

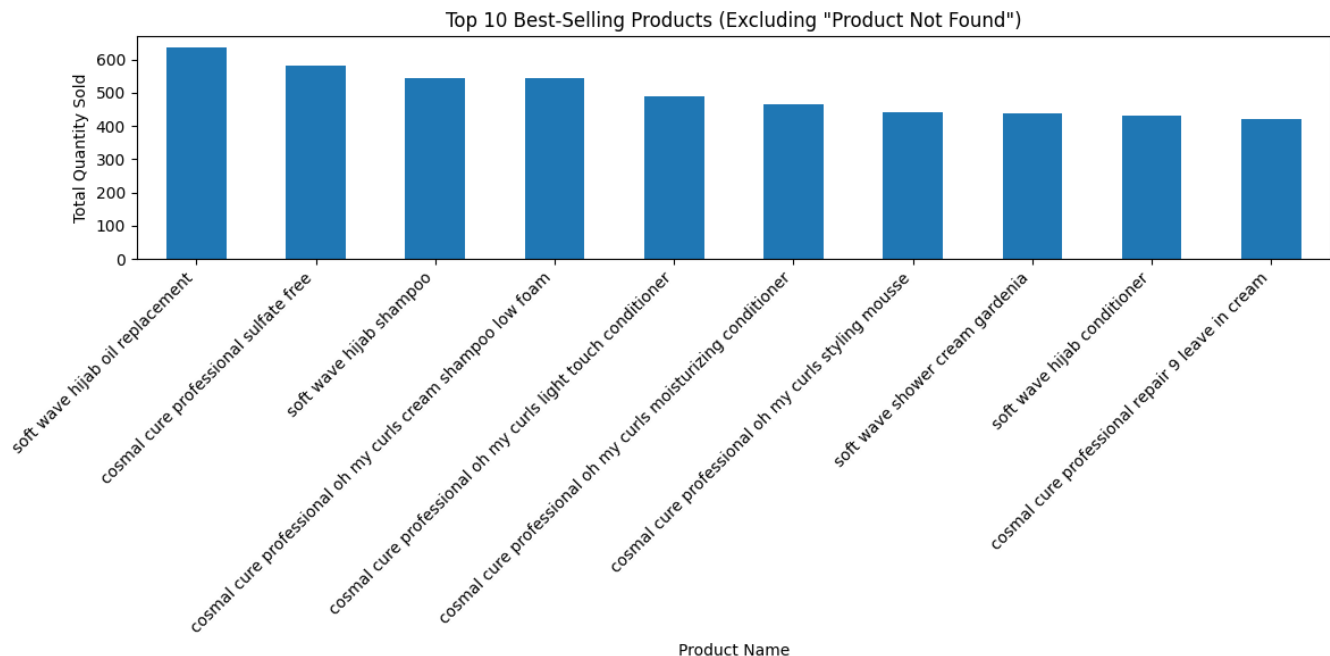
AUB x Malia Capstone E-commerce Performance Analysis

Created by: Romanos Rizk and Hadil Fares

Section 1: Sales Analysis

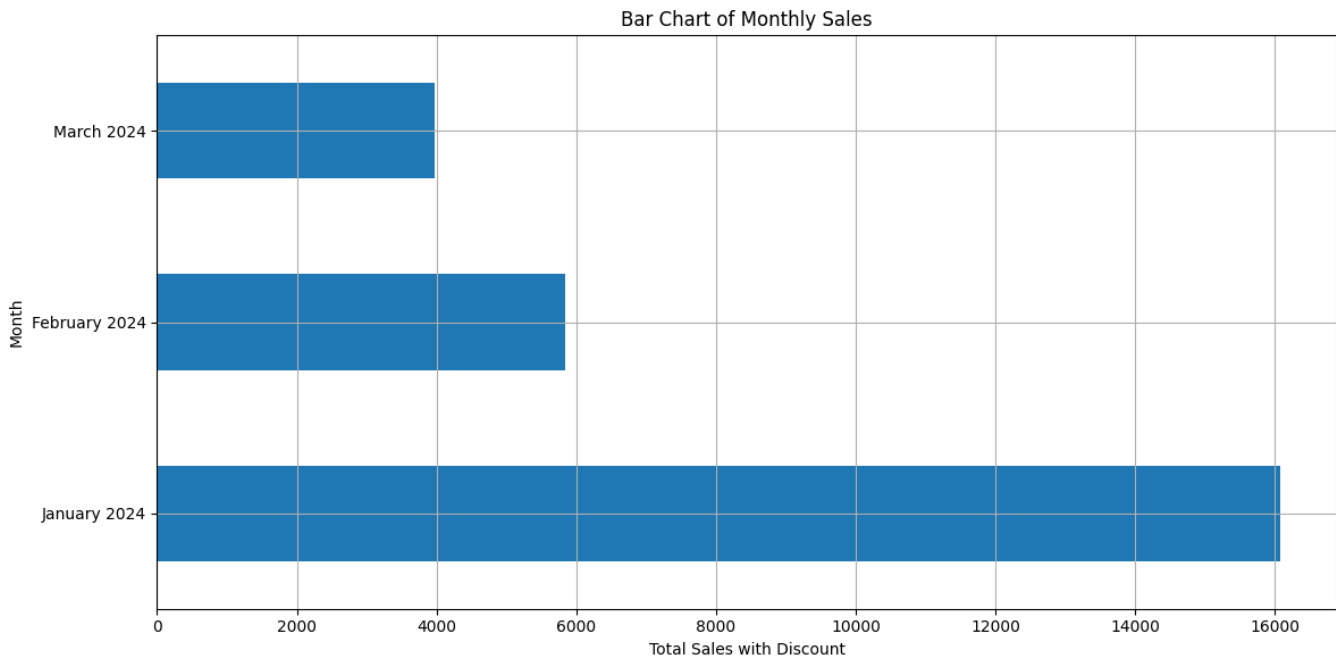
Top 10 Best-Selling Products

The 'Top 10 Best-Selling Products' plot shows the products with the highest sales volume. This visualization highlights the top-performing products in terms of quantity sold, providing insights into customer preferences and popular items.



Monthly Sales Trend

The 'Monthly Sales Trend' plot displays the total sales revenue for each month. It helps in understanding the sales performance over time, identifying peak sales periods, and evaluating seasonal trends or patterns.



