

# From Pennies to Prizes: Assessing Incentive Strategies for Reusable Cups

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# Executive Summary

## Introduction

This study investigated whether there was a more efficient incentive strategy to encourage reusable cup usage than the current policy of a 25-cent fee on disposable cups. We wanted to examine if a lottery approach, a 5% chance to win a \$5 credit, influenced the perceived likelihood of using personal reusable mugs compared to the current policy.

## Research Question

How do lottery-based incentive strategies, compared to the current policy, influence the perceived likelihood of bringing personal reusable mugs?

## Methods

A between-subjects survey presented participants with hypothetical scenarios reflecting the current policy and lottery approach. Additional measures captured participants' preferences and motivations for reusable mug usage, disposable cup usage, and feedback on other incentives.

## Results

Mann-Whitney U test results indicated no significant difference in perceived likelihood between the control ( $M = 3.81$ ) and lottery approach ( $M = 3.91$ ) conditions ( $p = .77$ ). The exploratory analysis suggested motivations for reusable cup use included environmental concerns (76.00%) and saving money (74.00%), with a strong preference (56.80%) for a points-based reward system over other incentives.

## Recommendations

The exploratory analysis indicated that a points-based reward system is a more favorable option. This study recommends investigating points-based rewards programs, like stamp cards, to encourage reusable cup usage and support UBC's zero-waste action plan. Partnerships with organizations offering mug-share programs like CLUBZERØ or Circular & Co. could streamline operations with digital points-based incentive systems.

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# Introduction

## Background Research

In Vancouver, approximately 441 million disposable cups enter landfills annually (Lazaruk, 2022), as not all disposable cups are recyclable (Heo et al., 2023). The thermoplastic lining must be removed for the cup to be recyclable (Heo et al., 2023). Disposable cups play a role in environmental issues like carbon dioxide emission, which conflicts with the UN sustainability goals (Keller et al., 2021), and it is one of the main problems of plastic pollution (Wang et al., 2022). 16 cafes in Vancouver have the mug share program, where consumers pay a \$1.50-2.00 deposit to use a reusable mug and receive their deposit back once they return the cup (Reusable Coffee Cups, 2022). However, consumers are concerned about the cleanliness of the mugs (Lazaruk, 2022). Some UBC cafes have mug-sharing programs, but there have been issues regarding a loss of profit (Heo et al., 2020). Currently at UBC, there is a \$0.25 fee for disposable cups which can be avoided by bringing a reusable mug, and a previous SEEDS study has found that the current incentives are not enough (Wong et al., 2023), as students find that gains like this are too insignificant (Diamond & Loewy, 1991).

Another study evaluating rewards and incentives for using reusable cups found that financial incentives can convince consumers who are environmentally conscious customers, and customers who are not, to use reusable mugs (Nicolau et al., 2022). They also found that small discounts may attract environmentally aware consumers (Nicolau et al., 2022). Still, higher levels of monetary incentive are needed to encourage consumers with a knowledge gap about the environmental impact of disposable cups (Nicolau et al., 2022). Utilizing various incentive strategies is a form of nudging to alter one's behaviors, and research has demonstrated its effectiveness (Luo et al., 2022). Nudging is how things are presented to people that can predictably alter one's behavior without prohibiting other options (Zhao, 2024).

With all the background research considered, there is an evident need for more appealing incentives for consumers to reduce the use of disposable cups. Despite all the existing studies on incentives for reusable cups, there is still a lack of research concerning the effectiveness of using a lottery system to promote this behavior. Our research intends to evaluate more appealing incentives, such as a lottery system where a customer enters a lottery draw to win a prize by bringing a reusable cup. By using this lottery system as a nudge, we can better understand whether a lottery system like this can nudge consumers to use a reusable cup. Furthermore, utilizing a lottery system would solve the issue of needing a larger incentive, as the prize for the lottery system could be adjusted to much more significant amounts (e.g., amount on a gift card, free coffee) depending on the chance of winning.

## Research Question and Hypothesis

This project therefore intends to examine how lottery-based incentive strategies, compared to the current policy, influence the perceived likelihood of bringing personal reusable mugs. We hypothesize that implementing a lottery approach, where buyers have a 5% chance of winning a

\$5 credit when using a personal reusable mug, will result in higher motivation to bring personal mugs compared to the current policy involving exemption from a 25-cent cup fee.

## Methods

### Participants

The aim was to recruit 278 participants, based on a priori power analysis with a minimum effect size of 0.3,  $\alpha = .05$ , power = 0.8, and 2 conditions in a between-subjects design. 291 responses were collected; however, after filtering incomplete responses and suspected bots (based on missing IPA addresses, completing the questionnaire in an unreasonably short time, or completing both the control and experimental conditions), the final sample size was 229 participants. The average median age was 21 years old ( $SD = 3.50$ ), ranging from 15 to 44 years old. Most participants were women ( $f = 135, 59.00\%$ ), followed by men ( $f = 56, 24.50\%$ ), those who preferred not to answer ( $f = 30, 13.10\%$ ), and non-binary/third gender ( $f = 8, 3.50\%$ ). Additionally, most participants were affiliated with UBC ( $f = 165, 72.10\%$ ), where others were not ( $f = 41, 17.90\%$ ), and some did not answer ( $f = 23, 10.00\%$ ). Most participants self-reported SES around middle to upper level (based on a scale of 1-10), with a median average of 6 and standard deviation of 1.63, with responses ranging from 1-10.

