from the data. The results will then be summarized, and the analysis questions will be answered by providing recommendations to Conagra on increasing its Frozen Meat Substitutes market share. Finally, these recommendations will be supplemented with additional advertising strategies that Conagra can employ to advertise Gardein's product improvements.

[1]Markets and Markets. "Plant-Based Meat Market | Size | Share | Trends | Forecast to 2025." Www.marketsandmarkets.com, Dec. 2020, www.marketsandmarkets.com/Market-Reports/plant-based-meat-market-44922705.html

II. Meet the Team:

This project is a team effort; as such, all team members participated in all aspects of the project, **such as Research, Programming, Analysis, and Technical Writing.** However, each member took up one role specifically to ensure a smooth project workflow. This allowed the team to communicate well and better understand project deadlines and responsibilities.

Project Liaison: Shamina Raja Mohamad

Role Description: Shamina supported the project by facilitating communication and ensuring compliance with regulations.

Project Manager: Aishwarya Adiki

Role Description: Aishwarya led the team's efforts in research by compiling resources that the team can explore for research, learning, and analysis. Aishwarya also participated in coding along with George.

Project's Lead Programmer: Qiaozhi Fu

Role Description: George improved the team's programming efforts by helping the members when they had trouble with syntax, python package usage, errors, etc.

Project Document Master and Researcher: Ru Shuang Huang

Role Description: Ru was in charge of ascertaining that the project reports followed the right format and guidelines and that all sources were cited. Ru also participated in conducting thorough market research.

Project Analyst: Sri Sai Sudhamsu Boyapati

Role Description: Sai helped the team by interpreting models and graphs and connecting the inferences to market research. Provided great insights into different marketing and advertising tactics such as Sample Marketing and Sustainability Marketing

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III. Background: What is Gardein?

Gardein (a portmanteau of garden and protein) is a line of meat-free foods under Conagra Brands. All of Gardein's products are vegan, and the company uses a proprietary process to make its meatless products.

In 2014, the company also began producing gluten-free meatless products to cater to customers with gluten allergies. This was an important undertaking by the company because according to Yves Potvin, founder of Gardein, the company takes "great pride in offering a variety of great tasting, meatless foods. As so many consumers move to a gluten-free lifestyle, it was a natural next step to develop these products and fulfill an important market need. The taste, texture, versatility, and health benefits of all three are unparalleled in the marketplace.[2]"

Likewise, based on the research conducted for the report, Gardein seems to be an extremely customer-centric and market-conscious brand that is enthusiastic and adaptable with respect to integrating new offerings into its list of products.

However, despite all its efforts, the research provided by Conagra demonstrates that Gardein has been struggling to show much improvement in the industry over the years. Furthermore, the fact that the meat substitute market has slowed down over the past few years has added an extra barrier that Conagra will have to surpass in order to remain competitive and potentially revitalize the market–Gardein has an unusually small market share despite being a subsidiary of Conagra Brands (ConAgra Brands is a leading North American packaged food company and ranks twelfth in sales.)[3]

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[2] Just Food. "US: Meat alternatives firm Gardein adds gluten-free to range." Just Food, 9 November 2017, https://www.just-food.com/news/us-meat-alternatives-firm-gardein-adds-gluten-free-to-range/. Accessed 31 March 2024.

[3] https://www.statista.com/topics/3129/conagra-brands/#topicOverview

IV. Problem Statement

A. Market Research:

a. Where Does Gardein Currently Stand?

The plant-based meat sector is in a critical phase, seeking to adapt to consumer expectations and the competitive landscape to sustain and grow its market presence, and Gardein is one such company that wishes to do just that.

Currently, Conagra Foods (Gardein is a Conagra subsidiary) is ranked 13th according to the ranking compiled by Food Processing's Top 100 (2023) –The Top 100 Food and Beverage Companies for U.S. and Canada 2023[4]. Conagra ranks higher than Kellogg Co. (20th ranked Food Company) which owns Morningstar Farms. Additionally, Impossible Foods and Beyond Meat are much smaller companies, but they seem to have a higher market share in the plant-based meat-substitute industry than Gardein which doesn't look too good.

To better cater to potential customers and maintain a strong foothold in the industry, Gardein has to evolve and adapt to remain competitive against industry leaders such as Morningstar Farms and Impossible Meat.

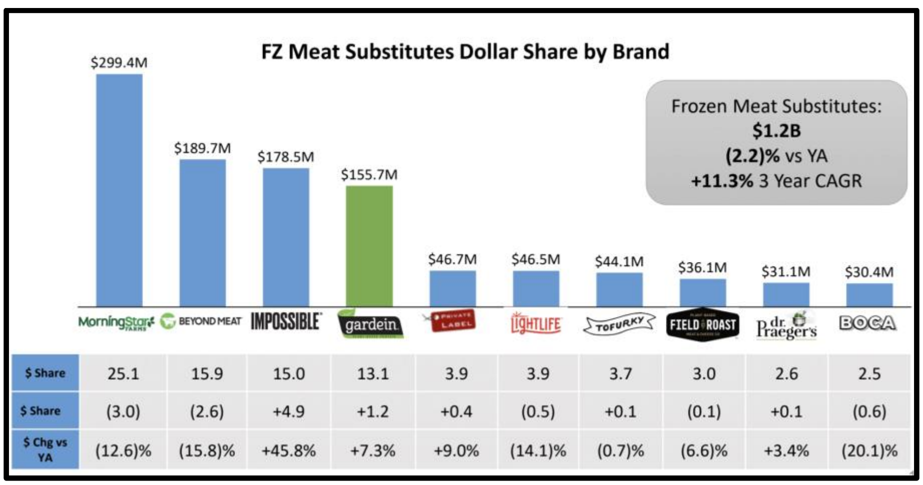

Figure 1: Market Share in Dollars by Meat Substitute Brands [5]

According to Figure 1 above, Gardein is arguably #3 to #4 in dollar share behind Morningstar Farms, Beyond Meat, and Impossible in the Frozen Meat Substitutes

[4] Food Processing. "Top 100 Food and Beverage Companies for U.S. and Canada 2023." Food Processing, https://www.foodprocessing.com/top100/2023. Accessed 31 March 2024.

[5] Circana POS MULO + C L52wk ending 2.26.23

category. Morningstar Farms is doing well for a company that belongs to a big corporation such as Kellogg Co., so why is Gardein, despite belonging to Conagra Brands, unable to stay as competitive as smaller companies like Impossible and Beyond Meat? Not to mention, Impossible has experienced the highest growth in the last few years, and Morningstar Farms' dollar share is nearly twice as much as Gardein's despite each of the companies belonging to big Food Companies such as Conagra Foods and Kellogg Co. respectively.

As such, the first order of business would be to overtake Impossible Foods and Beyond Meat before trying to tackle Morningstar Farms. Impossible Foods and Beyond Meat are closer to Gardein in terms of market share, however, impossible has grown the most over the past few years so analyzing some of their advertising strategies can give Conagra an idea of how to better market Gardein.

b. The Market–An Ongoing Problem with Inflation and Rising Prices:

Arguably, one of the most important factors impacting consumer behavior is product price. Based on Figure 2 below, the annual food-at-home prices rose about 5% in 2023 compared to 2022. Except for the pork category, the prices of many food types have increased a lot. Particularly, price changes for oils, sugar, bakery products, and beverages surpass historical ones. This implies that consumers allocated considerably more funds towards groceries in 2023 compared to previous years.

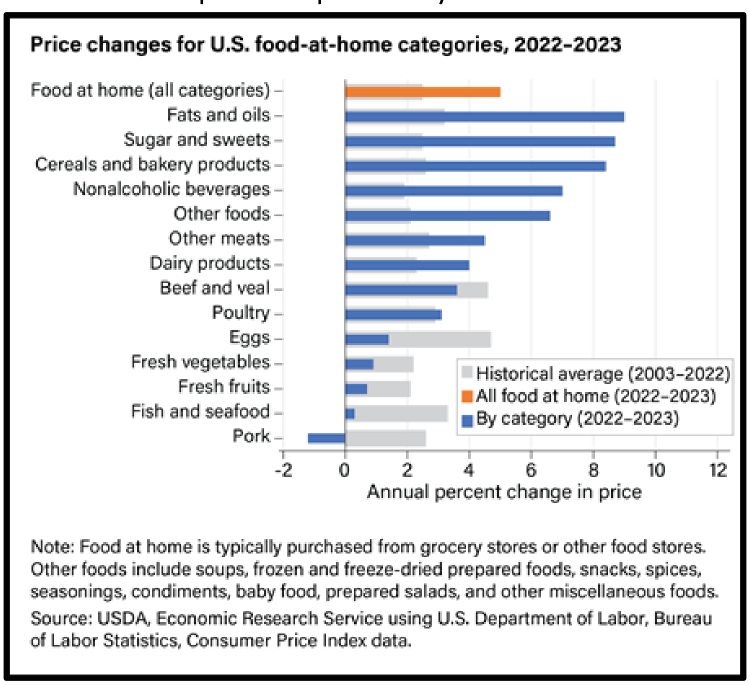

Figure 2: Price Change for U.S. Food-at-Home Categories, 2022-2023 [6]

Along with higher prices, people slowed their food purchases. Good Food Institute (GFI) and the Plant Based Foods Association (PBFA) point out that plant-based unit sales fell 9% from 2022, while dollars declined 2%. On the other hand, although overall sales for total food and beverage decreased by 2%, dollars increased by 6%. In addition, the unit sales of traditional meat and seafood dropped 2%, and dollar sales remained[7]. Therefore, the decline in plant-based unit sales and dollar sales was greater than that in total food and beverage and animal-based food in 2023. This situation highlights that in 2023, consumers reduced their food shopping in general, which sadly impacted plant-based substitute foods as well–plant-based foods showed an especially significant decrease.

Furthermore, specialty items like plant-based meat are typically priced $1 to $2 higher than regular frozen food products This poses an important question:

"What would encourage customers to spend that extra $1 or $2 and help revitalize the Frozen/Plant-based meat market?"

c. Improvements to Fulfill Consumer Requirements:

According to a consumer report by the Plant-Based Foods Association, texture and price are identified as the key factors influencing consumers' decisions to purchase plant-based foods. (see Figure 3)

[6] USDA, Economic Research Service

[7] Good Food Institute. "U.S. retail market insights for the plant-based industry "https://gfi.org/marketresearch/?_gl=1*k60kqc*_up*MQ..*_ga*MTE5NzI4NTI0Ni4xNzEzOTY4NTk4*_ga_TT1WCK8ETL*MTcxMzk2ODU5NS4xLjEuMTcxMzk2ODYyNi4wLjAuMA..#introduction

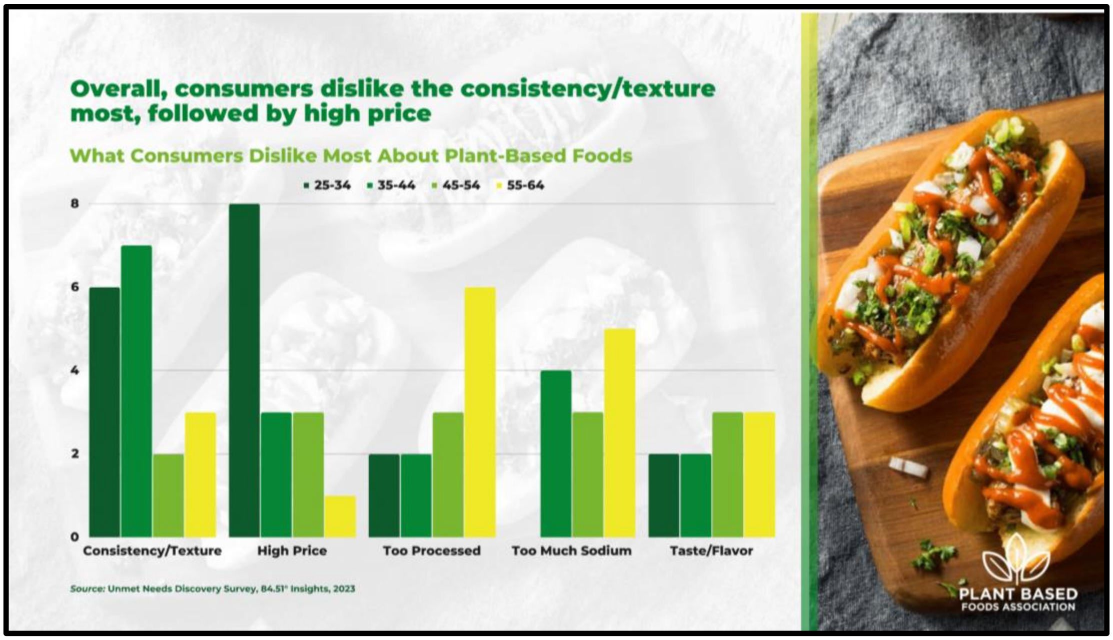

Figure 3: What Consumers Dislike Most About Plant-Based Foods[8]

In the plant-based sector, especially in meat alternatives, products must surpass or match consumer taste expectations to effectively compete with traditional offerings. These textural properties must be extensively studied using various sensory methodologies to guarantee consumer satisfaction. Creating products that closely resemble meat in terms of flavor, texture, succulence, aroma, and visual appearance will enhance their attractiveness to consumers.

