Request for Approval to Conduct an Experiment Using Monetary Incentives in the 2010 National Survey of College Graduates

I. Introduction

The National Survey of College Graduates (NSCG) has been conducted by the Census Bureau for the National Science Foundation (NSF) since the 1960s. It is the nation's only source of detailed statistics on the science and engineering labor force. The 2010 NSCG data collection effort began in October 2010 and is scheduled to end in May 2011. As part of the on-going survey evaluation, the Census Bureau and the NSF have tracked response rates and number of respondents for the survey's primary analytical domains on a weekly basis. Recent investigation of these figures has shed light on a potential problem that has both response rate and nonresponse bias implications.

As part of the 2010 NSCG sample design, the NSF set reliability requirements for each NSCG primary analytical domain. The 2010 NSCG sample was then allocated to ensure an adequate sample in each domain to meet these reliability requirements while taking into consideration the likely nonresponse that would occur in the 2010 data collection effort. The 2010 NSCG included the following three primary analytical domains as part of the sample design construction:

- Broad occupation by demographic group
- Broad occupation by highest degree level
- Detailed occupation by highest degree level

For each domain, Attachment A provides information on the desired reliability requirements. These reliability requirements assume a fully implemented NSCG rotating panel design. Attachment B provides information on the desired number of respondents from the 2010 NSCG sample within each primary analytical domain in order to meet these reliability requirements. When these desired figures were compared against the weekly results from the 2010 NSCG data collection effort, it was determined that a subpopulation of hard to enumerate cases exists within the NSCG sample and this subpopulation is adversely impacting the response level for the NSCG primary analytical domains. The impact of these hard to enumerate cases is being seen in both the response rate and number of respondents within each primary analytical domain. Unless appropriate steps are taken to increase the response rate for these hard to enumerate cases, there is a concern that the low response rate could introduce nonresponse bias into the estimates for these primary analytical domains.

To address the potential impact of the hard to enumerate cases on the NSCG primary analytical domains, the NSF is requesting approval to conduct an experiment using monetary incentives as part of the 2010 NSCG data collection effort. One of the largest contributors to improved survey response rates is the appropriate use of prepaid monetary incentives. Providing incentives to potential respondents with the survey request has been shown to significantly increase the number of people who respond. Furthermore, providing these incentives in advance evokes a sense of reciprocal obligation such that

people feel the need to respond to the reward they received by completing the survey. Perhaps more important than its influence on response rates is the potential effect that a financial incentive has on nonresponse bias. Research is beginning to demonstrate that such incentives reduce the potential for nonresponse bias by obtaining responses from sample cases that otherwise might not answer the questionnaire (Dillman, Smyth, and Christian, 2009).

This document discusses information related to the impact these hard to enumerate cases could have on estimates of the NSCG primary analytical domains and provides details on the proposed inclusion of a monetary incentive experiment in the 2010 NSCG.

II. Background

Historically, the NSCG sample was selected once a decade from the decennial census long form respondents. No other frame existed to sample this rare population. The 2003 NSCG was the last survey cycle to use the long form as its sampling frame. With the American Community Survey (ACS) replacing the long form, the NSF has switched to the ACS as a sampling frame beginning with the 2010 NSCG.

Although the long form and ACS provide information that allows the NSF to identify the unique NSCG target population, there are certain drawbacks associated with using these frames to select the NSCG sample. One particular drawback is the impact the long form or ACS data collection mode has on the response propensity to the NSCG.

Results from 2003 NSCG survey cycle provides evidence that the *response mode* used in the 2000 decennial census long form impacts the *response rate* in 2003 NSCG. The long form used two data collection modes in a sequential manner: mail followed by personal visit follow-up for mail nonrespondents. The 2003 NSCG response rate for long form mail respondents was 22 percentage points higher than the 2003 NSCG response rate for the long form cases personal visit respondents. In other words, the hard to enumerate cases from the long form (identified as cases requiring a personal visit follow-up to obtain a long form response) were equally difficult to enumerate in the NSCG data collection effort.

When the 2010 NSCG response rates are considered while taking the ACS data collection mode into account, a similarly severe response rate differential is noticed between ACS mail and non-mail cases. Table 1 provides 2010 NSCG response rate information by ACS data collection mode as of February 13, 2011. As of this date in the data collection, all sample cases had been included in two mail data collection phases and a month of nonresponse follow-up by computer assisted telephone interviewing (CATI). As was the case with the 2003 NSCG/2000 long form evaluation, the 2010 NSCG response rate differential between the ACS mail and ACS non-mail cases provides justification to consider the ACS non-mail cases as hard to enumerate cases for 2010 NSCG data collection effort. As a result, the remaining tables within this document will use the term “hard to enumerate” when referring to 2010 NSCG sample members that completed the

ACS in the CATI, CAPI, or GQPV data collection modes. The 2010 NSCG sample cases that completed the ACS in the mail data collection mode will be categorized as "other."

Table 1. 2010 NSCG Response Rate Information

ACS Data Collection Mode	Count	Response Rate
Mail	51,055	65.28%
CATI	5.718	42.15%
CAPI	8,205	36.20%
GQPV	217	44.70%
Total	65,195	59.52%

Notes: (1) 2010 NSCG Response Rate as of February 13, 2011.
(2) CATI is Computer Assisted Telephone Interviewing.
(3) CAPI is Computer Assisted Personal Interviewing.
(4) GQPV refers to the ACS sample cases residing in Group Quarters that were interviewed by Personal Visit.

III. Impact of the Hard to Enumerate Cases on the NSCG Primary Analytical Domains

As noted earlier, the 2010 NSCG sample was allocated to ensure an adequate sample in each primary analytical domain to meet the survey's reliability requirements. This allocation assumed a 70% overall response rate with some variation to account for the response rate variation likely to occur across certain demographic groups. The tables that follow provide insight on the difficulty associated with capturing an adequate percentage of the hard to enumerate cases within the NSCG primary analytical domains. As noted earlier, the hard to enumerate cases include the 2010 NSCG sample members that completed the ACS in the CATI, CAPI, or GQPV data collection modes.

Attachment C includes response rate information for <u>all</u> cells within the NSCG primary analytical domains. This attachment provides evidence of the adverse impact the hard to enumerate cases has on the cells within the NSCG primary analytical domains. Tables 2-4 below are subsets of Attachment C and provide a glimpse into the response rate impact associated with the hard to enumerate cases. These subset tables are included in the text rather than the full tables because of space considerations. However, the full tables in Attachment C should be examined when attempting to determine the impact of the hard to enumerate cases.

Table 2. 2010 NSCG Response Rate – Primary Analytical Domain #1 by Difficulty to Enumerate Indicator

Demographic Group	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Black	Physical Scientists	Other	90	55.56%
Black	Physical Scientists	Hard to Enumerate	37	24.32%
Black	Social Scientists, Except Psychologists	Other	72	51.39%
Black	Social Scientists, Except Psychologists	Hard to Enumerate	26	23.08%
Black	Psychologists	Other	30	66.67%
Black	Psychologists	Hard to Enumerate	15	33.33%
Black	Engineers	Other	356	52.25%

Demographic Group	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Black	Engineers	Hard to Enumerate	206	26.70%

Table 3. 2010 NSCG Response Rate – Primary Analytical Domain #2 by Difficulty to Enumerate Indicator

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Master	Chemical engineers	Other	174	66.09%
Master	Chemical engineers	Hard to Enumerate	25	36.00%
Master	Civil and architectural engineers	Other	457	70.46%
Master	Civil and architectural engineers	Hard to Enumerate	73	38.36%
Master	Electrical and computer engineers	Other	468	69.44%
Master	Electrical and computer engineers	Hard to Enumerate	101	46.54%

Table 4. 2010 NSCG Response Rate – Primary Analytical Domain #3 by Difficulty to Enumerate Indicator

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Bachelor/ Professional	Mathematician	Other	897	61.43%
Bachelor/ Professional	Mathematician	Hard to Enumerate	202	39.60%
Bachelor/ Professional	Computer Scientist	Other	1,871	64.19%
Bachelor/ Professional	Computer Scientist	Hard to Enumerate	471	40.34%
Bachelor/ Professional	Biological/medical scientists	Other	346	69.94%
Bachelor/ Professional	Biological/medical scientists	Hard to Enumerate	103	38.84%

The concern is that the low response rates for the hard to enumerate cases within the 2010 NSCG sample increases the potential for nonresponse bias in the estimates of the NSCG primary analytical domains. This concern is amplified by the fact that the hard to enumerate cases make up a disproportionate percentage of the NSCG population. As presented in Table 5, while the hard to enumerate cases are only about 22% of the unweighted NSCG sample, they comprise approximately 31% of NSCG weighted population.

