

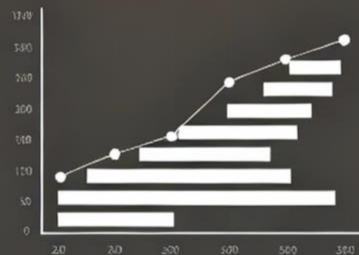
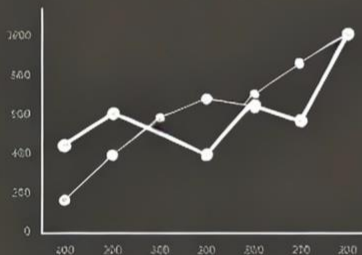
Blinkit Sales Analysis Report

Comprehensive Data Analysis Dashboard

blinkit

India's Last Minute App

SALES ANALYSIS



blinkit



By Ritesh Singh Bisht

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Project Overview

Dataset Description

Project Title: Blinkit Retail Sales Performance Analysis

Data Source: Blinkit retail sales dataset containing comprehensive transactional and product information

Dataset Size: 8,523 records with 828 KB of structured data

Key Variables:

Product Information:

- Item Identifier (unique product codes)
- Item Type (16 categories: Fruits and Vegetables, Snack Foods, Household, Frozen Foods, Dairy, Canned, Baking Goods, Health and Hygiene, Soft Drinks, Meat, Breads, Hard Drinks, Others, Starchy Foods, Breakfast, Seafood)
- Item Fat Content (Low Fat, Regular, LF, low fat, reg - standardized during analysis)
- Item Visibility (product display prominence)
- Item Weight

Outlet Characteristics:

- Outlet Identifier (unique store codes)
- Outlet Establishment Year (1998-2022)
- Outlet Location Type (Tier 1, Tier 2, Tier 3)
- Outlet Size (Small, Medium, High)
- Outlet Type (Supermarket Type1, Type2, Type3, Grocery Store)

Performance Metrics:

- Sales (transaction revenue)
- Rating (customer satisfaction scores 1-5)

Technology Stack

Programming Language: Python

Data Analysis Libraries:

- **Pandas** - Data manipulation, cleaning, aggregation, and statistical analysis
- **NumPy** - Numerical computations and array operations

Data Visualization Libraries:

- **Matplotlib (pyplot)** - Creating fundamental charts (bar charts, line graphs, pie charts)
- **Seaborn** - Advanced statistical visualizations with enhanced aesthetics

Analysis Workflow:

1. **Data Cleaning:** Standardized fat content categories, handled missing values
2. **Exploratory Data Analysis (EDA):** Statistical summaries and distribution analysis
3. **Data Aggregation:** Grouped data by categories, outlets, and time periods
4. **Visualization:** Created 15+ charts including pie charts, bar charts, grouped visualizations, and line plots
5. **Insight Generation:** Identified patterns, trends, and business opportunities

1. Fat Content Analysis

This section analyzes the impact of fat content on sales performance, including total sales distribution, average sales, number of purchases, and customer ratings.

Total Fat content distribution

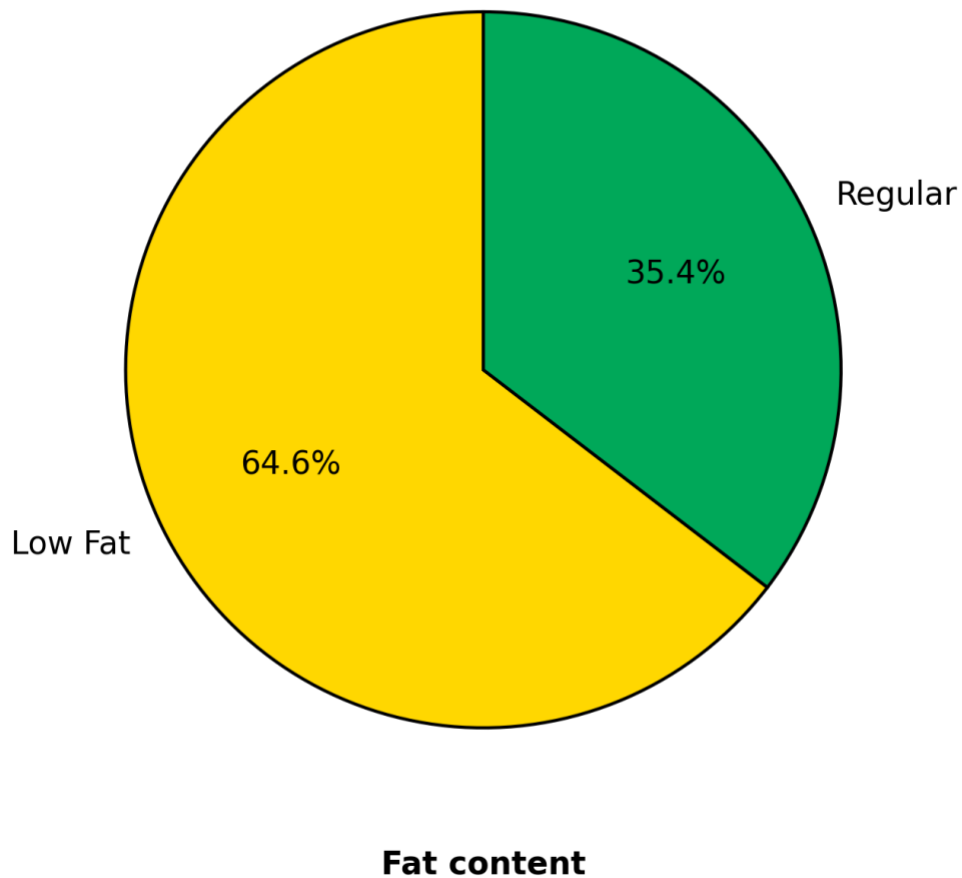


Figure 1.1: Total Sales Distribution by Fat Content

The pie chart shows that low-fat products dominate the dataset at 64.6%, while regular fat content products account for only 35.4%, indicating that nearly two-thirds of all items analyzed are low-fat options.

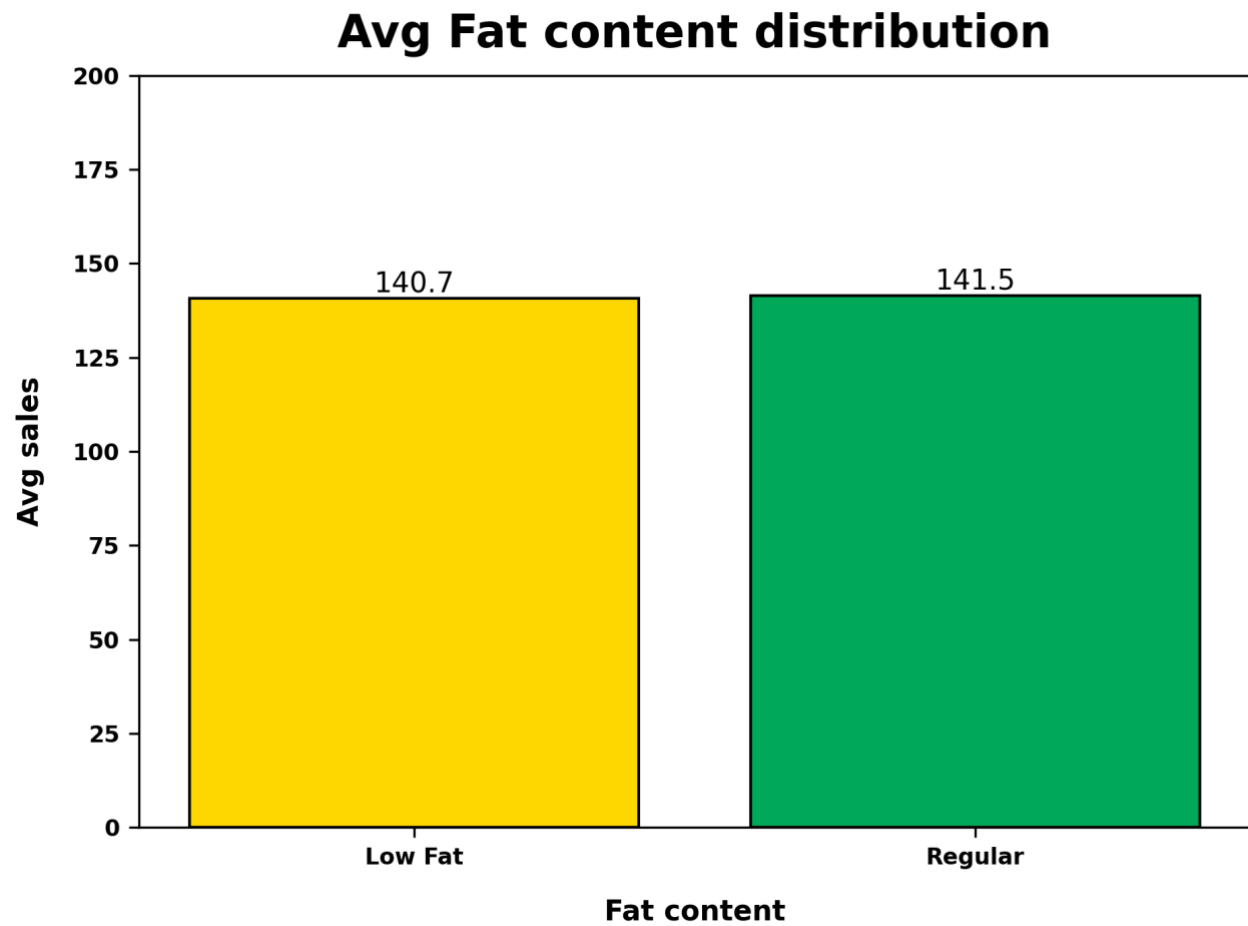


Figure 1.2: Average Sales by Fat Content

The bar chart shows that average sales for low-fat products (140.7) and regular fat products (141.5) are nearly identical, with regular products having only a marginal 0.8 unit advantage, indicating that fat content has minimal impact on sales performance.

