Vegetable Economics – Retail & Yield Analysis Report

Introduction

This report focuses on understanding the economic behavior of vegetables in the retail market. It answers key questions like which vegetables are the most expensive or affordable and provides insights into the best price-to-cup equivalent ratio. Using a dataset focused on retail prices, yields, and forms of vegetables, we aim to derive valuable insights that can aid business decisions, particularly for stakeholders involved in the vegetable retail industry.

Inspiration

We selected this dataset to better understand the retail economics of vegetables. Vegetables are a staple product across markets and analyzing their prices in relation to yield and form (canned, fresh, frozen, etc.) offers meaningful insights. With rising consumer interest in health and affordability, understanding the pricing trends can greatly benefit retailers and business owners. This dataset helps bridge the gap between raw data and informed business strategies.

Why This Dataset?

This dataset offers detailed information on vegetable types, forms (fresh, canned, frozen, dried), retail prices, yield, and cup equivalent sizes. By analyzing these variables, we can derive insights such as identifying the most economical vegetables, evaluating which forms are more cost-effective, and determining high-yield vegetables for retailers. These insights are critical in helping businesses price their products competitively while maximizing yield.

What Can Be Learned?

From this dataset, we can learn the pricing trends of various vegetables, the relationship between price and yield, and the most cost-effective forms. We can also analyze how different forms like fresh, frozen, and canned compare in terms of retail price and yield. These insights can help business owners make informed decisions about their product offerings, optimize inventory, and set competitive prices to attract more customers.

Questions Raised and Answered

- **Which top 5 vegetables cost the most?**
  This question helps businesses understand which vegetables require higher consumer spending.

- **Which vegetables are the most affordable?**
  Identifying affordable vegetables aids in inventory planning for budget-conscious customers.

- **Which vegetable form is the most expensive?**
  This helps businesses optimize their product form offerings based on price-conscious markets.

- **Which vegetables have the best price-to-cup equivalent size ratio?**
  This allows businesses to determine which vegetables offer the most value to consumers.