Under economic conditions, plant-based meat manufacturers can lower product prices to encourage more entrenched meat consumers to embrace their products. Free try-outs or coupons would be a suitable beginning. It can not only encourage people to try plant-based meat but also further foster long-term consumer loyalty.

Since many factors can influence Gardein's market share, like the ones mentioned in the market research section above, the team has decided to explore the following questions below to devise a product and marketing strategy that can increase Gardein's Dollar sales. Additional analyses that are not addressed in the Exploration Questions section are also provided in the Analysis and Visualizations section further below.

B. Exploration Questions:

- Does the data provided corroborate the market research that Gardein is in fact the 3rd or 4th best-performing brand in terms of sales?

[8] Plant Based Foods Association. "Uncovering the Unmet Needs of Plant-Based Consumers Report [March 2023]"

- Are there interactions across categories that pose a risk and/or opportunity for Conagra?
- If all meat substitute products are ranked in terms of sales quantity for all brands, then how do Gardein’s products rank compared to Morningstar Farms (Kellanova company) and Impossible Foods?
- Is Gardein selling its products at a higher price than its competitors thereby driving away potential customers?
- What product attributes (form, flavor, size, etc.) have the greatest opportunity for CAG?
- Are there certain products from Gardein that perform well on the market?
- Should the analysis suggest that Gardein’s products are just fine, then is Conagra willing to approach the problem of lower market share from a poor Marketing/Advertising standpoint instead?

V. Process: Data Pre-processing

All data processing and analysis were performed using Python on Jupyter Notebooks. The final dataset 'refined_data' which combines "fz_rfg_substitute_meat" and "product attributes," undergoes several data generation and cleaning processes to enhance its utility and analytical clarity.

First, the data merging process consolidates sales and product attributes into a single comprehensive dataset. Geographic details are simplified through the 'extract_location' function, which isolates just the location portion from the 'Geography' column. Time data is parsed using the 'parse_time' function, which splits the 'Time' column into 'Year', 'Quarter', and 'Month', enabling a more detailed temporal analysis.

Products are streamlined with the 'parse_product' function, which retains only essential identifiers like the company and product names, facilitating easier product categorization. The 'imputation_process' function is crucial for calculating incremental sales metrics by subtracting base sales figures from total sales.

Columns are strategically reordered to align with analysis needs using the 'change_column_order' function. Additionally, the 'map_season' function categorizes each month into seasons, aiding in seasonal sales trend analysis. Product and flavor categorization is refined with functions like 'map_product_name' and 'map_flavor', which group products and flavors into broader, more manageable categories.

The entire dataset transformation is encapsulated in the 'transform_data' function, which consists of all functions mentioned above, enhancing understanding and significantly broadening the range of potential insights, as illustrated in Table 1. To construct a model better suited for lasso regression, a separate 'model dataframe' was developed. Data modeling techniques, especially 'map_flavor', 'map_product_name', and 'map_size_into text', were employed to improve model performance and avoid the potential overfitting problem by decreasing the number of levels for these critical columns, with key features retained as shown in Table 2.

Decision Tree models and Lasso Regression were employed to validate the insights derived from data analysis. For the Decision Tree model, 'OneHotEncoder' was utilized to transform categorical data into a binary matrix. This ensures that all features are correctly interpreted by the model, which is crucial for handling categorical variables effectively.

For Lasso Regression, 'Pasty' was utilized because it simplifies specifying complex relationships within the model through a formula-based syntax. This also automatically generates dummy variables for categorical inputs, this is a necessary step since Lasso Regression can only process numerical data. The capability of 'Pasty' is essential for accurately assessing the impact of categorical features on the dependent variable, ensuring the regression model remains both accurate and interpretable.

VI. Data Insights: Analyses and Visualizations

The team's research strategy involves extracting valuable insights from the top 7 companies leading in sales of plant-based meat alternatives and using this information to provide recommendations for Conagra to enhance their sales. The top 7 plant-based meat manufacturers were selected because they represent approximately 80% of total market shares.

A. Top 7 Manufacturers & Sales

Plot 1 illustrates that the top 7 companies with the highest sales of plant-based meat alternatives are Kellanova(MorningStar), Beyond Meat Inc., Conagra Brands(Gardein), Impossible Foods Inc., Lightlife Foods Inc., Private Label, and Turtle Island Foods Inc. Plot 2 reveals that KELLANOVA holds a significant lead in the market, but Beyond Meat (No. 2) is closer to Conagra in terms of market share, thereby providing an excellent benchmark for comparison with CONAGRA, which ranks as No.3.

B. Sales Per Unit Distribution

Based on Plot 3, The distribution has several peaks, suggesting that sales are concentrated around the prices of approximately $4, $5, and just over $6, which indicates that products priced around this level are the most commonly sold. There are spikes in sales at various price points, suggesting certain products priced uniquely compared to others also see notable sales columns. These could be specialty items or items with unique value propositions. According to Plot 4, understanding which price points are most popular can help in adjusting pricing strategies and marketing focuses, and compared to rest manufacturers (as given by Plot 14), overpricing is not an issue for Conagra.

C. Sales by Location & Season

In Plot 5, The Northeast and Southeast regions, along with California, show significantly higher sales of meat alternatives compared to other areas.

Additionally upon running a regression model for Dollar Sales (that has been elaborated upon in a subsection below), the results suggest that the Plains and South Central areas–with a booming slaughter and animal husbandry industry–exhibit a negative relationship with Dollar Sales. The team reached this conclusion by looking at the coefficients of the model as given in Table 8. The negative coefficients for the dummy variables Plains and Southcentral suggest that

In Plot 6 and Plot 7, it can be seen that sales peak in the summer, potentially due to the availability of fresh vegetables and a shift towards lighter, plant-based eating during warmer months. Meanwhile, sales generally decrease towards the end of the year, which may reflect seasonal changes in diet where people might prefer more calorie-dense foods during colder months. However, this is merely a conjecture.

In Plot 9, it can be observed that the total dollar sales do not show a drastic difference with a change in season. Therefore, Seasonality may not be the primary attribute that needs to be analyzed concerning Food Products as the goal is to maximize sales of Food Products all year round.

D. Sales by Flavor / Scent

Plot 8 shows a wide range of flavors, from meat-like dishes such “Beef” and “Chicken” to vegetarian options like “Tomato Basil” and “Sweet Corn”. This variety suggests that the brands cater to a diverse palette. However, only some of the flavors are top-selling, and these flavors include “Regular”, “Lightly Seasoned”, and “Chicken”. (e.g., Regular flavor has a regression coefficient of 1039, and lightly seasoned has a regression coefficient of 642). These are the two flavors that are impacting Dollar Sales positively. Other flavors such as sweet (regression coefficient of -11569 negatively impact Dollar sales. When it comes to interaction terms with a specific flavor and a specific location, the impact on dollar sales is positive. This phenomenon indicates a strong consumer preference for these tastes and it can provide insights into market trends, potentially guiding new product development and marketing strategies. The feature importances of these features are all around 0.01, which is pretty strong compared to other 90+ features. Thus, Conagra should focus on marketing regular and lightly seasoned flavors more, and once consumers get more familiar with the brand they will naturally venture out and try other flavors offered by Conagra.

E. Popular Flavors Based on Past Unit Volume and Dollar Sales

In Plot 10 and Plot 11, it can be observed that the frozen and refrigerated meat substitute products that have the most Unit Volume Sales and Dollar Sales have the dominant flavor of Regular Meat Substitute. The plots contain the list of the top 10 products where the top 4 products are Regular flavored meat substitutes.

F. Sales Rank and Product Rank of Products

From Table 5 and Table 6,

- Impossible Foods Inc. is noted for higher overall sales rankings, particularly in regular flavored meat substitutes.
- Conagra Brands has a notable presence in the chicken flavor category with six different products, suggesting a specialization in this flavor.

- Kellanova offers a wider variety of flavors compared to Conagra and Impossible Foods, with even more Chicken-Flavor products
- People like regular flavor products maybe because they would like to season it later based on their preferences.

According to Table 6 statistically,

- Only 4 products from Conagra are in the top 20
- Impossible is making more profit from their 22 products of 9 flavors, which might be because of product attributes such as flavor and size

In general, all these companies make the most profit from regular/original products; however, with over 60+ products and 30 flavors from Conagra, it still cannot beat Impossible & Kellanova in this industry. These points highlight the competitive dynamics and strategic positioning within the market. Conagra appears to concentrate on fewer but potentially deeper market penetrations in specific categories like Chicken. This is a good sign since the importance of the feature 'Chicken' is better than any other flavor.

G. Package Size vs. Sales

Table 7 shows sales data for various food manufacturers, focusing on their products classified by portion size.

1. The large portion of products generated $39,836,190 in sales with unit sales ranking at 17th and dollar sales ranking at 18th
2. The medium portion products had sales of $27,316,240, ranking 5th in unit sales and 4th in dollar sales
3. The small portion of products earned $27,042,300, ranking 6th in unit sales and 3rd in dollar sales

Likewise, Plot 13 demonstrates that all these companies make the most profit from regular/original products.

Lastly, Conagra Brands is generally outperformed by Beyond Meat Inc. and Kellanova in most size categories. This highlights Conagra's stronger competition in the segment. Hence, Conagra should produce more products in small-size packages since both coefficients & importance of small-size portions perform much better than the other two sizes, and might help Conagra build an impression and have a place in customers' shopping options as customers tend to like hearing "give it a try" instead of "buy a lot" (in case they end up disliking their purchase.

H. Regression Analysis: Dollar Sales vs. Features

a. Decision Tree Model Results:

- Specific regions like California, the Great Lakes, and the Northeast show notable importance in influencing sales with importance values of 0.01068, 0.00479, and 0.00453 respectively.
- With the importance values of 0.00389, 0.01901, 0.00536, and 0.04244, the years (2020, 2021, 2022, 2023) reflect how external factors like market changes or consumer trends over these years affect sales.
- Brand impression significantly influences customers' purchasing decisions. Conagra demonstrates the least impression power. indicated by a very low importance value of 0.00019, which may impact their product sales negatively, while other manufacturers show much higher importance values, suggesting stronger brand impressions could lead to higher sales. Kellanova, Beyond Meat, and Impossible Foods have importance values of 0.08232, 0.02617, and 0.03681 respectively.
- The most influential features among all these product attributes in determining product sales include the manufacturer name "Beyond Meat Inc.", portion size "Small", the category of "Refrigerated Meat", and the flavors "Pork" and "Regular". The respective importance values for these are as follows: 0.08232, 0.072536, 0.066669, 0.0224617, and 0.0216534. However, these values do not necessarily imply a positive impact on dollar sales. The effect could be either positive or negative.

b. Lasso Regression Model Results:

Dollar Sales = Geography + Portion + Geography*Portion + Geography*Flavor + Year + Month + Manufacturer Name + Category + Form + Flavor

- Various flavors (e.g., Regular, Chicken) and forms (e.g., Patty, Sausage) have distinct impacts on sales, with coefficients (-1023.931, +556.9472) for flavors and coefficients (+1832.8891, +8760.9371) for forms. These coefficients indicate that if the product belongs to a specific flavor or form, the annual dollar sales will increase by the value of the coefficients on average.
- Interaction between geography and product features impacts sales significantly, pointing out how regional tastes or preferences affect the popularity of certain product specifications. For example, pork-flavored products perform better in the West, with a coefficient of 204.0661, indicating an increase in annual dollar sales by $204.0661 if the product flavor is pork. This trend is not observed in other regions, particularly in the

Plains, where the coefficient is -2206.01. In Northeast and Southeast (Conagra has a bigger consumer base here) Regular flavors are more popular.

