June 2020

Category review: Chips

Retail Analytics

quantium

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.

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

The customer segments that contribute most heavily to chip sales are: `Budget - older families`, `Mainstream - young singles/couples`, and `Mainstream - retirees`.

- Higher sales from more customers is applicable for `Mainstream - young singles/couples` and `Mainstream - retirees`
- Higher sales from more units of chips being bought per customer is applicable for older and younger families in general
- Average price per unit chips bought greater for mainstream midage and young singles/couples compared to other customer segments in the same life stage with differing premium customer status
- Mainstream, young singles/couples tend towards Kettle brand chips and lower pack sizes

02 Task 2

Trial stores have displayed significant improvement in performance compared to their control stores.

- For trial stores 77, 86 and 88, the control stores 233, 155, 237 respectively have been found.
- Personally created results conflict with the given conclusion, where store 167 provided the best control score for trial store 77, store 229 provided the best control score for trial store 86, and store 201 provided the best control store for trial store 88.
- Had issues adjusting how much impact correlation should have on final score

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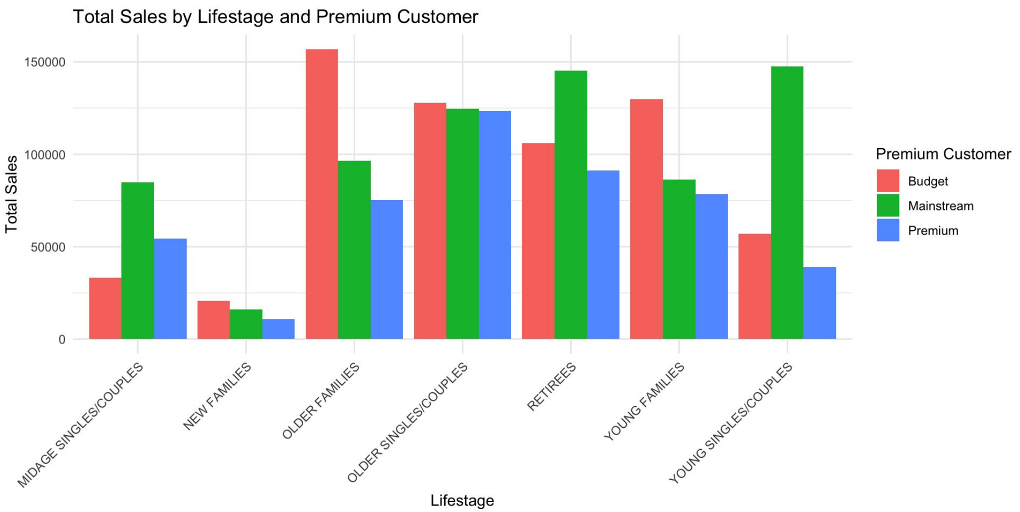
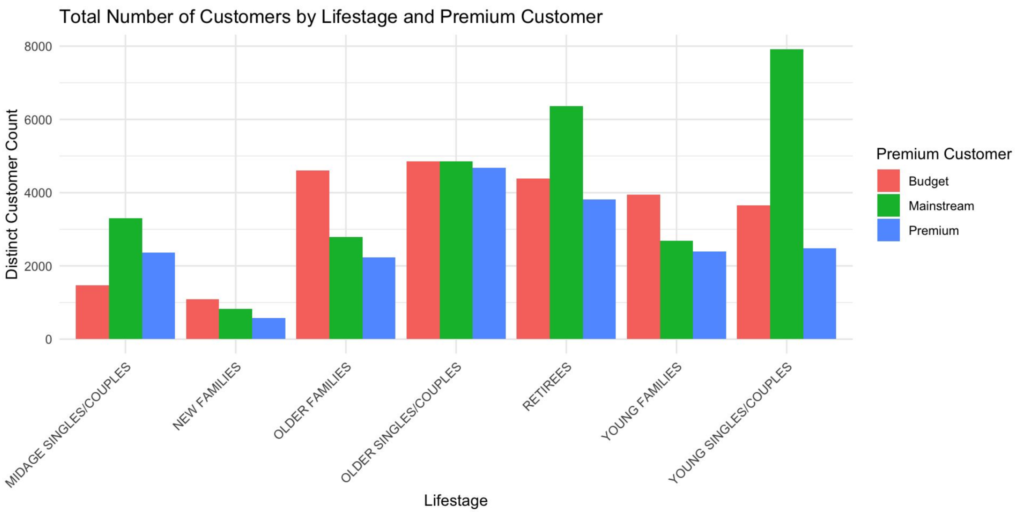
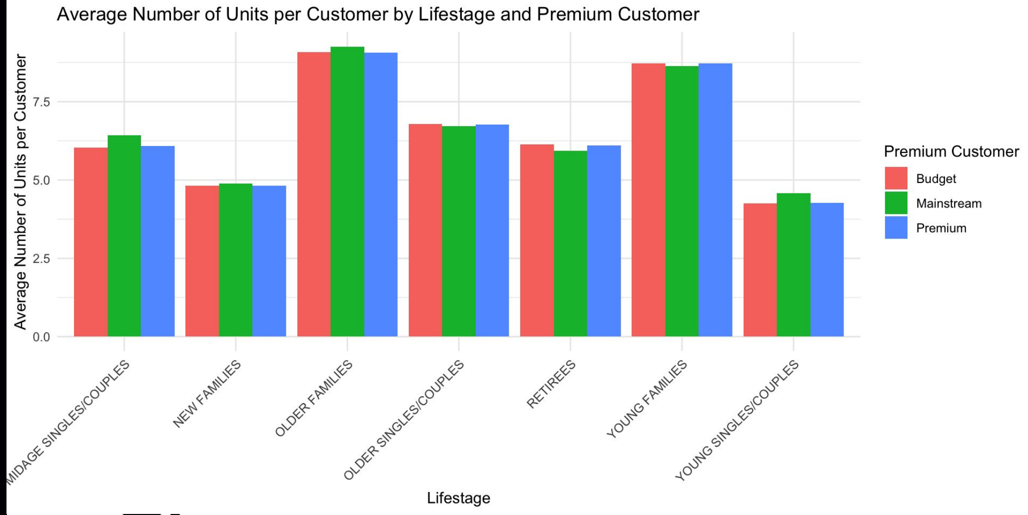
01

