

May 2024

Evaluate The Performance of A Store Trial For Chips

Retail Analytics



Classification: Confidential



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

We all have a responsibility to use data for good

Privacy

- We have built our business based on privacy by design principles for the past 17 years
- Quantum 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.

Quantum 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

- Overview Of Customer Information.
- Overview Of Products.
- Overview Of Transactions.

02

Task 2

- Define metrics of revenue, customers, and transactions to select control stores.
- Analyze control stores 233, 155, 237 against trial stores 77, 86 and 88 respectively.
- Results show significant sales increases for trial stores 77 and 88, but not for store 86.
- Overall, the trial increased sales significantly.

01

Task 1: Overview of the Data

Time: June 2018 to June 2019

Objects: All stores

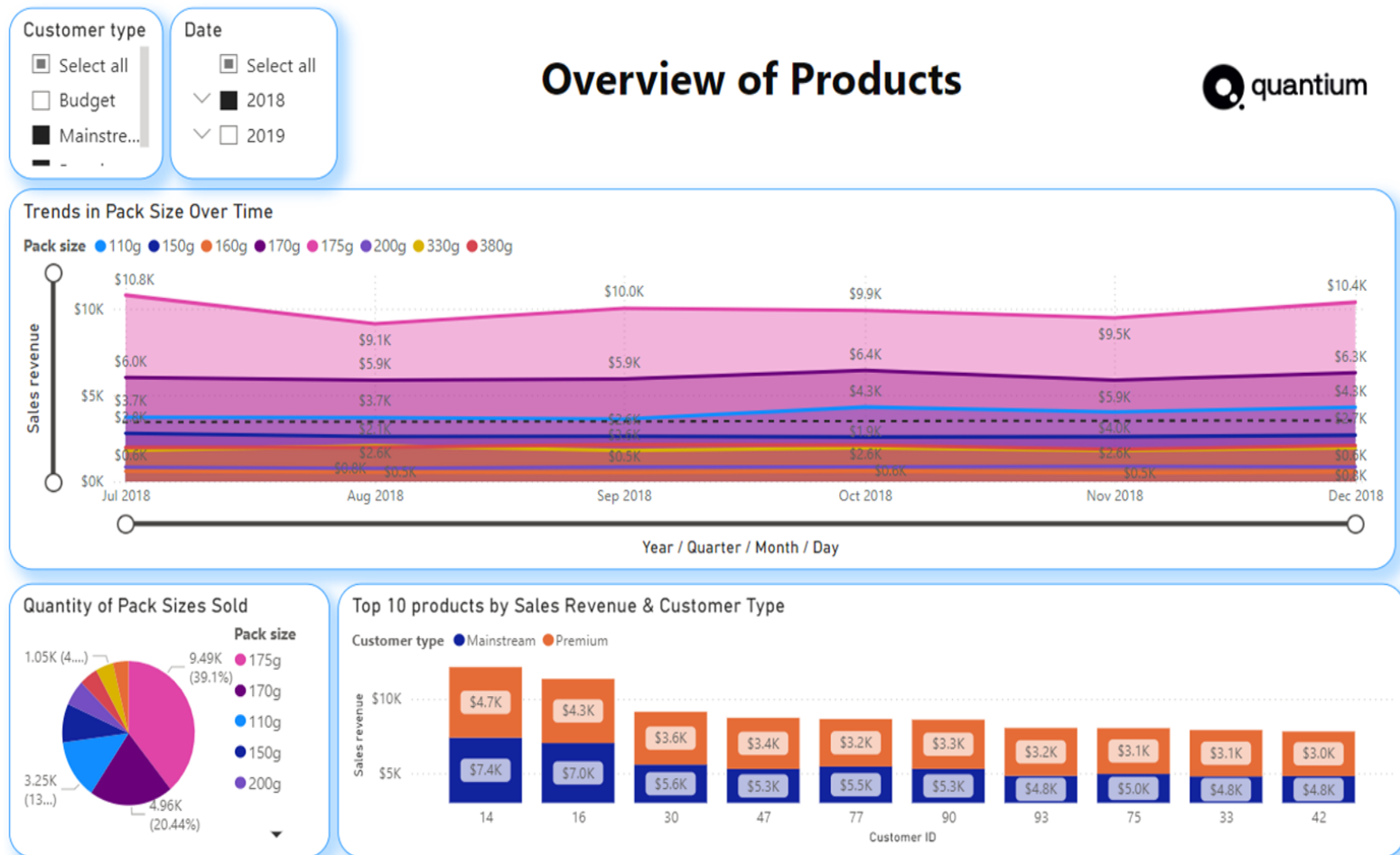
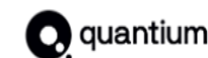
Metrics: Products, Customers and Transactions



Findings

- ❑ Midge singles/couples and young singles/couples are the highest spenders, consistently generating over \$3K in monthly sales.
- ❑ Premium customers account for the largest revenue share.
- ❑ The top 20 customers include budget, mainstream, and premium types, with balanced contributions across store IDs.

