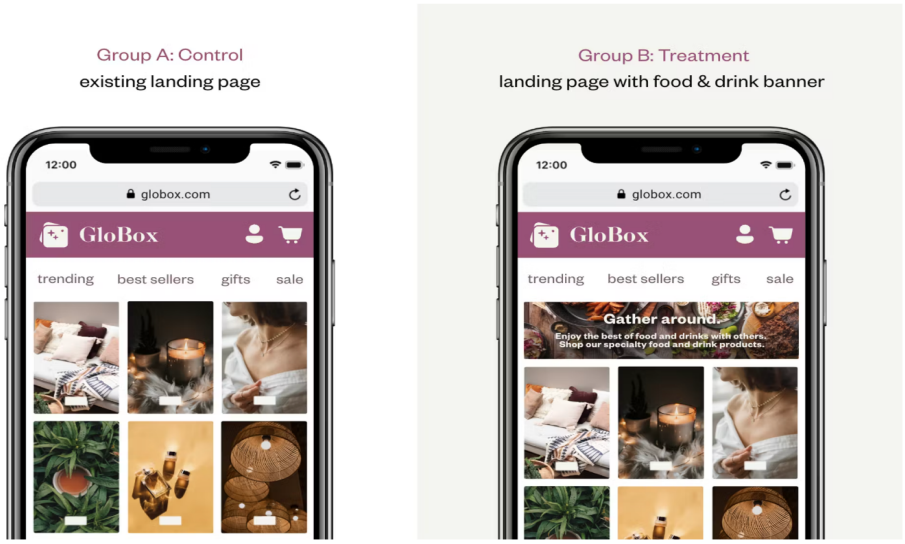
July 7, 2023

Glo-Box Results

Presented by Alishia Baker



GloBox A/B Test Analysis

TL:DR

I recommend that GloBox launch the banner experience to all its users. Based on my analysis I found several areas with significant increases in the treatment group.

Summary

GloBox has been primarily known for their boutique fashion items and high-end decor products. However, they have recently expanded substantially in their food and drink products and would like to bring more awareness to these areas in order to increase overall revenue. I have conducted an analysis using A/B testing in order to gain insight on whether a new food and drink banner on the company's mobile website would increase the conversion rate and overall revenue. Upon my research, I explored the difference in conversion rate amongst both groups A (control) and B (treatment) and found an increase of .71%. Which indicates that including the banner on the landing page would be beneficial for GloBox. I also remarked on a positive correlation

with the average amount spent per user. Group A had an average of $3.37 per user and group B had an average of $3.39 per user, displaying an overall increase of $.05. Based on my analysis, there was sufficiently strong enough evidence to go ahead and recommend that they launch this experience to all its users.

Context

Motivation

The original motivation of this testing was to bring awareness to the newly expanded area of GloBox's food and drink products and hopefully increase revenue with a food and drink banner implemented on their mobile landing page.

Test Groups

The experiment was only to be run on their mobile page. A user visits the GloBox main page and is then randomly assigned to either group A (control) or group B (treatment), this moment will be considered the join date. If the user was assigned to the control group then the food and drink banner does not load; if they were assigned to the treatment group, the page loads the banner. The user then may or may not make a purchase; the purchase can be made either on the date joined or in the days to come. If the user makes one or more purchases, this is considered a conversion. This test is not exclusive to purchases made on food and drink products, it includes all categories of purchase.

Test Parameters

I began by constructing a query that gave me all of the necessary data of customers including ID, join date, group, gender, country, device, activity and if each user converted or not. From there I was able to construct both of my hypotheses and gather the inferential statistics necessary in order to ensure the test had been executed effectively.

Success Metrics

Upon exploring the difference in conversion rate amongst both groups A (control) and B (treatment) , I found an overall increase of .71%. This indicates that including the banner on the landing page would be beneficial for GloBox. I also remarked on a positive correlation with the average amount spent per user. Group A had an average of $3.37 per user and group B had an average of $3.39 per user, displaying an overall increase of $.05. Based on my analysis, there was sufficiently strong enough evidence to go ahead and recommend that they launch this experience to all its users.

