SAMPLE DESIGN AND ESTIMATION PROCEDURES FOR THE OFFICE FOR CIVIL RIGHTS, U.S. DEPARTMENT OF EDUCATION ELEMENTARY AND SECONDARY SCHOOL SURVEYS

Joseph Croos, Westat; Adam Chu, Westat; and Peter McCabe, Office for Civil Rights, U.S. Dept. of Education
Joseph Croos, Westat, 1650 Research Boulevard, Rockville, Maryland 20850

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1. Introduction

An important function of the Office for Civil Rights (OCR), United States Department of Education, is to monitor compliance with civil rights laws prohibiting discrimination in federally assisted education programs and activities. The applicable civil rights laws include: (a) Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin in the assignment of students to schools, classes, or ability groups and tracks; (b) Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against students on the basis of handicap; and (c) Title IX of the Education Amendments of 1972, which prohibits discrimination on the basis of sex. Since 1968, OCR has conducted the Elementary and Secondary (E&S) School Survey to obtain relevant descriptive data needed to effectively monitor compliance with federal civil rights laws. The E&S School Survey has also been used by social scientists and civil rights advocacy groups conducting research on discriminatory practices.

The primary objective of the E&S School Survey is to provide a historical record of the distribution of students enrolled in public schools by selected demographic and other characteristics. Specifically, the E&S School Survey is used to develop state and national estimates of the numbers of students in various educational programs and disciplinary categories by race/ethnicity and gender. Typically, the estimates are derived from a probability sample of over 5,000 public school districts and the roughly 50,000 elementary and secondary schools operated by them. Currently, about half of the sampled school districts submit E&S survey data on hard copy forms, while the remaining half submit the required data over the internet or on data diskettes using special-purpose data entry software. Although the use of electronic modes of data collection has greatly simplified receipt control and data processing, it is still necessary to enter, clean, edit, review, and reconcile over 12 million school-data items.

The response rates achieved in the E&S School Surveys have been exceptionally high. For example, in the 1998 E&S School Survey, over 95 percent of the eligible districts and 99 percent of the associated schools completed the requisite survey forms. Nonetheless, it is not unusual for some districts and schools to either submit incomplete data, or to refuse to participate in the survey entirely. When either type of nonresponse occurs, statistical adjustments are used to compensate for the missing data. This paper summarizes the statistical procedures used to develop national and state-level estimates from OCR's E&S School Surveys and discusses how the observed levels of nonresponse may affect the quality and interpretation of the survey data.

2. The E&S School Survey

The E&S School Survey, which is conducted at roughly two-year intervals, collects both district-level and school-level data. District-level data are reported on the ED101 form. The ED101 is used to collect district-level data on total membership, number of children awaiting initial evaluation for special education, number of children with disabilities covered under the *Individuals with Disabilities Education Act* (IDEA), number of children served under Section 504 of the *Rehabilitation Act* of 1973 and other statistics.

School-level data are reported on the ED102 form. The ED102 form is used to collect school-level data on membership (enrollment) by gender and race/ethnicity, for categories of students defined by different types of disabilities, participation in gifted and talented and advanced placement programs, receipt of high school diploma or certificate of completion, type of disciplinary action (suspension, expulsion, corporal punishment), participation in limited English proficiency (LEP) programs, and other characteristics. In response to evolving data needs, new items are occasionally added to the ED101 and ED102 forms. For example, beginning in 1998, data on the numbers of students participating in state-required testing for grade-to-grade promotion and graduation were added to the ED102. Additional details about the data collected in the E&S School Survey can be obtained from OCR's website: www.ed.gov/offices/ocr.

Sample Design

The E&S School Surveys are generally administered to nationally representative samples of public school districts and schools. An exception was the 2000 E&S School Survey, which was administered to all (i.e., the universe of) existing districts and schools. The sample design employed for each of the 1994, 1997, and 1998 E&S School Surveys was a stratified cluster sample design in which districts were selected in the initial stage of sampling and all schools within the selected districts were included in the sample in (what essentially was) the final stage of sampling. Although the designs have varied slightly from survey to survey, they all featured stratification by state and district

enrollment within state. Designating state as the primary stratifier was intended to ensure that state-level estimates would be reasonably precise for all states.