Category

Overview: The customer segments that contribute most heavily to chip sales are: `Budget - older families`, `Mainstream - young singles/couples`, and `Mainstream - retirees`.

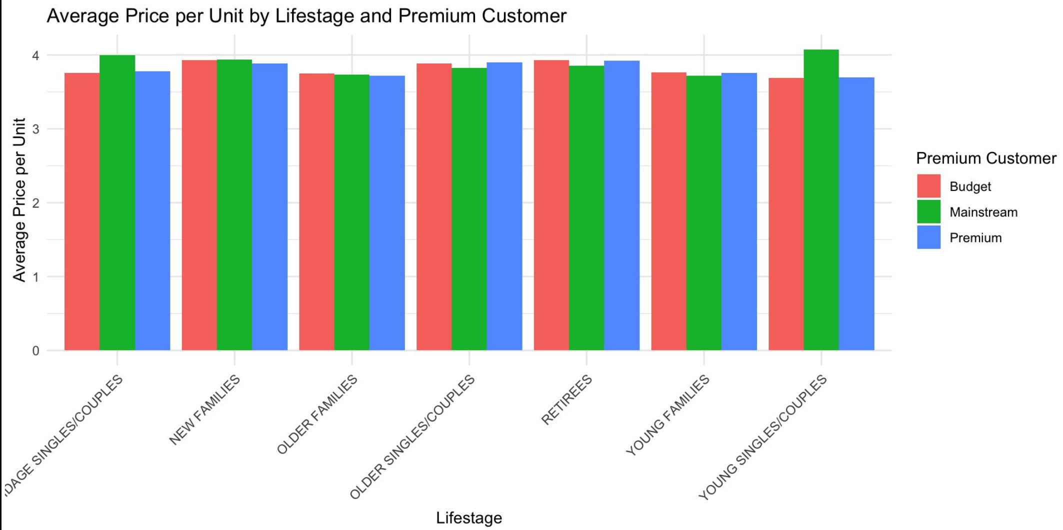






- `Mainstream - young singles/couples` and `Mainstream - retirees` have particularly high numbers of customers, with at least 6000 customers each, implicitly leading to higher sales from more customers.
- Older and younger families tend to have higher values of units of chips bought per customer compared to their midage or newly established counterparts, and compared to singles/couples of the same age brackets.