Overview of Products





Findings:

- ❑ Sales revenue fluctuates with peaks around November 2018 and January 2019.
- ❑ Top 20 stores by revenue are led by store 226, driven by young singles/couples and midge singles/couples.
- ❑ Transaction counts vary, with notable spikes in certain stores.

Customer type

☒ Select all

☐ Budget

☐ Mainstre...

☐ -

Date

☒ Select all

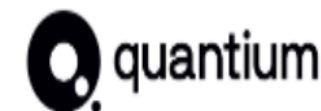
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2018

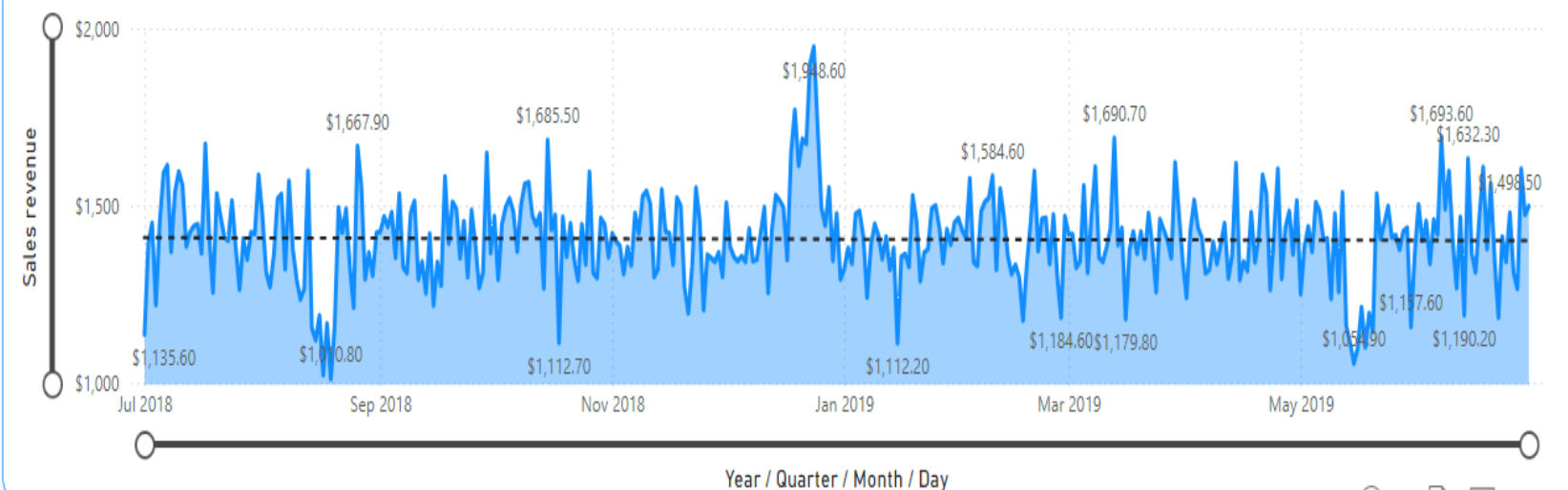
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2019

