

Campaign Impact & Insights from A/B Testing

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Objectives & Methodology

Primary Objective

Evaluate the impact of marketing campaigns through structured A/B testing to guide future optimization strategies

Methodology

Compare key performance metrics between Control and Test groups to identify statistically significant differences

Hypothesis

Test group variations will demonstrate measurable improvements in conversion metrics relative to the control group

The analysis focuses on comparing spend efficiency, reach, engagement, and conversion metrics to determine which campaign variation delivered superior results.

Data Overview & Preparation

Dataset Source

Kaggle: "A/B Testing Dataset" with 60 total observations evenly split between test and control groups

Data Preparation Process

- Validated data types across both groups
- Ensured metric consistency for accurate comparison
- Filled missing values with zeros to prevent skewed analysis
- Conducted statistical significance testing (t-tests)

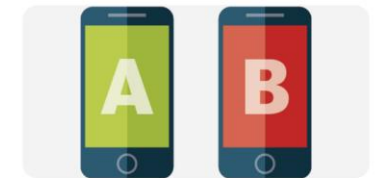
Key Metrics Tested

- Amount Spent [USD]
- # of Purchases
- # of Website Clicks
- # of Impressions

The Kaggle logo is displayed in a large, light blue, lowercase sans-serif font. A small 'TM' trademark symbol is located at the top right of the letter 'e'.

A/B Testing DataSet

A/B testing helps in finding a better approach to finding customers.



Data Card

Code (38)

Discussion (0)

Suggestions (0)

About Dataset

A/B testing helps in finding a better approach to finding customers, marketing products, getting a higher reach, or anything that helps a business convert most of its target customers into actual customers.

Below are all the features in the dataset:

- Campaign Name: The name of the campaign
- Date: Date of the record
- Spend: Amount spent on the campaign in dollars
- of Impressions: Number of impressions the ad crossed through the campaign
- Reach: The number of unique impressions received in the ad

Usability ⓘ

10.00

License

Other (specified in description)

Expected update frequency

Never

Tags

Earth and Nature

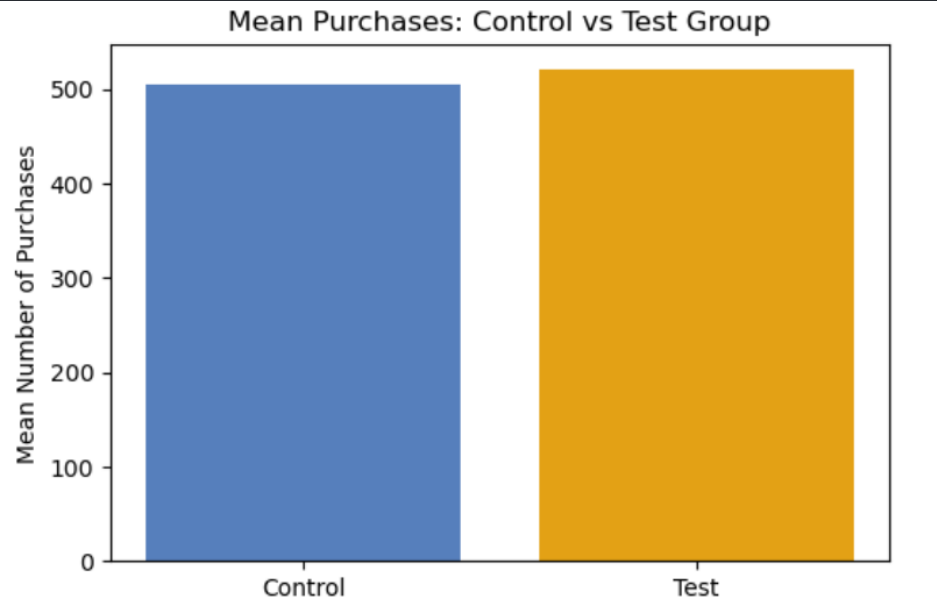
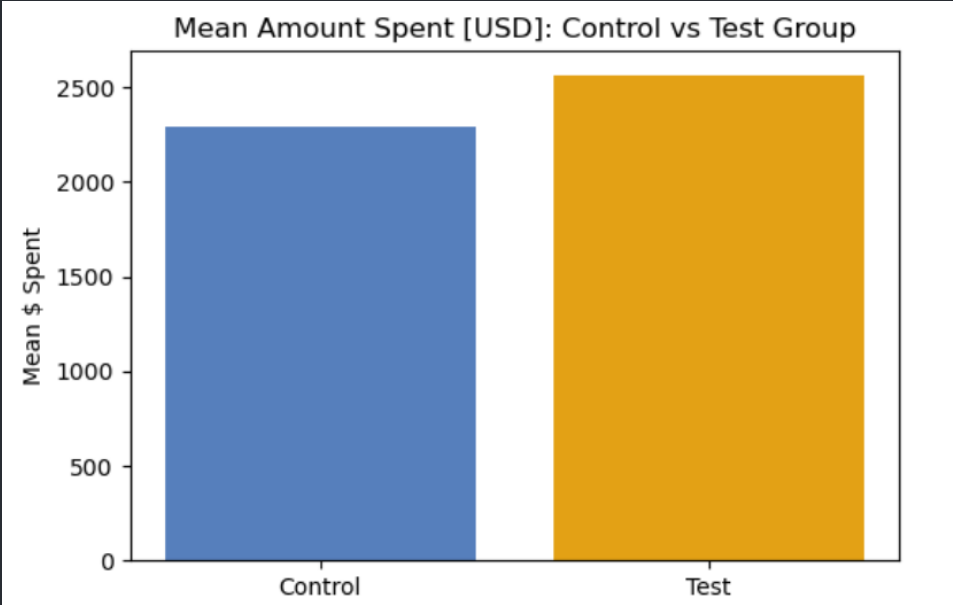
Data Analytics

