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**PREDICTIVE ANALYTICS FOR DATA SCIENCE**

**GROUP - 4**

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12. ***Introduction***

Conagra Brands, a leading food company headquartered in Chicago, is known for its diverse portfolio, including Gardein—a key player in the meat substitute category. Gardein offers a range of plant-based protein products targeting vegans, vegetarians, and flexitarians seeking sustainable alternatives to meat.

This project focuses on Conagra’s Meat Substitutes segment, with some attention to related categories like seafood, beef, and breakfast sausages. The objective is to identify strategies to accelerate growth and optimize the brand portfolio in the plant-based space.

Through multi-year sales data analysis, we identified key consumer trends and product performance patterns. These insights support the development of market-driven hypotheses and strategies to help Conagra capitalize on emerging opportunities in the plant-based meat sector. The following sections will explore the industry landscape and growth drivers to guide Conagra’s long-term positioning.

1. ***Project Overview***

This project aimed to analyze buyer behavior and key sales drivers in the meat substitute category, with a focus on Conagra’s portfolio, to identify strategic growth opportunities. Using LASSO regression, we identified high-impact product attributes influencing unit sales and compared category-wide drivers with those specific to Conagra, including form, packaging, and distribution.

We also developed consumer personas based on household size, income, age, marital status, and presence of children to better understand target segments. These insights informed actionable recommendations to optimize Conagra’s product mix, distribution strategy, and marketing to drive long-term growth.

1. ***Dataset Overview***

Conagra has provided 3 different datasets for each: Meat Alternatives category, Refrigerated Meat aisle and Frozen Meat aisle. For this project, we have received a comprehensive dataset spanning **five years**, providing valuable insights into the sales and consumer behavior associated with **meat substitute products**. The data encompasses various **brands** and their respective **meat substitute** offerings, enabling us to perform a detailed analysis of market performance over time. The dataset is not limited to a single brand but covers multiple brands within the meat substitutes category, providing a broad view of the competitive landscape in this segment.

**Sales Data**:

* The dataset contains **sales figures** for meat substitute products sold across the years. This data allows us to track the **year-over-year performance** of each brand and product type, identifying trends in consumer demand and market dynamics.
* **Volume of Sales**: The dataset specifies the total sales volume for each product and brand, enabling an understanding of how each product category performed relative to others in the market.
* **Revenue Data**: In addition to volume, the dataset provides information about the **revenue generated** by each brand’s meat substitute products. This helps in analyzing not just the popularity of products but also their profitability.
* **Household Buying Data (HH Buying)**: **Household (HH) Buying** data is provided to indicate how frequently different households purchase meat substitute products. This information highlights the purchasing behavior of consumers, giving insights into:
  + **Frequency of Purchases**: How often households buy meat substitute products, which can indicate product loyalty or seasonal fluctuations in consumer behavior.
  + **Household Segments**: Analysis of different consumer groups, such as **vegans, vegetarians, flexitarians**, and even non-vegetarians who occasionally purchase meat substitutes.
* **Panel Buyer Distribution**: The **panel buyer distribution** data provides information on a specific set of consumers (panelists) who have consistently bought meat substitute products over a period. This data helps us understand:
  + **Loyalty and Retention Rates**: How many consumers consistently purchase from the meat substitute category, giving an insight into brand loyalty and consumer retention.
  + **Product Preferences**: Analysis of which brands and specific products panel buyers prefer. This data can help identify the most popular products and the emerging preferences in the market.
* **Yearly Breakdown**: The dataset provides a **yearly breakdown** of sales and consumer behavior, offering a detailed look at:
  + **Trends Over Time**: How sales for each brand and product have changed from one year to the next, highlighting key growth or decline trends.
  + **Seasonal Variations**: Identifying any seasonal or cyclical patterns in consumer demand for meat substitutes, which can be crucial for product launch planning and marketing strategies.