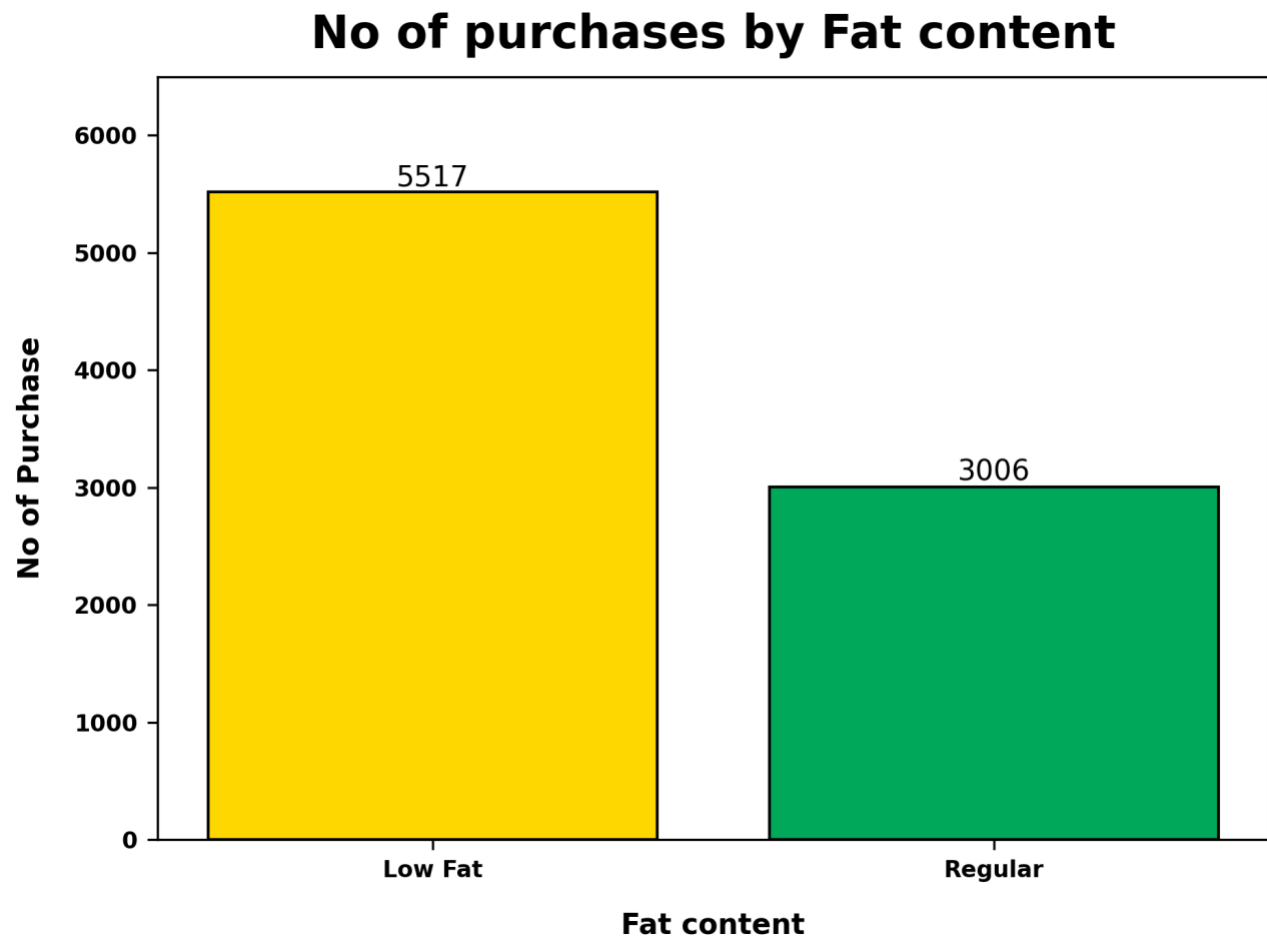


Figure 1.3: Number of Purchases by Fat Content

The bar chart shows that low-fat products had significantly higher purchase volume with 5,517 transactions compared to regular fat products with only 3,006 transactions, meaning low-fat products were purchased 83.5% more frequently than regular products.

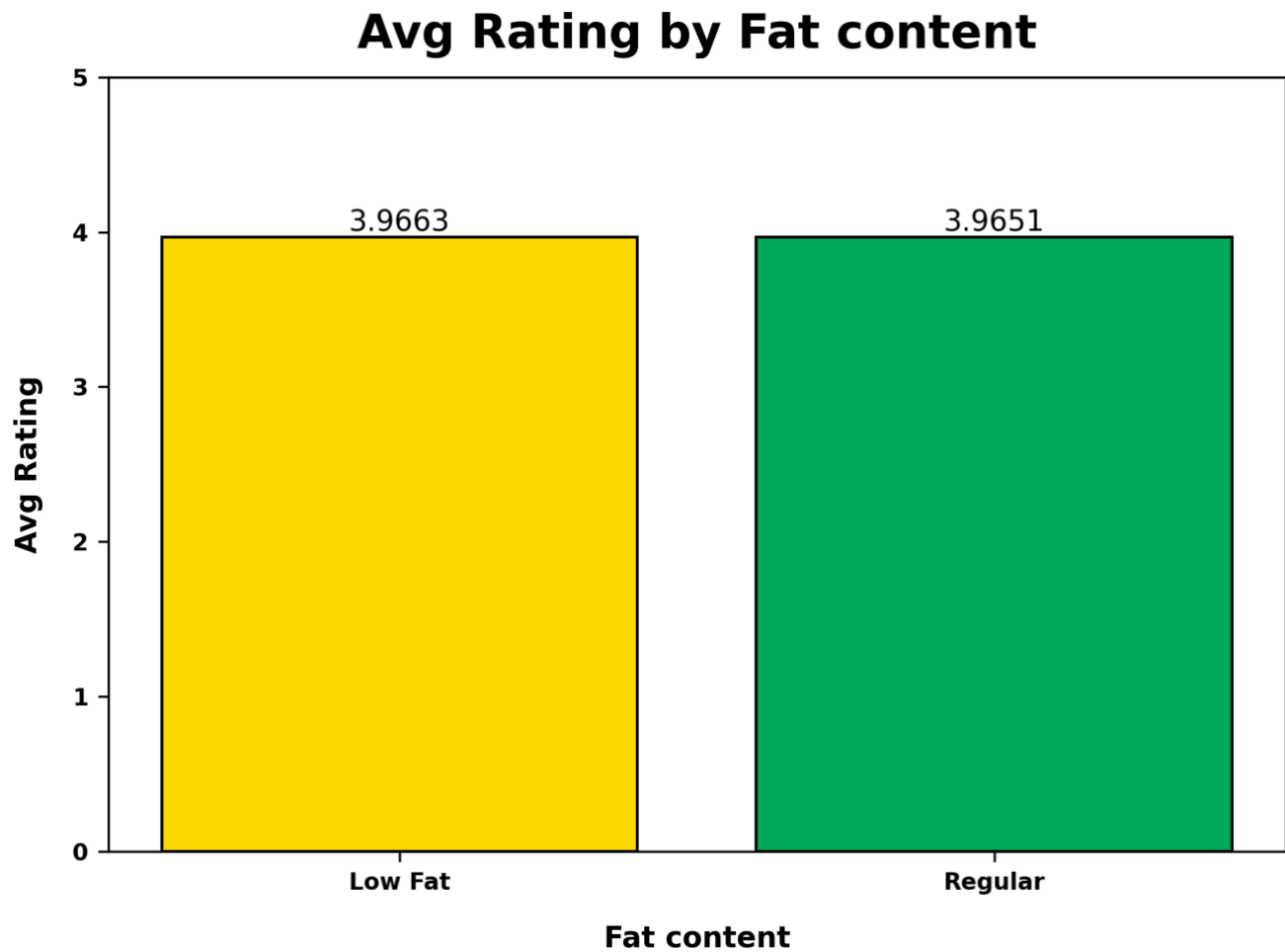


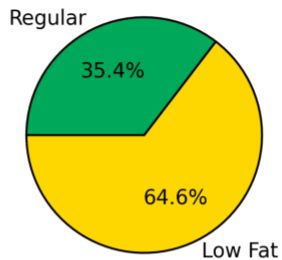
Figure 1.4: Average Rating by Fat Content

The bar chart shows that customer ratings are virtually identical for both fat content types, with low-fat products averaging 3.9663 and regular products averaging 3.9651, indicating that fat content has no meaningful impact on customer satisfaction.

