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**Demographic Statistical Methods Division
Survey Methodology**

2023 NSCG Incentives Experiment Report

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Executive Summary

The 2023 National Survey of College Graduates (NSCG) included an experiment which tested the effect of removing an incentive on response and demographic representation. The control groups received the incentive, while the treatment groups did not receive an incentive. The experiment was conducted on both the new and old cohorts and data were analyzed for the old cohort by the number of incentives received from past cycles of the NSCG¹.

For all groups, removing the incentive significantly lowered final response rates and there was evidence that offering the incentive led to earlier response. Additionally, results showed that removing the incentive yielded significantly lower response rates for cases that previously received two or three incentives compared to having received the incentive only once.

In general, the incentive did not change the demographic makeup of respondents. However, for race and ethnicity, the old cohort group that received one prior incentive and received the incentive this cycle had a higher proportion of respondents who identified as black compared to the group that received one prior incentive but did not receive an incentive this cycle. For the new cohort, the group that did not receive an incentive had a higher proportion of respondents who were white compared to those that received an incentive.

For other demographic groups, there were some meaningful differences (greater than four percentage points) between experimental groups. Specifically, several treatment groups within the old cohort had a higher proportion of respondents when the incentive was not offered for those aged 40-55 or those with a science and engineering degree or occupation.

The analysis overwhelmingly showed how positive incentives are for increasing response rates. For most of the individual demographic respondent distributions, the results showed that the response rates did not differ, significantly or meaningfully, between the incentive and non-incentive groups. This suggests that the large differences in overall response rates, between 12 and 22-percentage points, are not likely the direct result of individual demographic characteristics.

We recommend retaining the incentive for those sample members who have a low response propensity and high sampling weight. The groups that were offered the incentive responded earlier than the groups that were not offered the incentive and their final response rates were significantly higher.

¹ Within the old cohort, sample cases could have received one, two, or three incentives previously.

1. Introduction

The goal of the 2023 National Survey of College Graduates (NSCG) incentives experiment was to measure the impact of removing a monetary incentive on response. This report documents the results of the experiment and recommendations for data collection procedures for future cycles².

The NSCG is a repeated cross-sectional survey, conducted every two years, designed to provide data on the number and characteristics of individuals with a college degree living in the United States (U.S. Census Bureau, 2023). The U.S. Census Bureau implements the survey on behalf of the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF).

The 2023 NSCG sample consisted of approximately 161,000 new and returning cases (e.g., new and old cohorts) that have responded to the American Community Survey (ACS). Data collection spanned 26 weeks and used a multi-mode approach of self-administered web and paper questionnaires and Computer-Assisted Telephone Interviewing (CATI).

Response rates have decreased for the past two NSCG cycles. There are many possible reasons, but the decrease has brought into question the effectiveness of the incentives and how they should be used moving forward. The NSCG has used incentives since 2010 and multiple experiments were conducted in 2010 and 2013 to determine the incentive amount, timing, and who should receive an incentive. Data showed that a \$30 debit card incentive sent to cases with high weights and a low response propensity was cost effective and increased both response rates and the representativeness of responding cases (Reiser et al., 2013). A model is used to identify who in the new cohort will receive an incentive and those cases continue to receive an incentive throughout their time in the NSCG. The model calculates response propensity based on the prior cycle's model coefficients along with frame data from the ACS and then multiplies the inverse of the propensity by the log of the base weight. The cases are then rank ordered from highest value to lowest. The 20 percent of cases with the highest values receive an incentive (Rowe, 2023).

In the new cohort, every sample case under the 20 percent cutoff receives an incentive. This means we do not have an equivalent comparison group that did not receive an incentive. However, we can compare the sample cases that border the 20 percent cutoff, as these cases can be assumed to be similar. In other words, we can compare the response rate of cases just within the 20 percent cut-off (i.e., 17-20 percent, who received an incentive) with the response rate of cases just outside the 20 percent cut-off (i.e., 21-24

² The U.S. Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure avoidance protection of the confidential source data used to produce this product (Data Management System (DMS) number: P-7533594, Disclosure Review Board (DRB) approval number: CBDRB-FY24-POP001-0118).

percent, who did not receive an incentive). Looking over the past several cycles, response rate differences around the cutoff has decreased (White, 2024). The response rates for the incentivized group are still higher, but not by as much as they were in 2015, for example. This could suggest the incentive is no longer having the positive effect it once did. However, while these groups are similar, they are not the same, and we are not currently able to directly measure the impact of the incentive.

The NSCG also offers incentives to old cohort cases that received an incentive during their first cycle and continue to receive one throughout their time in the sample. The NSCG has operated under the assumption that offering an incentive sets an expectation moving forward and removing that incentive could have a negative impact on response. However, this assumption and its magnitude have never been experimentally tested.

We conducted two experiments in the 2023 NSCG. For the new cohort, we withheld the incentive from a random subset of sample cases in the 20 percent that are assigned an incentive and compared that group to the cases that received an incentive to measure how the incentives are affecting response rates and the demographic makeup of respondents. This allows us to isolate its effect and determine whether the incentives are working as expected or if we need to re-evaluate the current incentive strategy. For the old cohort, we withheld incentives from a random sample of cases in each sample frame that received an incentive in past cycles. This allows us to measure the conditioning effect and see if it differs for cases that received an incentive once versus multiple times.

2. Methodology

This section details the experimental design, research questions, and methods that were used to answer them. The main goal was to measure the impact of removing the incentive on response rates, the timing of response, and the demographic makeup of respondents. We examined the new and old cohorts separately because of the difference in response behaviors. Within the old cohort, we analyzed each sample frame individually by the number of past incentives a group had received.

The NSCG uses Successive Difference Replication (SDR) methods to construct replicate weights and calculate variance estimates. Like previous analyses, we used a jackknife variance estimator with a jackknife coefficient of 0.05 because of its similarities to the SDR method and because SDR is not supported using SAS software (Opsomer, Breidt, White, & Li, 2016). Jackknife replicates include 80 replicates for the new cohort and 240 replicates for the old cohort. Experimental and replicate weights were provided by Survey Statistics for Poverty, Health, Expenditures, and Redesign (SSPHER) staff in DSMD and used for most analyses, including weighted response rates. When possible, recommendations for future NSCG cycles are

based on weighted estimates and statistical tests because they provide inferences about the NSCG population. We used a significance level of 0.1 for all analyses in this report.

2.1 Experimental Design

This experiment had two conditions in the new cohort: an incentive group of sample cases that were within the 20 percent model threshold and were offered an incentive, and a non-incentive group from a random subset of those within the 20 percent threshold that would typically receive an incentive but did not.

Among the old cohort, there were six conditions: three incentive groups (sample cases that have received one incentive, two incentives, and three prior incentives) and three non-incentive groups³. The number of previous incentives a group has received is based on the number NSCG cycles a sample member has been a part of. 2023 NSCG new cohort sample members were selected from the 2021 ACS. Table 1 summarizes the non-incentive and incentive experimental groups with their respective sample sizes by cohort. Additionally, more information is provided regarding ACS frame and past incentive history. The sample sizes for the non-incentive groups in both cohorts were held to a minimum to not jeopardize the overall response rate.

