Vegetable Economics - Retail & Yield Analysis

Sakshi Andhale

Table of contents

01
Overview

Overview

This presentation showcases a dashboard on the retail price of vegetables dataset. The dashboard investigates the pricing patterns, yield percentages, and portion sizes of different vegetables sold in various forms, such as fresh, canned, frozen, and dried.

By analyzing these elements, we aim to uncover the most and least expensive vegetables, highlight vegetables with the best value for money, and provide insights for retailers to optimize their stock and pricing strategies.

Each visualization will address specific business questions and help answer essential pricing-related queries for better business decision-making.

Dataset Overview

The dataset contains detailed information on vegetables, such as their form (fresh, canned, frozen, dried), retail price, yield percentage, cup-equivalent size, and price per pound or cup.

The following columns are included:

- **Vegetable Name:** The specific vegetable type (e.g., Carrots, Broccoli, Spinach).
- **Form:** Indicates whether the vegetable is fresh, frozen, canned, or dried.
- **Retail Price:** The price of the vegetable per pound.
- **Retail Price Unit:** The measurement unit for the price (e.g., per pound).
- **Yield:** The percentage of usable parts of the vegetable after cooking or preparation.
- **Cup Equivalent Size:** The size of the vegetable per cup, used to determine portion size.
- **Cup Equivalent Price:** The price of the vegetable for one cup-equivalent serving.

Objective

The primary objective of this exploratory data analysis is to:

- Analyze the pricing structure of vegetables across different forms (fresh, canned, frozen, dried).
- Identify which vegetables are most and least expensive.
- Determine the best price-to-yield ratios for vegetables.
- Provide actionable insights for retailers on how to price and stock vegetables to maximize profit and customer satisfaction.
- Answer key business questions on the affordability and value of vegetables to assist with product positioning, inventory management, and sales strategy.

Key Questions Answered

Throughout this presentation, the following key questions will be answered:

- Which vegetables are the most expensive?
- Which vegetables are the most affordable?
- How does yield vary between different vegetable forms?
- What is the best price-to-cup equivalent size ratio for vegetables?
- Which form (fresh, canned, frozen) tends to be the most expensive?
- What are the business decisions that can be derived from these insights?

These questions will guide us through the analysis of retail pricing and consumer value, providing a clear understanding of the economic dynamics at play in the vegetable market.

02
Data Cleaning

Data Cleaning Methods

Handling Missing Values:

Missing data can lead to inaccurate conclusions, so we employed a strategy to fill missing values using the mean value across similar vegetables in the same form category. This allowed us to retain valuable records without introducing bias or removing too much data.

For example:

If retail price data for a vegetable in the "Frozen" form was missing, it was replaced with the average retail price of other frozen vegetables in the dataset.

This method ensures that we can rely on the dataset to provide meaningful insights, even when some values were incomplete.

Data Cleaning Methods

- **Rounding Numerical Values:**

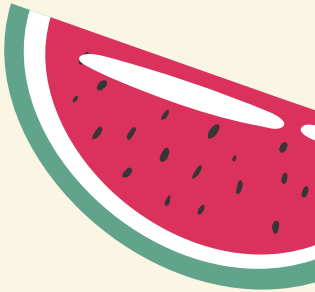
The dataset originally included retail prices and cup-equivalent prices with up to four decimal places, which were unnecessary for our analysis. These values were rounded to one decimal place for better readability and clarity. For example, prices such as $3.2345 per pound were rounded to $3.2 per pound.

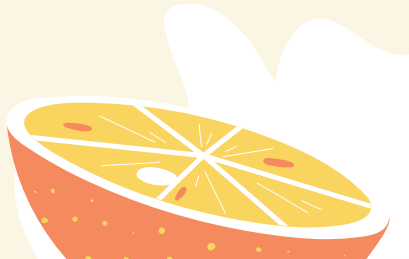
- **Standardizing Categorical Data:**

Categorical values, especially in the "Form" column, were inconsistent with spelling and formatting variations (e.g., "Frozen" vs. "frozen"). These were cleaned and standardized to ensure consistent groupings during the analysis.

