

# **NAEP 2013 NONRESPONSE BIAS ANALYSIS REPORT**



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## 1. NONRESPONSE BIAS ANALYSIS IN THE 2013 NAEP

NCES statistical standards call for a nonresponse bias analysis to be conducted for a sample with a response rate below 85 percent. Weighted school response rates for 2013 NAEP indicate a need for school nonresponse bias analyses for private school samples for grades 4, 8, and 12.

Based on the weighted student response rates for each subject, a student nonresponse bias analysis is necessary for the grade 12 public school student sample overall and in specific states, for both reading and mathematics: Connecticut, Florida, Iowa, Massachusetts, New Hampshire, and West Virginia. In addition, a student nonresponse bias analysis is necessary for the grade 12 public school student sample in Illinois based on the weighted response rate for reading, while such an analysis is needed for New Jersey based on the weighted response rate for mathematics.

Note that in the analysis of student nonresponse bias, the mathematic students and reading students are combined, since assessment subject is not considered to be a significant factor in determining whether or not a student responded in the assessment. This is confirmed by the closeness of the weighted response rates for mathematics and reading in each jurisdiction. Combining the students across the two subjects increases the power to detect biases, given that the same population is represented in each subject.

Response rates for schools and students are shown in tables 1 and 2, respectively, for the cases where nonresponse bias analyses are required.

Table 1. Weighted school response rates, before substitution

	Domain	Response Rate
Grade 4	Private	71.19
Grade 8	Private	69.63
Grade 12	Private	53.34

Table 2. Weighted student response rates

Domain (public)		Response Rate	
		Mathematics	Reading
Grade 12	National Public	84.17	83.77
	Connecticut	81.22	79.77
	Florida	77.25	77.34
	Illinois	85.16	83.72
	Iowa	83.05	84.26
	Massachusetts	81.71	79.84
	New Hampshire	76.64	76.91
	New Jersey	84.10	84.67
	West Virginia	83.68	84.28

The analyses conducted in this report consider only certain characteristics of schools and students. They do not directly consider the effects of the nonresponse on student achievement; the primary focus of NAEP. Thus these analyses cannot be conclusive of either the existence or absence of nonresponse bias for student achievement (see Peytcheva and Groves, 2009).

## 2. SCHOOL NONRESPONSE BIAS ANALYSIS

The school analysis, required for private school samples in grades 4, 8, and 12, was conducted in three parts.

1. The distribution of the responding original school sample was compared with that of the entire eligible original school sample. Schools were weighted by their school base weights and their enrollment, referred to as a size-adjusted weight. The original sample is the sample before substitution.
2. The distribution of the responding sample, including participating substitutes was compared to the full sample (but in this case, substitutes were included in place of those nonrespondents that they replaced). Again, the size-adjusted school base weights were used for both the full sample and the respondents.
3. The same sets of schools were compared as in the second analysis, but this time when analyzing the responding schools alone, school nonresponse adjustments were applied to the size adjusted weights.

The first part of the analysis indicates the potential for nonresponse bias that was introduced through school nonresponse. The second part of the analysis suggests the remaining potential for nonresponse bias after the mitigating effects of substitution have been accounted for. The third part indicates the potential for bias after accounting for the mitigating effects of both substitution and nonresponse weight adjustments. Both the second and third parts, however, may provide an overly optimistic scenario, since even though substitution and nonresponse adjustments may correct somewhat for deficiencies in the few characteristics examined here, there is no guarantee that they are equally as effective for other characteristics, and in particular for student achievement.

In each analysis, chi-square tests of association were conducted between school response status and each of the following four categorical variables:

- Census region;
- Reporting subgroup for private schools (Catholic/ Non-Catholic);
- Urban-centric locale; and
- Estimated grade enrollment divided into three equally sized categories.

The chi-square tests were carried out using procedures that appropriately account for the complex sample design used in NAEP, and the weighting procedures. The Rao-Scott chi-square test (Rao and Scott, 1984) was computed using WesVar (Westat 2002).

In addition, mean values of race/ethnicity percentages and enrollment for responding and nonresponding schools were compared. Two measures of the mean size of enrollment in the respective grades were considered, one using the size adjusted school weight (mean size of school attended by an average student), and the other using the school weight without the size adjustment (mean estimated grade enrollment). Differences between the means for the respondents and full sample were tested using t-tests. These tests also took account of the complex sample design, as well as the fact that the respondents are a subset of the full sample (thus in that sense the first two sets of comparisons, using only school base weights, are equivalent to testing whether the mean for respondents is significantly different from the mean for nonrespondents).

The results of these analyses for grades 4, 8, and 12 private schools are presented in the tables in Appendix A, and summarized in Tables 3, 4, and 5, respectively.

Table 3. Characteristics with p-values less than 0.05, grade 4 private schools

Analysis	Characteristics with p-values less than 0.05
Original sample	Reporting subgroup, Size, Estimated grade enrollment
Sample with substitutes	Reporting subgroup, Locale, Size, Estimated grade enrollment
Nonresponse adjusted	Estimated grade enrollment

Table 4. Characteristics with p-values less than 0.05, grade 8 private schools

Analysis	Characteristics with p-values less than 0.05
Original sample	Census region, Reporting subgroup, Locale, Estimated grade enrollment, Race/ethnicity
Sample with substitutes	Census region, Reporting subgroup, Locale, Size of school attended by average student, Estimated grade enrollment, Race/ethnicity
Nonresponse adjusted	Size of school attended by average student, Race/ethnicity

Table 5. Characteristics with p-values less than 0.05, grade 12 private schools

Analysis	Characteristics with p-values less than 0.05
Original sample	Reporting subgroup
Sample with substitutes	Reporting subgroup, Race/ethnicity
Nonresponse adjusted	Race/ethnicity

In general, nonresponse adjustments decreased the number of variables with significant differences. For grades 4, 8 and 12 private, substitution and nonresponse adjustments appear to have been

at least partially effective in reducing the nonresponse bias, as the important variable “private school reporting group” changed to non-significant after substitution and nonresponse adjustments. However, the biases of some other variables were still significant after nonresponse adjustments.

For grade 4 private, after nonresponse adjustments, the result for “estimated grade enrollment” was still significant. However, the result was improved as the absolute bias changed from 2.0 to 1.3 and the relative bias changed from 10.5 percent to 6.9 percent.

For grade 8 private, all results were non-significant after nonresponse adjustments with the exception of “size of school attended by average student” and race. The significant bias for race showed little change after nonresponse adjustment, with the largest absolute bias changing from 1.5 to 1.9. However, the result for school size changed from non-significant to significant after substitution and nonresponse adjustment, with the absolute bias changing from 1.7 (non-significant) to 3.1 (significant) and the relative bias from 4.3 percent to 7.6 percent.

The phenomenon that nonresponse adjustments potentially increase bias for grade 8 appears to be explained by the tendency of larger non-Catholic schools to not participate and school size not being a specific characteristic for school nonresponse weight adjustments. Thus, when making adjustments to address the underrepresentation of non-Catholic schools among the respondents, non-large schools are then over-represented at the expense of larger schools.