Table 5. 2010 NSCG Sample by Difficulty to Enumerate Indicator

Difficulty to Enumerate Indicator	Unweighted		Weighted	
	2010 NSCG Sample Cases	Percentage	Total	Percentage
Hard to Enumerate	14,140	21.69%	17,635,066	31.37%
Other	51,055	78.31%	38,573,550	68.63%
Total	65,195	100.00%	56,208,616	100.00%

Furthermore, when you examine the cross-tabulation of the demographic group variable for the 2010 NSCG sample by the difficulty to enumerate indicator, it is evident that the hard to enumerate cases make up a disproportionate percentage for the population of each demographic group. Since demographic group information is included in one of the NSCG key analytical domains, the combination of the low response rate and the disproportionate percentage of the population creates potential for nonresponse bias in the NSCG estimates.

IV. Incentive Proposal

Given the extreme response rate differences documented in the previous sections and the potentially adverse impact these differences could have on estimates of the NSCG primary analytical domains, the NSF is requesting approval to conduct an experiment that uses monetary incentives for the hard to enumerate cases within the 2010 NSCG sample. Currently, there are approximately 9,000 hard to enumerate cases that are nonrespondents in the 2010 NSCG sample.

The incentive experiment we are proposing will include a control group that receives no incentive, a treatment group that receives a $20 prepaid incentive, and another treatment group that receives a $30 prepaid incentive. Research conducted at the National Science Foundation using incentives to encourage survey response has consistently resulted in an increase in response and/or data quality. As noted in Zhang, 2010, the past incentive research conducted at the NSF has focused on the surveys similar to the NSCG. These similarities include the target population (college educated), questionnaire length, and data collection modes. Since the NSCG has these similarities, it is reasonable to assume the research results from the other NSF surveys apply to the NSCG.

Furthermore, the data from this research suggests that higher incentive amounts may be associated with greater response rate gain. However, further exploration of this relationship between incentive amount and gain in response is needed. (Zhang, 2010). As a result, two incentive values are being included in this experiment to examine the impact incentive amount has on gain in response for the college-educated population.

The $20 incentive value was chosen for the first treatment group based on the effectiveness of this amount when used in past NSF-sponsored surveys (Zhang, 2010). The $30 incentive value was chosen for the second treatment group in an effort to determine whether the increased incentive amount compared to the $20 incentive value would result in a noticeable response rate gain.

The $30 incentive value for the second treatment group was determined using the findings from a survey of postsecondary faculty conducted by Research Triangle Institute (RTI). This RTI survey used two incentive values ($20 and $30) and found no significant difference in response between these two incentive values (Fahimi et al., 2006). However, the RTI survey used a postpaid incentive structure that required a completed interview for the incentive to be used. Since the NSCG will use a prepaid incentive

structure, we feel there is value in reexamining the $20 vs. $30 incentive amount question.

With this backgound in mind, this proposed experiment will allow us to investigate the following issues:

- Does the use of a monetary incentive ($0 vs. $20) and ($0 vs $30) impact the response tendency for these hard to enumerate sample cases?
- Does the amount of the monetary incentive ($20 vs. $30) impact the response tendency for these hard to enumerate sample cases?
- Is the addition cost associated with the $30 incentive over the $20 incentive justified by the increase in response rate?
- Does the use of a prepaid incentive create sample cases that will use the incentive without completing the survey? If so, are there any demographic indicators that provide insight on the type of cases using the incentive without completing the survey.

In order to use incentives in the context of this experiment, we have determined the necessary sample size requirements to meet a response rate difference detection level of at least 10% in the pairwise comparison between the control group and either treatment group. The control group sample size presented in Table 6 is the minimum number of cases needed in each group to meet the desired detection level. Rather than also setting the sample size for the treatment groups equal to the control group sample size, the balance of the cases would be put equally into the two treatment groups in order to maximize the impact of the incentive. As a result of the larger sample size for the treatment groups, the actual detection level of each pairwise comparison is lower than the desired detection level. However, the actual detection level would vary depending on the standard error of the estimates from the two groups.

Please note that these sample size calculations assume an alpha level of 10%, a beta level of 90%, and estimated response rates of 50% for each group (setting the response rates for each group at this 50% value is a conservative approach that maximizes the required sample size).

Table 6. 2010 NSCG Incentive Experiment – Sample Size Information

Desired Detection Level	Control Group Sample Size	Treatment Group #1 Sample Size	Treatment Group #2 Sample Size	Percent Receiving NO Incentive	Percent Receiving an Incentive
10.0%	600	4,200	4,200	6.7%	93.3%

V. References

Dillman, Don A., Jolene D. Smyth and Leah Melani Christian. (2009). Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method, 3rd edition. John Wiley: Hoboken, NJ.

Fahimi et al. (2006). *Efficacy of Incentives in Increasing Response Rates*. Paper prepared for the Second International Conference on Telephone Survey Methodology, Miami, Florida, January 2006.
http://www.rti.org/pubs/TSM2006_Fahimi-efficacy_paper.pdf

Zhang F. (2010). *Incentive Experiments: NSF Experiences.* Working Paper SRS 11-200. Arlington, VA: National Science Foundation, Division of Science Resources Statistics.
http://www.nsf.gov/statistics/srs11200/srs11200.pdf

Table A-1: NSCG Desired CV Levels - Broad Occupation by Demographic Group

	DEMOGRAPHIC GROUP								
	USCAB or High Prob. of U.S. Earned Degree						Low Prob. of U.S. Earned Degree		
BROAD OCCUPATION	Hispanic	Black	Asian	AIAN/NHPI	Disabled	White	Hispanic	Asian	Residual
Mathematician	8.1%	6.6%	5.0%	11.3%	8.1%	2.9%	19.7%	4.4%	6.4%
Computer Scientists	8.0%	10.0%	9.0%	16.0%	18.4%	2.5%	22.0%	6.6%	6.4%
Life Scientists	11.1%	11.8%	12.1%	25.8%	15.5%	4.0%	21.0%	6.9%	7.3%
Physical Scientists	10.0%	12.0%	11.0%	18.0%	20.4%	4.5%	24.0%	8.6%	8.4%
Social Scientists, Except Psychologists	13.0%	14.6%	15.5%	30.0%	21.1%	5.5%	30.0%	17.8%	15.6%
Psychologists	13.3%	18.7%	15.8%	25.0%	16.1%	5.1%	24.1%	30.0%	21.9%
Engineers	5.6%	8.0%	4.0%	15.3%	7.8%	4.0%	12.4%	5.0%	6.7%
Health-Related Occupations	11.3%	16.7%	13.8%	23.0%	14.1%	3.1%	22.1%	28.0%	19.9%
S&E-Related non-Health Occupations	11.3%	16.7%	13.8%	23.0%	14.1%	3.1%	22.1%	28.0%	19.9%
Post secondary teacher, S&E FOD	6.2%	6.9%	6.3%	14.9%	8.9%	4.0%	15.7%	6.6%	7.5%
Post secondary teacher, Non-S&E FOD	20.7%	15.9%	26.1%	29.2%	17.5%	5.4%	29.5%	20.3%	11.7%
Secondary Teacher, S&E FOD	3.4%	3.1%	3.7%	7.3%	4.8%	4.0%	8.9%	3.9%	4.8%
Secondary teacher, Non-S&E	20.7%	15.9%	26.1%	29.2%	17.5%	5.4%	29.5%	20.3%	11.7%
Non-S&E High Interest Occup, S&E FOD	3.2%	4.4%	2.4%	8.1%	4.3%	2.4%	6.6%	2.9%	3.8%
Non-S&E Low Interest Occup, S&E FOD	3.7%	3.4%	4.0%	7.6%	5.1%	4.3%	9.2%	4.2%	5.1%
Non-S&E Occupations, Non-S&E FOD	20.7%	15.9%	26.1%	29.2%	17.5%	5.4%	29.5%	20.3%	11.7%
Not Working, S&E FOD	6.8%	6.9%	6.1%	13.2%	6.2%	2.8%	16.3%	7.3%	7.2%
Not Working, Non-S&E FOD	26.0%	24.3%	19.2%	30.0%	13.5%	8.6%	30.0%	17.0%	12.0%

Notes:

(1) CV = Coefficient of Variation

(2) The total row and column CVs are approximated by the assumption of strata independence.

