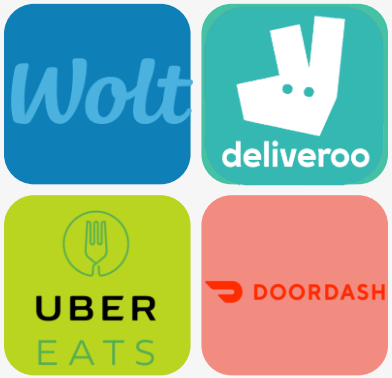
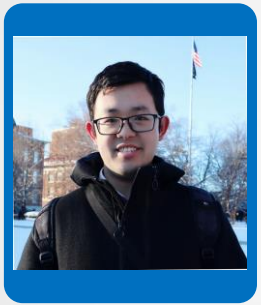


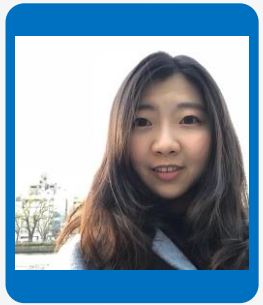
How food delivery time affect your willingness to place an order?

Yulong Gong, Tzuhua Huang, Chenzhi Pan, Muyan Xie, Yichi Zhang, Yangyang Zhou

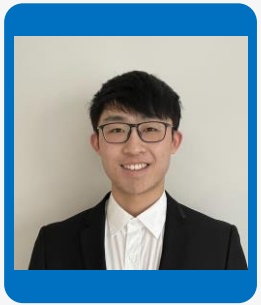
Our Researchers



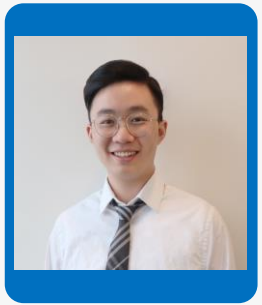
Yulong Gong



Tzuhua Huang

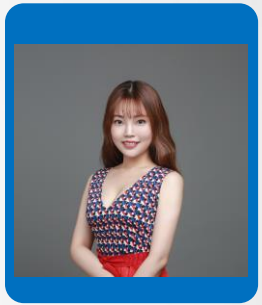


Chenzhi Pan



Muyan Xie

Yichi Zhang



Yangyang Zhou

Agenda

Introduction

Experiment Design

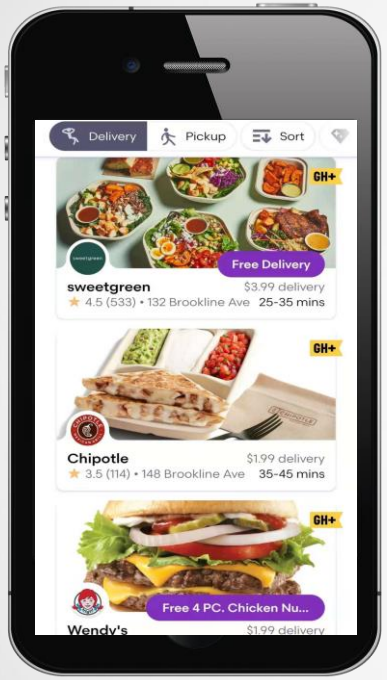
Analysis

- Balance check
- ATE & CATE & Heterogeneity
- Cuisine Analysis

Conclusion

- limitation
- Future research
- Bibliography

Introduction



Research Question

When everything holds constant, how will the food delivery time interval affect a consumer's willingness to place an order?

- According to Resendes (2020), 33% of customers are willing to pay more in exchange for faster delivery speed.
- From Feb.2020 to Apr.2020, the restaurants who actively use online ordering increase 169% and weekly sales increase 840%.

Hypothesis

Under the same ordering time condition, the shorter the delivery time period is, the more willingly the consumer is to place the order.

Implications

- Have a better understanding of the influence of wait time on consumers' willingness to place an order.
- Help to develop an win-win environment for consumers and businesses entities.

Experiment Design

50% Control

50% Treatment

Randomization

Used built-in randomizer to assign participants to either interface.

Collected and Cleaned Data

Ended up collecting 90 valid responses from 91 participants.

Questionnaire Design

Built our questionnaire and simulated two interfaces based on our experiment.

qualtrics XM

Conducted Experiment

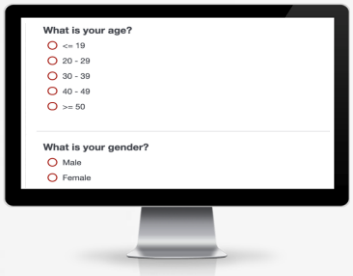
Posted the questionnaire on social media and sent it to friends.