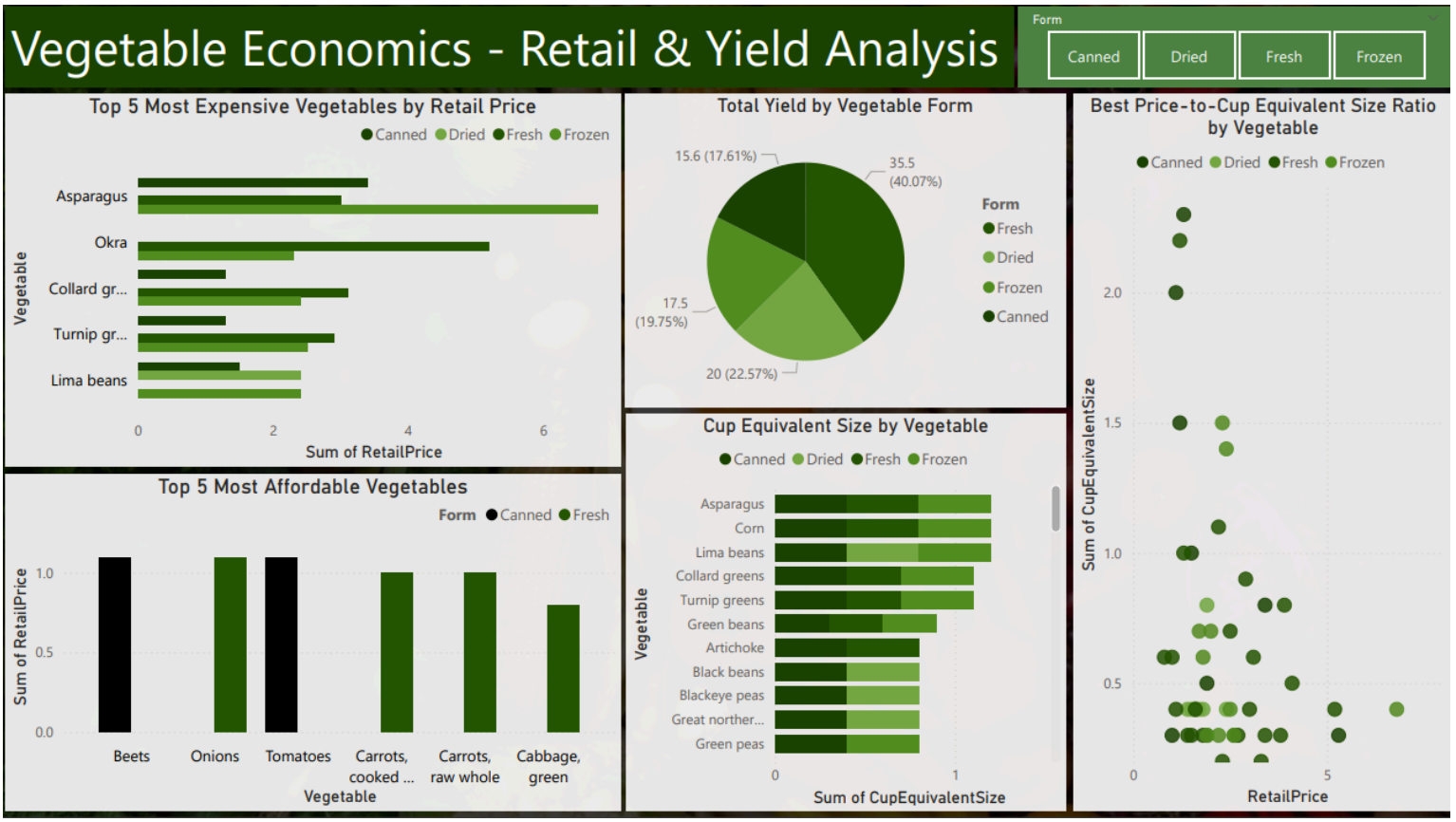
- **How does the total yield vary by vegetable form?**
  Yield data is critical for supply chain decisions, ensuring businesses stock high-yield products.

These questions allow businesses to understand consumer preferences, make informed pricing decisions, and optimize their product offerings.

Context and Background Information

Vegetables are a core part of the retail food market. Given their varying forms (fresh, canned, frozen), pricing strategies can differ greatly depending on the form, size, and yield. For retailers, understanding how to price these products based on yield and form is crucial to maximizing profits while ensuring customers receive value for money. Retailers need these insights to manage inventory, avoid spoilage, and cater to different consumer segments, such as those preferring fresh vegetables over canned or frozen alternatives.

Final Dashboard



Data

Data Description

The dataset includes columns such as:

Vegetable: The type of vegetable (e.g., Asparagus, Okra, Lima Beans).
Form: The form in which the vegetable is available (Fresh, Canned, Frozen, Dried).
Retail Price: The price per unit for each vegetable.
Retail Price Unit: Unit of measurement for the retail price (e.g., per pound).
Yield: The amount of usable vegetable after preparation.
Cup Equivalent Size: The size of the vegetable in cup units.
Cup Equivalent Price: The price per cup equivalent.

Tools Used

We used Power BI for the analysis and creation of visualizations. The visualizations provide a detailed view of vegetable pricing and yield trends.

Data Cleaning

Before analyzing the data, several steps were taken to clean and prepare it for visualization:

Handling Decimal Precision:
The dataset initially contained values with four decimal points, especially for numerical fields such as retail price and cup equivalent size. To improve readability and make the data more presentable, the values were rounded to one decimal place. This made the pricing and yield data easier to interpret without sacrificing accuracy, allowing for clearer visualizations and faster decision-making.

Missing Data:
The dataset was examined for any missing or null values. While no significant missing data was found that could impact the analysis, this step was essential to ensure completeness and accuracy.

Duplication:
The data was also checked for duplicate entries to avoid skewing the results. No duplicates were identified, allowing for a straightforward analysis of unique vegetable entries.

