



# Predicting Cannibalization Rate On The Jindong Platform For Spend Optimization



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## ABSTRACT

This study helps to understand cannibalization rate on JD.com, one of China's leading e-commerce platforms. With our model, sellers could understand their advertising investments better on this platform, such as banner ads, feed ads, automated search ads, and search ads. We show how these different ads yield common KPIs such as click-through-rate, conversion rate, and return on investment. Lastly, we formulate our predictive model to estimate cannibalization rate when reallocating investment portfolio to minimize loss investment and maximize revenue.

## INTRODUCTION

This study's motivation is that businesses need to know to best allocate their advertising investments on large e-commerce platforms. Unfortunately, with the JD.com platform, data provided back to sellers is aggregated at such a high level, making it unclear how the company generated 'organic search' from paid advertisements. They would hope returns from their direct advertising expense known as 'paid search' was what helped to secure more 'organic search' known as natural traffic coming without advertisements. Companies want advertisements to create a long-term effect of incurring organic customers instead of cannibalizing existing one. Based on this, we calculated the cannibalization rate as the percentage of loss in marginal organic view growth that was captured by marginal paid view growth.

$$\text{Cannibalization Rate} = \frac{\text{Marginal Organic View Growth}}{\text{Marginal Paid View Growth}}$$

Figure 1. Cannibalization rate formula

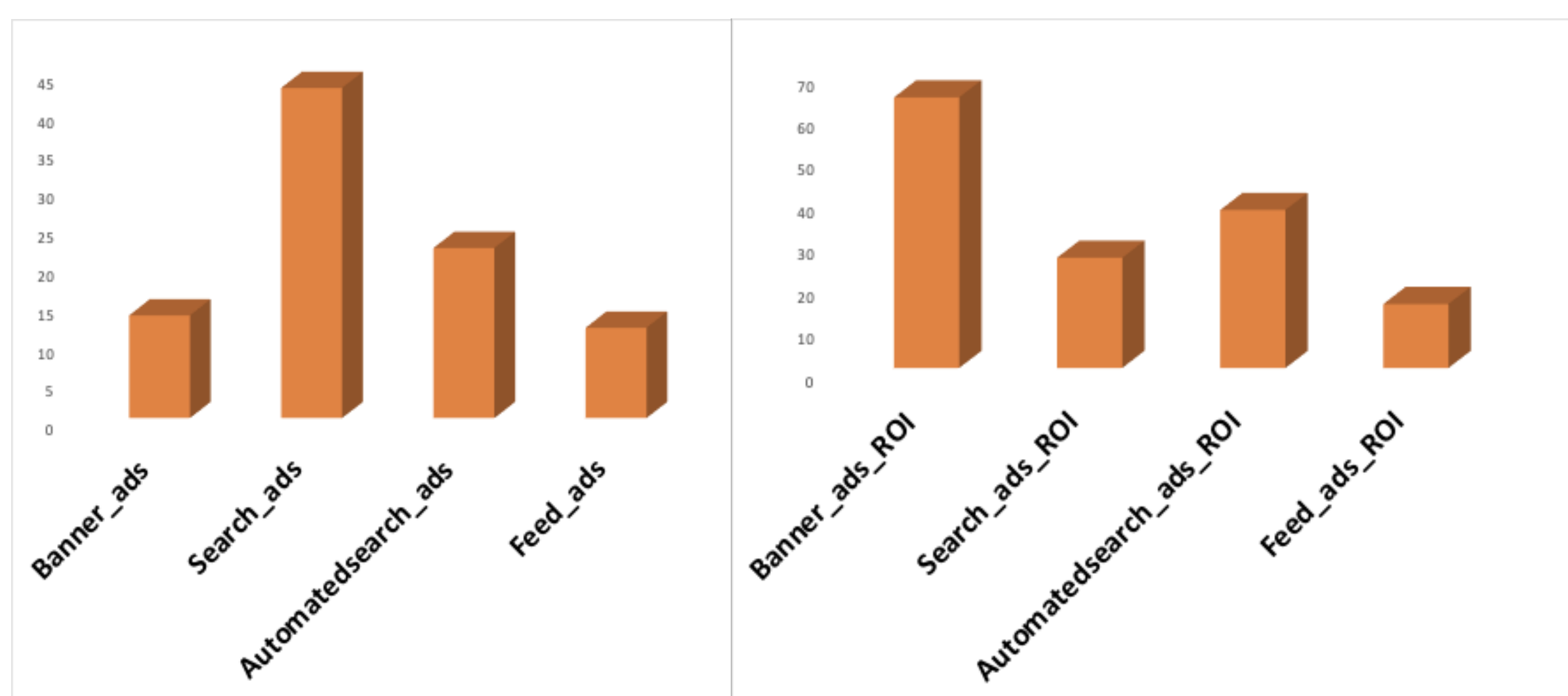


Figure 2. Avg click rate by ads channel

Figure 3. Avg ROI by ads channel

## RESEARCH QUESTIONS

To understand how investment in paid ads channels from high-level data would influence the cannibalization rate and how to minimize the effect of cannibalization?

## METHODOLOGY

The data used for this study was collected from the JD.com platform includes four granulated source channels data and two store level data from 08/2019 to 01/2021.

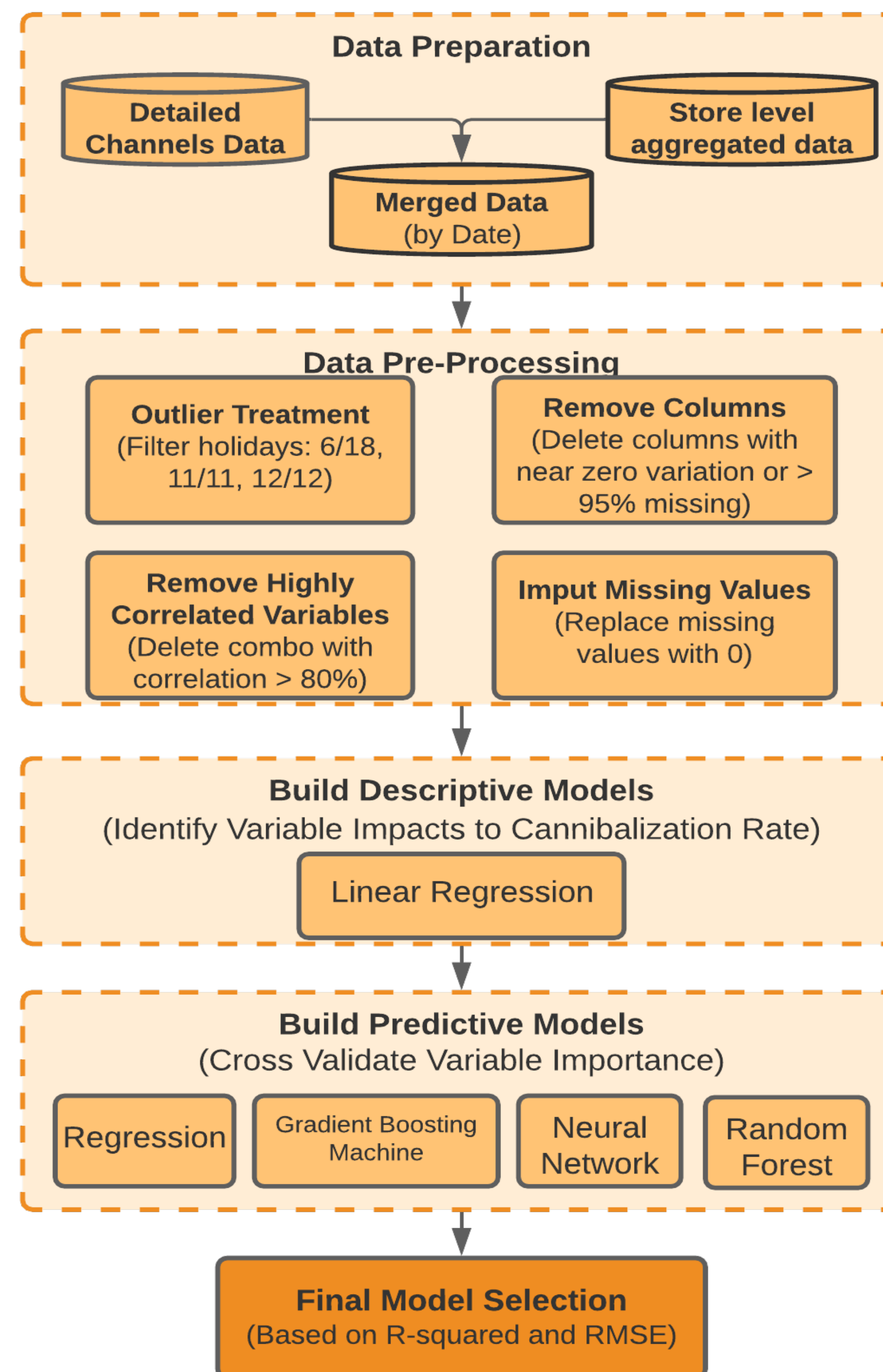


Figure 4. Methodology flow chart

## CONCLUSIONS

Instead of just changing cost of different channels to minimize the cannibalization rate, focusing on advertising quality or performance metrics, such as ROI, click rate and etc.

