

A/B Test Analysis for FoodTech UI Change

Analyzing the impact of larger food images on conversions



Introduction – Problem Statement & A/B Test Goal

- Problem Statement: Does increasing the size of food images improve conversion rates?
- Goal: Test whether the new design (larger images) leads to a higher percentage of successful orders.
- Experiment: Compare two variations
 - Variation 1 (Old Design)
 - Variation 2 (New Design with Larger Images)

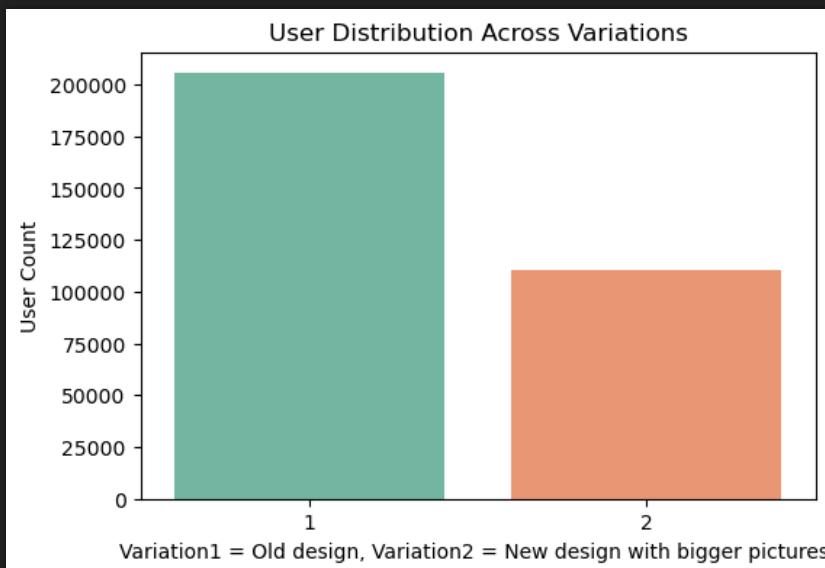
Data Exploration & Cleaning

- Before performing Analysis, understating Dataset is a crucial part.
- And data should be cleaned and accurate without any missing values.

Handling Missing Values & Data Types

- shop_id is not critical, so I choose to drop shop_id rows
- final_order_status (156,289 missing values). This likely means that many users did not complete an order.
- If final_order_status is only available for completed orders (e.g., "successful" "cancelled" "refunded_after_delivery")
- Here, I made an assumption that missing values represent "no order placed". So Filling missing values with "no_order"
- datetime_event is converted to Datetime Format. Before, it's object (string). datetime format can be used for time-based analysis..

User Distribution Across Variations



User distribution across variations is imbalanced:

Variation 1 (Old Design) → 205,338 users
Variation 2 (New Design) → 110,504 users

A/B tests should ideally have a balanced distribution of users across variations.

If one group has significantly more users, results might be biased.
Any observed differences in conversion rates could be due to unequal sample sizes rather than the UI change itself.

Resampling the Data for Balance

- Here I am randomly downsample Variation 1 to match Variation 2's user count.

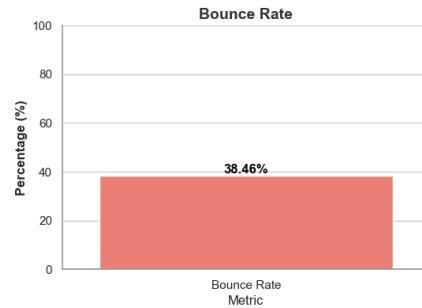
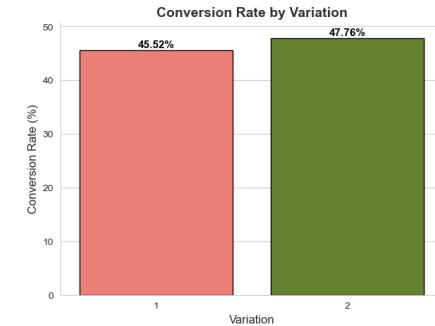
Variation 1 (Old Design) → 110,504 users