Table 1: 2023 NSCG Incentive Experimental Groups

Frame	Incentive History	Estimated Sample Size *	2023 Incentive	Experimental Group
New Sample Members:				
2021 ACS	No past incentive	11,000	Offered	Incentive
		2,000	Not Offered	Non-incentive
Returning Sample Members (Old Cohort):				
2019 ACS	One past incentive	5,600	Offered	Incentive
		400	Not Offered	Non-incentive
2017 ACS	Two past incentives	5,400	Offered	Incentive
		400	Not Offered	Non-incentive
2015 ACS	Three past incentives	4,200	Offered	Incentive
		300	Not Offered	Non-incentive

Source: U.S. Census Bureau 2023 National Survey of College Graduates Incentives Experiment Analysis Plan

*Only 20 percent of those sampled for NSCG are eligible to receive an incentive.

³ The three non-incentive groups were returning sample cases that are in their second cycle and previously received an incentive, sample cases that are in their third cycle and previously received two incentives, and sample cases that are in their fourth cycle and previously received three incentives.

The sample sizes allow us to detect a minimum detectable difference (MDD) of approximately 6 percentage points for comparisons of response rates, depending on the cohort. The MDD calculations assume a 50 percent response rate in each group and use an alpha value of 0.10. Appendix D provides the MDD equation and definitions.

2.2 Research Questions

We will answer the following research questions to determine the effects of not offering a \$30 incentive:

1. Relative to the control group, does removing the incentive lead to lower response rates?
 - a. Within the old cohort, does removing the incentive have a negative effect for cases that received an incentive once versus multiple times?
 - b. Was the demographic makeup of respondents different between the treatment and control groups?
2. Does sending an incentive lead to earlier response, hence reducing the number of follow-up contacts?

2.3 Data Analysis

This section outlines the methods that were used to answer each research question. We used experimental base weights for each estimate to account for small non-incentive group sample sizes compared to the incentive, as well as to make inferences about the NSCG target population. The experiments within the new and old cohorts are different, so they were analyzed separately. We verified and tested the output using double programming, a process in which multiple staff develop program code independently to verify results. This practice helps ensure the quality of deliverables⁴.

2.3.1 Response Rates

To determine whether removing the incentive led to lower response rates, we calculated the overall weighted response rate using Equation 1 in Appendix A. This equation is the same as the final response rate calculated for NSCG in production.

For returning sample members, the incentive was withheld from a random sample of cases in each sample frame that received an incentive in past cycles. Respondents who have received incentives in multiple previous cycles would expect to receive an incentive again this cycle. This is known as a conditioning effect. To measure the conditioning effect, we compared the final response rates for those who previously

⁴ For disclosure purposes, the SAS code used for programming and verifying results will be saved on the M drive under the DSMD Survey Methodology area folder.

received the incentive once, two, or three times within the old cohort that did not receive the incentive this cycle. That way, we could measure the effect of removing the incentive for cases that had previously received the incentive once, versus two or three times. We compared the overall response rates for each of these experimental groups using statistical t-tests with an alpha of 0.10.

2.3.2 Timing of Response

Another way to measure the impact of the incentive on response is to determine if sending an incentive led to earlier response, hence reducing the number of follow-up contacts and associated costs. We used the date of the mailing in Week 8, July 13th, to determine response status by that time. We looked at response status on this day for those who were deemed eligible respondents at the end of data collection because analysis of all sample members would include those who might never respond. We then compared response status between experimental groups using statistical t-tests with an alpha of 0.10.

2.3.3 Demographic Variables

We were also interested in whether the demographic makeup of respondents changes when the incentive is not offered. To determine if the removal of an incentive will negatively impact response rates, we first calculated chi-square tests on respondent distributions of the demographic characteristics from Table 10 in Appendix C. In some cases, we combined categories to make larger cell sizes that could be analyzed using chi-square tests (See Appendix C for updated variable categories). For reporting purposes, we chose to combine additional categories for other variables to avoid needing to suppress results when reporting respondent distributions.

In cases where collapsing categories was not possible because there are only two categories (such as disability status), and some of the categories were too small for a chi-square analysis, we chose to combine the old cohort frames for the analysis. For disability status and the oversample group eligibility indicator, we conducted a chi-square analysis comparing new cohort and all of the old cohort. To evaluate the possible impact of the number of incentives a case had previously received, we used a logistic regression for old cohort respondents with an outcome of whether a respondent received an incentive as a function of disability (or oversample) status controlling for the number of previous incentives a case had received.

After completing the chi-square analysis, if any significantly different demographic respondent distributions were found in the subpopulations, pairwise t-tests were calculated between the non-incentive and incentive groups. A Bonferroni adjustment for multiple comparisons was applied to the p-values with an alpha of 0.10.

3. Assumptions and Limitations

- Small sample sizes result in high variances and may limit the ability to identify statistically significant differences; therefore, we consider and discuss meaningful differences as well. We consider differences larger than two percentage points meaningful for response rates and four percentage points for respondent distributions to be meaningful.
- Small sample sizes were used for the non-incentive groups because it was expected that the withholding of incentives would result in a large, negative impact on response rates. Using large sample sizes for these groups would therefore have a large, negative impact on all production outcomes.

4. Results

In this section, we present the final response rates for each experimental group by cohort, the statistical t-tests comparing the groups within the old cohort that did not receive an incentive this cycle, the response status before the paper questionnaire mailing in week 8 for all respondents, and the results of the demographic makeup of respondents.

4.1 Response Rates

First, we looked at whether withholding the incentive led to lower response rates. We found that for all experimental groups, withholding the incentive led to significantly lower response rates. Additionally, the difference in response rates increased the longer that cases have been receiving an incentive, except for the group who previously received two incentives. The final weighted response rates, standard errors, and statistical tests for the new and all old cohort experimental groups are in Table 2 below.

Table 2: Final Response Rates, Standard Errors, and Statistical Tests

Incentive History	Experimental Group	Final Response Rates	
		Estimate	P-value
New Sample Members:			
No past incentive	No incentive	46.4 (3.5)	0.0009*
	Incentive	58.1 (1.1)	
Returning Sample Members (Old Cohort):			
One past incentive	No incentive	50.2 (4.2)	< 0.0001*
	Incentive	68.7 (1.1)	

Incentive History	Experimental Group	Final Response Rates	
		Estimate	P-value
Two past incentives	No incentive	58.0 (3.6)	0.0017*
	Incentive	69.0 (0.9)	
Three past incentives	No incentive	42.8 (3.4)	< 0.0001*
	Incentive	64.5 (0.9)	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant

Next, we examined whether withholding the incentive this cycle had a negative effect on response for cases that have previously received an incentive once, versus having had received two or three incentives in the past. Table 3 below provides the final response rates for the old cohort groups that did not receive an incentive this cycle. We compared the final response rates for the groups within the old cohort that did not receive the incentive this cycle and found that cases who previously received three incentives had a significantly lower response rate compared to the groups that had previously received one or two incentives. This provides possible evidence of a conditioning effect. However, the group that previously received two incentives (but no incentive this cycle) yielded a significantly higher response rate than the group that had previously received one incentive. It is unclear why the group that previously received two incentives yielded a significantly higher response rate, but graphs of the unweighted weekly collection rates (Appendix B) show that these two groups ended with the same unweighted final collection rate. Table 3 also provides the differences between these groups and the resulting p-values.

