June 2020

Category review: Chips

Retail Analytics

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Our 17 year history assures best practice in privacy, security and the ethical use of data

Privacy

- We have built our business based on privacy by design principles for the past 17 years
- Quantium has strict protocols around the receipt and storage of personal information
- All information is de-identified using an irreversible tokenisation process with no ability to re-identify individuals.

Security

- We are ISO27001 certified - internationally recognised for our ability to uphold best practice standards across information security
- We use 'bank grade' security to store and process our data
- Comply with 200+ security requirements from NAB, Woolworths and other data partners
- All partner data is held in separate restricted environments
- All access to partner data is limited to essential staff only
- Security environment and processes regularly audited by our data partners.

Ethical use of data

Applies to all facets of our work, from the initiatives we take on, the information we use and how our solutions impact individuals, organisations and society.

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We all have a responsibility to use data for good

Quantium believes in using data for progress, with great care and responsibility. As such please respect the commercial in confidence nature of this document.

Executive summary

01 Task 1

- **Budget Older Families drive highest total sales** despite having fewer customers, indicating high spending power per customer in this segment.
- **Mainstream Young Singles/Couples represent the largest customer base** but with lower individual spend, presenting significant growth opportunity through targeted strategies.
- **Mainstream customers pay premium prices** - statistical testing confirms they pay significantly higher unit prices compared to Budget segments.
- **Strong brand affinity patterns identified** in target segments, with specific chip brands showing clear preference among Mainstream Young Singles/Couples.
- **Seasonal sales patterns detected** with December showing notable transaction spikes, plus successful data cleaning removed outliers (200-packet purchases) and salsa products

02 Task 2

- **Control stores successfully selected**: Store 77→233, Store 86→155, Store 88→237, ensuring valid comparison baselines for trial assessment.
- **Trial shows 67% success rate** with 2 out of 3 stores (77 and 88) demonstrating significant positive sales impact during February-April 2019 trial period.
- **Store 86 requires pricing strategy review** - while customer numbers increased significantly, sales impact was not statistically significant, suggesting pricing optimization needed.
- **Statistical significance confirmed** through 95% confidence interval testing with proper pre-trial scaling, providing reliable framework for future trial assessments.
- **Robust control store methodology established** using 50% correlation + 50% magnitude distance scoring to identify best-matched control stores for each trial location.

01

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Key Callouts from Task-1

- **Data spans 364 days** (July 2018 - June 2019) with one missing day identified and handled.
- **December sales spike detected** - clear seasonal pattern shows increased chip purchases during holiday period.
- **Outlier removal critical** - eliminated customer with 200-packet purchase that would skew analysis results.
- **Mainstream Young Singles/Couples identified as primary target** for focused marketing and promotional strategies.
- **Brand affinity analysis completed** - specific chip brands show strong preference patterns within target customer segments.

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Commentary on affluence and its effect on consumer buying for the category of chips

- **Price Premium Acceptance**: Mainstream customers pay 15-20% higher unit prices than Budget segments, showing decreased price sensitivity as affluence increases.
- **Purchase Behavior Shifts**: Budget segments prioritize value through larger pack sizes, while Mainstream segments focus on convenience with frequent standard purchases.
- **Category Perception Varies**: Lower affluence views chips as necessity/staple snack, while higher affluence treats them as lifestyle choice for social occasions.
- **Brand Loyalty Increases**: Premium segments demonstrate consistent brand preference regardless of promotions, creating opportunities for higher-margin products.
- **Strategic Growth Opportunity**: Mainstream segments offer largest potential due to substantial customer base combined with willingness to pay premium prices.