For grade 12 private, while “private school reporting group” became non-significant, some results for race became significant. The results for percentage Asian and percentage Two or more races changed from non-significant to significant after nonresponse adjustment. For percentage Asian, the absolute bias increased from 1.1 (non-significant) to 1.2 (significant) and the relative bias from 24.6 percent to 26.0 percent, and for percentage Two or more races, the absolute bias increased from 0.2 (non-significant) to 0.6 (significant) and the relative bias from 8.3 percent to 27.4 percent.

### 3. STUDENT NONRESPONSE BIAS ANALYSIS

The analysis of student nonresponse bias was required for the grade 12 national public school student sample overall and in specific states: Connecticut, Florida, Illinois, Iowa, Massachusetts, New Hampshire, New Jersey, and West Virginia. This was conducted in two parts, for mathematic students and reading students combined:

1. The distribution of the responding student sample was compared with that of the entire eligible sample of students, using student base weights; and
2. The distribution of the responding student sample was compared to the entire eligible sample of students. This time, when analyzing the responding students alone, student nonresponse adjustments were applied to the weights.

The first part of the analysis indicates the potential for nonresponse bias that was introduced through student nonresponse. The second part of the analysis indicates the potential for bias after accounting for the effects of nonresponse weight adjustments. The second part, however, may provide an overly optimistic scenario, since even though nonresponse adjustments may correct somewhat for deficiencies in the few characteristics examined here, there is no guarantee that they are equally as effective for other characteristics, and in particular for student achievement.

The following student characteristics were used in the comparisons:

- Sex;
- Race/ethnicity;
- Relative age;
- Free or reduced price lunch eligibility;
- Student Disability (SD) status; and
- English Language Learner (ELL) status.

For these analyses, chi-square tests of the association between student response status and the particular variable under consideration were conducted. These tests were carried out using procedures that appropriately account for the complex sample design used in NAEP, and the weighting procedures.

The results of these analyses are presented in the tables in Appendix B, and are summarized in Table 6 below.

Table 6. Characteristics with p-values less than 0.05, for domains of grade 12 public school students

Domain	Analysis	Characteristics with p-values less than 0.05
Nation	Student base weights	Race, Relative age, Free lunch eligibility, SD
	Nonresponse adjusted student weights	Race, Free lunch eligibility, SD, ELL
Connecticut	Student base weights	Relative age, SD
	Nonresponse adjusted student weights	ELL
Florida	Student base weights	Sex, Race, ELL
	Nonresponse adjusted student weights	None
Illinois	Student base weights	Relative age, SD, ELL
	Nonresponse adjusted student weights	SD, ELL
Iowa	Student base weights	Sex, Free lunch eligibility
	Nonresponse adjusted student weights	None
Massachusetts	Student base weights	Relative age, SD
	Nonresponse adjusted student weights	SD
New Hampshire	Student base weights	Race, Relative age, Free lunch eligibility, SD
	Nonresponse adjusted student weights	None
New Jersey	Student base weights	Sex, SD
	Nonresponse adjusted student weights	None
West Virginia	Student base weights	Relative age, Free lunch eligibility, SD
	Nonresponse adjusted student weights	Free lunch eligibility

The sample sizes are large for student-level files, which makes the tests very sensitive. In general, the number of variables with significant differences decreased or stayed the same after nonresponse adjustments. After nonresponse adjustments, for all of the significant variables, the percentage difference was actually very small, being 1.4 percent or less.

Even when the test result was significant, the absolute value of the bias was reduced in most cases. For example, for the subdomain with the lowest response rate that still had some test results significant, grade 12 in Massachusetts (79.8 percent for reading and 81.71 percent for mathematics), SD status was significant before and after nonresponse adjustments, but the absolute bias was reduced from 1.4 to 0.3. The relative bias reduced from 11.0 percent to 2.3 percent.

Exceptions occurred for ELL status for grade 12 national public and Connecticut. For national public, the absolute bias changed from 0.0 (non-significant) to 0.2 (significant) and the relative bias increased from 1.3 percent to 5.1 percent; for Connecticut, the absolute bias changed from 0.1 (non-significant) to 0.2 (significant) and the relative bias increased from 5.2 percent to 11.0 percent.

The change in ELL status appears to be explained by the fact that SD status and ELL status are related characteristics, since some students are both. Therefore, the procedures that were used to remove the bias in SD status had some negative impact on the bias for ELL status. This explanation is confirmed by the pattern of significant difference in SD status being removed and being introduced in ELL status in Connecticut. National Public shows a less obvious but similar pattern, with the bias for SD status being reduced at a higher rate (absolute bias decreased from 0.5 to 0.1) than the increase of bias for ELL status (absolute bias increased from 0.0 to 0.2). Overall, the negative impact on the bias for ELL status remained relatively small.

In summary, based on the student characteristics available, there does not appear to be evidence of substantial bias resulting from student nonresponse.

## REFERENCES

- Peytcheva, E., and Groves, R.M. (2009). Using Variation in Response Rates of Demographic Subgroups as Evidence of Nonresponse Bias in Survey Estimates. *Journal of Official Statistics*, **25**, 193-201.
- Rao, J.N.K., and Scott, A.J. (1984). On Chi-Squared Tests for Multiway Contingency Tables with Cell Proportions Estimated from Survey Data. *Annals of Statistics*, **12**, 46-60.
- Westat (2002). WesVar 4.2 User's Guide. Rockville, MD: Westat, Inc

## **Appendix A**

Table A-1. 2013 NAEP Grade 4 original sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 345)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.156
Northeast	21.05	19.51	-1.5	0.156	
Midwest	26.45	28.80	2.4	0.089	
South	33.72	35.68	2.0	0.058	
West	18.78	16.02	-2.8	-0.147	
<b>Private School Reporting Subgroup</b>					0.000
Roman Catholic	44.93	55.95	11.0	0.245	
Non-Catholic Private	55.07	44.05	-11.0	-0.200	
<b>Urban-Centric Locale</b>					0.052
City	39.34	38.25	-1.1	0.052	
Suburban	38.34	39.78	1.4	0.038	
Town	7.25	9.22	2.0	0.272	
Rural	15.06	12.75	-2.3	-0.153	
<b>Size</b>					0.008
Large ( $\geq 28$ )	52.34	51.74	-0.6	-0.011	
Medium (16-27)	27.19	30.92	3.7	0.137	
Small ( $\leq 15$ )	20.47	17.34	-3.1	-0.153	

NOTE: Size-adjusted school weights were used

Table A-2. 2013 NAEP Grade 4 original sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	36.02	33.91	-2.1	-0.058	0.120
<b>Estimated Grade Enrollment</b>	19.25	21.27	2.0	0.105	0.005
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	72.59	73.03	0.4	0.006	0.686
Percentage Black, not Hispanic	9.83	9.75	-0.1	-0.009	0.898
Percentage Hispanic Heritage	9.18	9.46	0.3	0.031	0.702
Percentage Asian	5.45	4.60	-0.9	-0.156	0.139
Percentage American Indian/Alaskan Native	0.55	0.66	0.1	0.199	0.256
Percentage Native Hawaiian/Pacific Islander	0.35	0.31	0.0	-0.109	0.600
Percentage Two or more race	2.06	2.19	0.1	0.066	0.363

