GloBox Landing page A/B Test Analysis

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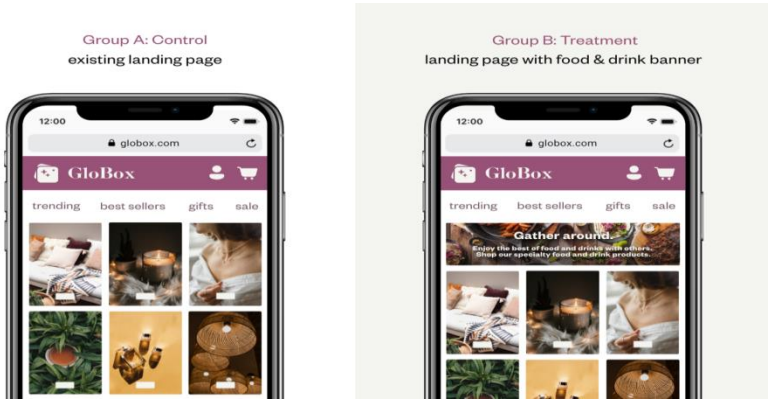
Summary

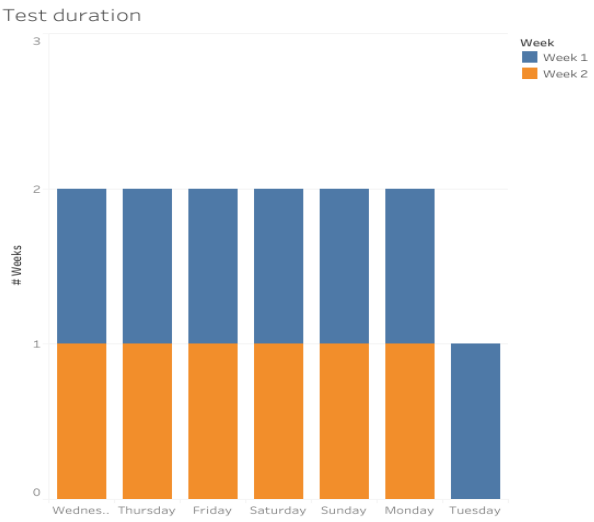
I recommend that we do not launch the new landing page with food and drink banner because we did not observe a statistically significant increase in the revenue per user.

Context

We ran an A/B test with a new design for the GloBox landing page to see if it would increase revenue per user and CR. The experiment was run on the mobile website only. Visitors to the main page were randomly assigned to either the control or treatment group. The control group saw the existing landing page while the treatment group saw the new landing page with food and drink banner as follows:



The experiment ran for approx. 2 weeks (13 days) from Wednesday, 25th January to Monday, 6th February in Q1 2023:



There were 24,600 users in the treatment, 24,343 users in the control, and 48,943 in total. A user was said to have converted if they made at least one purchase during the experiment period.

Validity checks

To test if the increased conversion rate observed in the treatment group may have been due to an allocation bias in favor of the treatment group, the following checks were done:

Sample ratio mismatch (SRM) check: To check the integrity of user allocation to the experimental groups, we checked if there was a sample ratio mismatch. The observed allocation ratio was 49.73% for the control group and 50.26% for the treatment group. Assuming an expected 50:50 allocation, we ran a Chi-square goodness of fit test to check if there was a statistically significant difference between the expected and observed allocation ratios. At 5% significance level, we did not observe a difference between the allocation ratios (p=0.25).

Attribute distribution imbalance check: To check if the distribution of users in the control and treatment groups based on their gender, devices and countries was balanced, we did an attribute distribution imbalance check. We observed that the distributions of these attributes were balanced between the 2 groups.