Top Categories by Sales Volume

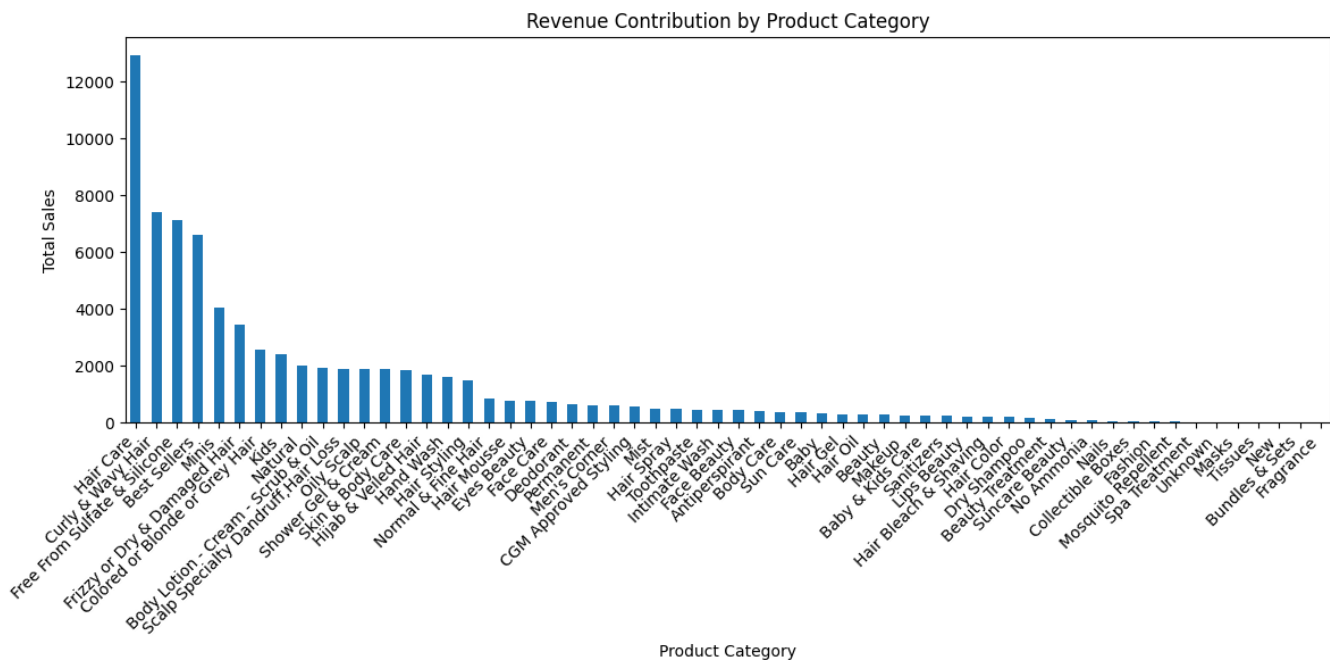
The 'Top Categories by Sales Volume' table ranks product categories by their total sales volume. This information is useful for understanding which categories are most popular and contribute most significantly to overall sales.

| product_category | ordered_quantity |
|------------------------------|------------------|
| Hair Care | 12125 |
| Curly & Wavy Hair | 6716 |
| Best Sellers | 6667 |
| Free From Sulfate & Silicone | 6534 |
| Minis | 4283 |
| Frizzy or Dry & Damaged Hair | 3238 |
| Kids | 2971 |

| | |
|--------------------------------|------|
| Shower Gel & Cream | 2932 |
| Colored or Blonde or Grey Hair | 2373 |
| Natural | 2246 |

Revenue Contribution by Product Category

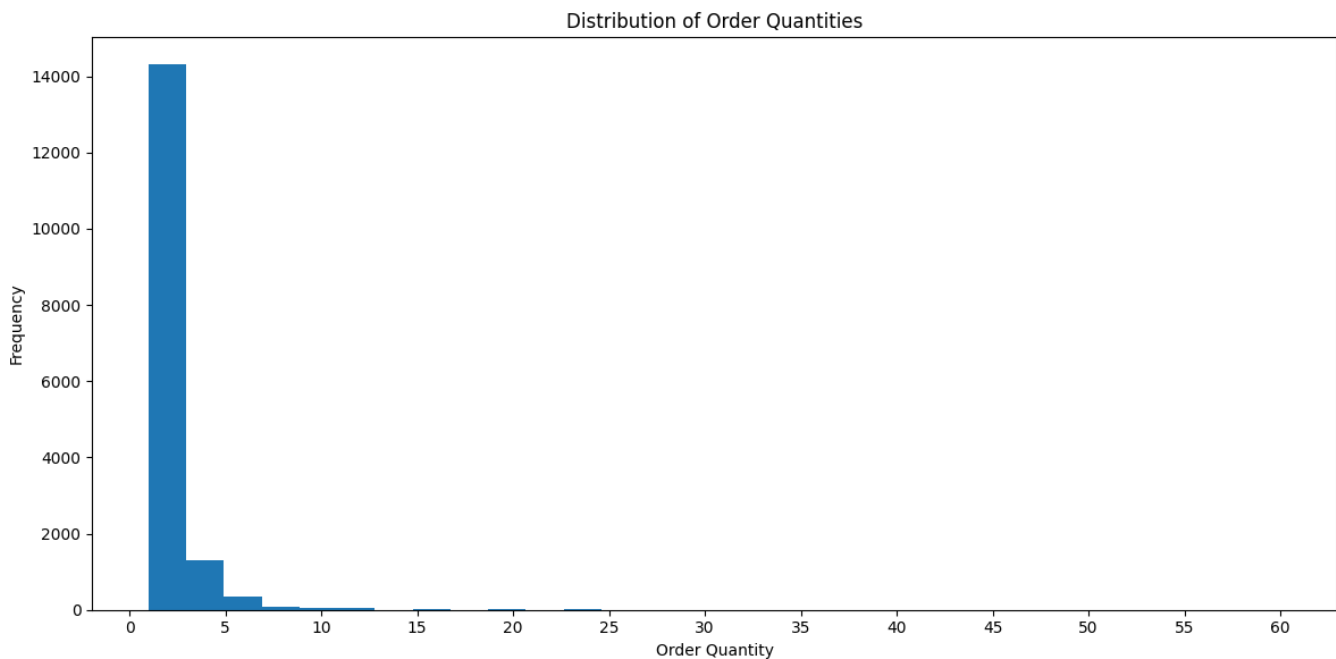
The 'Revenue Contribution by Product Category' plot shows the percentage of total revenue generated by each product category. It highlights the most financially significant categories and helps identify which ones drive the most revenue.