The sampling frames (universe files) for the E&S School Surveys were developed from the most recent National Center for Education Statistics (NCES) Common Core of Data (CCD) public school agency files. The sampling frames included regular independent districts, school district components in supervisory unions, and regional educational service agencies (RESA). For sampling purposes, up to six broad size strata (defined in terms of district-wide enrollment) were specified. For example, the following size strata were used in the 1998 E&S School Survey: (1) 300 or less; (2) 301 to 1,500; (3) 1,501 to 3,000; (4) 3,001 to 5,000; (5) 5,001 to 25,000; and (6) 25,001 or more. Within each size class, districts were further substratified by minority status (i.e., "high" vs. "low") according to whether the percent minority enrollment of the district was above or below the corresponding state-wide median percentage of all districts in the same size class.

As specified by OCR, districts meeting selected criteria are included in the sample with certainty. Generally, the certainty selections have included (but are not necessarily limited to):

- School districts under Justice Department-initiated court orders;
- School districts that were selected for but did not participate in the previous E&S School Survey;
- School districts in states with fewer than 25 districts;
- School districts with enrollment exceeding 25,000 students; and
- Regional education service agencies (RESA) in states with 13 or fewer RESAs.

For the 1998 E&S Survey, 1,437 districts were designated as certainties according to criteria provided by OCR. Note that apart from the districts with total enrollment exceeding 25,000 (and to some extent those districts in states with fewer than 25 districts), there was no statistical basis for including the specified districts in the sample with certainty. In other words, the automatic inclusion of the other types of districts did little to improve overall sampling precision, even though with proper weighting no biases were introduced.

As mentioned earlier, the sample design for the E&S School Survey was driven mainly by the need to obtain state-level estimates with adequate precision. This meant that states with relatively small numbers of public school students had to be "oversampled" to meet the desired precision levels. Thus, using an algorithm provided by OCR, the noncertainty sample of school districts was allocated to states in a manner that took account of both the size of the state and the need to obtain minimum acceptable levels of precision for all states. Table 1 summarizes the distribution of the noncertainty (nonRESA) sample selected for the 1998

E&S School Survey by number of students in the state. As can be seen in the table, districts in states with fewer than 250,000 students were sampled at roughly 1.75 times the rate of those in states with more than 1,000,000 students. Finally, within each state, the specified sample size was allocated to size/minority status strata in rough proportion to the sum of the square root of the enrollment of districts in the stratum. Additional details about the allocation and selection of the district samples are given in *Fall 1998 Elementary and Secondary School Civil Rights Compliance Report, Projections and Documentation*, U.S. Department of Education (2000).

Table 1. Distribution of noncertainty districts in the 1998 E&S School Survey by size of state

Number of students in state*	No. states†	Total districts*	Sampled districts*
Under 250,000	12	1,864	868
250,000 to 499,999	10	2,425	915
500,000 to 749,999	8	1,454	535
750,000 to 999,999	6	1,690	554
1,000,000 or more	8	5,608	1,480
Total	44	13,041	4,352

* Excludes OCR-designated certainty districts and RESAs.
† Excludes states for which all districts were sampled.

In general, all operating schools within the sampled districts were included in the survey. The only exception has involved a school district in one state in which "regular" schools were subsampled at a rate of 1 in 2 to reduce respondent burden. Thus, for example, 55,769 operating schools were included in the 1998 E&S School Survey. As summarized in Table 2, of the 5,898 sampled districts (including RESAs and certainty districts), 39 (0.7%) were determined to be ineligible (e.g., closed, no longer in operation). Of the remaining 5,859 eligible districts, 5,575 participated (responded) in the study for an overall district response rate of 95 percent. Within the 5,575 responding districts, 55,769 operating schools were identified and "sampled." Of these, 55,340 completed the ED102 form for a conditional school-level response rate (conditioned on the responding districts) of 99 percent. Thus, the overall school response rate was 94 percent.

Table 2. Number of districts and schools in the 1998 E&S School Survey by response status

Response status of district	Sampled districts	Sampled schools	Responding schools
Respondent*	5,575	55,769	55,340
Nonrespondent	284	——	——
Ineligible†	39	——	——
Total	5,898	55,769	55,340

* Districts for which at least one school completed the ED102 form.
† Closed districts, districts that had consolidated with another district, etc.