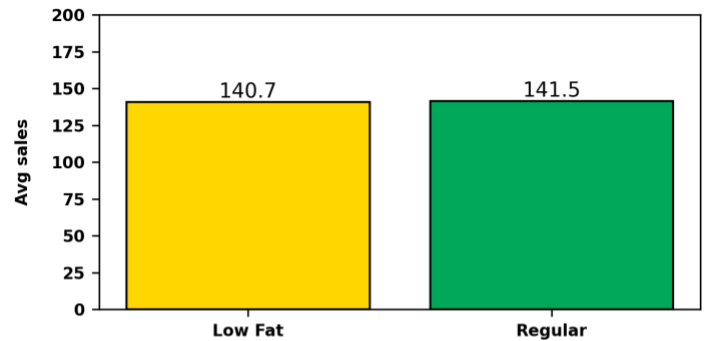
Fat Content - Combined Analysis

Fat Content Analysis

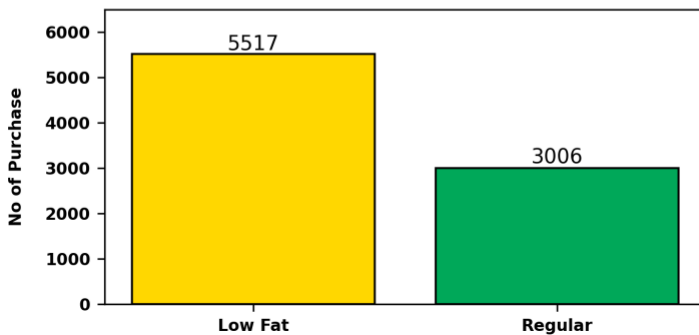
Total Fat content distribution



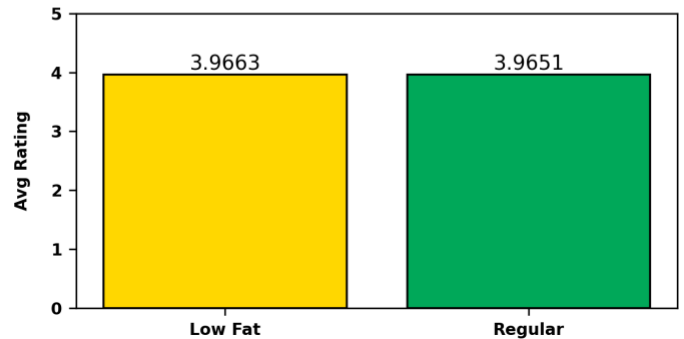
Avg Fat content distribution



No of purchases by Fat content



Avg Rating by Fat content



Key Insight for Business Strategy

The data suggests that **quantity does not equal quality of revenue** - businesses should maintain diverse fat content offerings since regular products achieve comparable per-unit profitability and satisfaction despite lower market penetration, while low-fat products capture volume-driven market share

2. Item Type Analysis

This section identifies the performance of different item types, comparing total sales, average sales, purchase volume, and customer ratings across all product categories.

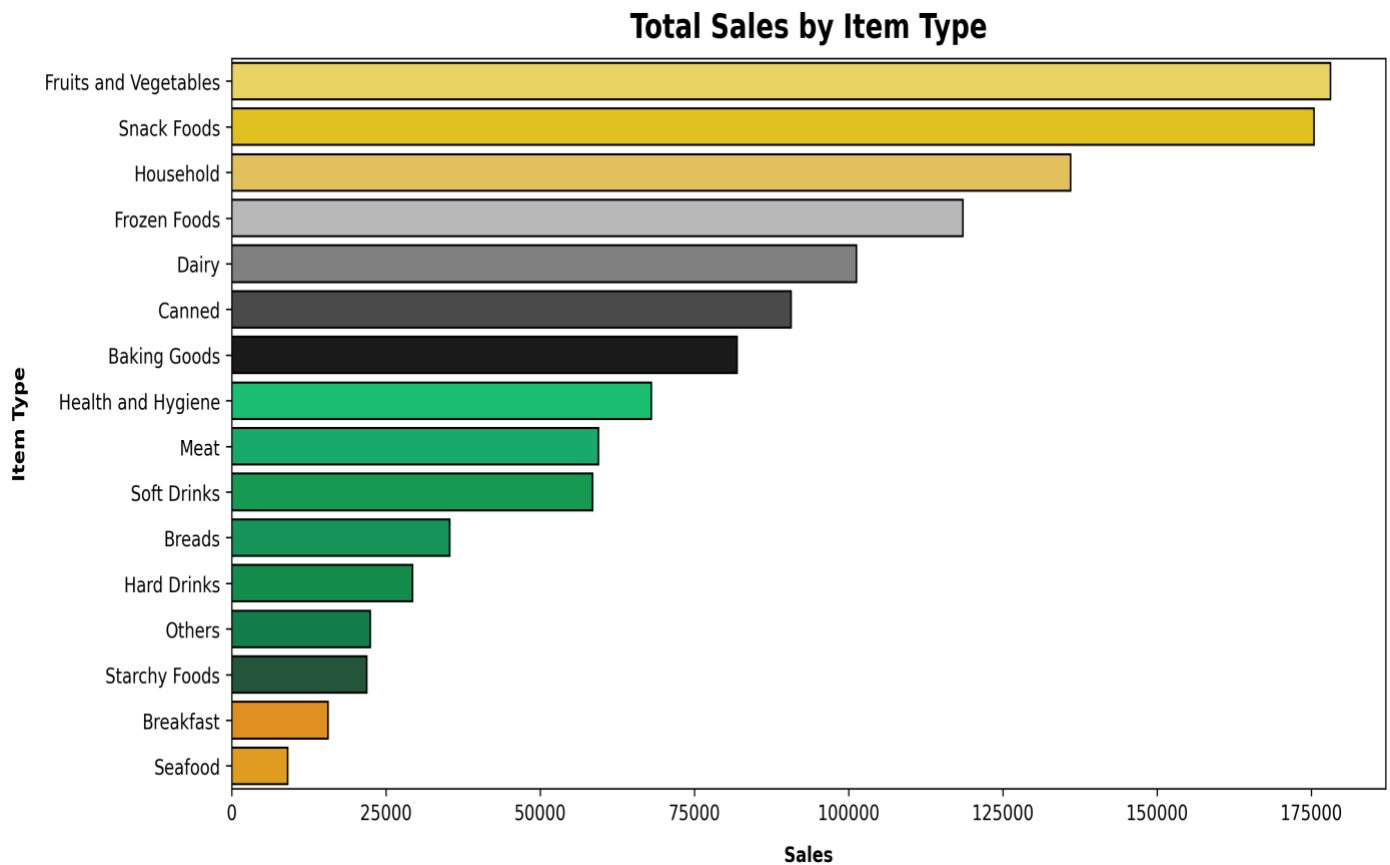


Figure 2.1: Total Sales by Item Type

The horizontal bar chart shows that Fruits and Vegetables (~178,000) and Snack Foods (~175,000) are the top revenue-generating categories with nearly identical sales performance, followed by Household items (~135,000), while categories like Seafood (~10,000) and Breakfast (~15,000) generate minimal sales, revealing a stark disparity where the top two categories each generate approximately 17 times more revenue than the bottom performers.