Distribution of Order Quantities

The 'Distribution of Order Quantities' plot is a histogram that visualizes the frequency of various order quantities placed by customers. It provides insight into purchasing behavior by showing how many items are

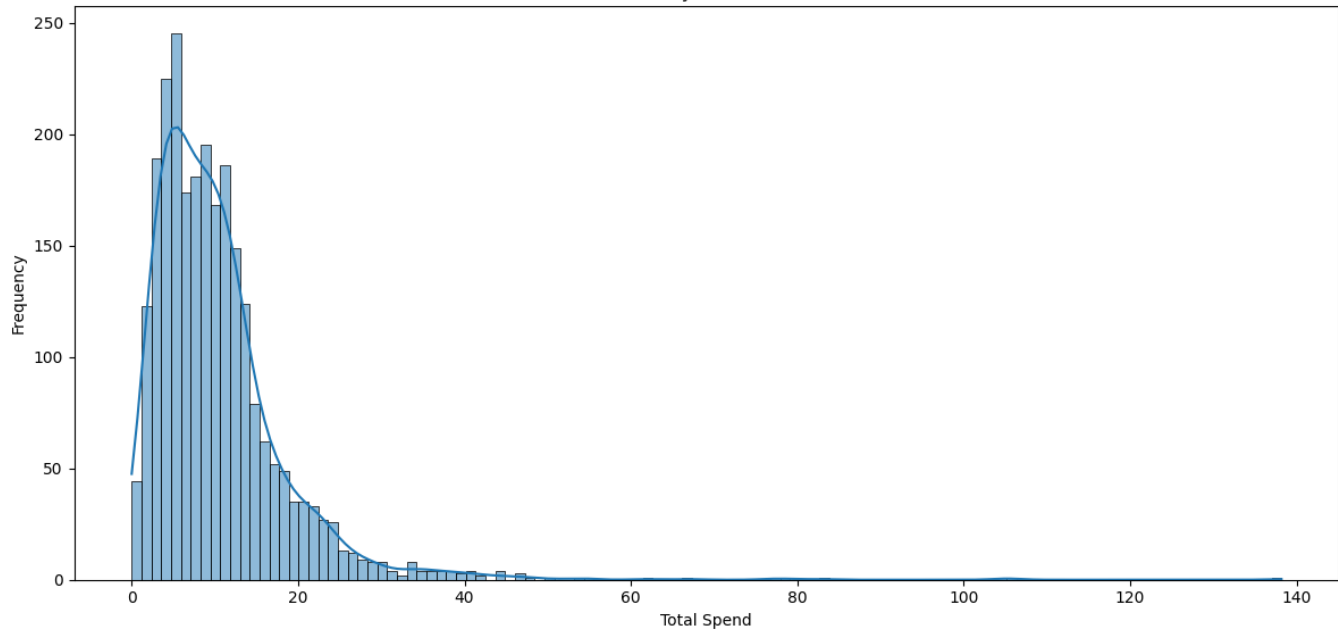
typically ordered in a single transaction. This histogram helps identify common order sizes, revealing whether customers typically buy single items or larger quantities.



Monetary Distribution

The 'Monetary Distribution' plot is a histogram that displays the distribution of total spending per order, showing the frequency of different spending levels by customers. It helps to understand the monetary value of transactions, indicating how much customers typically spend in a single purchase.

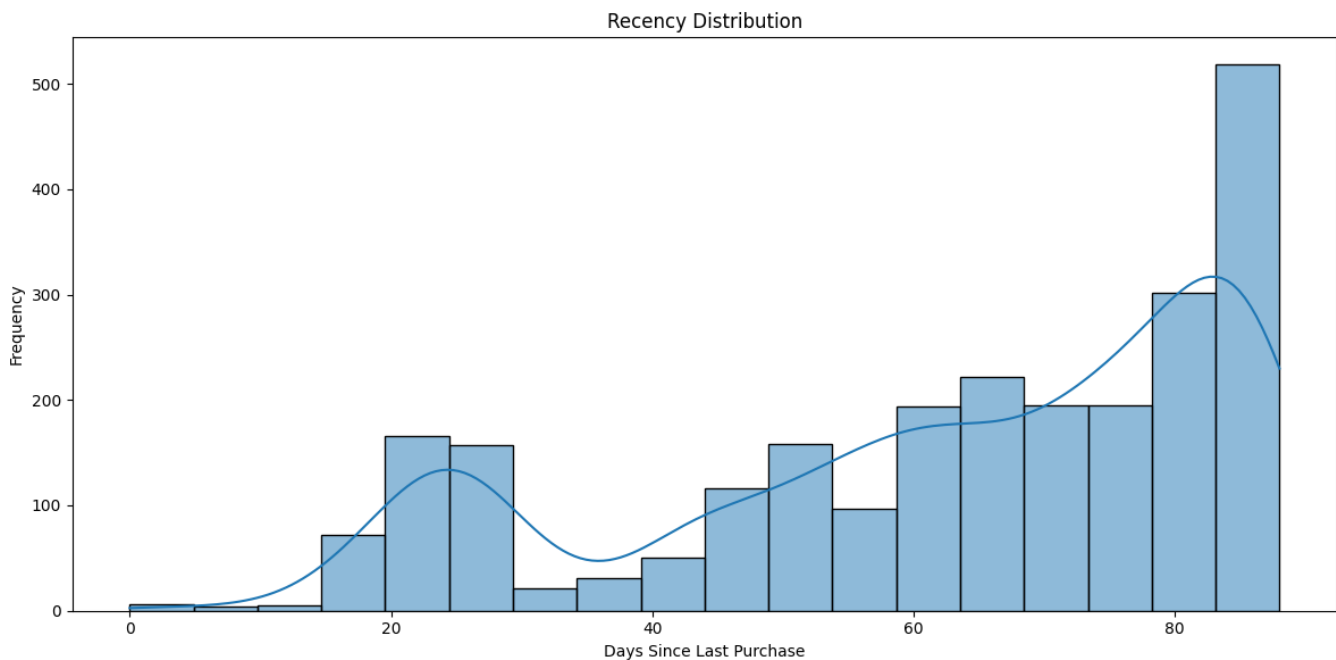
Monetary Distribution



Section 2: Order Analysis

Recency Distribution

The 'Recency Distribution' plot is a histogram that illustrates the distribution of the number of days since customers last made a purchase. This plot provides insight into customer engagement by showing how recently customers have interacted with the business. The x-axis represents the number of days since the last purchase, while the y-axis shows the frequency of customers falling into each recency category. This analysis helps identify the proportion of recent versus infrequent customers, which can be useful for tailoring marketing and retention strategies.