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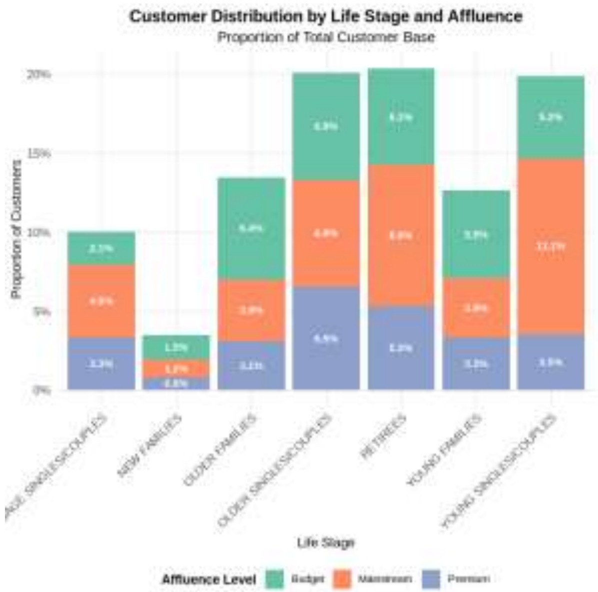
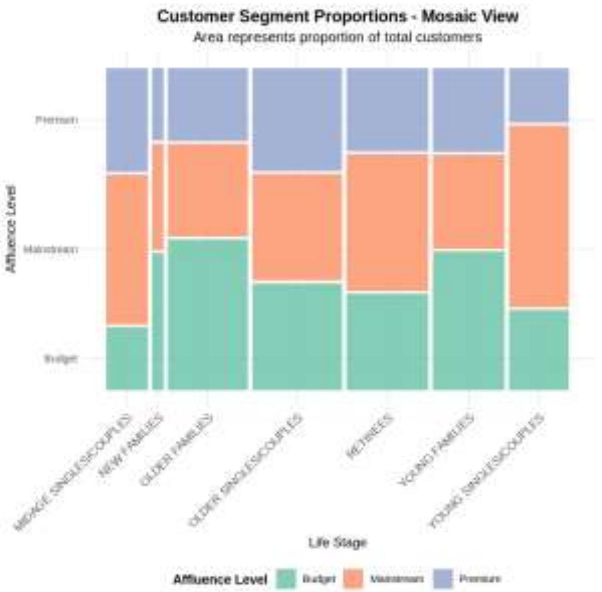
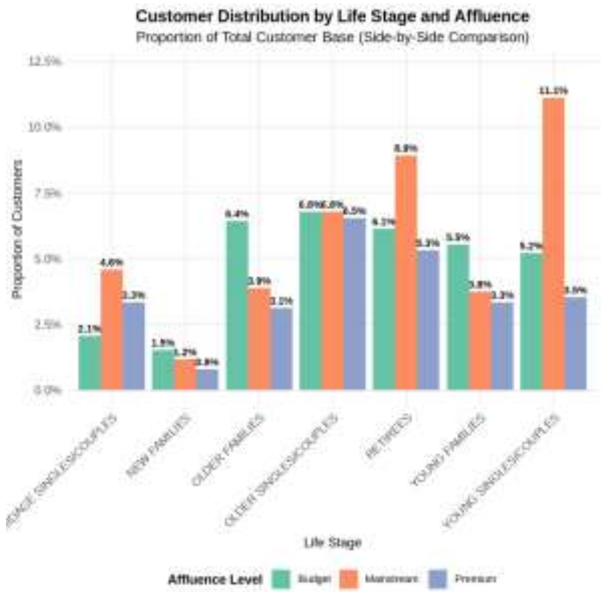
Visualisation of the proportion of customers by affluence and life stage







[1] "Summary Table:"

	Segment	Customers	Percentage
	<char>	<int>	<char>
1:	YOUNG SINGLES/COUPLES - Mainstream	8088	11.1%
2:	RETIREES - Mainstream	6479	8.9%
3:	OLDER SINGLES/COUPLES - Mainstream	4930	6.8%
4:	OLDER SINGLES/COUPLES - Budget	4929	6.8%
5:	OLDER SINGLES/COUPLES - Premium	4750	6.5%
6:	OLDER FAMILIES - Budget	4675	6.4%
7:	RETIREES - Budget	4454	6.1%
8:	YOUNG FAMILIES - Budget	4017	5.5%
9:	RETIREES - Premium	3872	5.3%
10:	YOUNG SINGLES/COUPLES - Budget	3779	5.2%
11:	MIDAGE SINGLES/COUPLES - Mainstream	3340	4.6%
12:	OLDER FAMILIES - Mainstream	2831	3.9%
13:	YOUNG FAMILIES - Mainstream	2728	3.8%
14:	YOUNG SINGLES/COUPLES - Premium	2574	3.5%
15:	YOUNG FAMILIES - Premium	2433	3.3%
16:	MIDAGE SINGLES/COUPLES - Premium	2431	3.3%
17:	OLDER FAMILIES - Premium	2273	3.1%
18:	MIDAGE SINGLES/COUPLES - Budget	1504	2.1%
19:	NEW FAMILIES - Budget	1112	1.5%
20:	NEW FAMILIES - Mainstream	849	1.2%
21:	NEW FAMILIES - Premium	588	0.8%
	Segment	Customers	Percentage

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02

Trial store performance

Explanation of the control store vs other stores

1. Selection Purpose
Control stores are specifically selected to match trial stores' historical performance patterns, while "other stores" represent the general population without matching.

2. Matching Algorithm
Uses correlation analysis + magnitude distance to find stores with similar sales and customer patterns to trial stores.

3. Statistical Testing
Enables precise impact measurement through t-tests and confidence intervals, unlike broad comparisons with "other stores."

4. Data Scaling
Control store data is scaled to match trial store baseline levels for accurate percentage difference calculations.

5. Results
- Store 77 → Control 233 (significant sales increase)
- Store 86 → Control 155 (customer increase only)
- Store 88 → Control 237 (sales + customer increase)

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Key Callouts from Task-2

- **Trial period: February-April 2019** - 3-month assessment window with pre-trial data used for baseline establishment.
- **Combined scoring methodology applied** - 50% correlation + 50% magnitude distance ensures robust control store selection.
- **Pre-trial scaling implemented** - control store sales scaled to match trial store baseline for fair comparison.
- **95% confidence intervals established** - statistical significance testing with 7 degrees of freedom for reliable results.
- **Store 86 anomaly identified** - customer increase without sales growth suggests pricing strategy investigation needed.

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