Technical Notes
Condition of Public School Facilities: 2012–13

Data Disclosure Warning

Under law, public use data collected and distributed by the National Center for Education Statistics (NCES) within the Institute of Education Sciences may be used only for statistical purposes.

Any effort to determine the identity of any reported case by public-use data users is prohibited by law. Violations are subject to Class E felony charges of a fine up to $250,000 and/or a prison term up to 5 years.

NCES does all it can to assure that the identity of data subjects cannot be disclosed. All direct identifiers, as well as any characteristics that might lead to identification, are omitted or modified in the dataset to protect the true characteristics of individual cases. Any intentional identification or disclosure of a person or institution violates the assurances of confidentiality given to the providers of the information. Therefore, users shall:

- Use the data in this dataset for statistical purposes only.
- Make no use of the identity of any person or institution discovered inadvertently, and advise NCES of any such discovery.
- Not link this dataset with individually identifiable data from other NCES or non-NCES datasets.
- To proceed you must signify your agreement to comply with the above-stated statutorily based requirements.

Data perturbations were conducted on some background data to preclude identification of individuals and institutions.

Fast Response Survey System

The Fast Response Survey System (FRSS) was established in 1975 by the National Center for Education Statistics (NCES), U.S. Department of Education. FRSS is designed to collect issue-oriented data within a relatively short time frame. FRSS collects data from state education agencies, local education agencies, public and private elementary and secondary schools, public school teachers, and public libraries. To ensure minimal burden on respondents, the surveys are generally limited to three pages of questions, with a response burden of about 30 minutes per respondent. Sample sizes are relatively small (usually about 1,200 to 1,800 respondents per survey) so that data collection can be completed quickly. Data are weighted to produce national estimates of the sampled education sector. The sample size permits limited breakouts by analysis variables. However, as the number of categories within any single analysis variable increases, the sample size within categories decreases, which results in larger sampling errors for the breakouts by analysis variables.

Sample and Response Rates

The sample for the FRSS survey of the Condition of Public School Facilities consisted of approximately 1,800 regular public elementary, middle, and secondary/combined schools in the 50 states and the District of Columbia. The nationally representative sample was selected from the 2010–11 NCES Common Core

of Data (CCD) Public School Universe file, which was the most current file available at the time of selection. The sampling frame included 50,995 regular elementary schools, 16,582 regular middle schools, and 19,190 regular secondary/combined schools. For purposes of this study, "regular" schools included charter schools. Excluded from the sampling frame were schools with a high grade of prekindergarten, kindergarten, or ungraded, schools with zero, missing, or "not applicable" enrollment, along with special education, vocational, and alternative/other schools, and schools outside the 50 states and the District of Columbia. A school was defined as an elementary school if the lowest grade was less than or equal to grade 3 and the highest grade was less than or equal to grade 8. A middle school was defined as having a lowest grade greater than or equal to grade 4 and a highest grade less than or equal to grade 9. A school was considered a secondary school if its lowest grade was greater than or equal to grade 9 and the highest grade was greater than or equal to grade 10. Combined schools were defined as having a lowest grade less than or equal to grade 3 and a highest grade greater than or equal to grade 9 *or* the lowest grade is in grades 4 through 8 and the highest grade is in grades 10 through 12. Secondary and combined schools were combined into one category for sampling.

To select the sample, the public school sampling frame was stratified by instructional level (elementary, middle, secondary/combined), community type (city, suburban, town, rural), and enrollment size (less than 300, 300 to 499, 500 to 999, 1,000 to 1,499, and 1,500 or more) to create 52 primary strata. Within each of the strata, schools were sorted by percent combined enrollment of Black, Hispanic, Asian, Native Hawaiian/Pacific Islander, American Indian/Alaska Native students, and students of two or more races (missing, less than 6 percent, 6 to 20 percent, 21 to 49 percent, and 50 percent or more) and region (Northeast, Southeast, Central, West) prior to selection to induce additional implicit stratification. These variables are defined in more detail in the "Definitions of Selected Analysis Variables" section of these technical notes. Within each primary stratum, schools were selected systematically at rates that depended on the size class of the school. The approximately 1,800 schools were located in approximately 1,380 school districts.

Questionnaires and cover letters were mailed in January 2013. While individual schools were sampled, the questionnaires were mailed to the districts with which the schools were associated. A separate questionnaire was enclosed for each sampled school. The cover letter indicated that the survey was designed to be completed by district-level personnel who were very familiar with the school facilities in the district. Often this was a district facilities coordinator (although the title of the position varied). The letter indicated that the respondent might want to consult with other district-level personnel or with school-level personnel, such as the principal of the sampled school, in answering some of the questions. Respondents were offered the option of completing the survey via the Web. Telephone follow-up for survey nonresponse and data clarification was initiated in February 2013 and completed in June 2013.