Analysis

Ran regressions for balance check and data analysis

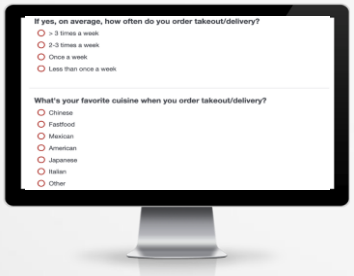
Questionnaire Design

Step 1: Collect users' general information.



- What is your age?
- What is your gender?
- Are you a student?
- Do you currently work/study from home?

Step 2: Understand users' experience of using food delivery service app.



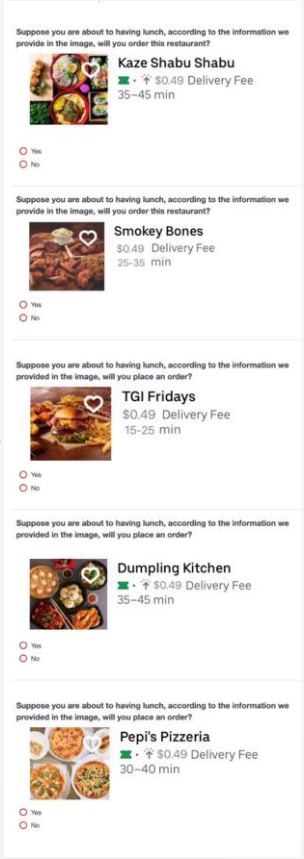
- How often do you order takeout/delivery?
- What's your favorite cuisine when you order takeout/delivery?
- Do you currently have an account on the following platforms?
- Are you a prime member of these platforms?

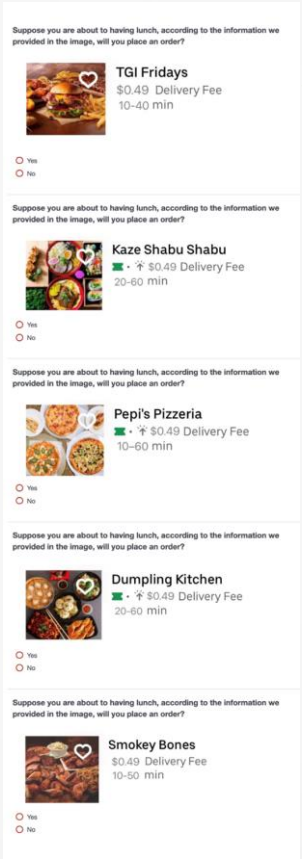
Questionnaire Design

Step 3: Simulate two interfaces and randomly assign one of them to the participants.

Treatment

TGI Fridays
$0.49 Delivery Fee
15-25 min





TGI Fridays
$0.49 Delivery Fee
10-40 min

Control

Analysis:Balance Check

	Dependent variable:				
	wfh	student	member	frequency	chinese
	(1)	(2)	(3)	(4)	(5)
any_treatment	0.044	-0.067	0.156	0.111	0.044
	(0.067)	(0.057)	(0.098)	(0.101)	(0.097)
Constant	0.867***	0.956***	0.600***	0.600***	0.689***
	(0.047)	(0.040)	(0.069)	(0.071)	(0.068)
Observations	90	90	90	90	90
R2	0.005	0.015	0.028	0.014	0.002
Adjusted R2	-0.006	0.004	0.017	0.002	-0.009
Residual Std. Error (df = 88)	0.317	0.269	0.466	0.477	0.458
F Statistic (df = 1; 88)	0.442	1.390	2.510	1.220	0.212
Note:					*p<0.1; **p<0.05; ***p<0.01

Are you a student?

Do you currently work/study from home?

Are you a member of any food delivery platforms?

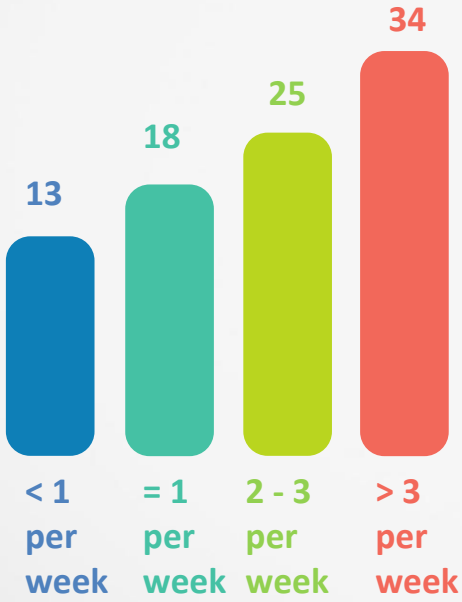
How often do you order delivery?

What's your favorite cuisine ?