- Interaction between geography and portion impacts sales as well. Products categorized as small portions, defined as weighing less than 12 oz, have a coefficient of 5629, indicating that annual dollar sales increase by $5629 when the product is a small portion. Similarly, annual sales increase by $4015 when the product is a medium portion. However, regional preferences vary; for instance, consumers in the Great Lakes prefer small portions as indicated by a coefficient of 1157, whereas medium portion only has a coefficient of 244.8286.
- Conagra needs to take serious consideration before it decides to launch a new product in a specific region. Detailed coefficients for product attributes and their combinations with geographic areas emphasize the importance of aligning product development with consumer tastes.

VII. Data-Driven Marketing Approach: Strategies to Improve Dollars Sales Based on Regression Model Analysis

The devised model focuses on evaluating market trends from 2020 to 2024, with a particular emphasis on variables such as year, geography, flavor, and portion relative to dollar sales. The data indicates a downward trend in the market during this period. In response, Conagra can revitalize the declining market by honing its focus on geographic regions and portion sizes that show the most promise. The regression model reveals that significant sales opportunities exist primarily in the Northeast, Southeast, and the Bay Area. By directing marketing efforts towards these regions, Conagra can target a more defined audience, potentially increasing engagement among consumers who are health-conscious, vegan, or transitioning to vegan diets. Please refer to the advertising section for reference on suggested advertising tactics Conagra can potentially employ

Further analysis suggests a consumer preference for milder flavors. In light of this, Conagra could innovate by offering products with customizable flavor options. This approach not only allows consumers to personalize their food according to their taste preferences but also helps in reducing manufacturing costs. When it comes to flavor, from the estimation it can be seen that people prefer regular and lightly spiced flavors. As such, instead of producing pre-flavored products, Gardein could provide a “flavoring packet/sauce” included separately in the product packaging, like noodles or ramen products, so that customers can mix the flavors according to their preferences. This way the manufacturing cost also decreases. Such strategic flexibility can enhance Conagra's market presence and foster stronger relationships with niche market retailers like Whole Foods and Trader Joe's, known for their health-conscious clientele. This tailored approach is likely to resonate well with the target demographic, thereby amplifying repeat purchases and customer loyalty.

Likewise, when it comes to size, the majority of meat substitute product sales are from "small" portions/sizes. As a result, Conagra should focus on producing only small and "smedium (small-medium)" packaging sizes. Large package sizes may appear to be overwhelming in terms of size and price for potential customers in comparison to small or smedium package sizes. Customers may be more willing to try out a particular product for the first time if the product is of small portion size. Any large packages in Conagra's current inventory can be repackaged into smaller sizes or given out as samples (visit sample marketing section), to minimize product waste and recycle inventory. Conagra can also introduce a personal size which can be given out at promotional events.

VIII. Advertising-Based Marketing Approach: Strategy to Improve Product Reach and Brand Recognition Through Smart Advertising

A. Brand Revitalization

According to Reddit forums under r/vegan (**Figure 4**), it can be seen that Conagra's biggest hurdle is market invisibility. Simply put, vegan consumers don't know that Gardein as a brand exists due to the lack of proper advertising.

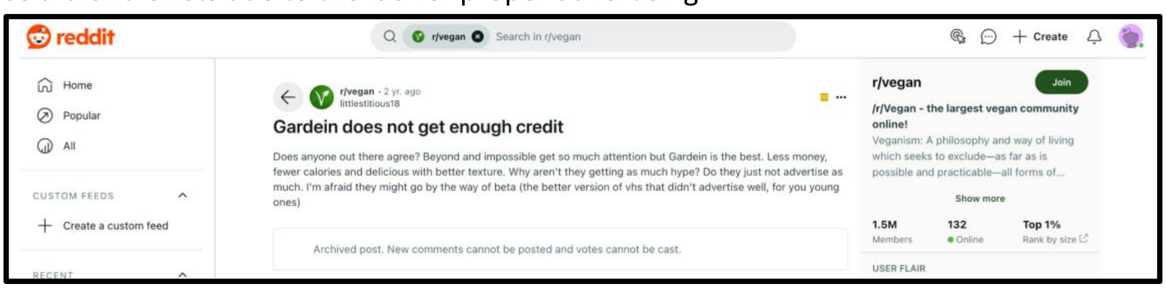

Figure 4: Gardein's impression in the largest online vegan community (Reddit)

The data-driven strategies suggest that Conagra can target certain Geographies and focus on certain Flavors and Portions but all that will be for naught if consumers don't realize that Gardein is on the market. Gardein as a brand is in desperate need of attention and the following strategies can help ***revitalize*** Gardein's brand image.

a. "SAMPLE MARKETING"

The team recommends that Conagra reintroduce the brand to potential consumers by giving out free samples at grocery stores such as Costco, Whole Foods, Trader Joe's, etc. According to a cross-over LinkedIn article on psychology and business, "Product sampling is a great way to increase sales. Studies have shown that 35% of customers who tried a sample will buy the product on the same shopping trip." Free samples are effective because they help to remove the risk factor associated with trying new products[9]"

Additionally, Conagra is sold in WholeFoods whose brand image appeals to people who are health-conscious in comparison to other markets like Costco or Walmart. Brands like Impossible and BeyondMeat are not sold in WholeFoods, therefore Conagra can leverage its sole presence by giving out samples to Whole Foods customers. This creates an opportunity for potential customers whether flexitarians or vegetarians to become familiar with the brand and trying the samples would encourage them to purchase the product on their next visit to the grocery store.

Lastly, the team recommends that if there are additional products left over in the inventory at the end of each business quarter, Conagra can use its remaining inventory to create small, bite-sized sample packs of the products and distribute them through UberEats and DoorDash Grocery as a free/promotional item. This way potential consumers who are afraid of wasting their money on trying new products that they may end up disliking will try Gardein's products for free. If consumers like the sample, they might be willing to come back for more. How does the team know that the consumers will return if they try the product? This question can be answered by referring to the following graphic that Conagra already has access to:

[9] D'Souza, Lavin Jane. "The Complete Psychology Behind Free Samples and Why they Work?" *LinkedIn*, 9 November 2017, https://www.linkedin.com/pulse/complete-psychology-behind-free-samples-why-work-lavin-jane-d-souza/. Accessed 30 April 2024.

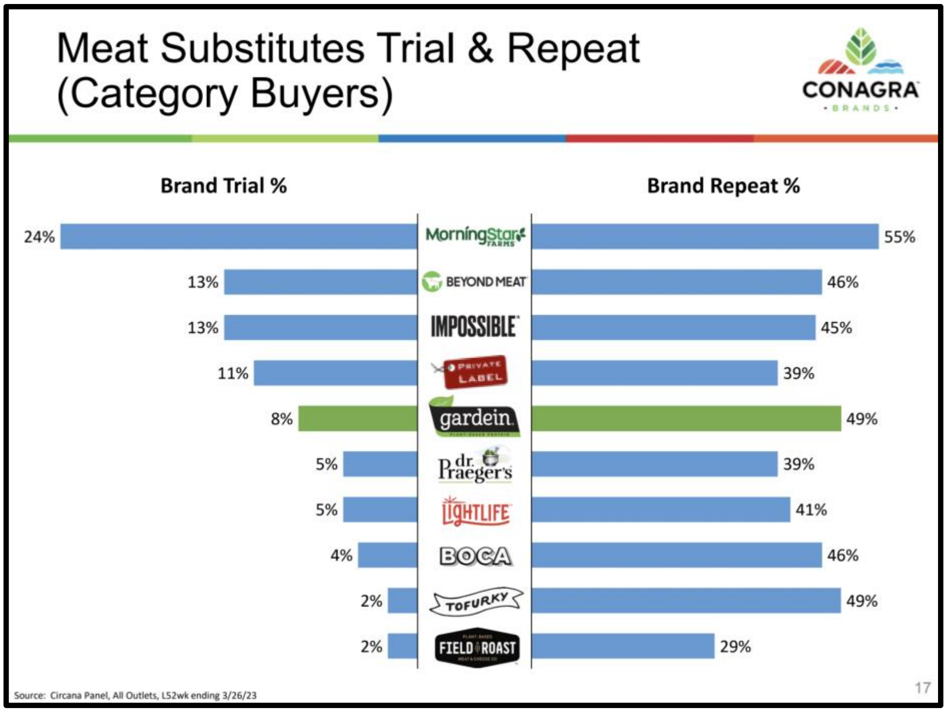

Figure 5: Meat Substitutes Trial & Repeat (Category Buyers) by Circana Panel

Figure 5 demonstrates that even though only 8% of buyers are trying Gardein's products, approximately 49% of them are coming back for a second time. Conagra has the second-highest repeat percentage. As such, Conagra needs to focus heavily on getting potential buyers to taste it at least once.

b. SOCIAL MEDIA MARKETING

Conagra should employ Social Media Marketing in conjunction with Sample Marketing to reach a broader audience. Food marketing isn't just important for brands—it's essential. Without marketing the brand, there is no widespread way for potential customers to find out about Gardein's products other than through word of mouth.

According to Suzy (an end-to-end consumer insight platform), "Consumers are more likely to learn about healthy food trends from social media than from traditional marketing. As people become more health conscious, and concerns about global climate change rise, companies are looking for sustainable options that won't lose their customer base."[10]

[10]"Burger King Turned the "Impossible" into Social Media Gold." Social Factor, 4 April 2019, https://socialfactor.com/blog/marketing/burger-king-turned-the-impossible-into-social-media-gold/. Accessed 1 May 2024.

Gardein has an active Instagram, Facebook, Tiktok, and Twitter pages. Older people typically engage on Facebook whereas young adults prefer to use Instagram and TikTok. Gardein's existing social media strategies are not increasing post engagements or website visits. Especially on TikTok, any post made by Gardein (1357 followers) consistently pulls in 1500 views. However, that is nowhere near enough compared to Beyond Meat (214.7K followers) and Impossible Foods (23,800 followers) which rake in close to 80,000 and 10,000 views respectively per Tiktok video.

Additionally, Gardein is also severely lagging behind Morningstar Farms, Impossible, and BeyondMeat, on other social media platforms such as Instagram and Facebook as well. As such, the first order of business for Gardein would be to grow its social media following so that potential buyers can see that Gardein is alive and well and a strong competitor in the Frozen meat substitute market.

The following strategies (in no particular order) can be employed to increase Gardein's social media presence:

- Creating Prank Videos: Create videos of people (those who want to participate in videos) trying the Gardein burgers or nuggets and a regular burger or nugget by simply stating that a taste survey is being conducted. However, once they try it and give their review, let the person who tried it know that they just ate a plant-based burger. Thus, the combination of prank vs. not-a-prank aspects can keep social media guessing and allow Gardein to amplify its social media engagement. These videos can be posted as short videos on Instagram Reels, TikTok, and YouTube Shorts. It is important to upload the videos to as many social media platforms as possible because potential customers may use different forms of social media.
- Provide followers with authentic and eye-catching images with a personal touch instead of posting "boring" screenshots of food. The brand needs a personal touch to make it look like–for lack of a better word–*food porn*
- In addition to partnering up with vegan influencers, Gardein needs to focus on vegan food bloggers and nutritionists as well. Some of these food bloggers and nutritional experts have amassed millions of followers and get millions of views monthly. Due to the nature of their job, they tend to be more neutral in their assessments/reviews than influencers. As such, if the food bloggers like the product, they would be willing to push the product out of their own volition instead of having to pay them regularly. An example of this would be the nutritional expert Coach Ted (Website: https://healthyeater.com); BuzzFeed; and popular vegan food blogs and newsletters such as Vegconomist and Seriouseats.

