CHAPTER 4

THE TEACHER DEMAND AND SHORTAGE SURVEY

4.1 Introduction

The purposes of the Teacher Demand and Shortage Survey are to assess the extent of demand for and shortages of elementary and secondary school teachers, identify teacher categories and types of schools and school districts for which shortages exist, and collect information that can be used to analyze relationships between teacher shortages and the policies of schools and school districts with respect to pay, benefits, recruitment and hiring. For the public school sector, the information is collected from a sample of school districts; for the private school sector it is obtained from a sample of schools.

This chapter has the same organization as the two preceding chapters. It has four sections covering the main phases of the survey operations: frame development and sampling (4.2); data collection procedures and associated errors (4.3); data processing and estimation (4.4); and evaluation of estimates (4.5). Most of the material in this chapter will refer to the public sector component of the Teacher Demand and Shortage Survey. The main features of the private sector component, especially for Round 2, have been described in Chapter 2, in connection with the School Survey.

In Round 1 of SASS there were two versions of the questionnaire for the Teacher Demand and Shortage Survey: one for public school districts and one for private schools. The public school district version was sent to school districts containing one or more of the public schools selected for the School Survey sample, plus a small sample of school districts with no schools. The private school version was sent to the same sample of schools that was used for the School and School Administrator Surveys. In Round 2, for the private school sector, a single questionnaire was used to collect the information for the School and the Teacher Demand and Shortage Surveys.

There were only a few changes in survey content between Rounds 1 and 2. To reduce the burden on respondents, a complex accounting-style matrix item that called for data on full-time equivalent (FTE) teachers and teaching positions by level and specialty was dropped. Items were added in Round 2 to collect information on demand for and shortages of librarians and on pension portability.

The initial sample for the public school sector in Round 2 consisted of 5,424 local education agencies. Of these 3.5 percent proved to be out of scope for the survey, and complete questionnaires were not obtained for some of the remainder. Further details on response rates appear in Tables 3.1 to 3.4.

4.2 Frame development and sampling

Target populations For the public school sector, the target population consists of U.S. public school districts, often called local education agencies (LEAs). An LEA is a local government agency administratively responsible for providing public elementary and/or secondary instruction and educational support services, operating under a public board of education. Some LEAs do not operate schools but hire teachers for schools in other LEAs; an example would be a special education program whose teachers are placed in regular schools. Such LEAs were included in the target population. LEAs that did not employ any teachers were excluded. Each school operated by either of two federal agencies, the Bureau of Indian Affairs and the Department of Defense, was treated as a separate LEA. In Minnesota and Missouri there were some schools operated by state agencies; these state agencies were not included in the LEA target population.

For the private school sector, the target population for Round 2 of the Teacher Demand and Shortage Survey consisted of all U.S. private schools operating in school year 1990-91. The design and selection procedures for the private school sample were described in Chapter 2, Section 2.2.

Design and selection of the Round 2 LEA sample As explained in Chapter 2, it would have been feasible to sample LEAs as a first step and then sample schools only in the selected LEAs. However, a simulation study of alternative designs led to the rejection of this approach because it would have substantially increased the sampling variability of school estimates (Wright, n.d.).

The basic design adopted was to include in the sample all LEAs associated with one or more sample schools. This design gave every LEA that operated schools a non-zero probability of selection, whose value could be calculated for each LEA selected. There were two exceptions to the basic approach:

(1) The Common Core of Data (CCD) frame for the school survey included some LEAs that hired teachers but did not operate any schools. The 1988-89 CCD frame used to select the school and LEA samples for Round 2 included 1,352 such LEAs. These LEAs were sorted by state, metropolitan area status, 3-digit ZIP code and LEA identification, and then a 1 in 10 systematic sample was selected. Of the 135 LEAs selected, only 43 were found to be hiring teachers during the survey reference period and therefore eligible for inclusion in the Teacher Demand and Shortage Survey.

