Quantium Retail Analytics Report

🧠 Executive Summary

The trial layout for chips in selected stores did **not result in a statistically significant improvement** in key performance metrics. However, customer segmentation and product performance analysis identified areas of strength and potential growth opportunities that can inform future business strategies.

---

1. Customer and Product Insights :

- **Customer Segments**:
  - **Top Performer**: Older Families (Budget) ➔ Highest sales and transaction volume
  - Strong performance also seen in Retirees (Mainstream) and Young Singles/Couples (Mainstream)
  - **Underperformers**: New Families and Premium customers
- **Product Performance**:
  - **Top Seller**: Dorito Corn Chip Supreme 380g (Total Sales: $40,352)
  - **Popular Brands**: Smiths and Kettle appeared multiple times in top 20
  - **Cross-Selling**: Salsa dips (e.g., Old El Paso) suggest potential for bundled promotions
- **Sales Trends**:
  - Peak on **Fridays**, followed by **Wednesdays** and **Saturdays**
  - **No sales on Sundays** ➔ Suggests stores closed

2. Trial vs Control Store Evaluation :

- **Objective**: Evaluate whether the trial layout (Feb–Jul 2019) improved performance in stores 77, 86, and 88.
- **Analysis**: Conducted T-tests comparing trial and matched control stores.
- **Results**:
  - **Total Sales**: P-value = 0.918 ➔ No significant difference
  - **Customer Count**: P-value = 1.0 ➔ No significant difference
  - **Transactions per Customer**: P-value = 1.0 ➔ No significant difference
- **Conclusion**: The new layout did **not produce measurable impact** during the trial period.
- **Visual Insight**:

- Sales spiked in **December 2018**, peaking on **December 24**.
- Slight dip observed around **May 2019**.

🧠 Executive Summary

The trial layout for chips in selected stores did **not result in a statistically significant improvement** in key performance metrics. However, customer segmentation and product performance analysis identified areas of strength and potential growth opportunities that can inform future business strategies.

🔍 Key Findings

1. Trial vs Control Store Evaluation (Task 2)

- **Objective**: Evaluate whether the trial layout (Feb–Jul 2019) improved performance in stores 77, 86, and 88.
- **Analysis**: Conducted T-tests comparing trial and matched control stores.
- **Results**:
  - **Total Sales**: P-value = 0.918 ➔ No significant difference
  - **Customer Count**: P-value = 1.0 ➔ No significant difference
  - **Transactions per Customer**: P-value = 1.0 ➔ No significant difference
- **Conclusion**: The new layout did **not produce measurable impact** during the trial period.
- **Visual Insight**:

  - Sales spiked in **December 2018**, peaking on **December 24**.
  - Slight dip observed around **May 2019**.

2. Customer and Product Insights (Task 1)

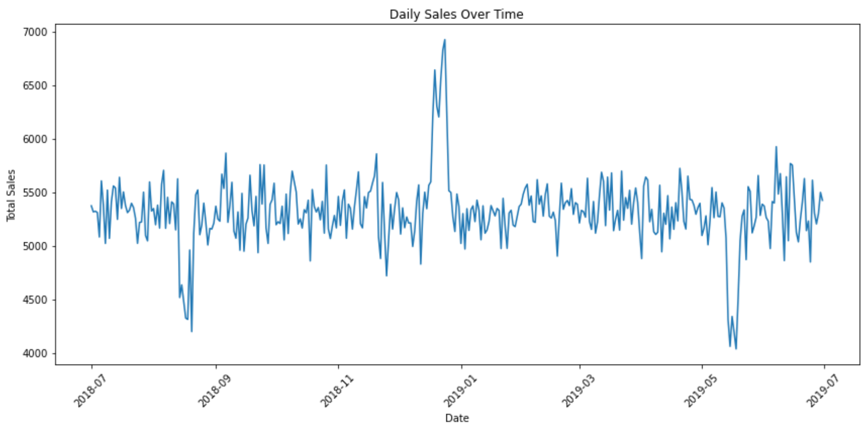
- **Customer Segments**:
  - **Top Performer**: Older Families (Budget) ➔ Highest sales and transaction volume
  - Strong performance also seen in Retirees (Mainstream) and Young Singles/Couples (Mainstream)
  - **Underperformers**: New Families and Premium customers
- **Product Performance**:
  - **Top Seller**: Dorito Corn Chip Supreme 380g (Total Sales: $40,352)
  - **Popular Brands**: Smiths and Kettle appeared multiple times in top 20