1. ***Market Analysis***

The meat substitute market has grown rapidly in response to consumer demand for more sustainable, health-conscious, and ethical food choices. As awareness of the environmental impact of meat production rises, more vegans, vegetarians, and flexitarians are incorporating plant-based alternatives to reduce their carbon footprint and improve their health. This shift has fueled an expanding range of products, including plant-based burgers, sausages, meatballs, and even seafood and breakfast substitutes.

|  |  |
| --- | --- |
| **Metric** | **Value** |
| **Global Market Size (2024)** | $16.69 billion |
| **Projected Market Size (2033)** | $100.31 billion |
| **Compound Annual Growth Rate (CAGR)** | 21.92% (2025–2033) |
| **U.S. Market Size (2024)** | $3.21 billion |
| **U.S. Projected Market Size (2030)** | $8.70 billion |
| **Top Product Segment** | Burger patties (45%+ market share) |
| **Leading Consumer Segment** | Flexitarians and health-conscious consumers |
| **Key Growth Drivers** | Health awareness, sustainability, taste innovation |

A graph of the market

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A notable fast-growing segment is vegan bacon, which provides a cruelty-free, sustainable option to traditional pork bacon. Made from ingredients like tempeh, tofu, mushrooms, and coconut, it resonates with health-conscious consumers concerned about animal welfare and environmental impact. Manufacturers continue to innovate on taste and texture to attract a wider audience. However, taste remains a challenge—for example, Conagra’s Gardein has received criticism for the flavor and texture of its plant-based bacon, signaling the need for ongoing product refinement.

A close-up of a graph

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A key debate in the plant-based industry centers on amino acid spiking—the practice of adding isolated amino acids to inflate protein content. Critics argue these proteins may lack bioavailability and offer limited muscle-building benefits compared to complete animal proteins. There is also growing concern that heavy processing and amino acid manipulation could pose health risks, with some consumers fearing potential links to cancer.

A diagram of various medical features

Description automatically generated with medium confidenceA diagram of protein content and food groups

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**Consumer Insights & Common Reasons for Choosing Plant-Based Diets -** Consumer interest in plant-based diets is growing, mainly among omnivores and flexitarians rather than strict vegans. In the U.S., 40% of shoppers have purchased plant-based meat or dairy in the past six months, but only 10% follow a fully plant-based diet. Additionally, 86% of households buying meat alternatives also buy conventional meat, indicating that plant-based products are being used to complement, not replace, meat. Key motivations include health, environmental sustainability, and ethical concerns, as consumers aim to reduce their carbon footprint and improve their diet without eliminating animal products.

**Market Trends & Outlook -** Beyond taste, factors like packaging and product presentation significantly influence consumer purchasing decisions. While the global meat market is valued at around $1.43 trillion in 2024, the plant-based meat market is projected to reach $16.7 billion, highlighting substantial growth potential. The rising health and wellness movement—promoting plant-based diets for heart health, weight management, and disease prevention—continues to drive demand. The COVID-19 pandemic also boosted interest, as consumers sought more sustainable and immune-supportive food choices.

1. ***Product insights***

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* 1. **Conagra (Gardein):**

Gardein, a leading brand under Conagra, offers a diverse and convenient range of meat-free alternatives, including turkey-style cutlets, crab less cakes, and canned soups and chilis, primarily in frozen form. Made from nutrient-rich ancient grains, vegetables, and non-GMO soy, wheat, and canola, Gardein’s products are crafted to mimic the taste and texture of real meat while delivering 100% plant protein, no cholesterol, lower saturated fat, and more fiber than traditional animal proteins. The brand’s Ultimate Plant-Based Chicken Line—featuring filets, tenders, and nuggets—showcases its commitment to creating delicious, healthy, and sustainable options that fit seamlessly into everyday meals without sacrificing flavor or quality.

* 1. **Morningstar Farms:**

Founded in 1974 and acquired by Kellogg in 1999 for around $300 million, Morningstar Farms has evolved into a multi-hundred-million-dollar business. Unlike other brands that focus solely on being meat substitutes, Morningstar positions itself as offering natural and tasty alternatives. It has become an established and trusted name in the plant-based space, with 73% brand awareness among U.S. meat substitute users. Additionally, 33% of users like Morningstar Farms products and 32% purchase them regularly, reflecting strong consumer appeal and brand loyalty.