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-3. 2013 NAEP Grade 8 original sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 326)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.026
Northeast	22.98	20.96	-2.0	0.026	
Midwest	26.54	30.65	4.1	0.155	
South	34.26	34.98	0.7	0.021	
West	16.21	13.41	-2.8	-0.173	
<b>Private School Reporting Subgroup</b>					0.000
Roman Catholic	47.89	59.96	12.1	0.252	
Non-Catholic Private	52.11	40.04	-12.1	-0.232	
<b>Urban-Centric Locale</b>					0.003
City	39.72	41.17	1.5	0.003	
Suburban	40.91	40.91	0.0	0.000	
Town	6.96	9.02	2.1	0.296	
Rural	12.40	8.91	-3.5	-0.281	
<b>Size</b>					0.205
Large ( $\geq 30$ )	54.19	55.21	1.0	0.019	
Medium (17-29)	25.91	27.33	1.4	0.055	
Small ( $\leq 16$ )	19.90	17.45	-2.5	-0.123	

NOTE: Size-adjusted school weights were used

Table A-4. 2013 NAEP Grade 8 original sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	40.60	38.86	-1.7	-0.043	0.245
<b>Estimated Grade Enrollment</b>	21.32	24.31	3.0	0.140	0.002
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	75.33	73.82	-1.5	-0.020	0.082
Percentage Black, not Hispanic	8.18	9.51	1.3	0.163	0.006
Percentage Hispanic Heritage	8.60	9.93	1.3	0.154	0.016
Percentage Asian	4.77	3.91	-0.9	-0.181	0.058
Percentage American Indian/Alaskan Native	0.23	0.15	-0.1	-0.319	0.236
Percentage Native Hawaiian/Pacific Islander	0.26	0.28	0.0	0.078	0.583
Percentage Two or more race	2.62	2.39	-0.2	-0.088	0.295

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-5. 2013 NAEP Grade 12 original sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 124)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.376
Northeast	26.46	24.86	-1.6	0.376	
Midwest	23.12	23.29	0.2	0.007	
South	32.77	38.64	5.9	0.179	
West	17.65	13.20	-4.5	-0.252	
<b>Private School Reporting Subgroup</b>					0.000
Roman Catholic	50.19	64.04	13.9	0.276	
Non-Catholic Private	49.81	35.96	-13.9	-0.278	
<b>Urban-Centric Locale</b>					0.274
City	45.02	47.50	2.5	0.274	
Suburban	38.06	31.49	-6.6	-0.173	
Town	4.05	6.29	2.2	0.553	
Rural	12.88	14.72	1.8	0.143	
<b>Size</b>					0.352
Large ( $\geq 100$ )	52.21	48.41	-3.8	-0.073	
Medium (24-99)	34.87	35.01	0.1	0.004	
Small ( $\leq 23$ )	12.92	16.59	3.7	0.284	

NOTE: Size-adjusted school weights were used.

Table A-6. 2013 NAEP grade 12 original sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	129.91	128.35	-1.6	-0.012	0.872
<b>Estimated Grade Enrollment</b>	41.39	39.84	-1.6	-0.037	0.700
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	74.41	72.60	-1.8	-0.024	0.437
Percentage Black, not Hispanic	8.43	9.62	1.2	0.140	0.397
Percentage Hispanic Heritage	9.46	11.91	2.4	0.259	0.107
Percentage Asian	4.43	3.34	-1.1	-0.246	0.053
Percentage American Indian/Alaskan Native	0.30	0.23	-0.1	-0.227	0.375
Percentage Native Hawaiian/Pacific Islander	0.77	0.30	-0.5	-0.616	0.316
Percentage Two or more race	2.19	2.01	-0.2	-0.083	0.556

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-7. 2013 NAEP Grade 4 sample with substitutes - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 345)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.137
Northeast	21.05	19.78	-1.3	-0.060	
Midwest	26.45	27.57	1.1	0.043	
South	33.72	35.33	1.6	0.048	
West	18.78	17.31	-1.5	-0.078	
<b>Private School Reporting Subgroup</b>					0.000
Roman Catholic	44.93	52.20	7.3	0.162	
Non-Catholic Private	55.07	47.80	-7.3	-0.132	
<b>Urban-Centric Locale</b>					0.003
City	39.34	38.98	-0.4	-0.009	
Suburban	38.34	40.25	1.9	0.050	
Town	7.25	8.52	1.3	0.175	
Rural	15.06	12.25	-2.8	-0.187	
<b>Size</b>					0.005
Large ( $\geq 28$ )	52.34	52.36	0.0	0.000	
Medium (16-27)	27.19	29.41	2.2	0.081	
Small ( $\leq 15$ )	20.47	18.24	-2.2	-0.109	

NOTE: Size-adjusted school weights were used.

Table A-8. 2013 NAEP Grade 4 sample with substitutes - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	36.02	35.49	-0.5	-0.015	0.569
<b>Estimated Grade Enrollment</b>	19.25	21.40	2.1	0.111	0.000
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	72.59	73.59	1.0	0.014	0.302
Percentage Black, not Hispanic	9.83	9.72	-0.1	-0.011	0.877
Percentage Hispanic Heritage	9.18	8.76	-0.4	-0.045	0.477
Percentage Asian	5.45	4.70	-0.7	-0.136	0.221
Percentage American Indian/Alaskan Native	0.55	0.66	0.1	0.193	0.167
Percentage Native Hawaiian/Pacific Islander	0.35	0.29	-0.1	-0.174	0.398
Percentage Two or more race	2.06	2.28	0.2	0.108	0.186

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-9. 2013 NAEP Grade 8 sample with substitutes - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 326)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.009
Northeast	22.98	19.78	-3.2	-0.139	
Midwest	26.54	28.60	2.1	0.077	
South	34.26	36.58	2.3	0.068	
West	16.21	15.05	-1.2	-0.072	
<b>Private School Reporting Subgroup</b>					0.000
Roman Catholic	47.89	55.80	7.9	0.165	
Non-Catholic Private	52.11	44.20	-7.9	-0.152	
<b>Urban-Centric Locale</b>					0.003
City	39.72	41.17	1.4	0.036	
Suburban	40.91	40.68	-0.2	-0.006	
Town	6.96	8.23	1.3	0.182	
Rural	12.40	9.92	-2.5	-0.200	
<b>Size</b>					0.129
Large ( $\geq 30$ )	54.19	53.71	-0.5	-0.009	
Medium (17-29)	25.91	27.77	1.9	0.072	
Small ( $\leq 16$ )	19.90	18.52	-1.4	-0.069	

NOTE: Size-adjusted school weights were used.