Ensuring Consistent Formats:
All relevant numerical fields were standardized to ensure consistency in units and formats. For example, retail prices were consistently formatted in the same currency, and cup equivalent sizes were standardized across vegetable forms.

These data cleaning steps were crucial for maintaining the integrity of the analysis and ensuring that the visualizations would be accurate and insightful for business decisions

Analysis

Top 5 Most Expensive Vegetables by Retail Price

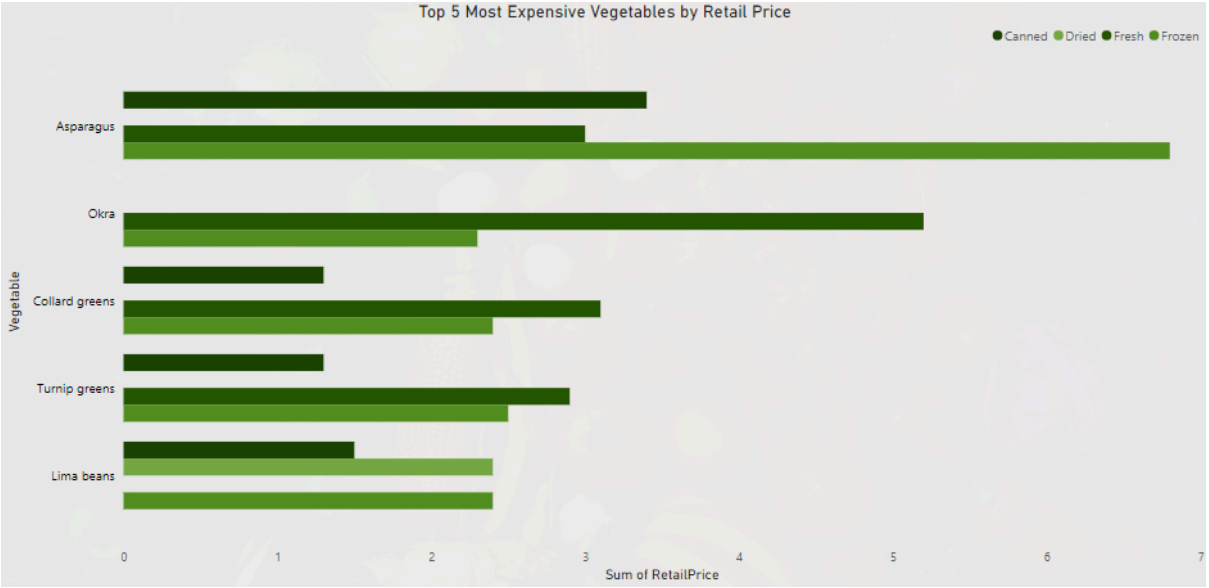


Chart Type: Horizontal bar chart

Question Answered: Which are the top 5 most expensive vegetables by retail price?

Data Presented:
The chart displays the retail price of the top 5 most expensive vegetables across different forms (canned, fresh, frozen, dried).

Numbers Presented:
Asparagus is the most expensive vegetable with a retail price of $6.0 per pound.
Okra follows with a price of $5.5 per pound.
Other vegetables in the top 5 include Collard Greens ($5.0), Turnip Greens ($4.7), and Lima Beans ($4.5).

Conclusion:
Asparagus and Okra stand out as the costliest vegetables. Business owners focusing on premium vegetables can consider these items for special pricing strategies or gourmet offerings.

Business Decision:
Businesses should monitor the supply of these high-cost vegetables, as they may have a smaller customer base due to their high prices. Retailers could promote these high-cost vegetables as luxury or premium products, creating exclusive marketing campaigns or bundling them with complementary items.