### Conditions

The study had a between-subjects design to measure the perceived likelihood of bringing a personal reusable mug in both the treatment and control conditions. Participants were asked to imagine a hypothetical scenario where they purchase a beverage from a cafe. In the control condition ( $N = 107$ ), reflecting the current policy, participants were told that if they bring a personal reusable mug, they will not need to pay the additional 25 cent single-use cup fee. In the treatment condition ( $N = 122$ ), the lottery approach, participants were told that if they bring a personal reusable mug, they are entered into a lottery with a 5% chance of winning a 5 dollar from the cafe.

### Dependent Variable

The Dependent variable measured the Perceived Likelihood of Bringing a Reusable cup in the future, in relation to our two independent conditions: Control and Lottery. To measure the dependent variable, we used a 7-point Likert scale to measure participant's perceived likelihood to bring a reusable cup in the future (Likert, 1932). We designed the questions to be equal in tone with the key difference being the Control Condition telling participants that bringing a reusable cup will waive a 25-cent free from their beverage order, and the Lottery (Experiment Condition) telling participants that bringing a reusable cup will give them a 5% chance to win 5\$ from the Cafe. These questions were appropriate for the measure because they were clearly defined and independent of each other.

### Procedure

The survey was designed and distributed on Qualtrics and was open from February 29th - March 28th. Q2 and Q3 asked participants their likelihood to bring a reusable mug, measured on a 7-point Likert scale, where 1 was “Very Unlikely” and 7 was “Extremely Likely”. Q4 asked participants to select their motivations for bringing a reusable mug, Q5 asked participants their motivations for using a disposable cup, and Q6 asked participants what would make them more likely to use a reusable mug. Q4,5,6 had 5 options to choose from, with the 5th option being “other”, in which participants could record their own answers for the question posed. Q7 asked participants what their favorite initiative for encouraging reusable cup usage was, out of the 5 initiatives listed. The proposed initiatives for Q7 were the following: when bringing a reusable mug, having a 5% chance of winning a 5 dollar credit; a prize lottery, in which bringing a reusable mug would automatically enter the participant into a lottery for a chance of winning a small prize; a monthly lottery, where bringing a reusable mug would automatically enter the participant into a bigger lottery drawn at the end of every month; a points-based system, where bringing a reusable mug would accumulate points which could be redeemed for rewards; and finally, the status quo, where the 25 cent disposable cup fee is waived. Q4,5,6 was “select all that apply”; meaning participants could select as many options as they wanted. Q8,9,10 were demographic questions capturing age, gender identity, and affiliation with UBC.

The survey was distributed using a variety of methods. Firstly, social media was used to promote the survey which enabled the collection of many responses. Additionally, the survey link was sent to several class Discord servers that the authors of this study were a part of. Flyers with a QR code linked to the survey were posted around UBC Vancouver campus, in places with high traffic. Even with all these methods of distribution, it was challenging to acquire enough responses to the survey. The needed power level was 278, and although there were 292 total responses, many had to be filtered out due to suspected bot responses, leaving 229 validated responses. Bots were identified and additional cleaning was done on behalf of the authors. Survey responses with no answers, no IP address, no longitude/latitude, or other missing crucial information were removed from the calculations.

## Results

### Analysis of Independent Variable Conditions (Q2,3)

Examining the Independent Variable of the Between-Subjects design, the Control condition Q2 (Cup Fee Waived - Status Quo) ( $N = 107$ ,  $M = 3.81$ ,  $SD = 2.13$ ) and Experimental condition Q3 (Lottery) ( $N = 122$ ,  $M = 3.91$ ,  $SD = 1.91$ ) (Table 1.1), resulted in data that was not distributed normally due to a bimodal distribution of data. This violated an assumption required for a t-test. Instead, a Mann-Whitney U test was used due to the data being nonparametric. The Mann-Whitney U test results ( $U = 6673.50$ ,  $p = .77$ ) (Table 1.2) displayed a p-value far higher than the alpha ( $\alpha = .05$ ). Thus, there were no significant differences in perceived willingness to bring a reusable mug in the future between the two conditions. Therefore, we did not find support for our hypothesis.

### Exploratory Analysis of Data: Motives (Q4,5,6)

Participants were asked to select multiple options from a given list to gather data on different motivations they have for choosing reusable and disposable cups ( $N = 229$ ). Participants can select any number of options from a given list. Because of this, we could only evaluate frequency trends in the data. When examining motives for bringing reusable mugs (Q4, table 4.1), there were trends towards Environmental Concern ( $f = 174$ , 76.00%) and Saving Money ( $n = 170$ , 74.00%). When examining motives for using disposable cups (Q5, Table 4.1), there were trends towards Convenience for not needing to carry a reusable ( $f = 191$ , 83.00%), Forgetting to bring a reusable ( $f = 188$ , 82%), and using a Disposable cup is Habit ( $f = 126$ , 55.00%). Moreover, when asked what would motivate the participants to use reusables more often, trends emerged towards Incentives such as discounts or rewards for using Reusable mugs ( $f = 162$ , 71.00%), Assurance of Easy cleaning and maintenance of Reusables ( $f = 128$ , 56.00%), and having lower cost options available for reusables ( $f = 104$ , 45.00%) (Q6, Table 4.2).

