

# **ANALYSIS OF NONRESPONSE BIAS IN THE 2004 NAEP LONG TERM TREND**

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## 1. ANALYSIS OF NONRESPONSE BIAS IN THE 2004 NAEP LONG TERM TREND

The analysis of nonresponse bias was conducted for all ages of the 2004 NAEP Long Term Trend. For each of these studies, the response rates at both the school and student level are close to or less than 85 percent. The analysis consists of tables showing weighted response rates for various school and student-level characteristics of interest, produced separately for each age. At the school level, there is also a comparisons of means table for the size and race variables. The weight used at the school level is the school base weight. The weight used at the student level is the student base weight. The student response rate is computed within responding schools.

The results showing weighted response rates for various characteristics of interest are presented. At the school level, the characteristics of interest are Census Region, public or private affiliation, reporting subgroup for private schools, type of location, estimated grade enrollment, and percentage of students in each race category. At the student level, the characteristics of interest are the students' sex, race, free lunch eligibility, session, whether the student received a reading or mathematics assessment, whether the student was in a high or low grade for his/her age, whether or not the student receives Title 1 assistance, and whether or not the student is classified as SD or LEP. These characteristics were available for each school and student, regardless of response status. The p-values from Rao-Scott Chi-square tests of association between each characteristic of interest and response status are also reported. The significant findings from the Chi-square tests and mean comparisons (i.e., with p-values less than 0.05) are summarized below. These characteristics of interest may be related to response status. The corresponding tables follow.

Table 1. Characteristics related to response.

Age	Level	Response Rate	Characteristics with a p-value less than 0.05
Age 9	School	85.73	Public/Private Affiliation, Reporting subgroup, Type of location, Estimated Age Enrollment, Percentage of Black students
Age 9	Student	94.32	
Age 13	School	81.45	Free Lunch Eligibility, SD, LEP
Age 13	Student	92.2	Reporting Subgroup, Estimated Age Enrollment, Percentage Black
Age 17	School	76.96	Public/Private Affiliation, Race, High or Low Grade, Free Lunch Eligibility, Title 1, SD
Age 17	Student	75.18	Public/Private Affiliation, Reporting Subgroup, Percentage of Asian Students
Age 17	Student	75.18	Race, High or Low Grade, Free Lunch Eligibility, SD

Table 2. 2004 NAEP Long Term Trend Age 9 - Percentages and counts of responding and nonresponding schools by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi square p-value
<b>Census Region</b>						<b>0.550</b>
Northwest	79.50	20.50	98	25	123	
Midwest	85.63	14.37	130	19	149	
South	91.07	8.93	151	21	172	
West	84.86	15.14	122	20	142	
<b>Public/Private Affiliation</b>						<b>0.019</b>
Public	90.13	9.87	345	31	376	
Private	73.72	26.28	156	54	210	
<b>Private Reporting Subgroup</b>						<b>0.002</b>
Conservative Christian	74.94	25.06	23	10	33	
Roman Catholic	93.77	6.23	86	7	93	
Other Private	59.81	40.19	47	37	84	
<b>Type of Location</b>						<b>0.008</b>
Central City	93.38	6.62	182	17	199	
Urban Fringe/Large Town	86.46	13.54	180	37	217	
Small Town/Rural	78.24	21.76	139	31	170	
<b>All</b>	<b>85.73</b>	<b>14.27</b>	<b>501</b>	<b>85</b>	<b>586</b>	

Table 3. 2004 NAEP Long Term Trend - Weighted mean values of various characteristics for responding and nonresponding schools

	Respondent Mean	Nonrespondent Mean	Difference	P-Value
Estimated Grade Enrollment	62.22	36.17	26.05	<b>0.001</b>
<b>Race/Ethnicity</b>				
Percentage				
American Indian	1.31	0.95	0.36	0.563
Percentage Asian	3.92	2.84	1.08	0.113
Percentage Black	15.68	5.46	10.22	<b>0.000</b>
Percentage Hispanic	14.59	13.59	1.01	0.815