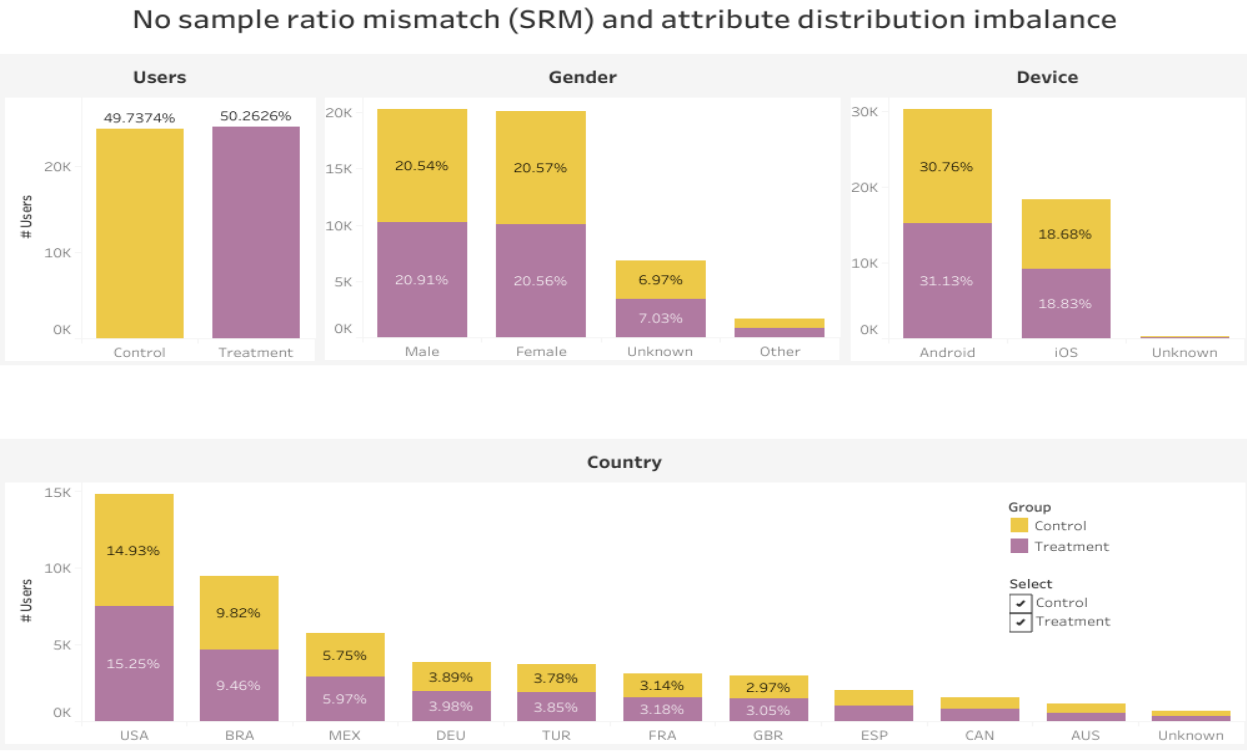


Figure 1: Dashboard showing the number of users in the control and treatment groups and the distribution ratios for gender, device and country.

Novelty effect: To also check if the observed results in the treatment group were as a result of the new landing page and not as a result of novelty effect, we compared the sales trends for conversion and total revenue with that of the control group. We observed that both groups had the same sales trends.