Order Quantity Statistics

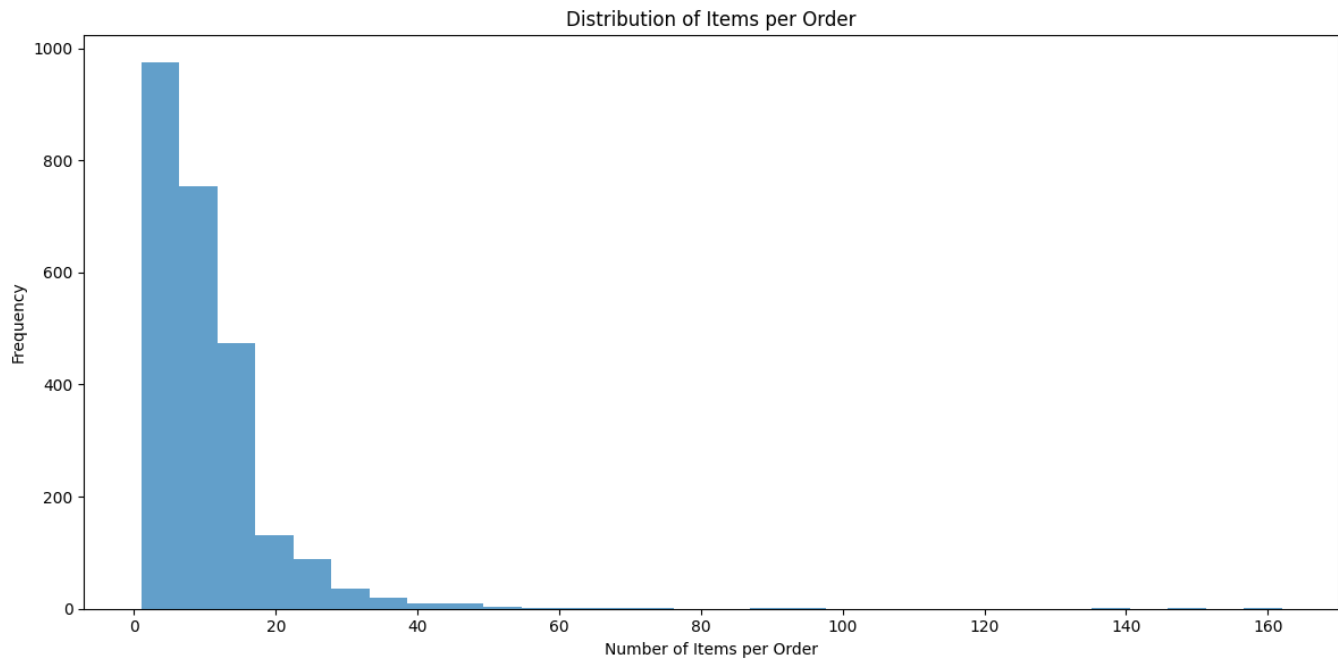
The 'Order Quantity Statistics' table presents summary statistics for the quantity of items ordered per transaction. It provides key metrics such as the average, minimum, maximum, median, and quartiles (Q1 and

Q3) of the total items ordered in each transaction. This table offers a comprehensive overview of order sizes, highlighting typical order quantities, the range of quantities ordered, and the distribution's central tendency and spread. This information can help in understanding customer purchasing patterns.

| Statistic | Value |
|--------------------------|--------------------|
| Average | 10.261060183339977 |
| Minimum | 1.0 |
| Maximum | 162.0 |
| Q1 (25th percentile) | 5.0 |
| Median (50th percentile) | 8.0 |
| Q3 (75th percentile) | 13.0 |

Distribution of Items per Order

The 'Distribution of Items per Order' plot is a histogram that visualizes the frequency of different quantities of items ordered in a single transaction. It shows how many transactions include specific numbers of items, providing insight into typical order sizes. This plot helps identify common order sizes, whether customers often purchase single items or multiple items, and the overall distribution of items per transaction.



Section 3: Pricing and Discount Analysis

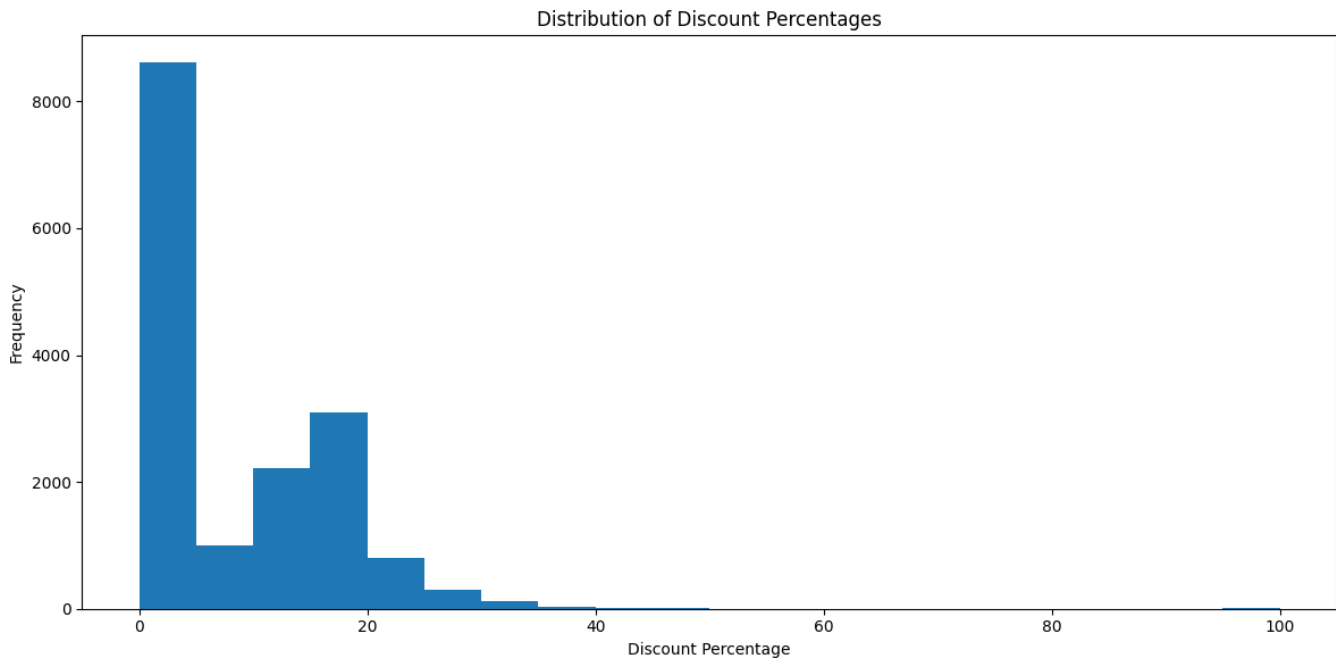
Distribution of Selling Prices and List Prices

The 'Distribution of Selling Prices and List Prices' plot is a histogram that shows the frequency distribution of both the selling prices and list prices of products. The plot helps to understand the range and distribution of prices at which products are sold (selling price) compared to their original or undiscounted prices (list price).