This slide will be commentary on affluence and its effect on consumer buying for the category of chips




```
        Welch Two Sample t-test

data:  TOT_SALES by GROUP
t = 22.456, df = 27326, p-value < 2.2e-16
alternative hypothesis: true difference in means between group Mainstream and group
Non_Mainstream is not equal to 0
95 percent confidence interval:
 0.6142873 0.7317767
sample estimates:
    mean in group Mainstream mean in group Non_Mainstream
                    7.563116                     6.890084
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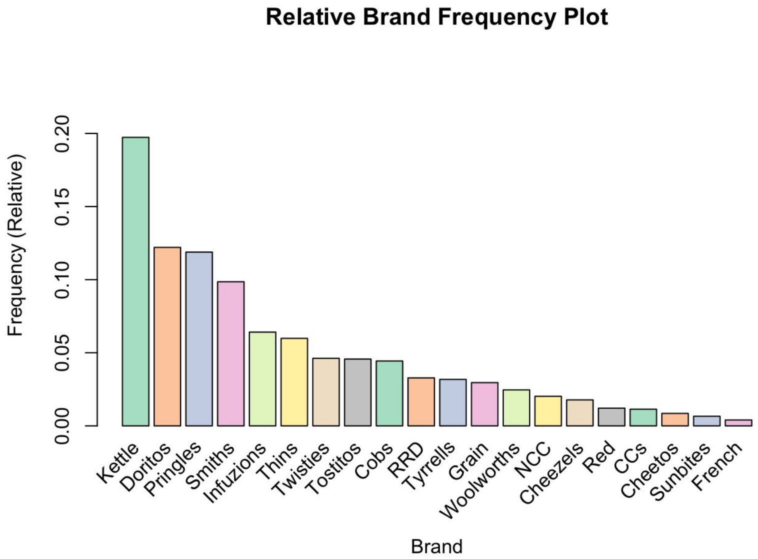
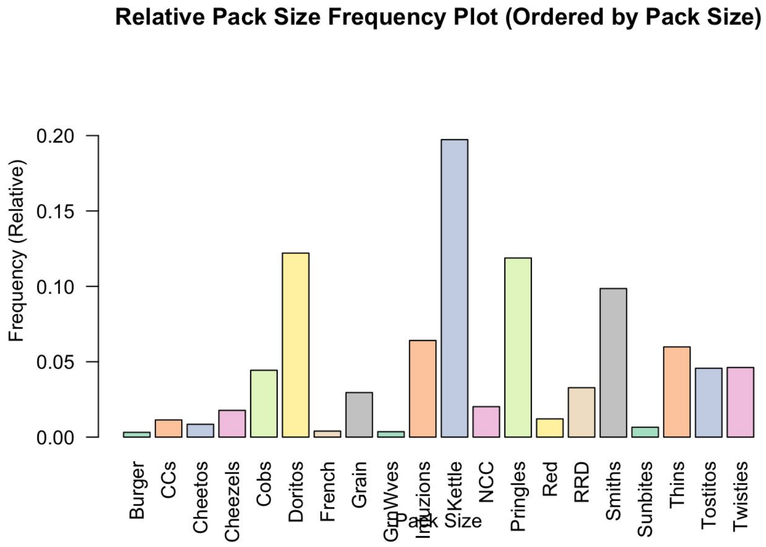
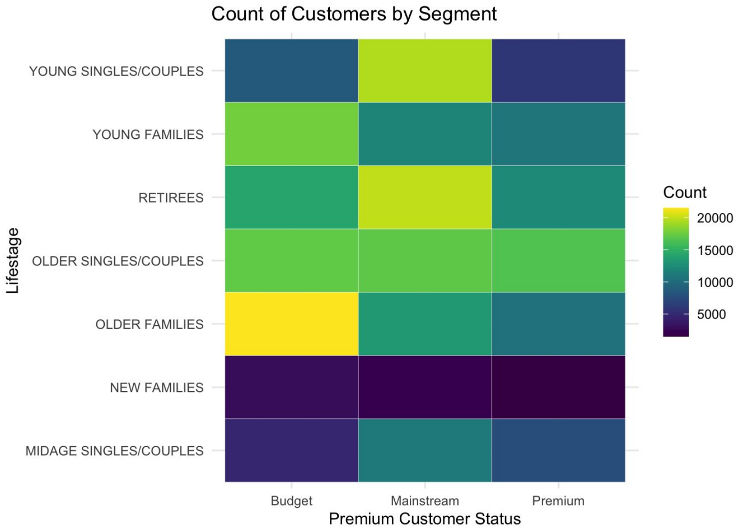


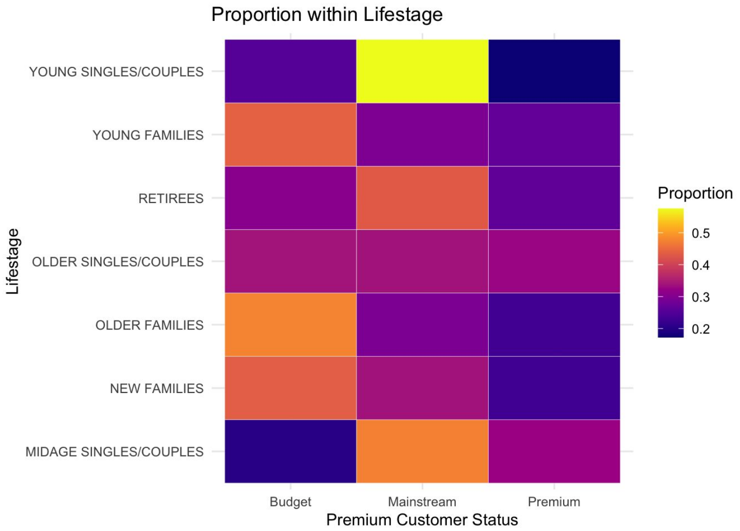


- Average price per unit chips bought greater for mainstream midage and young singles/couples compared to other customer segments in the same life stage with differing premium customer status