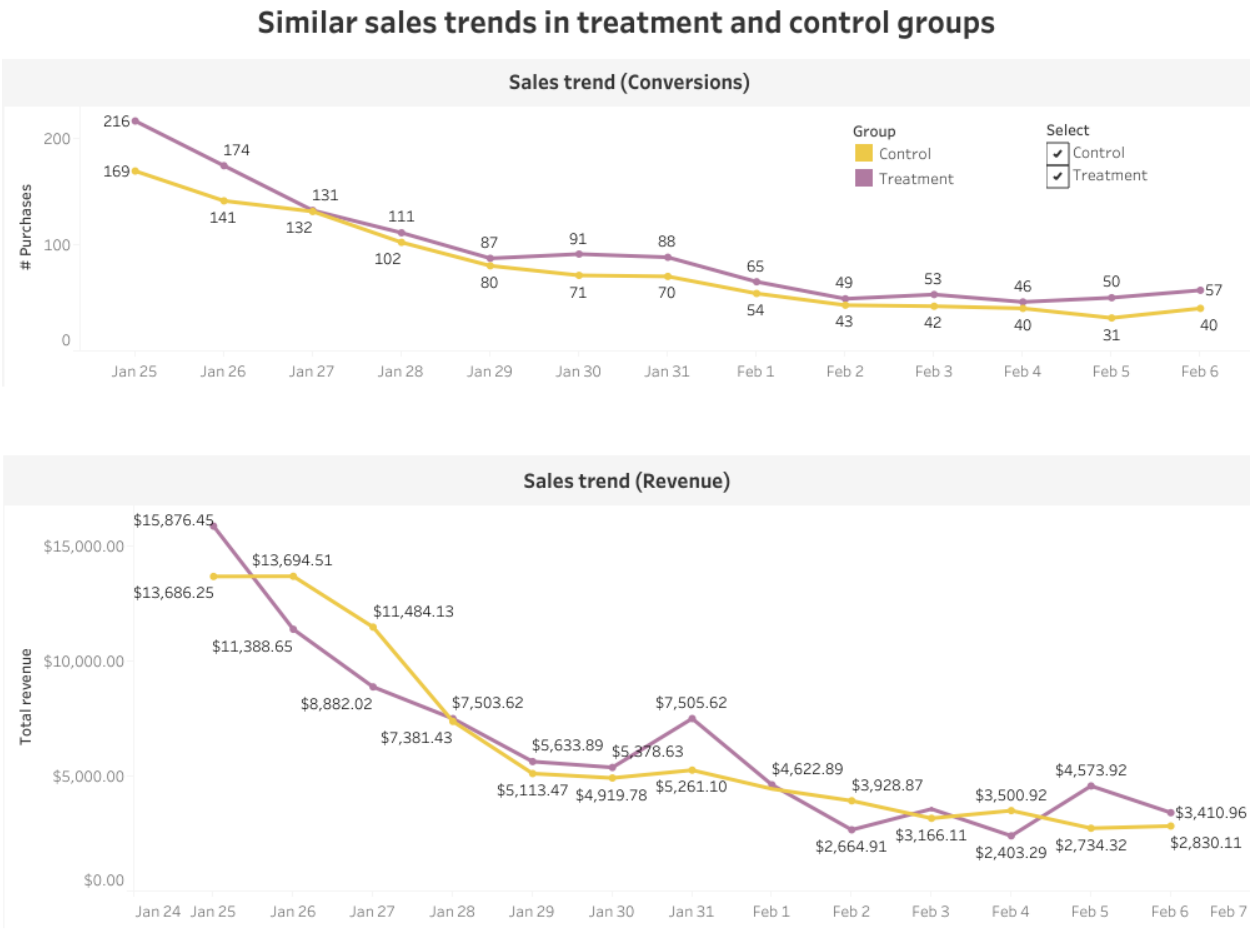


Figure 2: Dashboard showing the trend in conversion and total revenue in the control and treatment group during the experiment.

Results

The revenue per user was $3.39 (95% CI: $3.07, $3.71) for the treatment group and $3.37 (95% CI: $3.04, $3.70) for the control group. By observing the CI alone, there is an overlap between the CI of both groups and hence, there is no statistically significant difference between the groups (Fig.3a). In order to further determine whether there was a difference in revenue per user between the two groups, a hypothesis test was done. In agreement with the CI calculation, there was no statistically significant difference between the two groups at the 5% significance level (p=1). The 95% CI for the difference in revenue per user ($0.02) between the two groups

is ($-0.44, $0.47). Note that the interval includes $0 (red line) (Fig.3b).

a.) b.)