Top 5 Most Affordable Vegetables by Retail Price

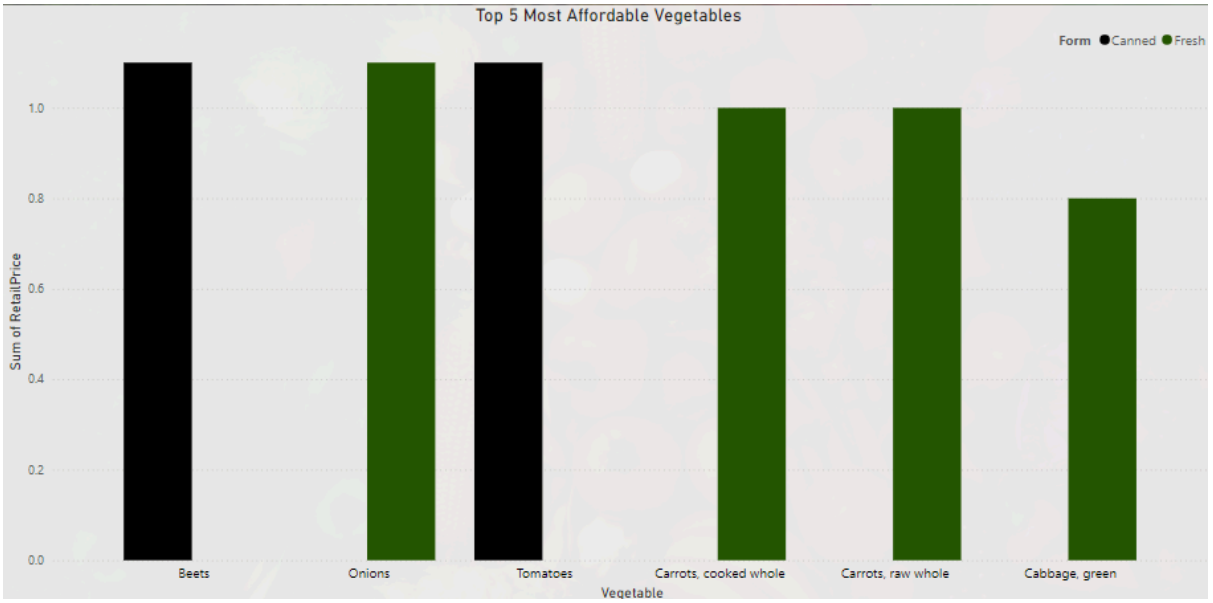


Chart Type: Vertical bar chart

Question Answered: Which vegetables are the most affordable in terms of retail price?

Data Presented:
This chart highlights the retail prices of the 5 least expensive vegetables across different forms.

Numbers Presented:
Beets are the cheapest at $1.0 per pound.
Onions and Tomatoes also cost $1.0 per pound.
Other vegetables include Carrots (Cooked) at $1.1 and Cabbage (Green) at $1.2.

Conclusion:
Beets, onions, and tomatoes are some of the most affordable vegetables, making them popular choices for budget-conscious consumers.

Business Decision:
Retailers can promote these vegetables in bulk or for everyday meal plans. The affordability factor makes these vegetables appealing for cost-conscious customers, and promotions can be run around their low price point to drive sales.