- Mainstream, young singles/couples tend towards purchasing Kettle brand chips and smaller pack sizes

Stretch: Try visualising the proportion of customers by affluence and life stage on this slide



- Significantly more customers in older lifestages including retirees, then younger lifestages, then midage singles/couples and new families
- Between lifestages, most customers have the Budget status, followed by Mainstream then Premium.



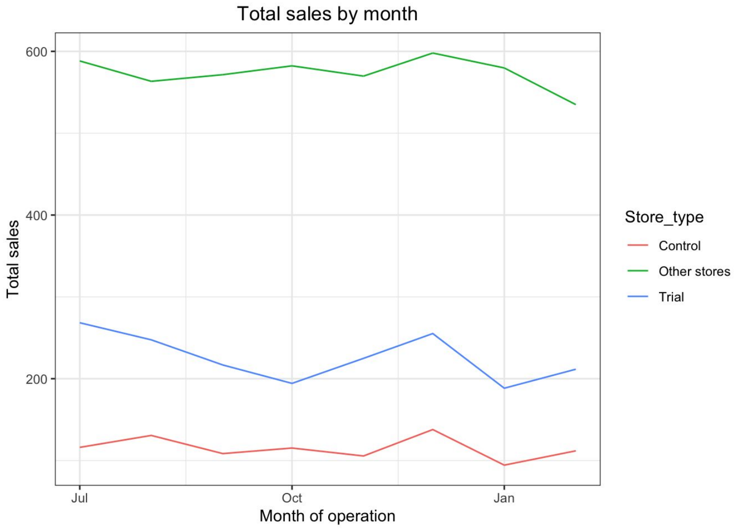
02

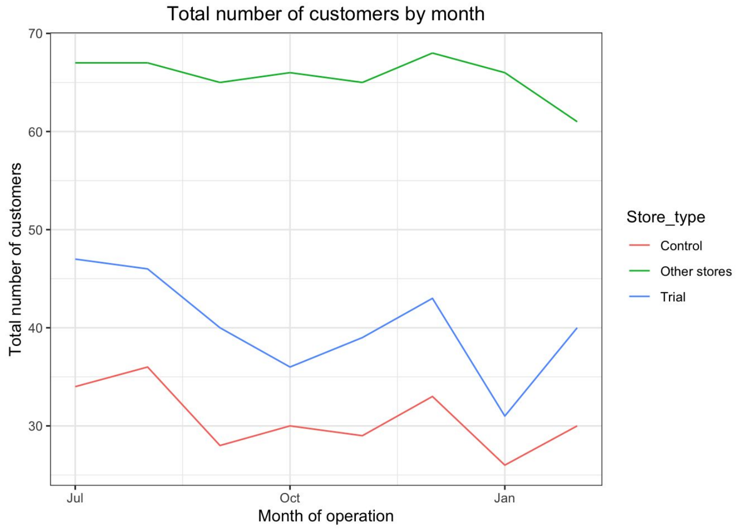
Trial store performance

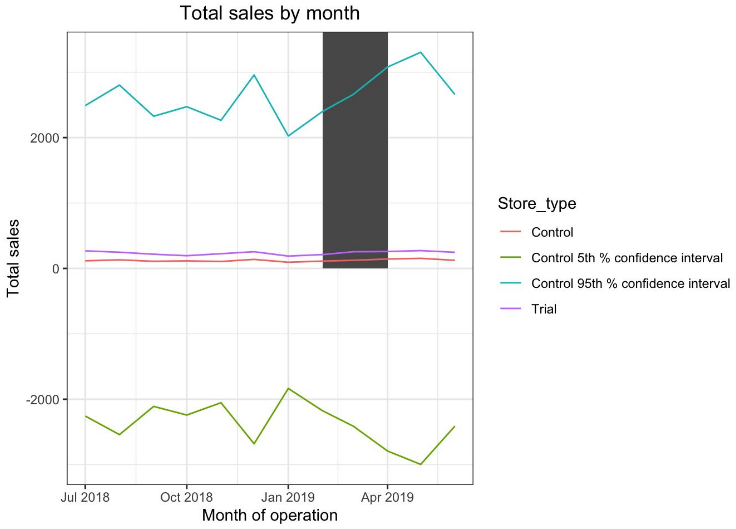
Explanation of the control store vs other stores

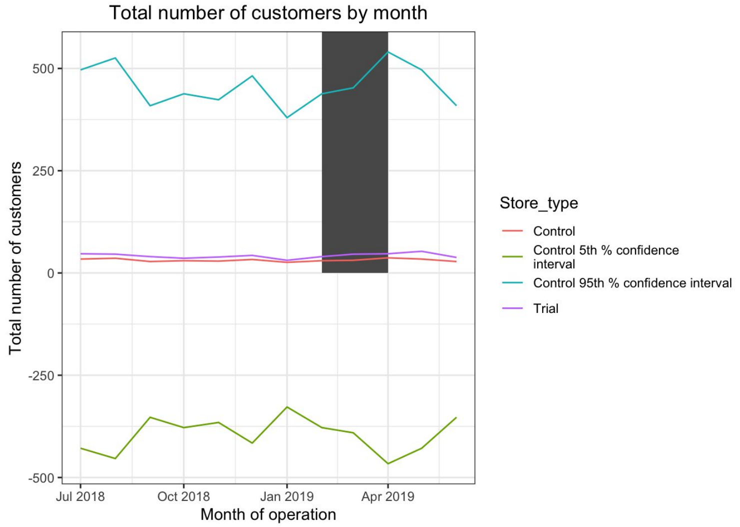
- Control stores are selected on the following criteria:
  - They are established stores that are operational for the entire observation period (12 months between July 2019 and June 2019)
