Website Visitor Analysis and Campaign Impact

September 10, 2023

Introduction

This project aims to look at time spent on our website on certain weekdays and how that differs across campaigns.

The main goal of this business is to sell products from our e-commerce site, so we will be looking at time spent in connection with dollars spent, in the context of comparing campaigns.

Since the attribution model for our campaigns is incomplete, we do not see which campaign generated how much revenue. We can only see data on an aggregate level. This way, the context of our analysis becomes `campaign` versus `non-campaign`.

Agenda

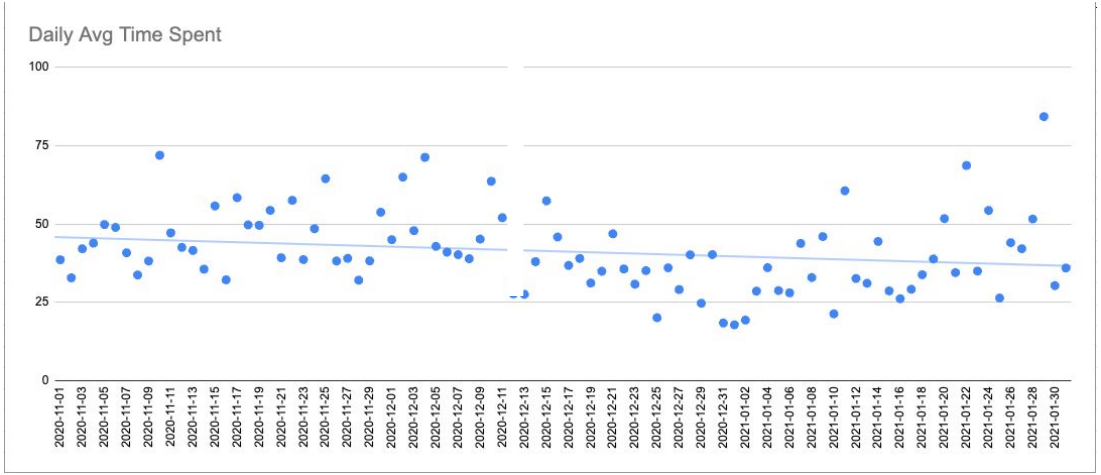
- Data Preparation: Outliers
- Correlation Analysis
- Hypothesis A: Weekdays Impact
- Hypothesis B: Campaign vs. No Campaign User Behavior
- Hypothesis C: Campaign Performance
- Hypothesis C: A/B Test Results
- Conclusion
- Considerations, recommendations

Data Preparation: Outliers

To better understand the distribution of average time spent on the website, we examined outliers using quartiles and the interquartile range (IQR).

Since none of the values are outside of the bounds, we continue including all values in our correlation and regression analysis.

First quartile	Third quartile	IQR	Lower bound	Upper bound
9.025	30.67	21.645	-23.4425	63.1375



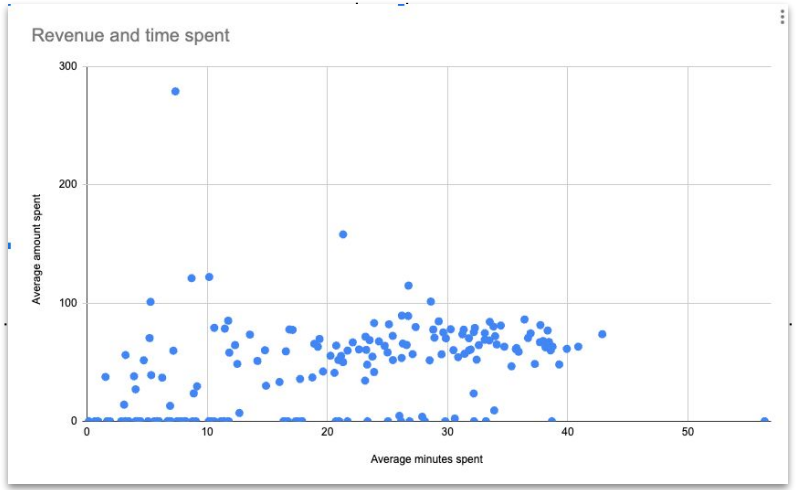
Correlation Analysis

Summary

- There is a statistically significant positive linear relationship between average time spent and revenue.
- Approximately 39.1% of the variation in revenue can be explained by variations in average time spent.
- Each additional minute spent on the website is associated with an increase in revenue of approximately 0.0026 units.

Implications

- Continuing to analyze website visitor and customer behavior in relation to time spent on the e-commerce site is statistically relevant.
- Understanding user behavior and time spent can have a positive impact on revenue.