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* 1. **Beyond Meat**

Beyond Meat is committed to delivering plant-based alternatives that replicate the taste and texture of meat while using simple, non-GMO ingredients derived from sources like peas, beans, potatoes, and brown rice. Since launching its first product, Chicken Strips, in 2012, Beyond Meat has expanded to include signature offerings like the Beyond Burger—designed to mimic real beef, the Beyond Meatballs, and the Beyond Meat Jerky, its first shelf-stable product developed with PepsiCo. The brand targets a broad audience, including meat-eaters, aiming to offer a realistic meat alternative. Additionally, Beyond Meat has partnered with the American Cancer Society in a multi-year research initiative to study the role of plant-based meat in cancer prevention, focusing on dietary data and long-term health benefits.

A map of the united states

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* 1. **Impossible Foods**

Founded in 2016, Impossible Foods is dedicated to replacing traditional meat with sustainable plant-based alternatives. Its flagship product, the Impossible Burger, is now served in over 17,000 restaurants, including major chains like Burger King and White Castle. The company positions itself as a sustainability champion, with research showing that substituting beef with Impossible products results in 96% less land use, 91% fewer greenhouse gas emissions, and 92% less water consumption. This strong restaurant presence and environmental impact highlight Impossible Foods’ commitment to innovation, scalability, and eco-friendly food solutions.

A map of the united states

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* 1. **Final Thoughts**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Competitor** | **Key Strategies** | **Strengths** | **Weaknesses / Challenges** | **Lessons for Conagra** |
| **Impossible Foods** | Heavy investment in R&D and taste innovation | High brand recognition | High pricing | Invest in culinary R&D |
| Strong foodservice partnerships (e.g., Burger King) | Strong messaging around sustainability | Limited portfolio outside burgers | Expand foodservice presence |
| **Beyond Meat** | Broad product line (burgers, sausages, chicken) | Aggressive marketing | Volatile financials | Diversify retail + QSR channels |
| Retail and QSR channels | Global footprint | Recent sales declines | Ensure pricing competitiveness |
| **MorningStar Farms (Kellanova)** | Legacy brand with mass retail reach | Strong Walmart presence | Aging brand image | Balance value and innovation |
| Value-focused SKUs | Broad flavor options | Less innovation recently | Modernize brand appeal |
| **Gardein *(Conagra)*** | Broad SKU range (meatballs, tenders, etc.) | Depth in formats | Declining HH penetration | Leverage packaging, flavor & loyalty marketing |
| Distribution across frozen aisles | Retail coverage | Weak brand differentiation |

1. ***Seasonal Insights & Trends***

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To stay competitive in the expanding meat substitute market, ConAgra must revitalize its product lineup and focus on seasonal marketing, particularly during Spring and Summer, when performance has historically been strong. Reinvesting in season-specific launches, promotions, and advertising is essential to regain momentum. There’s also a clear opportunity to diversify product offerings by expanding form factors like nuggets and crumbles and enhancing flavor variety to attract broader consumer segments, especially where competitors are plateauing.

Using historical sales data, ConAgra should identify and phase out underperforming SKUs, reallocating efforts to high-demand products. To boost seasonal sales, the company should implement differentiated pricing strategies, such as value packs, targeted discounts, and store-level promotions, especially for price-sensitive shoppers. These actions will help ConAgra strengthen its position in the market and support sustained growth.

1. ***Visualizations***

**7.1 Analyzing Price Per Unit Sales for All Brands**

A graph of sales and prices

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A graph showing a graph of sales

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The meat substitutes category shows clear price sensitivity, with sales declining as prices rise—confirmed by both scatterplots and LASSO regression. Gardein, priced between $3 and $6, positions as a value brand but lags in sales volume, suggesting low pricing alone is insufficient.

In contrast, Beyond Meat and Impossible Foods succeed with premium pricing ($6–$12), driven by strong brand equity, taste, and sustainability messaging. Morningstar Farms, with similar pricing to Gardein, outperforms due to brand familiarity and broader distribution. Smaller brands in the Rest\_ALL category show minimal impact, reflecting market fragmentation.

Strategic opportunity exists for Conagra to launch a $6–$9 premium line with better packaging, taste, and health benefits, while maintaining its core value SKUs. This dual approach, supported by targeted promotions, can attract both value-driven and premium consumers.