### Exploratory Analysis of Data: Preferred Incentive (Q7)

In the attached questionnaire, participants were asked to select a preferred incentive from a list of multiple incentives. The options included a Monetary Credit Lottery (Lottery Condition) ( $f = 15$ , 6.60%), Cup Fee Waived (Control Condition) ( $f = 46$ , 20.10%), Prize Lottery ( $f = 24$ , 10.50%), points-based System ( $f = 130$ , 56.80%), and Monthly Grand Lottery ( $f = 13$ , 5.70%) (Table 2.3). Based on observations, a single sample chi-square goodness of fit test was used to evaluate the frequency of the participant's responses against a null that assumed each option had equal frequency distribution. The results ( $X^2(df = 4, N = 228) = 210.29$ ,  $p < .001$ ) (Table 2.2) indicated a significant deviation from the hypothesis of a goodness of fit test that assumes all options have equal distributions. This was noted with a particularly high frequency of scores in favour of a points-based System ( $n = 130$ , 56.80%) which gained a majority of all potential scores. Therefore, we can reject the null. Furthermore, we examined if the different lottery options had split the vote. A retest where all lottery options were compiled together resulted in ( $X^2(df = 2, N = 228) = 57.79$ ,  $p < .001$ ) (Table 2.5). This also indicated a significant result in a



chi-square goodness of fit test and enabled us to reject a hypothesized equal distribution of scores. Again, there was a particularly high frequency of scores in favour of a points-based System (Figure 2.1). Additionally, a 2x3 cross-tabulation chi-square test of independence between the Conditions (Control and Lottery) and Initiative options (Control, Lotteries Combined, points-based System). The results ( $\chi^2(df = 2, N = 228) = 11.15, p = .004$ ) (Table 3.3) concluded that there were significant associations between the Conditions and Initiative options to a moderate effect size (Cramer's  $V = .221$ ) (Table 3.4). Thus, we can reject the null hypothesis and conclude that there is an association between the Conditions and Initiative options.

## Discussion

This study aimed to investigate the impact of lottery-based incentive strategies compared to the status quo on the perceived likelihood of participants bringing a personal reusable mug. The results failed to find any significant differences in perceived likelihood of bringing a reusable mug between the lottery condition and status quo condition. This suggests that a hypothetical lottery incentive with a 5% chance to gain \$5 credit did not significantly increase participants' propensity to bring a reusable mug compared to the current policy of waiving the 25-cent cup fee. These findings suggest that lottery-based incentive strategies may not be the most effective at promoting personal reusable mug usage on a campus setting. This study builds upon previous research by Wong and colleagues (2023) that further indicates that current incentives are not enough to promote sustainable behaviours on university campus. Previous research has indicated the need for higher monetary incentives to encourage consumers to use reusables (Nicolau et al., 2022). In this study, additional exploratory analyses were run on items that captured participants' motives for bringing reusable mugs and using disposable cups, factors that would motivate participants to use reusables more often and preferred incentives from a list of multiple options.

Results revealed environmental concern and saving money as prominent motivators for using personal reusable mugs. While previous studies (Wong et al, 2023; Diamond & Loewy, 1991; Nicolau et al 2023) have explored the link between incentives and consumer behaviour in the sustainability domain, the exploratory analysis of this study extends this knowledge by examining the specific types of incentive strategies consumers prefer the most. The findings suggest that consumers significantly preferred a points-based incentive system compared to the control and lottery-based incentives, suggesting that current policies may be insufficient and that a points-based system could be more effective.

Some of the limitations of this study are the following: The study failed to reach the target sample size and encountered bot responses that had to be invalidated from examination, which affected the study's sample size and may have implications for reaching significant power. The reliance on convenience sampling posed challenges in ensuring a diverse participant pool. Moreover, it can lead to self-selection bias, where those choosing to take the survey have different attitudes to those who did not. The usage of hypotheticals rather than real-life scenarios may have constrained the generalizability and ecological validity of the study. Lastly, the unique environment of the campus that this study was conducted on may affect participant behaviour in ways that are not representative of the general population.

This study underscores the critical need to better understand consumer preferences for strategies that promote sustainable behaviours, highlighting the importance of preferential distinction between a points-based system compared to a lottery based one. Future research should further explore the motivations behind preferences for specific incentive strategies, particularly the appeal of points-based systems. Exploring variations of points-based incentives tailored to the specific context of reusable mug usage could provide valuable insights for policy implementation. In conclusion, this study provides valuable insights into the hypothetical efficacy of various incentive strategies in promoting personal reusable mug use on campus. By addressing the identified limitations and building on preferential distinction for points-based

incentives, future research can refine strategies to promote higher personal reusable mug usage and foster greater adoption of sustainable behaviours.

## Recommendations

Survey results suggest that when asked about ideal incentives, participants strongly preferred a points-based rewards scheme. Implementing this scheme may act as positive reinforcement, encouraging coffee drinkers to utilize reusable mugs instead of single-use cups. Based on the survey responses, we suggest that cafés implement a rewards program that allows customers to gain points when they come in with a reusable mug. In practice, this rewards program may involve the use of stamp cards or software designed to keep track of customer rewards.

For participants whose main hindrance was forgetting to travel with their personal reusable mug, mug share programs may offer a solution. In line with UBC's "zero waste action plan" (2023), mug share programs introduce a set number of mugs to be reused across campus by various individuals with the aim of contributing to a "reusables-based food service model across campus." (UBC, 2023).

Companies like CLUBZERØ and Circular & Co. make it easy for cafés to establish mug share programs as they take care of the basics. For example, CLUBZERØ provides reusable mugs, "drop point boxes" and allows participating cafés to track their environmental impact via the CLUBZERØ app which also has a built-in rewards system. While CLUBZERØ and Circular & Co. have not been fully established in Canada, there are active mug-share programs on UBC's Vancouver campus and it is believed that using these companies as inspiration may help current on campus mug-share programs to streamline operations, increase customer satisfaction, and help further UBC's goal of achieving a zero waste, circular economy.