- YouTube Marketing: YouTube Ads are important to spread the word. However, if Conagra doesn't wish to spend too much money on paid ads, then an alternative would be to record videos of people doing a blind test challenge of various products. This video can be entirely authentic or scripted, and consumers would be none the wiser. Regardless of the approach, viewers like to see an element of surprise or suspense, and typically such videos get a lot of engagement.

c. RESTAURANT AND RETAIL MARKETING

According to Google's year-end search report[11], search results for "vegan food" experienced more than 5,000 percent increase. This shows that people are willing to try vegan food at least once. As such, Conagra should seize this opportunity by partnering with retail food chains and having them include Gardein's products on the menu.

A precedent for this would be when Impossible Foods started supplying plant-based meat to Burger King and introduced the "Impossible Whopper." While Burger King experienced an 18% boost in traffic and a 3.6% rise in overall sales[12], the real winner turned out to be Impossible Foods–the company that provided Burger King with its no-meat alternative patties. Unsurprisingly, Impossible Burgers became the number 1 item sold in grocery stores in September 2022[13]. This is significant because it shows that Burger King's digital campaign didn't just attract new customers to its restaurants, it also bolstered sales of Impossible Foods to consumers across the board.

In regions such as the Bay Area, there are quite a few restaurants for different types of cuisines, and the population there is more accepting of the idea of trying new food. As such, collaborating with solely vegan restaurants or restaurants that provide vegan options would aid in improving Gardein's brand image and getting the word out.

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[11] Starostinetskaya, Anna. "Google Searches for "Vegan Food Near Me" Spike by More than 5000 Percent in 2021." VegNews.com, 28 December 2021, https://vegnews.com/2021/12/google-searches-for-vegan-food. Accessed 1 May 2024.

[12] "Burger King Turned the "Impossible" into Social Media Gold." Social Factor, 4 April 2019, https://socialfactor.com/blog/marketing/burger-king-turned-the-impossible-into-social-media-gold/. Accessed 1 May 2024.

[13] "Burger King Turned the "Impossible" into Social Media Gold." Social Factor, 4 April 2019, https://socialfactor.com/blog/marketing/burger-king-turned-the-impossible-into-social-media-gold/. Accessed 1 May 2024.

d. SUSTAINABILITY ADVERTISING

With veganism on the rise and animal rights activists pushing to reduce meat consumption across the board, Conagra has an opportunity to partner up with these Organizations and Activists to provide samples at their events. By doing so, Conagra will essentially gain a free marketing ally due to mutual interests.

Additionally, should Conagra be open to adopting sustainable packaging (plastic-free packaging), then they can partner up with environmental sustainability organizations to spread the word about sustainable food under what the team calls the “sound body, sound earth” initiative.

IX. Scope for Further Exploration

The biggest constraint for this project undoubtedly was time. If time had allowed it, the team was planning to equip Robotic Process Automation to scrape Gardein’s website and other plant-based ranking sites for product reviews and attributes. This would have allowed for a current and holistic analysis with which the team could have given more insights into Customer Lifetime Value and other Key Performance Indicators and Metrics. Secondly, the team wanted to implement Machine Learning through Azure Machine Learning Studio to perform in-depth classification and regression analysis instead of just performing lasso regression and the Decision Tree Model.

Additionally, the team also wanted to explore feature importance further through Shapley plots however, each Shapley plot was taking over 7 minutes to run due to system limitations, and that proved to be unfeasible under the time and system resources at the team’s disposal.

Lastly, the team used clustering, group by, and common sense to group features and similar rows. However, it was at a later stage when the team realized that it could have performed Principal Component Analysis instead to refine the data. However, it was too late to go back and add PCA at that point. If given more time, this would be the first thing the team wishes to fix.

X. Conclusion

Data Analysis suggests that while Conagra can focus on certain geographical or sell certain portions/sizes of products, it doesn’t change the fact that Gardein is a brand that is not lacking in taste or flavor. Gardein's biggest problem is its advertising and lack of brand presence. Other than its cult followers and a select few audiences who have tried it and are willing to attest to it, the average flexitarian or health-conscious individual has probably never heard of the brand. The same goes for our team who had never heard of Gardein before but knew about Impossible Foods. Conagra can employ any combination of recommendations highlighted in the sections Data-Driven Marketing Approach and Advertising-Based Marketing Approach to increase its Dollar Sales, and subsequently its market share.

Conagra must realize that now is the time to aggressively improve Gardein's brand because the Plant-based meat market is currently at a standstill. The market is projected to recover and double by 2027[14], and if Conagra doesn't overtake its competitors now, then it is entirely possible that it may never be able to do so because MorningStar farms, Impossible Foods, and Beyond Meat are also trying to pull ahead. According to the research provided in earlier sections of the report, Impossible Foods is growing the fastest amongst the four brands with BeyondMeat not too far behind. Beyond Meat also has a very strong brand presence and despite the downward market trend, it hasn't slowed down much compared to its competitors.

To summarize, Gardein will be left behind in the race if Conagra doesn't allocate adequate efforts to revitalize its brand, pioneering change, and seize the opportunity to overtake its immediate competitors while it still can. The moment has come for Conagra to ponder upon its position in the meat substitute seriously, and while the market is still relatively down…

> … the team has nothing but one thing left to say to Conagra: "Make the Meat Substitute Market Great Again" while there's still a chance.
>
> – Meet the team: Aishwarya Adiki, Sri Sai Sudhamsu Boyapati, Qiaozhi Fu, Ru Shuang Huang, Shamina Raja Mohamad

[14] Markets and Markets. "Plant-Based Meat Market | Size | Share | Trends | Forecast to 2025." Www.marketsandmarkets.com, Dec. 2020, www.marketsandmarkets.com/Market-Reports/plant-based-meat-market-44922705.html

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B. D'Souza, Lavin Jane. "The Complete Psychology Behind Free Samples and Why they Work?" LinkedIn, 9 November 2017, https://www.linkedin.com/pulse/complete-psychology-behind-free-samples-why-work-lavin-jane-d-souza/. Accessed 30 April 2024.

C. Food Processing. "Top 100 Food and Beverage Companies for U.S. and Canada 2023." Food Processing, https://www.foodprocessing.com/top100/2023. Accessed 31 March 2024.

D. Good Food Institute. "U.S. retail market insights for the plant-based industry" https://gfi.org/marketresearch/?_gl=1*k60kqc*_up*MQ..*_ga*MTE5NzI4NTI0Ni4xNzEzOTY4NTk4*_ga_TT1WCK8ETL*MTcxMzk2ODU5NS4xLjEuMTcxMzk2ODYyNi4wLjAuMA..#introduction

E. Just Food. "US: Meat alternatives firm Gardein adds gluten-free to range." Just Food, 9 November 2017, https://www.just-food.com/news/us-meat-alternatives-firm-gardein-adds-gluten-free-to-range. Accessed 31 March 2024.

F. Markets and Markets. "Plant-Based Meat Market | Size | Share | Trends | Forecast to 2025." *Www.marketsandmarkets.com*, Dec. 2020, www.marketsandmarkets.com/Market-Reports/plant-based-meat-market-44922705.html.

G. Plant Based Foods Association. "Uncovering the Unmet Needs of Plant-Based Consumers Report [March 2023]" https://members.plantbasedfoods.org/checkout/unmet-needs-consumer-report

H. "Retail Sales Data: Plant-Based Meat, Eggs, Dairy | GFI." Gfi.org, 19 Jan. 2021, gfi.org/marketresearch/#categories.

I. Starostinetskaya, Anna. “Google Searches for “Vegan Food Near Me” Spike by More than 5000 Percent in 2021.” VegNews.com, 28 December 2021, https://vegnews.com/2021/12/google-searches-for-vegan-food. Accessed 1 May 2024.

J. USDA ERS. “Food Prices and Spending” https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-prices-and-spending/#:~:text=U.S.%20food%2Dat%2Dhome%20prices,is%202.5%20percent%20per%20year

XII. Appendix

Table 1

Date	Geography	Year	Quarter	Month	Season	Form	Manufacturer Name	Brand Name	Product Name	Flavor / Scent	...
2020-01-01	California	2020	1	1	Winter	CRUMBLE	BEYOND MEAT INC	BEYOND MEAT	FROZEN FEISTY MEAT SUBSTITUTE CRUMBLE 10 OZ	SPICY	...
2020-01-01	Mid-South	2020	1	1	Winter	BURGER	KELLANOVA	MORNINGSTAR FARMS	FROZEN GARDEN VEGETABLE MEAT SUBSTITUTE BURGER...	VEGETABLE	...
2020-01-01	Mid-South	2020	1	1	Winter	BURGER	KELLANOVA	MORNINGSTAR FARMS	FROZEN GARDEN VEGETABLE MEAT SUBSTITUTE BURGER...	VEGETABLE	...

Table 2

Month	Season	Manufacturer Name	Product Name	Category	Flavor / Scent	Form	Package Size	Portion
1	Winter	BEYOND MEAT INC	FROZEN FEISTY MEAT SUBSTITUTE CRUMBLE 10 OZ	FROZEN MEAT	SPICY	CRUMBLE	10.0	Small
1	Winter	KELLANOVA	FROZEN GARDEN VEGETABLE MEAT SUBSTITUTE BURGER...	FROZEN MEAT	VEGETABLE	BURGER	9.5	Small
1	Winter	KELLANOVA	FROZEN GARDEN VEGETABLE MEAT SUBSTITUTE BURGER...	FROZEN MEAT	VEGETABLE	BURGER	56.0	Large

Plot 1 and 2

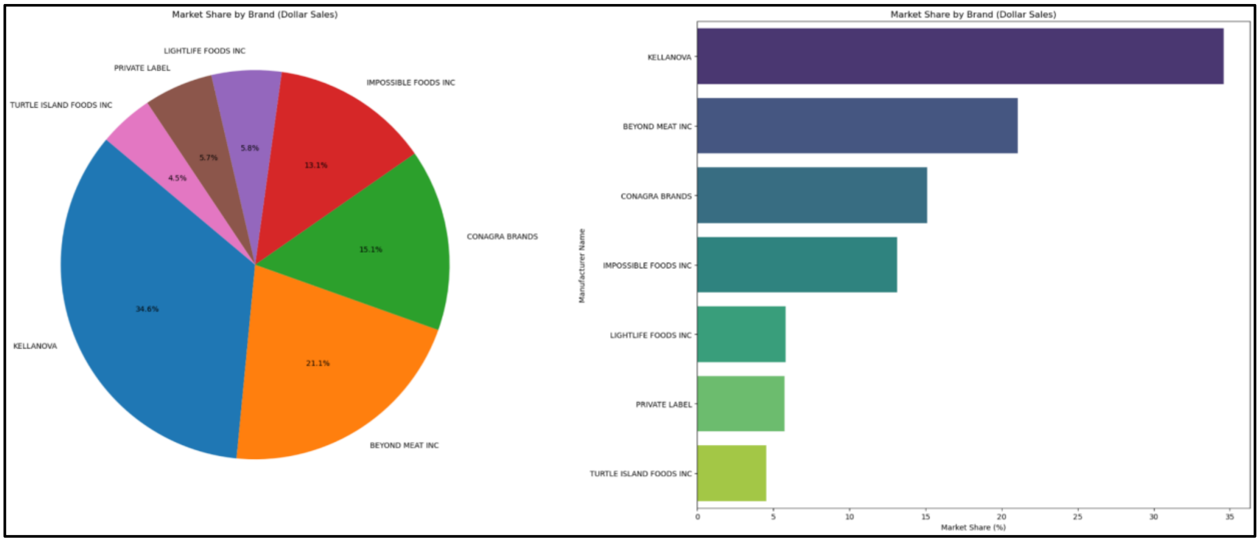


Table 3

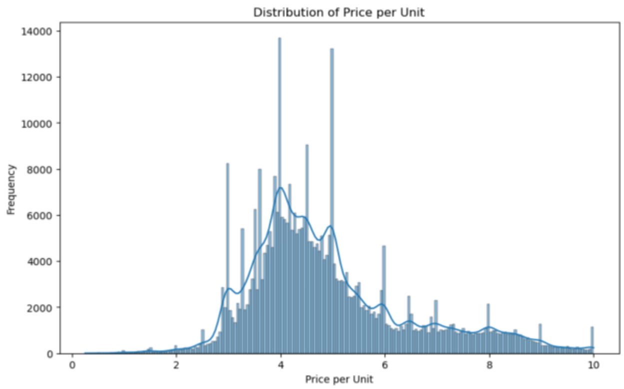
Dollar Sales_x is the brand's market share, and Dollar Sales_y is the product's market share. The Percentage column shows which percentage of the brand's market share the product market share consumes.