The 2000 E&S School Survey

Unlike the previous surveys, the 2000 E&S School Survey was based on a complete enumeration (census) of the 16,341 districts in existence at the time. Of the 16,341 districts, 1,252 (8%) were determined to be ineligible (e.g., closed, merged with another district, etc.). Of the remaining 15,089 eligible districts, 14,645 participated in the study for an overall district response rate of 97 percent. Within the 14,645 responding districts 87,954 operating schools were identified. The conditional school-level response rate was 99.95 percent. Thus, at 97 percent, the overall school response rate for the 2000 E&S School Survey was somewhat higher than in previous years.

The 2002 and 2004 Sample Design

The next two rounds of the E&S School Surveys are expected to be conducted in 2002 and 2004. The sample design for these two surveys will be part of a "rolling stratified sample design," with the 1998 sample design serving as the starting point. Under this design, each subsequent sample is selected in a way that minimizes overlap with the preceding sample to the extent feasible. The procedures to be used to accomplish this objective are designed to avoid introducing biases and inefficiencies that would otherwise occur by simply excluding prior sample selections from the current sampling process. To select the 2002 and 2004 samples, the overlap minimization procedures described in Chowdhury, Chu, and Kaufman (2000) will be used.

Briefly, the overlap minimization procedures will involve the following steps. First, the sample design for the new survey (e.g., the 2002 survey) will be developed. This part of the sampling process can be done independently of the designs used in prior surveys. For example, different modes of stratification or different sample allocation schemes can be used if desired. However, it is anticipated that the basic features of the sample design for 2002 and beyond will closely resemble those employed in prior years. Next, within the strata established for the new survey, districts will be placed into one of the following four categories depending on their desired target selection probabilities, P_c, their selection probabilities under the original (previous) design, P_o, and their prior sample selection status:

(1) $P_c > 1 - P_o$ and selected for the original sample;

(2) $P_c > 1 - P_o$ but not selected for the original sample;

(3) $P_c \leq 1 - P_o$ and selected for the original sample; or

(4) $P_c \leq 1 - P_o$ but not selected for the original sample.

Depending on the category to which they are assigned, districts will then be selected with conditional probabilities, P_{cond}, defined as follows:

$P_{cond} = \{P_c - (1 - P_o)\}/P_o$ for districts in category (1); $P_{cond} = 1$ for districts in category (2); $P_{cond} = 0$ for districts in category (3); and $P_{cond} = P_c/(1 - P_o)$ for districts in category (4). It can be shown that this sampling scheme minimizes the overlap between the new and previous samples, while maintaining the desired probabilities of selection for the new sample (Chowdhury, *et. al.*, 2000).

3. Weighting and Estimation

Analysis of school-level (ED102) data from the E&S School Surveys generally requires the use of weights to compensate for variable probabilities of selection and differential response rates. For example, the estimated total for a survey item, *Y*, for state *s* is computed as the weighted sum of school-level data using weights that reflect the schools' overall selection probabilities and adjustments for nonresponse. Specifically, let y_{sji} denote the reported value of a survey item for the *i*th school in district *j* in state *s*, and let w_{sji}^{sch} denote the corresponding final school weight. The estimated (projected) total for state *s* is given by:

$$\hat{y}_s = \sum_{j=1}^{m_s} \sum_{i=1}^{n_{sj}} w_{sji}^{sch} y_{sji} \tag{1}$$

where the first sum extends over the m_s responding districts in the state and second sum extends over the n_{sj} responding schools in the *j*th district in the state. Note that the corresponding national estimates are obtained by simply adding up the individual state estimates.

An important goal of the weighting process is to develop school weights that are effective in compensating for sample losses due to nonresponse. As discussed in Kalton (1983, page 63), adjusting the weights of the responding schools within classes that are homogeneous with respect to response rates can often be effective in reducing nonresponse biases for a broad range of survey items. For the E&S School Surveys, response rates have varied by state at both the district and school level. As indicated in Table 3, district-level response rates in the 1998 E&S School Survey varied from slightly more than 85 percent to 99 percent or greater. School level response rates within the responding districts (i.e., "conditional" response rates) were much less variable, with over 90 percent of the states reporting conditional school-level response rates of 99 percent or higher. Within states, response rates also varied by district size class, with small districts typically having lower response rates than large districts.