(2) For three states, Delaware, Nevada and West Virginia, a simulation study prior to Round 1 showed that the sampling errors of LEA estimates would be quite large even though the proposed selection procedures would have included most of the LEAs in those states in the sample (Kaufman, 1991, p.27). In both Rounds 1 and 2, therefore, every LEA in those three states was treated as a separate stratum for the purpose of sampling schools, so that all of the states' LEAs were included in the sample.

As indicated in Chapter 2, Section 2.2, a pretest prior to Round 2 suggested that LEAs included in the sample for a second round would be less likely to respond than those being asked to participate for the first time. For this reason, the school sample overlap was controlled at 30 percent. At this level, the expected LEA overlap was 58 percent.

Frame evaluation As already noted in Chapter 2, Section 2.2, a comparison of public school estimates with counts from the Public Elementary/Secondary School Universe Survey of the Common Core of Data (CCD) series showed that 275 public school districts with only elementary schools (Class 1 districts) had not been included in the school frame based on the Quality Education Data (QED) list. As a result, the number of LEAs at the national level and especially for Nebraska were underestimated from the sample. These schools and hence the corresponding LEAs were included in the frame for Round 2.

4.3 Data collection procedures and associated errors

Data collection procedures for LEAs in Round 2 In the late Fall of 1990, advance letters were mailed to district superintendents for the sample LEAs to alert them to the planned SASS data collection activities for their districts. They were informed that a Census Bureau representative would be calling them soon to ask that they designate a staff member to take responsibility for completing the Teacher Demand and Shortage Survey questionnaire. After these calls were made, the survey questionnaires were mailed to the designated persons in December 1990 and January 1991.

About 5 weeks after the first mailing, there was a second mailing to the designated LEA respondents who had failed to respond by that time. For those who did not respond to the second mailing, Census Bureau field representatives made telephone followups to attempt to complete the questionnaires.

No reinterviews were conducted for the Teacher Demand and Shortage Survey. Frequently, more than one person in an LEA provided data for the initial response, which might have caused some difficulties in arranging for reinterviews, especially if conducted by telephone. As was done for all of the SASS basic surveys, Census Bureau regional office staff reviewed a sample of the questionnaires completed by field representatives in their telephone followups of nonrespondents. The procedures were the same as those described for the School Survey in Chapter 2, Section 2.3.

Time required for completion of questionnaire The public school district questionnaires for Round 2 included a final question "Not counting interruptions, how long did it take to complete this survey?" For questionnaires completed and returned by mail, this item was completed by the person responding for the school district; for questionnaires completed in followup telephone interviews, the item was completed by the interviewer. The median time for completion was 1 hour and 15 minutes, with an interquartile range of 90 minutes. About 5 percent of the districts required more than 5 hours to complete the questionnaire and 1 percent required more than 10 hours.

The State Data Project In Round 1, many LEA respondents to the Teacher Demand and Shortage Survey had difficulty completing two matrix items that called for detailed information on FTE teachers and positions by teaching level and specialty. Some of the state education offices suggested that they might be in a better position than the LEAs to report such data to NCES. A feasibility test of this approach was included in the 1990 SASS Pretest for Round 2 (Healy, 1990b).

Initially, 11 states were selected to participate in the test. For these states, data for several items on the Teacher Demand and Shortage Survey questionnaire were to be collected directly from the sample LEAs and also, independently and in computer-readable form, from the state education offices. Data from the two sources would be compared, on an item-by-item basis, for each of the sample LEAs.

Eventually, 7 state education offices were able to submit data tapes with the requested LEA data. Pretest interviews were completed for 82 of the 96 LEAs in the pretest sample for those states. For 24 of the 38 data elements compared, over 50 percent of the individual LEAs reported data that differed by 10 percent or more from the data provided by their state offices. On the basis of these results, NCES concluded that it would not be advisable to try to obtain data for LEAs from any states in Round 2 of SASS. It was also decided, as noted earlier in this chapter, that the matrix items on FTE teachers and positions would not be included in the survey questionnaire for Round 2.