	Brand Name	Dollar Sales_x	Dollar Sales_y	Percentage
38	IMPOSSIBLE WILD NUGGIES	2.150508e+07	2.150508e+07	100.0000
11	GARDEIN ULTIMATE PLANT BASED	2.455504e+08	4.910115e+07	19.9964
1	IMPOSSIBLE	1.015503e+09	9.746890e+07	9.5981
2	GARDEIN	9.404258e+08	5.843099e+06	0.6213

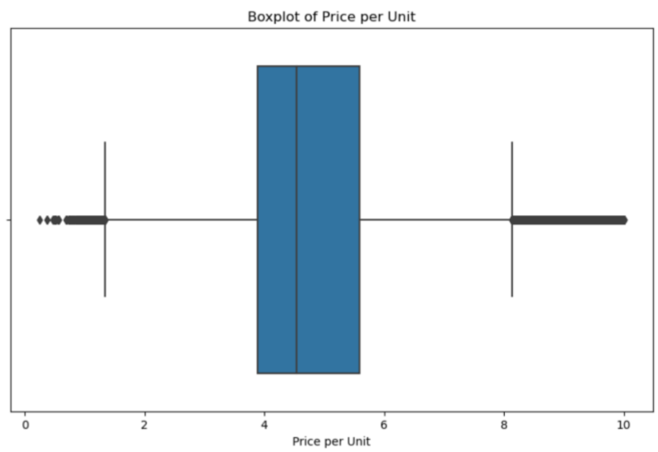
Table 4

	Brand Name	Dollar Sales_x	Dollar Sales_y	Percentage
11	GARDEIN ULTIMATE PLANT BASED	2.455504e+08	7.054408e+07	28.7290
21	MORNINGSTAR FARMS INCOGMEATO	7.257893e+07	2.046105e+07	28.1914
2	GARDEIN	9.404258e+08	1.497733e+08	15.9261
1	IMPOSSIBLE	1.015503e+09	2.289344e+06	0.2254

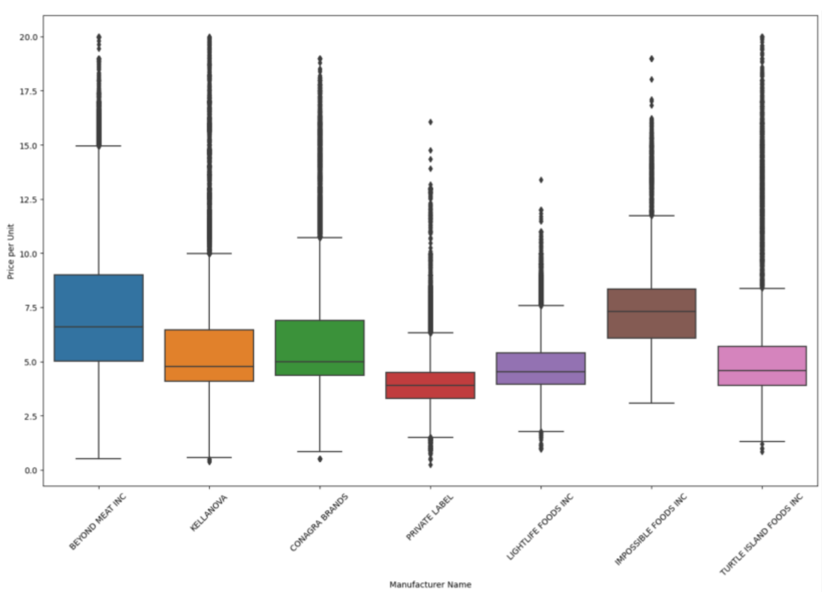
Plot 3



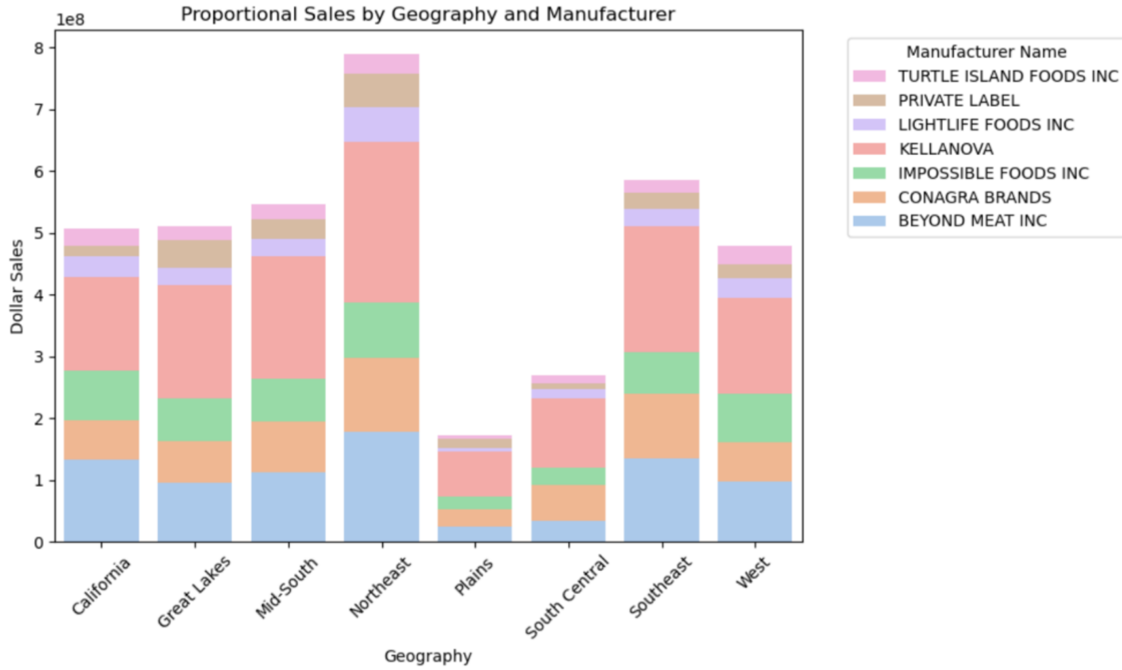
Plot 4



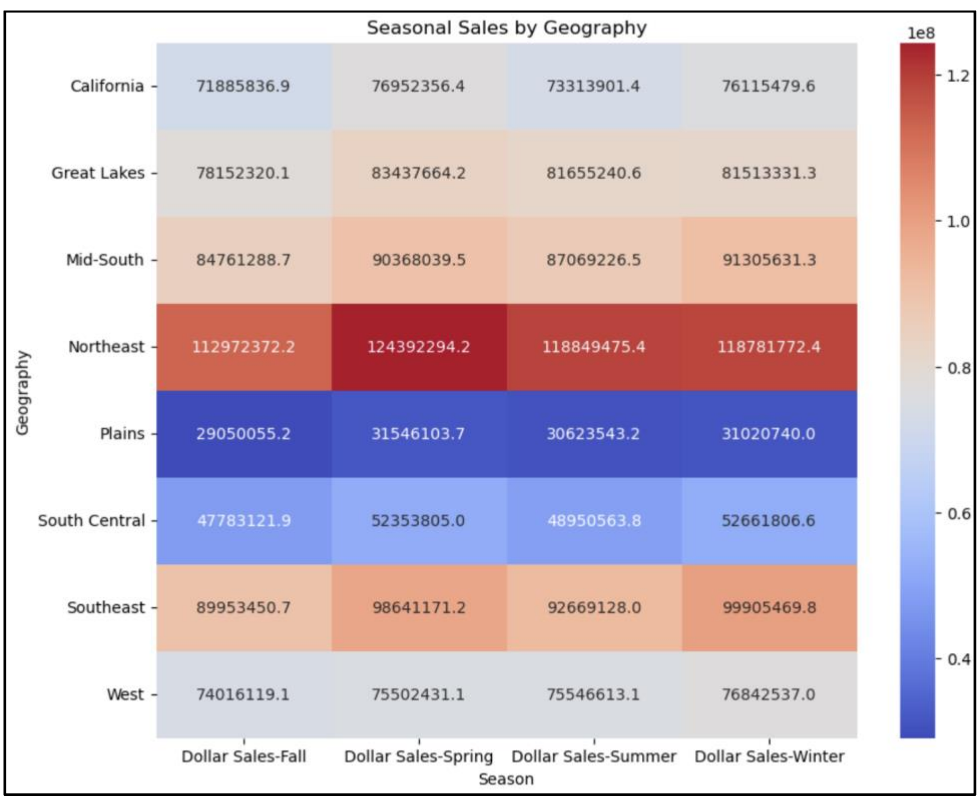
Plot 14



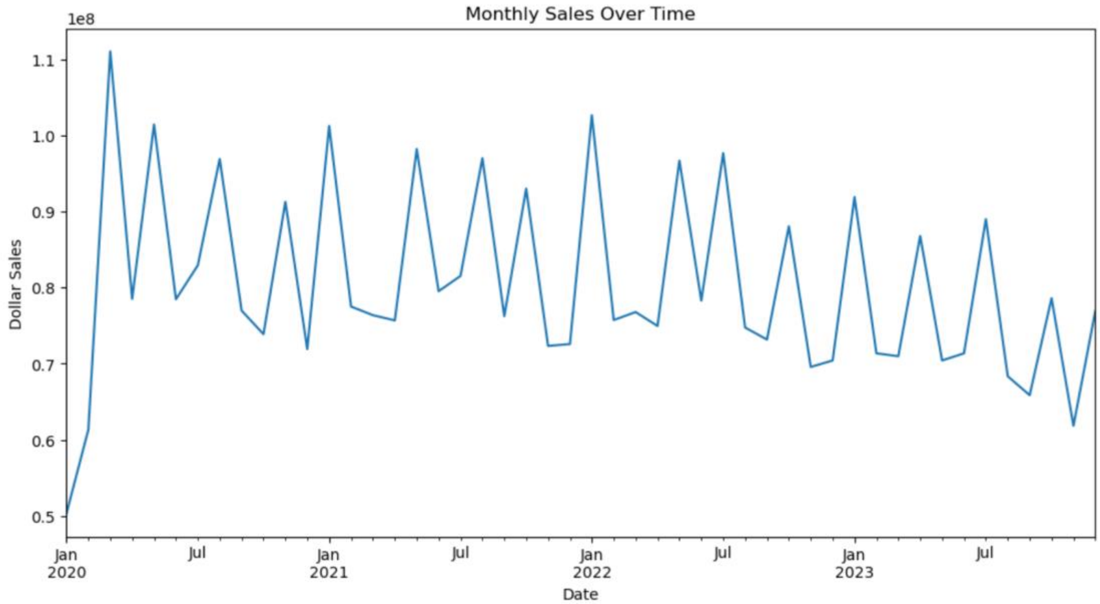
Plot 5


Proportional Sales by Geography and Manufacturer
1e8
8
7
6
5
4
3
2
1
0
Dollar Sales
California
Great Lakes
Mid-South
Northeast
Plains
South Central
Southeast
West
Geography
Manufacturer Name
TURTLE ISLAND FOODS INC
PRIVATE LABEL
LIGHTLIFE FOODS INC
KELLANOVA
IMPOSSIBLE FOODS INC
CONAGRA BRANDS
BEYOND MEAT INC