Table 3: Old Cohort Final Response Rates Comparison, Standard Errors, and Statistical Tests

Incentive History	Response Rates		
	Estimate	Difference	P-value
One past incentive vs. two past incentives	50.2 (4.2) 58.0 (3.6)	-7.9	0.0794*
One past incentive vs. three past incentives	50.2 (4.2) 42.8 (3.4)	7.4	0.0882*
Two past incentives vs. three past incentives	58.0 (3.6) 42.8 (3.4)	15.2	0.0011*

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant

4.2 Timing of Response

For cases that were eligible respondents at the end of data collection, we determined their response status just before the paper questionnaire mailing in week 8 and found that offering an incentive did yield a significantly higher response for all experimental groups. This implies that sending an incentive leads to earlier response thus preventing the need to send a costly questionnaire mailing.

Table 4 includes the percentage of respondents at week 8, standard errors, and statistical tests for the new and old cohort experimental groups who were eligible respondents at the end of data collection.

Table 4: Percentage of Respondents at Week 8 Standard Errors and Statistical Tests

Incentive History	Experimental Group	Percentage of Respondents	
		Estimate (SE)	P-value
New Sample Members:			
No past incentive	No incentive	43.7 (5.6)	< 0.0001*
	Incentive	76.8 (1.5)	
Returning Sample Members (Old Cohort):			
One past incentive	No incentive	54.8 (5.8)	0.0010*
	Incentive	72.9 (1.1)	
Two past incentives	No incentive	55.3 (4.9)	< 0.0001*
	Incentive	77.0 (0.9)	
Three past incentives	No incentive	49.6 (6.2)	< 0.0001*
	Incentive	75.9 (1.2)	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant

4.3 Demographic Variables

In this section we present the statistically significant demographic distributions as well as those with meaningful differences. A set of tables capturing the remaining distributions are provided in Appendix E. Additionally, the logistic regression for oversample status and disability status can be found in Appendix F.

We performed chi-square tests on the distributions of all sample members, regardless of response status, to determine if any differences between experimental groups existed before data collection started as a baseline. Next, we performed the same chi-square tests on the distributions of respondents. Significant differences in the demographic makeup of respondents between experimental groups are only considered if the baseline analysis was not found to be significant.

4.3.1 Significant Demographic Respondent Distributions

For the statistically significant chi-square results of the demographic respondent distributions, we performed additional t-test analysis with a Bonferroni adjustment for multiple comparisons of the original alpha level of 0.10. There were two demographic respondent distributions which were found to be statistically significant with a p-value lower than our adjusted alphas of 0.025 for race and ethnicity for the old cohort group that previously received one incentive and 0.025 for race and ethnicity for the new cohort.

The old cohort group that previously received one incentive and received the incentive this cycle had a higher proportion of respondents who identified as black compared to the group that did not. Offering an incentive this cycle had a positive effect on response for sample cases whose race and ethnicity was “Black, not Hispanic or Latino” for this old cohort frame. For the new cohort, the group that did not receive an incentive had a higher proportion of respondents who were white compared to the group that did receive an incentive. It is unclear how offering an incentive to the new cohort yielded fewer white respondents compared to other groups, but this could continue to be looked at for future cycles. Table 5 shows the respondent distributions for race and ethnicity for the two cohorts and the p-values for the Chi-square tests. Tables 6 and 7 show the p-values from statistical t-tests with the Bonferroni-adjusted alpha of 0.025.

Table 5: Respondent Distributions for Race and Ethnicity, New Cohort and Old Cohort (One Past Incentive)

Cohort	Experimental Group	Race and Ethnicity	Frequency	% (SE)	Chi-Square P-Value
New Cohort	Incentive	Hispanic	700	6.1 (0.4)	0.0729*
		Black, not Hispanic or Latino	550	5.2 (0.4)	
		White, not Hispanic or Latino	2200	78.2 (1.3)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	700	10.5 (1.2)	
		Total	4200	100	

Cohort	Experimental Group	Race and Ethnicity	Frequency	% (SE)	Chi-Square P-Value
New Cohort	No incentive	Hispanic	80	4.9 (1.2)	
		Black, not Hispanic or Latino	50	3.4 (1.0)	
		White, not Hispanic or Latino	350	84.4 (2.2)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	100	7.3 (1.2)	
		Total	550	100	
Old Cohort	Incentive	Hispanic	550	11.4 (0.7)	0.0278*
		Black, not Hispanic or Latino	600	11.9 (0.6)	
		White, not Hispanic or Latino	1900	65.2 (0.9)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	600	11.4 (0.8)	
		Total	3600	100	
	No incentive	Hispanic	20	8.6 (2.7)	
		Black, not Hispanic or Latino	20	4.9 (1.2)	
		White, not Hispanic or Latino	100	72.0 (4.7)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	40	14.5 (3.8)	
		Total	200	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant at the alpha = 0.10 level

Table 6: New Cohort Multiple Comparisons t-tests for Race and Ethnicity

Race and Ethnicity	Experimental Group	Frequency	% (SE)	P-Value
Hispanic	Incentive	700	6.1 (0.4)	0.3133
	Non-incentive	80	4.9 (1.2)	
Black, not Hispanic or Latino	Incentive	550	5.2 (0.4)	0.1137
	Non-incentive	50	3.4 (1.0)	
White, not Hispanic or Latino	Incentive	2200	78.2 (1.3)	0.0155*
	Non-incentive	350	84.4 (2.2)	
Asian, AIAN, or NHPI, not Hispanic or Latino	Incentive	700	10.5 (1.2)	0.0574
	Non-incentive	100	7.3 (1.2)	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant at the Bonferroni-adjusted alpha = 0.025 level

Table 7: Old Cohort (One Past Incentive) Multiple Comparisons t-tests for Race and Ethnicity

Race and Ethnicity	Experimental Group	Frequency	% (SE)	P-Value
Hispanic	Incentive	550	11.4 (0.7)	0.3069
	Non-incentive	20	8.6 (2.7)	
Black, not Hispanic or Latino	Incentive	600	11.9 (0.6)	<0.0001*
	Non-incentive	20	4.9 (1.2)	
White, not Hispanic or Latino	Incentive	1900	65.2 (0.9)	0.1575
	Non-incentive	100	72 (4.7)	
Asian, AIAN, or NHPI, not Hispanic or Latino	Incentive	600	11.4 (0.8)	0.4183
	Non-incentive	40	14.5 (3.8)	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant at the Bonferroni-adjusted alpha = 0.025 level

4.3.2 Meaningful Differences in Demographic Respondent Distributions

Of the non-significant demographic respondent distributions, there were a few circumstances where there were meaningful differences (greater than four percentage points) that did not meet the level of significance (p -value < 0.10) for the following demographic variables: work status, highest degree, S&E status, age group, and race/ethnicity.