Hypothesis A

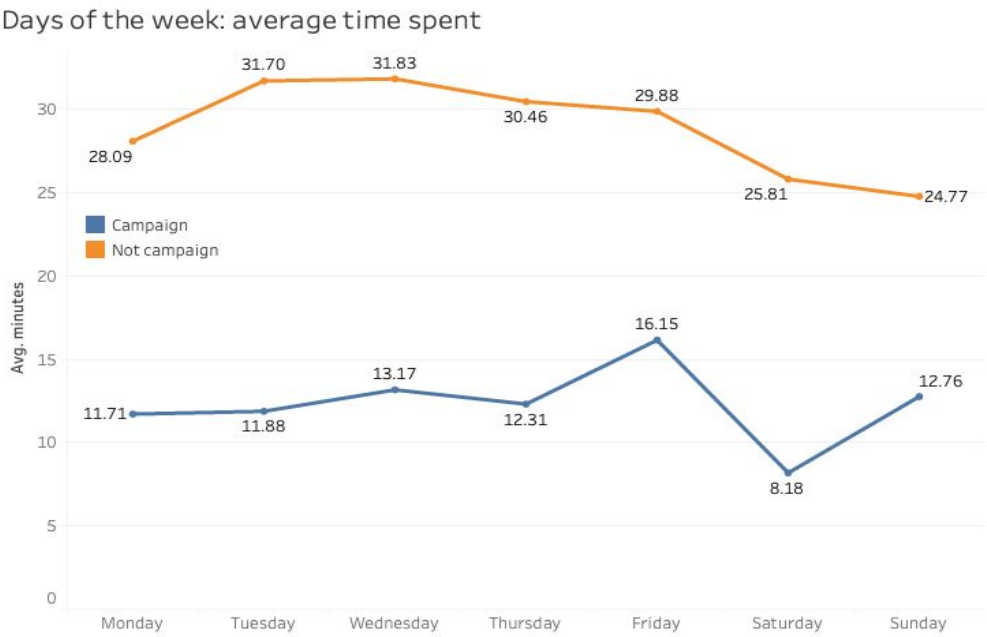
ACCEPTED

Users spend more time, on average, on our e-commerce site on certain weekdays.

The hypothesis is accepted based on the analysis.

Time spent on the website has a positive impact on amount spent.

Further analysis shows a better correlation between time spent and amount spent on weekdays without campaigns.



Hypothesis B

ACCEPTED

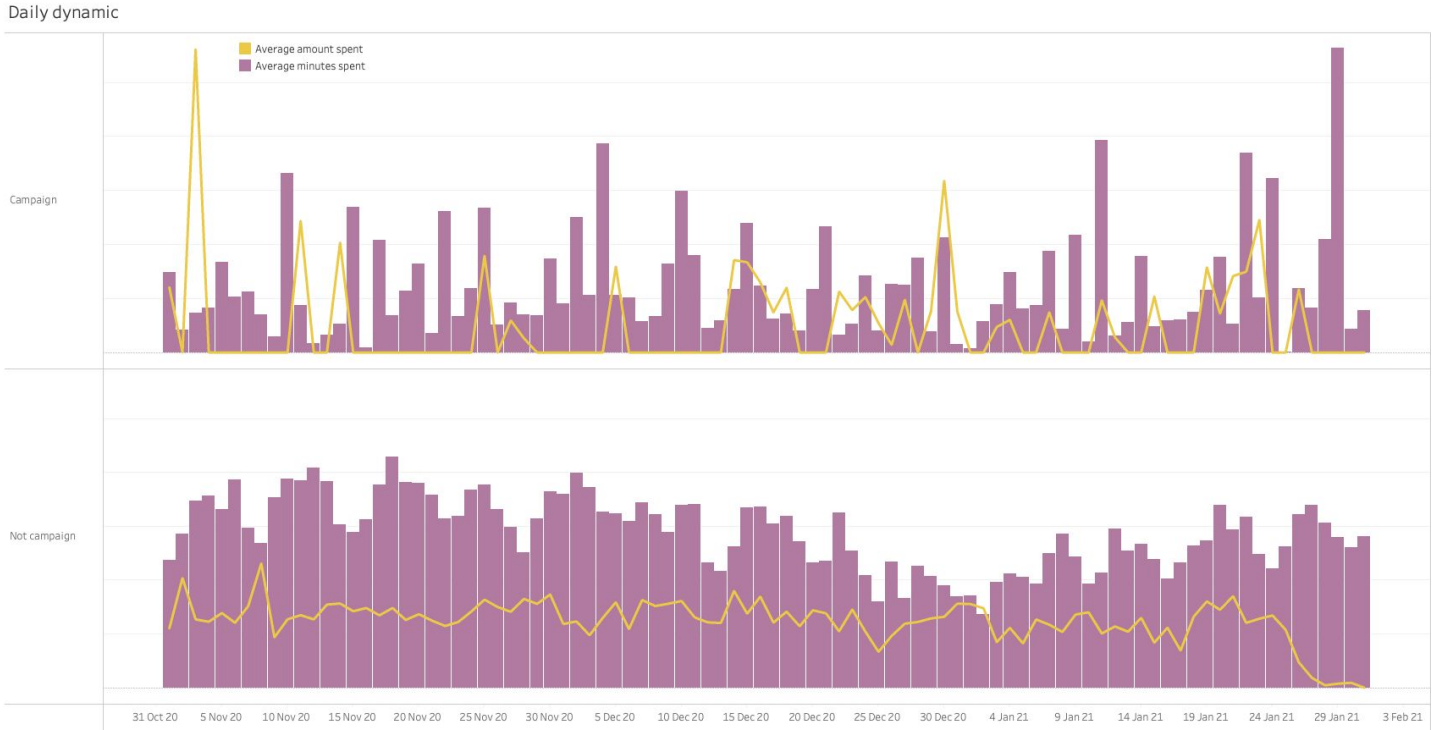
In the context of spending time on our e-commerce site, users have different purchasing behavior when they come from a campaign versus not campaign.