**7.2 Analyzing Forms and Flavors with Unit Sales Over the Years**

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From 2020 to 2024, REGULAR flavor led ConAgra’s unit sales with consistent performance and seasonal spikes, indicating strong consumer preference. CHICKEN and ORIGINAL flavors showed stable sales, with ORIGINALtrending upward, suggesting growing appeal. In contrast, 7 GRAIN remained low and flat, signaling limited demand. These trends highlight the importance of prioritizing core flavors like REGULAR and ORIGINAL, while considering reformulation or discontinuation of underperforming variants like 7 GRAIN

A graph showing different colored bars

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The REGULAR flavor leads category unit sales, with ConAgra holding a solid but non-leading share—indicating both strength and opportunity. While CHICKEN, ORIGINAL, and BACON perform well at the category level, ConAgra’s share in these is limited, suggesting gaps in product presence or marketing. Additionally, high-performing flavors like SPICY BLACK BEAN and VEGETABLE CHICKEN show minimal or no ConAgra presence, revealing white space opportunities for incremental growth.

A graph with different colored bars

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ConAgra holds dominant share in select forms like BREAST (95.7%), FILET (89.0%), and TENDER (68.4%), which should be reinforced through targeted innovation. However, it is underrepresented in high-demand forms such as BURGER (5.9%), GROUND (16.3%), and NUGGET (7.7%)—areas that make up a significant portion of the market. Expanding in these formats, especially those favored by flexitarians and families, is a key opportunity to boost growth and shelf presence.

A graph of sales and statistics

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Over the past four years, Kellanova has led in unit sales but has seen a gradual decline since mid-2021. Beyond Meat has consistently outperformed ConAgra, though both remain in the middle tier. Impossible Foods is steadily growing and closing the gap with ConAgra. While ConAgra’s position is stable, it risks being overtaken without innovation or stronger brand penetration. Kellanova’s decline presents an opportunity for ConAgra to capture share by improving taste, form variety, and merchandising.

1. ***Analysis & Strategies***

LASSO regression analysis identified key product attributes driving unit sales in the meat substitute category. TUB/CONTAINER packaging was the strongest driver (+1920), highlighting consumer preference for convenience and freshness. BURGER/PATTY form (+109) also performed well, appealing to flexitarian consumers seeking familiar meal formats. PLAIN/ORIGINAL flavor (+171) showed strong preference, reinforcing the value of core, recognizable flavors.

While PLANT-BASED SUBSTITUTE had a positive impact (+66), it showed that being plant-based alone is not enough—differentiation in form, flavor, and convenience is still needed. Price per unit had a negative coefficient, confirming high price sensitivity and the importance of competitive pricing and value-driven promotions to maintain growth.

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**8.1 LASSO Regression Output**

|  |  |
| --- | --- |
| Feature | Coefficient |
| Package Grouped\_TUB/CONTAINER | 1920.37 |
| ACV Weighted Distribution | 1360.5 |
| Flavor Grouped\_PLAIN/ORIGINAL | 171.43 |
| Form Grouped\_BURGER/PATTY | 109.43 |
| Product Type Grouped\_PLANT-BASED SUBSTITUTE | 66.39 |
| Price per Unit | -56.96 |
| Product Type Grouped\_OTHER | -241.31 |

|  |  |
| --- | --- |
| Metric | Value |
| Best alpha | 148.22 |
| Train R² score | 0.738 |
| Test R² score | 0.78 |

A graph with different colored bars

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Seasonality and merchandising analysis showed that TUB/CONTAINER packaging peaked in unit sales from May to August, presenting a clear opportunity to better capitalize on summer demand. While promotions during this period provided a modest lift, they were underutilized, highlighting the need for improved promo timing, depth, and visibility. Additionally, ACV Weighted Distribution and promotional presence proved critical to driving volume, underscoring the importance of strong retail execution during key windows.

Conagra’s Gardein recorded 114.6 million unit sales, capturing 12.1% of the meat substitute market. By form, Nuggets, Tenders, and Strips led at 33.2 million units, followed by Ground/Crumble and Burger/Patty. Bag packaging dominated, indicating a preference for flexible, resealable formats. In terms of flavor, Plain/Original and Other performed similarly, reinforcing the importance of familiar flavors while leaving space for innovation.