Table 4. 2004 NAEP Long Term Trend Age 9 - Percentages and counts of responding and nonresponding students by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi- square p- value
<b>Public/Private</b>						
<b>Affiliation</b>						0.574
Public	94.27	5.73	20408	1270	21678	
Private	94.68	5.32	4182	261	4443	
<b>Sex</b>						0.888
Male	94.29	5.71	12348	755	13103	
Female	94.35	5.65	12242	776	13018	
<b>Race</b>						0.083
White, not Hispanic	93.99	6.01	14701	947	15648	
Black, not Hispanic	95.09	4.91	3788	197	3985	
Hispanic Heritage	94.61	5.39	4116	247	4363	
Asian/Pacific Islander	95.40	4.60	1427	95	1522	
American Indian/Alaskan						
Native	89.25	10.75	208	26	234	
Other	94.59	5.41	350	19	369	
<b>High or Low Grade</b>						0.850
High	94.34	5.66	16546	1000	17546	
Low	94.27	5.73	8044	531	8575	
<b>Free Lunch Eligibility</b>						0.014
Student not eligible	95.01	4.99	11797	620	12417	
Reduce or Free Lunch	94.28	5.72	9342	604	9946	
Missing	91.42	8.58	3182	286	3468	
<b>Title 1</b>						0.372
Yes	94.58	5.42	10131	617	10748	
No	94.16	5.84	13988	875	14863	
<b>SD</b>						0.023
Yes	92.62	7.38	1752	140	1892	
No	94.44	5.56	22802	1387	24189	
<b>LEP</b>						0.002
Yes	95.88	4.12	1731	80	1811	
No	94.19	5.81	22808	1447	24255	
<b>Session</b>						0.609
Mathematics Bridge	94.24	5.76	5156	310	5466	
Reading Bridge	94.57	5.43	4607	262	4869	
Reading Operational	94.36	5.64	7498	467	7965	
Mathematics Operational	93.90	6.10	7329	492	7821	
<b>All</b>	94.32	5.68	24590	1531	26121	

Table 5. 2004 NAEP Long Term Trend Age 13 - Percentages and counts of responding and nonresponding schools by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi square p-value
<b>Census Region</b>						0.321
Northwest	75.39	24.61	88	29	117	
Midwest	74.18	25.82	89	25	114	
South	89.76	10.24	142	21	163	
West	83.20	16.80	104	18	122	
<b>Public/Private Affiliation</b>						0.325
Public	83.99	16.01	250	37	287	
Private	78.12	21.88	173	56	229	
<b>Private Reporting Subgroup</b>						0.003
Conservative Christian	86.30	13.70	24	8	32	
Roman Catholic	93.22	6.78	94	9	103	
Other Private	66.73	33.21	54	38	92	
<b>Type of Location</b>						0.129
Central City	76.77	13.23	139	24	163	
Urban Fringe/Large Town	85.06	14.94	160	34	194	
Small Town/Rural	75.66	24.34	124	35	159	
<b>All</b>	81.45	18.55	423	93	516	

Table 6. 2004 NAEP Long Term Trend Age 13 - Weighted mean values of various characteristics for responding and nonresponding schools

	Respondent Mean	Nonrespondent Mean	Difference	P-Value
Estimated Grade Enrollment	99.11	62.41	36.70	<b>0.010</b>
<b>Race/Ethnicity</b>				
Percentage American Indian	0.55	1.12	-0.57	0.584
Percentage Asian	2.96	2.09	0.87	0.106
Percentage Black	15.48	5.79	9.69	<b>0.000</b>
Percentage Hispanic	12.75	11.33	1.42	0.668



Table 7. 2004 NAEP Long Term Trend Age 13 - Percentages and counts of responding and nonresponding students by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi- square p- value
<b>Public/Private</b>						
<b>Affiliation</b>						<b>0.014</b>
Public	92.05	7.95	21697	1882	23579	
Private	93.77	6.23	4578	304	4882	
<b>Sex</b>						0.311
Male	91.97	8.03	12974	1107	14081	
Female	92.43	7.57	13301	1079	14380	
<b>Race</b>						<b>0.025</b>
White, not Hispanic	92.32	7.68	16406	1364	17770	
Black, not Hispanic	92.20	7.80	4133	348	4481	
Hispanic Heritage	91.36	8.64	4005	375	4380	
Asian/Pacific Islander	95.66	4.34	1284	59	1343	
American						
Indian/Alaskan Native	84.16	15.84	181	26	207	
Other	91.57	8.43	266	14	280	
<b>High or Low Grade</b>						<b>0.001</b>
High	92.69	7.31	17186	1333	18519	
Low	91.33	8.67	9089	853	9942	
<b>Free Lunch Eligibility</b>						<b>0.001</b>
Student not eligible	92.80	7.20	14106	1079	15185	
Reduce or Free Lunch	91.12	8.88	8829	849	9678	
Missing	93.09	6.91	3176	244	3420	
<b>Title 1</b>						<b>0.034</b>
Yes	91.13	8.87	6429	613	7042	
No	92.60	7.40	19729	1553	21282	
<b>SD</b>						<b>0.000</b>
Yes	89.01	10.99	1669	219	1888	
No	92.40	7.60	24576	1958	26534	
<b>LEP</b>						0.339
Yes	91.23	8.77	929	92	1021	
No	92.24	7.76	25339	2093	27432	
<b>Session</b>						0.448
Mathematics Bridge	92.08	7.92	5727	472	6199	
Reading Bridge	92.46	7.54	4740	383	5123	
Reading Operational	92.36	7.64	8332	673	9005	
Mathematics						
Operational	91.73	8.27	7476	658	8134	
<b>All</b>	92.20	7.80	26275	2186	28461	