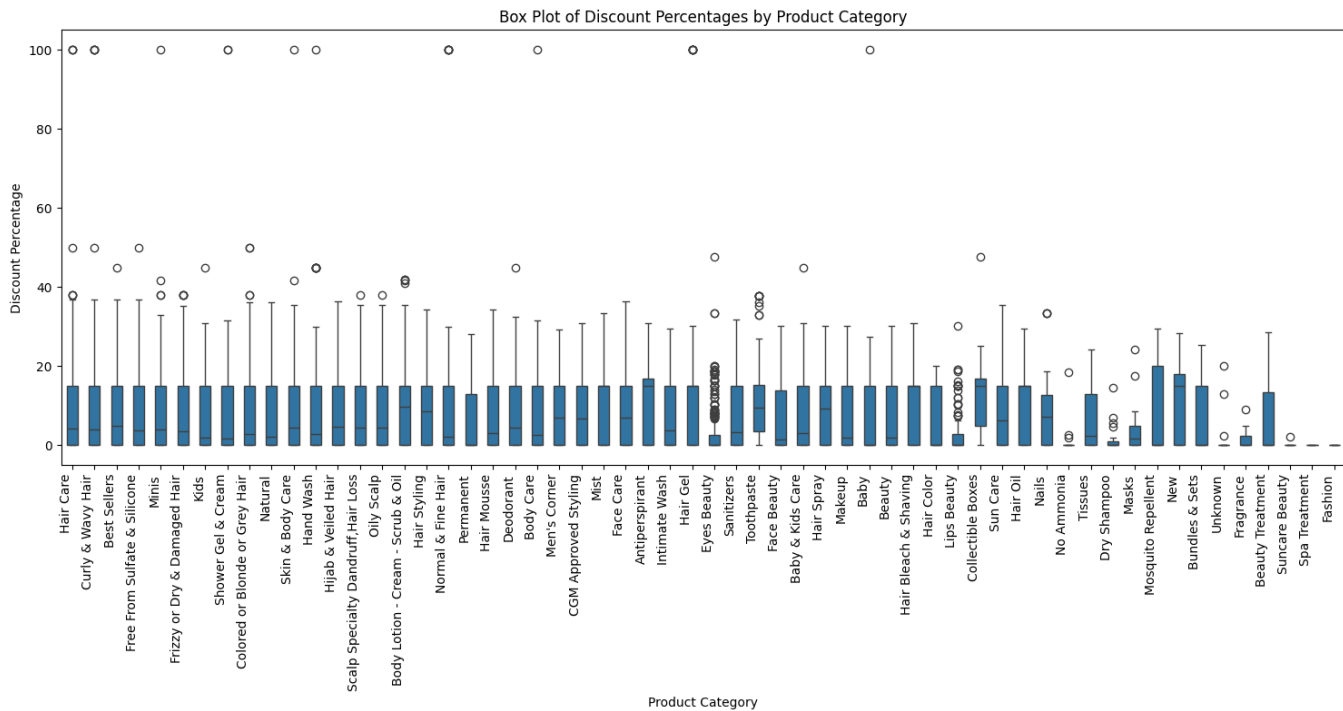
Distribution of Discount Percentages

The 'Distribution of Discount Percentages' plot is a histogram that displays the frequency distribution of discount percentages applied to products. It provides insight into the range and prevalence of discounts offered on products. This plot helps to identify common discount levels and the extent of price reductions across the product range.



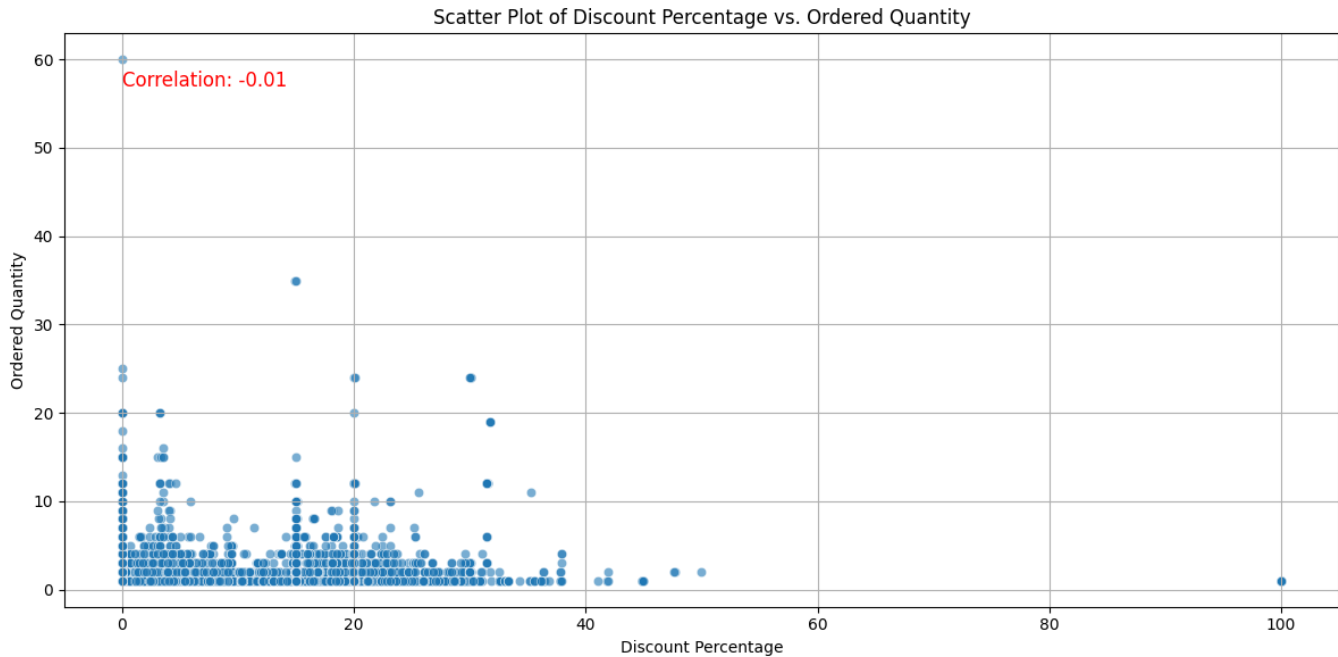
Discount Percentage by Category

The 'Discount Percentage by Category' plot shows the variation in discount percentages across different product categories. This visualization helps to understand how discounting strategies differ between categories and which categories offer higher or lower discounts.