|  |  |  |
| --- | --- | --- |
| Dimension | Market-Wide Key Drivers | CONAGRA-Specific Key Drivers |
| Packaging | Tub/Container format: strongest driver (~+1900) | Not a leading factor-potential area for exploration |
| Distribution (ACV) | ACV Weighted Distribution: high impact (~+1350) | ACV: critical contributor-maintain and enhance distribution |
| Form Factor | Burger/Patty: moderate positive impact | Ground format: strongest driver-core growth area |
| Flavor Profiles | Plain/Original flavor: top-performing | Several flavors (e.g., Nashville Hot, Teriyaki): negative impact |
| Price Sensitivity | Price per Unit: moderate influence | Minimal impact-pricing less sensitive |
| Product Type | Plant-Based Substitutes: moderate uplift | Fish Substitute & niche variants: limited effect |

**8.2 Unpacking the Sales Engine: What Drives Gardein’s Volume?**

**A screenshot of a computer

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We ran a regression analysis to decode what truly drives unit sales across Gardein and other brands — and the results were telling.

First, product attributes like form and flavor played a significant role. Certain forms (like nuggets and meatballs) and flavors (like BBQ or plant-based blends) consistently outperformed the base categories, suggesting clear consumer preferences within the substitute meat aisle.

Second, as expected, distribution reach (ACV) had a strong positive correlation with unit sales — wider availability meant greater volume sold. But what’s more interesting is the interaction effect with pricing:

For Gardein, price sensitivity behaves differently compared to competitors. While discounting helps most brands lift volume, Gardein’s effectiveness from discounting was less pronounced, suggesting that it commands stronger brand equity and may not need aggressive pricing to drive demand.

In short:

* Winning forms & flavors should be prioritized for shelf space and innovation.
* Gardein can lean into its brand strength with less discount dependency.
* Expanding ACV coverage remains a key lever for growth.

This model not only explains 76% of sales variability, but also gives us confidence to steer portfolio, pricing, and distribution decisions with precision.

**8.3 Impact of Product Form and Flavor on Unit Sales**

A close-up of a graph

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This analysis evaluates how different product forms and flavor groups affect Gardein's unit sales relative to their respective base categories (Ball for Form, BBQ for Flavor), using coefficient estimates from regression analysis.

**Product Form Insights:**

* Forms like nugget, sausage, pieces, and sliced are significantly associated with lower unit sales, suggesting these formats underperform relative to the base form (ball).
* Ground form shows a positive effect, though not statistically significant (p > 0.05).

**Flavor Group Insights:**

* Flavors such as plant protein, mushroom, original, and veggie are significant drivers of sales, outperforming BBQ.
* Spicy and herb flavors, despite moderate coefficients, are not statistically significant, indicating more variable performance.

**8.4 Pricing and Distribution Levers Drive Sales Uplift**

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* **Price Discount Sensitivity Varies Across Brands:**
  + Beyond Meat responds the most to price cuts — every 10% discount is projected to generate ~11.3K additional unit sales.
  + Conagra, while responsive, shows a much lower elasticity. A 10% discount only yields ~1.7K more units — 85% lower response than Beyond Meat.
  + Kellanova trails even further, suggesting promotions alone are not a strong lever for these brands without supporting tactics like awareness or placement.
* **Availability (ACV) is a Powerful Growth Driver:**
  + Every 10-point gain in ACV Weighted Distribution lifts unit sales by ~137 units.
  + This linear effect confirms that expanding shelf presence remains a critical and scalable strategy, especially for under-penetrated regions or banners.

**8.5 Household (HH) Trend Analysis:**

Recent analysis shows that Gardein’s household penetration declined from 2.8% in 2022 to 1.4% in 2024, with repeat rate dropping from 1.4% to 0.7%. While the overall meat substitute category also saw declines, Gardein’s drop was steeper, suggesting brand-specific challenges. Additionally, the correlation between promotional sales and household engagement was negative (–0.45 for penetration, –0.47 for repeat), indicating that current promotions are not effectively driving repeat purchases or improving consumer retention.

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A graph showing the growth of garden

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From a forecasting standpoint, a linear model projects GARDEIN’s household penetration could fall further to approximately 0.7% in 2025, with repeat rate declining to 0.5%. However, a more sophisticated exponential decay model suggests a more optimistic scenario, with penetration stabilizing around 1.25% and repeat rate near 0.64%. This indicates that while the brand is still in decline, the rate of erosion may be slowing, offering a critical window of opportunity for intervention.