(3) USCAB = U.S. Citizen at Birth

(4) AIAN/NHPI = American Indian, Alaska Native / Native Hawaiian, Pacific Islander

(5) S&E = Science and Engineering

(6) FOD = Field of Degree

Table A.2: NSCG Desired CV Levels - Broad Occupation by Highest Degree Level

BROAD OCCUPATION	HIGHEST DEGREE LEVEL		
	Bachelor's	Master's	Doctorate
Mathematician	2.7%	3.4%	10.7%
Computer Scientist	3.5%	3.9%	7.7%
Life Scientists	4.5%	5.1%	6.6%
Physical Scientists	5.5%	5.9%	8.9%
Social Scientists, Except Psychologists	6.4%	6.9%	12.5%
Psychologists	15.4%	4.9%	16.4%
Engineers	3.0%	4.0%	9.7%
Health-Related Occupations	13.4%	2.9%	14.4%
S&E-Related non-Health Occupations	13.4%	2.9%	14.4%
Post Secondary Teacher, S&E FOD	3.0%	4.0%	14.7%
Post Secondary Teacher, Non-S&E FOD	20.5%	10.0%	14.0%
Secondary Teacher, S&E FOD	4.0%	4.0%	7.3%
Secondary teacher, non-S&E FOD	20.5%	10.0%	14.0%
Non-S&E High Interest Occupations, S&E FOD	1.7%	2.2%	5.2%
Non-S&E Low Interest Occupations, S&E FOD	4.3%	4.3%	7.6%
Non-S&E Occupation, Non-S&E FOD	20.5%	10.0%	14.0%
Not Working, S&E FOD	4.0%	5.0%	13.0%
Not Working, Non-S&E FOD	13.4%	15.0%	19.0%

Notes:

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(3) S&E = Science and Engineering

(4) FOD = Field of Degree

(5) The Bachelor's degree column includes respondents with a Professional degree

Table A.3: NSCG Desired CV Levels - Detailed Occupation by Highest Degree Level

DETAILED OCCUPATION	HIGHEST DEGREE LEVEL		
	Bachelor's	Master's	Doctorate
Mathematician	2.7%	3.4%	10.7%
Computer Scientist	3.5%	3.9%	7.7%
Biological/medical scientists	5.5%	6.0%	7.0%
Agriculture and other life scientists	5.5%	5.8%	6.7%
Chemists, except biochemists	3.0%	4.0%	12.3%
Physicists and other physical scientists	3.0%	4.0%	13.0%
Psychologists	15.4%	4.9%	16.4%
Economics	3.1%	4.0%	12.0%
Other social scientists	3.0%	4.0%	13.4%
Chemical engineers	3.0%	4.0%	25.8%
Civil and architectural engineers	3.0%	4.0%	30.0%
Electrical and computer engineers	3.0%	4.0%	14.2%
Mechanical engineers	3.0%	4.0%	27.2%
Other engineers	6.0%	8.0%	14.9%
Health-Related Occupations	13.4%	2.9%	14.4%
S&E-Related non-Health Occupations	13.4%	2.9%	14.4%
Post secondary teacher, S&E FOD	3.0%	4.0%	14.7%
Post secondary teacher, Non-S&E FOD	20.5%	10.0%	14.0%
Secondary Teacher, S&E FOD	4.0%	4.0%	7.3%
Secondary Teacher, Non-S&E FOD	20.5%	10.0%	14.0%
Non-S&E High Interest Occupations, S&E FOD	1.7%	2.2%	5.2%
Non-S&E Low Interest Occupations, S&E FOD	4.3%	4.3%	7.6%
Non-S&E Occupation, Non-S&E FOD	20.5%	10.0%	14.0%
Not Working, S&E FOD	4.0%	5.0%	13.0%
Not Working, Non-S&E FOD	13.4%	15.0%	19.0%

Notes:

(1) CV = Coefficient of Variation

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(3) S&E = Science and Engineering

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(5) The Bachelor's degree column includes respondents with a Professional degree

Table B-1: 2010 NSCG Desired Number of Respondents - Broad Occupation by Demographic Group

	DEMOGRAPHIC GROUP								
	USCAB or High Prob. of U.S. Earned Degree						Low Prob. of U.S. Earned Degree		
BROAD OCCUPATION	Hispanic	Black	Asian	AIAN/NHPI	Disabled	White	Hispanic	Asian	Residual
Mathematician	95	197	140	20	63	603	14	170	89
Computer Scientists	112	112	78	26	24	1,071	14	209	109
Life Scientists	67	65	50	10	26	483	22	138	129
Physical Scientists	76	63	48	27	17	355	13	119	104
Social Scientists, Except Psychologists	57	30	30	10	22	180	8	19	26
Psychologists	43	26	24	10	19	204	10	8	13
Engineers	238	335	290	24	99	371	42	232	156
Health-Related Occupations	80	37	51	15	38	827	18	12	16
S&E-Related non-Health Occupations	69	26	35	15	32	644	18	8	19
Post secondary teacher, S&E FOD	176	166	178	38	78	603	31	235	131
Post secondary teacher, Non-S&E FOD	18	11	10	9	19	228	10	20	33
Secondary Teacher, S&E FOD	249	271	99	56	186	385	39	58	104
Secondary teacher, Non-S&E	17	11	12	9	26	268	10	17	60
Non-S&E High Interest Occup, S&E FOD	811	1,171	1,049	109	348	1,340	146	728	638
Non-S&E Low Interest Occup, S&E FOD	626	522	420	147	297	475	78	392	295
Non-S&E Occupations, Non-S&E FOD	19	13	13	11	22	284	10	15	49
Not Working, S&E FOD	178	232	197	36	206	1,053	29	141	158
Not Working, Non-S&E FOD	12	19	21	9	48	133	7	23	54

Notes:

(1) USCAB = U.S. Citizen at Birth

(2) AIAN/NHPI = American Indian, Alaska Native / Native Hawaiian, Pacific Islander

(3) S&E = Science and Engineering

(4) FOD = Field of Degree

Table B.2: NSCG Desired Number of Respondent - Broad Occupation by Highest Degree Level

BROAD OCCUPATION	HIGHEST DEGREE LEVEL		
	Bachelor's	Master's	Doctorate
Mathematician	787	586	61
Computer Scientist	578	605	119
Life Scientists	400	236	146
Physical Scientists	241	191	89
Social Scientists, Except Psychologists	169	125	43
Psychologists	23	254	30
Engineers	901	416	89
Health-Related Occupations	60	953	40
S&E-Related non-Health Occupations	37	843	30
Post Secondary Teacher, S&E FOD	937	550	32
Post Secondary Teacher, Non-S&E FOD	19	64	40
Secondary Teacher, S&E FOD	549	335	112
Secondary teacher, non-S&E FOD	23	71	44
Non-S&E High Interest Occupations, S&E FOD	2,403	1,076	237
Non-S&E Low Interest Occupations, S&E FOD	554	481	82
Non-S&E Occupation, Non-S&E FOD	25	67	41
Not Working, S&E FOD	533	295	38
Not Working, Non-S&E FOD	50	40	19

Notes:

(1) S&E = Science and Engineering

(2) FOD = Field of Degree

(3) The Bachelor's degree column includes respondents with a Professional degree

Table B.3: NSCG Desired Number of Respondents - Detailed Occupation by Highest Degree Level

DETAILED OCCUPATION	HIGHEST DEGREE LEVEL		
	Bachelor's	Master's	Doctorate
Mathematician	787	586	61
Computer Scientist	578	605	119
Biological/medical scientists	273	171	126
Agriculture and other life scientists	231	214	90
Chemists, except biochemists	681	299	32
Physicists and other physical scientists	809	368	43
Psychologists	23	254	30
Economics	133	153	35
Other social scientists	748	366	42
Chemical engineers	598	203	12
Civil and architectural engineers	643	374	6
Electrical and computer engineers	744	401	33
Mechanical engineers	726	360	9
Other engineers	246	109	48
Health-Related Occupations	60	953	40
S&E-Related non-Health Occupations	37	843	30
Post secondary teacher, S&E FOD	937	550	32
Post secondary teacher, Non-S&E FOD	19	64	40
Secondary Teacher, S&E FOD	549	335	112
Secondary Teacher, Non-S&E FOD	23	71	44
Non-S&E High Interest Occupations, S&E FOD	2,403	1,076	237
Non-S&E Low Interest Occupations, S&E FOD	554	481	82
Non-S&E Occupation, Non-S&E FOD	25	67	41
Not Working, S&E FOD	533	295	38
Not Working, Non-S&E FOD	50	40	19

Notes:

(1) S&E = Science and Engineering

(2) FOD = Field of Degree

(3) The Bachelor's degree column includes respondents with a Professional degree

Table C.1: 2010 NSCG Response Rates - Primary Analytical Domain #1 by Difficulty to Enumerate Indicator