- **Cross-Selling**: Salsa dips (e.g., Old El Paso) suggest potential for bundled promotions

- **Sales Trends**:
    - Peak on **Fridays**, followed by **Wednesdays** and **Saturdays**
    - **No sales on Sundays ➔** Suggests stores closed

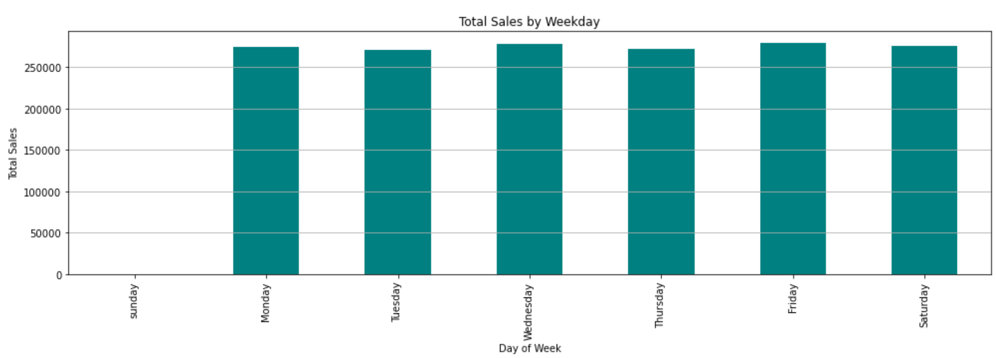
📊 Visual Highlights

- **Daily Sales Over Time**



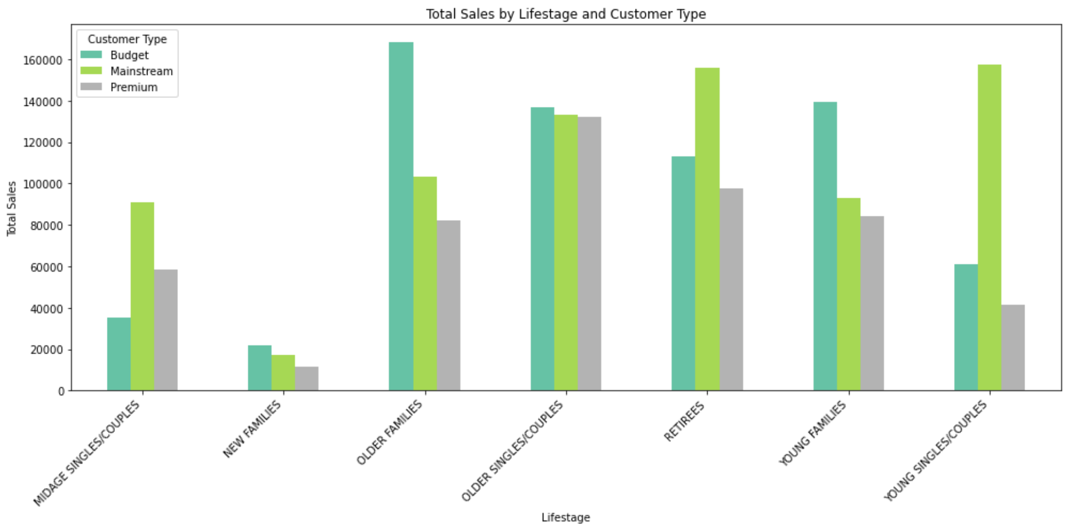
    - Clear seasonal patterns with December peak
    - Trial period (Feb–Jul 2019) shows no standout trend