Results

Overall Results

NULL and ALTERNATIVE hypothesis for conversion rate read as follows:

There is no difference in the conversion rate between the control group and the treatment group.

There is a difference in the conversion rate between the control group and treatment group.

NULL and ALTERNATIVE hypothesis for amount spent per user read as follows:

There is no difference in the average amount spent per user between the control group and treatment group.

The average amount spent per user is greater/ less between the treatment and control group.

Hypothesis Test Results - Conversion Rate

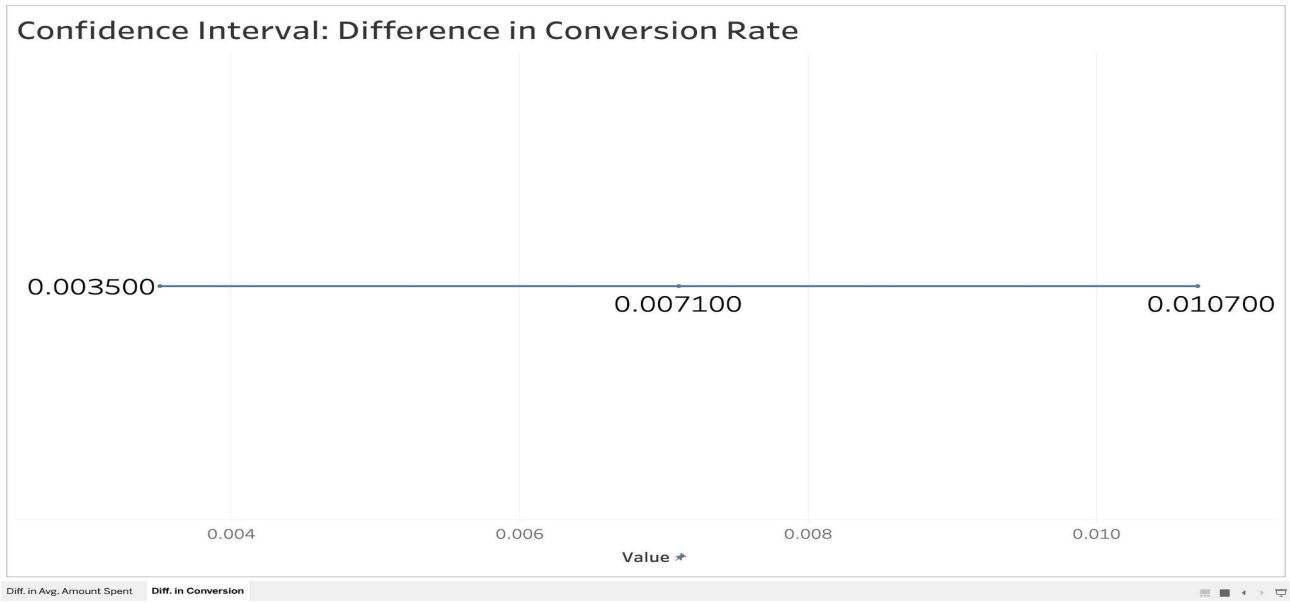
After statistical analysis the p-value concluded that there was a difference between samples and therefore I rejected the NULL hypothesis. Overall there was an increase in conversion when it came to the treatment group.