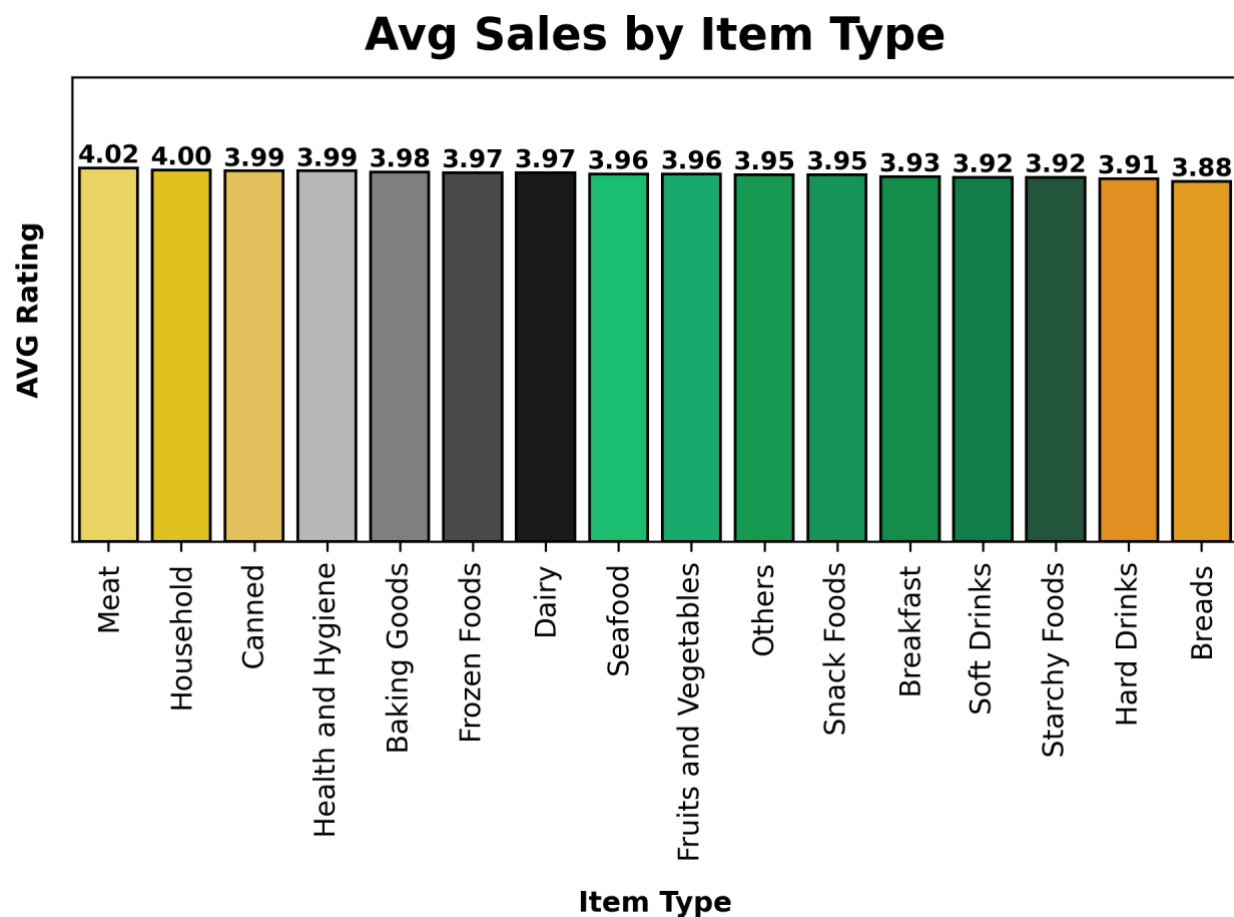


Figure 2.2: Average Sales by Item Type

The bar chart shows that customer ratings across all 16 item types are remarkably consistent, ranging from 3.88 to 4.02 (a difference of only 0.14 points), with Meat (4.02), Household (4.00), and Canned (3.99) receiving the highest ratings while Breads (3.88) ranks lowest, indicating uniformly high customer satisfaction across all product categories regardless of item type.

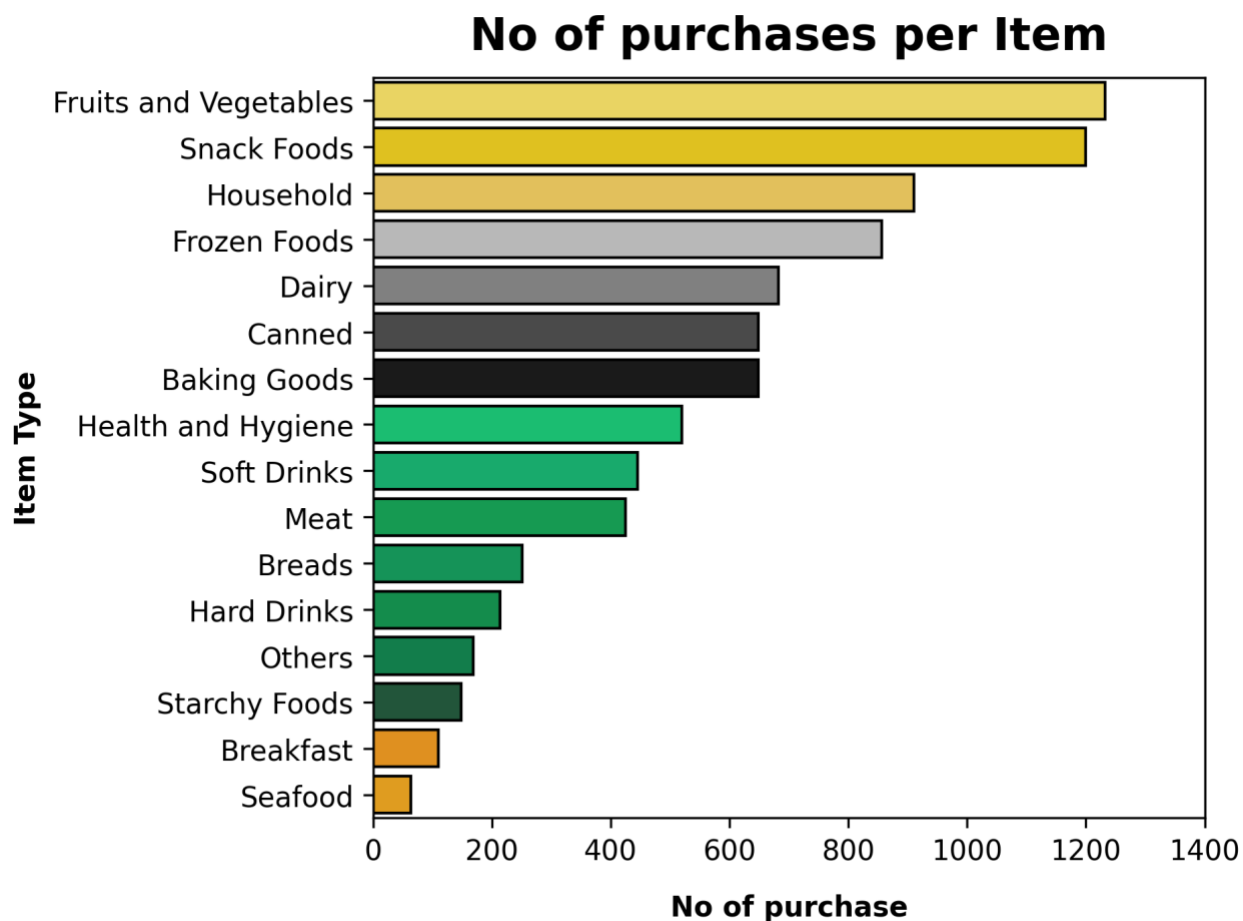
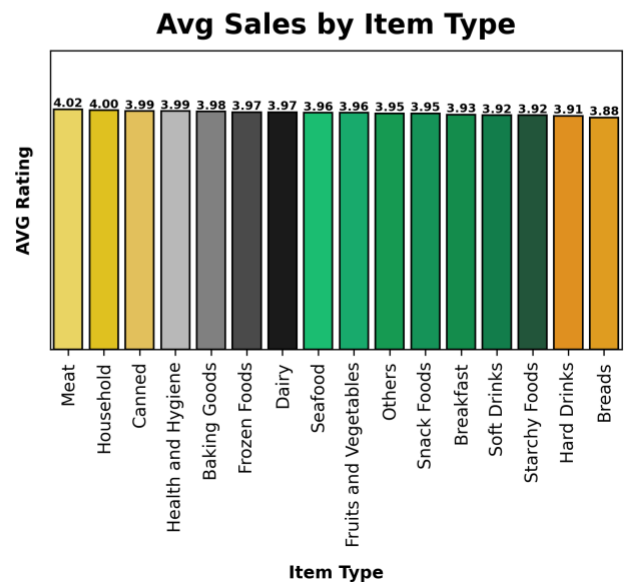
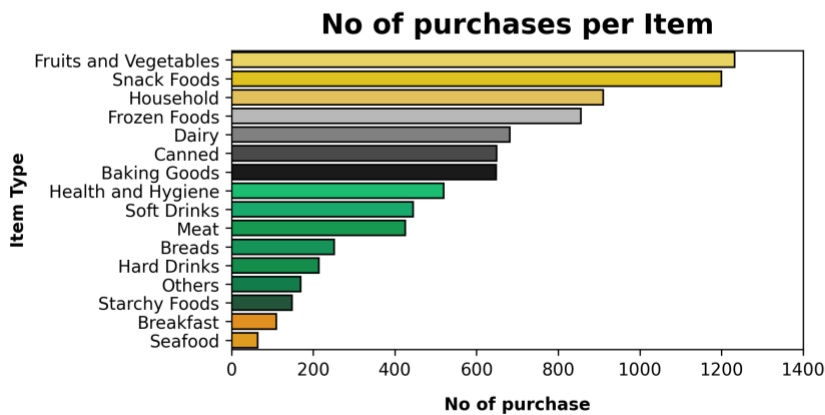
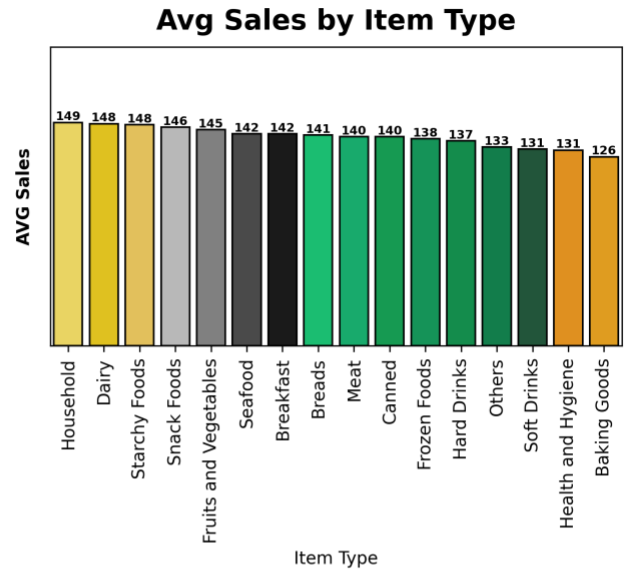
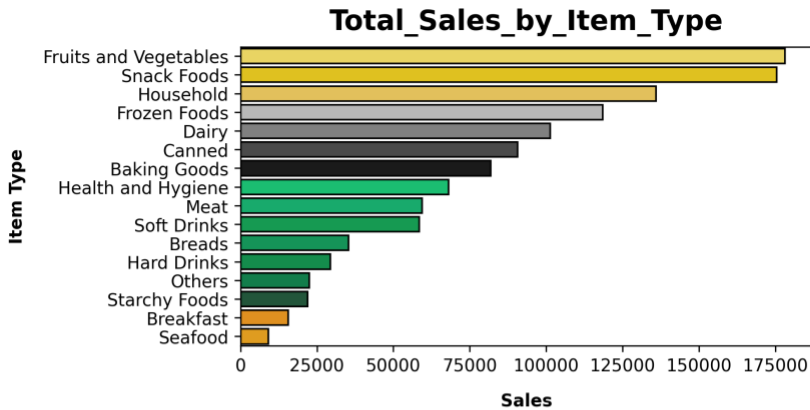