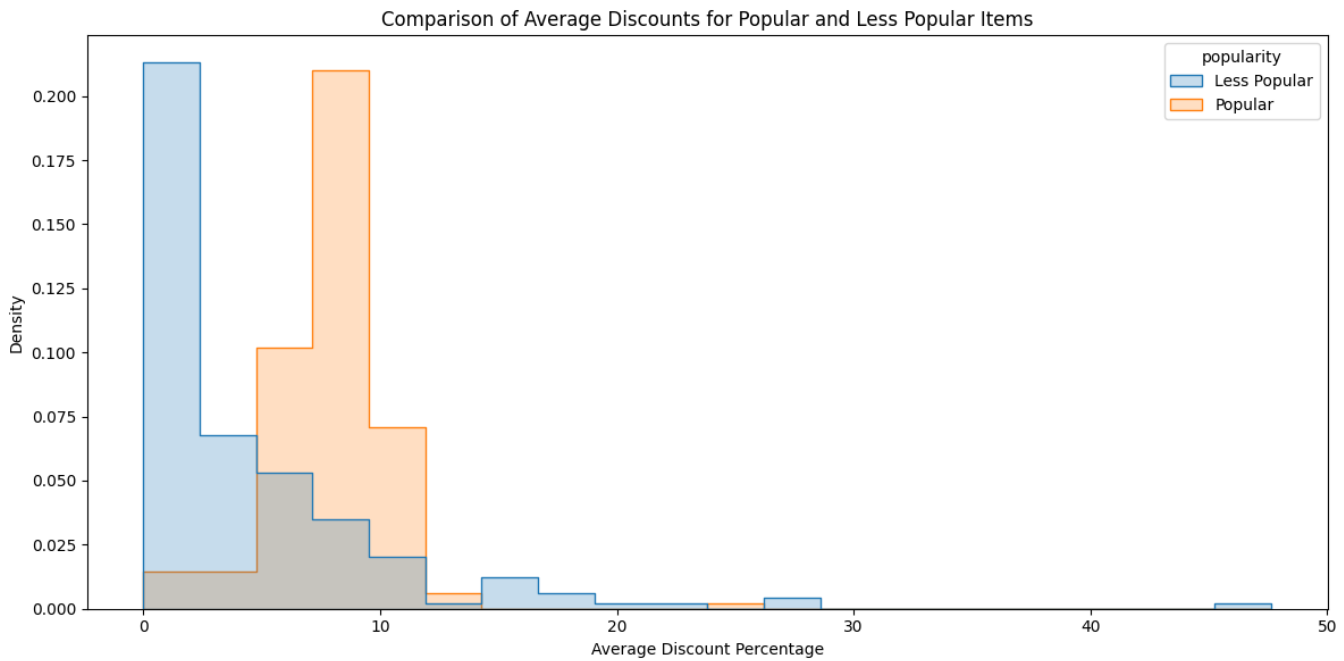
Scatter Plot of Discount Percentage vs. Ordered Quantity

The 'Scatter Plot of Discount Percentage vs. Ordered Quantity' shows the relationship between the discount percentage applied to products and the quantity ordered. It helps to analyze whether higher discounts correlate with higher sales volumes, providing insights into the effectiveness of discount strategies.



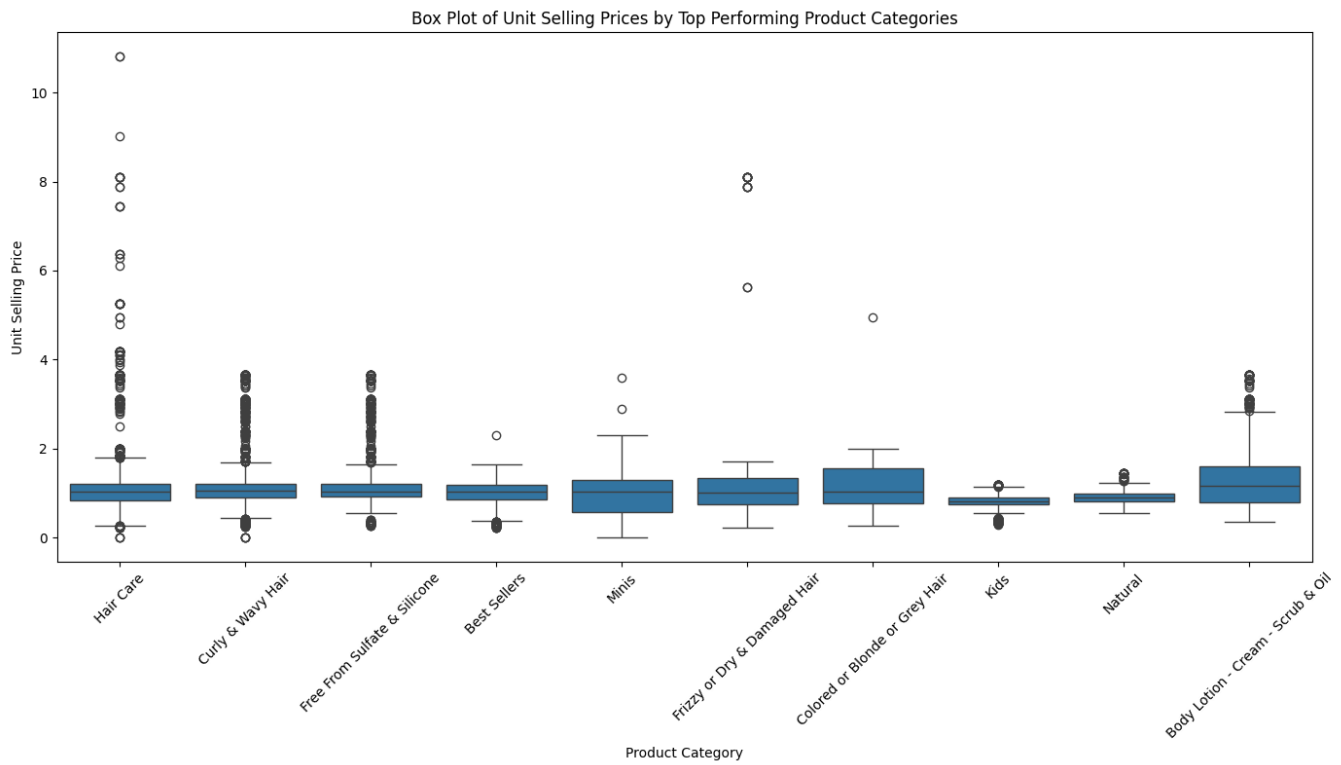
Comparison of Average Discounts for Popular and Less Popular Items

The 'Comparison of Average Discounts for Popular and Less Popular Items' plot is a histogram that compares the average discount percentages applied to popular and less popular items. The items are categorized based on their sales volume, with 'popular' items having sales above the median and 'less popular' items below. This plot helps to understand how discount strategies vary based on product popularity, showing the distribution of average discounts for each category. It provides insight into whether popular or less popular items receive larger discounts on average.



