A/B Test Results

Optimizing Digital Ad Campaign Conversions

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Overview

This report presents the findings of a project designed to compare the effectiveness of two major digital advertising platforms: Facebook Ads (also known as Meta Ads) and Google Ads (formerly AdWords Ads). Our goal was to determine which platform delivered a better **conversion rate** – meaning, which one more efficiently turned ad clicks into desired actions, such as purchases or sign-ups.

Research Objective

The primary objective of this project was to definitively answer: **"Is the Facebook Ad campaign more effective in terms of conversions compared to the Google Ad campaign?"** We used a systematic A/B testing approach to ensure our comparison was fair and statistically sound.

Data Source

The data analyzed for this project was a sample dataset derived from the Capstone Project of the Meta Marketing Analytics Professional Certificate on Coursera. This dataset provided a realistic snapshot of digital ad campaign performance metrics.

Methodology

This project employed a **quantitative research methodology**, focusing on numerical data to draw conclusions. We treated this as an **A/B test**, comparing two distinct campaigns. The primary data was collected directly and continuously from digital ad platforms over time, allowing us to observe trends and performance changes. Essentially, we performed an "in-the-field" analysis of new primary data.

Key Analytical Steps Included:

- **Data Cleaning:** Ensuring the data was accurate and ready for analysis.
- **Statistical Analysis:** Applying methods to determine if observed differences were statistically significant or just due to random chance.
- **Conversion Rate Calculation:** Measuring how often an ad click led to a conversion.

Technologies Used

To conduct this analysis, we leveraged powerful programming and statistical tools:

Tool/Library	Purpose
Python	General-purpose programming language
NumPy	Numerical computing with arrays and matrices
Pandas	Data manipulation and analysis
SciPy	Scientific computing, including statistical functions
Matplotlib	Data visualization for charts and graphs

Project Summary

Through rigorous analysis and an A/B testing framework, we compared the conversion performance of ad campaigns run on Facebook (Meta Ads) versus Google (Google Ads). We calculated conversion rates for each platform and performed statistical tests to assess the significance of any observed differences.

Key Finding:

Our analysis indicates a significant difference in conversion performance between the two platforms. **We found that conversions driven by the Facebook advertising platform were, on average, 16% greater than those driven by the Google advertising platform.**

Recommendation:

Based on these findings, we recommend **prioritizing or increasing investment in Facebook advertising campaigns** for optimizing conversion rates. While Google Ads certainly have their place for specific objectives, for driving direct conversions, Facebook appears to be the more effective channel based on this dataset. Further testing and budget allocation adjustments should be considered based on overall marketing goals and audience targeting.

Visualizations

(Examples from Analysis Notebook)

To support our findings, the following charts were developed in the analysis notebook, providing a deeper visual understanding of campaign performance:

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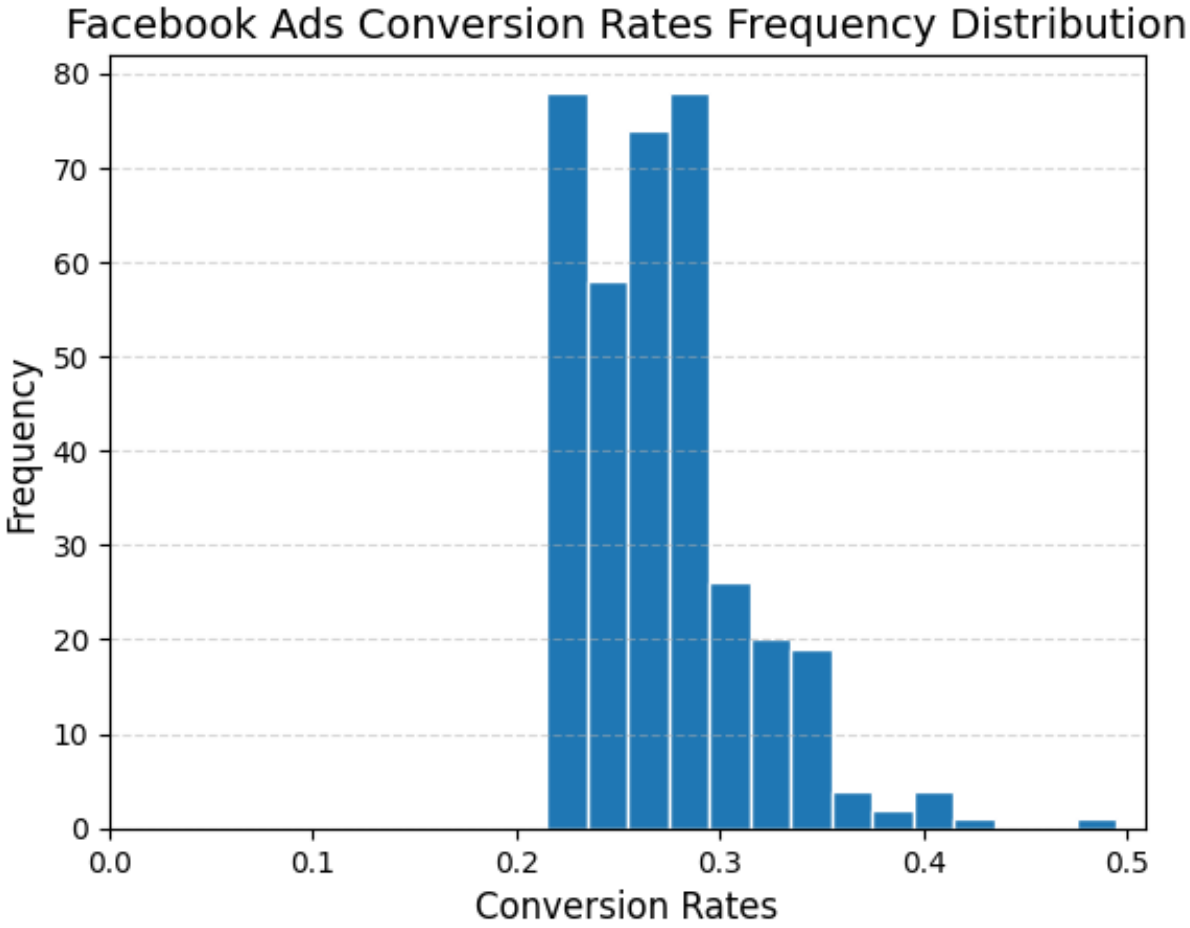
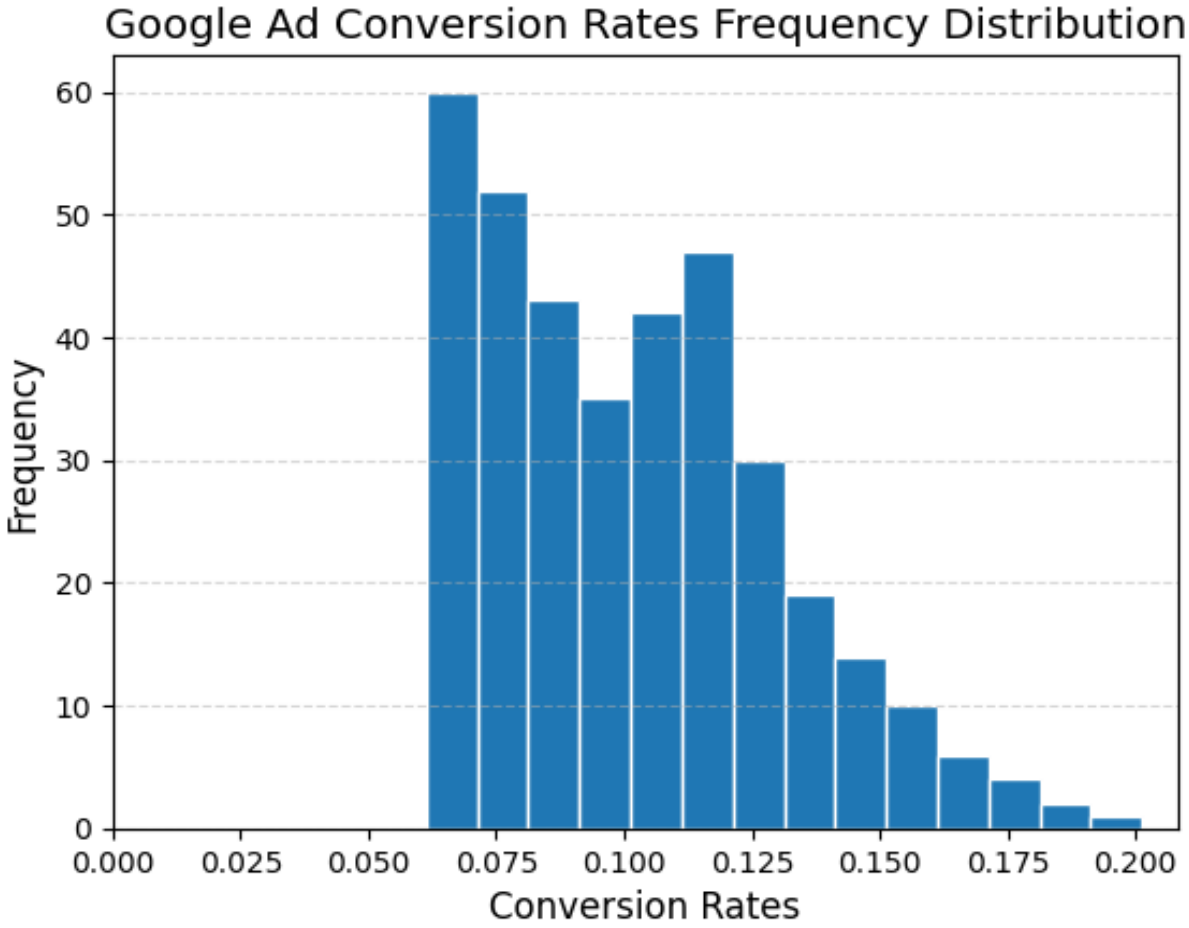
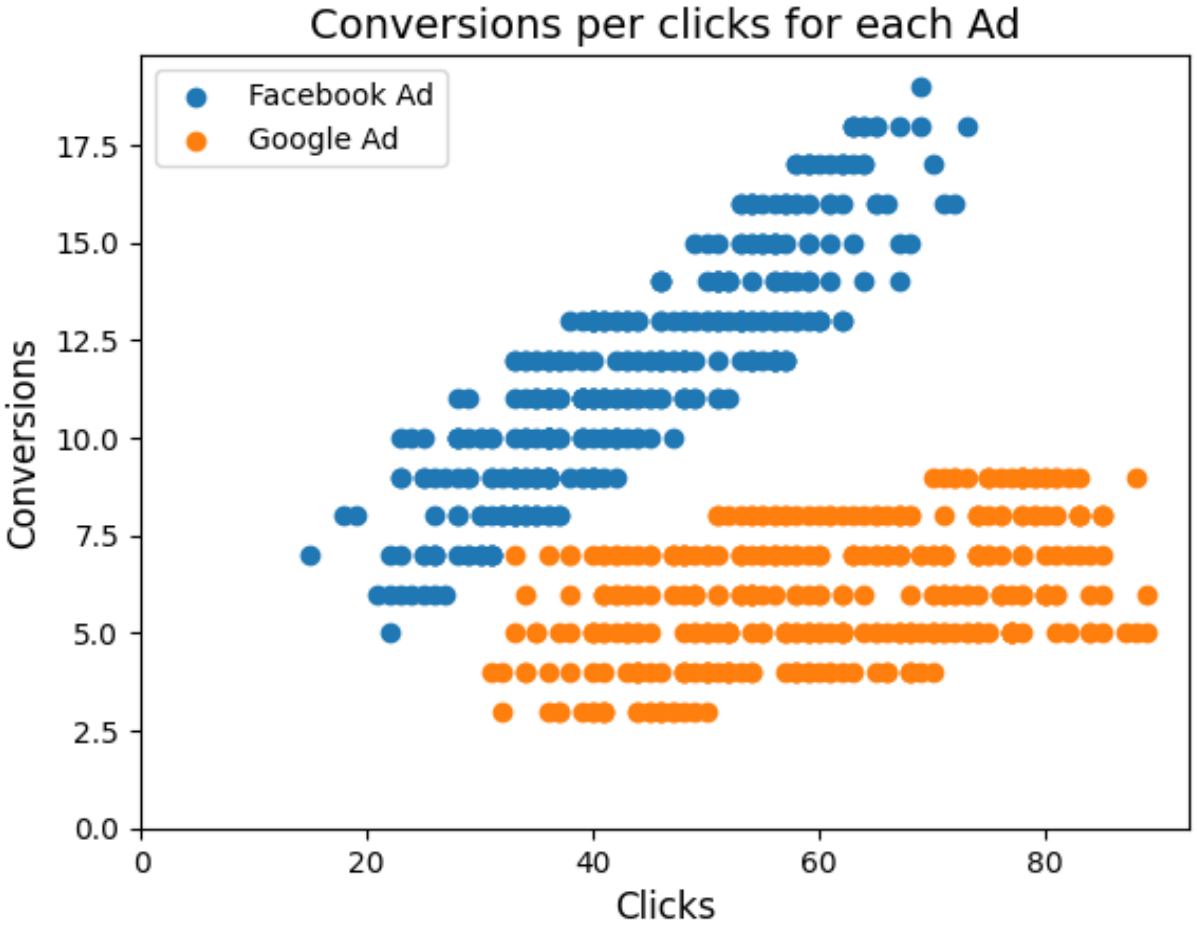


The graph shows that most of Facebook Ad conversion rates cluster around 20-30%.



According to the graph, most of Google Ad conversion rates cluster around 6-12%.



This graph indicates that ***clicks*** driven by Google advertising platform are more than those driven by Facebook advertising platform. However, ***conversions*** driven by Facebook advertising platform are more than those driven by Google advertising platform.

Thank you

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