Landing page with food and drink banner- A/B Test analysis

By- Babita Bharti

Summary

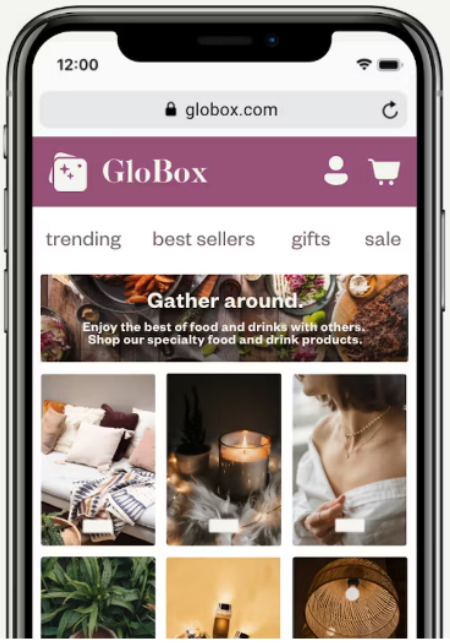
I recommend that we launch the landing page with a food & drink banner because we did observe strong evidence that there was an increase in conversion rate..

Context

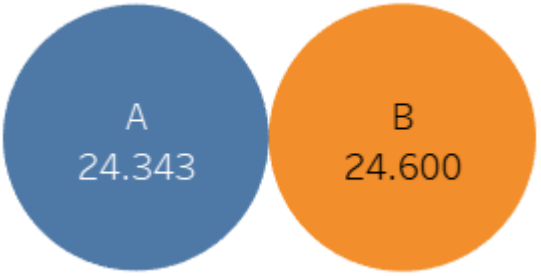
We ran an A/B test with the landing page with a food & drink banner to see if it would increase conversion rate. You can see the difference between the two designs below. The control group saw the old design, the treatment group saw the new design.

Group A: Control
existing landing page

Group B: Treatment
landing page with food & drink banner

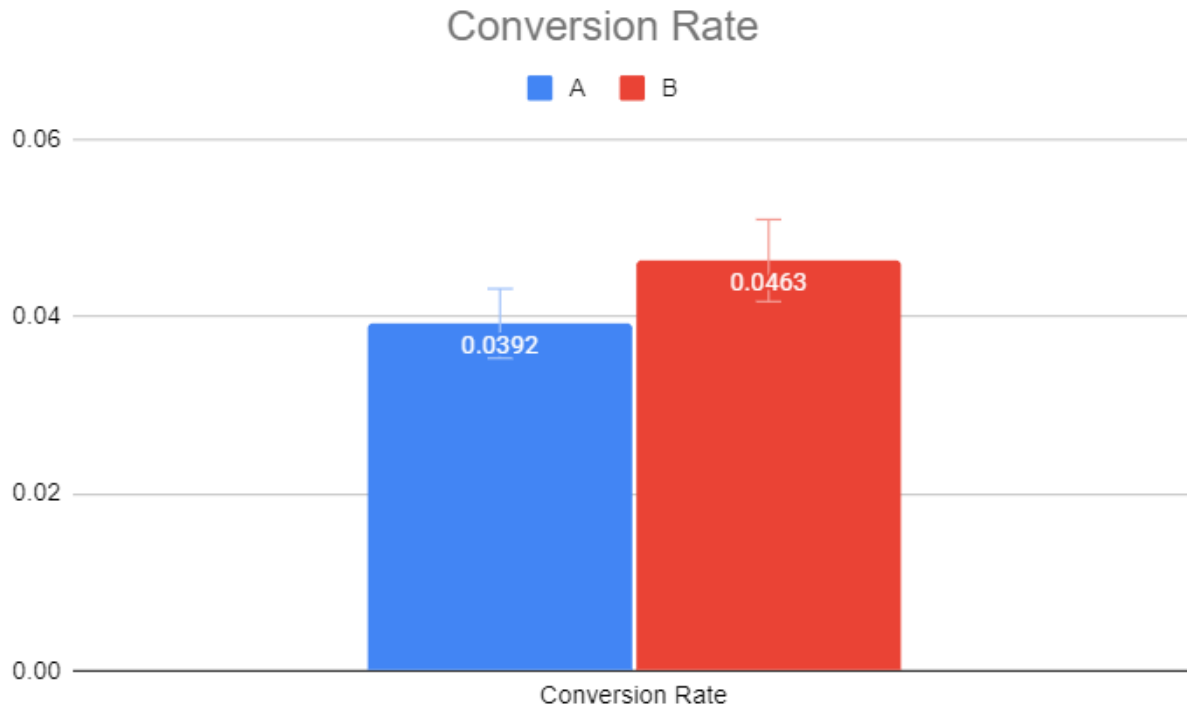


The experiment ran for 13 days in 2023 (25 Jan to 06 Feb) . There were 24600 users in the treatment, 24343 users in the control, and 48943 in total.