This outcome does not necessarily rule out the collection from states, in future rounds of SASS, of some of the LEA data for the public Teacher Demand and Shortage Survey. In November 1991, NCES and the Council of Chief State School Officers convened a Workshop on Improving Reliability and Comparability of Staffing Data, the main purpose of which was to review the findings from the State Data Project. The participants concluded that state education agencies can report district-level data for selected items. The state participants expressed a desire to continue to work with NCES to develop a state reporting role in SASS, especially for the public Teacher Demand and Shortage Survey (Blank, 1992). However, the results of the State Data Project demonstrated that further research would be needed to better understand the nature of the discrepancies that were observed and to identify the specific items which could be adequately reported at the state level.

Nonresponse error Tables 4.1 to 4.3 show unweighted and weighted response rates for the LEA questionnaire for Rounds 1 and 2 and for the private school Teacher Demand and Shortage Survey questionnaire for Round 1 only (in Round 2 it was combined with the School Survey questionnaire, for which response rates are shown in Chapter 2, Tables 2.5 to 2.7). LEAs and private schools that were not operating in the school year of reference for the survey or failed to meet the definition for other reasons are excluded from the bases of the response rates. Table 4.4 shows, for LEAs in Round 2, the percentage of the initial sample that was excluded for such reasons. As explained below, under measurement errors, a few questionnaires that were initially counted as respondents were subsequently excluded from the survey estimates because of reporting errors that could not readily be corrected.

As shown in Table 4.1, Round 1 response rates for LEAs were about 25 percentage points higher than those for the private school Teacher Demand and Shortage Survey questionnaire. For Round 2, the weighted LEA response rate was 93.6 percent, compared with 83.9 percent for the private School Survey questionnaire (which included the teacher demand and shortage items), so the gap between the public and private school sectors has narrowed somewhat. For both sectors the response rates increased between Rounds 1 and 2, in the face of a predicted decline as a result of expected lower response in Round 2 for LEAs and schools that had already been included in Round 1. Actually, in Round 2 the response rate for overlap LEAs (those that had been in the sample in Round 1) was about the same as the rate for nonoverlap LEAs.

The higher response rates in Round 2 may have been due in part to the elimination of the troublesome matrix items on FTE teachers and positions. For private schools in Round 1, when separate questionnaires were used, the response to the School Survey questionnaire was higher than the response to the Teacher Demand and Shortage questionnaire (78.6 percent versus 66.0 percent, weighted). Combining these two questionnaires for Round 2 may also have contributed to the higher response rates.

There was considerable variation in response rates within the public and private sectors. In Round 1, in the public sector, 17 states had weighted LEA response rates of 95 percent or better and only 1, Connecticut, was below 80 percent. In Round 2 there were 25 states with weighted response rates of 95 percent or better and, as before, only Connecticut was below 80 percent (Table 4.2). In the private sector, the weighted response rates to the Round 1 Teacher Demand and Shortage questionnaire by association group varied from a low of 38.8 percent to a high of 91.7 percent, with only 4 of 14 groups having response rates of 80 percent or higher (Table 4.3). For Round 2, the teacher demand and shortage items were included in the private school questionnaire, so the applicable response rates are those shown for schools in Table 2.7b, Chapter 2.

Data from published summaries of unweighted *item* response rates for the Teacher Demand and Shortage Survey are shown in Table 4.5. For Round 2, data are shown only for the LEAs, because the available data do not make it possible to distinguish teacher demand and shortage items from other items on the School Survey questionnaire for private schools. Most of the items with low response rates in Round 1 were associated with the two matrix items on FTE teachers and positions by field of assignment. Because of the low response rates and other indications of poor quality, no data based on these two questionnaire items were published and they were not included in the survey data files. In Round 2, which did not include these items, the overall level of item response was substantially improved.

