The Impact of Monetary Incentives on the Willingness to Share Non-Sensitive Personal Information: An Experiment at UCSD

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Motivation

Background: In an age where data is invaluable, understanding the dynamics behind personal information sharing is critical. This study stems from the need to identify effective methods to encourage data sharing without compromising individuals' privacy.

Importance: Investigating the role of monetary incentives can help organizations design better data collection strategies, ensuring higher participation rates while maintaining ethical standards.

Research Question: Does offering monetary incentives increase UCSD students' willingness to share non-sensitive personal information compared to no incentives?

Design and Experiments

Experiment Setting: Conducted at UCSD Library Walk, targeting students for participation.

Participants: 200 UCSD students split into two groups (100 each for control and treatment conditions).

Procedure: Participants were asked to fill a web form under two conditions: without incentives (Control) and with a $1 incentive per form (Treatment). The order is First Control, then Treatment (To avoid the experimenter demand effects).

Data Collected: Information such as Year of Enrollment, Field of Study, Academic GPA, etc., was collected. The quality of information gathered was ignored, there are only two possible outcomes: For each question answered = 1 out of 10 and for each question unanswered = 0 out of 10.

Randomization: Participants were randomly encountered during two time slots on the SAME day, ensuring an unbiased selection.

Results and Data Analysis

FOR CONTROL GROUP (NO MONETARY INCENTIVE):

- Sample size (n) = **100**
- Average fraction of questions answered in this sample group ($\bar{X}_{Control}$) = **0.389**
- Variance of the fractions of questions answered in this sample group = **0.040382828**
- Standard Deviation of the fractions of questions answered in this sample group = **0.200954792**

FOR TREATMENT GROUP (WITH MONETARY INCENTIVES):

- Sample size (n) = **100**
- Average fraction of questions answered in this sample group ($\bar{X}_{Treatment}$) = **0.812**
- Variance of the fractions of questions answered in this sample group = **0.031369697**
- Standard Deviation of the fractions of questions answered in this sample group = **0.177114926**

	Control	Treatment
Sample Size (n)	100	100
Average Frac. of Qs Answered	0.389	0.812
Variance of Avg. Frac. of Qs Answered	0.040382828	0.031369697
Std. Dev. of Avg. Frac. of Qs Answered	0.201	0.177

Figure 1. Statistical Balance Table

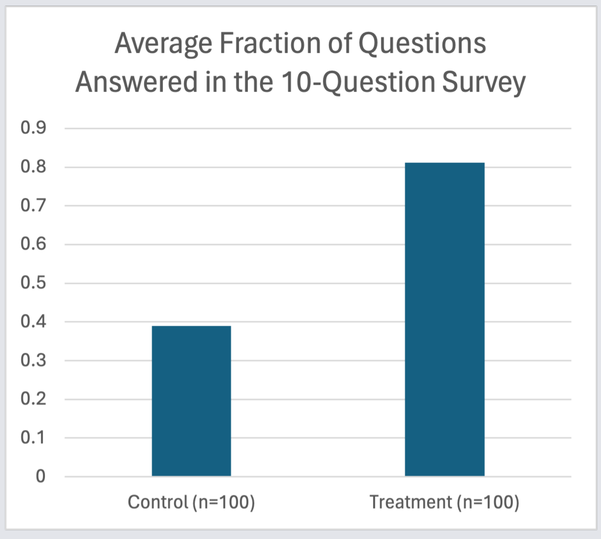

Figure 2. Average Fraction of Questions Answered in the 10-Question Survey

Now we can perform hypothesis testing by using the statistical data above:

1. Set up the Hypotheses:

H_0: $\mu_{Treatment} - \mu_{Control} = 0$
H_1: $\mu_{Treatment} - \mu_{Control} > 0$ (right-sided test)

2. Calculate the t-statistic:
Formula Used:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$\bar{X}_{Treatment} - \bar{X}_{Control} = 0.812 - 0.389 = 0.423$
$\mu_{Treatment} - \mu_{Control} = 0$ (hypothesized value)

$$\text{Standard Error } (\bar{X}_{Treatment} - \bar{X}_{Control}) = \sqrt{\frac{VAR(X\ Control)}{n\ control} + \frac{VAR(X\ Treatment)}{n\ treatment}}$$

Therefore, our t-stat for this experiment is:

$$\text{t statistic} = \frac{(0.812 - 0.389) - 0}{\sqrt{\frac{0.040382828}{100} + \frac{0.031369697}{100}}} = \mathbf{15.79}$$

3. Compare our t-stat with critical values at a 5% level of significance and a 1% level of significance.

Since we are performing the right-sided test, the corresponding critical values for 5% and 1% significance level

	Significance Level		
	10%	5%	1%
2-sided test (=)	1.64	1.96	2.58
1-sided test (>)	1.28	1.64	2.33
1-sided test (<)	-1.28	-1.64	-2.33

|t-stat| = 15.79 > 1.64 = critical value (with α = 0.05) ⇒ We reject the null hypothesis

|t-stat| = 15.79 > 2.33 = critical value (with α = 0.01) ⇒ We reject the null hypothesis

Conclusion

Since both in 5% and 1% significance level we can reject the null hypothesis, therefore, we conclude that our finding from this experiment is statistically significant, indicating that providing monetary incentives does have a positive effect on encouraging people to share their personal (non-sensitive) information.

Discussion

This experiment shows monetary incentives boost willingness to share non-sensitive information among UCSD students, but its findings, limited by the university context and potential biases from self-reported data, call for further exploration across diverse demographics and incentive structures.