Variation 2 (New Design) → 110,504 users

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Balanced User Count per Variation:  
variation  
1    110504  
2    110504  
Name: count, dtype: int64
```

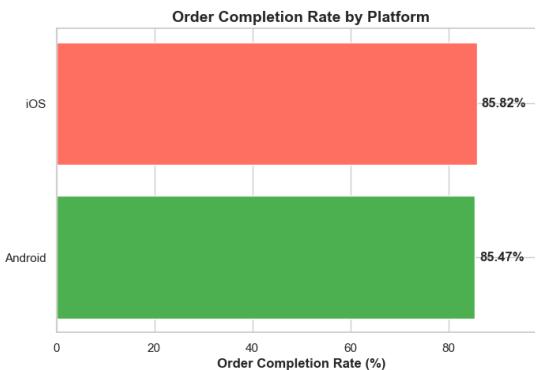
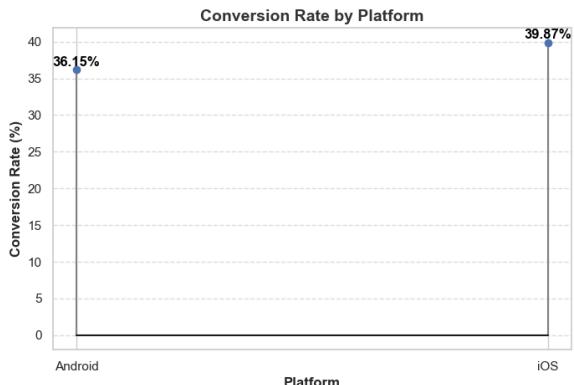
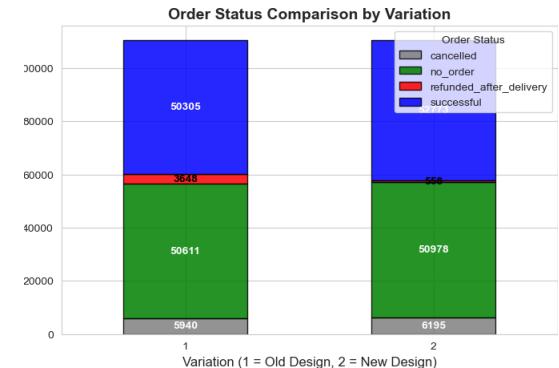
Calculating Conversion Rates & Key Insights

- Total users: 110,504 in each variation.
- Variation 2 (New Design) Conversion Rate: 47.76% vs. 45.52% for Variation 1.
- Bounce Rate: Android (39.17%) vs. iOS (36.80%).



Key Observations

- Successful Orders: 52,773 (New Design) vs. 50,305 (Old Design), an improvement of ~2.23%.
- Conversion Rate: Android (36.15%) vs. iOS (39.87%).
- Order Completion: Android (85.47%) vs. iOS (85.82%).



Statistical Test Results – P-Values & Conclusions

Chi-Square Test

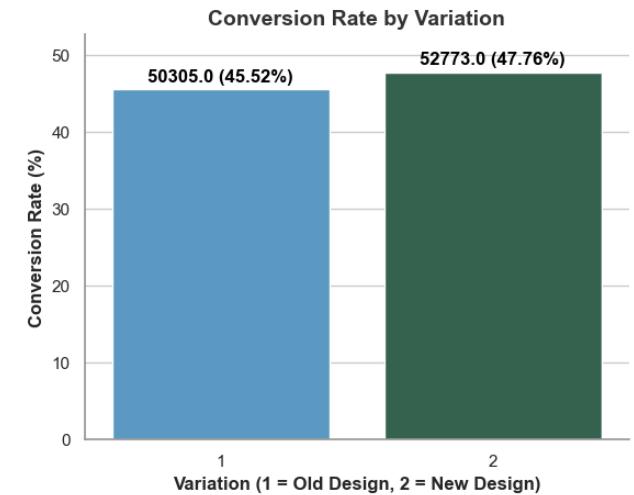
- Chi-Square Statistic: 110.6512
- P-value: 0.0000 ($p < 0.05$) → Statistically significant difference

Two-Proportion Z-Test

- Z-Statistic: -10.5233
- P-value: 0.0000 ($p < 0.05$) → New design performs better

Conclusion:

The larger images **significantly improve conversions** and should be rolled out.



Business Recommendations – Data-Driven Suggestions

- **New Design Rollout:** Implement larger food images for all users.
- **Further UX Testing:** Experiment with different image sizes and placements.
- **Android Optimization:** Reduce bounce rate by improving UI performance.
- **iOS Strategy:** Leverage high conversion rates by testing premium features.
- **Future A/B Tests:** Explore enhancements like clearer pricing, descriptions, and faster load times.