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# Appendices

## Appendix I: Survey Questions

Q1

Selecting the “Yes” option below indicates that you consent to participate in this study.

Please be advised that even after clicking “Yes”, you may withdraw at anytime by closing the browser window (and any answered questions will be discarded).

If you choose to not participate, please close the browser window. By submitting the completed survey, your consent to participation will be assumed.

(Before proceeding, it is recommended that you print a copy of this page for your records).

- Yes (1)
- No (2)

Thank you for consenting to participate in our study!

End of Block: Consent Form

Start of Block: Experimental Scenario: Control Condition

Imagine that you are at a cafe and are about to order your coffee or other desired beverage. When you reach the counter, you are informed that if you bring a personal reusable mug, you will not need to pay an additional 25 cent for a single use cup.

Q2

How likely are you to bring a personal reusable mug? (1 = not likely at all, 7 = very likely)

E	S	T	S	E
xtremel	omewh	either	omewh	xtremel
y	at	likely	at likely	y likely
unlikel	unlikely	nor		
y		unlikel		
		y		

Likelihood of bringing a personal reusable mug ()	
---	--

End of Block: Experimental Scenario: Control Condition

Start of Block: Experimental Scenario: Experimental Condition

Imagine that you are at a cafe and are about to order your coffee or other desired beverage. When you reach the counter, you are informed that if you bring a personal reusable mug, you will have a 5% chance of winning 5 dollars from the cafe.

Q3

How likely are you to bring a personal reusable mug? (1 = not likely at all, 7 = very likely)

E            S            1            S            E  
 xtremel   omewh   either   omewh   xtremel  
           y            at        likely   at likely   y likely  
 unlikel   unlikely   nor  
           y                            unlikel  
     y



End of Block: Experimental Scenario: Experimental Condition

Start of Block: Preferences/Motivations

Q4

Please select your motivations for wanting to use a reusable mug. (Select all that apply).

- Saves money (e.g., avoiding the 25-cent cup fee) (1)
- Environmental Concern (e.g., reducing waste and environmental conservation) (2)
- Convenience (e.g., ease of use) (3)
- Personal Preference (e.g., enjoying the taste or feel of beverages in a reusable mug) (4)
- Social Responsibility (e.g., setting an example for others or contributing to a larger sustainability initiative) (5)
- Other: (6) \_\_\_\_\_

Q5

Please select your motivations for using a disposable cup. (Select all that apply).

- Convenience (e.g., not having to clean or carry a reusable mug) (1)
- Forgot (e.g., forgot to bring a reusable mug) (2)

- Habit (e.g., accustomed to using disposable cups) (3)
- Cost (e.g., not wanting to pay for/buy a reusable mug) (4)
- Limited access to reusable mugs (e.g., not owning or having access to a reusable mug) (5)
- Other: (6) \_\_\_\_\_

Q6

What would make you more likely to use a personal reusable mug? (Select all that apply).

- Lower cost options being available (1)
- Educational campaigns highlighting environmental benefits (2)
- Availability of stylish or customizable designs (3)
- Incentives such as discounts or rewards for using a reusable mug (4)
- Assurance of easy cleaning and maintenance (5)
- Other (please specify): (6)

Q7

Please choose your favorite scheme that would most encourage you to bring a personal reusable mug.

- Monetary Credit Lottery: When bringing a reusable mug, you get a 5% chance of winning 5 dollars from the cafe. (1)
- Cup Fee Waived: When bringing a reusable mug, you will not need to pay an additional 25 cent for a single use cup. (2)
- Prize Lottery: When bringing a reusable mug, you will get a chance to win small prizes. (3)
- points-based System: When bringing a reusable mug, you will get points that can be accumulated and redeemed for rewards. (4)
- Monthly Grand Lottery: When bringing a reusable mug, you will get entered into a monthly drawing for a larger prize. (5)

End of Block: Preferences/Motivations

Start of Block: Demographic

Q8

What is your age? Please indicate in years.

0 5 0 5 0 5 0 5 0 5 0 5 0 5 0

Age (in years) ()	
-------------------	--

Q9

What is your gender identity?

- Woman (1)
- Man (2)
- Non-binary / third gender (3)
- You don't have an option that applies to me. I identify as (4)

- Prefer not to answer (5)

Q10

Are you affiliated with the University of British Columbia? (Employed as staff and/or studying as a student)

- Yes (1)
- No (5)

Q11

Think of this ladder as representing where people stand in the country you currently live in. At the top of the ladder are the people who are the best off – those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off – those who have the least money, least education, the least respected jobs, or no job. The higher up you are on this ladder, the closer you are to the people at the very top; the lower you are, the closer you are to the people at the very bottom.

0

<p>Where would you place yourself on this ladder? (1 = Bottom; 10 = Top) ()</p>	
---	--

End of Block: Demographic

Start of Block: Debrief Form

Thank you for participating in our survey on incentives for reusable mug use. Your valuable input will help us gain insights into effective strategies for promoting sustainable behaviors on campus and beyond. Specifically, your responses will contribute to our understanding of how different incentive approaches, such as the exemption from a 25-cent cup fee versus a lottery approach with a 5% chance of winning a \$5 credit, impact students' motivation to bring personal reusable mugs. Rest assured that your responses will remain confidential and will only be used for research purposes.

If you have any further questions or would like to learn more about the study, please feel free to contact Dr. Jiaying Zhao at [jiayingz@psych.ubc.ca](mailto:jiayingz@psych.ubc.ca). We sincerely appreciate your contribution to our research efforts.