**8.6 Gardein Buyer Index by Key Household Demographics:**

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| **Demographic** | **Household Insight Summary** |
| --- | --- |
| HH Size | 3-person households are highly engaged (Index ~115); 5+ person households are under-engaged (~70). Focus on 2- and 3-person households. |
| Marital Status | Single buyers align strongest with Gardein (~117); married/divorced households are near average (95–98). Target individual shoppers. |
| Kids Presence | No-kid, $70K+ households show highest engagement (~150); households with kids underperform (~85–90), regardless of income. |
| Age Group | Low engagement from households with kids aged 6–11; teen households (12–17) are average, offering modest growth potential. |

**8.7 Identifying Gardein’s Strongest & Weakest Household Personas:**

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Gardein sees its strongest engagement among child-free adults aged 35–64 with higher incomes, particularly 35–44-year-olds earning over $70K, who are 50% more likely to purchase the brand than the average consumer. Similarly, 45–64-year-olds without children also show strong alignment, indicating that older, financially stable individuals are a key consumer base. These consumers likely value health, sustainability, and convenience, which aligns with Gardein’s brand positioning.

In contrast, lower-income households (under $35K) in urban areas and families with children, even those with higher incomes, are under-engaged with Gardein. This suggests that the brand’s current offerings and messaging may not resonate as well with these groups. Overall, Gardein’s appeal is strongest among independent, health-conscious adults, while its limited traction among families points to an opportunity for repositioning or targeted product innovation.

1. ***Recommendations***

|  |  |
| --- | --- |
| **Area** | **Recommendation** |
| **Product Focus** | Expand BURGER and GROUND forms; prioritize ORIGINAL flavor. |
| **Promotion Strategy** | Shift from deep discounts to value packs, targeted bundles. |
| **Target Demographics** | Focus on 2-3 person HHs with $70K+ income, no kids. |
| **Forecasting Action** | Use early signs of HH Penetration stabilization (1.25%) to relaunch lapsed-buyer campaigns. |
| **Merchandising** | Boost display and shelf visibility for core SKUs. |

* Penetration Stabilization: Leverage the projected flattening trend to rebuild household reach through targeted campaigns, especially focusing on lapsed buyers. Boost top-of-funnel awareness using digital media and influencer marketing.
* Format & Flavor Focus: Prioritize TUB/CONTAINER packaging in new launches, especially during peak summer months. Reinforce the BURGER/PATTY format and PLAIN/ORIGINAL flavor in messaging, as both are strong sales drivers.
* Refine Promotional Strategy: Shift away from deep discounting, which has shown limited long-term impact. Instead, test value-driven promotions, bundled offers, and seasonal exclusives to align with peak periods and improve merchandising efficiency.
* Distribution Expansion: Strengthen ACV Weighted Distribution in underdeveloped regions and expand presence in health-focused and plant-based retail channels to broaden market reach.
* Monitoring & Metrics: Establish 2025 benchmarks: maintain household penetration above 1.3% and repeat rate at or above 0.7%. Use real-time tracking of regional trends and form/package performance to adjust strategies with agility.
* Target child-free households aged 35–64 with $70K+ income, who show up to 50% higher purchase likelihood. These consumers represent the strongest brand alignment.
* Emphasize convenience, health benefits, and versatility in marketing—key values for the core buyer segment.
* Expand ACV Weighted Distribution to improve shelf presence, especially in urban locations.
* Prioritize Tub/Container packaging and high-performing SKUs like Ground and Burger/Patty to align with consumer preferences.
* Implement loyalty programs and personalized offers to retain core buyers and mitigate penetration decline through 2025.

