

Retail Transaction and Customer Segmentation Analysis (Quantum Case Study)

Luthando Mbuyane

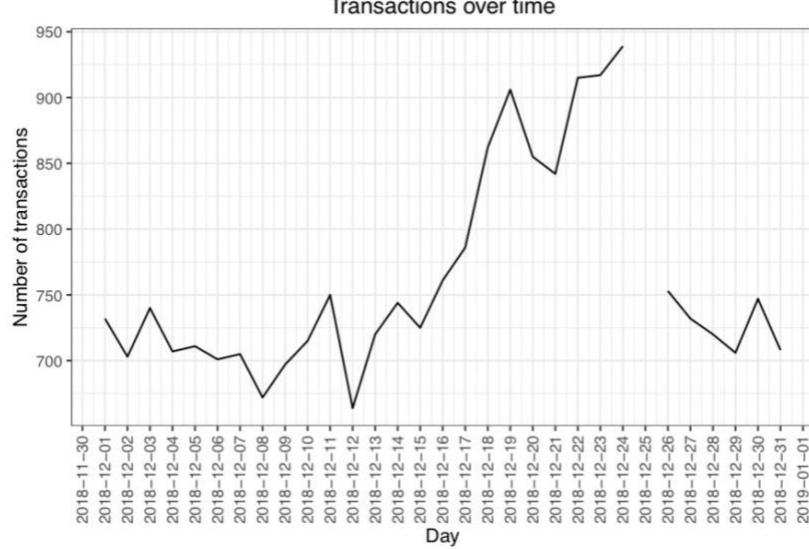
This case study analyses retail transaction data provided as part of the Quantum Virtual Internship. The objective is to understand overall transaction trends and identify customer segments that contribute disproportionately to sales, in order to inform targeted commercial and marketing strategies.

Data Overview and Assumptions

The dataset contains daily transaction records over a multi-month period, including customer lifestage and premium segmentation. Customers are classified into Budget, Mainstream, and Premium groups, and lifestage categories such as Young Singles/Couples, Older Families, and Retirees. All analysis assumes data completeness over the observed period, with no adjustments made for inflation or pricing changes.

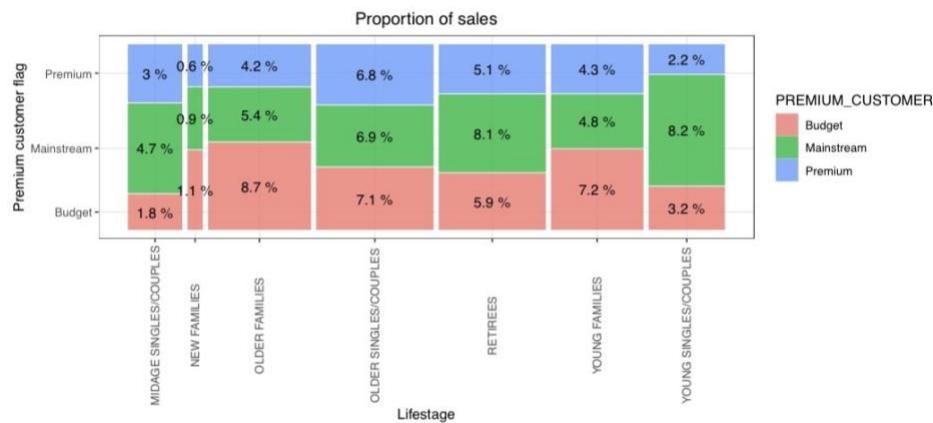
Transaction Trends Over Time

Daily transaction volumes remain relatively stable across most of the observed period, fluctuating around a consistent baseline. A pronounced spike occurs in late December, indicating a seasonal uplift likely driven by holiday-related purchasing behaviour. Following this peak, transaction volumes revert toward baseline levels, suggesting the increase was event-driven rather than structural.



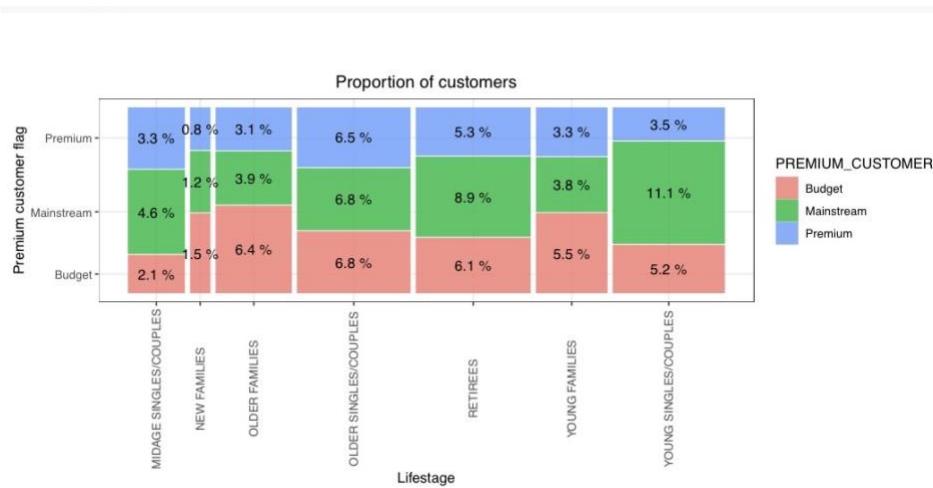
Customer Segmentation and Sales Contribution

Analysis of sales contribution by lifestage and premium segment reveals meaningful differences between customer share and revenue share. Older Families and Retirees contribute a higher proportion of total sales relative to their population size, particularly within the Mainstream and Premium segments. In contrast, some younger segments exhibit higher representation in customer counts but lower proportional sales.



Customer Distribution by Segment

When examining customer counts, Mainstream customers form the largest group across most lifestages. However, Premium customers, while smaller in number, often generate a disproportionately higher share of sales. This divergence highlights opportunities to tailor product offerings and pricing strategies by segment.



Key Insights and Commercial Implications

The analysis suggests that revenue growth opportunities lie in deepening engagement with high-value segments such as Premium Retirees and Older Families, while optimising conversion strategies for younger and Budget-focused customers. Targeted promotions

during peak seasonal periods may further amplify revenue without requiring sustained increases in baseline demand.

Limitations and Next Steps

This analysis does not account for product-level margins or customer lifetime value, which could further refine prioritisation decisions. Future work could incorporate basket analysis, longitudinal customer behaviour, and controlled experimentation to validate the effectiveness of targeted interventions.