End of Block: Debrief Form

## Appendix II: Statistical Results and Graphics



**1.Independent Variable Examination**

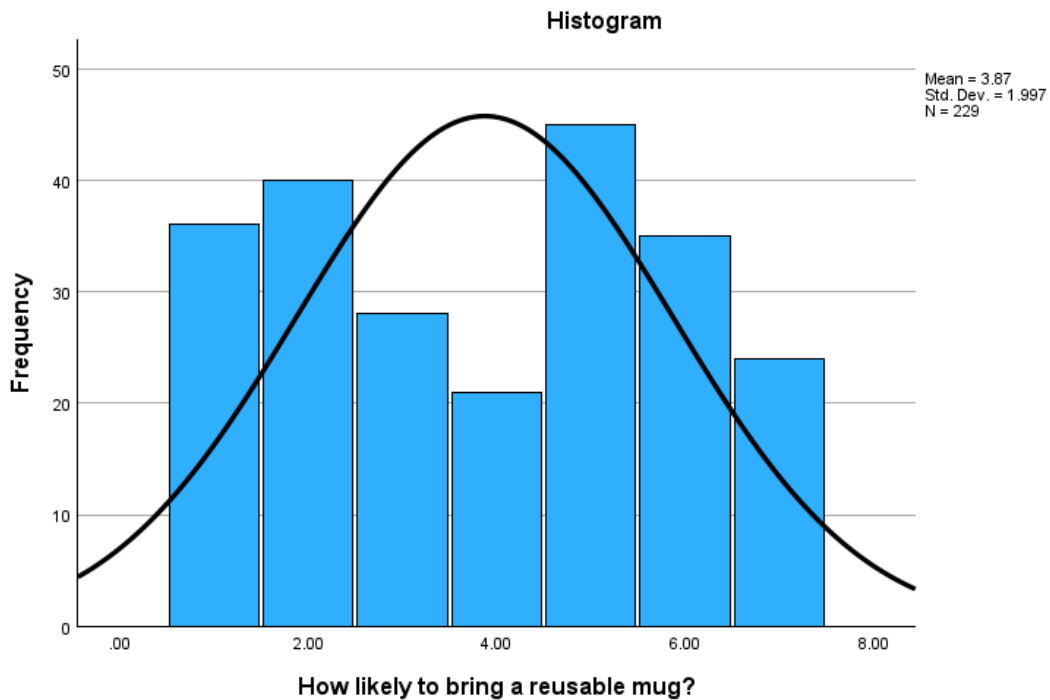
**Table 1.1 - Q2 (Control/Status Quo) and Q3 (Lottery) Descriptive Statistics**

		Statistics	
		Q2_1	Q3_1
N	Valid	107	122
	Missing	122	107
Mean		3.8131	3.9098
Median		4.0000	4.0000
Mode		1.00 <sup>a</sup>	5.00
Std. Deviation		2.13299	1.90694
Variance		4.550	3.636
Range		7.00	6.00
Minimum		.00	1.00
Maximum		7.00	7.00

a. Multiple modes exist. The smallest value is shown

*Note: This table showcases the descriptive statistics for the Conditions (Control/Status Quo and Lottery).*

**Figure 1.1 - Q2 and Q3 Combined Histogram**



*Note: This Histogram Graphic showcases how the data was observed to not be normally distributed, violating a core assumption required for a t-test, leading to the usage of a Mann-Whitney U test to evaluate significance.*

**Table 1.2 - Mann-Whitney U Significance Test Summary**

<b>Hypothesis Test Summary</b>				
	Null Hypothesis	Test	Sig. <sup>a,b</sup>	Decision
1	The distribution of Q23Comb is the same across categories of Condition.	Independent-Samples Mann-Whitney U Test	.767	Retain the null hypothesis.

a. The significance level is .050.

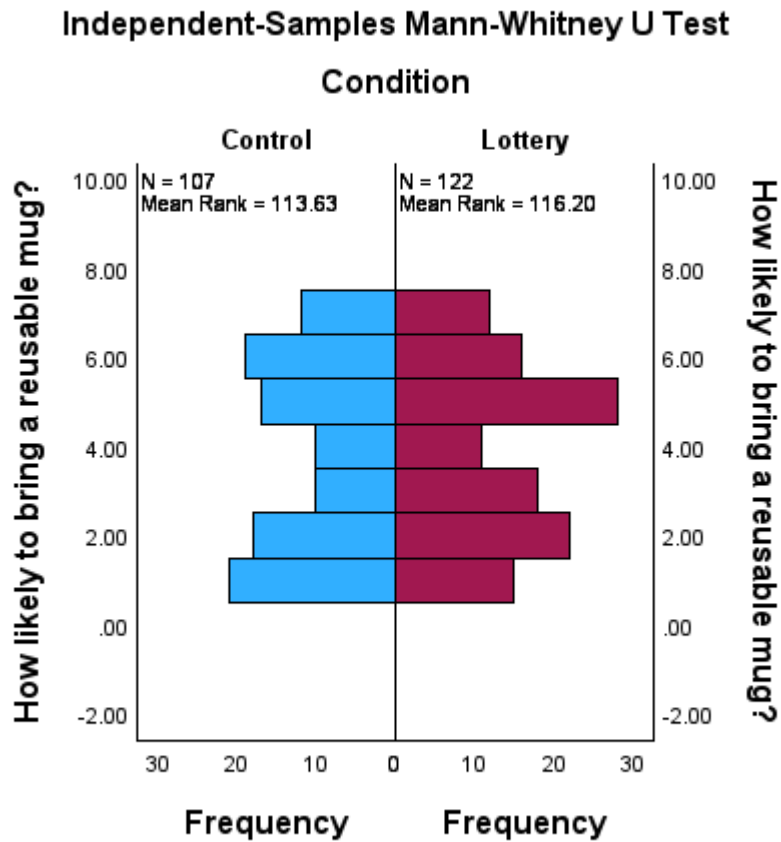
b. Asymptotic significance is displayed.