1. ***References***

* [***https://www.conagrabrands.com/***](https://www.conagrabrands.com/)
* <https://www.gardein.com/>
* <https://impossiblefoods.com/>
* <https://www.beyondmeat.com/en-US/>
* <https://www.morningstarfarms.com/en_US/home.html>
* <https://www.news.market.us>
* <https://www.acumenresearchandconsulting.com/vegan-meat-market>
* <https://brand.utdallas.edu/graphics-visual-identity/>
* <https://colab.research.google.com/>
* <https://www.researchgate.net/figure/General-limitations-and-advantages-of-a-plant-based-diet-and-plant-protein-consumption_fig1_360381211>
* <https://www.researchgate.net/figure/Possible-solutions-to-the-limitations-of-plant-proteins-that-impact-on-protein_fig2_360381211>
* <https://unfccc.int/climate-action/momentum-for-change/planetary-health/impossible-foods>
* <https://research.contrary.com/company/impossible-foods?head=%3B%3Bmarket>
* <https://www.prnewswire.com/news-releases/morningstar-farms-advances-sustainability-commitment-with-new-recycling-renewable-electricity-and-ingredient-sourcing-initiatives-301516822.html>
* <https://gfi.org/wp-content/uploads/2023/01/2022-Plant-Based-State-of-the-Industry-Report.pdf>
* <https://ycharts.com/companies/CAG/revenues>
* <https://quinoamarketing.com/category/vegan-news/beyond-meat-analysis-of-a-successful-marketing-strategy>
* <https://vegnews.com/guides/best-vegan-gardein-products>
* <https://www.statista.com/forecasts/1304950/morningstar-farms-meat-substitutes-brand-profile-in-the-united-states>
* <https://houstonfamilynutrition.com/impossible-burger-review/>
* <https://www.seriouseats.com/best-meat-substitute-burgers-taste-test>
* <https://www.businessinsider.com/what-its-like-to-cook-with-the-impossible-burger-review-2019-9#the-impossible-burger-looked-pretty-much-like-ground-beef-there-were-slight-differences-the-grain-was-finer-and-there-wasnt-the-sheen-of-animal-fat-but-if-i-didnt-already-know-that-this-wasnt-beef-i-wouldnt-have-guessed-that-it-wasnt-2>
* <https://www.beyondmeat.com/en-US/whats-new/beyond-burger-iv>
* <https://illuminatelabs.org/blogs/health/beyond-meat-review>
* <https://www.mordorintelligence.com/industry-reports/united-states-meat-substitutes-market>
* <https://news.gallup.com/poll/282989/four-americans-eaten-plant-based-meats.aspx>
* <https://www.simplyrecipes.com/everything-you-want-to-know-about-impossible-and-beyond-burgers-5190889>
* <https://gfi.org/marketresearch/>
* <https://www.foodnavigator-usa.com/Article/2022/09/06/Conagra-Brands-Gardein-talks-alt-meat-There-s-no-way-the-space-supports-20-manufacturers-making-plant-based-burger-patties/>
* <https://www.livekindly.com/vegan-meat-brand-11-new-meals/>

1. ***Appendix***

**Data Dictionary:**

|  |  |  |
| --- | --- | --- |
| **Feature Name** | **Source** | **Description** |
| Unit Sales | filtered\_manufacturers\_data.csv | Total number of product units sold (aggregated by SKU/date/geography). |
| Price per Unit | filtered\_manufacturers\_data.csv | Average retail price per unit for the product. |
| ACV Weighted Distribution | filtered\_manufacturers\_data.csv | Distribution metric showing the % of store volume carrying the product. |
| Package | filtered\_manufacturers\_data.csv | Packaging format (e.g., tub, resealable bag). |
| Form | filtered\_manufacturers\_data.csv | Product form such as patty, ground, sausage, etc. |
| Flavor / Scent | filtered\_manufacturers\_data.csv | Product flavor descriptor (e.g., BBQ, teriyaki, original). |
| Product Type | filtered\_manufacturers\_data.csv | Substitute meat category (e.g., poultry substitute, plant-based). |
| Brand Name | filtered\_manufacturers\_data.csv | Product brand (e.g., Gardein, Morningstar). |
| Manufacturer Name | filtered\_manufacturers\_data.csv | Parent manufacturer (e.g., CONAGRA, Beyond Meat). |
| % Promo Sales | Derived | Ratio of Unit Sales Any Merch to Total Unit Sales (expressed as a %). |
| HH Penetration | Panel\_HH Buying.xlsx | % of U.S. households that purchased the brand in a given year. |
| HH Repeat | Panel\_HH Buying.xlsx | % of households that made 2+ purchases of the brand in a given year. |
| Buyer Index | Panel\_Buyer Distribution.xlsx | Relative index of purchase rate compared to U.S. average (100 = national avg). |
| HH Persona | Panel\_Buyer Distribution.xlsx | Segmented household group combining age, income, kids, and marital status. |

**Purpose of the Data Dictionary**

This data dictionary provides concise definitions of the key variables used across our analysis and predictive modeling efforts. It ensures clarity and consistency in interpreting metrics from multiple sources, including POS data, household panel insights, and promotional tracking. Variables such as Unit Sales, HH Penetration, Buyer Index, and Price per Unit form the foundation of both descriptive and inferential analysis. Understanding these definitions is critical for replicating results, interpreting feature importance in LASSO regression, and connecting sales performance to demographic and promotional levers.

