

Quantium Chips Category Analysis: Task 1

Your Name Here

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0.1 1. Introduction

To: Zilinka From: Garvit Akar Subject: Initial Findings - Chip Category Analysis

This report outlines the initial analysis of the chip category, focusing on customer segments and purchasing behavior as requested. The analysis follows three main stages:

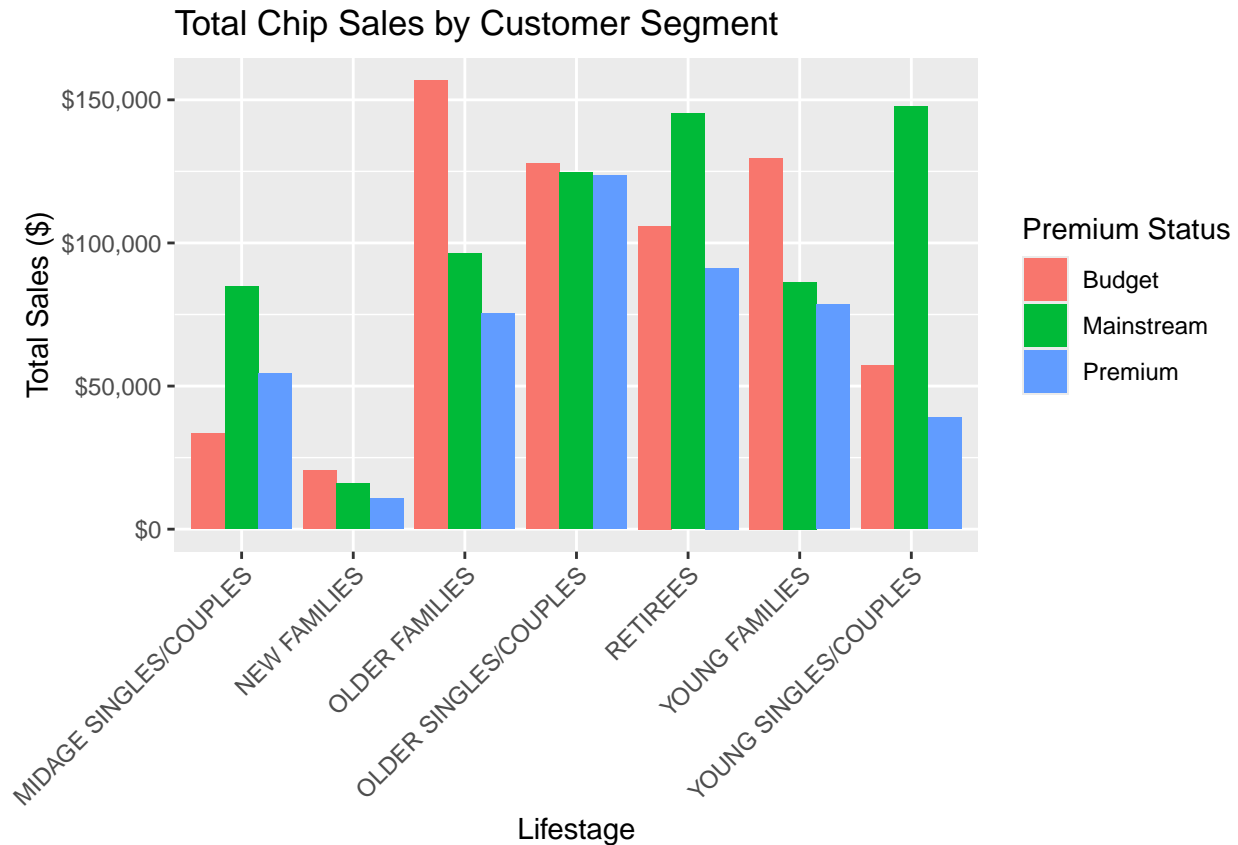
1. **Data Examination:** Transaction and customer data were loaded, cleaned, and merged. Outliers and non-chip items were removed.
2. **Metrics & Exploration:** We analyzed total sales and average price per item by customer segment to identify high-value groups.
3. **Deep Dive & Recommendation:** We performed a deep dive into our key target segment to understand their specific brand and pack size preferences.

0.2 2. Overall Customer Segmentation

We began by defining our key metrics: total sales and average price per item, broken down by lifestage and premium status.