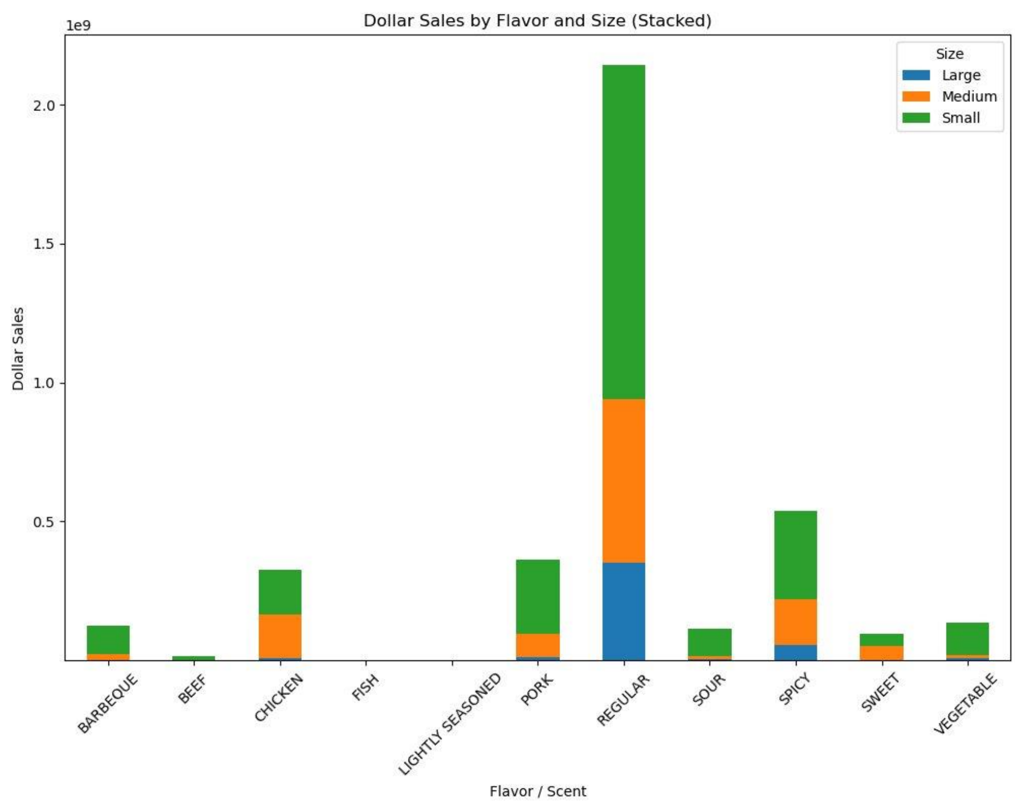
Plot 6


Seasonal Sales by Geography
California
71885836.9
76952356.4
73313901.4
76115479.6
Great Lakes
78152320.1
83437664.2
81655240.6
81513331.3
Mid-South
84761288.7
90368039.5
87069226.5
91305631.3
Northeast
112972372.2
124392294.2
118849475.4
118781772.4
Plains
29050055.2
31546103.7
30623543.2
31020740.0
South Central
47783121.9
52353805.0
48950563.8
52661806.6
Southeast
89953450.7
98641171.2
92669128.0
99905469.8
West
74016119.1
75502431.1
75546613.1
76842537.0
Geography
Dollar Sales-Fall
Dollar Sales-Spring
Dollar Sales-Summer
Dollar Sales-Winter
Season
1e8
1.2
1.0
0.8
0.6
0.4

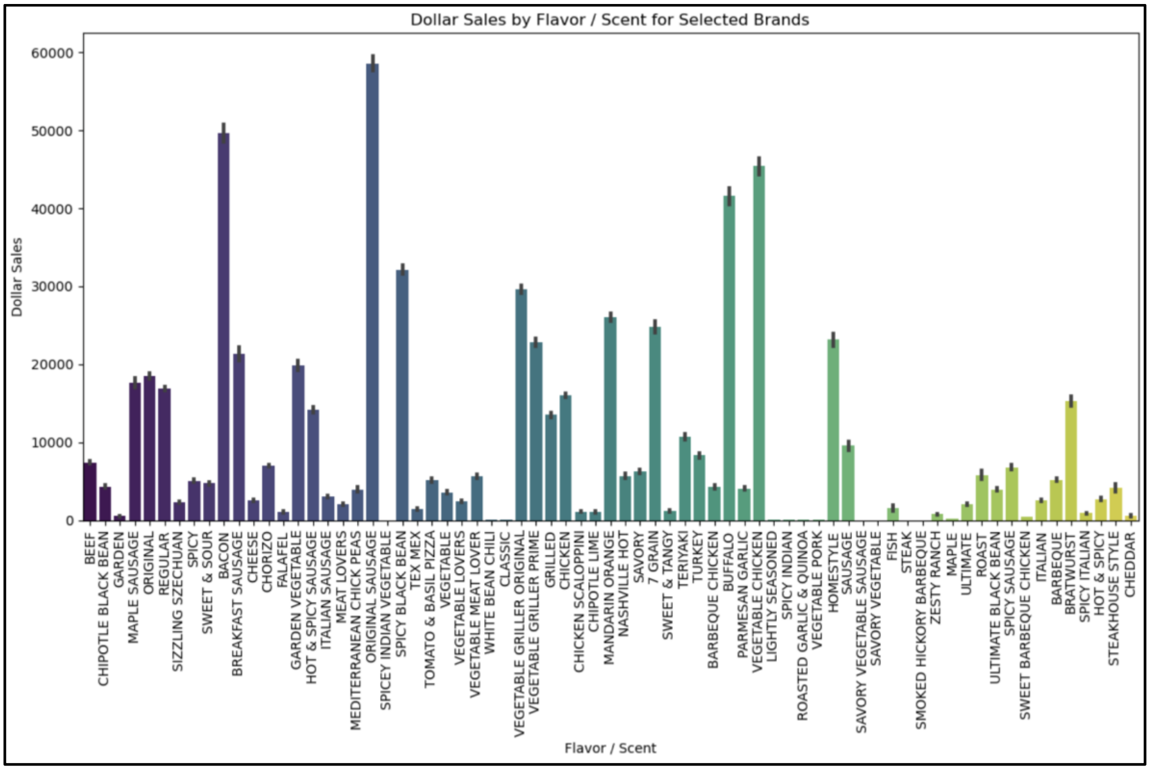
Plot 7



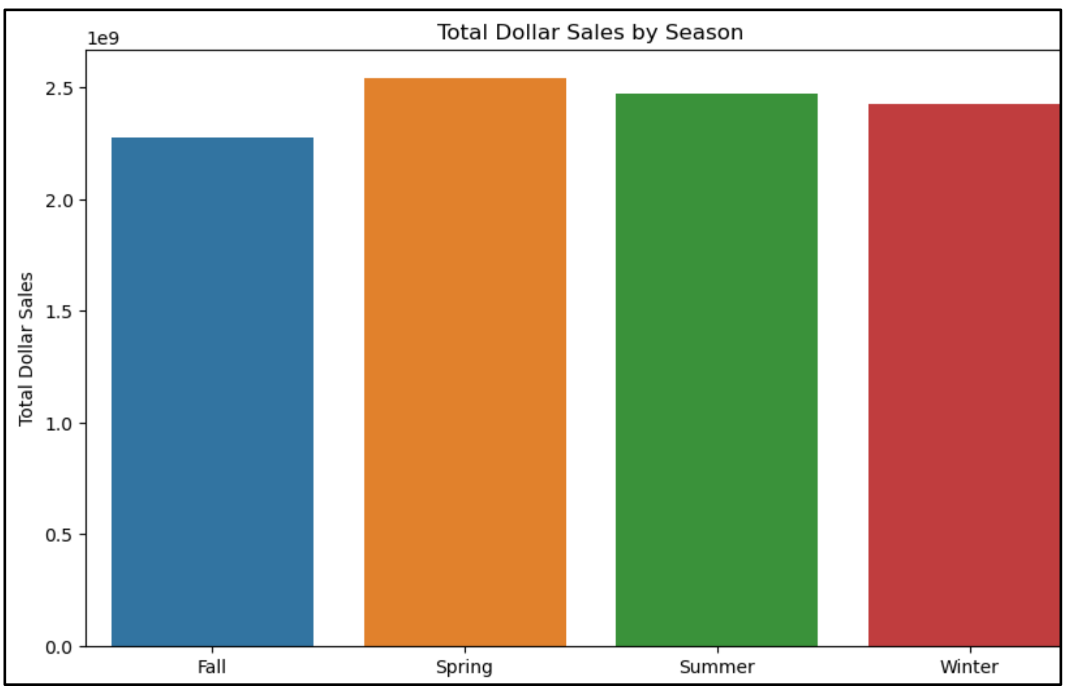
Plot 13



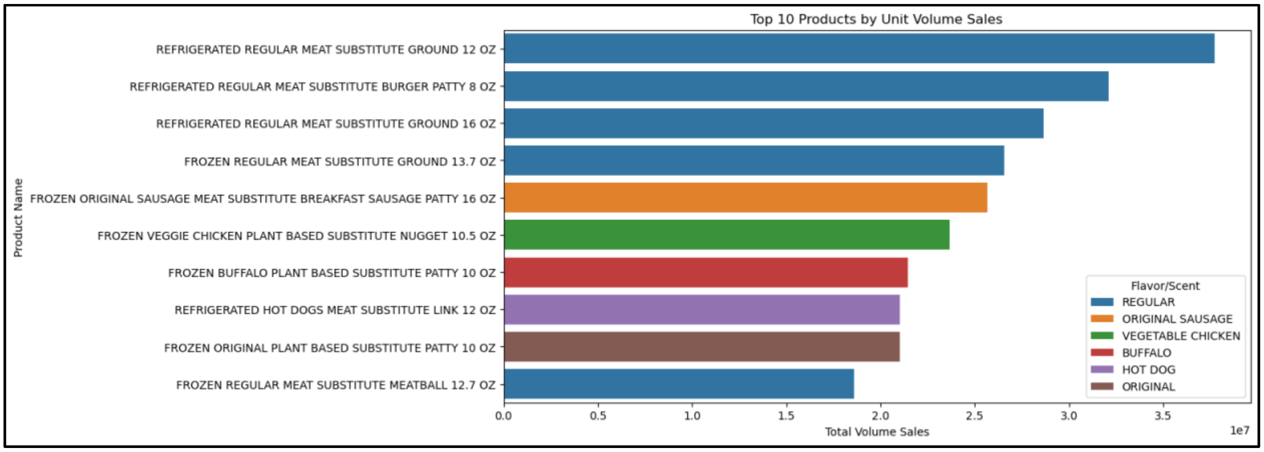
Plot 8


Dollar Sales by Flavor / Scent for Selected Brands
Dollar Sales
60000
50000
40000
30000
20000
10000
0
BEEF
CHIPOTLE BLACK BEAN
GARDEN
MAPLE SAUSAGE
ORIGINAL
REGULAR
SIZZLING SZECHUAN
SPICY
SWEET & SOUR
BACON
BREAKFAST SAUSAGE
CHEESE
CHORIZO
FALAFEL
GARDEN VEGETABLE
HOT & SPICY SAUSAGE
ITALIAN SAUSAGE
MEAT LOVERS
MEDITERRANEAN CHICK PEAS
ORIGINAL SAUSAGE
SPICEY INDIAN VEGETABLE
SPICY BLACK BEAN
TEX MEX
TOMATO & BASIL PIZZA
VEGETABLE
VEGETABLE LOVERS
VEGETABLE MEAT LOVER
WHITE BEAN CHILI
CLASSIC
VEGETABLE GRILLER ORIGINAL
VEGETABLE GRILLER PRIME
GRILLED
CHICKEN
CHICKEN SCALOPPINI
CHIPOTLE LIME
MANDARIN ORANGE
NASHVILLE HOT
SAVORY
7 GRAIN
SWEET & TANGY
TERIYAKI
TURKEY
BARBEQUE CHICKEN
BUFFALO
PARMESAN GARLIC
VEGETABLE CHICKEN
LIGHTLY SEASONED
SPICY INDIAN
ROASTED GARLIC & QUINOA
VEGETABLE PORK
HOMESTYLE
SAUSAGE
SAVORY VEGETABLE SAUSAGE
SAVORY VEGETABLE
FISH
STEAK
SMOKED HICKORY BARBEQUE
ZESTY RANCH
MAPLE
ULTIMATE
ROAST
ULTIMATE BLACK BEAN
SPICY SAUSAGE
SWEET BARBEQUE CHICKEN
ITALIAN
BARBEQUE
BRATWURST
SPICY ITALIAN
HOT & SPICY
STEAKHOUSE STYLE
CHEDDAR
Flavor / Scent

