

Bean and Brew Case Analysis

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Bean & Brew's challenge



Analyze whether the current promotions work, and what other business strategies can we recommend to promote reusable cup usage.



Trying to strike the balance between environmental protection and profit generation.



Research questions



Did the November 2023 rebrand impact revenue?



Did the increased advertising of their merch actually encourage reusable cup habits?



What are the tradeoffs between protecting the environment and making a profit?



Which kind of customers are more likely to bring their reusable cup?



To answer those questions, we did...



Data set cleaning & joining: calculated product profit from items, merged it to the sales dataset, added cup profit to finally get total profit per transaction



EDA: visualize financial and environmental performance before/after Nov 2023



Statistical analysis: z-test



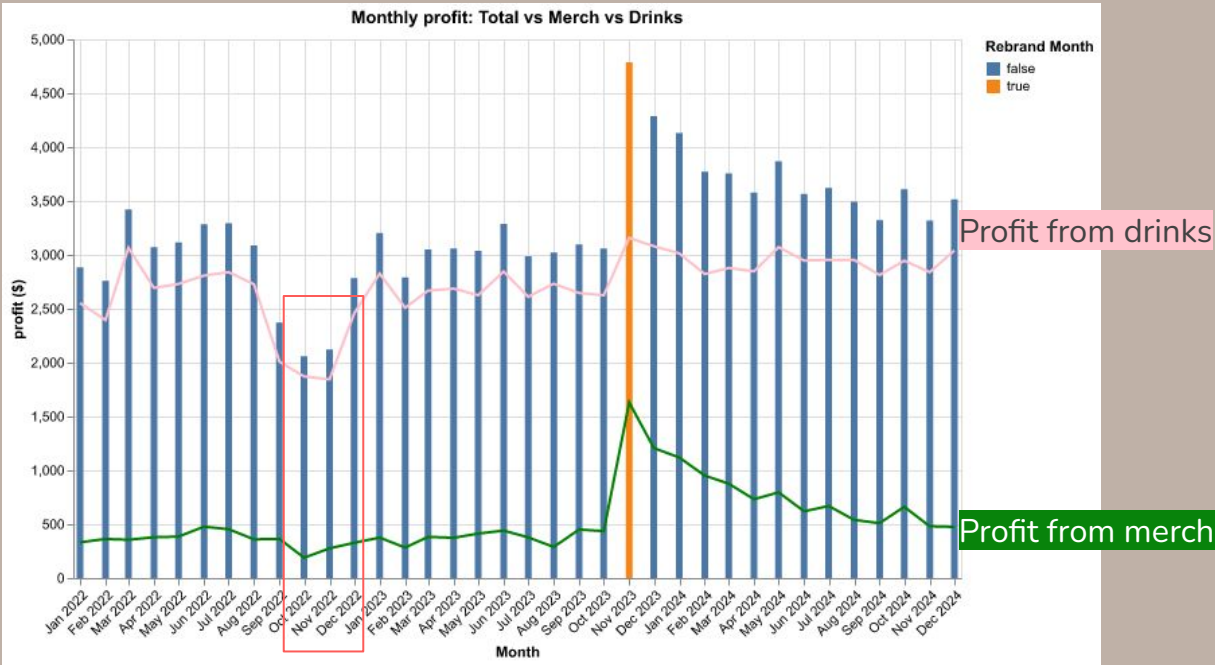
Simple modeling: logistic regression



Business suggestions based on EDA, modelling and statistical tests

1. Does the current strategy work?

- Did that actually encourage reusable cup habits?