0.2.1 2.1. Total Sales by Segment

Total sales volume is heavily driven by **Budget - Older Families**, **Mainstream - Young Singles/Couples**, and **Mainstream - Retirees**.



0.2.2 2.2. Average Price Per Item

While Budget families drive volume, we see a different story in price sensitivity. **Mainstream - Young Singles/Couples** pay the highest average price per item (\$4.07).

To confirm this, we ran a statistical t-test.

```
# We test if "Mainstream, young singles/couples" spend more per item
# than other customers.
```

```
target_prices <- full_data %>%
  filter(
    LIFESTAGE == "YOUNG SINGLES/COUPLES",
    PREMIUM_CUSTOMER == "Mainstream"
  ) %>%
  pull(PRICE_PER_ITEM)

other_prices <- full_data %>%
  filter(
    !(LIFESTAGE == "YOUNG SINGLES/COUPLES" &
      PREMIUM_CUSTOMER == "Mainstream")
  ) %>%
  pull(PRICE_PER_ITEM)
```

```
# Run the T-Test
```

```
test_result <- t.test(target_prices, other_prices, alternative = "greater")  
print(test_result)
```

```
##  
## Welch Two Sample t-test  
##  
## data: target_prices and other_prices  
## t = 33.743, df = 23653, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is greater than 0  
## 95 percent confidence interval:  
## 0.2409413 Inf  
## sample estimates:  
## mean of x mean of y  
## 4.065642 3.812353
```

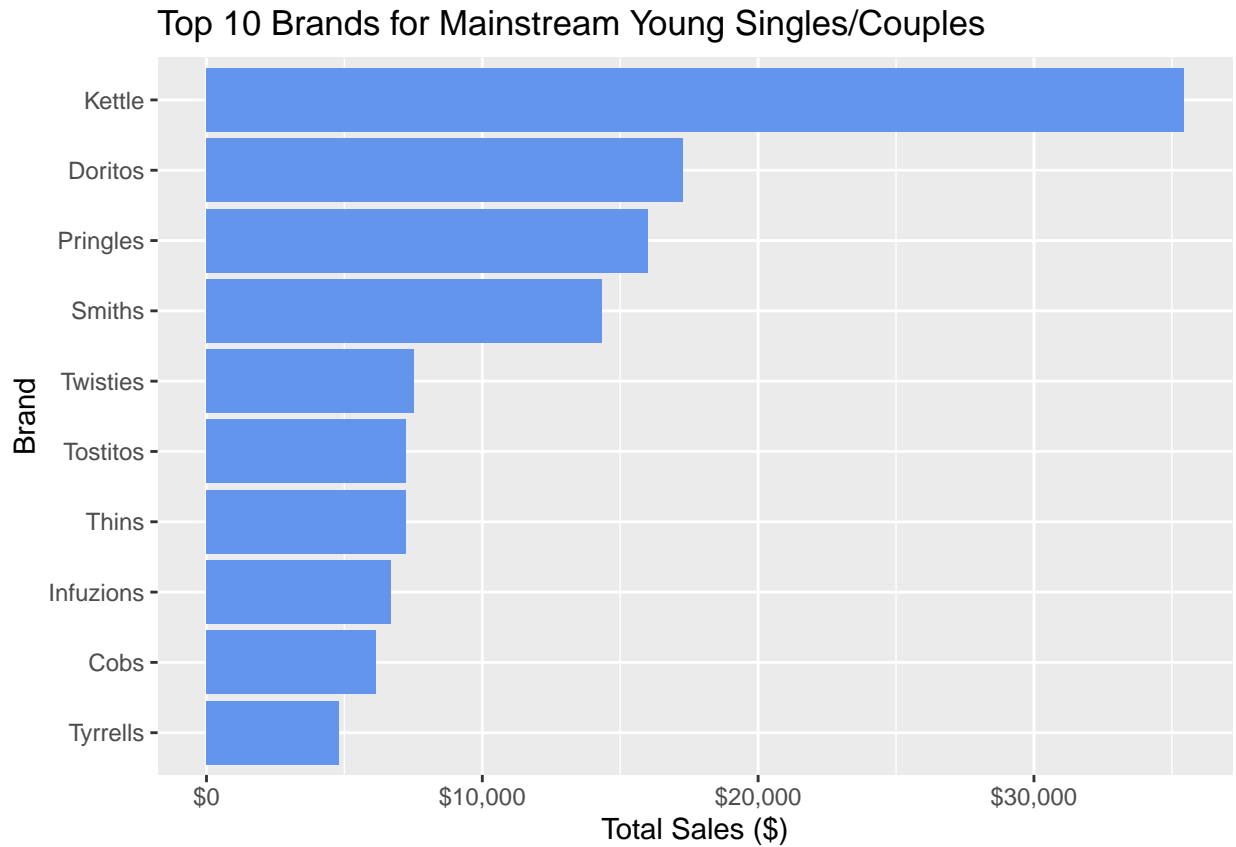
Finding: The p-value is extremely small ($< 2.2e-16$), which is **highly statistically significant**. We can confidently conclude that **Mainstream, young singles/couples** spend more per item than other shoppers.