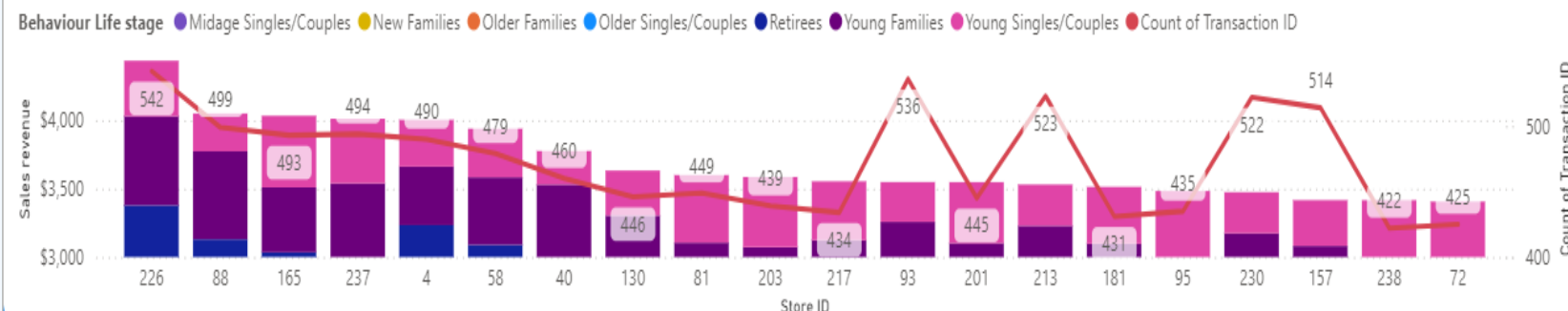
Overview of Transactions



Trends in Sales Revenue Over Time



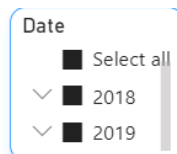
Top 20 Stores by Sales Revenue & Customer life stage



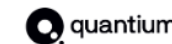


Findings

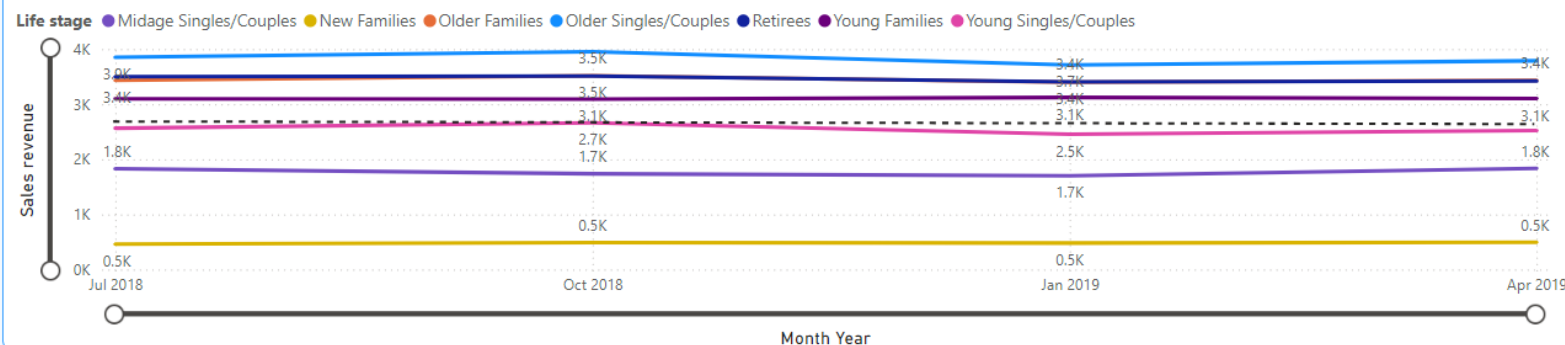
- ❑ The 175g pack size consistently leads in sales revenue.
- ❑ Mainstream customers dominate top products. Sales show stable trends with slight fluctuations.
- ❑ The highest quantity sold is also in the 175g pack size.



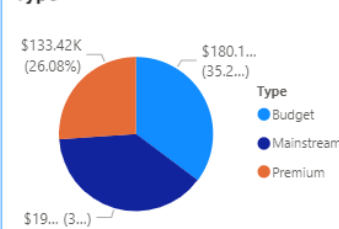
Overview of Customer Information in Transactions



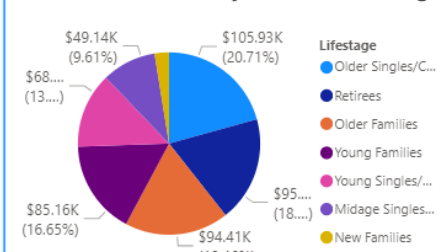
Trends in Customer Life Stage Purchase Over Time



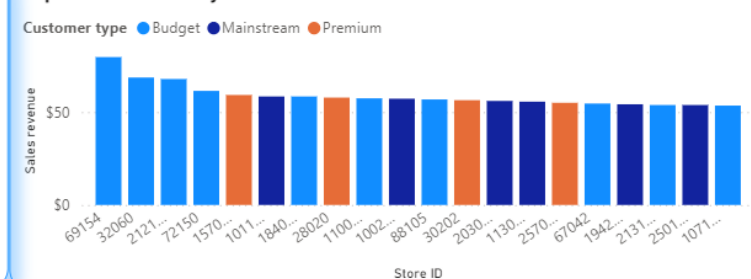
Revenue Distribution by Customer Type



Revenue Distribution by Customer Life Stage



Top 20 Customers by Purchases



Selection Methods Of Magnitude Distance

1. Calculate Euclidean Distance

For each trial store, compute the Euclidean distance between its metrics and the metrics of all potential control stores. The metrics are:

• x_1, x_2, x_3 : Metrics for the trial store (Total Sales Revenue, Total Number of Customers, Average Number of Transactions per Customer).