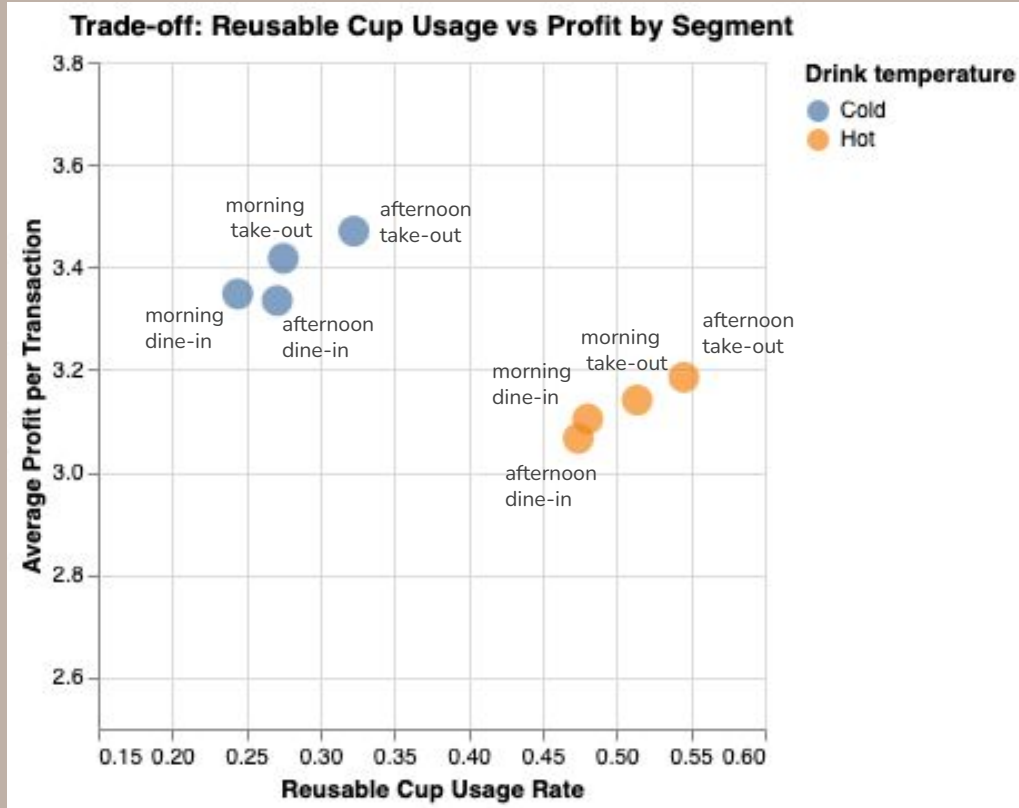
Z-statistic: -15.066

P-value: 0.00000

Result: Significant increase in reusable cup usage after the rebrand 🎉

- Dip from Sep. - Dec. 2022 from the construction.
- Surge in merch sales after the increased merch advertising.
- Slow decreasing trend as time passes.
- P-value < 0.001, it shows a significant increase in reusable cup usage after the rebrand!