Measurement errors associated with data collection For Round 1, at the time the weights were being applied to LEA data, it was observed that for some LEAs the numbers of students or teachers were much higher or lower than expected on the basis of prior year data for the same LEAs. A listing was prepared of all LEAs for which (a) reported counts of students or teachers differed by 35 percent or more from expected counts, or (b) the student/teacher ratio

was greater than 35 or less than 10. Reviewers of the listed cases identified 290 LEAs for which counts of students or teachers appeared to be incorrect, including 46 LEAs which appeared to have reported data for sample schools only, rather than the entire district.

Further review of the questionnaires for the 290 LEAs identified:

- Several cases where LEAs had merged and one case which was out of scope because all teachers and students were preschool.

- Thirty-three LEAs for which the entire questionnaire had been completed for a single school, rather than the entire LEA. (This is the converse of the situation discussed in Chapter 2, Section 2.5, where it was found that some Round 1 School Survey questionnaires had been completed for the entire district rather than the specified sample school.) These sample LEAs were reclassified as noninterview cases, reducing the response rate for the public Teacher Demand and Shortage Survey by slightly more than 1 percent.

As a result of these findings and the actions that were taken, the sample weights had to be recalculated. For the LEAs that were not reclassified as noninterviews, values that were clearly incorrect were replaced by imputed values, based primarily on other items from the same questionnaire or data on the sample file (Fondelier, 1990).

The 1990 Pretest of the Round 2 questionnaire for the public Teacher Demand and Shortage Survey identified some potential reporting problems (Healy, 1990a). One of these had to do with the categories used for grade level in questions about staffing and enrollment: pre-kindergarten, kindergarten, 1-6 and 7-12. Some districts use other grade structures for their school data, for example, kindergarten to 5, 6-8 and 9-12. In the pretest, 12 of 283 LEAs handled this problem by crossing out the grade level categories on their questionnaires and writing in new ones. This observation suggested the need for a clerical check of completed questionnaires to make adjustments in such cases.

Numerous instances of incomplete or incorrect reporting in the Pretest were observed with the matrix items that called for data on FTE teachers and positions by grade level and specialty. As noted earlier, these two items were dropped from the final questionnaire for Round 2.

A general observation from this review was that the quality of questionnaires returned by mail appeared to surpass that of the ones that had been completed by telephone follow-ups. The reviewer noted that the questionnaire is difficult to complete by telephone and that some of these cases were "quasi refusals", with respondents reluctantly providing minimal data.

Indications of response error in Round 2 of the public Teacher Demand and Shortage Survey come from several sources: an early review of unedited and edited questionnaires received from the field (Healy and Pasqualucci, 1991); memoranda submitted by Census regional offices following the completion of SASS data collection for Round 2 (Bureau of the Census,

1991a); a review of the forms completed by regional office staff for their reviews of questionnaires obtained by Census field representatives in telephone followups of mail nonrespondents (Pasqualucci, 1991); and a review of pre-edit reject rates, edit change tallies and post-edit item response rates (Jenkins, 1992a).

Types of response errors mentioned in these sources included:

- As noted in connection with the 1990 Pretest, a few respondents changed the grade level categories for reporting enrollments and staff, for example from 1-6 and 7-12 to 1-8 and 9-12. This was observed in the early review of incoming questionnaires and a procedure was added to the clerical edit to check for this type of alteration.

- As in Round 1, many respondents failed to record decimal entries in the manner intended for the items relating to FTE staff and graduation requirements. In most instances, such reporting errors can be detected and corrected either in clerical edits or as a result of consistency checks included in computer edits.

- Many respondents failed to observe skip instructions and unnecessarily completed an item on the overall range of base year teacher salaries in the district. This item was intended only for respondents who could not provide separate ranges for different levels of qualification. Failure to skip did not affect the accuracy of the data for these items.

- For two topics, one relating to FTE teachers and one to FTE librarians and media specialists, there were frequent discrepancies between component items and overall totals.

In most instances, it was possible to detect response errors of these kinds in the clerical and computer edits and to substitute correct or at least more nearly correct values on the basis of other information on the questionnaire or in the sample file, or from telephone contacts in the early stages of processing.