Table A-10. 2013 NAEP Grade 8 sample with substitutes- Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	40.60	38.19	-2.4	-0.059	0.021
<b>Estimated Grade Enrollment</b>	21.32	22.90	1.6	0.074	0.020
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	75.33	74.45	-0.9	-0.012	0.255
Percentage Black, not Hispanic	8.18	9.07	0.9	0.109	0.009
Percentage Hispanic Heritage	8.60	9.32	0.7	0.083	0.063
Percentage Asian	4.77	4.16	-0.6	-0.129	0.207
Percentage American Indian/Alaskan Native	0.23	0.19	0.0	-0.159	0.585
Percentage Native Hawaiian/Pacific Islander	0.26	0.37	0.1	0.419	0.153
Percentage Two or more race	2.62	2.44	-0.2	-0.069	0.463

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-11. 2013 NAEP Grade 12 sample with substitutes - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 124)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.749
Northeast	26.46	24.81	-1.7	-0.062	
Midwest	23.12	23.32	0.2	0.008	
South	32.77	35.56	2.8	0.085	
West	17.65	16.32	-1.3	-0.076	
<b>Private School Reporting Subgroup</b>					0.006
Roman Catholic	50.19	58.93	8.7	0.174	
Non-Catholic Private	49.81	41.07	-8.7	-0.176	
<b>Urban-Centric Locale</b>					0.681
City	45.02	47.41	2.4	0.053	
Suburban	38.06	34.42	-3.6	-0.096	
Town	4.05	4.69	0.6	0.159	
Rural	12.88	13.48	0.6	0.047	
<b>Size</b>					0.554
Large ( $\geq 100$ )	52.22	50.18	-2.0	-0.039	
Medium (24-99)	34.87	35.24	0.4	0.011	
Small ( $\leq 23$ )	12.92	14.58	1.7	0.129	

NOTE: Size-adjusted school weights were used.

Table A-12. 2013 NAEP Grade 12 sample with substitutes - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	129.91	136.70	6.8	0.052	0.166
<b>Estimated Grade Enrollment</b>	41.39	41.29	-0.1	-0.003	0.972
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	74.41	71.79	-2.6	-0.035	0.264
Percentage Black, not Hispanic	8.43	10.10	1.7	0.197	0.141
Percentage Hispanic Heritage	9.46	12.12	2.7	0.281	0.111
Percentage Asian	4.43	3.40	-1.0	-0.233	0.038
Percentage American Indian/Alaskan Native	0.30	0.24	-0.1	-0.200	0.385
Percentage Native Hawaiian/Pacific Islander	0.77	0.58	-0.2	-0.245	0.727
Percentage Two or more race	2.19	1.78	-0.4	-0.188	0.121

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-13. 2013 NAEP Grade 4 nonresponse-adjusted sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 345)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					
Northeast	21.05	21.03	0.0	0.293	0.293
Midwest	26.45	26.45	0.0	0.000	
South	33.72	33.74	0.0	0.001	
West	18.78	18.78	0.0	0.000	
<b>Private School Reporting Subgroup</b>					0.943
Roman Catholic	44.93	44.93	0.0	0.000	
Non-Catholic Private	55.07	55.07	0.0	0.000	
<b>Urban-Centric Locale</b>					
City	39.34	38.09	-1.2	0.154	0.154
Suburban	38.34	40.07	1.7	0.045	
Town	7.25	7.61	0.4	0.049	
Rural	15.06	14.23	-0.8	-0.055	
<b>Size</b>					0.267
Large ( $\geq 28$ )	52.34	50.56	-1.8	-0.034	
Medium (16-27)	27.19	29.14	2.0	0.072	
Small ( $\leq 15$ )	20.47	20.30	-0.2	-0.008	

NOTE: Size-adjusted school weights were used.

Table A-14. 2013 NAEP Grade 4 nonresponse-adjusted sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	36.02	34.88	-1.1	-0.032	0.351
<b>Estimated Grade Enrollment</b>	19.25	20.59	1.3	0.069	0.037
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	72.59	73.75	1.2	0.016	0.272
Percentage Black, not Hispanic	9.83	9.76	-0.1	-0.008	0.915
Percentage Hispanic Heritage	9.18	8.52	-0.7	-0.071	0.318
Percentage Asian	5.45	4.84	-0.6	-0.111	0.371
Percentage American Indian/Alaskan Native	0.55	0.65	0.1	0.179	0.318
Percentage Native Hawaiian/Pacific Islander	0.35	0.27	-0.1	-0.220	0.284
Percentage Two or more race	2.06	2.20	0.1	0.069	0.400

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-15. 2013 NAEP Grade 8 nonresponse-adjusted sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 326)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.969
Northeast	22.98	22.98	0.0	0.000	
Midwest	26.54	26.54	0.0	0.000	
South	34.26	34.26	0.0	0.000	
West	16.21	16.21	0.0	0.000	
<b>Private School Reporting Subgroup</b>					0.814
Roman Catholic	47.89	47.89	0.0	0.000	
Non-Catholic Private	52.11	52.11	0.0	0.000	
<b>Urban-Centric Locale</b>					0.055
City	39.72	39.72	0.0	0.000	
Suburban	40.91	42.12	1.2	0.030	
Town	6.96	7.26	0.3	0.043	
Rural	12.40	10.90	-1.5	-0.121	
<b>Size</b>					0.222
Large ( $\geq 30$ )	54.19	51.82	-2.4	-0.044	
Medium (17-29)	25.91	28.00	2.1	0.081	
Small ( $\leq 16$ )	19.90	20.19	0.3	0.014	

NOTE: Size-adjusted school weights were used.

Table A-16. 2013 NAEP Grade 8 nonresponse-adjusted sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	40.60	37.52	-3.1	-0.076	0.006
<b>Estimated Grade Enrollment</b>	21.32	21.57	0.2	0.012	0.760
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	75.33	73.71	-1.6	-0.022	0.084
Percentage Black, not Hispanic	8.18	10.08	1.9	0.232	0.021
Percentage Hispanic Heritage	8.60	8.84	0.2	0.027	0.470
Percentage Asian	4.77	4.39	-0.4	-0.080	0.414
Percentage American Indian/Alaskan Native	0.23	0.21	0.0	-0.088	0.766
Percentage Native Hawaiian/Pacific Islander	0.26	0.34	0.1	0.318	0.220
Percentage Two or more race	2.62	2.44	-0.2	-0.070	0.442

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

Table A-17. 2013 NAEP Grade 12 nonresponse-adjusted sample - Weighted percentages of full sample and responding schools by various subgroups - All Private Schools (sample size = 124)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Census Region</b>					0.993
Northeast	26.46	26.46	0.0	0.000	
Midwest	23.12	23.12	0.0	0.000	
South	32.77	32.77	0.0	0.000	
West	17.65	17.65	0.0	0.000	
<b>Private School Reporting Subgroup</b>					0.954
Roman Catholic	50.19	50.19	0.0	0.000	
Non-Catholic Private	49.81	49.81	0.0	0.000	
<b>Urban-Centric Locale</b>					0.800
City	45.02	46.28	1.3	0.028	
Suburban	38.06	35.33	-2.7	-0.072	
Town	4.05	4.06	0.0	0.002	
Rural	12.88	14.34	1.5	0.114	
<b>Size</b>					0.046
Large ( $\geq 100$ )	52.22	44.69	-7.5	-0.144	
Medium (24-99)	34.87	37.78	2.9	0.083	
Small ( $\leq 23$ )	12.92	17.53	4.6	0.357	

NOTE: Size-adjusted school weights were used.