2. The balance & trade-off between environmental protection and business profits



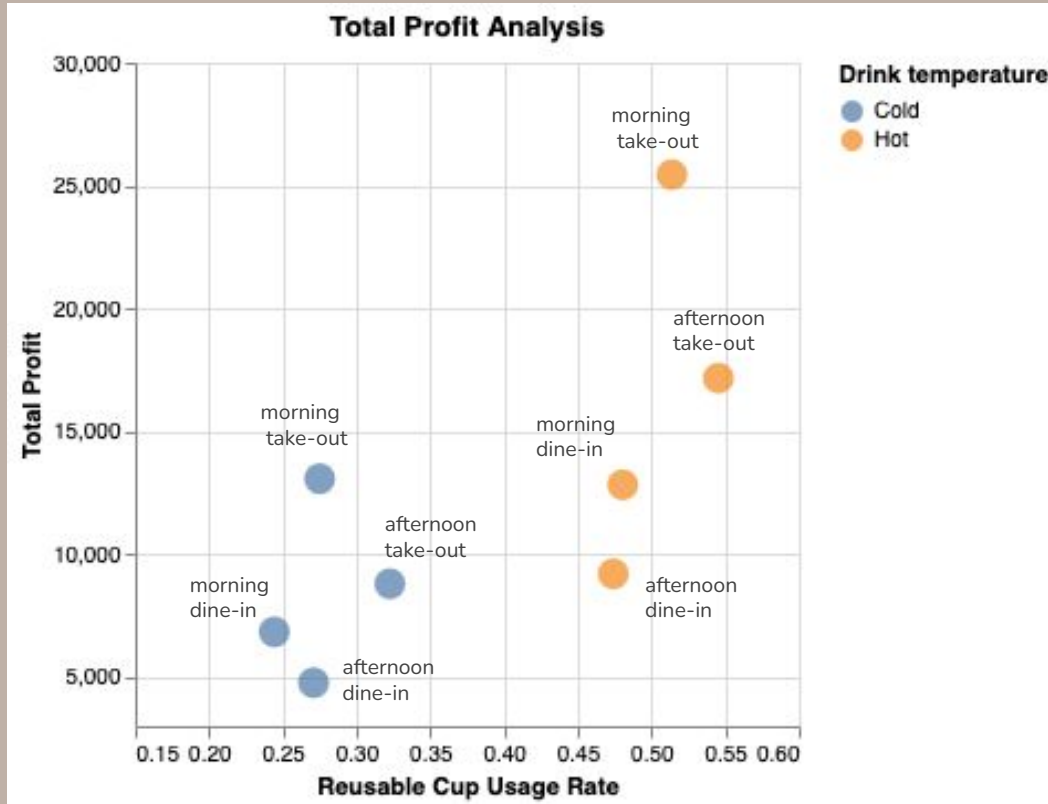
Key insight: the trade-off

- Hot drink sales
 - More environmentally friendly (higher reusable cup usage rate)
 - Less profitable (lower average profit per transaction)
- Cold drink sales: the opposite

Key KPIs about financial performance:

- Average profit per transaction
- Total profit generated per sales category

3. What products to focus on in terms of total profit?



Key insight:

- Morning take-out orders of hot drinks: largest share
- Hot drinks are associated with higher reusable cup usage rate
- Hot drinks generate slightly more total profits on average

Recommendations:

Allocate more resources and support to hot drink sales, especially morning take-out orders

4. How to encourage more reusable cups?

	coef	std_err	z_value	p_value	ci_lower	ci_upper
const	-1.026	0.032	-31.652	0.000	-1.089	-0.962
transaction_type_Takeout	0.198	0.025	7.929	0.000	0.149	0.247
drink_temperature_Hot	0.982	0.027	36.626	0.000	0.929	1.034
drink_type_Other	0.020	0.051	0.389	0.697	-0.079	0.119
drink_type_Tea	0.049	0.026	1.920	0.055	-0.001	0.099
time_of_day_Morning	-0.109	0.024	-4.500	0.000	-0.156	-0.061

Logistic Regression equation:

$$\text{logit}(p) = -1.026 + 0.198 \cdot (\text{Takeout}) + 0.982 \cdot (\text{Hot}) \\ + 0.020 \cdot (\text{Other}) + 0.049 \cdot (\text{Tea}) - 0.109 \cdot (\text{Morning})$$

Where: Takeout, Hot, Other, Tea, Morning are binary indicators (0 or 1).

p: the probability of consumers using their own cup

Insights:

Morning customers, dine-in orders, hot drink sells are significantly associated with a smaller probability of bringing own cups

Proposed business strategies:

Targeting these three segments of customers who are less environmental conscious, we recommend give a small price discount for morning customers, dine-in consumers, and hot drink buyers **who bring a reusable cup.**

→ encourage these customers who are not used to bringing own cups to do it



Summary of proposed strategies

- Allocate more resources and support to hot drink sales, especially morning take-out orders
 - Secure the major pillar of sales
 - Win-win: more profits and more environmentally friendly
- Give a small price discount for morning customers, dine-in consumers, and hot drink buyers **who bring and use a reusable cup.**
 - Help single-cup users from the target segments form the habit of bringing their own cups



Thank you for listening

Questions?



Appendix - Number of people using reusable cups