- **Sales during the week:**



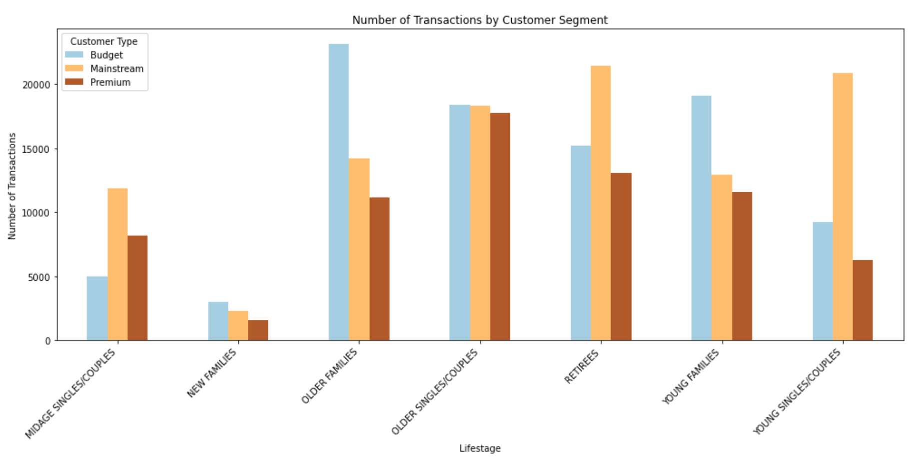
    - Friday is the highest sales day, followed closely by Wednesday and Saturday.
    - The weekday sales chart confirms consistent performance across the week, except for Sunday.

- **Customer Segmentation Sales Chart**



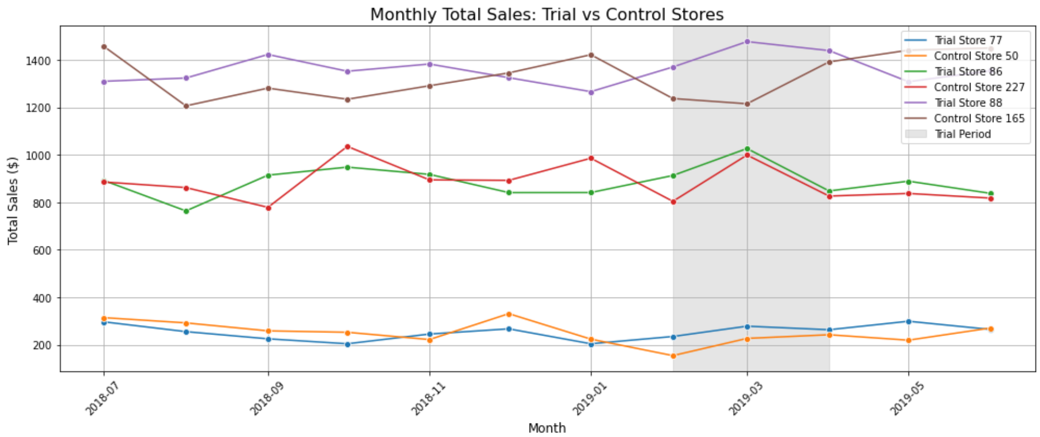
  - Budget/Mainstream dominate
  - Premium has fewer transactions but higher average spend

- **Customer Transactions by Customer Segment**



  - Budget and Mainstream segments are more prominent in sales and transactions.
  - Premium segments have fewer transactions but higher average spends.

- **Trial vs Control Stores**



   - A trial period appears to have positively impacted sales at trial store 77, bringing its performance closer to other high-performing stores. However, the trial's effect on store 86 is ambiguous, while store 88's consistently high sales suggest it may be less affected by such interventions.
   - **Control vs. Trial:**The relatively stable sales of the control stores provide a baseline against which to measure the trial's impact. Further analysis, including percentage change calculations and statistical tests, is needed to draw definitive conclusions about the trial's effectiveness.