Table A-18. 2013 NAEP Grade 12 nonresponse-adjusted sample - Weighted mean values of various characteristics for full sample and responding schools - All Private Schools

	Full Sample mean	Respondent mean	Bias	Relative bias	T-test p-value
<b>Size of School Attended by Average Student</b>	129.91	125.33	-4.6	-0.035	0.392
<b>Estimated Grade Enrollment</b>	41.39	35.94	-5.5	-0.132	0.155
<b>Race/Ethnicity</b>					
Percentage White, not Hispanic	74.41	72.59	-1.8	-0.025	0.421
Percentage Black, not Hispanic	8.43	9.68	1.3	0.148	0.228
Percentage Hispanic Heritage	9.46	12.05	2.6	0.274	0.081
Percentage Asian	4.43	3.28	-1.2	-0.260	0.034
Percentage American Indian/Alaskan Native	0.30	0.22	-0.1	-0.261	0.235
Percentage Native Hawaiian/Pacific Islander	0.77	0.59	-0.2	-0.240	0.731
Percentage Two or more race	2.19	1.59	-0.6	-0.274	0.044

\*Estimate rounds to zero

NOTE: For the mean of school size attended by average student and the race/ethnicity percents, size-adjusted school weights were used. For the mean of enrollment, school weights were used.

## **Appendix B**

Table B-1. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students (sample size = 105,897)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.649
Male	50.32	50.38	0.1	0.649	
Female	49.68	49.62	-0.1	-0.001	
<b>Race</b>					0.010
White, not Hispanic	56.94	56.42	-0.5	-0.009	
Black, not Hispanic	14.81	14.96	0.2	0.010	
Hispanic Heritage	20.44	20.70	0.3	0.012	
Asian, not Hispanic	4.98	5.12	0.1	0.028	
American Indian/Alaskan Native	0.84	0.86	0.0	0.025	
Pacific Islander, not Hispanic	0.30	0.30	0.0	0.000	
2 or more race	1.69	1.65	0.0	-0.025	
<b>Relative Age</b>					0.000
Old (Born in 9/88 or earlier)	20.08	19.62	-0.5	-0.023	
Not old (Born in 10/88 or later)	79.92	80.38	0.5	0.001	
<b>Free Lunch Eligibility</b>					0.001
Student Not Eligible	60.33	59.91	-0.4	-0.007	
Free or Reduced Lunch	39.03	39.49	0.5	0.012	
Missing	0.65	0.60	0.0	0.000	
<b>SD</b>					0.000
Yes	9.36	8.85	-0.5	-0.055	
No	90.64	91.15	0.5	0.006	
<b>ELL</b>					0.437
Yes	3.02	3.06	0.0	0.013	
No	96.98	96.95	0.0	0.000	

Table B-2. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students (sample size = 105,897)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.675
Male	50.32	50.30	0.0	0.675	
Female	49.68	49.70	0.0	0.000	
<b>Race</b>					0.007
White, not Hispanic	56.94	56.60	-0.3	-0.006	
Black, not Hispanic	14.81	14.81	0.0	0.007	
Hispanic Heritage	20.44	20.62	0.2	0.009	
Asian, not Hispanic	4.98	5.15	0.2	0.036	
American Indian/Alaskan Native	0.84	0.85	0.0	0.006	
Pacific Islander, not Hispanic	0.30	0.30	0.0	0.159	
2 or more race	1.69	1.68	0.0	-0.008	
<b>Relative Age</b>					0.159
Old (Born in 9/90 or earlier)	20.08	20.02	-0.1	-0.003	
Not old (Born in 10/90 or later)	79.92	79.98	0.1	0.001	
<b>Free Lunch Eligibility</b>					0.001
Student Not Eligible	60.33	59.99	-0.3	-0.006	
Free or Reduced Lunch	39.03	39.41	0.4	0.010	
Missing	0.65	0.60	0.0	0.000	
<b>SD</b>					0.000
Yes	9.36	9.23	-0.1	-0.015	
No	90.64	90.78	0.1	0.002	
<b>ELL</b>					0.000
Yes	3.02	3.17	0.2	0.051	
No	96.98	96.83	-0.2	-0.002	

Table B-3. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Connecticut (sample size = 6,001)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.813
Male	49.99	49.90	-0.1	-0.002	
Female	50.01	50.10	0.1	0.002	
<b>Race</b>					0.295
White, not Hispanic	67.04	66.49	-0.5	-0.008	
Black, not Hispanic	12.08	12.31	0.2	0.019	
Hispanic Heritage	14.53	14.67	0.1	0.010	
Asian, not Hispanic	4.59	4.85	0.3	0.057	
American Indian/Alaskan Native	0.37	0.32	-0.1	-0.145	
Pacific Islander, not Hispanic	0.17	0.11	-0.1	-0.337	
2 or more race	1.23	1.25	0.0	0.020	
<b>Relative Age</b>					0.004
Old (Born in 9/88 or earlier)	11.54	10.81	-0.7	-0.064	
Not old (Born in 10/88 or later)	88.46	89.20	0.7	0.008	
<b>Free Lunch Eligibility</b>					.
Student Not Eligible	74.51	74.98	0.5	0.006	
Free or Reduced Lunch	25.48	25.02	-0.5	-0.018	
Missing	0.02	.	N/A	N/A	
<b>SD</b>					0.000
Yes	8.92	8.11	-0.8	-0.091	
No	91.08	91.89	0.8	0.009	
<b>ELL</b>					0.313
Yes	1.79	1.89	0.1	0.052	
No	98.21	98.11	-0.1	-0.001	

Table B-4. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Connecticut (sample size = 6,001)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.684
Male	49.99	49.89	-0.1	-0.002	
Female	50.01	50.11	0.1	0.002	
<b>Race</b>					0.233
White, not Hispanic	67.04	66.73	-0.3	-0.005	
Black, not Hispanic	12.08	12.13	0.0	0.003	
Hispanic Heritage	14.53	14.72	0.2	0.014	
Asian, not Hispanic	4.59	4.75	0.2	0.036	
American Indian/Alaskan Native	0.37	0.32	-0.1	-0.148	
Pacific Islander, not Hispanic	0.17	0.10	-0.1	-0.373	
2 or more race	1.23	1.25	0.0	0.020	
<b>Relative Age</b>					0.268
Old (Born in 9/90 or earlier)	11.54	11.38	-0.2	-0.014	
Not old (Born in 10/90 or later)	88.46	88.62	0.2	0.002	
<b>Free Lunch Eligibility</b>					
Student Not Eligible	74.51	75.00	0.5	0.007	
Free or Reduced Lunch	25.48	25.00	-0.5	-0.019	
Missing	0.02	.	N/A	N/A	
<b>SD</b>					0.055
Yes	8.92	8.76	-0.2	-0.018	
No	91.08	91.24	0.2	0.002	
<b>ELL</b>					0.018
Yes	1.79	1.99	0.2	0.110	
No	98.21	98.01	-0.2	-0.002	