A/B test and collect more post covid data will help increase accuracy.

## STATISTICAL RESULTS

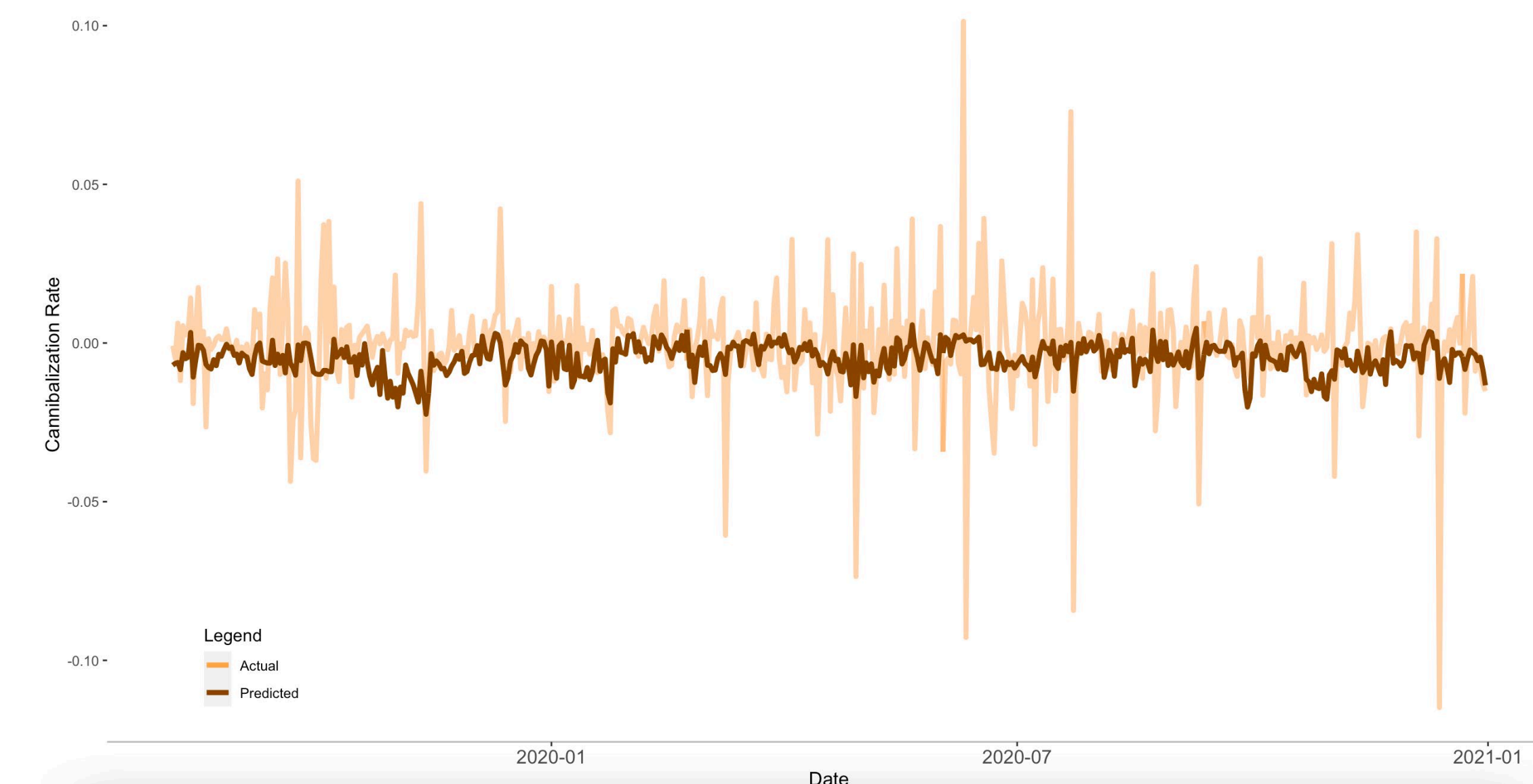


Fig 6. The Actual and Estimated Cannibalization Rate Distribution

From the plot we could learned that it does not distribute in a time-series pattern but more related to the market. Rather, we learn that the amount of investment is not directly related to the cannibalization rate but customers' behaviors such as clicks-related parameters. Further investigation with more customers' behavior related variables would help complement our current estimations.