The hypothesis is accepted:

When users do not come from a campaign, their purchasing behavior is shown as more predictable, the peaks and lows are less erratic.

OBS: purchasing behavior from campaigns might not have a strong linear relationship as the alternative.

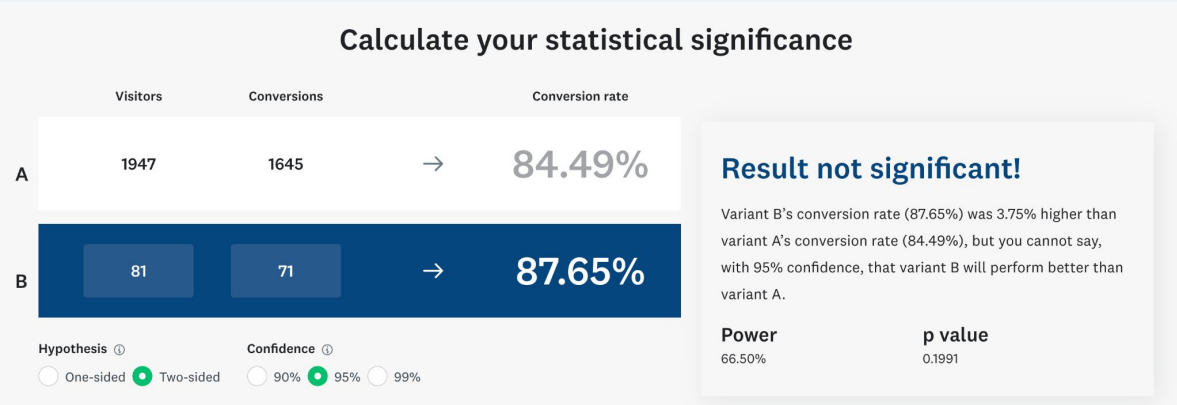
We recommend collecting more data.



REJECTED

Hypothesis C

Running campaigns will perform better in conversions than not running campaigns.



The hypothesis is rejected based on the results of the A/B test.

Summary of A/B Test Results

- The conversion rate is considerably higher for visitors coming from campaigns compared to visitors who do not come from campaigns.
- However, statistically, the difference is not significant due to the low number of events in the campaign group.
- It is advised to collect more data and repeat the test in the future to obtain more conclusive results.

Conclusion

There is a positive linear relationship between time spent and money spent on our website. Each additional minute spent on the website is associated with an increase in revenue of approximately 0.0026 units.

Purchasing behavior from campaign users differs from non-campaign users. More data is needed to evaluate linear relationship in campaign users.

Campaign conversion rate is higher by 3.75% than non-campaign, but confidence is missing due to low data availability.

Considerations, recommendations

Limited amount of data from campaigns hinders a direct comparison between campaigns and non-campaigns; produces low reliability results in regression models and A/B tests.

Generate more data.

The context of seasonality: during holidays, people tend to spend more, thus generating more purchases than non-holiday periods.

Compare in low season.

Awareness campaigns are essential to fill the top of the purchasing funnel and increase brand consideration.

Run campaigns for top of the funnel.