For work status, the old cohort group that previously received either two or three incentives and received the incentive this cycle, had a higher proportion of respondents that were employed compared to the groups that did not receive the incentive. For highest degree, the old cohort group that previously received one incentive and received the incentive this cycle had a higher proportion of respondents with a bachelor's degree as their highest degree compared to the group that did not receive the incentive. In turn, the group that did not receive the incentive had a higher proportion of respondents with a master's or PhD degree as their highest degree compared to the incentive group.

There were a few more instances where the non-incentive groups had a higher proportion of respondents than the incentive groups. For age group, the old cohort group that previously received two incentives but did not receive the incentive this cycle had a higher proportion of respondents aged 40-54 compared to the group that did receive the incentive. For S&E status, the old cohort that group that previously received one incentive but did not receive it this cycle had a higher proportion of respondents with a science and engineering degree, or occupation compared to the group that did receive the incentive. S&E status could continue to be looked at as the NSF uses information from the NSCG to prepare congressionally mandated reports on Science and Engineering Indicators.

The respondent distributions by race and ethnicity provided a couple of different findings. In Section 4.3.1, we discussed within the new cohort, the group that did not receive the incentive had a significantly higher proportion of white respondents compared to the group that did receive the incentive. We saw this same finding for the old cohort group that previously received one incentive but did not receive the incentive this cycle. This group had a meaningfully higher proportion of white respondents compared to the group that received the incentive, though this difference was not statistically significant. Alternatively, the old cohort group that previously received three incentives *and received the incentive this cycle*, had a higher proportion of white respondents compared to the group that did not receive the incentive this cycle.

Despite these small differences, the analysis overwhelmingly showed how positive incentives are for increasing response. Most demographic respondent distributions were not found to be meaningfully or significantly different from one another when comparing the groups that did receive an incentive this cycle

to those that did not. All demographic respondent distributions are displayed in tables 11 through 22 in Appendix E.

5. Conclusion

For all experimental groups, removing the incentive had a significantly negative impact on final response rates. There was about a 12-percentage point higher response rate for the new cohort incentive group and, for the old cohort group that received an incentive in three previous NSCG cycles, the difference grew to nearly 22-percentage points. Additionally, offering an incentive led to earlier response before the paper questionnaire mailing, which could reduce the number of follow-up contacts and cost.

Previous research using NSCG data found no “significant differences between the incentive and nonincentive groups” for a number of demographic variables, including race and ethnicity (Shettle & Mooney, 1999, p. 239). For this experiment, there was a significant difference in race and ethnicity for some experimental groups. Offering the incentive had a positive effect on response for sample cases whose race and ethnicity was “Black, not Hispanic or Latino” for one old cohort frame. However, for the new cohort, the group that did not receive an incentive had a higher proportion of respondents who were white compared to the group that did receive an incentive.

Though these differences may be statistically significant in some cases, modifying the strategy of who should or should not receive an incentive based on these results would not have any practical significance. These results only give insight into response rates based on a single characteristic of a potential respondent and not representative of their whole identity, or how their whole identity may influence their propensity to respond. The findings show that, overall, removing incentives had a significant negative impact on response. Except for the few circumstances discussed previously, overall, the demographic respondent distributions comparing the incentive and non-incentive groups were not found to be very different from one another.

For future research, we could compare response for those who were in the experiment this cycle and their response next cycle to see if withholding the incentive in the 2023 cycle had a lasting effect on their response in future NSCG cycles compared the those that received an incentive in 2023 and 2025.

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Appendix A: Response Rates

We calculated the overall weighted response rates⁵ using Equation 1.

Equation 1: Response Rate

$$\text{Response Rate} = \frac{ER}{(ER+ENR)+e(UE)}$$

where,

ER: Eligible Respondent

ENR: Eligible Nonrespondent

e: Estimated proportion of cases with unknown eligibility (UE) expected to be eligible.

The proportion of cases with unknown eligibility expected to be eligible (*e*) was estimated using the following equation:

$$e(UE) = \frac{ER + ENR}{ER + ENR + IE}$$

where, IE is Ineligible cases that were eligible for initial NSCG mailing but, after responding, were deemed ineligible for the survey.

This weighted response rate used eligible respondents in the numerator (final disposition codes between 50 and 54 in Table 8). The denominator also included eligible respondents as well as eligible nonrespondents (final disposition greater than or equal to 94 in Table 8) and an estimate of the proportion of unknown eligibility cases expected to be eligible (cases classified with unknown eligibility are final disposition codes between 80 and 89 in Table 8). This proportion was estimated using the sum of respondents and nonrespondents divided by the sum of all sampled persons (including those deemed ineligible with final disposition codes between 60 and 79 in Table 8) then multiplied by the sum of unknown eligibility.

Table 8: Disposition Codes for Eligible and Ineligible Respondents

Status	Disposition Code	Description
Eligible Respondents	50	Eligible complete – mail
	51	Eligible complete – CATI
	52	Eligible complete – web

⁵ This equation used base weights from the NSCG Master File.