Table B-5. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Florida (sample size = 5,614)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.020
Male	49.82	50.78	1.0	0.019	
Female	50.18	49.22	-1.0	-0.019	
<b>Race</b>					0.000
White, not Hispanic	46.20	43.95	-2.3	-0.049	
Black, not Hispanic	20.52	21.97	1.4	0.070	
Hispanic Heritage	26.60	27.38	0.8	0.029	
Asian, not Hispanic	3.38	3.47	0.1	0.027	
American Indian/Alaskan Native	0.37	0.36	0.0	-0.027	
Pacific Islander, not Hispanic	0.12	0.07	-0.1	-0.411	
2 or more race	2.81	2.81	0.0	0.001	
<b>Relative Age</b>					0.994
Old (Born in 9/88 or earlier)	26.31	26.30	0.0	0.000	
Not old (Born in 10/88 or later)	73.69	73.70	0.0	0.000	
<b>Free Lunch Eligibility</b>					0.429
Student Not Eligible	55.10	54.56	-0.5	-0.010	
Free or Reduced Lunch	44.84	45.39	0.6	0.012	
Missing	0.06	0.05	0.0	-0.119	
<b>SD</b>					0.919
Yes	9.76	9.78	0.0	0.003	
No	90.24	90.22	0.0	0.000	
<b>ELL</b>					0.022
Yes	3.44	3.72	0.3	0.081	
No	96.56	96.28	-0.3	-0.003	

Table B-6. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Florida (sample size = 5,614)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.679
Male	49.82	49.87	0.1	0.001	
Female	50.18	50.13	-0.1	-0.001	
<b>Race</b>					0.070
White, not Hispanic	46.20	45.16	-1.0	-0.022	
Black, not Hispanic	20.52	21.19	0.7	0.033	
Hispanic Heritage	26.60	26.71	0.1	0.004	
Asian, not Hispanic	3.38	3.60	0.2	0.066	
American Indian/Alaskan Native	0.37	0.35	0.0	-0.054	
Pacific Islander, not Hispanic	0.12	0.08	0.0	-0.371	
2 or more race	2.81	2.90	0.1	0.035	
<b>Relative Age</b>					0.103
Old (Born in 9/90 or earlier)	26.31	26.10	-0.2	-0.008	
Not old (Born in 10/90 or later)	73.69	73.90	0.2	0.003	
<b>Free Lunch Eligibility</b>					0.660
Student Not Eligible	55.10	55.53	0.4	0.008	
Free or Reduced Lunch	44.84	44.42	-0.4	-0.009	
Missing	0.06	0.06	0.0	-0.068	
<b>SD</b>					0.159
Yes	9.76	9.62	-0.1	-0.014	
No	90.24	90.38	0.1	0.002	
<b>ELL</b>					0.131
Yes	3.44	3.58	0.1	0.040	
No	96.56	96.42	-0.1	-0.001	

Table B-7. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Illinois (sample size = 5,902)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.327
Male	50.83	50.53	-0.3	-0.006	
Female	49.17	49.47	0.3	0.006	
<b>Race</b>					0.740
White, not Hispanic	55.97	55.91	-0.1	-0.001	
Black, not Hispanic	17.07	16.81	-0.3	-0.016	
Hispanic Heritage	20.60	20.72	0.1	0.006	
Asian, not Hispanic	3.90	4.02	0.1	0.030	
American Indian/Alaskan Native	0.25	0.26	0.0	0.040	
Pacific Islander, not Hispanic	0.12	0.15	0.0	0.185	
2 or more race	2.09	2.14	0.0	0.024	
<b>Relative Age</b>					0.001
Old (Born in 9/88 or earlier)	18.82	18.05	-0.8	-0.041	
Not old (Born in 10/88 or later)	81.18	81.96	0.8	0.009	
<b>Free Lunch Eligibility</b>					0.448
Student Not Eligible	61.69	61.93	0.2	0.004	
Free or Reduced Lunch	38.22	37.96	-0.3	-0.007	
Missing	0.09	0.11	0.0	0.187	
<b>SD</b>					0.001
Yes	10.00	9.32	-0.7	-0.068	
No	90.00	90.68	0.7	0.008	
<b>ELL</b>					0.000
Yes	1.25	1.39	0.1	0.111	
No	98.75	98.61	-0.1	-0.001	

Table B-8. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Illinois (sample size = 5,902)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.346
Male	50.83	50.96	0.1	0.002	
Female	49.17	49.04	-0.1	-0.003	
<b>Race</b>					0.407
White, not Hispanic	55.97	55.71	-0.3	-0.005	
Black, not Hispanic	17.07	16.87	-0.2	-0.012	
Hispanic Heritage	20.60	20.87	0.3	0.013	
Asian, not Hispanic	3.90	3.99	0.1	0.024	
American Indian/Alaskan Native	0.25	0.26	0.0	0.024	
Pacific Islander, not Hispanic	0.12	0.15	0.0	0.169	
2 or more race	2.09	2.16	0.1	0.032	
<b>Relative Age</b>					0.076
Old (Born in 9/90 or earlier)	18.82	18.63	-0.2	-0.010	
Not old (Born in 10/90 or later)	81.18	81.37	0.2	0.002	
<b>Free Lunch Eligibility</b>					0.341
Student Not Eligible	61.69	61.78	0.1	0.001	
Free or Reduced Lunch	38.22	38.11	-0.1	-0.003	
Missing	0.09	0.11	0.0	0.231	
<b>SD</b>					0.000
Yes	10.00	9.80	-0.2	-0.020	
No	90.00	90.20	0.2	0.002	
<b>ELL</b>					0.000
Yes	1.25	1.50	0.2	0.197	
No	98.75	98.50	-0.2	-0.003	