Demographic Group	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Hispanic	Mathematician	Other	92	70.65%
Hispanic	Mathematician	Hard to Enumerate	25	20.00%
Hispanic	Computer Scientists	Other	169	65.09%
Hispanic	Computer Scientists	Hard to Enumerate	54	38.89%
Hispanic	Life Scientists	Other	71	64.79%
Hispanic	Life Scientists	Hard to Enumerate	30	46.67%
Hispanic	Physical Scientists	Other	120	75.00%
Hispanic	Physical Scientists	Hard to Enumerate	35	42.86%
Hispanic	Social Scientists, Except Psychologists	Other	76	63.16%
Hispanic	Social Scientists, Except Psychologists	Hard to Enumerate	30	26.67%
Hispanic	Psychologists	Other	60	66.67%
Hispanic	Psychologists	Hard to Enumerate	13	38.46%
Hispanic	Engineers	Other	360	61.39%
Hispanic	Engineers	Hard to Enumerate	130	37.69%
Hispanic	Health-Related Occupations	Other	148	60.81%
Hispanic	Health-Related Occupations	Hard to Enumerate	72	34.72%
Hispanic	S&E-Related non-Health Occupations	Other	134	61.94%
Hispanic	S&E-Related non-Health Occupations	Hard to Enumerate	59	33.90%
Hispanic	Post secondary teacher, S&E FOD	Other	267	69.29%
Hispanic	Post secondary teacher, S&E FOD	Hard to Enumerate	80	37.50%
Hispanic	Post secondary teacher, Non-S&E FOD	Other	59	66.10%
Hispanic	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	15	53.33%
Hispanic	Secondary Teacher, S&E FOD	Other	164	59.15%
Hispanic	Secondary Teacher, S&E FOD	Hard to Enumerate	76	42.11%
Hispanic	Secondary teacher, Non-S&E	Other	14	64.29%
Hispanic	Secondary teacher, Non-S&E	Hard to Enumerate	36	38.89%
Hispanic	Non-S&E High Interest Occupations, S&E FOD	Other	967	60.08%
Hispanic	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	382	33.25%
Hispanic	Non-S&E Low Interest Occupations, S&E FOD	Other	750	58.00%
Hispanic	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	341	32.85%
Hispanic	Non-S&E Occupations, Non-S&E FOD	Other	138	58.70%
Hispanic	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	96	23.96%
Hispanic	Not Working, S&E FOD	Other	183	62.30%
Hispanic	Not Working, S&E FOD	Hard to Enumerate	120	38.33%
Hispanic	Not Working, Non-S&E FOD	Other	21	52.38%
Hispanic	Not Working, Non-S&E FOD	Hard to Enumerate	23	43.48%
Black	Mathematician	Other	128	57.81%
Black	Mathematician	Hard to Enumerate	60	40.00%
Black	Computer Scientists	Other	214	59.81%
Black	Computer Scientists	Hard to Enumerate	134	30.60%
Black	Life Scientists	Other	58	67.24%
Black	Life Scientists	Hard to Enumerate	28	35.71%
Black	Physical Scientists	Other	90	55.56%
Black	Physical Scientists	Hard to Enumerate	37	24.32%
Black	Social Scientists, Except Psychologists	Other	72	51.39%
Black	Social Scientists, Except Psychologists	Hard to Enumerate	26	23.08%
Black	Psychologists	Other	30	66.67%
Black	Psychologists	Hard to Enumerate	15	33.33%
Black	Engineers	Other	356	52.25%
Black	Engineers	Hard to Enumerate	206	26.70%
Black	Health-Related Occupations	Other	131	54.20%

Black	Health-Related Occupations	Hard to Enumerate	83	26.51%
Black	S&E-Related non-Health Occupations	Other	154	57.14%
Black	S&E-Related non-Health Occupations	Hard to Enumerate	81	35.80%
Black	Post secondary teacher, S&E FOD	Other	244	61.89%
Black	Post secondary teacher, S&E FOD	Hard to Enumerate	110	32.73%
Black	Post secondary teacher, Non-S&E FOD	Other	43	58.14%
Black	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	33	27.27%
Black	Secondary Teacher, S&E FOD	Other	128	56.25%
Black	Secondary Teacher, S&E FOD	Hard to Enumerate	128	25.00%
Black	Secondary teacher, Non-S&E	Other	15	80.00%
Black	Secondary teacher, Non-S&E	Hard to Enumerate	25	32.00%
Black	Non-S&E High Interest Occupations, S&E FOD	Other	1,309	56.23%
Black	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	686	32.22%
Black	Non-S&E Low Interest Occupations, S&E FOD	Other	654	51.38%
Black	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	352	27.56%
Black	Non-S&E Occupations, Non-S&E FOD	Other	112	61.61%
Black	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	158	25.32%
Black	Not Working, S&E FOD	Other	255	58.04%
Black	Not Working, S&E FOD	Hard to Enumerate	146	37.67%
Black	Not Working, Non-S&E FOD	Other	28	64.29%
Black	Not Working, Non-S&E FOD	Hard to Enumerate	31	25.81%
Asian	Mathematician	Other	112	62.50%
Asian	Mathematician	Hard to Enumerate	22	31.82%
Asian	Computer Scientists	Other	264	62.88%
Asian	Computer Scientists	Hard to Enumerate	54	42.59%
Asian	Life Scientists	Other	86	72.09%
Asian	Life Scientists	Hard to Enumerate	18	22.22%
Asian	Physical Scientists	Other	204	62.26%
Asian	Physical Scientists	Hard to Enumerate	30	33.33%
Asian	Social Scientists, Except Psychologists	Other	98	62.25%
Asian	Social Scientists, Except Psychologists	Hard to Enumerate	17	35.29%
Asian	Psychologists	Other	32	65.63%
Asian	Psychologists	Hard to Enumerate	6	50.00%
Asian	Engineers	Other	570	65.61%
Asian	Engineers	Hard to Enumerate	118	38.98%
Asian	Health-Related Occupations	Other	153	54.90%
Asian	Health-Related Occupations	Hard to Enumerate	31	29.03%
Asian	S&E-Related non-Health Occupations	Other	96	69.79%
Asian	S&E-Related non-Health Occupations	Hard to Enumerate	22	31.82%
Asian	Post secondary teacher, S&E FOD	Other	288	68.06%
Asian	Post secondary teacher, S&E FOD	Hard to Enumerate	48	52.08%
Asian	Post secondary teacher, Non-S&E FOD	Other	36	69.44%
Asian	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	8	50.00%
Asian	Secondary Teacher, S&E FOD	Other	81	61.73%
Asian	Secondary Teacher, S&E FOD	Hard to Enumerate	17	29.41%
Asian	Secondary teacher, Non-S&E	Other	16	68.75%
Asian	Secondary teacher, Non-S&E	Hard to Enumerate	8	37.50%
Asian	Non-S&E High Interest Occupations, S&E FOD	Other	1,411	61.52%
Asian	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	317	37.54%
Asian	Non-S&E Low Interest Occupations, S&E FOD	Other	608	57.57%
Asian	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	124	35.48%
Asian	Non-S&E Occupations, Non-S&E FOD	Other	76	55.26%
Asian	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	43	37.21%
Asian	Not Working, S&E FOD	Other	253	62.06%
Asian	Not Working, S&E FOD	Hard to Enumerate	74	32.43%
Asian	Not Working, Non-S&E FOD	Other	22	63.64%