Comments from Census regional offices are also available for the Round 3 SASS Pretest, conducted during the first half of 1992. Those relating specifically to the public Teacher Demand and Shortage questionnaires dealt primarily with issues of respondent burden resulting from complexity and requirements to complete matrix-style items. Understanding of the FTE concept continues to be considered a problem; one Census field representative was quoted as saying "I have yet to find one respondent whom I feel really understands the concept of FTE" (Bureau of the Census, 1992).

4.4 Data processing and estimation

Data processing procedures The sequence and nature of the data processing procedures for the Round 2 LEA Teacher Demand and Shortage Survey were essentially the same as for the other basic SASS surveys. Processing procedures for the School Survey are described in Chapter 2, Section 2.4 and the sequence and location of processing steps are shown in Exhibit 2.1.

Imputation in Round 2 Items that were missing or failed range or consistency checks were imputed at various stages of processing in both Rounds 1 and 2. In the first phase of computer imputation, values were imputed by the application of logical rules to other data for the same LEA. Data sources for imputation of missing items included other items on the same questionnaire, LEA data from the Common Core of Data frame and, if all of the schools in an LEA had been included in the sample, data from the School Survey questionnaires for those schools. For items that could not be imputed in the first phase, a hot deck procedure based on responses for other LEAs with similar characteristics was used. Imputation flags were assigned in the same manner as described for schools in Chapter 2, Section 2.4.

Weighting The overall weights applied to LEA data for Round 2, like those used for the School and School Administrator Surveys, were the product of four factors: a basic sampling weight; a sampling adjustment factor; an LEA nonresponse adjustment factor; and a frame ratio adjustment factor.

Because of the method used to select the sample of LEAs, calculation of the basic sampling weights for LEAs was somewhat more complex than it was for schools, school administrators and teachers. For LEAs with no schools, the basic weight was 10, because 1 in 10 of these LEAs had been selected. For LEAs in Delaware, Nevada and West Virginia, the basic weight was 1, because all LEAs in those states were selected. For the remaining LEAs with schools, the basic sampling weight for an LEA was the inverse of one minus the product of the probability of no schools being selected from each of six strata that were used in selecting the sample of schools.

The other three factors used in the calculation of the overall weights were similar to those described for schools in Chapter 2, Section 2.4. Sampling adjustment factors were needed to account for unusual factors affecting an LEA's probability of selection, such a merger with another LEA, a split into two or more LEAs or duplicate listings of the LEA in the sampling frame. For the nonresponse and frame ratio adjustment factors, the definitions of adjustment cells and the collapsing rules were similar to those used for schools.

Variance estimation As described in Chapter 2, Section 2.4, a balanced half-sample replication (BHR) procedure has been used to estimate sampling errors for all SASS surveys. Replicate weights for use in estimating sampling errors by this procedure are included in all microdata files, so that users of these files can estimate sampling errors for items of interest to them. The majority of LEAs were selected through the sample of schools, and the 48 half

sample replicates for these LEAs were formed using the corresponding school replicates. An LEA was placed into an LEA replicate if any of the sample schools associated with the LEA had been included in the corresponding school replicate. LEAs that had been selected with certainty were included in all replicates, and a separate procedure was used to assign sample LEAs with no schools to replicates.

The BHR variance estimation procedure assumes sampling with replacement, whereas sampling without replacement is used for all of the SASS surveys. Violation of the assumption leads to BHR overestimates of the true variances, but the effects should be small unless the sampling fractions are quite large (Kaufman, 1991). For some states, the proportion of LEAs sampled is large, so large overestimates of variance are more likely to occur for the public Teacher Demand and Shortage Survey estimates for these states.