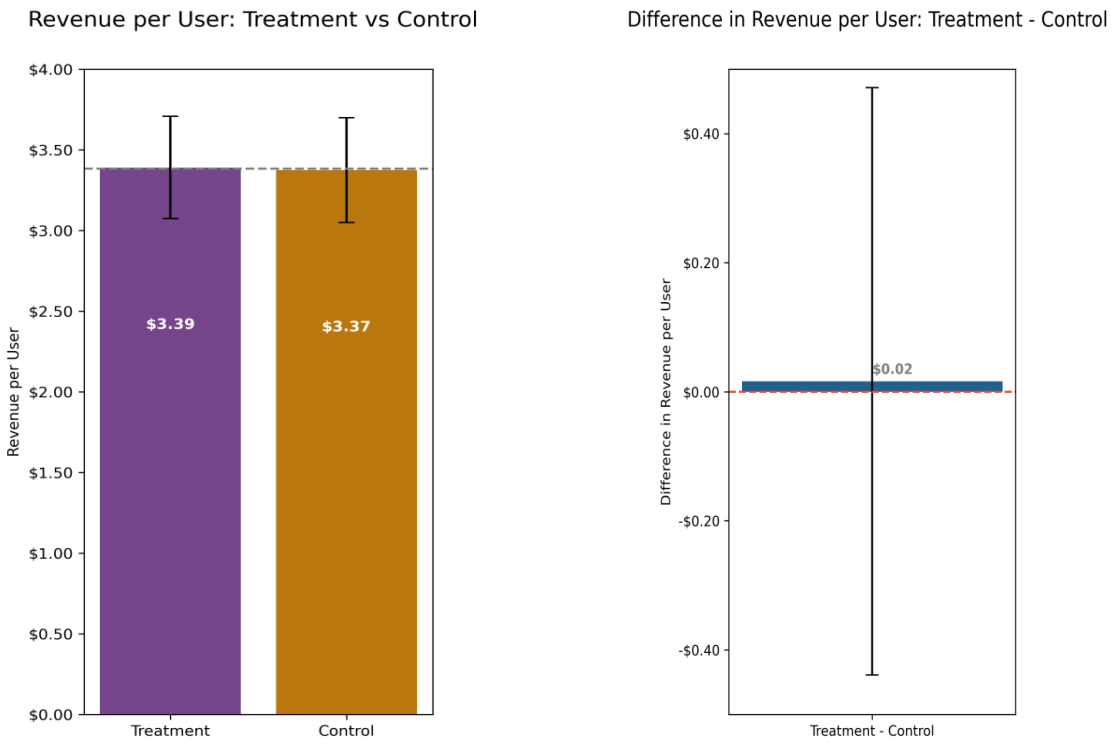
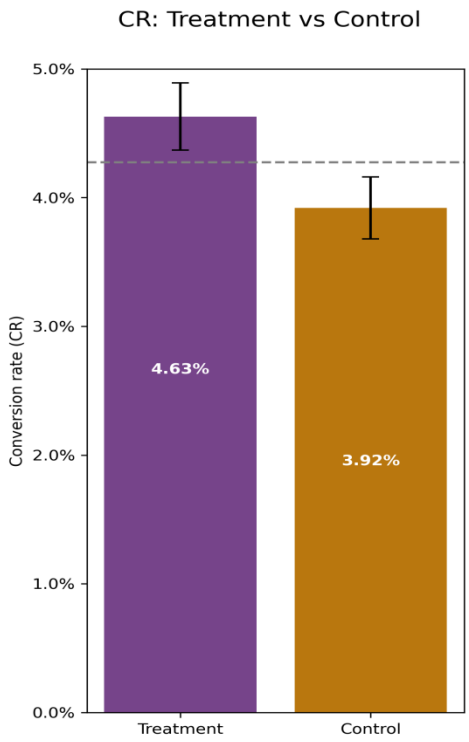


Figure 3: 95% CI for a.) revenue per user in treatment group vs control group b.) difference in revenue per user (treatment – control)

The CR was 4.63% (95% CI: 4.38%, 4.89%) for the treatment group and 3.92% (95% CI: 3.68%, 4.16%). Based on the CI calculation, there is no overlap between the CI of both groups and hence, there is a statistically significant difference between the groups (Fig.4a). Additionally, in order to further determine whether there was a difference in CR between the two groups, a second hypothesis test was done. There was a statistically significant difference between the two groups at the 5% significance level (p=0.0001). The 95% confidence interval for the difference in CR between the two groups is (0.35%, 1.07%). Note that the interval does not include 0% (Fig. 4b).

a.)



b.)

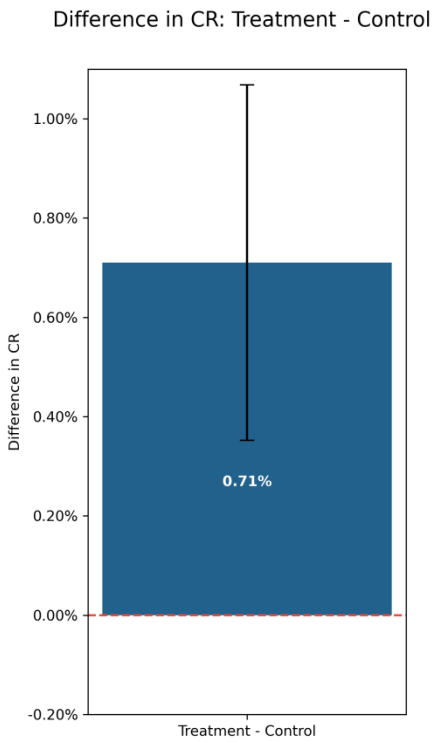


Figure 4: 95% CI for a.) CR in treatment group vs control group b.) difference in CR (treatment – control)

Recommendation

Although we didn't observe an increase in revenue per user, the new landing page did lead to an increase in CR. This is still a positive outcome, as it suggests that the new landing page works and has the potential to increase sales if certain adjustments are made. Therefore, I recommend that the team does not launch the new landing page at this time.