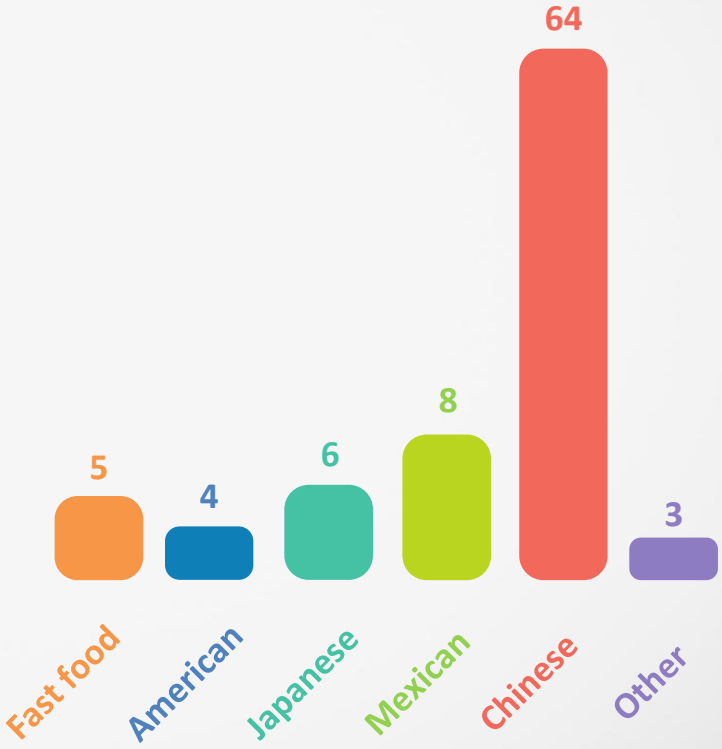
When you order takeout/delivery?

Analysis:EDA

Order Frequency Distribution



Food Preference Distribution



Analysis: ATE & Heterogeneity

ATE

- **Probability of ordering ~ any_treatment**
  - Treatment group is 13 % more likely to order
  - Significant at 95% level

Heterogeneity

- **Favor Cuisine**
  - **probability of ordering ~ any_treatment * favor cuisine (Chinese / non-Chinese)**
    - CATE for Chinese: 13.2%
    - CATE for non-Chinese: 11.2%

- **Order Frequency**
  - **probability of ordering ~ any_treatment * order frequency (> 2 times a week/ otherwise)**
    - CATE for High-frequency user:16.4%
    - CATE for Low-frequency user: 4%

Analysis: Cuisine

restaurants ~ any_treatment

- Fast Food and Italian Food: the difference between treatment group and control group is statistically significant at 90% confidence level.
- The result might implies that people who order from a fast food restaurant or a pizzeria are more time sensitive. They want their delivery time range as short as possible.

Dependent Var.:	American	Japanese	Italian
(Intercept)	0.5556*** (0.0749)	0.6889*** (0.0698)	0.3778*** (0.0731)
any_treatment	−0.0222 (0.1062)	0.1333 (0.0905)	0.2000. (0.1043)
S.E. type	Heteroskedas.-rob.	Heteroskedas.-rob.	Heteroskedas.-rob.
Observations	90	90	90
R2	0.00050	0.02406	0.04008
Adj. R2	−0.01086	0.01297	0.02917

Dependent Var.:	Chinese	Fast
(Intercept)	0.7111*** (0.0683)	0.5333*** (0.0752)
any_treatment	0.1556. (0.0854)	0.2000* (0.1005)
S.E. type	Heteroskedas.-rob.	Heteroskedas.-rob.
Observations	90	90
R2	0.03632	0.04306
Adj. R2	0.02537	0.03219

Conclusion

Conclusion:

ATE: 13%, Significant at 95% level

CATE: Chinese(13.2),
Non-Chinese(11.2%);
High-frequency(16.4%),
Low-frequency(4%).

Cuisines: Fast and Italian(90% level)

Limitation:

Questionnaire design:

- Incomprehensive food type
- Wording issue
- Picture choosing
- Distribution

Future research:

- Distributed in a large scale, to find out block-wise characteristics.
- Add a question about the price to test the relationship between waiting time and spending price.

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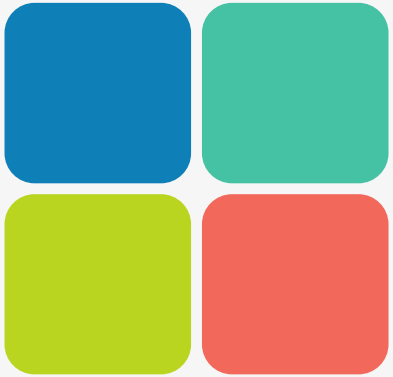
Q&A



Thanks!