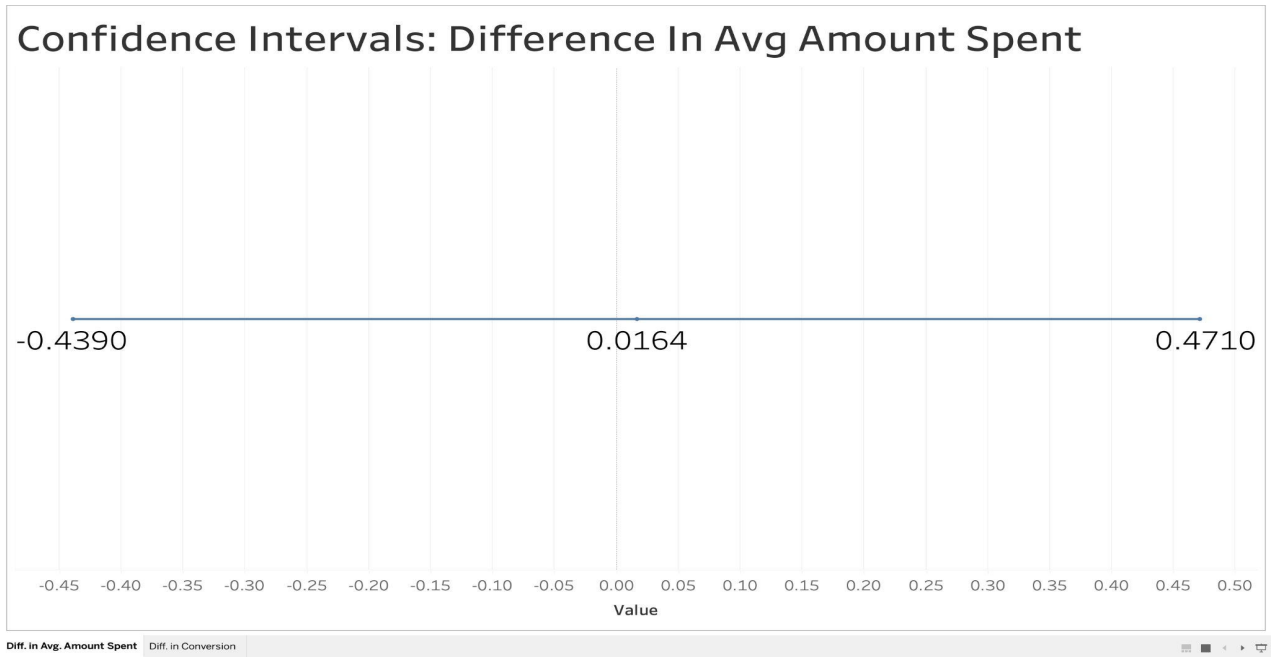
Hypothesis Test Results - Avg Spent per User

The p value concluded that there was a difference between samples and therefore we failed to reject the hypothesis. Overall version B was more effective at achieving more conversions and more average spent per user.

Confidence Intervals

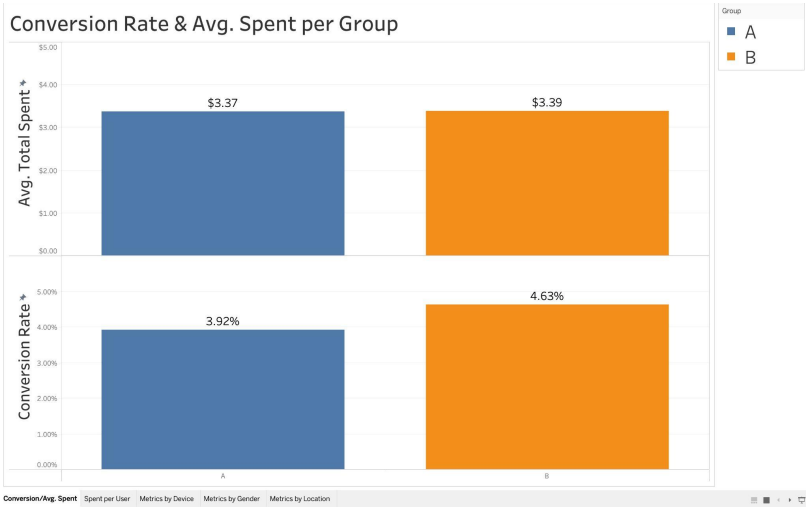
Below are visuals to display the critical intervals in both fields of conversion and average amount spent per user.