**Preparation of Data**

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

A screenshot of a computer

AI-generated content may be incorrect.

**Top selling products by Form/Flavour of CONAGRA:**

| **Form Grouped** | **Unit Sales** |
| --- | --- |
| NUGGET/TENDER/STRIP | ~33.2 million |
| OTHER | ~32.4 million |
| GROUND/CRUMBLE | ~17.1 million |
| BURGER/PATTY | ~14.8 million |
| MEATBALL | ~13.3 million |
| STEAK/CUT/ROAST | ~3.2 million |
| SAUSAGE/LINK | ~0.57 million |

Takeaway:

* Conagra is already strong in NUGGET/TENDER/STRIP—but this might be a crowded market with competitors.
* BURGER/PATTY is smaller (~14.8M), but we know from earlier analysis that BURGER/PATTY is a top driver category across the whole category (high coefficients, high growth).
* Conagra should consider expanding their BURGER/PATTY SKUs to better capture this category’s strength.

| **Flavor Grouped** | **Unit Sales** |
| --- | --- |
| OTHER | ~56.3 million |
| PLAIN/ORIGINAL | ~55.5 million |
| SPICY | ~2.6 million |
| ITALIAN | ~0.16 million |

Takeaway:

* PLAIN/ORIGINAL (~49% of sales) is strong—matches well with the category trend where Plain/Original was a positive driver.
* SPICY (~2.6M) and ITALIAN (~0.16M) are tiny niches.
* The OTHER bucket is huge (~56M)—possibly fragmented SKUs or less-defined flavors.

**Promotional Sales Trend (2020–2024)**

We analyzed the proportion of GARDEIN unit sales that were driven by promotional activity (Unit Sales Any Merch) each year.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Unit Sales** | **Unit Sales Any Merch** | **% Promo Sales** |
| **2020** | 32541570.0 | 7884700.0 | 24.229621 |
| **2021** | 29717470.0 | 7414531.0 | 24.950072 |
| **2022** | 28169110.0 | 6728760.0 | 23.887021 |
| **2023** | 22563710.0 | 4613516.0 | 20.446623 |
| **2024** | 1567590.0 | 486860.0 | 31.057861 |

While overall unit sales have declined significantly from 2020 to 2024, the percentage of units sold on promotion has remained fairly stable (~24–25%)—but jumped to 31% in 2024. This may indicate increased reliance on promotions to maintain household engagement during a downturn.  
  
**Household Trends (GARDEIN)**

GARDEIN household metrics such as **penetration** (HHs purchasing the brand) and **repeat rate** (HHs buying multiple times) were reviewed for 2022–2024.

|  |  |  |
| --- | --- | --- |
| **Year** | **HH Penetration** | **HH Repeat** |
| **2022** | 2.801024 | 1.389653 |
| **2023** | 1.786746 | 0.904258 |
| **2024** | 1.404855 | 0.706162 |

There is a clear year-over-year decline in both household penetration and repeat buying behavior. This decline aligns with the overall unit sales reduction and highlights weakening consumer stickiness with GARDEIN.  
  
**Promo Intensity vs. HH Metrics**

To assess whether promo intensity correlates with household engagement, we created a merged table of % promo sales vs. HH penetration and repeat rates.

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **HH Penetration** | **HH Repeat** | **% Promo Sales** |
| **2022** | 2.801024 | 1.389653 | 23.887021 |
| **2023** | 1.786746 | 0.904258 | 20.446623 |
| **2024** | 1.404855 | 0.706162 | 31.057861 |

* Despite higher promotional spending in 2024, penetration and repeat both declined.
* This suggests that **promotions are no longer sufficient** to drive sustainable household engagement for GARDEIN.
* Additional tactics (e.g., better targeting, innovation in flavor/form, distribution) are needed to reignite growth.