Table 3. Distribution of states in 1998 E&S School Survey by district and school response rate

District response rate	Conditional school response rate			
	90-96	97-98	99+	Total
85 to 89	1	0	3	4
90 to 94	0	1	8	9
95 to 96	0	0	16	16
97 to 98	1	0	12	13
99+	0	1	8	9
Total	2	2	47	51

In view of the above considerations, nonresponse adjusted school weights for the 1997 and 1998 E&S School Surveys have been derived using the following procedures. First, a nonresponse-adjusted district weight was calculated to compensate for the eligible sampled districts that did not respond to the survey. The nonresponse-adjusted weight for the jth responding district in stratum h in state s was computed as:

$$w_{shj}^{dist} = A_{sh}/B_{sh} \qquad (2)$$

where A_{sh} is the total number of eligible districts in stratum h in state s, and B_{sh} is the corresponding number of sampled and responding districts in stratum h in state s. Note that the reciprocal of the weight defined by (2) can be viewed as the probability that district shj was selected for and responds to the survey.

Finally, to compensate for school-level non-response, the final (nonresponse-adjusted) weight for the ith school in district j in state/stratum sh was computed as:

$$w_{shji}^{sch} = w_{shj}^{dist}\left(N_{shj}/n_{shj}\right) \qquad (3)$$

where N_{shj} is the total number of operating schools in district j in state/stratum sh, and n_{shj} is the corresponding number of schools that completed the ED102 form.

4. Item Nonresponse and Imputation

Item nonresponse occurs when a respondent refuses or is unable to provide data for some (but not all) items on the school-level form (ED102). The overall item response rates in the E&S School Surveys are generally very high as illustrated in Table 4. Response rates varied by item, with the disability items having the lowest response rates.

Despite the high response rates, it was necessary to impute or estimate values for the missing items to avoid understating population totals. An efficient imputation method was developed to process over 200 analysis variables collected from the sampled schools. The imputation procedures developed for the E&S School Surveys are summarized below.

Missing values for membership (enrollment) were imputed first. Missing values for race/ethnicity categories were derived using (a) race/ethnicity

distributions reported in the NCES CCD file; (b) race/ethnicity distributions reported in the ED102 for other schools in the same district; or (c) race/ethnicity distributions reported in the ED102 for other schools in the same stratum (defined by enrollment size and minority status of the district).

Table 4. Distribution of states in 1998 E&S School Survey by average item response rate

Item[*]	Average item response rate			
	<85	85-89	90-97	98+
Membership	0	0	0	51
Corp. punishment[†]	1	0	1	21
Suspensions	1	0	0	50
Expulsions	1	0	3	47
Mental retardation	1	3	20	27
Ser. emotion. dist.	2	10	27	12
Specific learn. disab.	2	1	22	26
HS diploma	0	0	2	49
HS certificate	0	0	2	49
In need of LEP	0	0	1	50
Enrolled in LEP	1	2	23	25
Gifted/talented	0	0	2	49
Adv. place. math	0	0	0	51
Adv. place. science	0	0	0	51

* See ED102 form for definitions.
† Excludes 28 states that ban corporal punishment.

Next, the remaining data items were imputed in separate imputation modules. Each module consisted of sets of related variables (e.g., variables related to suspensions, expulsions, and corporal punishment were included in one module, while variables on disabilities were included in another). In general, a missing value for a school was imputed using a "cell means" approach in which a district-wide or stratum-wide prevalence ratio was applied to the known membership (either reported or imputed) of the school. The prevalence ratio was computed as the ratio of the sum of the data item for all responding schools in a district or stratum to the corresponding sum of the membership counts. Separate ratios were computed for elementary and secondary schools. Variants of this procedure were applied to some variables. For example, a missing count of students enrolled in LEP programs was imputed by applying a district or stratum ratio to the corresponding nonmissing count of students in need of LEP programs, where in this case, the ratio used for imputation represented the proportion of students in need of LEP programs that were enrolled in LEP programs.

Checks were made to ensure that extreme values were not introduced and that the logic of the complex interrelationship among the analytic variables was maintained. Extensive descriptive statistics were produced to ensure that the distributions of the analysis

variables were not seriously altered by the imputation process.