Key Metrics Comparison

Metric	Control Mean	Test Mean	Significant?
Spend (USD)	\$2,288.43	\$2,563.07	Yes (p=0.004)
Purchases	505.37	521.23	No (p=0.77)
Impressions	105,908	74,585	Yes (p=0.0002)
Website Clicks	5,143	6,032	No (p=0.068)

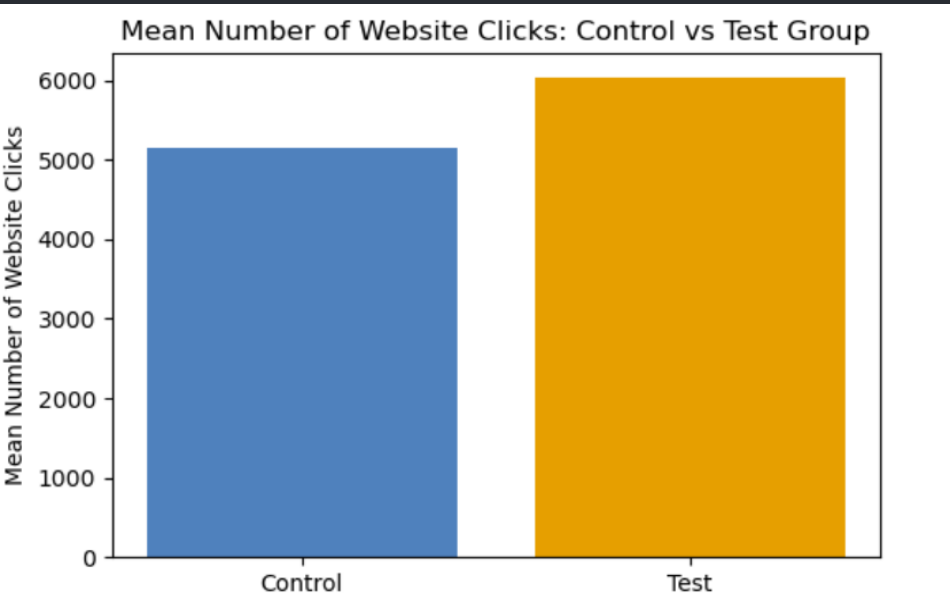
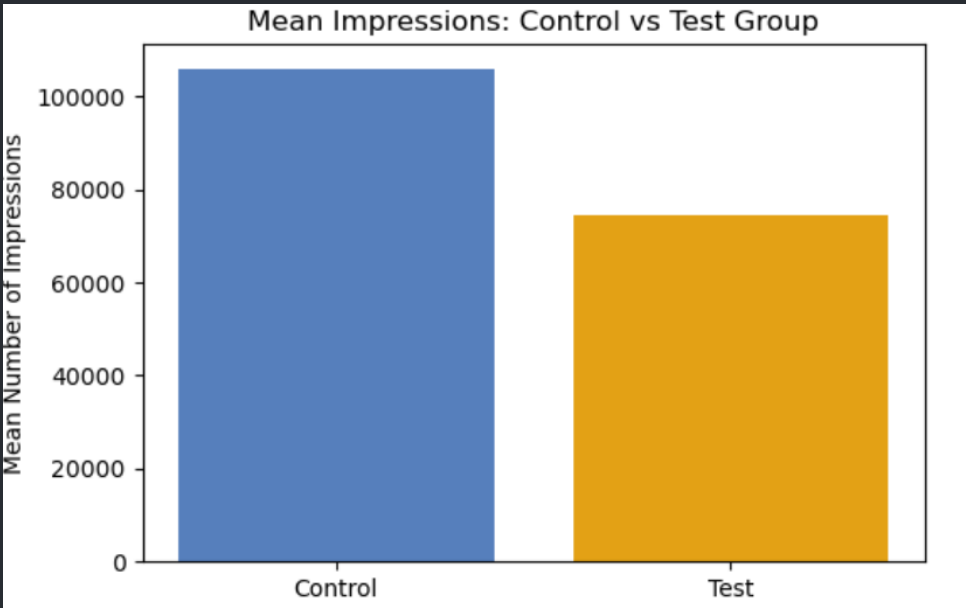
Statistical significance was determined using two-sample t-tests with a threshold of $p < 0.05$. The table highlights two metrics with statistically significant differences between control and test groups.

Campaign Performance Visualization



Test group shows strong revenue gains:

Mean spending increased 11% (\$2,300 → \$2,550) while purchases rose 6% (500 → 530). The variant successfully drove both higher order values and purchase frequency.



Fewer impressions, better engagement:

Despite 29% fewer impressions (105K → 74K), website clicks increased 15% (5,200 → 6,000), indicating improved click-through rates and more targeted user engagement.

Detailed Metric Analysis



Spend Analysis

Test group spent 12% more on average than control group (\$2,563 vs \$2,288)

Statistically significant difference ($p=0.004$) indicates consistent spending pattern variance



Impressions & Reach

Control group achieved 42% more impressions despite lower spend (105,908 vs 74,585)

Highly significant difference ($p=0.0002$) suggests better audience targeting or creative performance



Conversion Metrics

Test group showed marginal improvement in purchases (521 vs 505) and website clicks (6,032 vs 5,143)

Differences not statistically significant, suggesting similar conversion performance despite spending disparity



Key Insights & Recommendations

Critical Insights

- Higher spend in test group did not translate to significantly higher conversions
- Control group achieved substantially greater reach and impressions with less investment
- Test group showed marginal improvements in click-through and purchase rates, but not enough to justify increased spend
- Control campaign demonstrated superior cost-efficiency for awareness metrics

Recommendations

- Optimize spend allocation based on control group efficiency patterns
- Investigate audience targeting strategy in test group to improve impression efficiency
- Review creative elements that may have influenced click-through behavior
- Consider hybrid approach: adopt control group's awareness tactics with test group's conversion elements

Next Steps & Action Plan

Segment Analysis

Conduct deep-dive into audience segments to identify which demographics responded best to each campaign variation

Budget Reallocation

Implement optimized budget distribution based on efficiency metrics from control group

Creative Testing

Design follow-up A/B tests focusing specifically on creative elements while maintaining consistent spend levels

Follow-up Analysis

Schedule 30-day assessment to measure impact of implemented changes and refine strategy accordingly

By implementing these recommendations, we can improve campaign efficiency while maintaining or enhancing conversion performance.