03

Visualizations

Top 5 Most Expensive Vegetables by Retail Price

Data Presented: A bar chart showing the top 5 vegetables with the highest retail prices per pound.
Vegetables presented: Asparagus, Okra, Brussels Sprouts, Broccoli, Cauliflower.
Questions Answered: Which vegetables are the most expensive?

Key Insights:

- Asparagus has the highest retail price, costing $6.0 per pound.
- Okra follows with a price of $5.5 per pound.
- Brussels Sprouts, Broccoli, and Cauliflower are also among the most expensive, with prices around $4.0 per pound.

Conclusion/Business Decision:
These vegetables can be categorized as premium items. Retailers could target higher-income customers or market them as luxury or health-focused products.

Top 5 Most Expensive Vegetables by Retail Price

Top 5 Most Affordable Vegetables by Retail Price

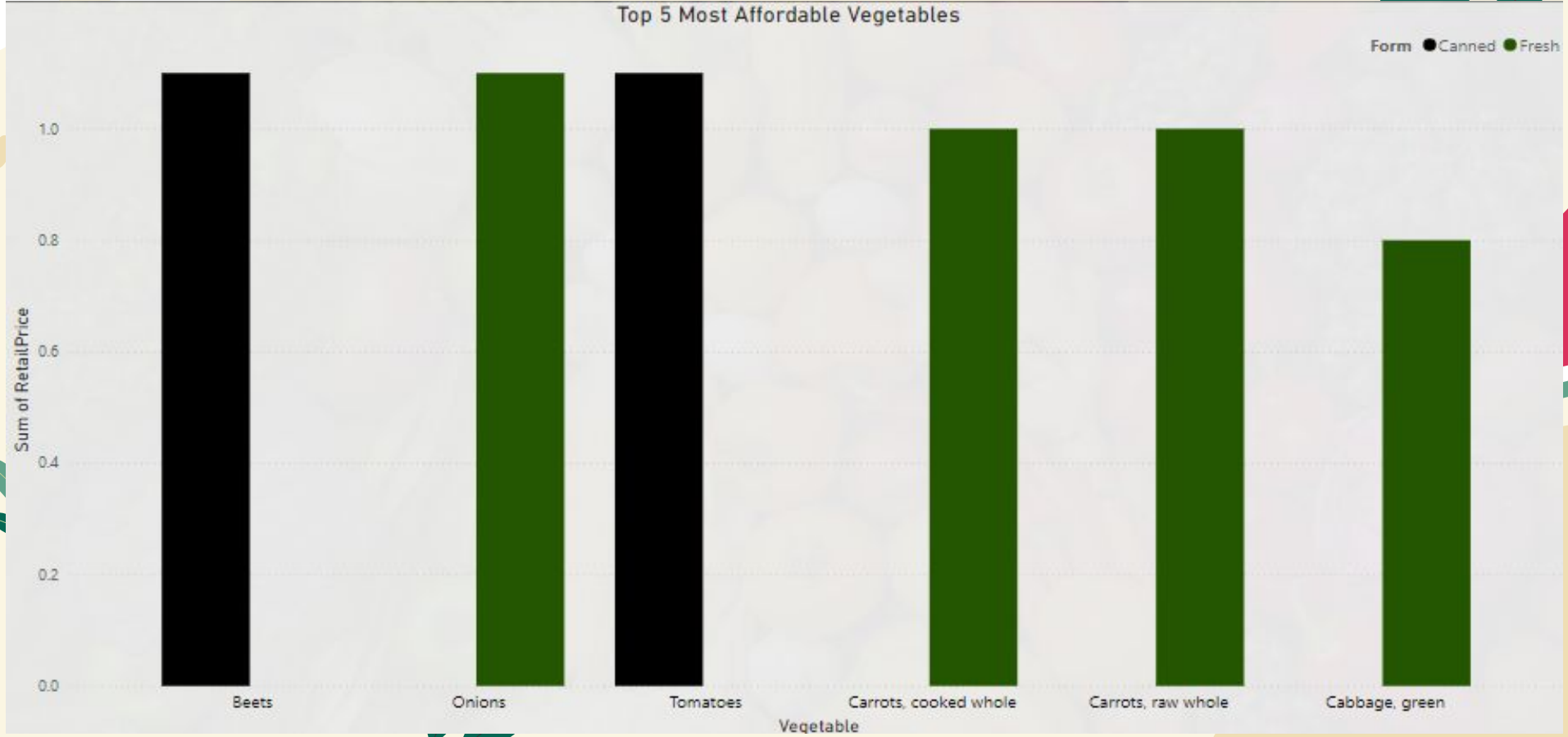
Data Presented: A bar chart showing the top 5 vegetables with the lowest retail prices per pound.
Vegetables presented: Beets, Onions, Tomatoes, Cabbage, Carrots.