Box Plot of Unit Selling Prices by Top Performing Product Categories

The 'Box Plot of Unit Selling Prices by Top Performing Product Categories' visualizes the range and distribution of unit selling prices across the top-performing product categories. This plot provides insight into the pricing strategies within these categories, highlighting price variations and the median price point.



Section 4: Supply Chain Analysis

Top Distributing Companies by Quantity Shipped

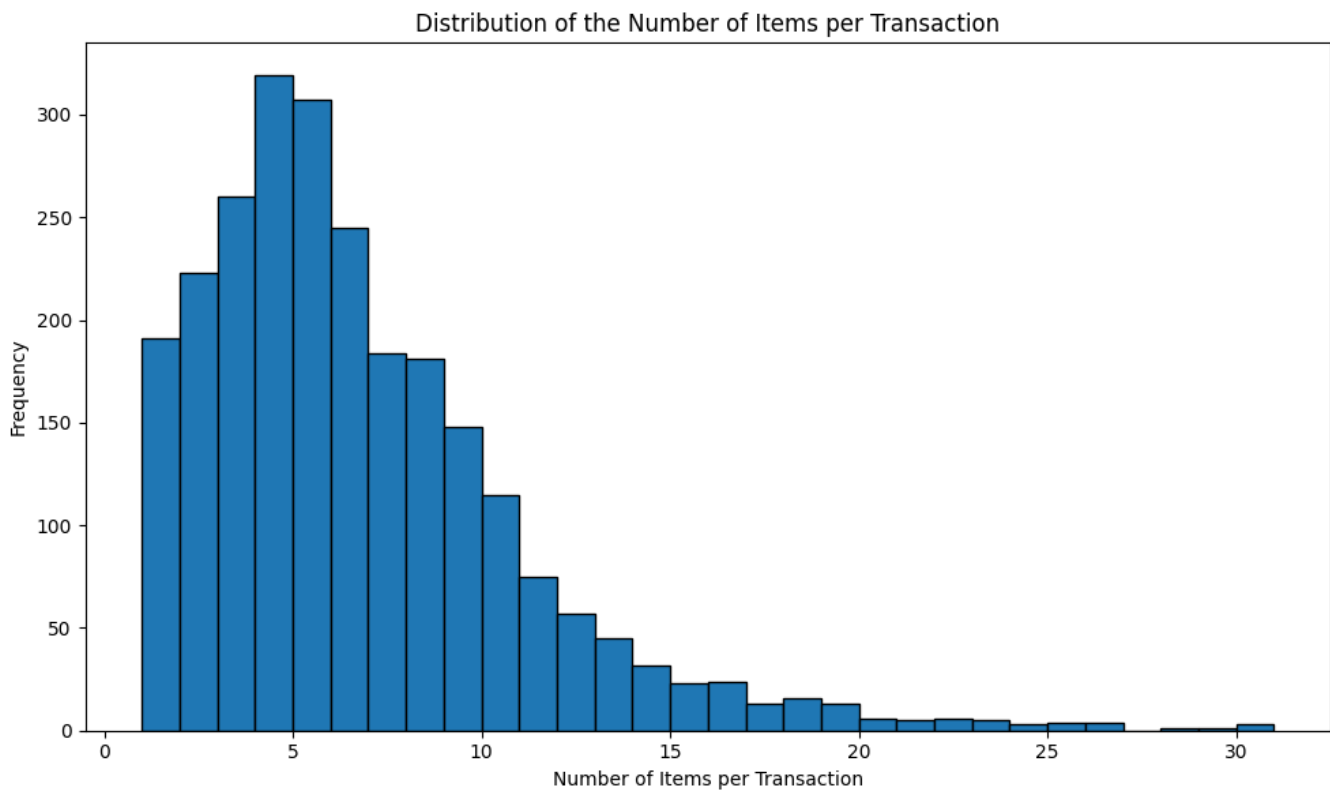
The 'Top Distributing Companies by Quantity Shipped' treemap visualizes the quantity of items shipped by each distributor. It provides a clear view of the most active distribution companies, showing their relative contribution to the total shipments. This visualization helps to understand the role and impact of different distributors in the supply chain.