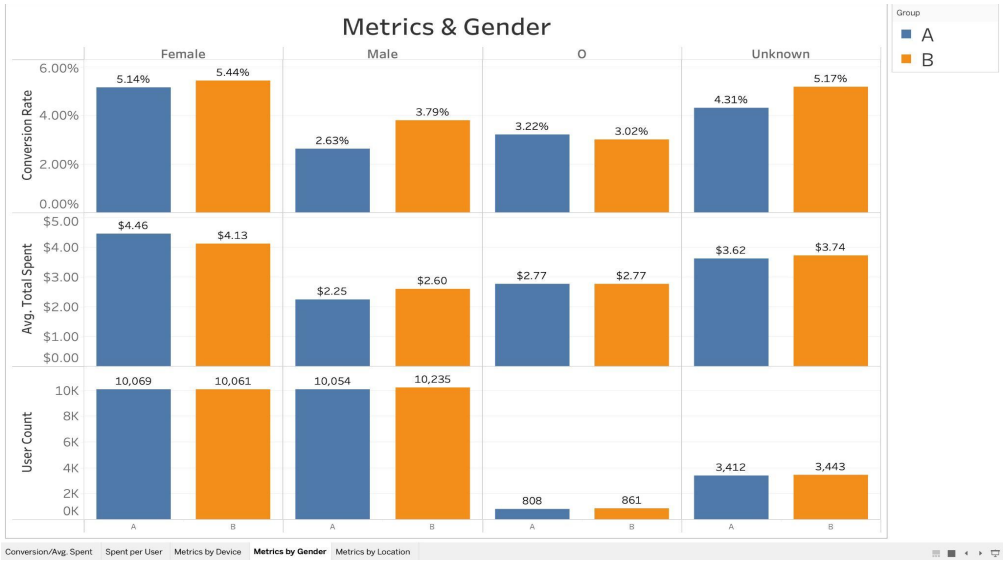
Since the two intervals overlap, that indicates that there is not a statistically significant difference among the two groups.

Results Breakdown



When it comes to the overall conversion rate and average spent per user in each group, there is a positive difference among the treatment group in both areas. The average amount spent increased by .02 cents in group B. Even more increase was noted amongst the treatment group (B) in the conversion rate with an overall increase of .71% which shows that the banner has a positive effect on the rate of conversion.

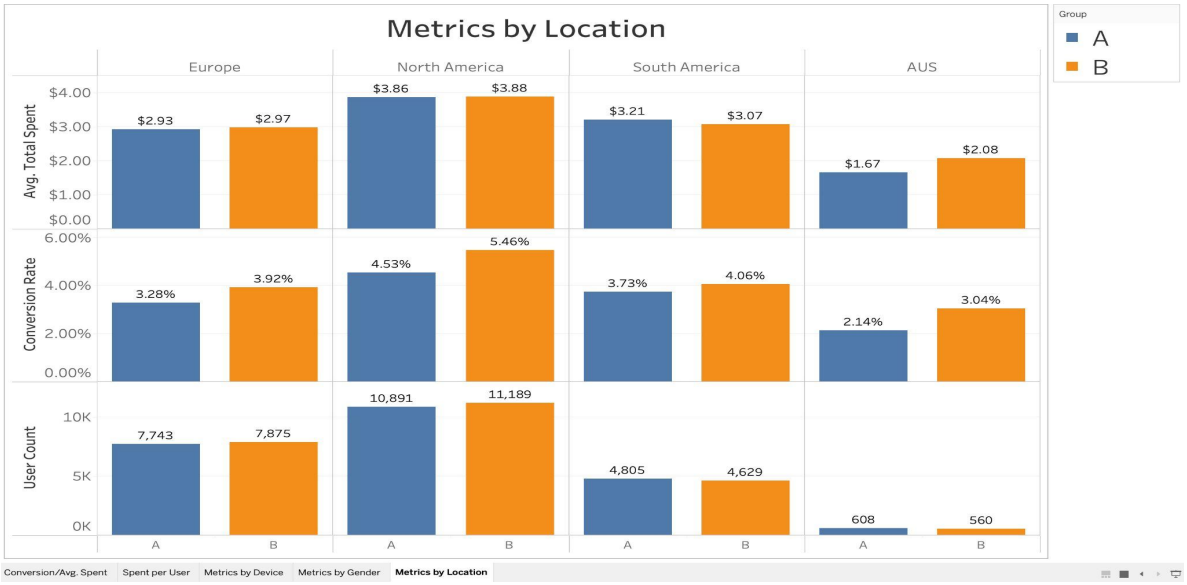
Metrics by Gender



Upon observation of the chart above, I noted that the male and female user count are very close in range amongst the two groups. Gender “O” having the lowest user count, therefore the actual count of users is not really affected by the use or no use of banners.