Plot 9


Total Dollar Sales by Season
1e9
Total Dollar Sales
2.5
2.0
1.5
1.0
0.5
0.0
Fall
Spring
Summer
Winter

Plot 10



Plot 11

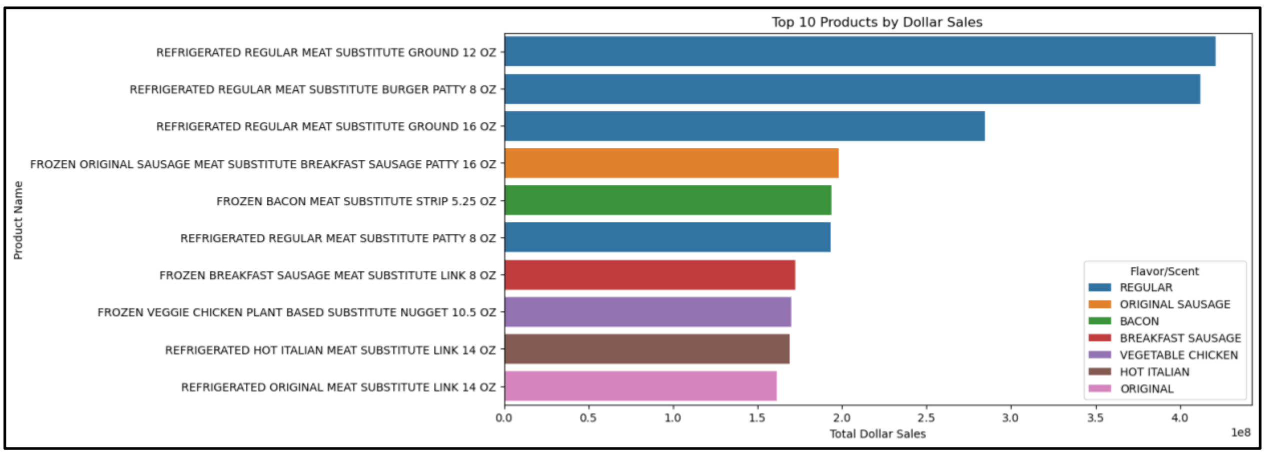


Table 5

ut[7]:

	Manufacturer Name	Product Counts
0	CONAGRA BRANDS	4
1	IMPOSSIBLE FOODS INC	9
2	KELLANOVA	48

Kellanova is the manufacturer name for all its morningstar series products, while Conagra brans is the manufactuer name for all Gardein products. By this table, we can tell that there are extremly huge difference between amount of product.

Table 6

[10]:

Manufacturer Name	Flavor / Scent	Product Name	total sales	product_rank	sales_rank
CONAGRA BRANDS	7 GRAIN	1	1.139179e+08	25.0	13.0
	BARBEQUE	1	8.384383e+06	26.0	37.0
	CHICKEN	6	1.855102e+08	3.0	8.0
	CHICKEN SCALOPPINI	1	3.537012e+06	27.0	41.0
IMPOSSIBLE FOODS INC	BRATWURST	1	2.369121e+07	28.0	25.0
	CHICKEN	4	1.175260e+08	5.0	12.0
	HOMESTYLE	1	4.505414e+07	29.0	22.0
	ITALIAN	1	5.965307e+06	30.0	38.0
	ITALIAN SAUSAGE	1	1.333919e+07	31.0	33.0
	REGULAR	6	7.214120e+08	4.0	1.0
	SAVORY	3	5.149151e+07	9.0	19.0
	SPICY	4	3.514959e+07	6.0	23.0
	SPICY SAUSAGE	2	2.337895e+07	16.0	26.0
	BACON	2	1.950485e+08	17.0	7.0
	BARBEQUE CHICKEN	1	1.420720e+07	32.0	31.0
	BREAKFAST SAUSAGE	3	1.747002e+08	10.0	10.0
	BUFFALO	4	1.761298e+08	7.0	9.0
	CHEDDAR	1	5.270048e+04	33.0	49.0
	CHEESE	2	1.334509e+07	18.0	32.0
	CHICKEN	3	6.688983e+07	11.0	18.0
	CHIPOTLE BLACK BEAN	3	2.516483e+07	12.0	24.0
	CHORIZO	2	4.684184e+07	19.0	21.0
	CLASSIC	2	2.201651e+04	20.0	50.0
	FALAFEL	1	8.282953e+05	34.0	46.0
	GARDEN	1	4.217641e+02	35.0	57.0
	GARDEN VEGETABLE	4	1.072739e+08	8.0	14.0
	GRILLED	2	9.417863e+07	21.0	16.0
	HOT & SPICY	1	3.008024e+06	36.0	42.0

Plot 12

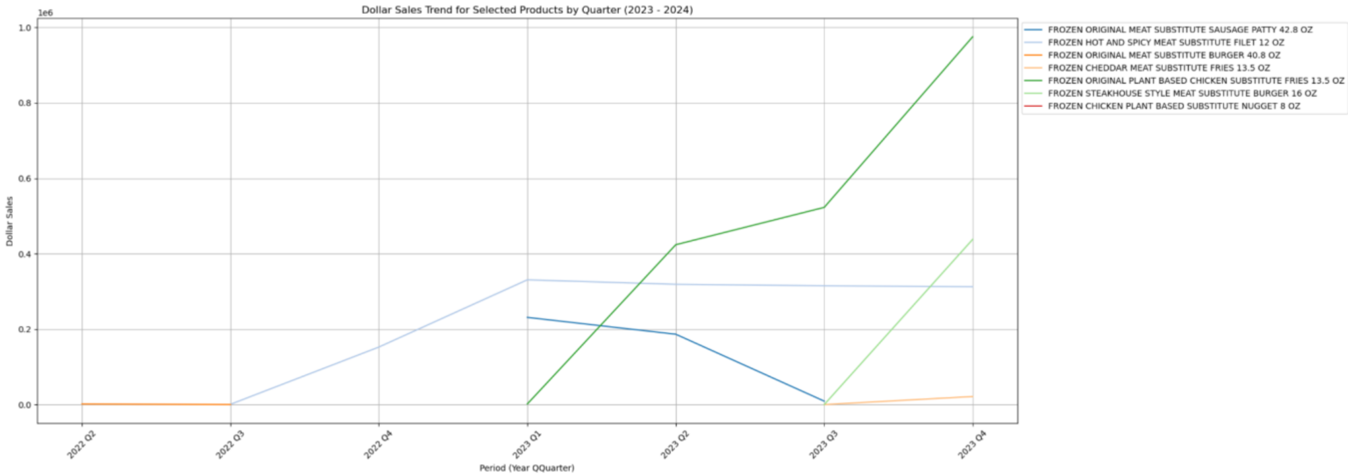


Table 7

	Manufacturer Name	Portion	Dollar Sales	Unit Sales	dollar_sales_rank	unit_sales_rank
0	BEYOND MEAT INC	Large	1.239249e+08	8.391039e+06	12.0	15.0
1	BEYOND MEAT INC	Medium	3.223279e+08	3.990147e+07	3.0	8.0
2	BEYOND MEAT INC	Small	3.669630e+08	7.154953e+07	2.0	2.0
3	CONAGRA BRANDS	Large	3.983619e+07	3.264724e+06	17.0	18.0
4	CONAGRA BRANDS	Medium	2.731624e+08	4.862099e+07	5.0	4.0
5	CONAGRA BRANDS	Small	2.704230e+08	6.110614e+07	6.0	3.0
6	IMPOSSIBLE FOODS INC	Large	6.240358e+07	4.715248e+06	15.0	17.0
7	IMPOSSIBLE FOODS INC	Medium	1.584669e+08	2.258464e+07	10.0	12.0
8	IMPOSSIBLE FOODS INC	Small	2.856910e+08	4.358863e+07	4.0	6.0
9	KELLANOVA	Large	1.969895e+08	2.424117e+07	7.0	11.0
10	KELLANOVA	Medium	1.888235e+08	2.864179e+07	8.0	10.0
11	KELLANOVA	Small	9.482973e+08	2.245272e+08	1.0	1.0
12	LIGHTLIFE FOODS INC	Medium	3.620461e+07	8.088657e+06	18.0	16.0
13	LIGHTLIFE FOODS INC	Small	1.880552e+08	4.575485e+07	9.0	5.0
14	PRIVATE LABEL	Large	5.330862e+06	7.200588e+05	20.0	19.0
15	PRIVATE LABEL	Medium	6.576427e+07	1.527229e+07	14.0	13.0
16	PRIVATE LABEL	Small	1.504208e+08	4.265396e+07	11.0	7.0
17	TURTLE ISLAND FOODS INC	Large	6.963001e+06	5.648375e+05	19.0	20.0
18	TURTLE ISLAND FOODS INC	Medium	4.844777e+07	9.338251e+06	16.0	14.0
19	TURTLE ISLAND FOODS INC	Small	1.190810e+08	3.169316e+07	13.0	9.0