• y_1, y_2, y_3 : Metrics for a potential control store.

The Euclidean distance D is given by:

$$D = \sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2 + (x_3 - y_3)^2}$$

2. Convert Euclidean Distance to Magnitude Distance

• D_{\min} : Minimum Euclidean distance

• D_{\max} : Maximum Euclidean distance

$$MD = 1 - \frac{D - D_{\min}}{D_{\max} - D_{\min}}$$

Using the formula for magnitude distance conversion:

3. Identify the Control stores for Trial stores

•Stores 233, 155, 237 are identified as the controls stores for trial stores 77, 86 and 88 respectively.

77	86	88
233	155	203

Time Status

- ☒ Select all
- ^

☐ Other

☐ 201905

☐ 201906
- ^

☒ Pre-Trial

☒ 201807

☒ 201808

☒ 201809

☒ 201810

☒ 201811

☒ 201812

☒ 201901
- ^

☐ Trial

☐ 201902

☐ 201903

☐ 201904

Stores

- ☒ Select all
- ^

☒ 1 -50

☒ 101-150

☒ 151-200

☒ 201-250

☒ 251-300

☒ 51-100
- ^

☐ TrialStore

☐ 77

☐ 86

☐ 88

Magnitude Distance

1.Calculate Euclidean Distance

$$D = \sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2 + (x_3 - y_3)^2}$$

2.Convert Euclidean Distance to Magnitude Distance

$$MD = 1 - \frac{D - D_{min}}{D_{max} - D_{min}}$$

Top 3 Stores Most Similar in Performance to Store 77

Store number	AverageMD77
233	84.98%
131	80.06%
264	78.26%
192	73.39%
265	72.87%
230	71.67%

Top 3 Stores Most Similar in Performance to Store 86

Store number	AverageMD86
155	88.20%
109	85.71%
101	84.55%
222	82.97%
225	82.37%
5	82.01%

Top 3 Stores Most Similar in Performance to Store 88

Store number	AverageMD88
203	87.85%
10	83.89%
109	82.67%
155	81.23%
237	79.50%
101	79.32%



Pre-Trial Performance Comparison

Time:

July 2018 to Jan 2019

Objects:

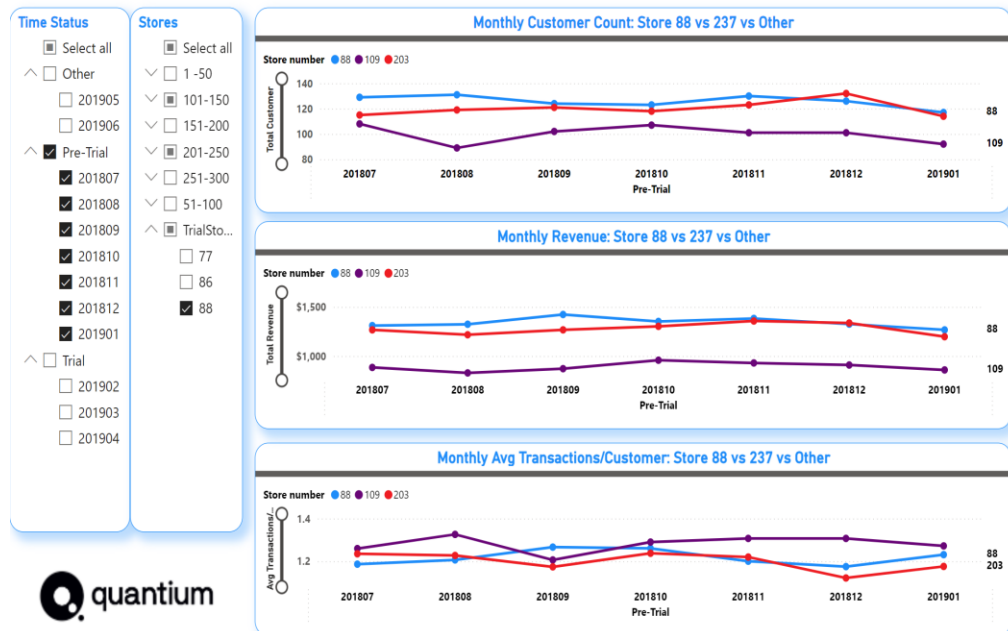
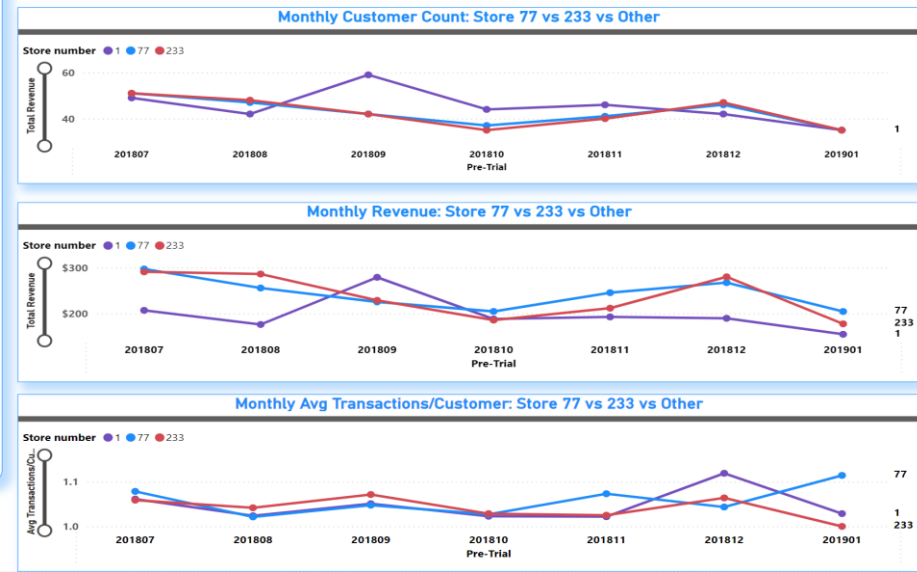
Trial store, control store and other.

Metrics:

- ❖ Total sales revenue
- ❖ Total number of customers
- ❖ Average number of transactions per customer

Time Status
☒ Select all
☐ Other
☐ 201905
☐ 201906
☒ Pre-Trial
☒ 201807
☒ 201808
☒ 201809
☒ 201810
☒ 201811
☒ 201812
☒ 201901
☐ Trial
☐ 201902
☐ 201903
☐ 201904

Stores
☒ Select all
☐ 1 - 50
☐ 101-150
☐ 151-200
☐ 201-250
☐ 251-300
☐ 51-100
☒ TrialSto...
☒ 77
☐ 86
☐ 88



Trial Performance Comparison

Time:

Feb 2019 to Apr 2019

Objects:

Trial store, control store and other.

Metrics:

- ❖ Total sales revenue
- ❖ Total number of customers
- ❖ Average number of transactions per customer

Time Status
☒ Select all
☐ Other
☐ 201905
☐ 201906
☐ Pre-Trial
☐ 201807
☐ 201808
☐ 201809
☐ 201810
☐ 201811
☐ 201812
☐ 201901
☒ Trial
☒ 201902
☒ 201903
☒ 201904

Stores
☒ Select all
☐ 1 -50
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☐ 151-200
☐ 201-250
☐ 251-300
☐ 51-100
☒ TrialSto...
☒ 77
☐ 86
☐ 88



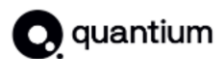
Time Status
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☒ 201904

Stores
☒ Select all
☐ 1 -50
☐ 101-150
☐ 151-200
☐ 201-250
☐ 251-300
☐ 51-100
☒ TrialSto...
☐ 77
☐ 86
☒ 88



Time Status
☒ Select all
☐ Other
☐ 201807
☐ 201808
☐ 201809
☐ 201810
☐ 201811
☐ 201812
☐ 201901
☒ Trial
☒ 201902
☒ 201903
☒ 201904

Stores
☒ Select all
☐ 1 -50
☐ 1
☒ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
☐ 11
☐ 12
☐ 13
☐ 14
☐ 15
☐ 16
☐ 17
☐ 18
☐ 19





Overall, the revenue of all trial stores increased, with stores 77 and 88 seeing significant increases, while store 86 increased slightly.

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