Asian	Not Working, Non-S&E FOD	Hard to Enumerate	22	36.36%
AIAN/NHPI	Mathematician	Other	15	60.00%
AIAN/NHPI	Mathematician	Hard to Enumerate	4	50.00%
AIAN/NHPI	Computer Scientists	Other	32	56.25%
AIAN/NHPI	Computer Scientists	Hard to Enumerate	15	40.00%
AIAN/NHPI	Life Scientists	Other	12	66.67%
AIAN/NHPI	Life Scientists	Hard to Enumerate	7	57.14%
AIAN/NHPI	Physical Scientists	Other	30	73.33%
AIAN/NHPI	Physical Scientists	Hard to Enumerate	10	50.00%
AIAN/NHPI	Social Scientists, Except Psychologists	Other	13	46.15%
AIAN/NHPI	Social Scientists, Except Psychologists	Hard to Enumerate	1	100.00%
AIAN/NHPI	Psychologists	Other	10	40.00%
AIAN/NHPI	Psychologists	Hard to Enumerate	5	60.00%
AIAN/NHPI	Engineers	Other	46	60.87%
AIAN/NHPI	Engineers	Hard to Enumerate	14	28.57%
AIAN/NHPI	Health-Related Occupations	Other	22	50.00%
AIAN/NHPI	Health-Related Occupations	Hard to Enumerate	17	23.53%
AIAN/NHPI	S&E-Related non-Health Occupations	Other	19	47.37%
AIAN/NHPI	S&E-Related non-Health Occupations	Hard to Enumerate	14	28.57%
AIAN/NHPI	Post secondary teacher, S&E FOD	Other	48	64.58%
AIAN/NHPI	Post secondary teacher, S&E FOD	Hard to Enumerate	18	44.44%
AIAN/NHPI	Post secondary teacher, Non-S&E FOD	Other	18	61.11%
AIAN/NHPI	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	8	25.00%
AIAN/NHPI	Secondary Teacher, S&E FOD	Other	29	65.52%
AIAN/NHPI	Secondary Teacher, S&E FOD	Hard to Enumerate	20	65.00%
AIAN/NHPI	Secondary teacher, Non-S&E	Other	4	75.00%
AIAN/NHPI	Secondary teacher, Non-S&E	Hard to Enumerate	14	21.43%
AIAN/NHPI	Non-S&E High Interest Occupations, S&E FOD	Other	126	58.73%
AIAN/NHPI	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	46	39.13%
AIAN/NHPI	Non-S&E Low Interest Occupations, S&E FOD	Other	162	58.03%
AIAN/NHPI	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	69	30.44%
AIAN/NHPI	Non-S&E Occupations, Non-S&E FOD	Other	24	54.17%
AIAN/NHPI	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	21	28.57%
AIAN/NHPI	Not Working, S&E FOD	Other	36	66.67%
AIAN/NHPI	Not Working, S&E FOD	Hard to Enumerate	23	34.78%
AIAN/NHPI	Not Working, Non-S&E FOD	Other	11	54.55%
AIAN/NHPI	Not Working, Non-S&E FOD	Hard to Enumerate	8	37.50%
Disabled	Mathematician	Other	48	58.33%
Disabled	Mathematician	Hard to Enumerate	14	42.86%
Disabled	Computer Scientists	Other	57	70.18%
Disabled	Computer Scientists	Hard to Enumerate	14	57.14%
Disabled	Life Scientists	Other	39	69.23%
Disabled	Life Scientists	Hard to Enumerate	12	66.67%
Disabled	Physical Scientists	Other	60	75.00%
Disabled	Physical Scientists	Hard to Enumerate	22	68.18%
Disabled	Social Scientists, Except Psychologists	Other	36	69.44%
Disabled	Social Scientists, Except Psychologists	Hard to Enumerate	17	64.71%
Disabled	Psychologists	Other	28	75.00%
Disabled	Psychologists	Hard to Enumerate	5	80.00%
Disabled	Engineers	Other	164	67.68%
Disabled	Engineers	Hard to Enumerate	49	46.94%
Disabled	Health-Related Occupations	Other	79	69.62%
Disabled	Health-Related Occupations	Hard to Enumerate	30	46.67%
Disabled	S&E-Related non-Health Occupations	Other	67	65.67%
Disabled	S&E-Related non-Health Occupations	Hard to Enumerate	22	40.91%
Disabled	Post secondary teacher, S&E FOD	Other	142	73.94%

Disabled	Post secondary teacher, S&E FOD	Hard to Enumerate	29	68.97%
Disabled	Post secondary teacher, Non-S&E FOD	Other	52	78.85%
Disabled	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	12	41.67%
Disabled	Secondary Teacher, S&E FOD	Other	120	73.33%
Disabled	Secondary Teacher, S&E FOD	Hard to Enumerate	55	56.36%
Disabled	Secondary teacher, Non-S&E	Other	29	79.31%
Disabled	Secondary teacher, Non-S&E	Hard to Enumerate	18	44.44%
Disabled	Non-S&E High Interest Occupations, S&E FOD	Other	406	70.69%
Disabled	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	118	49.15%
Disabled	Non-S&E Low Interest Occupations, S&E FOD	Other	350	65.14%
Disabled	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	114	43.86%
Disabled	Non-S&E Occupations, Non-S&E FOD	Other	102	65.69%
Disabled	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	38	57.90%
Disabled	Not Working, S&E FOD	Other	264	71.59%
Disabled	Not Working, S&E FOD	Hard to Enumerate	82	47.56%
Disabled	Not Working, Non-S&E FOD	Other	90	64.44%
Disabled	Not Working, Non-S&E FOD	Hard to Enumerate	38	63.16%
White/Other	Mathematician	Other	1,051	67.94%
White/Other	Mathematician	Hard to Enumerate	160	46.25%
White/Other	Computer Scientists	Other	1,518	66.27%
White/Other	Computer Scientists	Hard to Enumerate	235	45.96%
White/Other	Life Scientists	Other	859	72.53%
White/Other	Life Scientists	Hard to Enumerate	182	55.50%
White/Other	Physical Scientists	Other	1,716	71.33%
White/Other	Physical Scientists	Hard to Enumerate	271	52.03%
White/Other	Social Scientists, Except Psychologists	Other	1,187	65.54%
White/Other	Social Scientists, Except Psychologists	Hard to Enumerate	200	43.50%
White/Other	Psychologists	Other	382	73.82%
White/Other	Psychologists	Hard to Enumerate	60	46.67%
White/Other	Engineers	Other	3,838	68.73%
White/Other	Engineers	Hard to Enumerate	661	44.93%
White/Other	Health-Related Occupations	Other	2,120	67.03%
White/Other	Health-Related Occupations	Hard to Enumerate	440	42.27%
White/Other	S&E-Related non-Health Occupations	Other	1,520	69.34%
White/Other	S&E-Related non-Health Occupations	Hard to Enumerate	285	49.12%
White/Other	Post secondary teacher, S&E FOD	Other	1,405	75.37%
White/Other	Post secondary teacher, S&E FOD	Hard to Enumerate	242	55.79%
White/Other	Post secondary teacher, Non-S&E FOD	Other	872	73.05%
White/Other	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	150	46.67%
White/Other	Secondary Teacher, S&E FOD	Other	756	73.68%
White/Other	Secondary Teacher, S&E FOD	Hard to Enumerate	205	46.34%
White/Other	Secondary teacher, Non-S&E	Other	345	63.19%
White/Other	Secondary teacher, Non-S&E	Hard to Enumerate	203	40.89%
White/Other	Non-S&E High Interest Occupations, S&E FOD	Other	4,155	66.19%
White/Other	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	726	41.05%
White/Other	Non-S&E Low Interest Occupations, S&E FOD	Other	1,779	65.94%
White/Other	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	334	42.22%
White/Other	Non-S&E Occupations, Non-S&E FOD	Other	2,088	63.22%
White/Other	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	790	36.08%
White/Other	Not Working, S&E FOD	Other	1,416	69.77%
White/Other	Not Working, S&E FOD	Hard to Enumerate	230	47.39%
White/Other	Not Working, Non-S&E FOD	Other	356	64.61%
White/Other	Not Working, Non-S&E FOD	Hard to Enumerate	102	41.18%
Hispanic (low)	Mathematician	Other	21	76.19%
Hispanic (low)	Mathematician	Hard to Enumerate	5	40.00%
Hispanic (low)	Computer Scientists	Other	30	63.33%

Hispanic (low)	Computer Scientists	Hard to Enumerate	5	40.00%
Hispanic (low)	Life Scientists	Other	36	69.44%
Hispanic (low)	Life Scientists	Hard to Enumerate	8	25.00%
Hispanic (low)	Physical Scientists	Other	30	60.00%
Hispanic (low)	Physical Scientists	Hard to Enumerate	10	40.00%
Hispanic (low)	Social Scientists, Except Psychologists	Other	21	71.43%
Hispanic (low)	Social Scientists, Except Psychologists	Hard to Enumerate	8	25.00%
Hispanic (low)	Psychologists	Other	12	75.00%
Hispanic (low)	Psychologists	Hard to Enumerate	.	0.00%
Hispanic (low)	Engineers	Other	98	64.29%
Hispanic (low)	Engineers	Hard to Enumerate	33	39.39%
Hispanic (low)	Health-Related Occupations	Other	37	48.65%
Hispanic (low)	Health-Related Occupations	Hard to Enumerate	18	22.22%
Hispanic (low)	S&E-Related non-Health Occupations	Other	34	61.77%
Hispanic (low)	S&E-Related non-Health Occupations	Hard to Enumerate	9	33.33%
Hispanic (low)	Post secondary teacher, S&E FOD	Other	67	71.64%
Hispanic (low)	Post secondary teacher, S&E FOD	Hard to Enumerate	17	58.82%
Hispanic (low)	Post secondary teacher, Non-S&E FOD	Other	23	60.87%
Hispanic (low)	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	7	28.57%
Hispanic (low)	Secondary Teacher, S&E FOD	Other	23	65.22%
Hispanic (low)	Secondary Teacher, S&E FOD	Hard to Enumerate	13	38.46%
Hispanic (low)	Secondary teacher, Non-S&E	Other	11	45.46%
Hispanic (low)	Secondary teacher, Non-S&E	Hard to Enumerate	10	10.00%
Hispanic (low)	Non-S&E High Interest Occupations, S&E FOD	Other	198	52.02%
Hispanic (low)	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	74	20.27%
Hispanic (low)	Non-S&E Low Interest Occupations, S&E FOD	Other	112	51.79%
Hispanic (low)	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	77	16.88%
Hispanic (low)	Non-S&E Occupations, Non-S&E FOD	Other	22	45.46%
Hispanic (low)	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	49	18.37%
Hispanic (low)	Not Working, S&E FOD	Other	36	55.56%
Hispanic (low)	Not Working, S&E FOD	Hard to Enumerate	25	28.00%
Hispanic (low)	Not Working, Non-S&E FOD	Other	10	30.00%
Hispanic (low)	Not Working, Non-S&E FOD	Hard to Enumerate	16	50.00%
Asian (low)	Mathematician	Other	137	72.26%
Asian (low)	Mathematician	Hard to Enumerate	24	50.00%
Asian (low)	Computer Scientists	Other	520	64.81%
Asian (low)	Computer Scientists	Hard to Enumerate	117	36.75%
Asian (low)	Life Scientists	Other	204	75.98%
Asian (low)	Life Scientists	Hard to Enumerate	44	43.18%
Asian (low)	Physical Scientists	Other	322	66.15%
Asian (low)	Physical Scientists	Hard to Enumerate	50	36.00%
Asian (low)	Social Scientists, Except Psychologists	Other	77	57.14%
Asian (low)	Social Scientists, Except Psychologists	Hard to Enumerate	19	52.63%
Asian (low)	Psychologists	Other	11	90.91%
Asian (low)	Psychologists	Hard to Enumerate	3	33.33%
Asian (low)	Engineers	Other	613	68.84%
Asian (low)	Engineers	Hard to Enumerate	116	52.59%
Asian (low)	Health-Related Occupations	Other	136	52.94%
Asian (low)	Health-Related Occupations	Hard to Enumerate	38	31.58%
Asian (low)	S&E-Related non-Health Occupations	Other	101	68.32%
Asian (low)	S&E-Related non-Health Occupations	Hard to Enumerate	20	45.00%
Asian (low)	Post secondary teacher, S&E FOD	Other	334	68.26%
Asian (low)	Post secondary teacher, S&E FOD	Hard to Enumerate	122	40.16%
Asian (low)	Post secondary teacher, Non-S&E FOD	Other	59	69.49%
Asian (low)	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	14	28.57%
Asian (low)	Secondary Teacher, S&E FOD	Other	38	73.68%