Total Yield by Vegetable Form

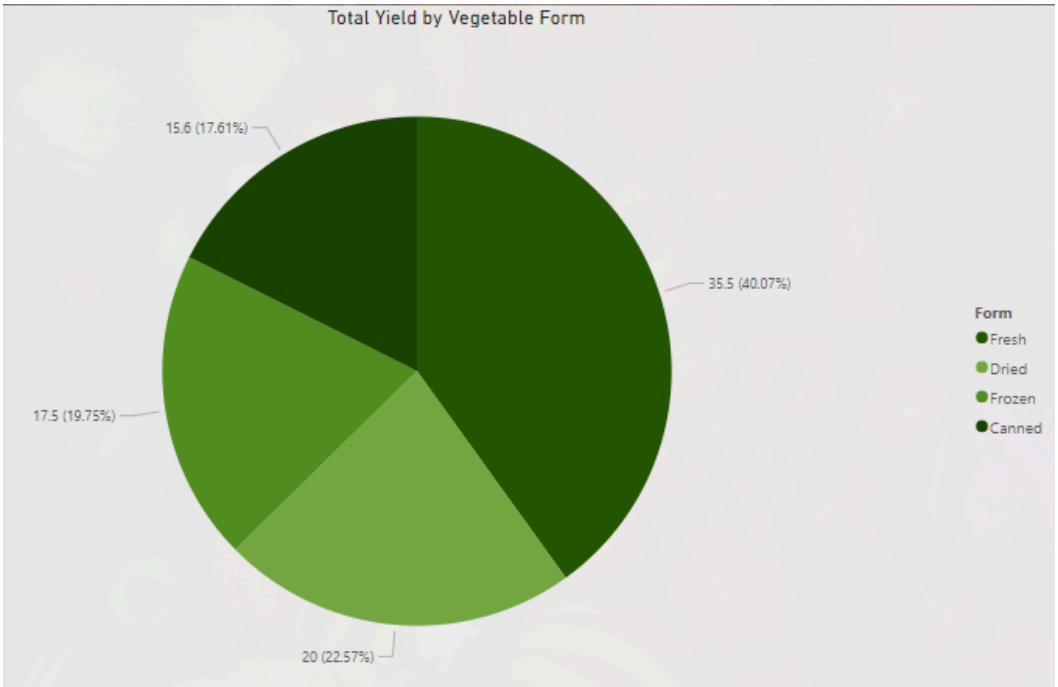


Chart Type: Pie chart

Question Answered: What is the distribution of total yield across different vegetable forms?

Data Presented:
The pie chart displays the total yield of vegetables categorized by form (fresh, canned, frozen, dried).

Numbers Presented:
Fresh vegetables contribute to 40.07% of the total yield.
Frozen vegetables follow with 22.57%.
Canned vegetables account for 19.75%, while Dried vegetables make up 17.61% of the total yield.

Conclusion:
Fresh vegetables have the largest yield, making them a vital category for retailers who want to focus on high turnover and seasonal produce. Frozen vegetables also hold a significant market share, catering to consumers who prefer convenience.

Business Decision:
This insight can inform inventory strategies, as retailers may want to stock more fresh vegetables due to their high demand and yield. However, frozen vegetables could also be an essential product for long-term storage or consumers who prioritize convenience.