0.3 3. Deep Dive: Mainstream Young Singles/Couples

This segment is our **key target** as they contribute high total sales *and* are willing to pay a premium price. We analyzed *what* they buy.

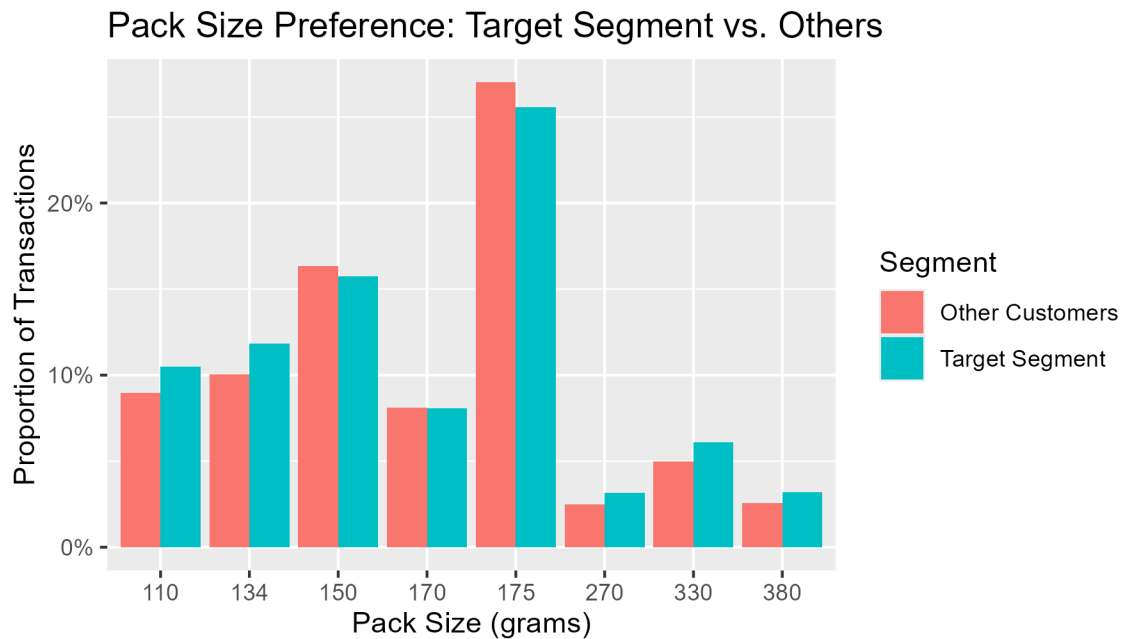
0.3.1 3.1. Preferred Brands

This segment strongly prefers Kettle chips, which account for a significant portion of their total spending.



0.3.2 3.2. Preferred Pack Size

Our analysis of pack size preferences shows a clear trend: this segment **over-indexes on 175g bags**. They buy a significantly higher proportion of 175g bags compared to all other customers.



0.4 4. Initial Recommendations for Julia

Based on this analysis, here are our initial findings and recommendations:

- **1. Primary Target Segment:** The most commercially valuable segment to target is “**Mainstream, young singles/couples.**”
- **2. Justification:** This segment is a key driver of sales, ranking #2 for total sales. Crucially, they are not price-sensitive and our t-test confirms they pay a **significantly higher price per item** than other shoppers.
- **3. Actionable Strategy:** This segment shows a distinct preference for **Kettle-branded chips** and **175g pack sizes**. We recommend increasing in-store promotions, visibility, and stock levels for these specific products to further drive sales within this high-value segment. ““