**Table 1.3 - Mann-Whitney U Test Summary**

<b>Independent-Samples Mann-Whitney U Test Summary</b>	
Total N	229
Mann-Whitney U	6673.500
Wilcoxon W	14176.500
Test Statistic	6673.500
Standard Error	494.136
Standardized Test Statistic	.296
Asymptotic Sig.(2-sided test)	.767

*Note: This table Figure is a summary of the results from our Independent Mann-Whitney U test of significance.*

Figure 1.2 - Mann-Whitney U Test Graphic



*Note: This Independent Sample Mann-Whitney U test computed the significance of the results for the Lottery and Control condition when examining our independent variable.*

**2.Question 7 Single Sample Chi-Square Data Exploration**

**Table 2.1 - Q7 One-sample Chi-Square Significance Summary**

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig. <sup>a,b</sup>	Decision
1	The categories of Q7 occur with equal probabilities.	One-Sample Chi-Square Test	<.001	Reject the null hypothesis.

a. The significance level is .050.  
 b. Asymptotic significance is displayed.

**Table 2.2 - Q7 One-sample Chi-Square Test Summary**

<b>One-Sample Chi-Square Test Summary</b>	
Total N	228
Test Statistic	210.289 <sup>a</sup>
Degree Of Freedom	4
Asymptotic Sig.(2-sided test)	<.001

a. There are 0 cells (0%) with expected values less than 5. The minimum expected value is 45.600.

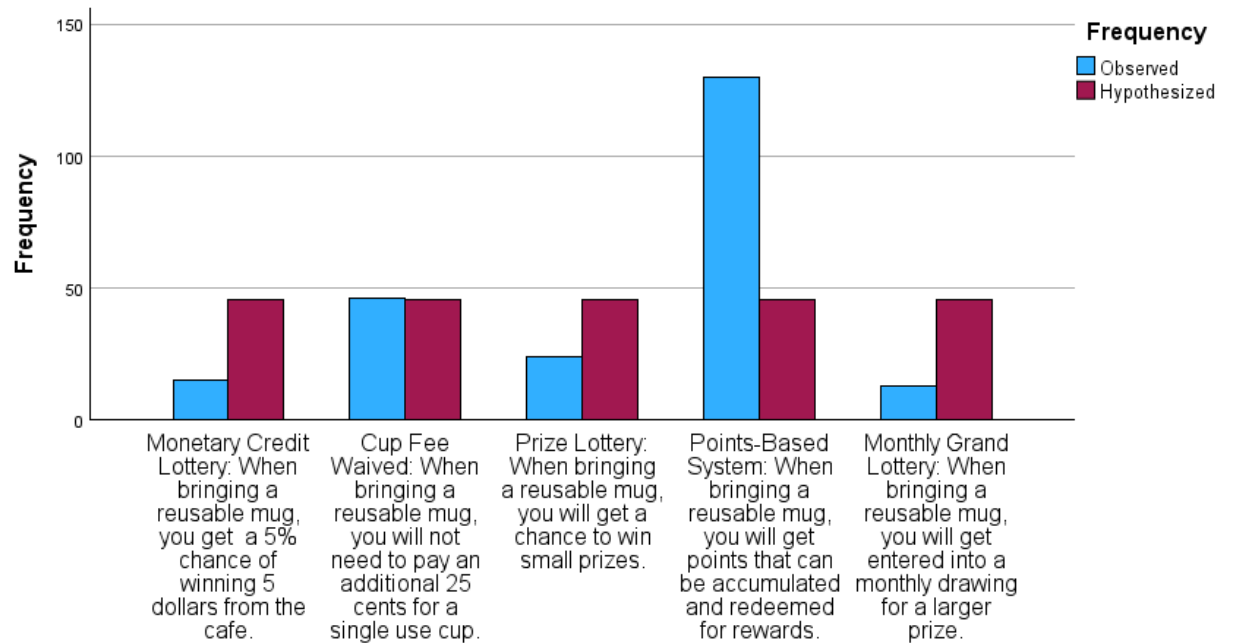
*Note: This figure is a Summary Table of the One-sample Chi-square test results for Goodness of Fit for Q7.*

**Table 2.3 - Q7 Distribution Table****Q7**

	N	%
Monetary Credit Lottery: When bringing a reusable mug, you get a 5% chance of winning 5 dollars from the cafe.	15	6.6%
Cup Fee Waived: When bringing a reusable mug, you will not need to pay an additional 25 cents for a single use cup.	46	20.1%
Prize Lottery: When bringing a reusable mug, you will get a chance to win small prizes.	24	10.5%
Points-Based System: When bringing a reusable mug, you will get points that can be accumulated and redeemed for rewards.	130	56.8%
Monthly Grand Lottery: When bringing a reusable mug, you will get entered into a monthly drawing for a larger prize.	13	5.7%
Missing System	1	0.4%

*Note: this is a distribution table showing frequency of distributions for Q7.*

**Figure 2.1 - Q7 One-Sample Chi-Square Graphic**



Please choose your favourite initiative that would most encourage you to use a reusable mug.