Results

In order to determine whether there was a difference in conversion rate between the two groups, we ran a hypothesis test. We did see a statistically significant difference between the two groups at the 5% significance level (p=0.0001).We reject the null hypothesis that there is no difference in the user conversion rate between the control and treatment group. The 95% confidence interval for the difference in conversion rate between the two groups is (0.0035,0.0107) .



Recommendation

Based on the results above, I strongly recommend launching the landing page with a food and drink banner because we observed an increase in conversion rate and revenue.

Link to spreadsheets:

https://docs.google.com/spreadsheets/d/17aVbqSqH7zgGy30qbrm8Vck07bu6tdFgj_R8VrBDds0/edit?usp=sharing

_Downloaded the date and created a Conversion column,with 1 as converted and 0 as not converted.

```
WITH cte AS (
SELECT uid, "group", SUM(spent) AS total_spent,
CASE WHEN sum(spent) is null   THEN 0
 WHEN sum(spent) =0   THEN 0
       WHEN sum(spent)>0 THEN 1 END AS conversion


FROM groups
left join activity
using(uid)
GROUP BY uid,"group"
), cte_2 as
(select uid, "group",
(COALESCE(total_spent, 0)) total_spent
, conversion
from cte)
select * from cte_2
```

1. What is the average amount spent per user for the control and treatment groups?

```
SELECT g.group,
 COALESCE(SUM(a.spent),0)/COUNT(distinct u.id) AS Avg_amt_spent
FROM groups g
JOIN users u
ON g.uid= u.id
LEFT JOIN activity a
ON a.uid= g.uid
GROUP BY g.group
```

ANS- Group A=3.37, GroupB=3.39

```
--Control Group A count & STDDEV
WITH T1 AS
(SELECT
DISTINCT u.id AS sample,
COALESCE(SUM(a.spent),0)/COUNT(distinct u.id) AS Average,

COALESCE(SUM(a.spent),0)::numeric AS sum_spent
FROM groups g
JOIN users u
ON g.uid= u.id
LEFT JOIN activity a
ON a.uid= g.uid
WHERE g.group='A'
GROUP BY 1)
SELECT count(sample)  as control_count
,ROUND(COALESCE(STDDEV(sum_spent),0),5) AS stdev
FROM T1
```

ANS-sample-24343 , stdev=25.93

2–What is the 95% confidence interval for the average amount spent per user in the **control**?

```
WITH T1 AS
(SELECT
DISTINCT u.id AS sample,
 COALESCE(SUM(a.spent),0)::numeric AS sum_spent
FROM groups g
JOIN users u
ON g.uid= u.id
LEFT JOIN activity a
ON a.uid= g.uid
WHERE g.group='A'
GROUP BY 1), T2 AS
(SELECT count(sample)  as control_count
,ROUND(COALESCE(STDDEV(sum_spent),0),5) AS stdev
FROM T1)
SELECT 3.37-1.96*(stdev/SQRT(control_count))AS lower_bound,
3.37+1.96*(stdev/SQRT(control_count))AS upper_bound
FROM T2
ANS 3.04,3.70
```

3-What is the 95% confidence interval for the average amount spent per user in the treatment?

```sql
WITH T1 AS
(SELECT
DISTINCT u.id AS sample,
 COALESCE(SUM(a.spent),0)::numeric AS sum_spent
FROM groups g
JOIN users u
ON g.uid= u.id
LEFT JOIN activity a
ON a.uid= g.uid
WHERE g.group='B'
GROUP BY 1), T2 AS
(SELECT count(sample)  as control_count
,ROUND(COALESCE(STDDEV(sum_spent),0),5) AS stdev
FROM T1)
SELECT 3.39-1.96*(stdev/SQRT(control_count))AS lower_bound,
3.39+1.96*(stdev/SQRT(control_count))AS upper_bound
FROM T2
 ANS:3.07,3.70
```

6.What is the user conversion rate for the control and treatment groups?

```sql
SELECT ROUND(count(DISTINCT a.uid)/count(DISTINCT u.id)::NUMERIC*100,2) AS
conversion_rate
FROM users u
JOIN groups g
On u.id =g.uid
Left Join activity a
ON g.uid=a.uid
WHERE g.group ='B'
ANS-Control-3.92%  Treatment-4.63%
```