Instacart Shopper Hiring Funnel:
A/B Test Detailed Report

Introduction

Background

Instacart aims to optimize its shopper hiring funnel and, as part of this initiative, conducted an A/B test. The experiment evaluated whether an earlier initiation of the mandatory background check would affect the conversion rates at different stages of the funnel. This report provides a comprehensive analysis of the A/B test data to inform future strategies.

Methodology

Data Collection and Preprocessing

The dataset, application.csv, contains event data for applicants and includes identifiers, event types, and timestamps. It has been preprocessed to ensure data quality and consistency.

Analytical Approach

The analysis followed a structured approach to ensure robust and actionable insights:

- Descriptive Statistics: An initial overview of the dataset was performed to understand its structure and composition. This included computing mean, median, and other statistical measures for key variables.
- Sample Size Analysis: The dataset was examined to identify the unique sample sizes for both the control and treatment groups. This is essential for understanding the representativeness of the test results.
- Conversion Funnel Analysis: A step-by-step breakdown of conversion rates at each stage of the hiring funnel was conducted for both groups. This included both graphical and statistical comparisons.
- Duration Analysis: The average and median time durations between key steps in the hiring funnel were computed and compared between the two groups.

Findings

Data Exploration

The dataset captures applicant data for the month of October 2018. During this period, the control group comprised 14501 unique applicants while the treatment group had 7197 unique

applicants. Initial data exploration also revealed that the treatment group had a higher rate of initial applications but a lower rate of background check completions.

6 rows × 6 columns pd.DataFrame ↗ CSV

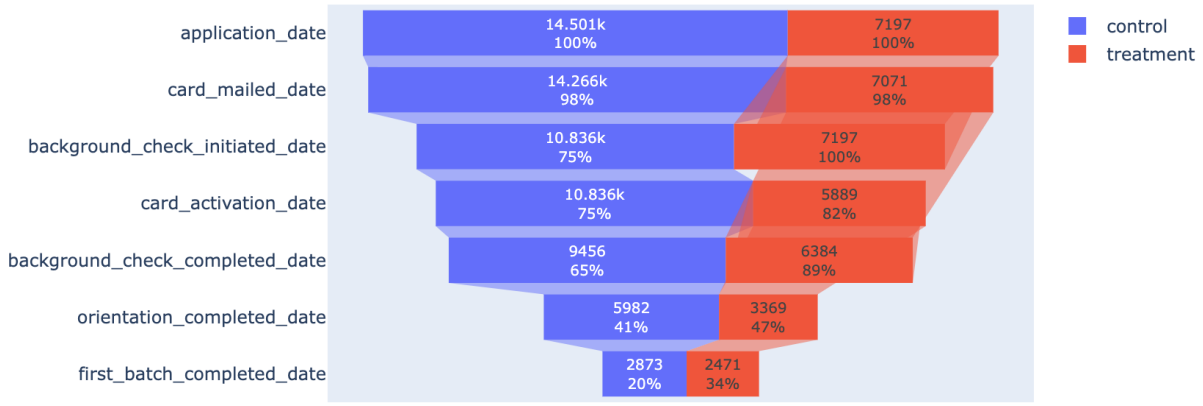
	applicant_id	channel	group	city	event	event_date
count	108328.0	108328	108328	108328	108328	108328
unique	21698.0	4	2	9	7	42
top	13575.0	web-search-engine	control	Midgard	application_date	2018-11-11 00:00:00
freq	7.0	41632	68750	49648	21698	3625
first	NaN	NaN	NaN	NaN	NaN	2018-10-01 00:00:00
last	NaN	NaN	NaN	NaN	NaN	2018-11-11 00:00:00

Conversion Funnel

The conversion funnel analysis provided several noteworthy insights:

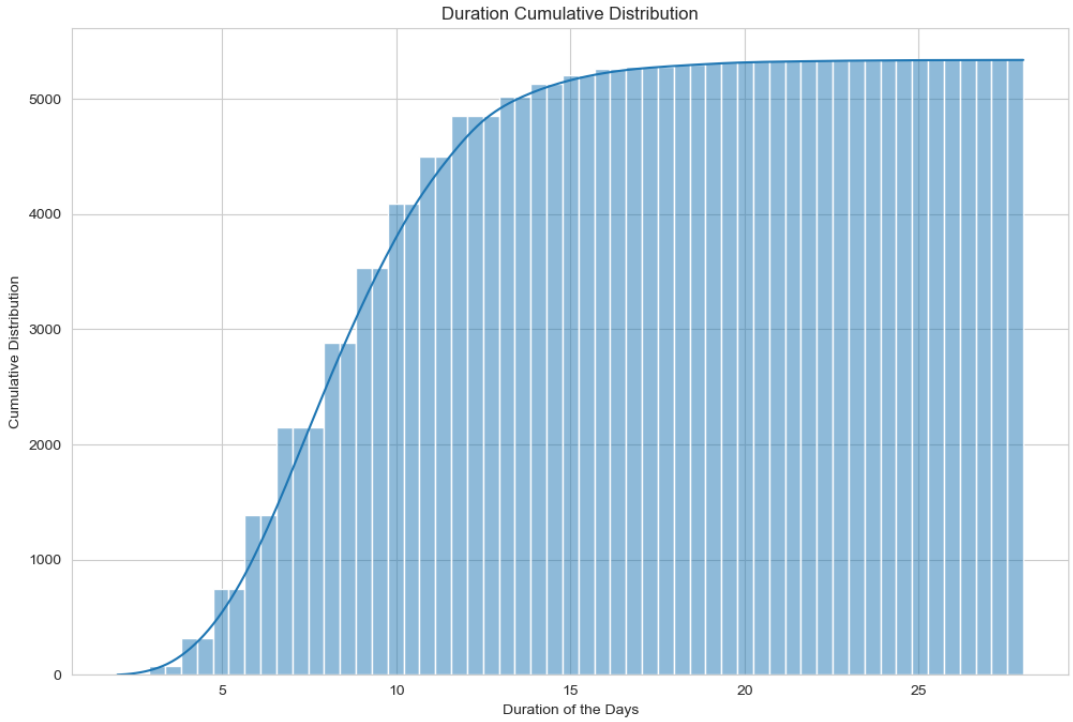
- The treatment group had higher conversion rates at the initial stages of the funnel, such as application and background check initiation.
- However, the treatment group lagged behind the control group in terms of completing the first batch of orders, which is a critical metric for Instacart.

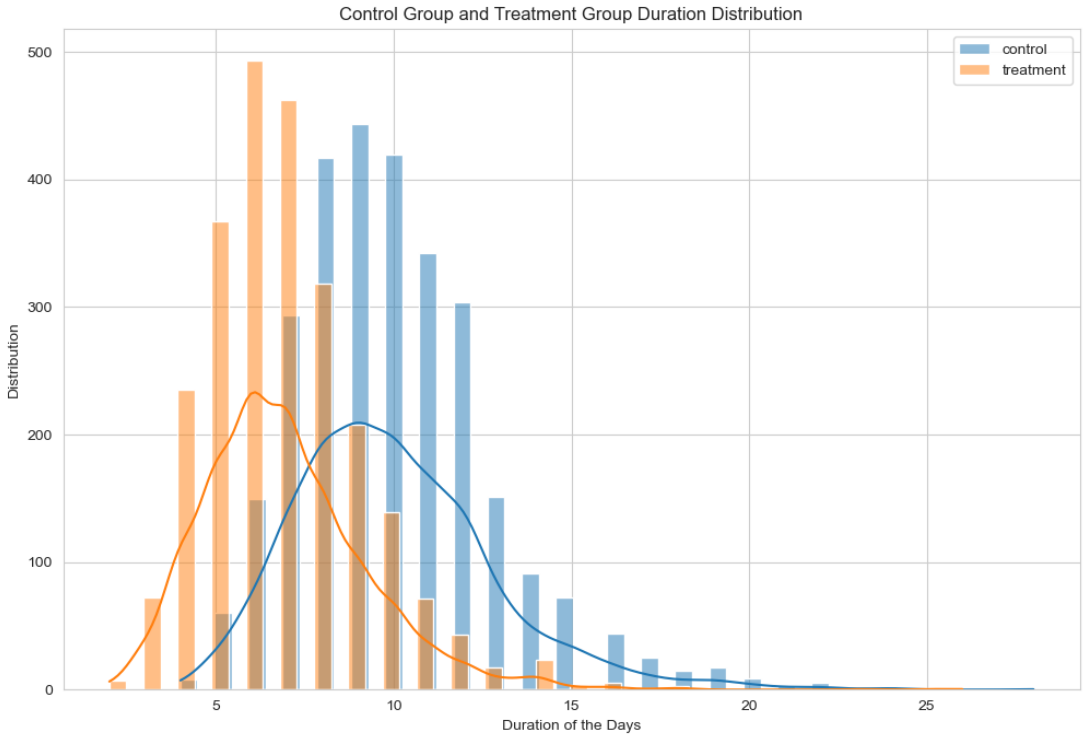
The analysis reveals varying conversion rates at different stages for both groups. The treatment group, which underwent the earlier background check, shows promising but variable conversion rates across the funnel stages.



Duration Analysis

The average time taken from application to the first batch completion varies between the groups. The treatment group generally takes longer to reach the final stage of the funnel.





Recommendations

- Extended A/B Test: Given the variability in conversion rates at different stages, it would be advisable to extend the A/B test for a longer period to gather more data.
- Cost-Effectiveness Analysis: A detailed cost-benefit analysis should be conducted to determine if the $30 background check fee results in a positive ROI.
- Funnel Optimization: Based on the duration analysis, it might be beneficial to revisit the design of the hiring funnel to identify and rectify bottlenecks.

Conclusion

The A/B test conducted by Instacart has provided invaluable insights into the shopper hiring process. While the treatment group showed promising results in the early stages of the funnel, it faltered at the crucial final stage. These findings suggest a need for further investigation and possibly a redesign of the hiring funnel for better optimization.