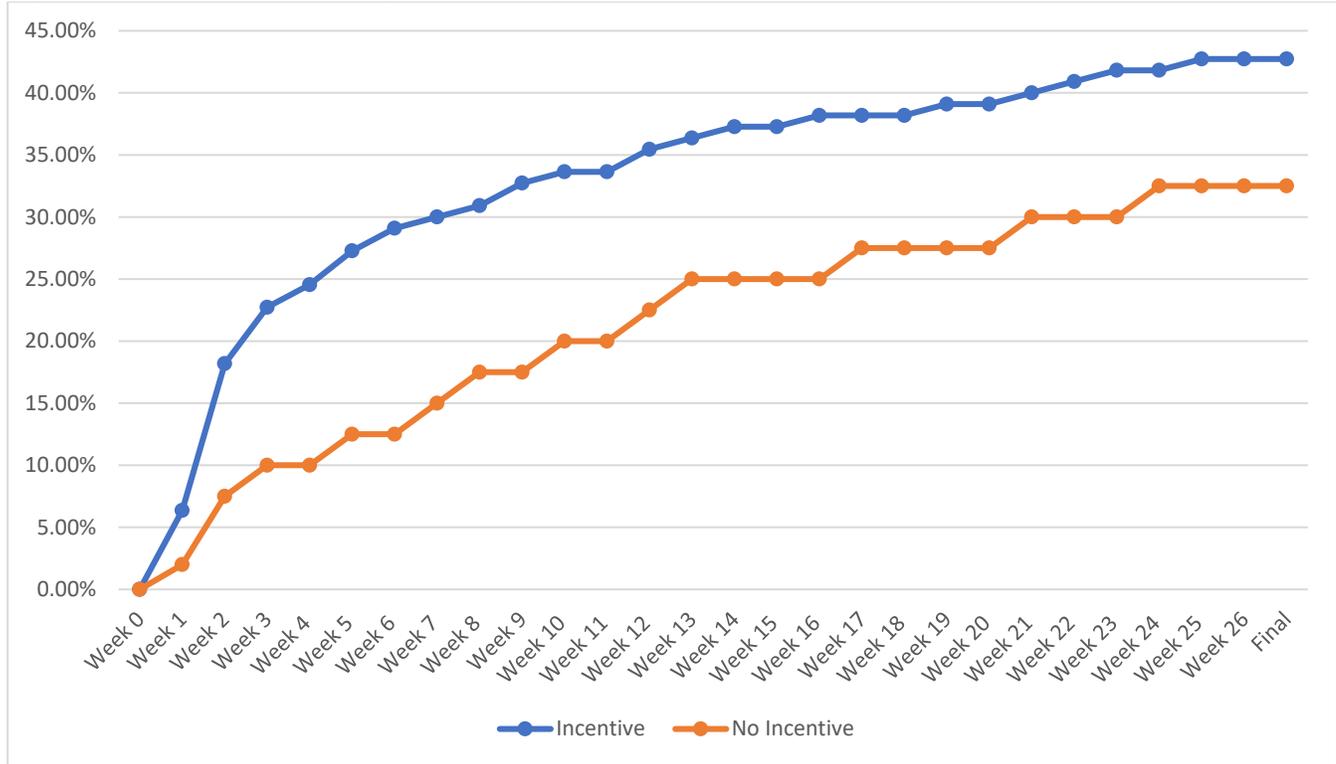
Status	Disposition Code	Description
	54	Eligible complete – Telephone Questionnaire Assistance (TQA) incoming call interview via CATI
Ineligibles	60	Emigrant – mail
	61	Emigrant – CATI
	62	Emigrant – web
	64	Emigrant – incomplete (TQA / locating / correspondence)
	65	Temporarily institutionalized
	67	Terminally ill / permanently institutionalized
	68	Over 75 years old
	69	Deceased
	70	Degree ineligible – no baccalaureate or higher degree earned
	71	Frame ineligible – earliest degree earned after ACS interview year
	78	Duplicate
79	Other confirmed ineligible	
Unknown Eligibility	80	Unable to locate
	81	Sample Person Verification failure – wrong sampled person (FINAL)
	82	Language / hearing barrier
	83	Noncontact – eligibility unknown
	84	Temporarily ill / absent and unable to confirm eligibility
	85	Final refusal and unable to confirm eligibility
	86	Congressional refusal and unable to confirm eligibility
	87	Unable to confirm eligibility and/or confirm reached correct SP - Mail
	88	Unable to confirm eligibility and/or confirm reached correct SP - Web
	89	Other nonresponse and unable to confirm eligibility
Eligible Nonrespondents	94	Eligible and temporarily ill / absent
	95	Eligible and final refusal – CATI
	96	Eligible and congressional refusal
	97	Eligible and missing critical complete items – Mail
	98	Eligible and missing critical complete items – Web
	99	Other confirmed eligible nonresponse

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Appendix B: Unweighted Weekly Collection Rates

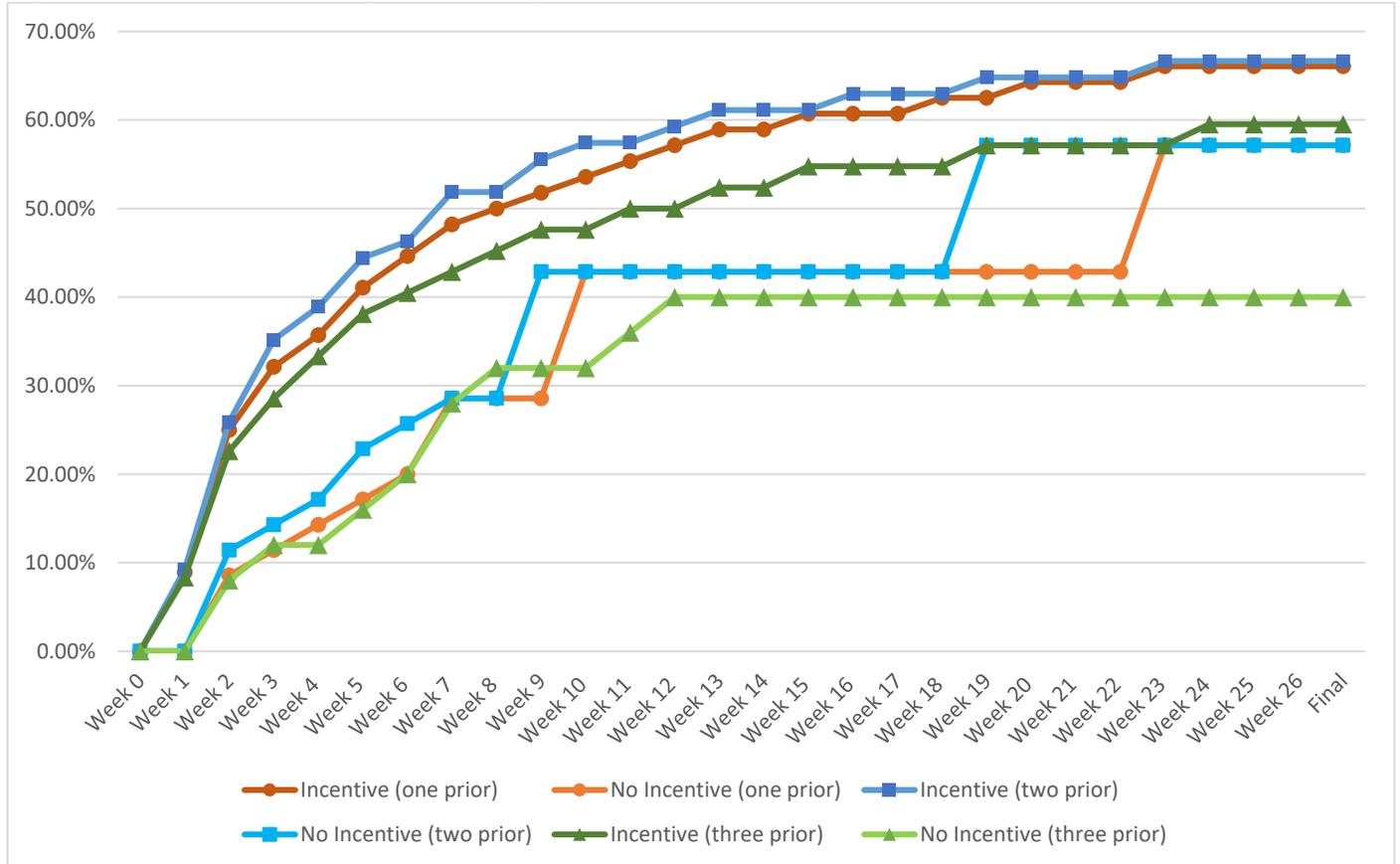
Figure 1 and Figure 2 graph the unweighted weekly collection rates for new and old cohort over the data collection period.

