🧪 A/B Testing - Ecommerce Landing Page

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Key Takeaways:

- 📉 The **proposed change did not significantly improve conversion rates**. It's recommended not to implement this change at this time.
- 🔍 Both classical and robust **statistical methods indicate no significant difference** between the control and treatment groups.

Analysis

A/B testing is a user experience research method. A/B tests consist of a randomised experiment that usually involves two variants, although the concept can be also extended to multiple variants of the same variable

Initial Data Quality Checks 🕵️

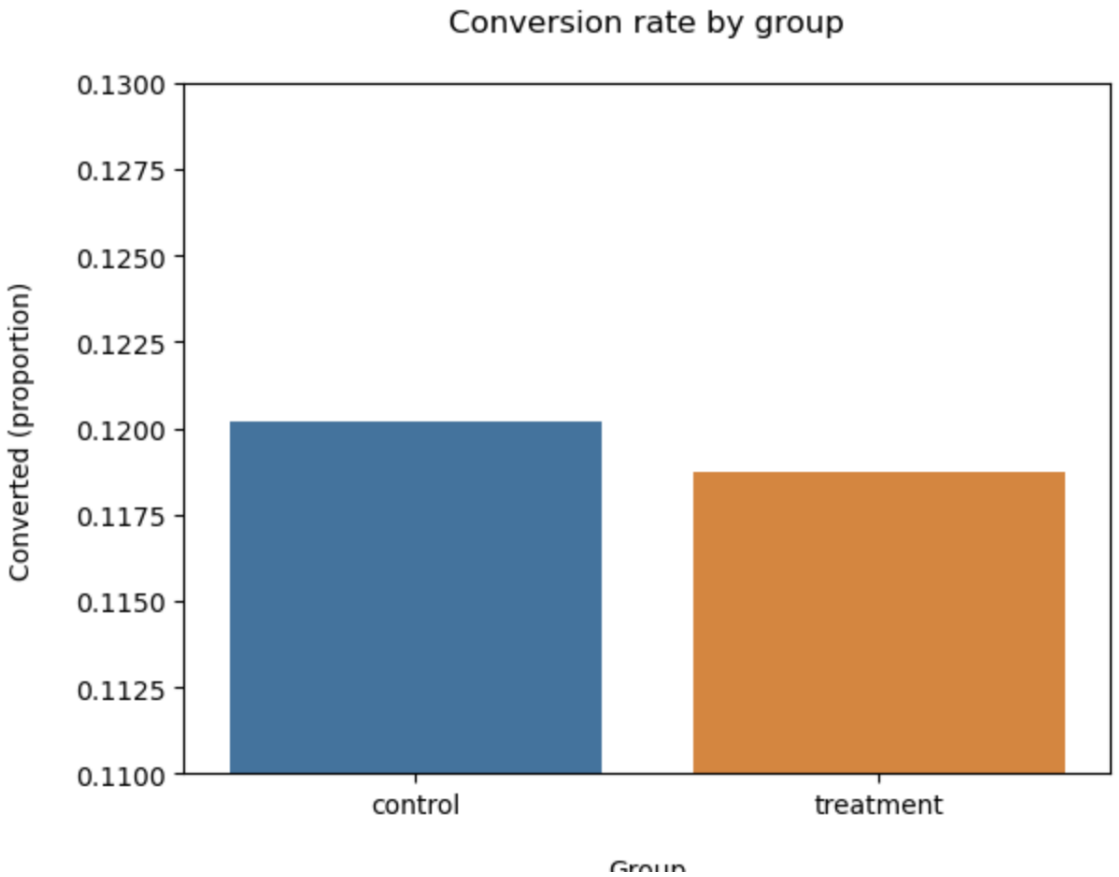
The analysis began with a thorough data quality assessment:

- **Nulls and Duplicates**: Checked for and addressed any missing or duplicate entries to ensure data accuracy.
- **Unit of Analysis**: Verified that users were uniquely assigned to either the treatment or control group, cleaning any overlaps.

Conversion Rate Calculation 📊

Conversion rates were calculated for both groups:

- **Control Group**: 12% conversion rate
- **Treatment Group**: 11.9% conversion rate



Statistical Significance Testing 📐

To determine if the observed difference was statistically significant, several methods were employed.

- **Z-Test for Proportions**: Used to compare the conversion rates between the two groups.
  - **P-value**: 0.232
  - **95% Confidence Interval for Control Group**: [0.118, 0.122]
  - **95% Confidence Interval for Treatment Group**: [0.117, 0.120]

Advanced Statistical Methods 🔬

To ensure robustness, additional techniques were applied:

- **Permutation Test**: Provided a p-value of 0.224, further supporting the lack of significance.
- **Bootstrapping**: Used to calculate the confidence interval for the mean difference between groups.
  - **95% Confidence Interval**: [-0.004, 0.001]

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- **P-value**: A measure of the probability that an observed difference could have occurred just by random chance.
- **Confidence Interval**: A range of values that likely contains the true difference between groups.

Recommendation 💡

Given the high p-values and confidence intervals overlapping zero, the **analysis suggests that the change does not significantly impact conversion rates.** Therefore, **it is recommended not to implement this change**. Instead, consider exploring alternative strategies or testing other elements to enhance the campaign's effectiveness.