Asian (low)	Secondary Teacher, S&E FOD	Hard to Enumerate	18	61.11%
Asian (low)	Secondary teacher, Non-S&E	Other	21	66.67%
Asian (low)	Secondary teacher, Non-S&E	Hard to Enumerate	11	45.46%
Asian (low)	Non-S&E High Interest Occupations, S&E FOD	Other	1,010	60.50%
Asian (low)	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	270	37.04%
Asian (low)	Non-S&E Low Interest Occupations, S&E FOD	Other	557	60.14%
Asian (low)	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	171	33.92%
Asian (low)	Non-S&E Occupations, Non-S&E FOD	Other	66	59.09%
Asian (low)	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	56	35.71%
Asian (low)	Not Working, S&E FOD	Other	202	57.43%
Asian (low)	Not Working, S&E FOD	Hard to Enumerate	89	34.83%
Asian (low)	Not Working, Non-S&E FOD	Other	45	53.33%
Asian (low)	Not Working, Non-S&E FOD	Hard to Enumerate	32	34.38%
Other (low)	Mathematician	Other	70	68.57%
Other (low)	Mathematician	Hard to Enumerate	14	57.14%
Other (low)	Computer Scientists	Other	203	69.95%
Other (low)	Computer Scientists	Hard to Enumerate	61	37.71%
Other (low)	Life Scientists	Other	163	69.94%
Other (low)	Life Scientists	Hard to Enumerate	37	35.14%
Other (low)	Physical Scientists	Other	206	67.96%
Other (low)	Physical Scientists	Hard to Enumerate	37	40.54%
Other (low)	Social Scientists, Except Psychologists	Other	84	57.14%
Other (low)	Social Scientists, Except Psychologists	Hard to Enumerate	15	20.00%
Other (low)	Psychologists	Other	20	85.00%
Other (low)	Psychologists	Hard to Enumerate	5	0.00%
Other (low)	Engineers	Other	413	63.20%
Other (low)	Engineers	Hard to Enumerate	86	45.35%
Other (low)	Health-Related Occupations	Other	96	59.38%
Other (low)	Health-Related Occupations	Hard to Enumerate	45	26.67%
Other (low)	S&E-Related non-Health Occupations	Other	80	65.00%
Other (low)	S&E-Related non-Health Occupations	Hard to Enumerate	25	32.00%
Other (low)	Post secondary teacher, S&E FOD	Other	241	68.88%
Other (low)	Post secondary teacher, S&E FOD	Hard to Enumerate	72	43.06%
Other (low)	Post secondary teacher, Non-S&E FOD	Other	78	75.64%
Other (low)	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	27	48.15%
Other (low)	Secondary Teacher, S&E FOD	Other	66	75.76%
Other (low)	Secondary Teacher, S&E FOD	Hard to Enumerate	30	40.00%
Other (low)	Secondary teacher, Non-S&E	Other	61	63.93%
Other (low)	Secondary teacher, Non-S&E	Hard to Enumerate	41	34.15%
Other (low)	Non-S&E High Interest Occupations, S&E FOD	Other	879	59.84%
Other (low)	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	233	33.48%
Other (low)	Non-S&E Low Interest Occupations, S&E FOD	Other	386	57.77%
Other (low)	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	175	30.86%
Other (low)	Non-S&E Occupations, Non-S&E FOD	Other	107	48.60%
Other (low)	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	71	30.99%
Other (low)	Not Working, S&E FOD	Other	197	59.90%
Other (low)	Not Working, S&E FOD	Hard to Enumerate	94	40.43%
Other (low)	Not Working, Non-S&E FOD	Other	58	46.55%
Other (low)	Not Working, Non-S&E FOD	Hard to Enumerate	60	36.67%

(1) AIAN/NHPI = American Indian, Alaska Native / Native Hawaiian, Pacific Islander

(2) S&E = Science and Engineering

(3) FOD = Field of Degree

(4) (low) = Low probability of U.S. earned degree cases. All other cases are U.S. citizens at birth or high probability of U.S. earned degree cases.

Table C.2: 2010 NSCG Response Rates - Primary Analytical Domain #2 by Difficulty to Enumerate Indicator

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Bachelor/Professional	Mathematician	Other	897	61.43%
Bachelor/Professional	Mathematician	Hard to Enumerate	202	39.60%
Bachelor/Professional	Computer Scientists	Other	1,871	64.19%
Bachelor/Professional	Computer Scientists	Hard to Enumerate	471	40.34%
Bachelor/Professional	Life Scientists	Other	580	69.14%
Bachelor/Professional	Life Scientists	Hard to Enumerate	194	45.88%
Bachelor/Professional	Physical Scientists	Other	1,628	66.46%
Bachelor/Professional	Physical Scientists	Hard to Enumerate	348	45.40%
Bachelor/Professional	Social Scientists, Except Psychologists	Other	975	59.80%
Bachelor/Professional	Social Scientists, Except Psychologists	Hard to Enumerate	237	37.98%
Bachelor/Professional	Psychologists	Other	68	64.71%
Bachelor/Professional	Psychologists	Hard to Enumerate	25	36.00%
Bachelor/Professional	Engineers	Other	4,182	64.95%
Bachelor/Professional	Engineers	Hard to Enumerate	994	40.34%
Bachelor/Professional	Health-Related Occupations	Other	1,657	63.01%
Bachelor/Professional	Health-Related Occupations	Hard to Enumerate	429	34.03%
Bachelor/Professional	S&E-Related non-Health Occupations	Other	1,003	62.71%
Bachelor/Professional	S&E-Related non-Health Occupations	Hard to Enumerate	265	42.64%
Bachelor/Professional	Post secondary teacher, S&E FOD	Other	1,222	67.59%
Bachelor/Professional	Post secondary teacher, S&E FOD	Hard to Enumerate	398	40.96%
Bachelor/Professional	Post secondary teacher, Non-S&E FOD	Other	323	69.35%
Bachelor/Professional	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	99	40.40%
Bachelor/Professional	Secondary Teacher, S&E FOD	Other	748	66.58%
Bachelor/Professional	Secondary Teacher, S&E FOD	Hard to Enumerate	324	39.20%
Bachelor/Professional	Secondary teacher, Non-S&E	Other	249	59.44%
Bachelor/Professional	Secondary teacher, Non-S&E	Hard to Enumerate	200	32.50%
Bachelor/Professional	Non-S&E High Interest Occupations, S&E FOD	Other	7,044	59.97%
Bachelor/Professional	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	2,038	34.54%
Bachelor/Professional	Non-S&E Low Interest Occupations, S&E FOD	Other	3,858	58.35%
Bachelor/Professional	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	1,398	31.69%
Bachelor/Professional	Non-S&E Occupations, Non-S&E FOD	Other	2,033	58.83%
Bachelor/Professional	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	1,034	32.11%
Bachelor/Professional	Not Working, S&E FOD	Other	2,015	64.91%
Bachelor/Professional	Not Working, S&E FOD	Hard to Enumerate	681	38.91%
Bachelor/Professional	Not Working, Non-S&E FOD	Other	462	58.23%
Bachelor/Professional	Not Working, Non-S&E FOD	Hard to Enumerate	253	38.74%
Master	Mathematician	Other	658	72.80%
Master	Mathematician	Hard to Enumerate	114	50.00%
Master	Computer Scientists	Other	943	66.38%
Master	Computer Scientists	Hard to Enumerate	200	37.00%
Master	Life Scientists	Other	485	72.78%

