E-Commerce A/B Testing Simulation — Summary Report

This report summarizes the findings of an A/B test conducted on an e-commerce platform to evaluate whether the new landing page (treatment group) led to higher user conversion compared to the original page (control group). The analysis includes hypothesis testing using a Z-test for proportions and a Logistic Regression model for conversion prediction.

Conversion Summary

Group	Users	Conversions	Conversion Rate
Control	147,202	17,723	12.04%
Treatment	147,278	17,514	11.89%

Statistical Hypothesis Testing

• Null Hypothesis (H_0): Conversion rate (control) = Conversion rate (treatment)
• Alternative Hypothesis (H_1): Conversion rate (treatment) > Conversion rate (control)

Z-score = −1.238
P-value = 0.892
Decision: Fail to reject H_0 — There is no statistically significant difference in conversion rates between the two groups.

Logistic Regression Model Summary

A Logistic Regression model was trained to predict user conversion probability using features such as group (control/treatment) and country. The model achieved an ROC-AUC score of 0.5007, indicating no meaningful predictive power — consistent with the A/B test conclusion.

Top Model Coefficients:
• group_treatment = −0.0046
• country_UK = +0.0625
• country_US = +0.0390

Business Interpretation

The A/B test results suggest that the new landing page did not significantly improve conversion rates. The logistic regression model confirms that neither experimental group nor country variables strongly influence conversion probability in this dataset.