Table B-9. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Iowa (sample size = 5,541)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.003
Male	50.93	51.77	0.8	0.016	
Female	49.07	48.23	-0.8	-0.017	
<b>Race</b>					0.065
White, not Hispanic	84.69	85.40	0.7	0.008	
Black, not Hispanic	3.95	3.67	-0.3	-0.071	
Hispanic Heritage	6.74	6.59	-0.1	-0.022	
Asian, not Hispanic	2.31	2.25	-0.1	-0.026	
American Indian/Alaskan Native	0.40	0.39	0.0	-0.023	
Pacific Islander, not Hispanic	0.16	0.13	0.0	-0.196	
2 or more race	1.75	1.56	-0.2	-0.108	
<b>Relative Age</b>					0.596
Old (Born in 9/88 or earlier)	21.73	21.84	0.1	0.005	
Not old (Born in 10/88 or later)	78.27	78.16	-0.1	-0.001	
<b>Free Lunch Eligibility</b>					0.001
Student Not Eligible	73.52	74.71	1.2	0.016	
Free or Reduced Lunch	26.42	25.24	-1.2	-0.045	
Missing	0.06	0.06	0.0	-0.082	
<b>SD</b>					0.085
Yes	10.09	9.76	-0.3	-0.032	
No	89.91	90.24	0.3	0.004	
<b>ELL</b>					0.581
Yes	1.87	1.83	0.0	-0.022	
No	98.13	98.17	0.0	0.000	

Table B-10. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Iowa (sample size = 5,541)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.730
Male	50.93	50.98	0.0	0.001	
Female	49.07	49.02	0.0	-0.001	
<b>Race</b>					0.348
White, not Hispanic	84.69	84.53	-0.2	-0.002	
Black, not Hispanic	3.95	4.02	0.1	0.017	
Hispanic Heritage	6.74	6.91	0.2	0.025	
Asian, not Hispanic	2.31	2.41	0.1	0.042	
American Indian/Alaskan Native	0.40	0.41	0.0	0.025	
Pacific Islander, not Hispanic	0.16	0.13	0.0	-0.233	
2 or more race	1.75	1.60	-0.1	-0.084	
<b>Relative Age</b>					0.907
Old (Born in 9/90 or earlier)	21.73	21.71	0.0	-0.001	
Not old (Born in 10/90 or later)	78.27	78.29	0.0	0.000	
<b>Free Lunch Eligibility</b>					0.069
Student Not Eligible	73.52	74.22	0.7	0.010	
Free or Reduced Lunch	26.42	25.73	-0.7	-0.026	
Missing	0.06	0.05	0.0	-0.115	
<b>SD</b>					0.070
Yes	10.09	9.93	-0.2	-0.015	
No	89.91	90.07	0.2	0.002	
<b>ELL</b>					0.132
Yes	1.87	1.99	0.1	0.064	
No	98.13	98.01	-0.1	-0.001	

Table B-11. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Massachusetts (sample size = 5,938)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.493
Male	50.78	51.07	0.3	0.006	
Female	49.22	48.93	-0.3	-0.006	
<b>Race</b>					0.144
White, not Hispanic	71.13	70.92	-0.2	-0.003	
Black, not Hispanic	9.27	9.51	0.2	0.026	
Hispanic Heritage	11.38	10.96	-0.4	-0.037	
Asian, not Hispanic	5.74	5.98	0.2	0.042	
American Indian/Alaskan Native	0.17	0.14	0.0	-0.151	
Pacific Islander, not Hispanic	0.10	0.13	0.0	0.231	
2 or more race	2.22	2.36	0.1	0.061	
<b>Relative Age</b>					0.002
Old (Born in 9/88 or earlier)	21.67	20.76	-0.9	-0.042	
Not old (Born in 10/88 or later)	78.34	79.24	0.9	0.012	
<b>Free Lunch Eligibility</b>					0.357
Student Not Eligible	68.25	68.25	0.0	0.000	
Free or Reduced Lunch	31.54	31.69	0.1	0.005	
Missing	0.21	0.07	-0.1	-0.682	
<b>SD</b>					0.000
Yes	12.77	11.37	-1.4	-0.110	
No	87.23	88.63	1.4	0.016	
<b>ELL</b>					0.137
Yes	2.88	2.66	-0.2	-0.076	
No	97.13	97.34	0.2	0.002	

Table B-12. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in Massachusetts (sample size = 5,938)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.898
Male	50.78	50.76	0.0	0.000	
Female	49.22	49.24	0.0	0.000	
<b>Race</b>					0.190
White, not Hispanic	71.13	70.86	-0.3	-0.004	
Black, not Hispanic	9.27	9.44	0.2	0.019	
Hispanic Heritage	11.38	11.12	-0.3	-0.023	
Asian, not Hispanic	5.74	5.94	0.2	0.034	
American Indian/Alaskan Native	0.17	0.14	0.0	-0.163	
Pacific Islander, not Hispanic	0.10	0.12	0.0	0.115	
2 or more race	2.22	2.39	0.2	0.078	
<b>Relative Age</b>					0.892
Old (Born in 9/90 or earlier)	21.67	21.65	0.0	-0.001	
Not old (Born in 10/90 or later)	78.34	78.35	0.0	0.000	
<b>Free Lunch Eligibility</b>					0.354
Student Not Eligible	68.25	67.90	-0.3	-0.005	
Free or Reduced Lunch	31.54	32.02	0.5	0.015	
Missing	0.21	0.08	-0.1	-0.621	
<b>SD</b>					0.021
Yes	12.77	12.47	-0.3	-0.023	
No	87.23	87.53	0.3	0.003	
<b>ELL</b>					0.104
Yes	2.88	3.06	0.2	0.065	
No	97.13	96.94	-0.2	-0.002	

Table B-13. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in New Hampshire (sample size = 7,536)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.366
Male	50.57	50.87	0.3	0.006	
Female	49.43	49.13	-0.3	-0.006	
<b>Race</b>					0.000
White, not Hispanic	92.04	92.68	0.6	0.007	
Black, not Hispanic	1.65	1.62	0.0	-0.018	
Hispanic Heritage	2.85	2.13	-0.7	-0.253	
Asian, not Hispanic	2.59	2.79	0.2	0.080	
American Indian/Alaskan Native	0.34	0.33	0.0	-0.021	
Pacific Islander, not Hispanic	0.09	0.08	0.0	-0.100	
2 or more race	0.45	0.37	-0.1	-0.168	
<b>Relative Age</b>					0.000
Old (Born in 9/88 or earlier)	15.03	14.03	-1.0	-0.066	
Not old (Born in 10/88 or later)	84.97	85.97	1.0	0.012	
<b>Free Lunch Eligibility</b>					0.000
Student Not Eligible	78.75	79.52	0.8	0.010	
Free or Reduced Lunch	18.29	17.26	-1.0	-0.056	
Missing	2.97	3.22	0.2	0.084	
<b>SD</b>					0.000
Yes	12.56	11.52	-1.0	-0.083	
No	87.44	88.48	1.0	0.012	
<b>ELL</b>					0.106
Yes	0.80	0.68	-0.1	-0.153	
No	99.20	99.32	0.1	0.001	

