
What Incentives Increase Form Responses

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Research Question

*“What motivates students to open their emails
and fill out a survey?”*

Specific Hypothesis Tested

Null Hypothesis (H0) = Treatment will not result in change in the Response Rate ($ATE = 0$)

Alternative Hypothesis (H1) = Treatment Response Rate is not equal to Control Response Rate ($ATE \neq 0$)

Prior Work Related to the Hypothesis

- *Ryu, E. (2006)* proposes that monetary incentives are helpful for increasing the survey response rates.
- *Furse, D. H., & Stewart, D. W. (1982)* indicates that charity will not improve response rates while *Robertson, D. H., & Bellenger, D. N. (1978)* shows different results
- *Petrovčič, A. et al., (2016)* points out that sense of community does not significantly change the response rates

Treatment and Randomization

01

CONTROL GROUP

No Incentive

02

TREATMENT 01

Amazon gift card raffle (Direct Monetary incentive)

03

TREATMENT 02

Donation to Charity (Indirect Monetary incentive)

04

TREATMENT 03

Appealing to pathos (Non-Monetary incentive)

- Sample Audience:
Graduates of Questrom
(except MSBA)
- Randomized MSMFT 1st,
2nd year equally across the
control and treatment
arms (143 students)

Data Collection



Metrics collected

- Number of Opens
- Number of Clicks on the Survey Link
- Number of Responses

Data Analysis

Control Group:

2nd highest number among the students who have completed the survey

Treatment arm1: (Monetary Incentive)

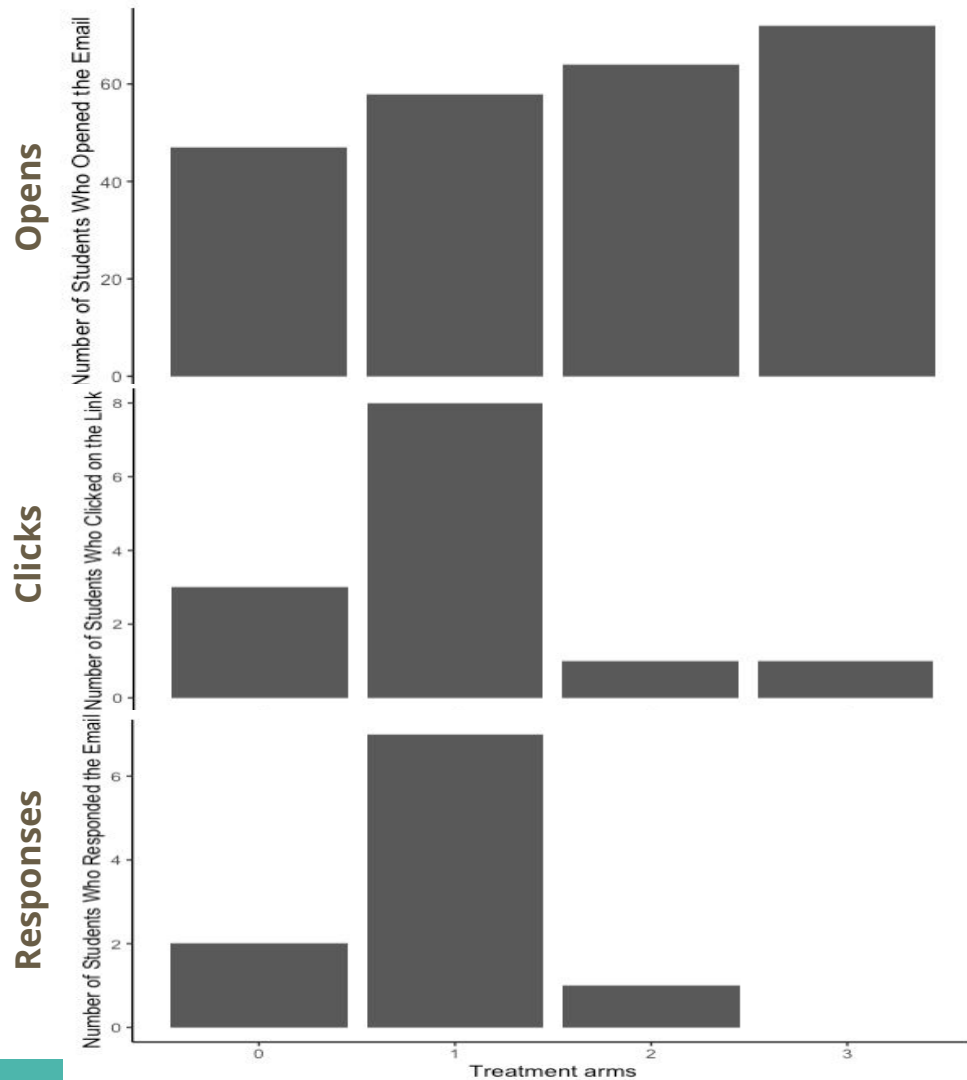
This treatment arm has the highest number of completed surveys

Treatment arm2:

Among students who have clicked on the link, only one student hasn't completed the survey

Treatment arm3:

Highest number of students who opened the email, but nobody responded



Results and Interpretation

- Average Treatment Effect (ATE)
- Conditional Average Treatment Effect (CATE) - Clicks & Opens
- Heterogeneous Treatment Effect - Gender
- Complier Average Causal Effect (CACE)
- Treatment Arms

ATE

```
```{r}
this_reg <- feols(response ~ treatment, data = full_data, se='white')
etable(this_reg)
```
```