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Master	Life Scientists	Hard to Enumerate	113	53.98%
Master	Physical Scientists	Other	783	73.82%
Master	Physical Scientists	Hard to Enumerate	127	50.39%
Master	Social Scientists, Except Psychologists	Other	592	68.75%
Master	Social Scientists, Except Psychologists	Hard to Enumerate	81	45.68%
Master	Psychologists	Other	340	73.53%
Master	Psychologists	Hard to Enumerate	57	45.61%
Master	Engineers	Other	2,063	69.66%
Master	Engineers	Hard to Enumerate	398	44.47%
Master	Health-Related Occupations	Other	1,153	67.48%
Master	Health-Related Occupations	Hard to Enumerate	287	40.77%
Master	S&E-Related non-Health Occupations	Other	1,149	71.19%
Master	S&E-Related non-Health Occupations	Hard to Enumerate	260	43.08%
Master	Post secondary teacher, S&E FOD	Other	977	73.80%
Master	Post secondary teacher, S&E FOD	Hard to Enumerate	216	49.54%
Master	Post secondary teacher, Non-S&E FOD	Other	524	70.42%
Master	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	117	37.61%
Master	Secondary Teacher, S&E FOD	Other	567	72.49%
Master	Secondary Teacher, S&E FOD	Hard to Enumerate	219	45.21%
Master	Secondary teacher, Non-S&E	Other	228	67.98%
Master	Secondary teacher, Non-S&E	Hard to Enumerate	140	40.71%
Master	Non-S&E High Interest Occupations, S&E FOD	Other	2,948	66.76%
Master	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	688	40.41%
Master	Non-S&E Low Interest Occupations, S&E FOD	Other	1,344	65.70%
Master	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	335	41.19%
Master	Non-S&E Occupations, Non-S&E FOD	Other	638	70.69%
Master	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	253	37.15%
Master	Not Working, S&E FOD	Other	697	68.87%
Master	Not Working, S&E FOD	Hard to Enumerate	180	46.11%
Master	Not Working, Non-S&E FOD	Other	153	68.63%
Master	Not Working, Non-S&E FOD	Hard to Enumerate	65	49.23%
Doctorate	Mathematician	Other	119	78.15%
Doctorate	Mathematician	Hard to Enumerate	12	25.00%
Doctorate	Computer Scientists	Other	193	72.02%
Doctorate	Computer Scientists	Hard to Enumerate	18	61.11%
Doctorate	Life Scientists	Other	463	74.51%
Doctorate	Life Scientists	Hard to Enumerate	59	42.37%
Doctorate	Physical Scientists	Other	367	73.30%
Doctorate	Physical Scientists	Hard to Enumerate	27	37.04%
Doctorate	Social Scientists, Except Psychologists	Other	97	74.23%
Doctorate	Social Scientists, Except Psychologists	Hard to Enumerate	15	46.67%

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Doctorate	Psychologists	Other	177	73.45%
Doctorate	Psychologists	Hard to Enumerate	30	46.67%
Doctorate	Engineers	Other	213	70.89%
Doctorate	Engineers	Hard to Enumerate	21	42.86%
Doctorate	Health-Related Occupations	Other	112	50.89%
Doctorate	Health-Related Occupations	Hard to Enumerate	58	43.10%
Doctorate	S&E-Related non-Health Occupations	Other	53	75.47%
Doctorate	S&E-Related non-Health Occupations	Hard to Enumerate	12	33.33%
Doctorate	Post secondary teacher, S&E FOD	Other	837	74.31%
Doctorate	Post secondary teacher, S&E FOD	Hard to Enumerate	124	59.68%
Doctorate	Post secondary teacher, Non-S&E FOD	Other	393	76.08%
Doctorate	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	58	56.90%
Doctorate	Secondary Teacher, S&E FOD	Other	90	74.44%
Doctorate	Secondary Teacher, S&E FOD	Hard to Enumerate	19	52.63%
Doctorate	Secondary teacher, Non-S&E	Other	39	79.49%
Doctorate	Secondary teacher, Non-S&E	Hard to Enumerate	26	65.39%
Doctorate	Non-S&E High Interest Occupations, S&E FOD	Other	469	73.35%
Doctorate	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	126	41.27%
Doctorate	Non-S&E Low Interest Occupations, S&E FOD	Other	156	62.82%
Doctorate	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	24	37.50%
Doctorate	Non-S&E Occupations, Non-S&E FOD	Other	64	71.88%
Doctorate	Non-S&E Occupations, Non-S&E FOD	Hard to Enumerate	35	48.57%
Doctorate	Not Working, S&E FOD	Other	130	66.15%
Doctorate	Not Working, S&E FOD	Hard to Enumerate	22	40.91%
Doctorate	Not Working, Non-S&E FOD	Other	26	65.39%
Doctorate	Not Working, Non-S&E FOD	Hard to Enumerate	14	42.86%

Notes:

(1) S&E = Science and Engineering

(2) FOD = Field of Degree

Table C.3: 2010 NSCG Response Rates - Primary Analytical Domain #3 by Difficulty to Enumerate Indicator

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Bachelor/Professional	Mathematician	Other	897	61.43%
Bachelor/Professional	Mathematician	Hard to Enumerate	202	39.60%
Bachelor/Professional	Computer Scientist	Other	1,871	64.19%
Bachelor/Professional	Computer Scientist	Hard to Enumerate	471	40.34%
Bachelor/Professional	Biological/medical scientists	Other	346	69.94%
Bachelor/Professional	Biological/medical scientists	Hard to Enumerate	103	38.84%
Bachelor/Professional	Agriculture and other life scientists	Other	234	67.95%
Bachelor/Professional	Agriculture and other life scientists	Hard to Enumerate	91	53.85%
Bachelor/Professional	Chemists, except biochemists	Other	624	65.22%
Bachelor/Professional	Chemists, except biochemists	Hard to Enumerate	148	43.24%
Bachelor/Professional	Physicists and other physical scientists	Other	1,004	67.23%
Bachelor/Professional	Physicists and other physical scientists	Hard to Enumerate	200	47.00%
Bachelor/Professional	Psychologists	Other	68	64.71%
Bachelor/Professional	Psychologists	Hard to Enumerate	25	36.00%
Bachelor/Professional	Economics	Other	93	64.52%
Bachelor/Professional	Economics	Hard to Enumerate	31	38.71%
Bachelor/Professional	Other social scientists	Other	882	59.30%
Bachelor/Professional	Other social scientists	Hard to Enumerate	206	37.86%
Bachelor/Professional	Chemical engineers	Other	502	66.73%
Bachelor/Professional	Chemical engineers	Hard to Enumerate	83	51.81%
Bachelor/Professional	Civil and architectural engineers	Other	840	62.38%
Bachelor/Professional	Civil and architectural engineers	Hard to Enumerate	198	43.43%
Bachelor/Professional	Electrical and computer engineers	Other	858	64.92%
Bachelor/Professional	Electrical and computer engineers	Hard to Enumerate	246	34.55%
Bachelor/Professional	Mechanical engineers	Other	885	66.55%
Bachelor/Professional	Mechanical engineers	Hard to Enumerate	181	37.57%
Bachelor/Professional	Other engineers	Other	1,097	64.81%
Bachelor/Professional	Other engineers	Hard to Enumerate	286	41.61%
Bachelor/Professional	Health-Related Occupations	Other	1,657	63.01%
Bachelor/Professional	Health-Related Occupations	Hard to Enumerate	429	34.03%
Bachelor/Professional	S&E-Related non-Health Occupations	Other	1,003	62.71%
Bachelor/Professional	S&E-Related non-Health Occupations	Hard to Enumerate	265	42.64%
Bachelor/Professional	Post secondary teacher, S&E FOD	Other	1,222	67.59%
Bachelor/Professional	Post secondary teacher, S&E FOD	Hard to Enumerate	398	40.96%
Bachelor/Professional	Post secondary teacher, Non-S&E FOD	Other	323	69.35%
Bachelor/Professional	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	99	40.40%
Bachelor/Professional	Secondary Teacher, S&E FOD	Other	748	66.58%
Bachelor/Professional	Secondary Teacher, S&E FOD	Hard to Enumerate	324	39.20%
Bachelor/Professional	Secondary Teacher, Non-S&E FOD	Other	249	59.44%
Bachelor/Professional	Secondary Teacher, Non-S&E FOD	Hard to Enumerate	200	32.50%
Bachelor/Professional	Non-S&E High Interest Occupations, S&E FOD	Other	7,044	59.97%
Bachelor/Professional	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	2,038	34.54%
Bachelor/Professional	Non-S&E Low Interest Occupations, S&E FOD	Other	3,858	58.35%