Questions Answered: Which vegetables are the most affordable?

Key Insights:
Beets, Onions, and Tomatoes are the most affordable, priced at $1.0 per pound.
Cabbage and Carrots follow closely at around $1.2 per pound.

Conclusion/Business Decision:
These vegetables can be marketed as budget-friendly options, ideal for bulk purchases and value-driven marketing strategies.

Top 5 Most Affordable Vegetables by Retail Price



Total Yield by Vegetable Form

Data Presented: A pie chart showcasing the percentage of total yield by vegetable form (fresh, canned, frozen, dried).

Questions Answered: How does yield differ across vegetable forms?

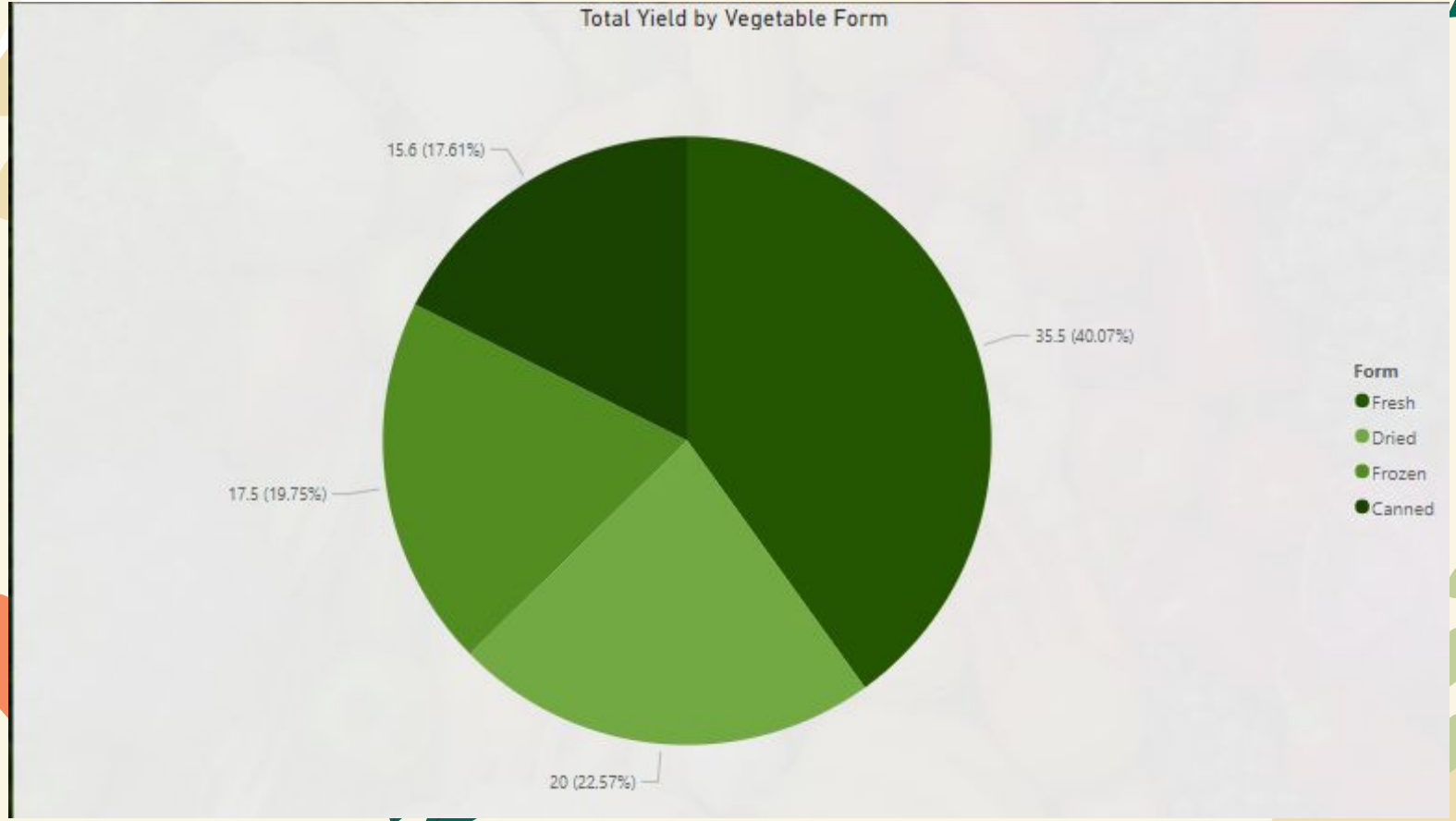
Key Insights:

- Fresh vegetables provide the highest yield, contributing to 40.07% of the total.
- Frozen vegetables make up 22.57% of the yield.
- Canned and Dried forms account for smaller portions, with 15.85% and 6.51%, respectively.

Conclusion/Business Decision:

Fresh vegetables dominate the yield, making them critical for stock prioritization. Retailers should focus more on fresh stock due to their higher consumer value and yield.

Total Yield by Vegetable Form



Cup Equivalent Size by Vegetable

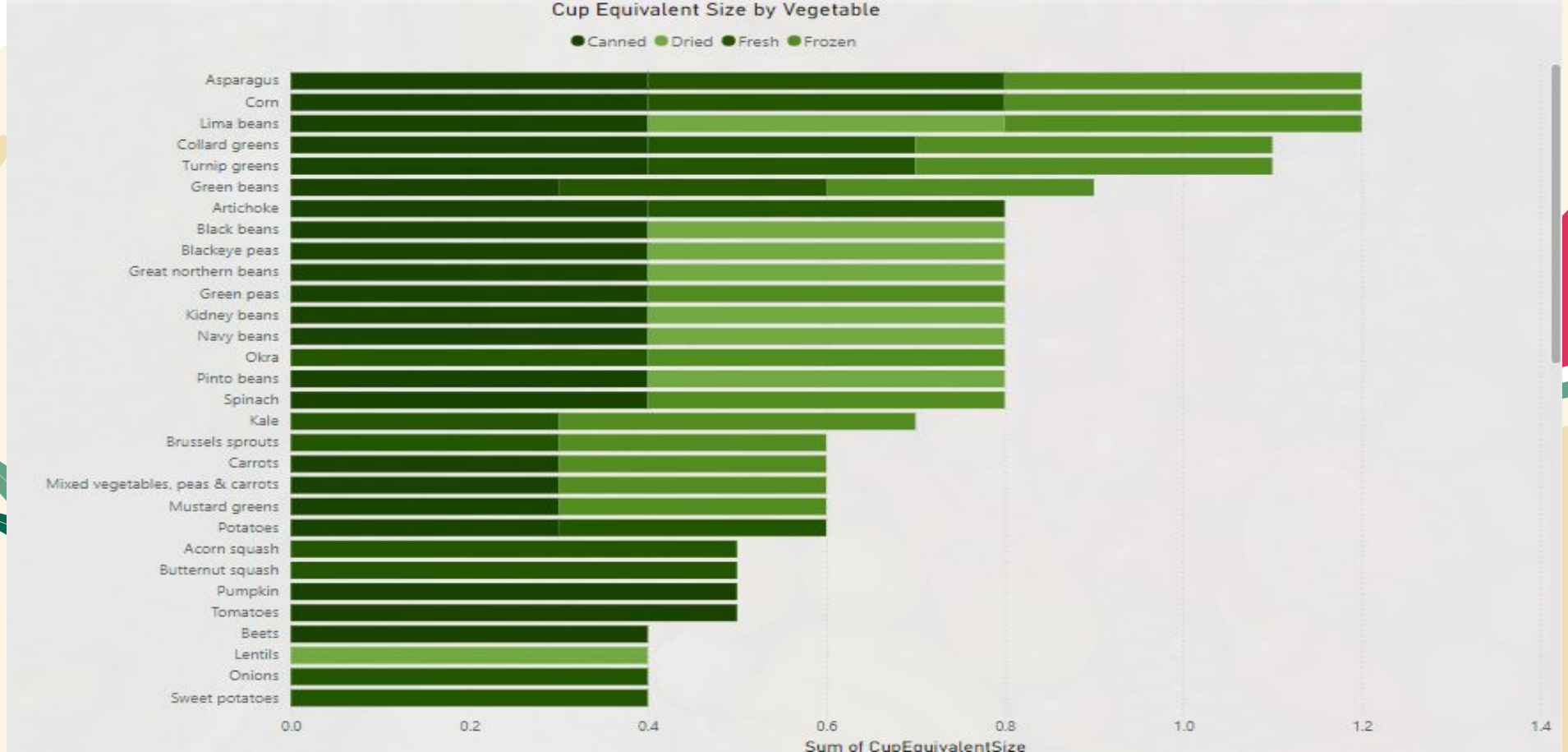
Data Presented: A bar chart comparing cup-equivalent sizes for various vegetables.

Questions Answered: Which vegetables provide the largest portion sizes per cup?

Key Insights:
Asparagus provides one of the largest portion sizes, with a cup-equivalent size of 1.3 cups. Corn and Broccoli also offer substantial portion sizes of around 1.1 cups per serving.

Conclusion/Business Decision:
Vegetables with larger cup-equivalent sizes provide better value for consumers. Marketing strategies could highlight the larger portion sizes to encourage sales.