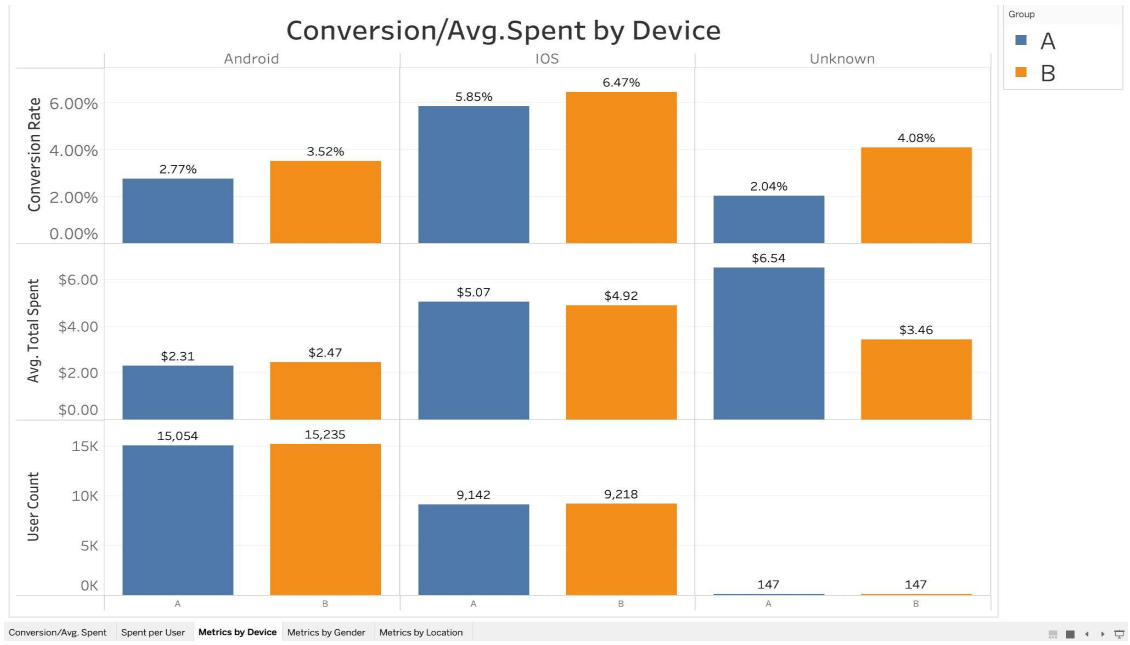
Overall when it comes to conversion rate, group B stats are higher than group A excluding “O” users which had a slightly lower conversion rate from group A to B. The conversion rate showed the most difference amongst groups B to A between the Male gender and the unknown gender. It would be helpful to learn which category the unknown gender falls into because it does show the most significant increase in conversion when using banners. Lastly, the average amount spent per user was slightly more amongst the treatment group with an average increase of almost .50 cents in all categories of gender excluding the females which dropped by .33 cents. In this instance Group A had a slightly higher average amount spent.The overall average increase in amount spent amongst gender was .20 cents.