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Bachelor/Professional	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	1,398	31.69%
Bachelor/Professional	Non-S&E Occupation, Non-S&E FOD	Other	2,033	58.83%
Bachelor/Professional	Non-S&E Occupation, Non-S&E FOD	Hard to Enumerate	1,034	32.11%
Bachelor/Professional	Not Working, S&E FOD	Other	2,015	64.91%
Bachelor/Professional	Not Working, S&E FOD	Hard to Enumerate	681	38.91%
Bachelor/Professional	Not Working, Non-S&E FOD	Other	462	58.23%
Bachelor/Professional	Not Working, Non-S&E FOD	Hard to Enumerate	253	38.74%
Master	Mathematician	Other	658	72.80%
Master	Mathematician	Hard to Enumerate	114	50.00%
Master	Computer Scientist	Other	943	66.38%
Master	Computer Scientist	Hard to Enumerate	200	37.00%
Master	Biological/medical scientists	Other	329	70.52%
Master	Biological/medical scientists	Hard to Enumerate	81	48.15%
Master	Agriculture and other life scientists	Other	156	77.56%
Master	Agriculture and other life scientists	Hard to Enumerate	32	68.75%
Master	Chemists, except biochemists	Other	232	72.41%
Master	Chemists, except biochemists	Hard to Enumerate	56	37.50%
Master	Physicists and other physical scientists	Other	551	74.41%
Master	Physicists and other physical scientists	Hard to Enumerate	71	60.56%
Master	Psychologists	Other	340	73.53%
Master	Psychologists	Hard to Enumerate	57	45.61%
Master	Economics	Other	132	69.70%
Master	Economics	Hard to Enumerate	19	47.37%
Master	Other social scientists	Other	460	68.48%
Master	Other social scientists	Hard to Enumerate	62	45.16%
Master	Chemical engineers	Other	174	66.09%
Master	Chemical engineers	Hard to Enumerate	25	36.00%
Master	Civil and architectural engineers	Other	457	70.46%
Master	Civil and architectural engineers	Hard to Enumerate	73	38.36%
Master	Electrical and computer engineers	Other	468	69.44%
Master	Electrical and computer engineers	Hard to Enumerate	101	46.54%
Master	Mechanical engineers	Other	418	68.90%
Master	Mechanical engineers	Hard to Enumerate	83	46.99%
Master	Other engineers	Other	546	70.88%
Master	Other engineers	Hard to Enumerate	116	46.55%
Master	Health-Related Occupations	Other	1,153	67.48%
Master	Health-Related Occupations	Hard to Enumerate	287	40.77%
Master	S&E-Related non-Health Occupations	Other	1,149	71.19%
Master	S&E-Related non-Health Occupations	Hard to Enumerate	260	43.08%
Master	Post secondary teacher, S&E FOD	Other	977	73.80%
Master	Post secondary teacher, S&E FOD	Hard to Enumerate	216	49.54%
Master	Post secondary teacher, Non-S&E FOD	Other	524	70.42%
Master	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	117	37.61%

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Master	Secondary Teacher, S&E FOD	Other	567	72.49%
Master	Secondary Teacher, S&E FOD	Hard to Enumerate	219	45.21%
Master	Secondary Teacher, Non-S&E FOD	Other	228	67.98%
Master	Secondary Teacher, Non-S&E FOD	Hard to Enumerate	140	40.71%
Master	Non-S&E High Interest Occupations, S&E FOD	Other	2,948	66.76%
Master	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	688	40.41%
Master	Non-S&E Low Interest Occupations, S&E FOD	Other	1,344	65.70%
Master	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	335	41.19%
Master	Non-S&E Occupation, Non-S&E FOD	Other	638	70.69%
Master	Non-S&E Occupation, Non-S&E FOD	Hard to Enumerate	253	37.15%
Master	Not Working, S&E FOD	Other	697	68.87%
Master	Not Working, S&E FOD	Hard to Enumerate	180	46.11%
Master	Not Working, Non-S&E FOD	Other	153	68.63%
Master	Not Working, Non-S&E FOD	Hard to Enumerate	65	49.23%
Doctorate	Mathematician	Other	119	78.15%
Doctorate	Mathematician	Hard to Enumerate	12	25.00%
Doctorate	Computer Scientist	Other	193	72.02%
Doctorate	Computer Scientist	Hard to Enumerate	18	61.11%
Doctorate	Biological/medical scientists	Other	398	73.87%
Doctorate	Biological/medical scientists	Hard to Enumerate	51	43.14%
Doctorate	Agriculture and other life scientists	Other	65	78.46%
Doctorate	Agriculture and other life scientists	Hard to Enumerate	8	37.50%
Doctorate	Chemists, except biochemists	Other	55	78.18%
Doctorate	Chemists, except biochemists	Hard to Enumerate	3	33.33%
Doctorate	Physicists and other physical scientists	Other	312	72.44%
Doctorate	Physicists and other physical scientists	Hard to Enumerate	24	37.50%
Doctorate	Psychologists	Other	177	73.45%
Doctorate	Psychologists	Hard to Enumerate	30	46.67%
Doctorate	Economics	Other	46	71.74%
Doctorate	Economics	Hard to Enumerate	8	62.50%
Doctorate	Other social scientists	Other	51	76.47%
Doctorate	Other social scientists	Hard to Enumerate	7	28.57%
Doctorate	Chemical engineers	Other	17	88.24%
Doctorate	Chemical engineers	Hard to Enumerate	3	100.00%
Doctorate	Civil and architectural engineers	Other	21	80.95%
Doctorate	Civil and architectural engineers	Hard to Enumerate	4	25.00%
Doctorate	Electrical and computer engineers	Other	46	71.74%
Doctorate	Electrical and computer engineers	Hard to Enumerate	5	20.00%
Doctorate	Mechanical engineers	Other	19	63.16%
Doctorate	Mechanical engineers	Hard to Enumerate	1	100.00%
Doctorate	Other engineers	Other	110	67.27%
Doctorate	Other engineers	Hard to Enumerate	8	37.50%
Doctorate	Health-Related Occupations	Other	112	50.89%

Highest Degree Level	Broad Occupation Group	Difficulty to Enumerate Indicator	2010 NSCG Sample Cases	Response Rate
Doctorate	Health-Related Occupations	Hard to Enumerate	58	43.10%
Doctorate	S&E-Related non-Health Occupations	Other	53	75.47%
Doctorate	S&E-Related non-Health Occupations	Hard to Enumerate	12	33.33%
Doctorate	Post secondary teacher, S&E FOD	Other	837	74.31%
Doctorate	Post secondary teacher, S&E FOD	Hard to Enumerate	124	59.68%
Doctorate	Post secondary teacher, Non-S&E FOD	Other	393	76.08%
Doctorate	Post secondary teacher, Non-S&E FOD	Hard to Enumerate	58	56.90%
Doctorate	Secondary Teacher, S&E FOD	Other	90	74.44%
Doctorate	Secondary Teacher, S&E FOD	Hard to Enumerate	19	52.63%
Doctorate	Secondary Teacher, Non-S&E FOD	Other	39	79.49%
Doctorate	Secondary Teacher, Non-S&E FOD	Hard to Enumerate	26	65.39%
Doctorate	Non-S&E High Interest Occupations, S&E FOD	Other	469	73.35%
Doctorate	Non-S&E High Interest Occupations, S&E FOD	Hard to Enumerate	126	41.27%
Doctorate	Non-S&E Low Interest Occupations, S&E FOD	Other	156	62.82%
Doctorate	Non-S&E Low Interest Occupations, S&E FOD	Hard to Enumerate	24	37.50%
Doctorate	Non-S&E Occupation, Non-S&E FOD	Other	64	71.88%
Doctorate	Non-S&E Occupation, Non-S&E FOD	Hard to Enumerate	35	48.57%
Doctorate	Not Working, S&E FOD	Other	130	66.15%
Doctorate	Not Working, S&E FOD	Hard to Enumerate	22	40.91%
Doctorate	Not Working, Non-S&E FOD	Other	26	65.39%
Doctorate	Not Working, Non-S&E FOD	Hard to Enumerate	14	42.86%

Notes:

(1) S&E = Science and Engineering

(2) FOD = Field of Degree