Of the approximately 1,800 public schools in the sample, approximately 40 were found to be ineligible because the school was closed or did not meet some other criteria for inclusion in the sample (e.g., was an alternative school). For the eligible schools, an unweighted response rate of 90 percent was obtained for this survey (about 1,590 responding schools divided by the approximately 1,760 eligible schools in the sample). The corresponding weighted response rate using the initial base weights was 90 percent. Of the schools that completed the survey, 62 percent completed it via the Web, 38 percent completed it by paper (sent by mail, fax, or e-mail), and less than 1 percent completed it by telephone.

Cases with missing data were recontacted by telephone to collect the missing information. However for cases in which this data retrieval was unsuccessful, missing data were imputed. Although item nonresponse was very low (1 percent or less for every item), missing data were imputed for the 48 items with a response rate of less than 100 percent. Table 1 shows the weighted percent of schools with imputed data for each questionnaire item. The missing items included both numerical data such as the total cost of all repairs/renovations/modernizations required to put the school's onsite buildings in good overall

condition, as well as categorical data, such as whether there was a written long-range educational facilities plan for the school. The missing data were imputed using a "hot-deck" approach to obtain a "donor" school from which the imputed values were derived. Under the hot-deck approach, a donor school that matched selected characteristics of the school with missing data (the recipient school) was identified. The matching characteristics included instructional level, enrollment size, community type, region, percent eligible for free or reduced-price lunch, and percent combined enrollment of Black, Hispanic, Asian, Native Hawaiian/Pacific Islander, American Indian/Alaska Native students, and students of two or more races. In addition, other relevant questionnaire items were used to form appropriate imputation groupings. Once a donor was found, it was used to derive the imputed values for the school with missing data. Imputation flags are included in the data.

Table 1. Weighted percent of public schools with imputed data, by questionnaire item: 2012–13

Questionnaire item		Percent imputed (weighted)
Question 2.	**What is the condition of each building system/feature for the permanent and portable (temporary) onsite buildings at this school?**	
Q2CA	Condition of permanent buildings' exterior walls, finishes	0.04
Q2FA	Condition of permanent buildings' plumbing/lavatories	0.09
Q2GA	Condition of permanent buildings' heating system	0.09
Q2HA	Condition of permanent buildings' air conditioning system	0.17
Q2IA	Condition of permanent buildings' ventilation/filtration system	0.12
Q2LA	Condition of permanent buildings' exterior lighting	0.03
Q2LB	Condition of portable (temporary) buildings' exterior lighting	0.11
Q2MA	Condition of permanent buildings' energy management system	0.08
Q2NA	Condition of permanent buildings' life safety features	0.03
Question 3.	**What is the condition of the following outdoor features at this school?**	
Q3A	Condition of school parking lots and roadways	0.08
Q3B	Condition of bus lanes and drop-off areas	0.08
Q3E	Condition of outdoor athletic facilities	0.08
Q3F	Condition of covered walkways	0.08
Question 5.	**What would probably be the total cost of all repairs/renovations/modernizations required to put this school's onsite buildings in good overall condition?**	
Q5	Cost of repairs/renovations/modernizations	0.31
Question 7.	**How satisfactory is each environmental factor in the permanent and portable (temporary) onsite buildings at this school?**	
Q7AA	Permanent buildings' artificial lighting	0.36
Q7AB	Portable buildings' artificial lighting	0.11
Q7BA	Permanent buildings' natural lighting	0.17
Q7BB	Portable (temporary) buildings' natural lighting	0.11
Q7CA	Permanent buildings' heating	0.32
Q7CB	Portable (temporary) buildings' heating	0.22
Q7DA	Permanent buildings' air conditioning	0.26
Q7DB	Portable (temporary) buildings' air conditioning	0.22
Q7EA	Permanent buildings' ventilation	0.12
Q7EB	Portable (temporary) buildings' ventilation	0.22
Q7FB	Portable (temporary) buildings' indoor air quality	0.11
Q7GB	Portable (temporary) buildings' water quality	0.11
Q7HA	Permanent buildings' acoustics/noise control	0.17
Q7HB	Portable (temporary) buildings' acoustics/noise control	0.11
Question 8.	**In what year was this school's main instructional building constructed?**	
Q8	Construction of main instructional building	0.12
Question 9.	**In what year was the last major renovation of the main instructional building?**	
Q9BOX	No major renovation	0.35
Q9	Major renovation	0.60

See notes at end of table.