Table 8. 2004 NAEP Long Term Trend Age 17 - Percentages and counts of responding and nonresponding schools by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi square p-value
<b>Census Region</b>						0.776
Northwest	73.21	26.79	71	29	100	
Midwest	77.02	22.98	99	33	132	
South	82.44	17.56	134	34	168	
West	73.30	26.70	96	43	139	
<b>Public/Private Affiliation</b>						0.000
Public	83.50	16.50	314	61	375	
Private	58.57	41.43	86	78	164	
<b>Private Reporting Subgroup</b>						0.009
Conservative Christian	70.58	29.42	24	15	39	
Roman Catholic	65.37	34.63	32	18	50	
Other Private	44.86	55.14	30	45	75	
<b>Type of Location</b>						0.671
Central City	72.93	27.07	110	50	160	
Urban Fringe/Large Town	75.70	24.30	158	48	206	
Small Town/Rural	79.07	20.93	132	41	173	
<b>All</b>	76.96	23.04	400	139	539	

Table 9. 2004 NAEP Long Term Trend Age 17 - Weighted mean values of various characteristics for responding and nonresponding schools

	Respondent Mean	Nonrespondent Mean	Difference	P-Value
Estimated Grade Enrollment	144.40	112.29	32.11	0.065
<b>Race/Ethnicity</b>				
Percentage American Indian	0.99	2.69	-1.70	0.217
Percentage Asian	2.02	3.38	-1.36	0.048
Percentage Black	10.31	7.85	2.47	0.206
Percentage Hispanic	12.48	13.79	-1.31	0.657

Table 10. 2004 NAEP Long Term Trend Age 17 - Percentages and counts of responding and nonresponding students by various subgroups

	Respondent weighted percentage	Nonrespondent weighted percentage	Respondent sample size	Nonrespondent sample size	Total sample size	Chi- square p- value
<b>Public/Private Affiliation</b>						0.064
Public	74.60	25.40	20552	6754	27306	
Private	81.01	18.99	3671	700	4371	
<b>Sex</b>						0.471
Male	75.43	24.57	12103	3667	15770	
Female	74.95	25.05	12120	3787	15907	
<b>Race</b>						0.013
White, not Hispanic	76.78	23.22	16947	4743	21690	
Black, not Hispanic	73.45	26.55	2922	1020	3942	
Hispanic Heritage	70.61	29.39	2890	1180	4070	
Asian/Pacific Islander	70.37	29.63	1137	398	1535	
American Indian/Alaskan						
Native	71.17	28.83	166	69	235	
Other	78.70	21.30	161	44	205	
<b>High or Low Grade</b>						0.024
High	75.99	24.01	18944	5595	24539	
Low	72.61	27.39	5279	1859	7138	
<b>Free Lunch Eligibility</b>						0.036
Student not eligible	78.42	21.58	14945	4095	19040	
Reduce or Free Lunch	73.37	26.63	5029	1727	6756	
Missing	65.75	34.25	3960	1506	5466	
<b>Title 1</b>						0.071
Yes	67.02	32.98	2642	1256	3898	
No	76.50	23.50	20885	5973	26858	
<b>SD</b>						0.003
Yes	70.72	29.28	1517	590	2107	
No	75.48	24.52	22696	6844	29540	
<b>LEP</b>						0.212
Yes	70.63	29.37	756	287	1043	
No	75.36	24.64	23460	7161	30621	
<b>Session</b>						0.236
Mathematics Bridge	76.00	24.00	3841	1155	4996	
Reading Bridge	74.24	25.76	4554	1432	5986	
Reading Operational	75.52	24.48	8267	2528	10795	
Mathematics Operational	75.05	24.95	7561	2339	9900	
<b>All</b>	75.18	24.82	24223	7454	31677	