Cup Equivalent Size by Vegetable



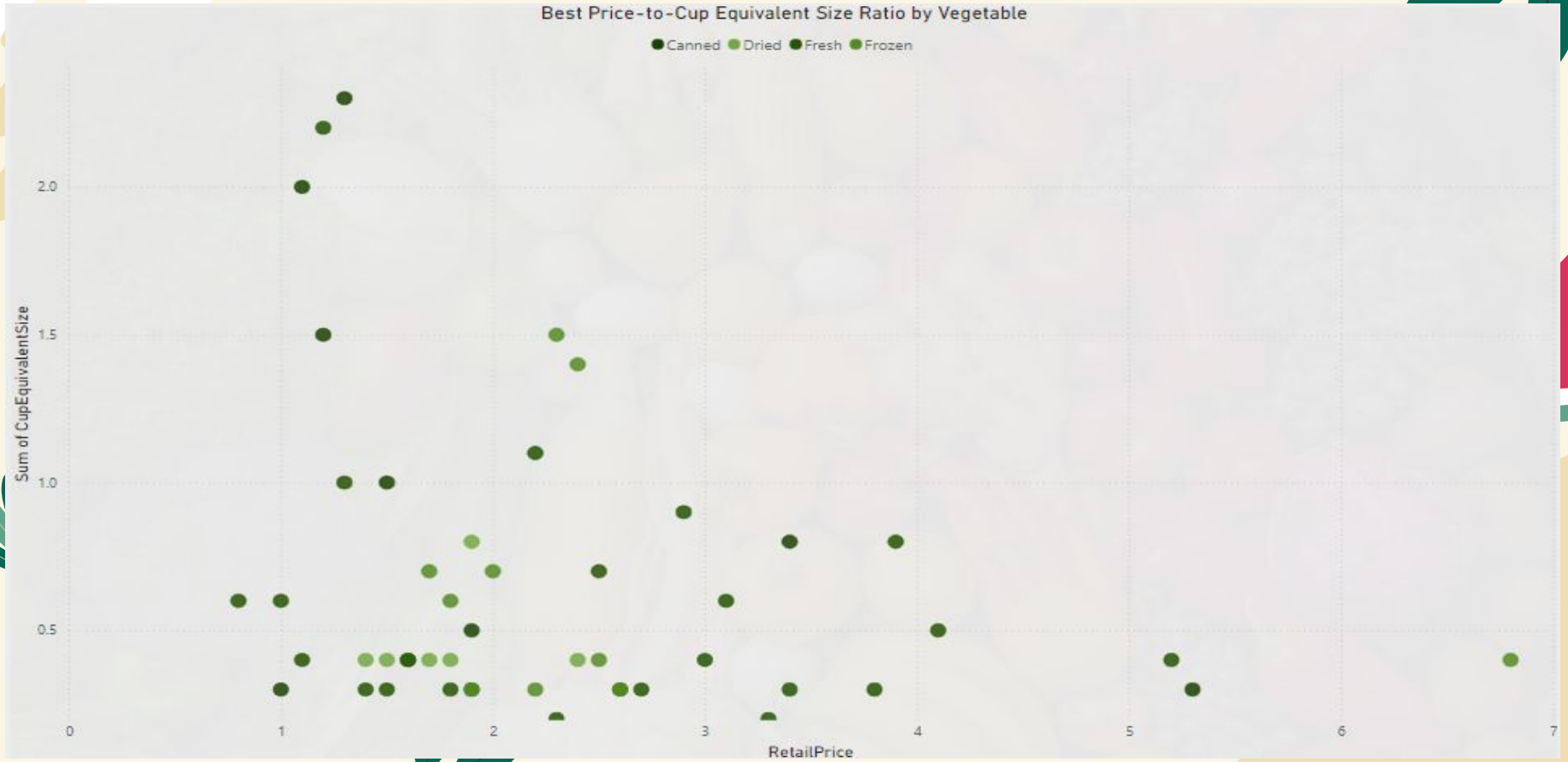
Best Price-to-Cup Equivalent Size Ratio by Vegetable

Data Presented: A scatter plot showing the relationship between retail price and cup-equivalent size.
Questions Answered: Which vegetables offer the best price-to-cup ratio?

Key Insights:
Carrots, Onions, and Cabbage offer the best value, with low prices and larger cup-equivalent sizes.

Conclusion/Business Decision:
Retailers should promote these vegetables as value-driven options, especially in cost-conscious markets.

Best Price-to-Cup Equivalent Size Ratio by Vegetable



04

Conclusion

This analysis reveals critical insights into the pricing, yield, and portion sizes of various vegetables.

- Asparagus and Okra are the most expensive, with prices around $6.0 and $5.5 per pound, respectively.
- Beets and Onions are the most affordable at $1.0 per pound.
- Fresh vegetables contribute the most to the total yield, with 40.07%, indicating their market importance.
- Green Beans and Black-Eyed Peas offer the best value in terms of portion size for price, making them ideal for budget-conscious consumers.

Business Recommendations:

- Focus on premium pricing for high-cost vegetables.
- Promote budget-friendly options for cost-sensitive consumers.
- Prioritize fresh vegetables in stock due to their high demand and yield.

Thanks!