Table 1. Weighted percent of public schools with imputed data, by questionnaire item: 2012–13—Continued

Questionnaire item		Percent imputed (weighted)
Question 10.	**In what year was the last major building replacement or addition made to this school?**	
Q10BOX	No major addition/replacement	0.32
Q10	Last major building replacement/addition	0.51
Question 11.	**Is any major repair/renovation/modernization work currently being performed at this school?**	
Q11	Current repair/renovation/modernization work	0.08
Question 13.	**Which of the following building systems or features at this school, if any, have major repairs, renovations, or replacements planned for the next 2 years? If major repairs, renovations, or replacements are planned for a building system or feature, what is the main reason for the planned major repair, renovation, or replacement?**	
Q13BB	Reason for major repair/replacement/renovation to framing, floors, foundations	0.53
Q13IA	Planned renovation/repair/replacement to ventilation/filtration system	0.12
Q13IB	Reason for major repair/replacement/renovation to ventilation/filtration system	1.09
Question 14.	**Is there a written long-range educational facilities plan for this school?**	
Q14	Written long-range educational facilities plan	0.12
Question 15.	**Has this school had the following performed by qualified professionals within the last 5 years?**	
Q15A	Inspected condition of physical features of the facility	0.10
Q15B	Evaluation of energy use	0.10
Q15C	Evaluation of indoor environmental hazards	0.10
Question 16.	**Have any of the following been done within the last 5 years to improve energy efficiency at this school?**	
Q16A	Replaced lighting fixtures, lighting ballasts, or bulbs	0.10
Q16B	Installed motion sensors for lighting	0.10
Q16C	Upgraded insulation, outer walls, and/or siding	0.10
Q16D	Replaced windows and/or doors	0.10
Q16E	Installed/upgraded reflective roof coating	0.19
Q16F	Installed efficient HVAC systems	0.10
Q16G	Installed/upgraded energy management system	0.10

NOTE: Percents are calculated as the weighted number of imputed cases divided by the weighted number of questionnaire respondents for whom the question applied (i.e., respondents instructed to skip the question are excluded from the base). Only questionnaire items with missing data are listed in the table. The final full sample weights (AWT) were used to compute statistics in this table.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Condition of Public School Facilities: 2012–13," FRSS 105, 2013.

Weighting Procedures and Sampling Errors

The response data were weighted to produce national estimates (see table 2). The weights were designed to reflect the probabilities of selection of the sampled schools and were adjusted for differential unit (questionnaire) nonresponse. FRSS survey data are based on complex sample designs that require the use of weights to compensate for variable probabilities of selection, differential response rates, and possible deficiencies in the sampling frame. The reciprocal of the probability of selection, referred to as the "base weight," will produce unbiased (or consistent) estimates of population totals and ratios if there is no nonresponse in the survey. Since a stratified sample design was employed for the survey, the base weight for the *i*-th school in stratum *h* was computed as $w_{hi}=1/fh$ where *fh* is the overall sampling rate used to select schools in stratum *h*.

Although the survey had a high response rate, adjustment of the base weights was necessary to compensate for the survey nonrespondents (i.e., whole questionnaire or unit nonresponse). The

nonresponse weighting adjustments were made within classes defined by school instructional level, community type, and school enrollment size. Within the final weighting classes, the base weights (i.e., the reciprocal of schools' probabilities of selection) of the responding schools were inflated by the inverse of the weighted response rate for the class.

The survey findings are presented in a *First Look* report titled *Condition of America's Public School Facilities: 2012–13* (NCES 2014-022). The reported findings are estimates based on the sample selected and, consequently, are subject to sampling variability. The standard error is a measure of the variability of an estimate due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard errors below to 1.96 standard errors above a particular statistic would include the true population parameter being estimated in about 95 percent of the samples. This is a 95 percent confidence interval. For example, the estimated percent of public schools with portable buildings is 31 percent, and the standard error is 1.4 percent. The 95 percent confidence interval for the statistic extends from 31 – (1.4 x 1.96) to 31 + (1.4 x 1.96), or from 28.3 to 33.7 percent.

Because the data from the FRSS survey on the condition of public school facilities were collected using a complex sampling design, the variances of the estimates from this survey (e.g., estimates of proportions) are typically different from what would be expected from data collected with a simple random sample. Not taking the complex sample design into account can lead to an under- or overestimation of the standard errors associated with such estimates. Estimates of standard errors were computed using a technique known as jackknife replication. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic. To construct the replications, 100 stratified subsamples of the full sample were created and then dropped one at a time to define 100 jackknife replicates. A computer program (WesVar) was used to calculate the estimates of standard errors using the JK1 option.