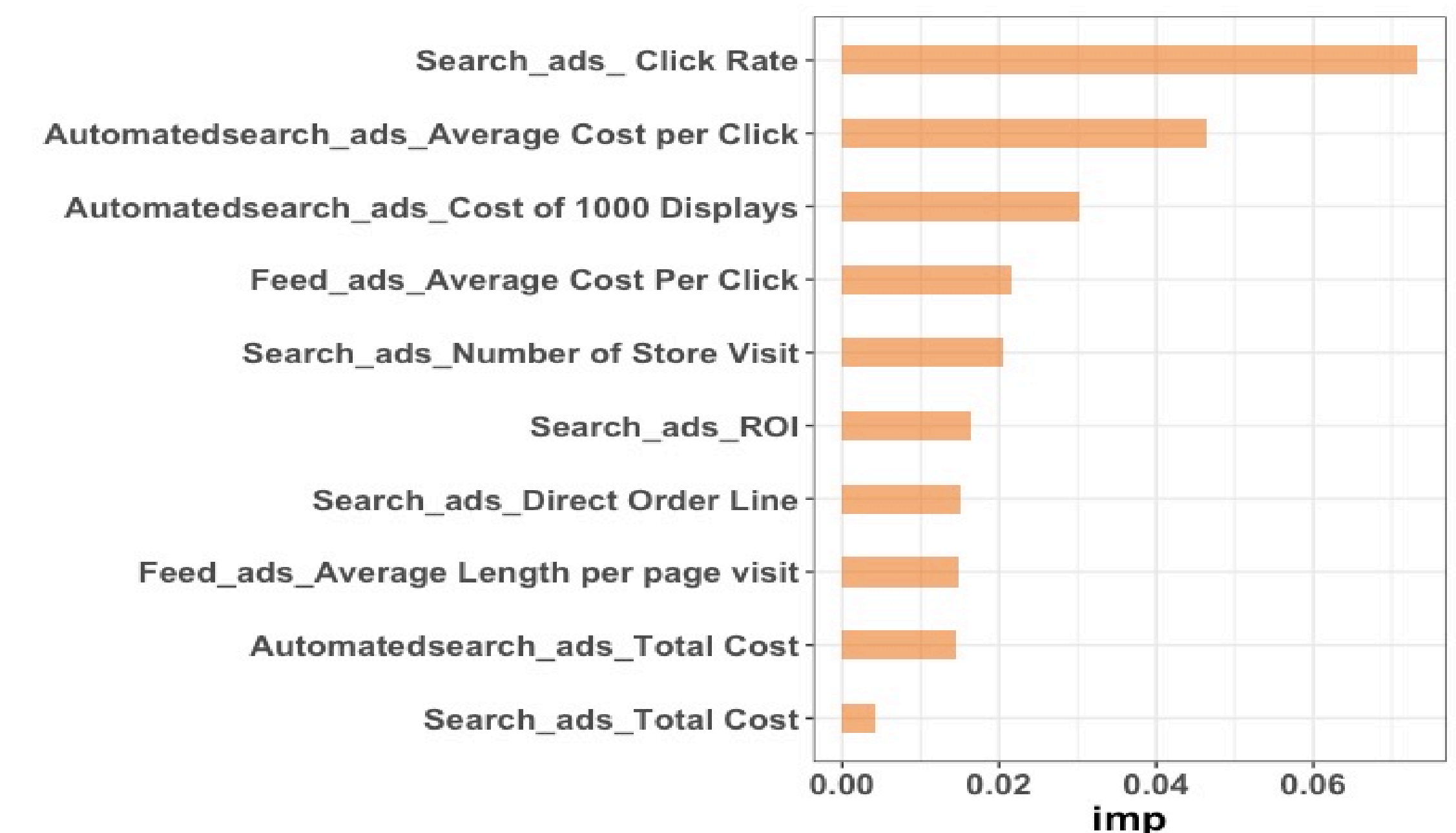


Figure 7. Variables importance bar graph

## ACKNOWLEDGEMENTS

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