Cup Equivalent Size by Vegetable

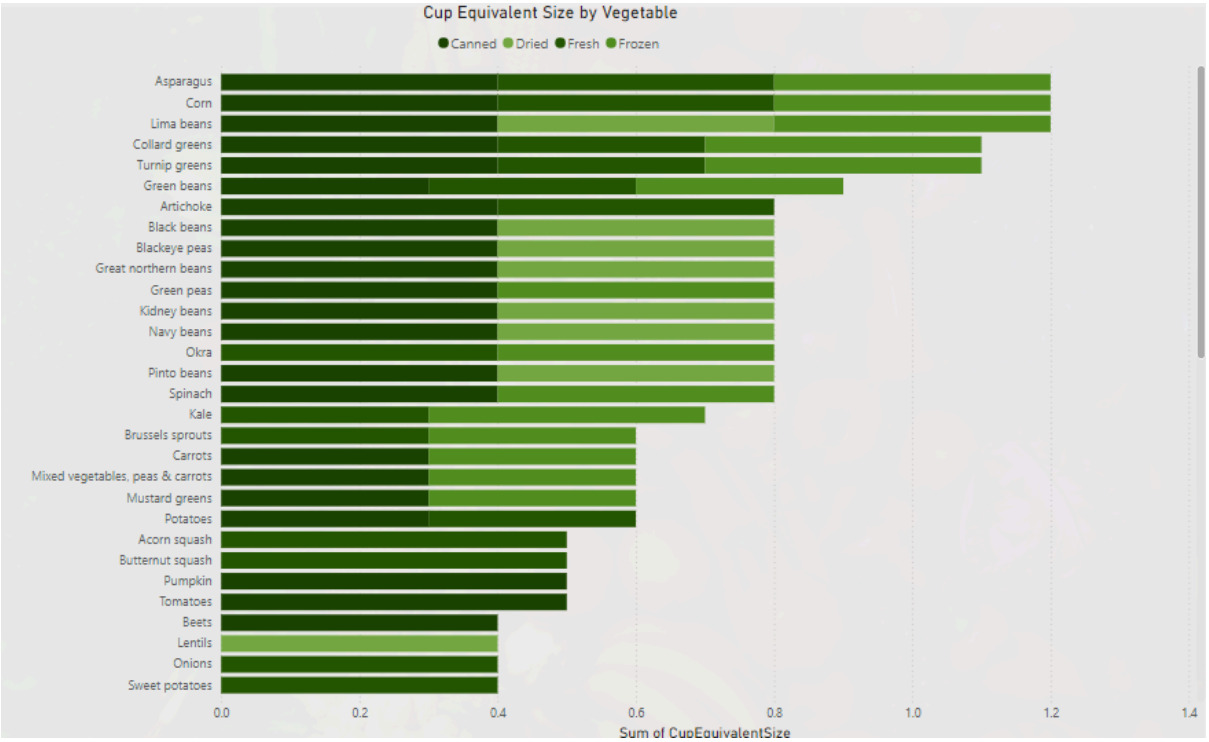


Chart Type: Stacked bar chart

Question Answered: How does the cup equivalent size vary among vegetables, and which forms (canned, dried, fresh, frozen) contribute the most?

Data Presented:
The chart shows the cup equivalent size of different vegetables across various forms.

Numbers Presented:
Asparagus and Corn have the highest cup equivalent sizes across multiple forms (fresh, frozen, canned).
Vegetables like Lima Beans and Turnip Greens also have significant cup equivalent sizes across multiple forms.

Conclusion:
Vegetables like asparagus and corn, which have higher cup equivalent sizes, offer more substantial portions per cup, making them valuable for consumers looking for bulk purchases.

Business Decision:
Retailers can emphasize the portion size of these vegetables in marketing materials. Highlighting the value in terms of larger portion sizes for the price can attract customers interested in buying vegetables in bulk for family consumption or meal prepping.