5. Levels of Precision

In general, estimates derived from the E&S School Surveys are subject to sampling variability. (Estimates from the 2000 E&S School Survey, which was a "census" of all districts and schools, are theoretically not subject to sampling error.) Let y_{shji} denote the value (reported or imputed) of a survey item for school i in district j in stratum h in state s. The standard error (*SE*) of the corresponding estimated state total, $\hat{y}_s$, was computed using standard formulas for stratified samples (e.g. see Cochran, 1977, page 95):

$$SE(\hat{y}_s) = \sqrt{\sum_{h=1}^{L} A_{sh}^2 \left(1 - \frac{B_{sh}}{A_{sh}}\right) \frac{s_{csh}^2}{B_{sh}}} \qquad (4)$$

where

$$s_{csh}^2 = \frac{\sum_{j=1}^{B_{sh}} \hat{y}_{shj}^2 - B_{sh}^{-1} \left(\sum_{j=1}^{B_{sh}} \hat{y}_{shj}\right)^2}{B_{sh} - 1} \qquad (5)$$

$$\hat{y}_{shj} = \sum_{i=1}^{n_{shj}} \left(N_{shj} / n_{shj}\right) y_{shi}. \qquad (6)$$

The standard error of the corresponding national estimate is given by:

$$SE\left(\sum_{s=1}^{51} \hat{y}_s\right) = \sqrt{\sum_{s=1}^{51} SE^2(\hat{y}_s)}. \qquad (7)$$

To compare the precision of statistics of widely different orders of magnitude, it is convenient to express the standard error in relative terms. The coefficient of variation (*CV*) is defined to be the ratio of the standard error to the estimate (expressed as a percentage). Table 5 summarizes the *CV*s of selected national estimates obtained from the 1998 E&S school Survey. The *CV*s are generally small for estimates aggregated across all race/ethnicity groups, typically ranging from 1 to 3 percent of the estimated total. (An exception is for estimates of the number of students receiving high school certificates of completion, where the *CV* is around 8%.) The *CV*s of the corresponding estimates by race/ethnicity tend to be larger for minority groups and smaller for white, nonHispanic students.

To illustrate the corresponding levels of precision for state estimates, Table 6 shows the distribution of states by the *CV* achieved in the study for selected survey items. As can be seen in this table, *CV*s below 5 percent were achieved for the majority of states for membership, suspensions, the three types of disability, high school diploma, and gifted/talented programs.

For the remaining items, the *CV*s were no more than 10 percent for most of the states. The items with the

largest sampling errors included high school certificates and advanced placement science for which almost half of the states achieved *CV*s of 10 percent or greater.

Table 5. Selected national estimates* from the 1998 E&S School Survey

Race/ ethnicity	Membership		Diploma		LEP program	
	Est.	CV	Est.	CV	Est.	CV
Amer. Ind.	512	2.9	21	4.1	64	11.2
Asian/Pac.	1,877	3.3	115	3.3	412	3.9
Hispanic	6,905	3.4	252	3.0	2,146	3.5
Black†	7,886	2.3	316	2.0	68	5.9
White†	28,825	0.4	1,733	0.7	175	4.6
Total	46,004	1.1	2,438	1.0	2,866	3.3

* Estimates are counts of students (in 1,000s). *CV*s are expressed as a percentage of the estimate.
† Not of Hispanic origin.

Table 6. Distribution of states in 1998 E&S School Survey by *CV* of estimated totals

Item*	CV† of estimated total			
	<1%	1-4.9%	5-9.9%	10%+
Membership	11	39	0	1
Corp. punishment†	31	7	4	9
Suspensions	5	35	8	3
Expulsions	5	12	20	14
Mental retardation	6	31	12	2
Ser. emotion. dist.	4	32	11	4
Specific learn. disab	6	42	2	1
HS diploma	9	34	6	2
HS certificate	5	11	11	24
In need of LEP	5	16	18	12
Enrolled in LEP	5	17	18	11
Gifted/talented	6	22	17	6
Adv. place. math	4	15	16	16
Adv. place. science	5	9	15	22

* See ED102 form for definitions.
† Excludes 28 states that ban corporal punishment.

6. Discussion

National and state estimates derived from the E&S School Surveys are subject to both sampling and nonsampling errors. Sampling errors are not "mistakes" in the data *per se*, but rather reflect the uncertainty (i.e., variability) in the estimates due to sampling. As discussed previously, the sampling errors for the majority of states have been relatively small for many survey items. Nonsampling errors, on the other hand, arise from sources such as imperfections in the sampling frame, measurement errors, and nonresponse. Unlike sampling errors, nonsampling errors generally cannot be measured directly from the survey.

