

International Computer and  
Information Literacy Study (ICILS 2023)  
Main Study Sampling, Recruitment, and Data  
Collection

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Appendix C: Non-Response Bias Analysis Plan

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# **APPENDIX C: NON-RESPONSE BIAS ANALYSIS PLAN**

## **Outline of the ICILS 2023 Non-response Bias Analyses**

RTI International will conduct a non-response bias analyses (NRBA) for ICILS 2023 schools if the response rate for original schools is below 85 percent. Currently, it is assumed that the student response rate for ICILS 2023 will be above 85 percent and thus, no NRBA at the student level will be required.

### **ICILS 2023 School Non-Response Bias Analysis Outline**

If needed, the NRBA will be conducted in the summer of 2024 before the release of the ICILS 2023 national report in November of 2024. A summary of the findings will be included in the technical appendix of the U.S. national report and the full NRBA will be included in the U.S. technical report.

#### **1. INTRODUCTION**

#### **2. METHODOLOGY**

The analysis will be conducted in three parts:

1. The distribution of the participating original school sample will be compared with that of the total eligible original school sample. The original sample is the sample before substitution. In each sample, schools will be weighted by their school base weights and their estimated grade 8 enrollment, excluding any non-response adjustment factor.
2. The distribution of the participating final sample, which includes the participating replacements for schools from the original sample that did not participate, will be compared to the total eligible final sample. The final sample is the sample after substitution. Again, school base weights and their estimated grade 8 enrollment will be used for both the eligible sample and the participating schools.
3. The same sets of schools will be compared as in the second analysis but, this time, when analyzing the participating schools alone, school nonresponse adjustments will be applied to the weights.

The following categorical variables will be available for all schools:

- School type—public or private;
- Locale—urban-centric locale code, i.e., city, suburb, town, rural;
- Census region; and
- Poverty level—for public schools, a high poverty school is defined as one in which 50 percent or more of the students are eligible for participation in the national free and reduced-price lunch (FRPL) program, and a low poverty school is defined as one in which less than 50 percent are eligible; all private schools are treated as low poverty schools.

The following continuous variables will be available for all schools:

- Number of grade 8 students enrolled;
- Total number of students;
- Mean percentage of students by race/ethnicity (White, non-Hispanic, Black, non-Hispanic, Hispanic, Asian, American Indian or Alaska Native, Hawaiian/Pacific Islander, and two or more races).

An additional continuous variable, the percentage of students eligible to participate in the FRPL program, will be available only for public schools.

Two forms of analysis will be undertaken:

- A test of the independence of each school characteristic and participation status, and
- A logistic regression in which the conditional independence of these school characteristics as predictors of participation will be examined.

For categorical variables, the distribution of frame characteristics for participants will be compared with the distribution for all eligible schools. The hypothesis of independence between the characteristic and participation status will be tested using an adjusted Wald-F statistic at the 5 percent level (SUDAAN 2012). For continuous variables, summary means will be calculated and the difference between means will be tested using a *t* test. In addition to these tests, generalized exponential regression models (including all characteristics) will be used to provide a multivariate analysis in which the conditional independence of these school characteristics as predictors of participation will be examined.

### **3. RESULTS**

For each categorical or continuous variable, a table will be shown giving the percentage (or mean) for the participating and eligible populations along with the bias, relative bias, and the p-value of the test. Text summaries of the results will also be provided. The generalized exponential regression results will be shown giving the parameter estimate, standard error, *t* test, and p-value. The results will be given for each analysis.

- 3.1 Original Respondent Sample
  - Categorical Variables
  - Continuous Variables
  - Logistic Regression Model

- 3.2 Respondent Sample with Replacements (Final Sample)
  - Categorical Variables
  - Continuous Variables
  - Logistic Regression Model

- 3.3 Final Sample with Nonresponse Adjustments Applied
  - Categorical Variables
  - Continuous Variables

### **4. CONCLUSIONS**

A summary of the results will be presented along with a conclusion on the effect of substitutes and the non-response weighting adjustment.

#### References

Research Triangle Institute (2012). *SUDAAN Language Manual, Volumes 1 and 2, Release 11*. Research Triangle Park, NC: Research Triangle Institute