Figure 1: New Cohort Unweighted Weekly Collection Rates for 2023 NSCG Data Collection



Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Figure 2: Old Cohort Unweighted Weekly Collection Rates for 2023 NSCG Data Collection



Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Variable	Range	Type	Description
			81 = non-S&E high interest occupation, S&E FOD 82 = non-S&E low interest occupation, non-S&E FOD 83 = non-S&E occupation, non-S&E FOD
Young graduate oversample group eligibility indicator	1,2	Categorical, binary	1 = S&E case that has earned a bachelor's or master's degree in the last five years 2 = non-S&E case, or S&E case that has not earned a bachelor's or master's degree in the last five years
Sex	1,2	Categorical, binary	1 = Male 2 = Female
Work status	1,2,	Categorical, binary	1 = Employed 2 = Unemployed or not in labor force

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Appendix D: Minimum Detectable Differences Equation and Definitions

To calculate the minimum detectable difference between two response rates with fixed sample sizes, we used the formula from Snedecor and Cochran (1989) for determining the sample size when comparing two proportions.

$$\delta \geq \left((Z_{\alpha^*/2} + Z_{\beta})^2 \left(\frac{p_1(1-p_1)}{n_1} + \frac{p_2(1-p_2)}{n_2} \right) D \right)^{1/2}$$

where:

- δ = minimum detectable difference
- α^* = alpha level adjusted for multiple comparisons
- $Z_{\alpha^*/2}$ = critical value for set alpha level assuming a two-sided test
- Z_{β} = critical value for set beta level
- p_1 = proportion for group 1
- p_2 = proportion for group 2
- D = design effect due to unequal weighting
- n_1 = sample size for a single treatment group or control
- n_2 = sample size for a second treatment group or control

The alpha level of 0.10 was used in the calculations. The beta level was included in the formula to inflate the sample size to decrease the probability of committing a type II error. The beta level was set to 0.10.

Appendix E: Respondent Distributions – Non-Significant Results⁶

Table 10: Respondent Distributions, Age Group

Incentive History	Experimental Group	Age Group	Frequency	% (SE)	P-Value
No previous incentive	Incentive	0-39	2400	37.8 (2.2)	0.9633
		40-54	1000	32.9 (2.4)	
		55-75	800	29.4 (1.9)	
		Total	4200	100	
	Non-incentive	0-39	350	37.8 (5.6)	
		40-54	150	34.1 (5.5)	
		55-75	100	28.1 (4.0)	
		Total	550	100	
One previous incentive	Incentive	0-39	2100	45.8 (1.1)	0.9744
		40-54	900	30.4 (1.1)	
		55-75	650	23.8 (1.1)	
		Total	3600	100	
	Non-incentive	0-39	100	44.7 (5.9)	
		40-54	50	30.8 (4.5)	
		55-75	30	24.5 (4.3)	
		Total	200	100	
Two previous incentives	Incentive	0-39	1600	30.0 (0.9)	0.3220
		40-54	1000	36.3 (1.1)	
		55-75	950	33.7 (1.0)	
		Total	3500	100	
	Non-incentive	0-39	80	26.2 (4.5)	
		40-54	60	44.0 (4.4)	
		55-75	60	29.8 (4.9)	
		Total	200	100	
Three previous incentives	Incentive	0-39	1100	30.5 (1.0)	0.8646
		40-54	750	37.5 (1.2)	
		55-75	500	32.3 (1.1)	
		Total	2400	100	
	Non-incentive	0-39	50	27.6 (6.1)	
		40-54	40	37.5 (5.5)	

⁶ Due to rounding rules for reporting data, distributions may not add to reported total. Additionally, percentages may not reflect the frequencies reported because of rounding.

Incentive History	Experimental Group	Age Group	Frequency	% (SE)	P-Value
Three previous incentives	Non-incentive	55-75	30	34.9 (6.4)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 11: Respondent Distributions, Citizenship

Incentive History	Experimental Group	Citizenship Status at Birth	Frequency	% (SE)	P-Value
No previous incentive	Incentive	US Citizen	3300	91.8 (0.4)	0.7447
		Not US Citizen	850	8.2 (0.4)	
		Total	4200	100	
	Non-incentive	US Citizen	450	91.3 (1.4)	
		Not US Citizen	100	8.7 (1.4)	
		Total	550	100	
One previous incentive	Incentive	US Citizen	2800	84.9 (0.8)	0.5805
		Not US Citizen	850	15.1 (0.8)	
		Total	3600	100	
	Non-incentive	US Citizen	150	82.8 (4.0)	
		Not US Citizen	50	17.2 (4.0)	
		Total	200	100	
Two previous incentives	Incentive	US Citizen	2600	83.3 (0.8)	0.7197
		Not US Citizen	900	16.7 (0.8)	
		Total	2500	100	
	Non-incentive	US Citizen	150	82.1 (3.4)	
		Not US Citizen	50	17.9 (3.4)	
		Total	200	100	
Three previous incentives	Incentive	US Citizen	1700	83.4 (0.8)	0.8272
		Not US Citizen	650	16.6 (0.8)	
		Total	2400	100	
	Non-incentive	US Citizen	100	84.3 (4.2)	
		Not US Citizen	50	15.7 (4.2)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 12: Respondent Distributions, Disability

Incentive History	Experimental Group	Disability Status	Frequency	% (SE)	P-Value
No previous incentive	Incentive	At least moderate difficulty in one functional activity area	200	2.7 (0.2)	0.6700
		No more than a slight difficulty in any functional activity area	4000	97.3 (0.2)	
		Total	4200	100	
	Non-incentive	At least moderate difficulty in one functional activity area	30	2.4 (0.6)	
		No more than a slight difficulty in any functional activity area	550	97.6 (0.6)	
		Total	550	100	
One, two or three previous incentives	Incentive	At least moderate difficulty in one functional activity area	750	5.2 (0.2)	0.3230
		No more than a slight difficulty in any functional activity area	14000	94.8 (0.2)	
		Total	15000	100	
	Non-incentive	At least moderate difficulty in one functional activity area	40	4.3 (0.8)	
		No more than a slight difficulty in any functional activity area	950	95.7 (0.8)	
		Total	1000	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 13: Respondent Distributions, Highest Degree

Incentive History	Experimental Group	Highest Degree	Frequency	% (SE)	P-Value
No previous incentive	Incentive	Bachelor's	2900	75.3 (1.1)	0.3045
		Master's or PhD	1300	24.7 (1.1)	
		Total	4200	100	
	Non-incentive	Bachelor's	400	71.4 (3.5)	
		Master's or PhD	200	28.6 (3.5)	
		Total	550	100	
Two previous incentives	Incentive	Bachelor's	2400	72.8 (0.9)	0.8935
		Master's or PhD	1100	27.2 (0.9)	
		Total	3500	100	
	Non-incentive	Bachelor's	150	73.4 (4.5)	
		Master's or PhD	60	26.6 (4.5)	
		Total	200	100	
Three previous incentives	Incentive	Bachelor's	1700	77.2 (0.9)	0.7676
		Master's or PhD	750	22.8 (0.9)	
		Total	2400	100	
	Non-incentive	Bachelor's	80	78.6 (4.5)	
		Master's or PhD	40	21.4 (4.5)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 14: Respondent Distributions, Hispanic Origin