Imperfections in the sampling frame can lead to noncoverage bias. However, OCR makes an effort to update the frame of public school districts and RESAs

prior to sample selection. Thus, undercoverage bias in the E&S School Surveys is expected to be minimal.

Measurement or reporting errors in the E&S Surveys can occur as a result of improper interpretation of a questionnaire item, absence of relevant administrative records needed to provide the requested information, data entry errors, and other factors. Without formal verification efforts, however, there is no way of quantifying the potential bias due to measurement error. In the E&S School Surveys, steps are taken to minimize reporting errors by frequently updating and clarifying the instructions in the ED101 and ED102 forms. Also, OCR employs extensive data editing protocols that are designed to identify and possibly correct unusual values in the reported data. Although steps are taken to minimize the potential for measurement errors in the E&S Surveys, the magnitude of such errors is unknown.

Even though nonresponse rates in the E&S School Surveys are low, missing data (either at the school level or at the item level) will contribute to bias in the survey estimates. Ignoring the other sources of nonsampling error mentioned earlier, it is possible to speculate on the size of the bias resulting from nonresponse. The bias of an estimated total, $\hat{y}_R$, derived from the E&S School Survey is defined to be the difference between the expected value of $\hat{y}_R$ (over all possible samples) and the corresponding "true" population total, Y. Assuming that the only source of bias is nonresponse, the bias can be expressed approximately as:

$$Bias(\hat{y}_R) = N(1 - W_R)(\overline{Y}_R - \overline{Y}_S) \qquad (8)$$

where N is the number of schools in the population, W_R is the response rate and $\overline{Y}_R$ and $\overline{Y}_S$ are the mean values of the survey item for respondents and nonrespondents, respectively (e.g., see Kalton, 1983, page 7). As can be seen in equation (8), the bias is a function of both the response rate (the lower the response rate, the greater the bias) and the difference in the mean value of the item being estimated between the respondents and nonrespondents. Setting $\overline{Y}_S = k\overline{Y}_R$, the corresponding *relative* bias (i.e., the bias expressed as a percentage of the total being estimated) can be written as:

$$Relbias(\hat{y}_R) = \frac{100(1-k)}{\left(\dfrac{W_R}{1-W_R}\right) + k} \ . \qquad (9)$$

Table 7 summarizes the relative bias of a survey estimate for response rates ranging from 80 to 100 percent, and for values of k ranging from 0.5 to 1.5. In Table 7, a value of $k = 0.5$ means that the expected value of the survey item among the nonrespondents is 0.5 times the corresponding expected value among the respondents. The entries in Table 7 provide a range of

relative biases that can be expected under different assumptions about response rates and the degree of similarity between respondents and nonrespondents. In particular, it can be seen that when the response rate is close to 100 percent, the resulting biases will be small even for survey items for which there is a relatively large difference between respondents and nonrespondents. For example, with an overall response rate of 95 percent (the response rate achieved for most states for many survey items), the relative biases can be expected to be in the range of ±2.5 percent or less.

A measure of the total survey error is given by the relative root mean square error (*RRMSE*) defined as:

$$RRMSE(\hat{y}_R) = \sqrt{CV^2(\hat{y}_R) + Relbias^2(\hat{y}_R)}. \qquad (10)$$

For estimates for which the *CV* is negligible, the relative bias term in (10) essentially determines the total survey error. In particular, this would apply to those states in which all districts are sampled with certainty. For the remaining states, the *CV*s are expected to range from 1 to 10 percent for many survey items (see Table 6). Thus, with an overall response rate of 95 percent, the total survey error can be expected to be in the range of 2.7 to 10.3 percent. This should be interpreted as a lower bound on the possible magnitude of the total survey error in the E&S School Surveys, since it does not reflect all sources of nonsampling error.

Table 7. Relative bias by response rate and selected values of k

Ratio (k)	Survey response rate (W_R)				
	80%	85%	90%	95%	100%
0.5	11.1	8.1	5.3	2.6	0.0
0.7	6.4	4.7	3.1	1.5	0.0
0.9	2.0	1.5	1.0	0.5	0.0
1.1	-2.0	-1.5	-1.0	-0.5	0.0
1.3	-5.7	-4.3	-2.9	-1.5	0.0
1.5	-9.1	-7.0	-4.8	-2.4	0.0

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