Section 5: Product Positioning

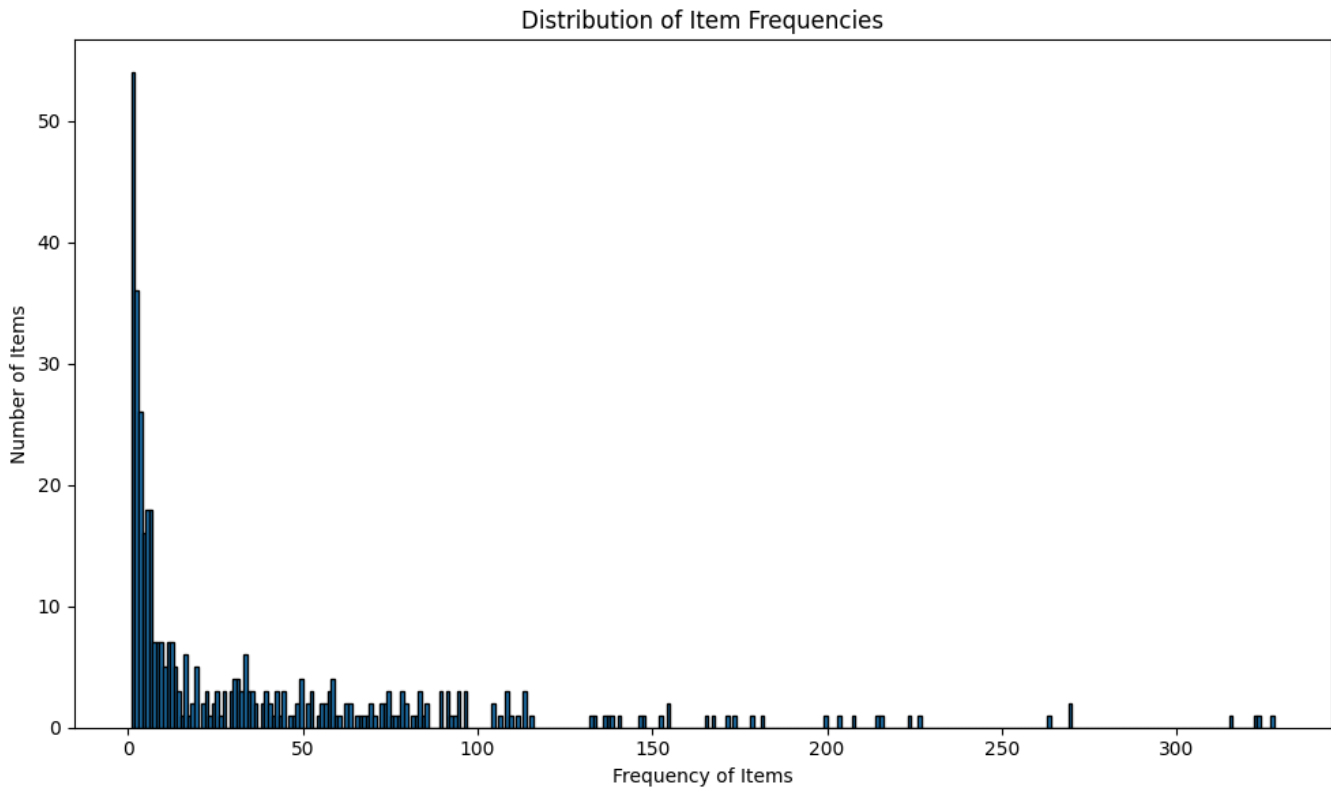
Transaction Diversity

The 'Transaction Diversity' plot shows the diversity in transactions by displaying the number of unique items purchased in each transaction. It helps to understand whether customers are buying a wide variety of products or focusing on a few specific items.



Distribution of Item Frequencies

The 'Distribution of Item Frequencies' plot shows how frequently each product is purchased. This plot provides insight into product popularity and helps identify which products are commonly bought together.



Transaction Diversity Statistics

The 'Transaction Diversity Statistics' table presents summary statistics regarding the number of unique items purchased per transaction. It provides key metrics such as the mean, median, minimum, maximum, and quartiles (Q1 and Q3) of the unique items in each transaction. This table offers an overview of how varied customer purchases are in terms of product diversity within a single transaction.

| Statistic | Value |
|-----------|-------------------|
| count | 2509.0 |
| mean | 6.313670785173376 |
| std | 4.319854255216399 |
| min | 1.0 |

| | |
|-----|------|
| 25% | 3.0 |
| 50% | 5.0 |
| 75% | 8.0 |
| max | 31.0 |

Item Frequency Statistics

The 'Item Frequency Statistics' table provides summary statistics on how frequently each item is purchased across all transactions. It includes key metrics such as the mean, median, minimum, maximum, and quartiles (Q1 and Q3) for the frequency of item purchases. This table offers insights into the popularity of different products, highlighting how often items are bought on average, the range of purchase frequencies, and the distribution of these frequencies.

| Statistic | Value |
|-----------|--------------------|
| count | 407.0 |
| mean | 38.92137592137592 |
| std | 57.368257388015934 |
| min | 1.0 |
| 25% | 3.0 |
| 50% | 12.0 |
| 75% | 55.5 |
| max | 328.0 |

Considered as Niche Products



The 'Considered as Niche Products' section lists products identified as niche based on specific criteria. These products are less frequently purchased but may cater to specific customer segments or interests. Understanding niche products helps in targeting niche markets and optimizing inventory. Below is a block containing all Niche Products

collistar reshaping draining solution refill, essence grow like a boss lash brow growth, fine napkin 40 1ply black, essence soft touch mousse make up, cosmal cure professional hair color cream hazelnut 7 3 developer, essence brow like a boss ink brow gel, fusion intense repair conditioner, koleston kit medium blonde 7, cosmal cure professional hair color cream medium blonde ash pearl 7 18 developer, essence jurassic world, collistar hyaluronic acid aqua gel, kadus color radiance shampoo, catrice 48h power stay brow gel, collistar anticellulite cryo gel boosted, essence french manicure sheer beauty nail polish, shiseido uv protective compact foundation spf 30 dark, invigo balance clean scalp shampoo, kadus deep moisture leave in conditioning spray, koleston maxi single chocolate brown 306 7, catrice professional brow palette, cosmaline smiles small, essence lash princess liner, koleston naturals red devotion 5, essence brow pomade brush, cosmal cure professional hair color cream gold blonde 9 3 developer, catrice skin face serum, koleston maxi single blue black 301 0, collistar eye hydro gel ice, koleston kit light brown 5, collistar protection milk spray spf50, koleston naturals dark ash blonde 6, essence mattifying compact powder, koleston kit exotic red 55, soft color kit 28 blue, soft color kit 77 golden, essence pumpkins pretty matte nail polish, kadus visible repair leave in conditioning balm, koleston kit hazelnut 7, soft color kit 71 ash, smk imperial lash mascara ink, collistar collagen cream, cosmaline antiperspirant roll on bright sensation, kadus velvet oil 100, fusion intense repair shampoo, koleston maxi single dark brown 303 0, essence matt mousse mk up, catrice disney princess pocahontas hydrogel facemask, essence disney lion king eyeshadow palette, cosmal cure professional hair color cream dark blonde matt 6 2 developer, koleston maxi single light brown 305 0, koleston kit light ash



blonde 8, koleston kit medium ash blonde 7, men s woven baseball cap c, gsc bb for sports, essence pumpkins pretty smoothing lip patch, cosmaline micellar cleansing water in oil, shiseido day spa deep back massage targeted stress massage for men and women 30, cosmal cure professional hair color cream burgundy 4 6 developer, essence welcome to cape town eyeshadow, essence gel nail polish 40 isn t she, collistar reshaping draining wraps, invigo leave in wonder balm, essence gel nail polish 01 gloss n, eimi sugar lift, cosmal cure professional hair color cream honey blonde 8 3 developer, cosmaline baby discovery kit, essence disney mickey friends bouncy, koleston maxi single chestnut 305 4, essence pumpkins pretty creamy shadow liner, essence pumpkins pretty eyeshadow palette, essence french manicure tip painter, essence disney princess jasmine false lashes, soft color kit 70 natural, cosmal cure professional hair color cream extra light blonde 9 0 developer, essence after shape brow roller cooling and, essence love that glow bronze, essence super fine liner pen, koleston kit dark brown 3, catrice skin face mask spatula, koleston maxi single dark blonde 306 0