  - Prior to the trial period from February 2019, they are similar to the trial stores in various metrics:
    - Monthly overall sales revenue
    - Monthly number of customers
    - Monthly number of transactions per customer
  - They provide the second-most optimal ranking from the composite score based on the above metrics, behind the trial store itself.
- 259 stores have been fully operational in the 12 months between July 2019 and June 2019.
- Calculated correlation and standardised magnitude difference of store performance metrics (sales and number of customers) with that of trial store, applied certain weights into each performance metric, then obtained average of performance metric as ranking.

Call out of the performance in the trial store, determining if it was successful



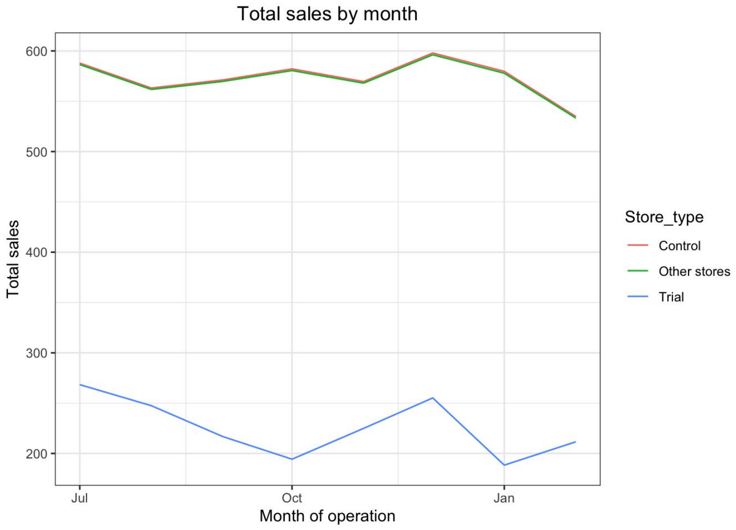


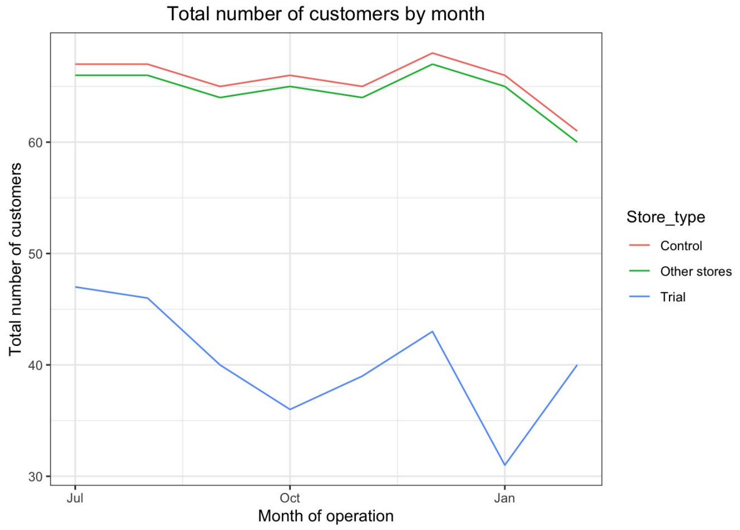


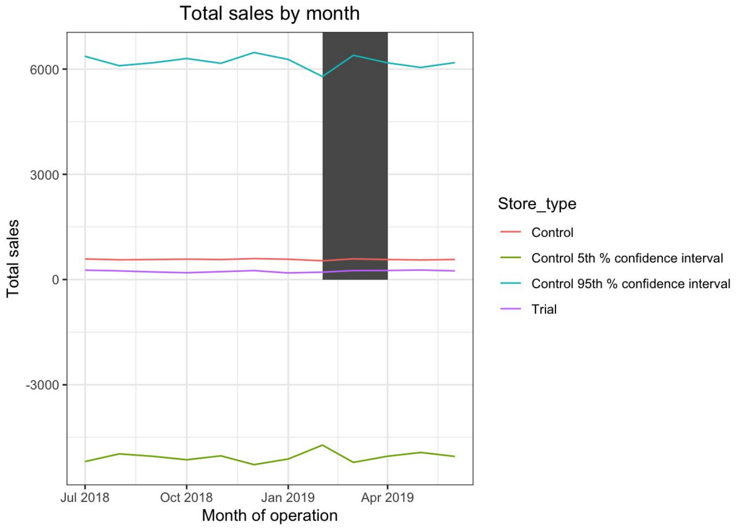


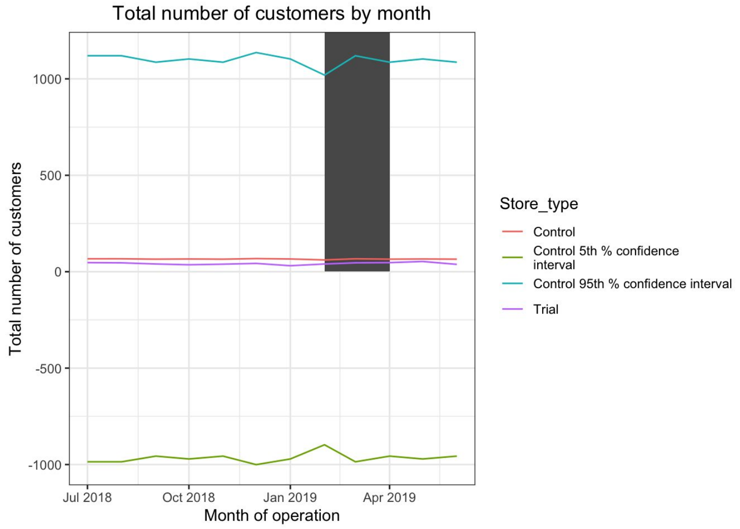
- Issues with magnitude metric due to ambiguity of how much weight should be applied for correlation compared to similarity in magnitude.
- Initial results of correlation weight of 0.5 resulted in results that did not match well with suggested control stores.

Call out of the performance in the trial store, determining if it was successful









- t-value is much larger than the 95th percentile value of the t-distribution for March and April.
- Trial in store 77 is significantly different to its control store 233 in the trial period, as the trial store performance lies outside the 5% to 95% confidence interval of the control store in two of the three trial months.
- Same applies for trial store 86 with control store 155, and trial store 88 with control store 237.

Future considerations

- Focusing on the customer segments `Budget - older families`, `Mainstream - young singles/couples`, and `Mainstream - retirees` would be beneficial to business.
    - Given the `Mainstream - young singles/couples` and `Mainstream - retirees` groups provide most sales from large quantities of customers, improved accessibility of the stores could be beneficial.
    - Decreasing the price of chips, especially Kettle brand chips, for older and younger families specifically may encourage them to purchase more chips.
- The new trial layouts appear to be effective and should be implemented, though it is uncertain if seasons have an influence on the impact of the trial layout due to the lack of data for different seasons.

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