Table 2. Number and percentage of responding public schools in the study sample, and estimated number and percentage of public schools the sample represents, by school characteristics: 2012–13

School characteristic	Respondent sample (unweighted)		National estimate (weighted)[1]	
	Number	Percent	Number	Percent
All public schools	**1,591**	**100**	**84,000**	**100**
School instructional level				
Elementary	1,023	64	62,600	75
Secondary	514	32	18,900	23
Combined	54	3	2,400	3
School enrollment size				
Less than 300	240	15	20,000	24
300 to 599	557	35	35,500	42
600 or more	794	50	28,500	34
Community type				
City	405	25	21,200	25
Suburban	477	30	23,500	28
Town	217	14	10,900	13
Rural	492	31	28,400	34

See notes at end of table.

Table 2. Number and percentage of responding public schools in the study sample, and estimated number and percentage of public schools the sample represents, by school characteristics: 2012–13—Continued

School characteristic	Respondent sample (unweighted)		National estimate (weighted)[1]	
	Number	Percent	Number	Percent
Percent of students eligible for free or reduced-price lunch				
Less than 35 percent	525	33	26,300	31
35 to 49 percent	298	19	15,500	18
50 to 74 percent	443	28	22,800	27
75 percent or more	325	20	19,400	23

[1] Weighted count of responding schools using the final full sample weights (AWT). The weighted count is an estimate of the number of eligible schools in the study universe (see text for definition of the types of schools included in the study).
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System (FRSS), "Condition of Public School Facilities: 2012-13," FRSS 105, 2013.

Nonsampling Errors, Coding, and Editing

The survey estimates are subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in data collection. These errors can sometimes bias the data. Nonsampling errors may include such problems as misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used.

To minimize the potential for nonsampling error, the questionnaire was pretested with district-level personnel who were very familiar with the school facilities in the district. During the design of the survey and the survey pretest, an effort was made to check for consistency of interpretation of questions and definitions and to eliminate ambiguous items. The questionnaire and instructions were also extensively reviewed by NCES.

Editing of the questionnaire responses was conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone. A coding source file and editing specifications were used to produce the codebook. The codebook served as the main tool for coding, editing, and processing completed questionnaires. Coders used the codebook to identify cases requiring data retrieval or clarification and prepare cases for entry into the web application. The source file served as a data dictionary and included the data file layout, a description of each data item, a list of valid response codes or range formats with codes for nonresponse and inapplicable, and defined skip patterns.

Logics, ranges, and validation checks were prepared prior to data collection and included online edit checks, manual logic checks, and automated checks using SAS. Online checks were incorporated into the web application and manual edits were conducted to process cases received by mail, fax, or telephone. Steps were taken to ensure that the method of entering data from web and hardcopy questionnaires was the same, regardless of mode. For example, to enter survey data received by mail, fax, or telephone, the data processing staff accessed the survey website as "respondents" and "completed" the survey using the responses on the hardcopy survey. Subjecting all survey responses to the same set of built-in logics, ranges, and validation checks helps to ensure that data entry does not produce systematic differences in

the survey data. In addition, all hardcopy data were subject to 100 percent verification using "doublekeying."

Definitions of Selected Analysis Variables

Many of the school characteristics, described below, may be related to each other. For example, school enrollment size and community type are related, with city schools typically being larger than rural schools. Other relationships between these analysis variables may exist.

Instructional level (S_LEVEL)—Schools were classified according to their grade span in the 2010–11 CCD Public School Universe file. The categories for analysis differed from the categories used for sampling (the sampling categories are described in the section above for "Sample and Response Rates."

Elementary school—had grade 6 or lower and no grade higher than grade 8

Secondary school—had no grade lower than grade 7 and had grade 7 or higher

Combined school—had grades lower than grade 7 and higher than grade 8

Enrollment size (SIZE)—This variable indicates the total number of students enrolled in the school based on data from the 2010–11 CCD Public School Universe file. The variable was collapsed into the following three categories:

Less than 300 students
300 to 599 students
600 or more students

Community type (URBAN)—This variable indicates the type of community in which the school is located, as defined in the 2010–11 CCD Public School Universe file. These codes are based on the location of school buildings. The urban-centric locale codes are assigned through a methodology developed by the U.S. Census Bureau's Population Division in 2005. This classification system has four major locale categories—city, suburban, town, and rural—each of which is subdivided into three subcategories. This variable was based on the 12-category urban-centric locale variable from CCD and collapsed into the four categories below.

City—Territory inside an urbanized area and inside a principal city

Suburban—Territory outside a principal city and inside an urbanized area

Town—Territory inside an urban cluster

Rural—Territory outside an urbanized area and outside an urban cluster

Percent of students eligible for free or reduced price lunch (POVST3)—This variable serves as a measure of the concentration of poverty at the school. This variable is based on data in the 2010–11 CCD Public School Universe file. This variable was collapsed into the four categories below.

Less than 35 percent
35 to 49 percent
50 to 74 percent
75 percent or more