Incentive History	Experimental Group	Hispanic Origin	Frequency	% (SE)	P-Value
No previous incentive	Incentive	Yes, Hispanic or Latino	700	6.1 (0.4)	0.3273
		No, not Hispanic or Latino	3500	93.9 (0.4)	
		Total	4200	100	
	Non-incentive	Yes, Hispanic or Latino	100	4.9 (1.2)	
		No, not Hispanic or Latino	500	95.1 (1.2)	
		Total	550	100	
One previous incentive	Incentive	Yes, Hispanic or Latino	550	11.4 (0.7)	0.3654
		No, not Hispanic or Latino	3100	88.6 (0.7)	
		Total	3600	100	
	Non-incentive	Yes, Hispanic or Latino	20	8.6 (2.7)	
		No, not Hispanic or Latino	150	91.4 (2.7)	
		Total	200	100	
Two previous incentives	Incentive	Yes, Hispanic or Latino	450	9.1 (0.6)	0.6286
		No, not Hispanic or Latino	3100	90.9 (0.6)	
		Total	3500	100	
	Non-incentive	Yes, Hispanic or Latino	20	10.7 (3.3)	
		No, not Hispanic or Latino	150	89.3 (3.3)	
		Total	200	100	
Three previous incentives	Incentive	Yes, Hispanic or Latino	350	10.4 (0.7)	0.9218
		No, not Hispanic or Latino	2100	89.6 (0.7)	
		Total	2400	100	
	Non-incentive	Yes, Hispanic or Latino	20	10.1 (3.2)	
		No, not Hispanic or Latino	100	89.9 (3.2)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 15: Respondent Distributions, Broad Occupation Category

Incentive History	Experimental Group	Broad Occupation Category	Frequency	% (SE)	P-Value
No previous incentive	Incentive	Computer and information scientists	300	2.1 (0.2)	0.8331
		non-S&E high interest occupation, S&E FOD	750	9.7 (0.5)	
		non-S&E low interest occupation, non-S&E FOD	700	6.8 (0.4)	
		non-S&E occupation, non-S&E FOD	450	52.2 (1.4)	
		Other*	1900	29.2 (1.3)	
		Total	4200	100	
	Non-incentive	Computer and information scientists	40	1.9 (0.4)	
		non-S&E high interest occupation, S&E FOD	100	9.5 (1.4)	
		non-S&E low interest occupation, non-S&E FOD	100	7.2 (1.3)	
		non-S&E occupation, non-S&E FOD	60	55.4 (4.6)	
		Other	250	26.0 (3.5)	
		Total	550	100	
One previous incentive	Incentive	Computer and information scientists	300	4.1 (0.3)	0.5976
		non-S&E high interest occupation, S&E FOD	550	9.1 (0.5)	
		non-S&E low interest occupation, non-S&E FOD	350	7.5 (0.6)	
		non-S&E occupation, non-S&E FOD	650	35.5 (1.3)	
		Other	1800	43.8 (1.3)	
		Total	3600	100	
	Non-incentive	Computer and information scientists	20	5.8 (1.7)	

Incentive History	Experimental Group	Broad Occupation Category	Frequency	% (SE)	P-Value
One previous incentive	Non-incentive	non-S&E high interest occupation, S&E FOD	30	12.0 (2.5)	
		non-S&E low interest occupation, non-S&E FOD	20	9.5 (3.3)	
		non-S&E occupation, non-S&E FOD	30	33.6 (5.6)	
		Other	80	39.2 (5.0)	
		Total	200	100	
Two previous incentives	Incentive	Computer and information scientists	300	4.6 (0.4)	0.8987
		non-S&E high interest occupation, S&E FOD	650	13.0 (0.6)	
		non-S&E low interest occupation, non-S&E FOD	350	7.9 (0.6)	
		non-S&E occupation, non-S&E FOD	600	27.4 (0.9)	
		Other	1700	47.1 (0.1)	
		Total	3500	100	
	Non-incentive	Computer and information scientists	20	4.1 (1.5)	
		non-S&E high interest occupation, S&E FOD	40	16.2 (3.4)	
		non-S&E low interest occupation, non-S&E FOD	20	7.5 (2.3)	
		non-S&E occupation, non-S&E FOD	40	27.0 (4.8)	
		Other	90	45.2 (5.0)	
		Total	200	100	
Three previous incentives	Incentive	Computer and information scientists	200	4.2 (0.4)	0.9770
		non-S&E high interest occupation, S&E FOD	450	10.3 (0.6)	
		non-S&E low interest occupation, non-S&E FOD	250	6.5 (0.4)	

Incentive History	Experimental Group	Broad Occupation Category	Frequency	% (SE)	P-Value
Three previous incentives	Incentive	non-S&E occupation, non-S&E FOD	450	37.8 (1.1)	
		Other	1100	41.2 (1.1)	
		Total	2400	100	
	Non-incentive	Computer and information scientists	20	3.9 (1.3)	
		non-S&E high interest occupation, S&E FOD	20	10.1 (2.9)	
		non-S&E low interest occupation, non-S&E FOD	20	6.6 (2.4)	
		non-S&E occupation, non-S&E FOD	20	40.9 (6.0)	
		Other	50	38.5 (5.7)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*“Other” is comprised of: mathematical scientists, life scientists, physical scientists, social scientists, except psychologists, psychologists, engineers, S&E-related health occupations, S&E-related non-health occupations, postsecondary teacher in an S&E field, postsecondary teacher in a non-S&E field, secondary teacher in an S&E field, secondary teacher in a non-S&E field, not working, S&E FOD or S&E previous occupation, and not working, non-S&E FOD and non-S&E previous occupation or never worked

Table 16: Respondent Distributions, Oversample Status

Incentive History	Experimental Group	Oversample Status	Frequency	% (SE)	P-Value
No previous incentive	Incentive	S&E case that has earned a bachelor's or master's degree in the last five years	1300	6.7 (0.3)	0.2853
		non-S&E case, or S&E case that has not earned a bachelor's or master's degree in the last five years	2900	93.3 (0.3)	
		Total	4200	100	
	Non-incentive	S&E case that has earned a bachelor's or master's degree in the last five years	200	5.7 (0.8)	
		non-S&E case, or S&E case that has not earned a bachelor's or master's degree in the last five years	400	94.3 (0.8)	
		Total	550	100	
One, two or three previous incentives	Incentive	S&E case that has earned a bachelor's or master's degree in the last five years	750	3.8 (0.2)	0.4635
		non-S&E case, or S&E case that has not earned a bachelor's or master's degree in the last five years	8900	96.2 (0.2)	
		Total	9500	100	
	Non-incentive	S&E case that has earned a bachelor's or master's degree in the last five years	40	3.2 (0.8)	
		non-S&E case, or S&E case that has not earned a bachelor's or master's degree in the last five years	450	96.8 (0.8)	
		Total	500	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 17: Respondent Distributions, Race and Ethnicity