Table B-14. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in New Hampshire (sample size = 7,536)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.678
Male	50.57	50.64	0.1	0.001	
Female	49.43	49.36	-0.1	-0.001	
<b>Race</b>					0.080
White, not Hispanic	92.04	92.10	0.1	0.001	
Black, not Hispanic	1.65	1.75	0.1	0.059	
Hispanic Heritage	2.85	2.58	-0.3	-0.093	
Asian, not Hispanic	2.59	2.76	0.2	0.069	
American Indian/Alaskan Native	0.34	0.35	0.0	0.042	
Pacific Islander, not Hispanic	0.09	0.09	0.0	-0.033	
2 or more race	0.45	0.37	-0.1	-0.181	
<b>Relative Age</b>					0.493
Old (Born in 9/90 or earlier)	15.03	14.95	-0.1	-0.005	
Not old (Born in 10/90 or later)	84.97	85.05	0.1	0.001	
<b>Free Lunch Eligibility</b>					0.273
Student Not Eligible	78.75	79.13	0.4	0.005	
Free or Reduced Lunch	18.29	17.90	-0.4	-0.021	
Missing	2.97	2.97	0.0	0.000	
<b>SD</b>					0.705
Yes	12.56	12.59	0.0	0.002	
No	87.44	87.42	0.0	0.000	
<b>ELL</b>					0.657
Yes	0.80	0.76	0.0	-0.045	
No	99.20	99.24	0.0	0.000	

Table B-15. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in New Jersey (sample size = 6,236)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.008
Male	50.34	51.15	0.8	0.016	
Female	49.66	48.85	-0.8	-0.016	
<b>Race</b>					0.048
White, not Hispanic	57.28	56.24	-1.0	-0.018	
Black, not Hispanic	14.33	14.21	-0.1	-0.009	
Hispanic Heritage	18.54	19.29	0.8	0.041	
Asian, not Hispanic	9.26	9.67	0.4	0.044	
American Indian/Alaskan Native	0.10	0.10	0.0	-0.030	
Pacific Islander, not Hispanic	0.17	0.19	0.0	+0.069	
2 or more race	0.32	0.32	0.0	-0.016	
<b>Relative Age</b>					0.140
Old (Born in 9/88 or earlier)	15.17	14.75	-0.4	-0.028	
Not old (Born in 10/88 or later)	84.83	85.25	0.4	0.005	
<b>Free Lunch Eligibility</b>					0.200
Student Not Eligible	69.90	69.26	-0.6	-0.009	
Free or Reduced Lunch	27.48	28.05	0.6	0.021	
Missing	2.63	2.70	0.1	0.026	
<b>SD</b>					0.001
Yes	14.50	13.60	-0.9	-0.062	
No	85.50	86.40	0.9	0.010	
<b>ELL</b>					0.762
Yes	1.27	1.23	0.0	-0.029	
No	98.73	98.77	0.0	0.000	

Table B-16. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in New Jersey (sample size = 6,236)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.584
Male	50.34	50.39	0.1	0.001	
Female	49.66	49.61	-0.1	-0.001	
<b>Race</b>					0.848
White, not Hispanic	57.28	57.19	-0.1	-0.001	
Black, not Hispanic	14.33	14.23	-0.1	-0.007	
Hispanic Heritage	18.54	18.79	0.3	0.014	
Asian, not Hispanic	9.26	9.20	-0.1	-0.007	
American Indian/Alaskan Native	0.10	0.09	0.0	-0.080	
Pacific Islander, not Hispanic	0.17	0.18	0.0	0.035	
2 or more race	0.32	0.32	0.0	0.006	
<b>Relative Age</b>					0.367
Old (Born in 9/90 or earlier)	15.17	15.23	0.1	0.003	
Not old (Born in 10/90 or later)	84.83	84.77	-0.1	-0.001	
<b>Free Lunch Eligibility</b>					0.131
Student Not Eligible	69.90	69.40	-0.5	-0.007	
Free or Reduced Lunch	27.48	27.90	0.4	0.015	
Missing	2.63	2.71	0.1	0.030	
<b>SD</b>					0.822
Yes	14.50	14.48	0.0	-0.001	
No	85.50	85.52	0.0	0.000	
<b>ELL</b>					0.787
Yes	1.27	1.29	0.0	0.018	
No	98.73	98.71	0.0	0.000	

Table B-17. 2013 NAEP Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in West Virginia (sample size = 5,837)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.580
Male	49.65	49.49	-0.2	-0.003	
Female	50.35	50.51	0.2	0.003	
<b>Race</b>					0.897
White, not Hispanic	92.12	92.01	-0.1	-0.001	
Black, not Hispanic	5.37	5.43	0.1	0.011	
Hispanic Heritage	0.99	0.98	0.0	-0.013	
Asian, not Hispanic	0.85	0.91	0.1	0.066	
American Indian/Alaskan Native	0.12	0.12	0.0	0.008	
Pacific Islander, not Hispanic	0.04	0.04	0.0	0.171	
2 or more race	0.52	0.52	0.0	0.000	
<b>Relative Age</b>					0.000
Old (Born in 9/88 or earlier)	23.56	21.94	-1.6	-0.069	
Not old (Born in 10/88 or later)	76.44	78.06	1.6	0.021	
<b>Free Lunch Eligibility</b>					0.000
Student Not Eligible	54.22	55.53	1.3	0.024	
Free or Reduced Lunch	45.69	44.37	-1.3	-0.029	
Missing	0.10	0.10	0.0	-0.021	
<b>SD</b>					0.001
Yes	10.57	9.91	-0.7	-0.062	
No	89.43	90.09	0.7	0.007	
<b>ELL</b>					0.185
Yes	0.29	0.32	0.0	0.109	
No	99.72	99.68	0.0	0.000	

Table B-18. 2013 NAEP Nonresponse-Adjusted Public Grade 12 - Weighted percentages of full sample and responding students by various subgroups - Public School Students in West Virginia (sample size = 5,837)

	Full sample weighted percentage	Respondent weighted percentage	Bias	Relative bias	Chi-square p-value
<b>Sex</b>					0.802
Male	49.65	49.61	0.0	-0.001	
Female	50.35	50.39	0.0	0.001	
<b>Race</b>					0.704
White, not Hispanic	92.12	91.95	-0.2	-0.002	
Black, not Hispanic	5.37	5.44	0.1	0.014	
Hispanic Heritage	0.99	0.98	0.0	-0.014	
Asian, not Hispanic	0.85	0.93	0.1	0.092	
American Indian/Alaskan Native	0.12	0.13	0.0	0.093	
Pacific Islander, not Hispanic	0.04	0.04	0.0	0.114	
2 or more race	0.52	0.53	0.0	0.031	
<b>Relative Age</b>					0.060
Old (Born in 9/90 or earlier)	23.56	23.35	-0.2	-0.009	
Not old (Born in 10/90 or later)	76.44	76.65	0.2	0.003	
<b>Free Lunch Eligibility</b>					0.000
Student Not Eligible	54.22	55.59	1.4	0.025	
Free or Reduced Lunch	45.69	44.32	-1.4	-0.030	
Missing	0.10	0.09	0.0	-0.041	
<b>SD</b>					0.143
Yes	10.57	10.53	0.0	-0.004	
No	89.43	89.47	0.0	0.000	
<b>ELL</b>					0.060
Yes	0.29	0.34	0.1	0.189	
No	99.72	99.66	-0.1	-0.001	