Table 8 Part 1

Feature	Coefficient		Feature	Coefficient
Intercept	0		Q("Form")[T.BREAKFAST PATTY]	0
Q("Geography")[T.Great Lakes]	-1361.7139		Q("Form")[T.BREAKFAST SAUSAGE LINK]	5864.99399
Q("Geography")[T.Mid-South]	163.167084		Q("Form")[T.BREAKFAST SAUSAGE PATTY]	9655.8391
Q("Geography")[T.Northeast]	7085.16703		Q("Form")[T.BREAKFAST SAUSAGE ROLL]	12342.039
Q("Geography")[T.Plains]	-4444.8481		Q("Form")[T.BREAST]	5683.85731
Q("Geography")[T.South Central]	0		Q("Form")[T.BURGER]	520.946065
Q("Geography")[T.Southeast]	1153.11772		Q("Form")[T.BURGER PATTY]	6227.45461
Q("Geography")[T.West]	-926.29918		Q("Form")[T.CAKE]	-999.11547
Q("Portion")[T.Medium]	4015.67888		Q("Form")[T.CHUNK]	-2881.2963
Q("Portion")[T.Small]	5629.77136		Q("Form")[T.CRUMBLE]	-6716.4635
Q("Flavor / Scent")[T.BEEF]	-5403.4671		Q("Form")[T.CUBE]	1010.85011
Q("Flavor / Scent")[T.CHICKEN]	-2807.7525		Q("Form")[T.CUTLET]	40.6065498
Q("Flavor / Scent")[T.FISH]	-9764.5093		Q("Form")[T.DELI SLICED]	3764.53478
Q("Flavor / Scent")[T.LIGHTLY SEASONED]	674.581822		Q("Form")[T.FILET]	2792.04865
Q("Flavor / Scent")[T.PORK]	-2603.6562		Q("Form")[T.FINGER]	-4309.8894
Q("Flavor / Scent")[T.REGULAR]	-1039.3127		Q("Form")[T.FRANK]	-5254.6096
Q("Flavor / Scent")[T.SOUR]	-6257.7482		Q("Form")[T.FRIES]	-1755.4633
Q("Flavor / Scent")[T.SPICY]	-2652.6999		Q("Form")[T.GROUND]	9435.65891
Q("Flavor / Scent")[T.SWEET]	-11568.681		Q("Form")[T.HOT DOG]	-6412.8226
Q("Flavor / Scent")[T.VEGETABLE]	-6245.9587		Q("Form")[T.LINK]	6251.84192
Q("Manufacturer Name")[T.CONAGRA BRANDS]	-15595.757		Q("Form")[T.MEATBALL]	2754.76514
Q("Manufacturer Name")[T.IMPOSSIBLE FOODS INC]	3327.11584		Q("Form")[T.NOT STATED ON PACKAGE]	-1438.5278
Q("Manufacturer Name")[T.KELLANOVA]	-9749.1068		Q("Form")[T.NUGGET]	-1858.5095
Q("Manufacturer Name")[T.LIGHTLIFE FOODS INC]	-26153.264		Q("Form")[T.PATTY]	1832.8891
Q("Manufacturer Name")[T.PRIVATE LABEL]	-26864.451		Q("Form")[T.PIECE]	-56.329469
Q("Manufacturer Name")[T.TURTLE ISLAND FOODS INC]	-26176.572		Q("Form")[T.POPCORN]	-10065.23
Q("Category")[T.FROZEN FALAFEL]	-15749.588		Q("Form")[T.POPPER]	-1601.5114
Q("Category")[T.FROZEN FISH]	0		Q("Form")[T.PULLED]	-10708.317
Q("Category")[T.FROZEN MEAT]	-2531.0179		Q("Form")[T.RIBLET]	0
Q("Category")[T.FROZEN MEAT ALTERNATIVE]	3221.23547		Q("Form")[T.ROAST]	3862.37726
Q("Category")[T.FROZEN POULTRY]	-2928.8726		Q("Form")[T.ROLL]	-14642.279
Q("Category")[T.FROZEN SEAFOOD]	-8898.5557		Q("Form")[T.SAUSAGE]	8760.93706
Q("Category")[T.REFRIGERATED MEAT]	3908.34354		Q("Form")[T.SAUSAGE PATTY]	-999.33059
Q("Category")[T.REFRIGERATED MEAT ALTERNATIVE]	902.132445		Q("Form")[T.SLICE]	-2022.8757
Q("Category")[T.REFRIGERATED SAUSAGE]	-9192.7613		Q("Form")[T.SLICED]	0
Q("Form")[T.BITE]	4809.87475		Q("Form")[T.SLIDER]	-10787.61
Q("Form")[T.BLOCK]	12841.9252		Q("Form")[T.SPLIT ROPE]	-4198.1634
Q("Form")[T.BRATWURST]	-19001.11		Q("Form")[T.STRIP]	1611.14703
Q("Form")[T.BREAKFAST LINK]	-11327.396		Q("Form")[T.TENDER]	1007.85007
			Q("Form")[T.TIP]	0

Table 8 Part 2

Feature	Coefficient		Feature	Coefficient
Q("Form")[T.ULTRA THIN SLICE]	-3816.566		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.LIGHTLY SEASONED]	0
Q("Form")[T.WHOLE]	5117.299		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.LIGHTLY SEASONED]	0
Q("Form")[T.WING]	-5385.884		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.LIGHTLY SEASONED]	0
Q("Geography")[T.Great Lakes]:Q("Portion")[T.Medium]	244.8286		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.LIGHTLY SEASONED]	0
Q("Geography")[T.Mid-South]:Q("Portion")[T.Medium]	-239.0392		Q("Geography")[T.West]:Q("Flavor / Scent")[T.LIGHTLY SEASONED]	0
Q("Geography")[T.Northeast]:Q("Portion")[T.Medium]	-3271.354		Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.PORK]	-293.6763
Q("Geography")[T.Plains]:Q("Portion")[T.Medium]	-2087.494		Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.PORK]	0
Q("Geography")[T.South Central]:Q("Portion")[T.Medium]	-3626.071		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.PORK]	0
Q("Geography")[T.Southeast]:Q("Portion")[T.Medium]	-1216.223		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.PORK]	-2206.01
Q("Geography")[T.West]:Q("Portion")[T.Medium]	1157.132		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.PORK]	-1810.364
Q("Geography")[T.Great Lakes]:Q("Portion")[T.Small]	1064.455		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.PORK]	-772.4218
Q("Geography")[T.Mid-South]:Q("Portion")[T.Small]	-477.6391		Q("Geography")[T.West]:Q("Flavor / Scent")[T.PORK]	204.0661
Q("Geography")[T.Northeast]:Q("Portion")[T.Small]	-4739.152		Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.REGULAR]	-484.5333
Q("Geography")[T.Plains]:Q("Portion")[T.Small]	0		Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.REGULAR]	0
Q("Geography")[T.South Central]:Q("Portion")[T.Small]	-3162.396		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.REGULAR]	1206.567
Q("Geography")[T.Southeast]:Q("Portion")[T.Small]	-782.569		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.REGULAR]	-4025.019
Q("Geography")[T.West]:Q("Portion")[T.Small]	799.9705		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.REGULAR]	-3677.351
Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.BEEF]	0		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.REGULAR]	1675.778
Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.BEEF]	0		Q("Geography")[T.West]:Q("Flavor / Scent")[T.REGULAR]	-875.8613
Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.BEEF]	-1233.479		Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.SOUR]	0
Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.BEEF]	0		Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.SOUR]	-172.0799
Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.BEEF	0		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.SOUR]	1042.548
Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.BEEF]	0		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.SOUR]	0
Q("Geography")[T.West]:Q("Flavor / Scent")[T.BEEF]	0		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.SOUR]	0
Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.CHICKI	0		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.SOUR]	-1164.471
Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.CHICKE	-396.3742		Q("Geography")[T.West]:Q("Flavor / Scent")[T.SOUR]	-997.4288
Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.CHICKEI	556.9472		Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.SPICY]	0
Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.CHICKEN]	-1537.788		Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.SPICY]	0
Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.CHIC	565.0193		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.SPICY]	-244.5502
Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.CHICKEI	0		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.SPICY]	-3498.487
Q("Geography")[T.West]:Q("Flavor / Scent")[T.CHICKEN]	0		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.SPICY]	-3011.229
Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.SPICY]	1530.995
Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.West]:Q("Flavor / Scent")[T.SPICY]	-475.2093
Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.SWEET]	0
Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.SWEET]	0
Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.FISH	0		Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.SWEET]	0
Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.SWEET]	696.4414
Q("Geography")[T.West]:Q("Flavor / Scent")[T.FISH]	0		Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.SWEET]	0
Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.LIGHTI	0		Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.SWEET]	-982.7646
Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.LIGHTL	0		Q("Geography")[T.West]:Q("Flavor / Scent")[T.SWEET]	-681.9738
			Q("Geography")[T.Great Lakes]:Q("Flavor / Scent")[T.VEGETABLE]	829.541
			Q("Geography")[T.Mid-South]:Q("Flavor / Scent")[T.VEGETABLE]	813.5131
			Q("Geography")[T.Northeast]:Q("Flavor / Scent")[T.VEGETABLE]	1456.657
			Q("Geography")[T.Plains]:Q("Flavor / Scent")[T.VEGETABLE]	0
			Q("Geography")[T.South Central]:Q("Flavor / Scent")[T.VEGETABLE]	0
			Q("Geography")[T.Southeast]:Q("Flavor / Scent")[T.VEGETABLE]	222.5499
			Q("Geography")[T.West]:Q("Flavor / Scent")[T.VEGETABLE]	-1547.793
			Q("Year")	-1705.008
			Q("Month")	-199.8694

Table 9

Feature	Importance	Feature	Importance	Form_BITE	7.99E-06
Manufacturer Name_BEYOND MEAT INC	0.0823293	Form_TENDER	0.004528	Flavor / Scent_LIGHTLY SEASONED	7.57E-06
Portion_Small	0.07253699	Geography_West	0.00352358	Form_CUTLET	7.54E-06
Category_REFRIGERATED MEAT	0.06666986	Form_FILET	0.00321661	Form_BRATWURST	6.05E-06
Geography_Plains	0.05839927	Form_NUGGET	0.00317271	Form_SPLIT ROPE	5.56E-06
Form_BURGER PATTY	0.05594356	Flavor / Scent_BARBEQUE	0.00303933	Form_FINGER	1.30E-06
Manufacturer Name_PRIVATE LABEL	0.0517257	Form_BREAST	0.0030092	Form_FRANK	3.60E-07
Portion_Medium	0.04908811	Form_BLOCK	0.0024295	Form_ULTRA THIN SLICE	3.12E-07
Geography_Northeast	0.04439239	Form_SLICED	0.00213679	Form_BREAKFAST SAUSAGE LINK	1.41E-07
Geography_South Central	0.04436142	Category_FROZEN FISH	0.00181477	Form_POPPER	6.61E-08
Year_2023	0.04244412	Category_FROZEN POULTRY	0.00170368	Form_RIBLET	1.43E-08
Year_2020	0.03895339	Category_FROZEN MEAT	0.00157109	Form_PULLED	2.30E-10
Manufacturer Name_IMPOSSIBLE FOODS INC	0.03681387	Form_BALL	0.00155047	Form_SAUSAGE PATTY	0
Manufacturer Name_KELLANOVA	0.02617665	Form_TIP	0.00137234	Flavor / Scent_FISH	0
Form_GROUND	0.02607107	Flavor / Scent_VEGETABLE	0.00134031	Form_BREAKFAST LINK	0
Flavor / Scent_PORK	0.02246171	Form_DELI SLICED	0.00111943		
Flavor / Scent_REGULAR	0.02165341	Form_CRUMBLE	0.0010597		
Year_2021	0.01901762	Manufacturer Name_TURTLE ISLAND FOODS INC	0.00083582		
Category_FROZEN CHICKEN	0.01530273	Form_HOT DOG	0.00051621		
Category_FROZEN MEAT ALTERNATIVE	0.01527466	Category_REFRIGERATED MEAT ALTERNATIVE	0.0004319		
Form_LINK	0.01516426	Form_SLICE	0.00027634		
Form_PATTY	0.01273764	Form_POPCORN	0.0002501		
Form_MEATBALL	0.01210655	Form_SLIDER	0.00023961		
Flavor / Scent_SPICY	0.0110959	Flavor / Scent_BEEF	0.00022606		
Geography_Southeast	0.01085325	Manufacturer Name_CONAGRA BRANDS	0.00019597		
Geography_California	0.01068522	Form_ROLL	0.00010155		
Flavor / Scent_CHICKEN	0.01007583	Form_PIECE	7.12E-05		
Category_REFRIGERATED SAUSAGE	0.00998513	Form_NOT STATED ON PACKAGE	6.30E-05		
Portion_Large	0.00914164	Form_WING	4.49E-05		
Flavor / Scent_SWEET	0.00849238	Form_BREAKFAST SAUSAGE ROLL	3.98E-05		
Form_BURGER	0.00799322	Form_CHUNK	3.91E-05		
Form_STRIP	0.00792112	Form_SAUSAGE	2.84E-05		
Form_BREAKFAST SAUSAGE PATTY	0.00789045	Form_ROAST	2.67E-05		
Form_BREAKFAST PATTY	0.00748145	Form_WHOLE	1.64E-05		
Flavor / Scent_SOUR	0.00719712	Category_FROZEN FALAFEL	1.25E-05		
Manufacturer Name_LIGHTLIFE FOODS INC	0.00574989	Form_CUBE	1.25E-05		
Geography_Mid-South	0.00556927	Form_FRIES	1.09E-05		
Year_2022	0.00536716	Form_CAKE	1.03E-05		
Geography_Great Lakes	0.00479354	Category_FROZEN SEAFOOD	9.39E-06		