Incentive History	Experimental Group	Race and Ethnicity	Frequency	% (SE)	P-Value
Two previous incentives	Incentive	Hispanic	450	9.1 (0.6)	0.9206
		Black, not Hispanic or Latino	500	10.8 (0.6)	
		White, not Hispanic or Latino	1900	65.6 (1.0)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	750	14.5 (0.6)	
		Total	3500	100	
	Non-incentive	Hispanic	20	10.7 (3.3)	
		Black, not Hispanic or Latino	30	11.9 (3.2)	
		White, not Hispanic or Latino	100	64.3 (4.9)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	30	13.1 (3.1)	
		Total	200	100	
Three previous incentives	Incentive	Hispanic	350	10.4 (0.7)	0.6952
		Black, not Hispanic or Latino	350	10.7 (0.7)	
		White, not Hispanic or Latino	1200	66.1 (1.0)	
		Asian, AIAN, or NHPI, not Hispanic or Latino	550	12.7 (0.5)	
		Total	2400	100	
	Non-incentive	Hispanic	20	10.1 (3.2)	
		Black, not Hispanic or Latino	20	14.2 (5.2)	
		White, not Hispanic or Latino	60	60.1 (6.3)	

Incentive History	Experimental Group	Race and Ethnicity	Frequency	% (SE)	P-Value
Three previous incentives	Non-incentive	Asian, AIAN, or NHPI, not Hispanic or Latino	30	15.5 (4.3)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 18: Respondent Distributions, S&E Status

Incentive History	Experimental Group	S&E Status	Frequency	% (SE)	P-Value
No previous incentive	Incentive	S&E	3500	37.7 (1.2)	0.7434
		Non-S&E	650	62.3 (1.2)	
		Total	4200	100	
	Non-incentive	S&E	500	39.2 (4.1)	
		Non-S&E	80	60.8 (4.1)	
		Total	550	100	
One previous incentive	Incentive	S&E	2700	52.0 (1.2)	0.2047
		Non-S&E	900	48.0 (1.2)	
		Total	3600	100	
	Non-incentive	S&E	150	59.8 (5.9)	
		Non-S&E	40	40.2 (5.9)	
		Total	200	100	
Two previous incentives	Incentive	S&E	2700	61.3 (1.0)	0.8764
		Non-S&E	850	38.7 (1.0)	
		Total	3500	100	
	Non-incentive	S&E	150	60.5 (5.0)	
		Non-S&E	50	39.5 (5.0)	
		Total	200	100	
Three previous incentives	Incentive	S&E	1800	48.6 (1.3)	0.7908
		Non-S&E	600	51.4 (1.3)	
		Total	2400	100	
	Non-incentive	S&E	90	47.0 (6.1)	
		Non-S&E	30	53.0 (6.1)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 19: Respondent Distributions, Sex

Incentive History	Experimental Group	Sex at Birth	Frequency	% (SE)	P-Value
No previous incentive	Incentive	Male	1800	40.7 (1.3)	0.9051
		Female	2300	59.3 (1.3)	
		Total	4200	100	
	Non-incentive	Male	250	41.4 (5.1)	
		Female	300	58.6 (5.1)	
		Total	550	100	
One previous incentive	Incentive	Male	1700	44.2 (1.1)	0.4243
		Female	1900	55.8 (1.1)	
		Total	3600	100	
	Non-incentive	Male	80	48.1 (4.7)	
		Female	100	51.9 (4.7)	
		Total	200	100	
Two previous incentives	Incentive	Male	1600	42.6 (1.0)	0.7019
		Female	1900	57.4 (1.0)	
		Total	3500	100	
	Non-incentive	Male	90	40.8 (4.7)	
		Female	100	59.2 (4.7)	
		Total	200	100	
Three previous incentives	Incentive	Male	1200	44.1 (1.1)	0.7564
		Female	1200	55.9 (1.1)	
		Total	2400	100	
	Non-incentive	Male	60	42.4 (5.7)	
		Female	60	57.6 (5.7)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 20: Respondent Distributions, Work Status

Incentive History	Experimental Group	Work Status	Frequency	% (SE)	P-Value
No previous incentive	Incentive	Employed	3200	79.4 (0.9)	0.7536
		Unemployed, or not in labor force	900	20.6 (0.9)	
		Total	4200	100	
	Non-incentive	Employed	450	80.4 (2.8)	
		Unemployed, or not in labor force	150	19.6 (2.8)	
		Total	550	100	
One previous incentive	Incentive	Employed	3100	82.7 (0.8)	0.5060
		Unemployed, or not in labor force	550	17.3 (0.8)	
		Total	3600	100	
	Non-incentive	Employed	150	84.9 (3.1)	
		Unemployed, or not in labor force	30	15.1 (3.1)	
		Total	200	100	
Two previous incentives	Incentive	Employed	2900	80.3 (0.8)	0.1090
		Unemployed, or not in labor force	650	19.7 (0.8)	
		Total	3500	100	
	Non-incentive	Employed	150	73.7 (4.5)	
		Unemployed, or not in labor force	40	26.3 (4.5)	
		Total	200	100	
Three previous incentives	Incentive	Employed	1900	80.2 (1.0)	0.2544
		Unemployed, or not in labor force	450	19.2 (1.0)	
		Total	2400	100	
	Non-incentive	Employed	100	75.1 (5.3)	
		Unemployed, or not in labor force	20	24.9 (5.3)	
		Total	100	100	

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

Table 21: Respondent Distribution of Significant Chi-Square Results – Highest Degree, ACS 2019

Incentive History	Experimental Group	Highest Degree	Frequency	% (SE)	Chi-Square P-Value	Bonferroni t-test P-Value
One previous incentive	Incentive	Bachelor's	2500	79.5 (1.0)	0.0431*	0.0711
		Master's or PhD	1200	20.5 (1.0)		
		Total	3600	100		
	Non-incentive	Bachelor's	100	71.3 (4.5)		
		Master's or PhD	60	28.7 (4.5)		
		Total	200	100		

Source: U.S. Census Bureau, 2023 National Survey of College Graduates Incentive Experiment

*Statistically significant at the alpha = 0.10 level.

Appendix F: Logistic Regression

Equation 2: Logistic Regression of Old Cohort Disability Status as a Function of Experimental Group

$$\log \text{odds} (DIS \text{ is } 1) = -2.96 + \begin{cases} -0.03 \text{ if incentive} \\ 0 \text{ if no incentive} \end{cases} + \begin{cases} -0.04 \text{ if three prior incentives} \\ -0.06 \text{ if two prior incentives} \\ 0 \text{ if one prior incentive} \end{cases}$$

Equation 3: Logistic Regression of Old Cohort Oversample Status as a Function of Experimental Group

$$\log \text{odds} (OVERSAMP \text{ is } 1) = -3.49 + \begin{cases} -0.08 \text{ if incentive} \\ 0 \text{ if no incentive} \end{cases} + \begin{cases} -0.56 \text{ if three prior incentives} \\ -0.31 \text{ if two prior incentives} \\ 0 \text{ if one prior incentive} \end{cases}$$