Figure 2.3: Number of Purchases per Item Type

The horizontal bar chart reveals that Fruits and Vegetables (~1,250 purchases) and Snack Foods (~1,200 purchases) dominate transaction frequency with nearly equal volumes, followed by Household (~900 purchases), while Seafood (~50 purchases) and Breakfast (~100 purchases) have extremely low purchase counts, demonstrating a massive gap where the top category generates 25 times more transactions than the bottom performer.

Item Type - Combined Analysis

Item Type Analysis



Key Business Insights

Volume leaders vs. value leaders differ - While Fruits and Vegetables generate the most transactions (~1,300 purchases), Household items deliver superior per-unit revenue (149 vs. 142), revealing that high-traffic categories don't necessarily maximize profitability per sale.

Customer satisfaction is universal - The narrow rating range (3.86-4.02) across all 16 item types demonstrates that product quality and customer experience are consistently maintained regardless of category popularity or price point.

Strategic focus areas - Prioritize Household, Dairy, and Snack Foods categories as they combine strong purchase frequency with above-average transaction values, while maintaining excellent customer ratings.

3. Outlet Location Type Analysis

This section compares sales performance across different outlet locations, segmented by fat content, analyzing total sales, average sales, purchase volume, and customer satisfaction ratings.

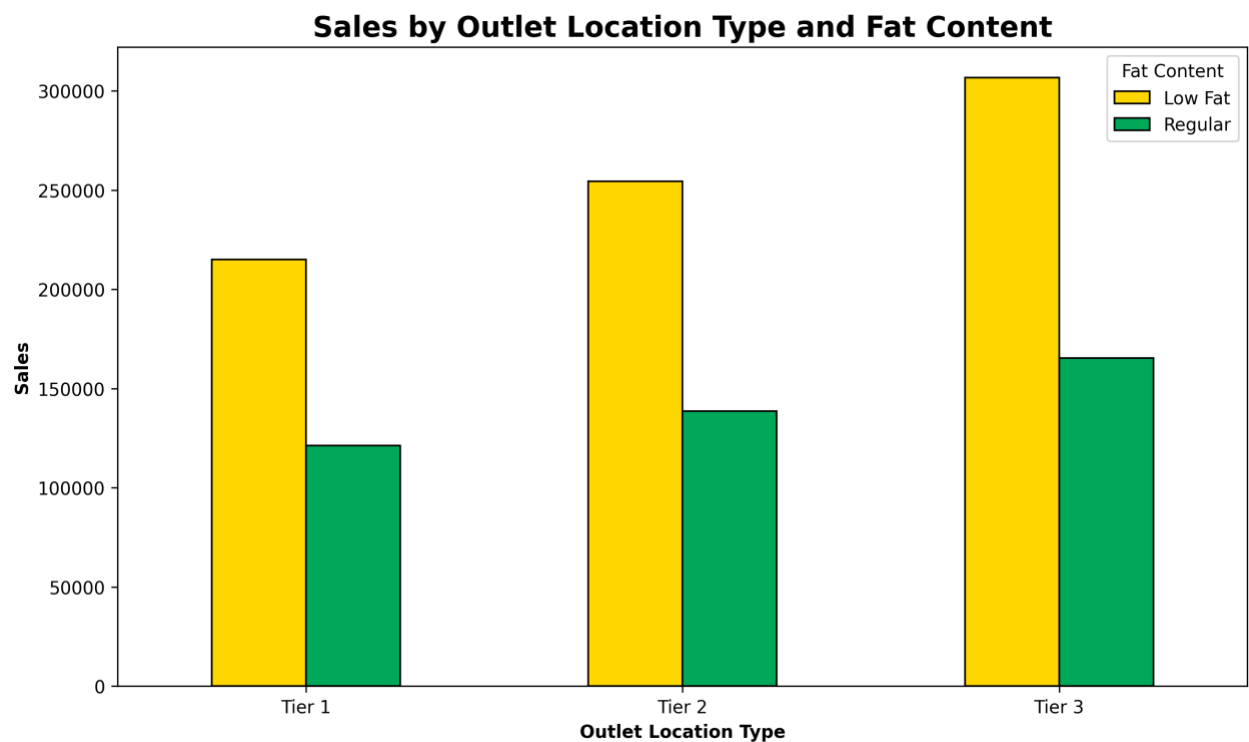


Figure 3.1: Total Sales by Outlet Location

Across all three outlet location types (Tier 1, Tier 2, and Tier 3), low-fat products consistently generate significantly higher sales (ranging from ~215,000 to ~305,000) compared to regular fat products (~122,000 to ~167,000), with Tier 3 locations driving the highest overall revenue and maintaining the largest low-fat dominance gap, demonstrating that low-fat preferences are universal across all market tiers but intensify in higher-tier locations.

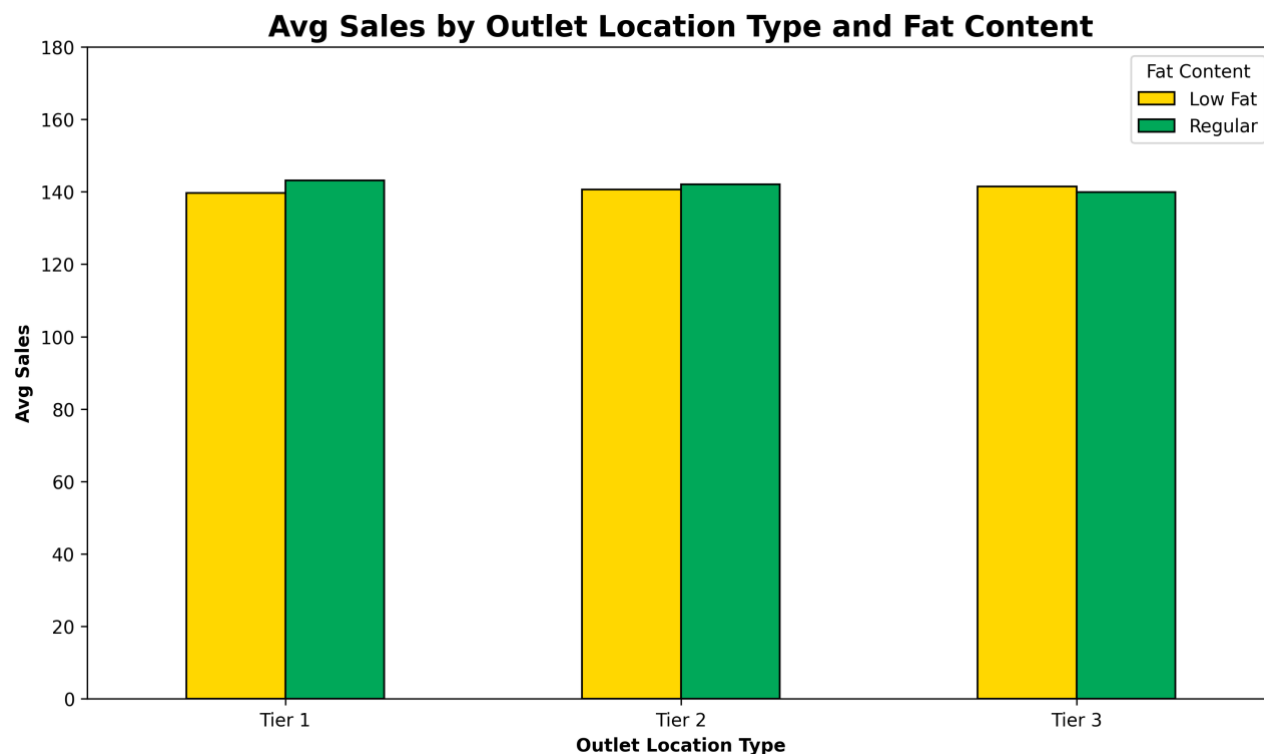


Figure 3.2: Average Sales by Outlet Location

Average sales per transaction are virtually identical across all outlet location types (Tier 1, Tier 2, and Tier 3) and fat content categories, with all values hovering around 140 (ranging from approximately 139-143), indicating that neither outlet tier nor fat content influences individual purchase value, demonstrating consistent per-transaction spending behavior regardless of location or product type.