*Note: This figure is the Bar Graph representing the results of the one-sample Chi-square test for Q7 between all 5 options, evaluated against a null hypothesis of equal distribution of scores between all options.*

**Table 2.4 - Q7 One-sample Chi-Square Significance Summary with all Lottery options combined**

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig. <sup>a,b</sup>	Decision
1	The categories of Q7Enhanced occur with equal probabilities.	One-Sample Chi-Square Test	<.001	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

**Table 2.5 - Q7 One-Sample Chi-Square Test Summary Table with all Lottery options combined**

One-Sample Chi-Square Test Summary	
Total N	228
Test Statistic	57.789 <sup>a</sup>
Degree Of Freedom	2
Asymptotic Sig.(2-sided test)	<.001

a. There are 0 cells (0%) with expected values less than 5. The minimum expected value is 76.

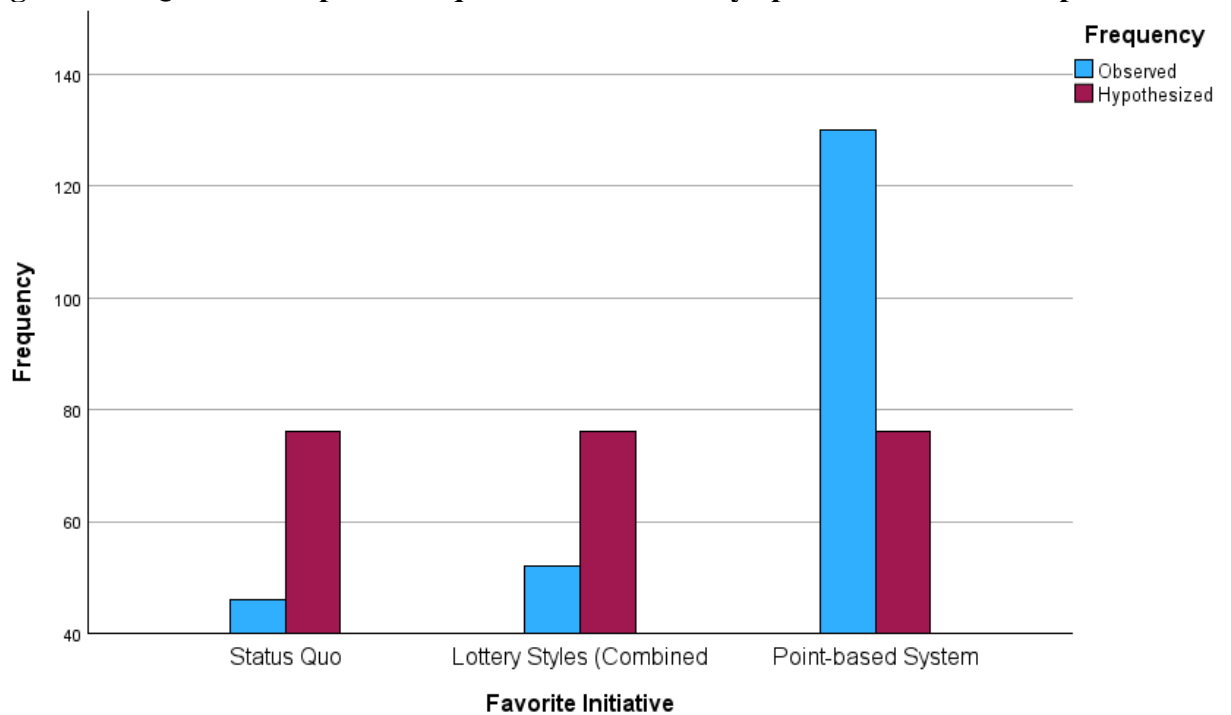
*Note: This is the table of the summary of results of the One-Sample Chi-Square goodness of fit test for Q7 with all lottery options combined.*

**Table 2.6 - Q7 distribution Table (Lottery Options Combined)**

		<b>Q7Enhanced</b>			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Status Quo	46	20.1	20.2	20.2
	Lottery Styles (Combined)	52	22.7	22.8	43.0
	Point-based System	130	56.8	57.0	100.0
	Total	228	99.6	100.0	
Missing	System	1	.4		
<b>Total</b>		<b>229</b>	<b>100.0</b>		

*Note: this is a distribution table showing frequency of distribution for Q7 with Lottery Option Combined.*

**Figure 2.2 - Q7 One-sample Chi-Square with all Lottery options combined Graphic**



*This figure is the Bar Graph representing the results of the one-sample Chi-square test for Q7 between 3 options where all lottery options were combined into one category, evaluated against a null hypothesis of equal distribution of scores between all available options.*

**3.Question 7 (with Lottery Systems Combined) 2x3 Cross-Tabulation Chi-Square test of Independence**

**Table 3.1 - Q7 Condition Placement**

**Case Processing Summary**

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Q7Enhanced * Condition	228	99.6%	1	0.4%	229	100.0%

*Note: This Table represents our evaluated Sample. One participant was invalidated from the equation due to an incomplete answer (they didn't pick an option). They did fill out the rest of the study and passed other examinations to test for both responses and were thus not excluded from the overall survey.*

**Table 3.2 - Q7 2x3 Cross-Tabulation**

**Q7Enhanced \* Condition Crosstabulation**

		Condition				Total	
		Control		Lottery		N	%
		N	%	N	%		
Q7Enhanced	Status Quo	30	28.3%	16	13.1%	46	20.2%
	Lottery Styles (Combined)	27	25.5%	25	20.5%	52	22.8%
	Point-based System	49	46.2%	81	66.4%	130	57.0%
<b>Total</b>		106	100.0%	122	100.0%	228	100.0%

*Note: This table contains our frequency distribution of our 2x3 Cross-Tabulation Chi-Square Test of Independence between our Conditions (Control and Lottery) and Q7 Favorite Initiatives (Status Quo, Lottery Styles Combined, and Point-Based System)*

**Table 3.3 - Q7 2x3 Cross-Tabulation Chi-Square Significance Test**

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.147 <sup>a</sup>	2	.004
Likelihood Ratio	11.241	2	.004
N of Valid Cases	228		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 21.39.