Description: df[,1] [9 × 1]

| | this_reg
<chr> |
|-----------------|-------------------|
| Dependent Var.: | response |
| (Intercept) | 0.0571 (0.0395) |
| treatment | 0.0169 (0.0470) |
| ----- | ----- |
| S.E. type | Heteroske.-rob. |
| Observations | 143 |
| R2 | 0.00081 |
| Adj. R2 | -0.00627 |

9 rows

feols(response ~ treatment)

- ATE = **0.0169**
- Std.Error = 0.047
- Not Statistically Significant

CATE - Clicks and Opens

Conditional - Clicks

- CATE = **-0.2**
- Std.error = 0.1386

```
```{r}
conditional_clicked_ate<- full_data[Clicks>=1,]
conditional_clicked_reg <- feols(response ~ treatment, data = conditional_clicked_ate, se='white')
etable(conditional_clicked_reg)
```
```

Description: df[,1] [9 × 1]

| | conditonal_clicke..
<chr> |
|-----------------|------------------------------|
| Dependent Var.: | response |
| (Intercept) | 1.000*** (1.38e-15) |
| treatment | -0.2000 (0.1386) |
| ----- | ----- |
| S.E. type | Heteroskedast.-rob. |
| Observations | 12 |
| R2 | 0.04000 |
| Adj. R2 | -0.05600 |

9 rows

Conditional - Opens

- CATE = **0.0174**
- Std.error = 0.0751

```
```{r}
#conditional ate, conditional on who opened it
conditional_opened_ate <-full_data[Opens>=1,]
conditional_opens_reg <- feols(response ~ treatment, data = conditional_opened_ate , se='white')
etable(conditional_opens_reg)
```
```

Description: df[,1] [9 × 1]

| | conditonal_op..
<chr> |
|-----------------|--------------------------|
| Dependent Var.: | response |
| (Intercept) | 0.0952 (0.0648) |
| treatment | 0.0174 (0.0751) |
| ----- | ----- |
| S.E. type | Heteroske.-rob. |
| Observations | 92 |
| R2 | 0.00055 |
| Adj. R2 | -0.01055 |

9 rows

Heterogeneous Treatment Effect

```
library(r)
heterogeneous_reg <- feols(response ~ treatment * gender, data = full_data, se = 'white')
etable(heterogeneous_reg)
```

Description: df[,1] [11 x 1]

| | heterogeneous_..
<chr> |
|--------------------|---------------------------|
| Dependent Var.: | response |
| (Intercept) | 0.0714 (0.0698) |
| treatment | -0.0260 (0.0767) |
| gender | -0.0238 (0.0842) |
| treatment x gender | 0.0721 (0.0973) |
| ----- | ----- |
| S.E. type | Heterosked.-rob. |
| Observations | 143 |
| R2 | 0.00787 |

1-10 of 11 rows

Gender: 1 = Male, 0 = Female

Randomization check of Gender:

- Mean of x (treatment) = 0.5925926
- Mean of y (control) = 0.60000

feols(response ~ treatment * gender)

- CATE(treatment = 1, Gender = 0)
 - $(-0.0238 + 0.0714) - 0.0714 =$
-0.0238
- CATE(treatment = 1, Gender = 1)
 - $(-0.026 + 0.0721) =$ **0.0461**
- Treatment x gender = 0.0721
 - Indicate the male student had 0.0721 higher treatment effect to response than the female student

CACE

```
```{r}
cace_reg <- feols(response ~ 1 | 0 | Opens ~ treatment, data = full_data, se='white')
etable(cace_reg)
```
```

Description: df[,1] [9 × 1]

| | cace_reg
<chr> |
|-----------------|-------------------|
| Dependent Var.: | response |
| (Intercept) | 0.0070 (0.1559) |
| Opens | 0.0373 (0.0941) |
| ----- | |
| S.E. type | Heteroske.-rob. |
| Observations | 143 |
| R2 | 0.07716 |
| Adj. R2 | 0.07061 |

9 rows

feols(response ~ 1 | 0 | Opens ~
treatment)

- CACE = **0.0373**
- Std.error = 0.0941

ATE on different Treatment Arms

```
```{r}
reg_treatment1 <- feols(response ~ treatment, data=full_data[(treatment_arms==1 | treatment==0)])
reg_treatment2 <- feols(response ~ treatment, data=full_data[treatment_arms==2 | treatment==0])
reg_treatment3 <- feols(response ~ treatment, data=full_data[treatment_arms==3 | treatment==0])
etable(reg_treatment1, reg_treatment2, reg_treatment3)
```
```

Description: df[,3] [9 × 3]

| | reg_treatment1
<chr> | reg_treatment2
<chr> | reg_treatment3
<chr> |
|-----------------|-------------------------|-------------------------|-------------------------|
| Dependent Var.: | response | response | response |
| (Intercept) | 0.0571 (0.0556) | 0.0571 (0.0347) | 0.0571* (0.0279) |
| treatment | 0.1320. (0.0775) | -0.0286 (0.0490) | -0.0571 (0.0392) |
| ----- | ----- | ----- | ----- |
| S.E. type | Standard | Standard | Standard |
| Observations | 72 | 70 | 71 |
| R2 | 0.03982 | 0.00498 | 0.02981 |
| Adj. R2 | 0.02611 | -0.00966 | 0.01575 |

9 rows

Result Summary

- The overall treatment has positive effect on survey response
- Male students are more likely to response than female students
- Only the treatment arms 1(Raffle: Amazon gift card) has positive effect on survey response
- **Important notice: All the results are not statistically significant**

Limitations

- Randomization check was limited to gender only
- Sample → sample size was small (hence lacked precision), non-representative → potential selection bias
- Could not calculate fixed effects due to lack of data
- Covariates were limited to only one (gender), also due to lack of data

Thank you so much for your time

Any Questions?