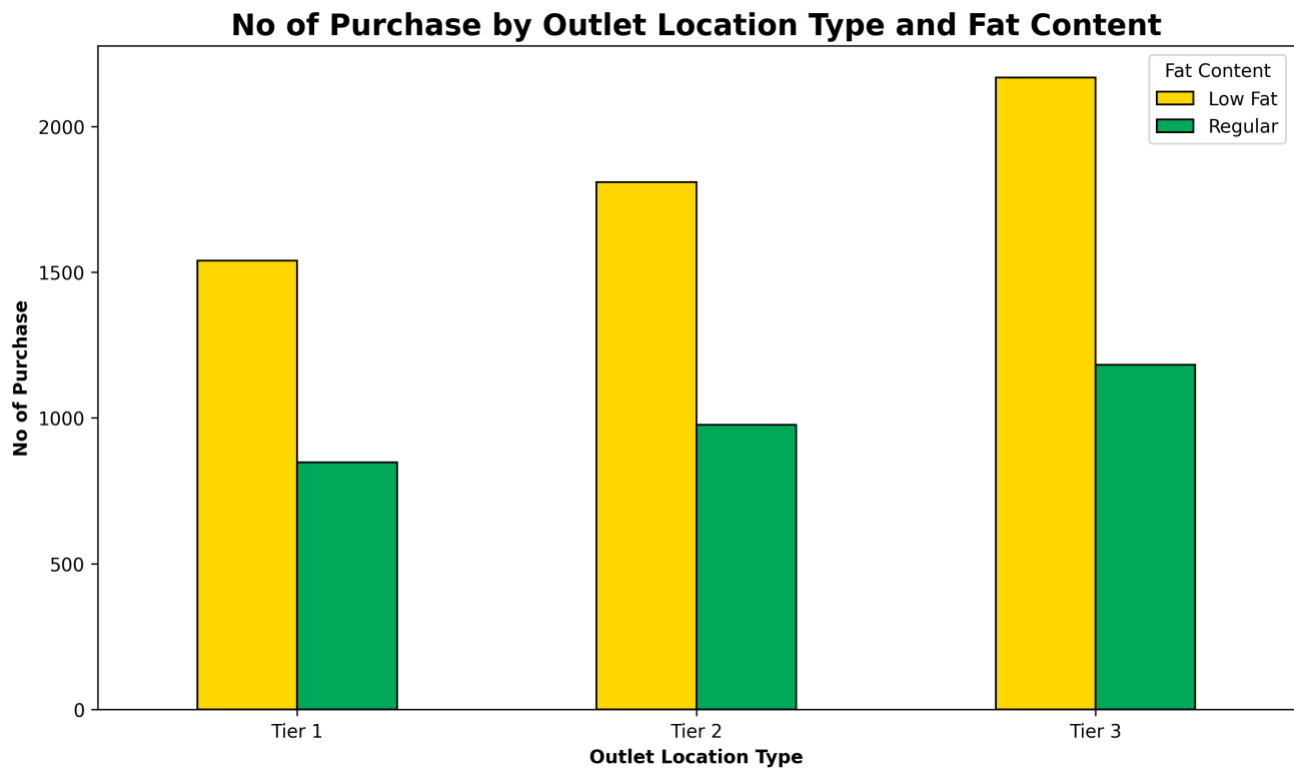


Figure 3.3: Number of Purchases by Outlet Location

Low-fat products consistently drive higher purchase volumes than regular products across all outlet tiers, with the gap widening progressively from Tier 1 (~1,550 vs ~850 purchases) to Tier 3 (~2,150 vs ~1,200 purchases), demonstrating that larger/higher-tier outlets amplify the preference for low-fat products with Tier 3 locations generating nearly double the low-fat transactions compared to Tier 1.

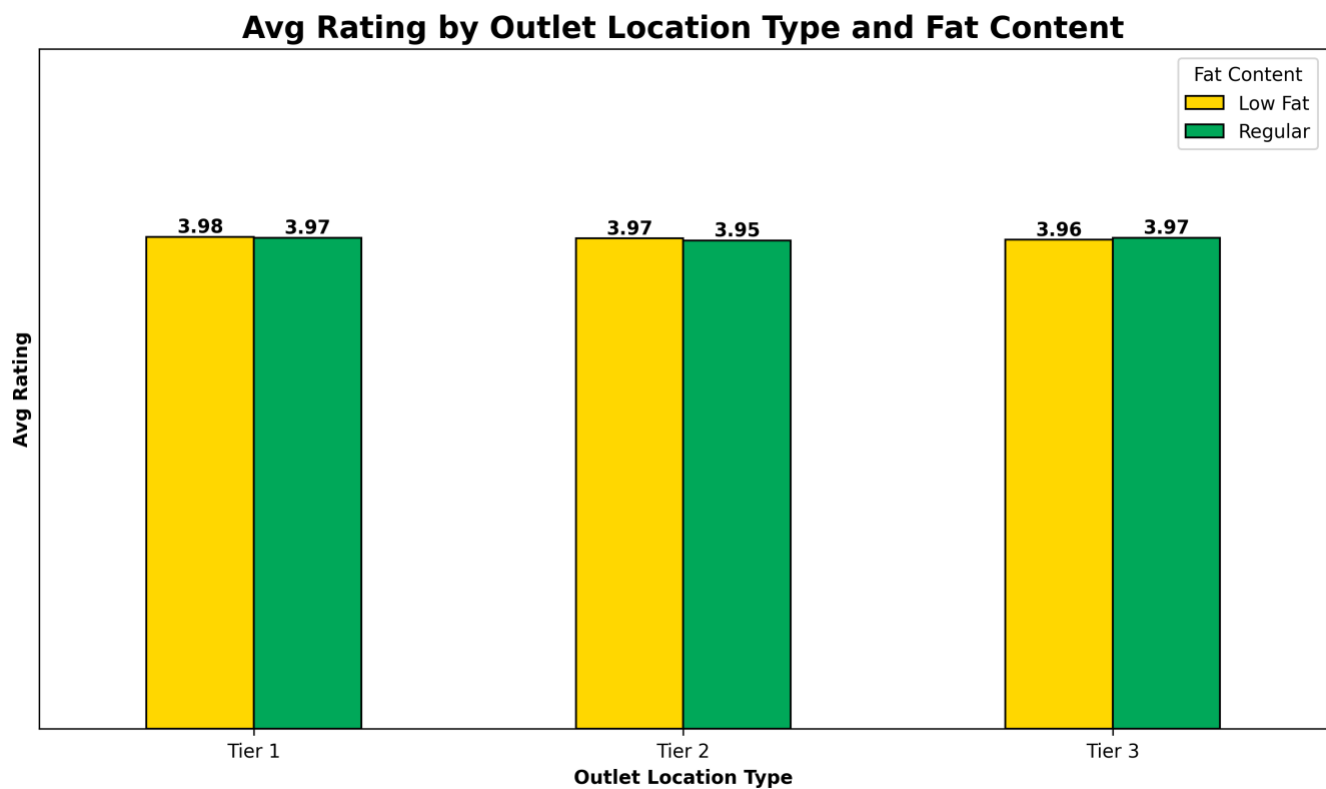
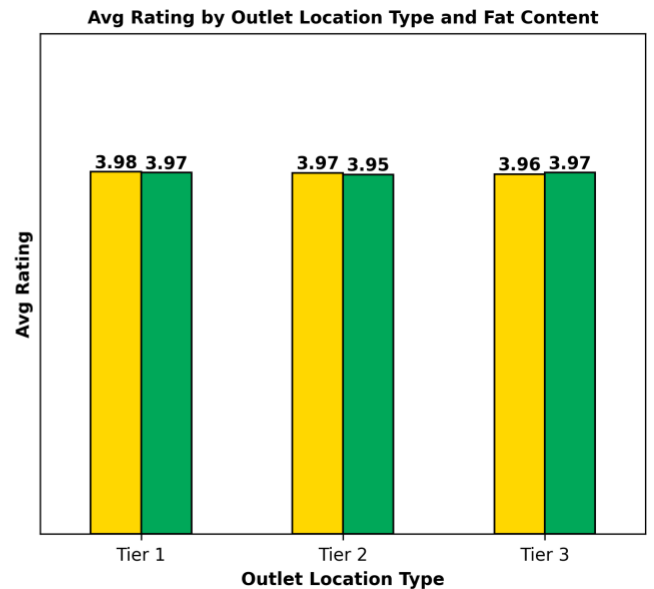
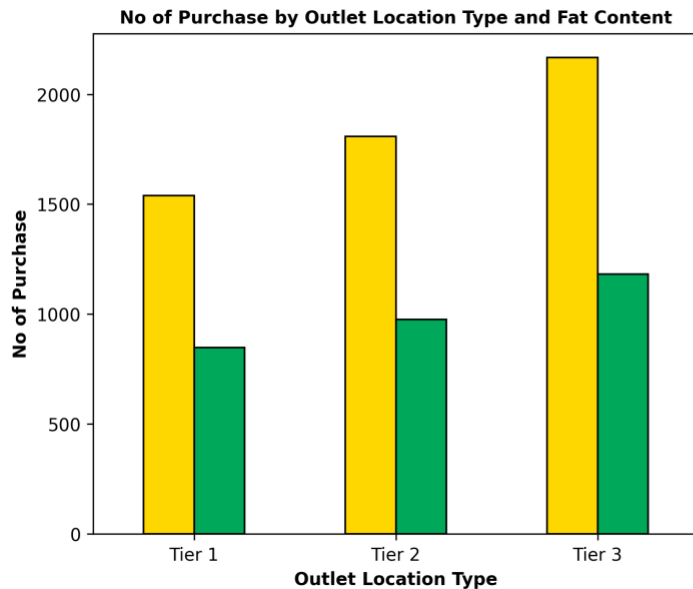
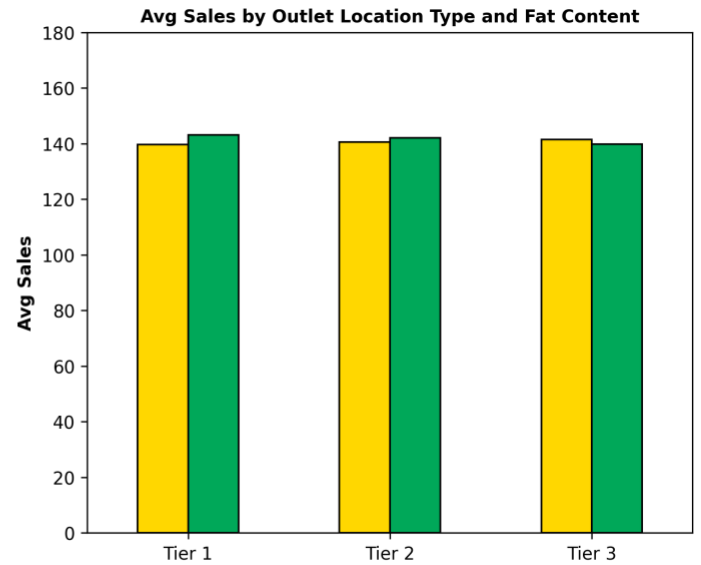
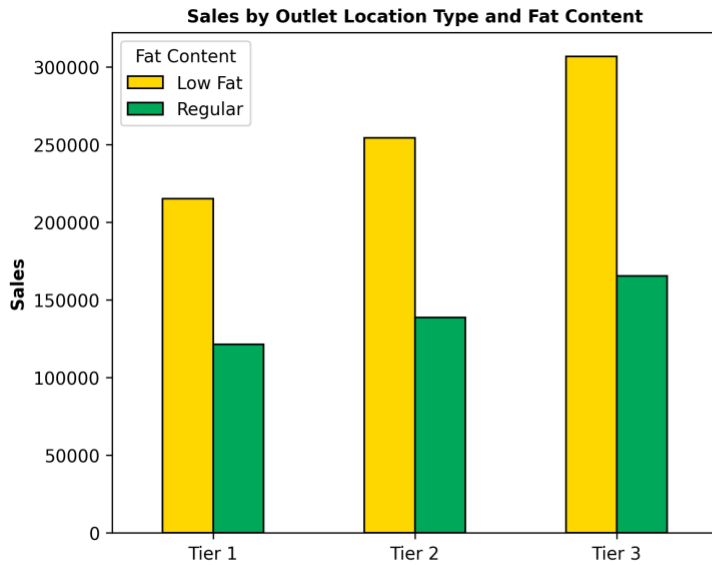