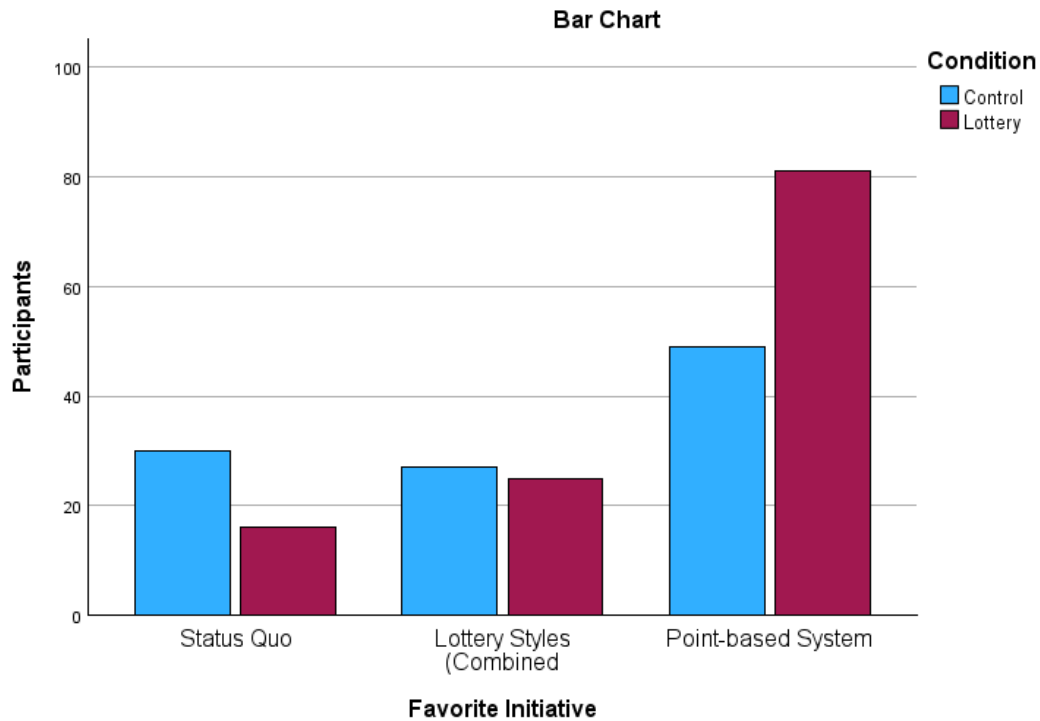
*Note: This table showcases the significance of results of the 2x3 Cross-Tabulation Chi-test of Independence.*

**Table 3.4 - Effect Size**

		<b>Symmetric Measures</b>	
		Value	Approximate Significance
Nominal by Nominal	Phi	.221	.004
	Cramer's V	.221	.004
N of Valid Cases		228	

*Note: This table is the computed effect size for the 2x3 Cross-Tabulation Independent Sample Chi-Square between the two Conditions (Control and Lottery) and Q7 Incentive Options (with all Lottery Options Combined).*

**Figure 3.1 - Q7 2x3 Cross-Tabulation Chi-Square Graphic**



*Note: This graphic is a visual representation of the 2x3 Cross-Tabulation Chi-Square test that evaluated Q7 Incentive Options (with all Lottery Styles combined) with the two Conditions (Control and Lottery).*

**4.Q 4,5 and 6 Exploratory Analysis Data**

**Table 4.1 - Q4 and Q5 Frequency Exploration**



<b><u>Q4: Motives for using reusables</u></b>	<b><u>Frequency (f) [n=229]</u></b>	<b><u>Q5: Motives for using Disposables</u></b>	<b><u>Frequency (f) [n=229]</u></b>
Environmental Concern	174 (.76)	Convenience (Not needing to carry reusable)	191 (.83)
Saving Money	170 (.74)	Forgetting	188 (.82)
Social Responsibility, setting examples	76 (.33)	Habit	126 (.55)
Convenience, Easy of use	67 (.29)	Limited Access to reusable mugs	29 (.13)
Personal Preference	59 (.26)	Cost	27 (.12)
Other	10 (.04)	Other	8 (.03)

*Observed in Note: This graphic examines the trends frequency between Q4 and Q5 when asking participants what motivates them to use reusable mugs or use disposable cups. Participants could select multiple options for these questions.*

**Table 4.2 - Q6 Frequency Exploration**

<b><u>Q6: What would make you use reusables more often?</u></b>	<b><u>Frequency (f) (n=229)</u></b>
Incentives such as discounts or rewards for using a reusable mug	162 (.71)
Assurance of easy cleaning and maintenance	128 (.56)
Lower cost options being available	104 (.45)
Availability of stylish/customizable designs	67 (.29)
Educational campaigns highlighting environmental benefits	40 (.17)
Other	16 (.07)

*Note: This table graphic examines the trends observed in frequency for Q6 which asked participants what option would make them use reusables more often. Participants could select multiple options for this question.*