Best Price-to-Cup Equivalent Size Ratio by Vegetable

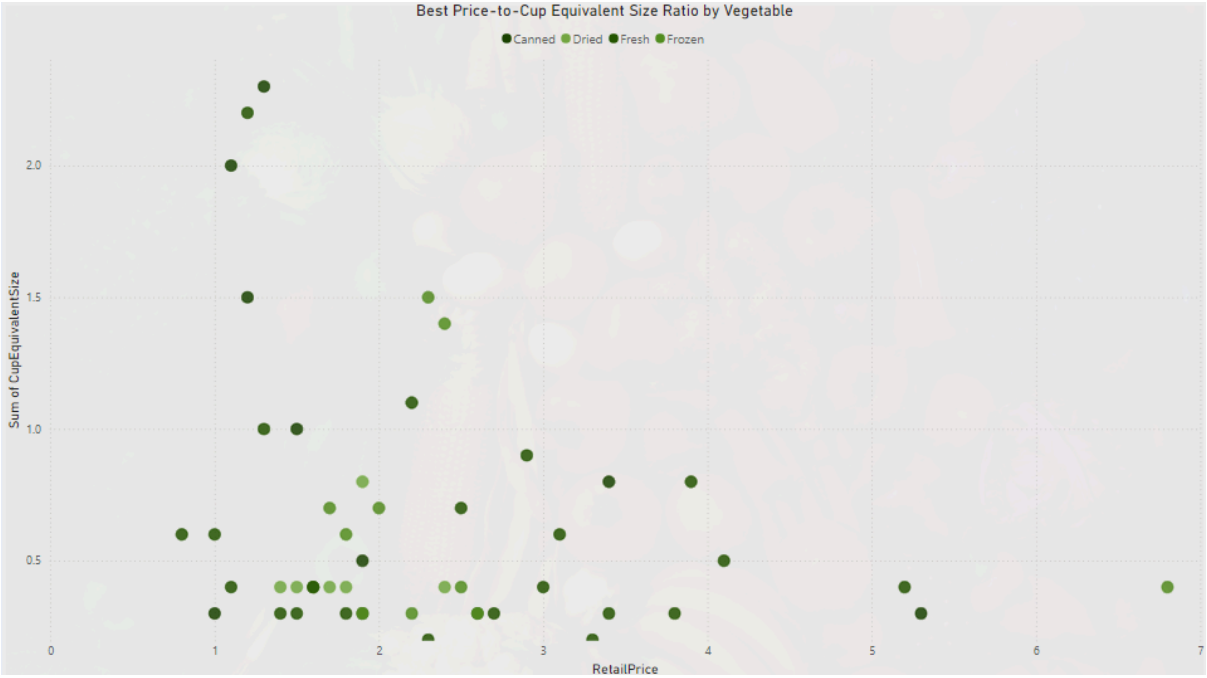


Chart Type: Scatter plot

Question Answered: Which vegetables offer the best price-to-cup equivalent size ratio?

Data Presented:
The scatter plot compares the retail price and the cup equivalent size across different vegetables and forms.

Numbers Presented:
Vegetables such as Green Beans and Black-Eyed Peas have favorable price-to-cup equivalent size ratios, offering larger portions for a lower price.
In contrast, vegetables like Asparagus and Okra have a higher price-to-size ratio, making them more expensive per serving.

Conclusion:
Vegetables with a better price-to-cup equivalent ratio, such as green beans, offer great value for consumers focused on maximizing the quantity per price.

Business Decision:
Retailers can target budget-conscious consumers with promotions highlighting the value of these vegetables in terms of portion size per price, creating a value-driven marketing strategy.

Results

The dashboard provides several key insights from the vegetable dataset:

Top 5 Most Expensive Vegetables:

Vegetables like asparagus, okra, and lima beans are among the most expensive. Retail prices range from $4 to $6 per unit, depending on the form (fresh, canned, etc.).
These price points highlight potential inventory decisions for high-margin vegetables in retail.

Top 5 Most Affordable Vegetables:

Vegetables such as beets, onions, tomatoes, and raw whole carrots are the most affordable, all priced around $1 per unit.
These can be promoted for volume sales or used in discount campaigns to increase customer acquisition.

Best Price-to-Cup Equivalent Size Ratio:

The visual showed that canned vegetables tend to have a better price-to-cup equivalent ratio, making them more economical for consumers. Fresh vegetables had the highest price-to-cup equivalent ratio, often making them the most expensive.
For business owners, this could inform pricing strategies for customers focused on cost-efficiency.

Total Yield by Vegetable Form:

Fresh vegetables take up the largest portion of total yield (40.07%), followed by frozen (22.57%) and dried (19.75%). This data can be essential for forecasting demand and understanding how much product yield can be expected from different forms.

Cup Equivalent Size by Vegetable:

Vegetables like asparagus and corn have higher cup equivalent sizes, indicating that they provide more servings per unit. This information is crucial for marketing strategies targeting health-conscious customers who value servings per dollar.

Conclusion

The analysis of vegetable retail prices, forms, yields, and cup equivalent sizes provides several useful business insights. From identifying the most expensive and affordable vegetables to determining which forms (canned, fresh, frozen) are the most cost-effective, this dashboard offers data-driven conclusions that can help grocery store owners, supply chain managers, and business strategists make better decisions.

High-margin vegetables like asparagus and okra should be closely monitored for inventory control and strategic promotion. In contrast, the most affordable vegetables like beets and onions can drive volume sales and consumer engagement through discounts or promotions.

The analysis of form types reveals that fresh vegetables have the largest yield, but canned and frozen vegetables offer better value when looking at price-to-cup equivalent size ratios. This distinction is important for retailers who want to optimize both profit margins and customer satisfaction.

The visualizations on cup equivalent sizes also provide insights into how consumers can get the most servings per dollar, useful for marketing strategies that emphasize value and nutrition.

By rounding the values to one decimal place during data cleaning, the visualizations are more user-friendly, with clear and concise pricing and yield data that can be easily interpreted by stakeholders. This improves overall clarity and allows for quicker decision-making.