Figure 3.4: Average Rating by Outlet Location

Customer ratings are remarkably consistent across all outlet location types (Tier 1, Tier 2, Tier 3) and fat content categories, ranging only from 3.95 to 3.98, indicating that neither outlet tier nor fat content has any meaningful impact on customer satisfaction levels.

Outlet Location - Combined Analysis



Key Insights

Volume vs. Value disconnect - While low-fat products generate substantially more transactions (ranging from ~1,550 in Tier 1 to ~2,150 in Tier 3) compared to regular products (~850 to ~1,200), average sales per transaction remain virtually identical across all segments (~140), indicating that low-fat's market dominance comes purely from frequency, not basket size.

Tier 3 drives scale - Tier 3 outlets generate the highest total sales (~305,000 for low-fat) and purchase counts (~2,150), demonstrating that larger/premium locations both attract more customers and amplify the low-fat preference gap, making them critical for volume-based revenue strategies.

Customer satisfaction is universal - Ratings remain consistently excellent (3.95-3.98) regardless of outlet tier or fat content, proving that operational quality and product standards are maintained uniformly across all market segments, eliminating satisfaction as a competitive differentiator.

4. Outlet Establishment Year Analysis

This section evaluates how the establishment year of outlets influences total sales performance over time.

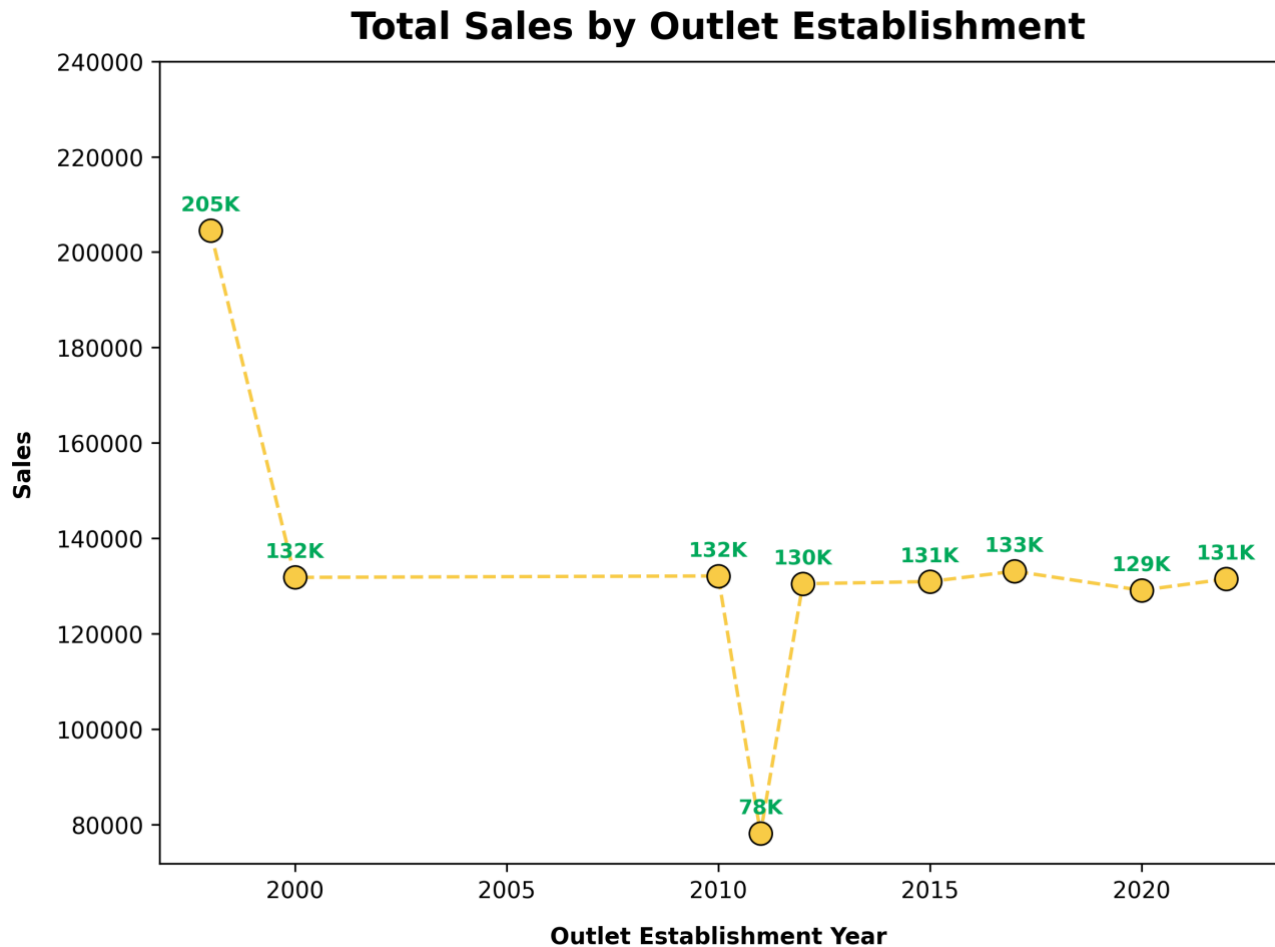


Figure 4.1: Total Sales by Outlet Establishment Year

The line chart shows that outlet establishment year has minimal impact on total sales performance, with most years clustering around 130K sales, except for a notable outlier in 1998 achieving 205K (the highest performer) and 2011 showing the lowest performance at 78K, indicating that outlet age alone is not a reliable predictor of sales success as older establishments don't necessarily underperform compared to newer ones.