Metrics by Location



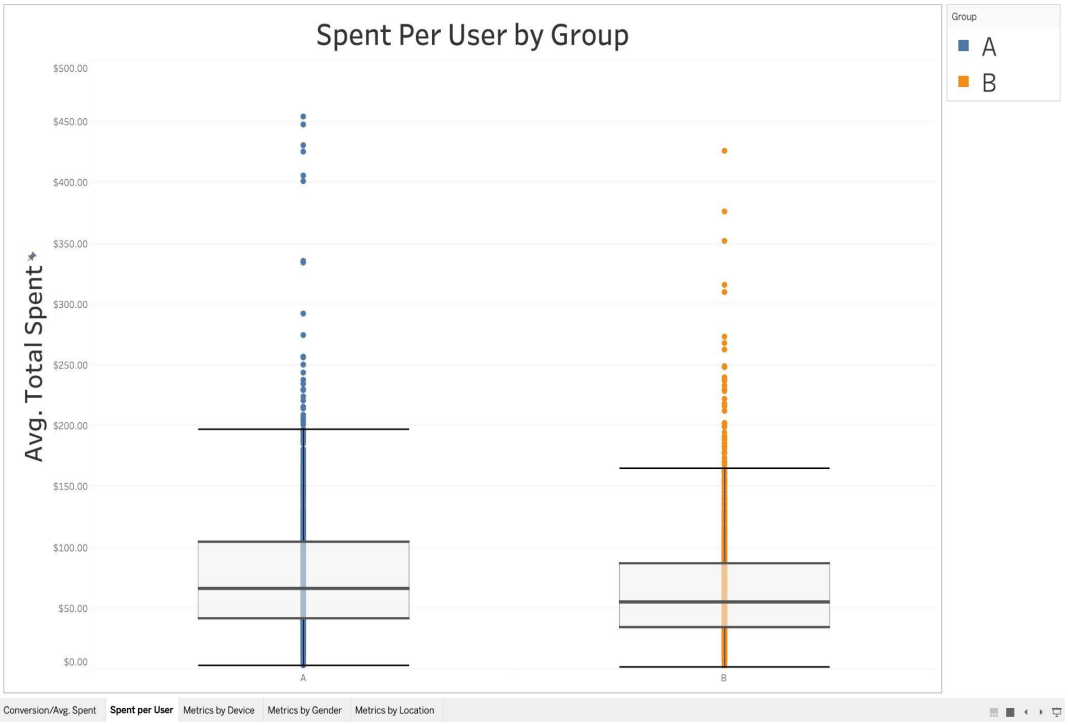
The above chart displays the user metrics based on location. Overall the majority of metrics were higher in group B, with the highest stats ranging from the North American region. North America showed the largest increase in the conversion rate area with an almost 1% increase and a 1% increase in the user count amongst the treatment group (B). When it comes to the average of total spent, I noted the biggest difference in groups from Australia showing a .41 cent increase in group B.

Metrics by Device



The following bar chart displays the metrics based on device. The overall user count is highest among Android users but when it comes to conversion rate and average spent per user IOS users are substantially more than Android, this could be due to the amount of unknown users.

Average of Total Spent per User by Group



When it comes to Average of Total spent, Group A was slightly higher with a median of $64.46 and Group B having a median of $54.54. So even though the conversion and average amount spent per user was higher, the average of total amount spent was higher in group A. The upper whisker in group A stands at $196.70 and the upper whisker in group B is $164.98 which also shows a slight decrease in overall average spent.

Recommendation

When it comes to the average of the total amount spent per user group, there is a slight decrease in total revenue from group A to group B. There was a positive change in both areas of conversion and average amount spent and because the use of a banner is not difficult to launch and maintain, I recommend they go ahead and launch the experience to all users. The sample size is just a portion of their overall population of customers and I believe that when launched for all users, the statistics will be significant and also bring awareness to their new food and drink products.

Appendix

SQL Query

```
SELECT
u.id,
u.country,
u.gender,
g.group,
g.device,
COALESCE(SUM(a.spent),0) AS total_spent,
CASE
        WHEN SUM(a.spent) > 0 THEN 1
        ELSE 0
END AS Converted
FROM groups AS g
JOIN users AS u
ON u.id = g.uid
LEFT JOIN activity AS a
ON g.uid = a.uid
GROUP BY u.id,
u.country,
u.gender,
g.group,
g.device;
```

Analysis Files

GloBox spreadsheet results:

https://docs.google.com/spreadsheets/d/1IsAcLKi_1SdyTfF9WUvQt2psgDhvNsYBkJMKLWsGBxY/edit#gid=1235041860

Tableau charts and visuals

https://public.tableau.com/views/GloBoxResults/MetricsbyLocation?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

Advanced Tasks - Critical Intervals

https://public.tableau.com/app/profile/alishia.baker/viz/CriticalIntervals/Diff_inAvg_AmountSpent