5. Outlet Size Analysis

This section analyzes the correlation between outlet size and total sales, showing the distribution of sales across small, medium, and high-sized outlets.

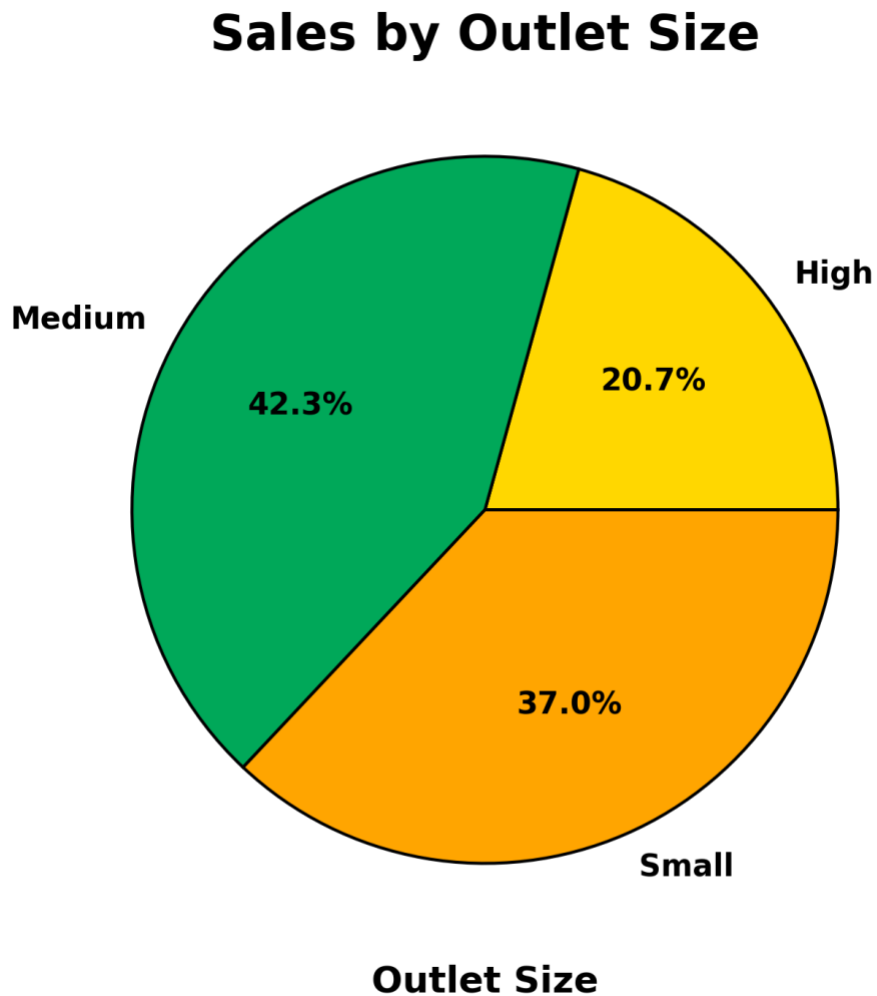


Figure 5.1: Sales Distribution by Outlet Size

The pie chart reveals that medium-sized outlets dominate sales with 42.3% market share, followed by small outlets at 37.0% and high-sized outlets at just 20.7%, indicating that mid-range stores generate more than double the revenue of large stores despite the counterintuitive expectation that bigger outlets would capture more sales.

6. Geographic Sales Distribution

This section assesses the geographic distribution of sales across different location tiers (Tier 1, Tier 2, Tier 3).

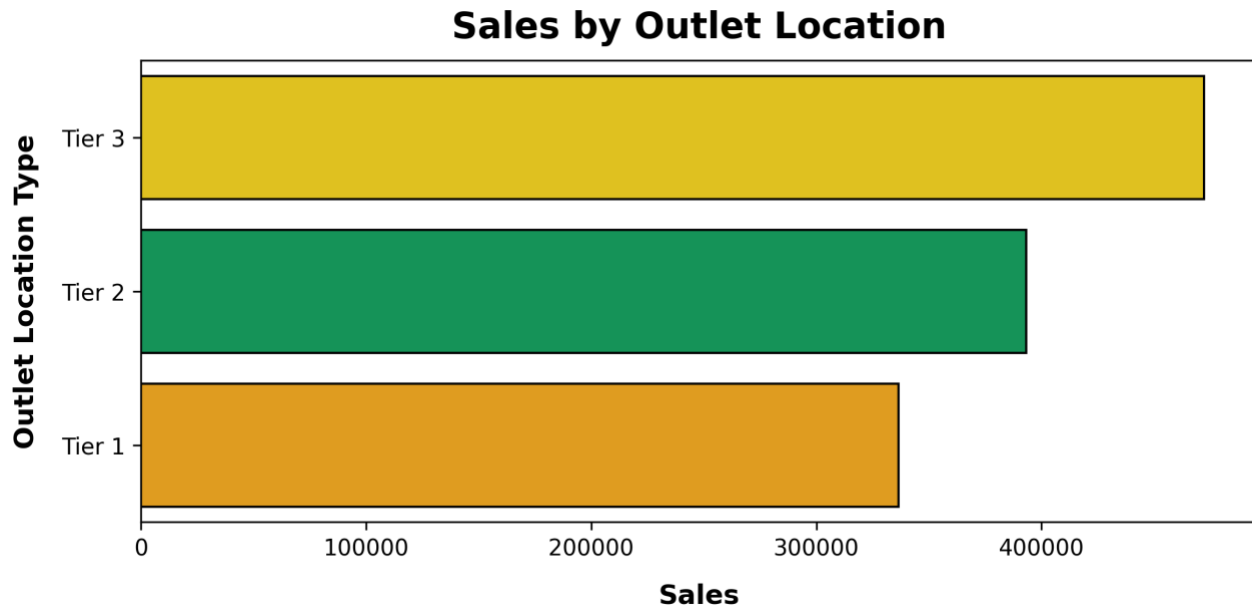


Figure 6.1: Sales by Outlet Location Type

The horizontal bar chart shows that Tier 3 outlets generate the highest total sales (~470,000), followed by Tier 2 (~390,000) and Tier 1 (~340,000), demonstrating a clear positive correlation where higher-tier/larger market locations drive progressively greater revenue, with Tier 3 outlets producing approximately 38% more sales than Tier 1 locations.

Conclusion

Based on my comprehensive data analysis, here are the key insights:

Primary Finding: Volume vs. Value Paradox

Low-fat products dominate in availability and transaction frequency but generate identical per-unit revenue and customer satisfaction as regular products. This reveals that health-conscious consumer behavior drives purchase volume (64.6% product mix, 5,517 vs 3,006 transactions) but doesn't command premium pricing or enhanced satisfaction (both rated ~3.97, both averaging ~141 in sales).

Strategic Location Insights

Tier 3 outlets are the revenue powerhouses, generating the highest total sales (~470,000) and amplifying the low-fat preference gap most significantly (2,150 vs 1,200 purchases). Despite medium-sized outlets contributing 42.3% of overall sales, higher-tier locations consistently outperform through sheer volume rather than per-transaction value differences.

Product Category Dynamics

Fruits and Vegetables lead in both total sales (~178,000) and purchase frequency (~1,250), but Household items achieve the best balance by ranking #1 in average sales value (149) while maintaining strong transaction volume. Customer ratings remain uniformly excellent (3.88-4.02) across all 16 categories, indicating quality consistency doesn't differentiate performance.

Time and Size Factors

Outlet establishment year shows no predictable pattern (1998 achieved 205K while 2011 dropped to 78K), suggesting operational execution matters more than age. Medium-sized outlets unexpectedly dominate at 42.3% market share, outperforming larger stores (20.7%), which challenges conventional retail assumptions about scale advantages.

Business Recommendations

Focus on Tier 3 expansion and low-fat product availability to capture volume-driven growth, while maintaining diverse offerings since regular products achieve comparable profitability per unit. Prioritize Fruits and Vegetables, Snack Foods, and Household categories for inventory investment, and investigate why medium outlets outperform large ones to replicate success factors.

The data tells a clear story: success comes from matching product mix to consumer health preferences, strategic location selection in higher-tier markets, and operational excellence rather than premium positioning or store age.