The public Teacher Demand and Shortage Survey is different from the other SASS surveys in that its unit for data collection and analysis, the LEA, is an aggregate of the sampling units, which are schools. This sample design leads to possible violation of a second assumption that is implicit in the BHR method of variance estimation, namely that the true variance is inversely proportional to the sample size. Kaufman (1992, 1993, 1994) has undertaken a series of simulation experiments to determine the extent of bias for the current variance estimation procedures and to evaluate some alternatives. One finding has been that the BHR variance estimates for the public Teacher Demand and Shortage Survey for Rounds 1 and 2 have been substantial overestimates. The extent of overestimation varies by state; for some states confidence intervals based on estimates plus or minus one standard error covered the corresponding population values more than 90 percent of the time (if the variance estimates were unbiased, this should happen about 68 percent of the time).

One of the simulation experiments evaluated two different weighting procedures: the one currently in use, in which the sampling weight for each LEA is the inverse of its selection probability, and an alternative "expected hits" weighting procedure, in which the weights are based on the selection probabilities of the sample schools within the selected LEAs. The alternative weighting procedure satisfies the second of the two assumptions of the BHR method of variance estimation and therefore should produce unbiased estimates of variances, using the BHR method, if sampling were done with replacement. This proved to be the case; however, for averages and ratios, the estimates based on expected hit weights had larger variances than those based on probability weights, so a change in the present weighting scheme was not deemed advisable.

The study also evaluated two different methods of variance estimation: the BHR and the bootstrap methods. In some respects the bootstrap method appears to work well, and it is being considered for use in future rounds of SASS. If this is done, it will still be possible for users to compute variances using any BHR program without modification (Kaufman, 1993, 1994).

4.5 Evaluation of estimates

Round 1 As noted in Section 4.2, some school districts in Nebraska that had only elementary schools were found to have been omitted from the Round 1 sampling frame based on the Quality Education Data list. Consequently, estimated numbers of LEAs, schools, teachers and students for Nebraska were low in Round 1.

Round 2: Post processing edit When the initial set of weighted estimates was available, the counts of school districts by state were compared with the 1988-89 CCD, which had served as the sampling frame for Round 2, and the numbers of teachers and students were compared with the corresponding data from the 1990-91 CCD, covering the same reference year. Eight states had SASS estimates of teachers or students that exceeded the CCD count by 15 percent or more. Examination showed that these overestimates resulted from the erroneous inclusion in SASS of school districts that were supervisory unions or other districts that did not hire teachers. All such districts were reclassified as out of scope and their data eliminated from the estimates.

Round 2: Evaluation of published estimates The final estimates, reflecting changes made in the post-processing edit, were again compared with CCD data by state. The estimated numbers of LEAs from SASS were compared with two counts from the 1988-89 CCD: the total number of LEAs and the number of regular LEAs. These comparisons were complicated by the fact that the character and definitions of LEAs vary by state: some of the LEAs not counted as regular in the CCD do hire teachers and were therefore eligible to be included in SASS.

For 14 states, the SASS estimate of LEAs differed from the CCD count of regular or total LEAs by 15 percent or more. Estimates for these states were reviewed in detail and in some instances state or local education agencies were called to obtain information about the nature of non-regular LEAs. For each of the 14 states, a CCD count of LEAs was determined that came as close as possible to meeting the SASS definition for eligible LEAs, and the SASS estimate was compared with that count. Based on this comparison, the SASS estimate was within 10 percent of the CCD count in 10 of the states and within 15 percent in the remaining 4 states.

Nationally, the SASS estimate of public school teachers, as reported by the LEAs, was 5.9 percent below the CCD count. There were 4 states whose SASS estimates were more than 15 percent below the CCD counts: Maryland, Michigan, New Mexico and Texas. The largest underestimate was for New Mexico, which was 18.6 percent below the CCD count. For enrollment, the U.S. estimate was 2.7 percent below the CCD count, and there were 3 states -- Michigan, Nevada and New Mexico -- for which SASS estimates of enrollment were from 10 to 15 percent below the CCD counts. For all other states, SASS estimates were within 10 percent of the CCD figures. Details by state for all of these comparisons are provided in Chapter XII of the Round 2 *Data File User's Manual.*

Table 4.1 Teacher Demand and Shortage Survey Response Rates

	Round 1 (1988)		Round 2 (1991)	
	Unweighted	Weighted	Unweighted	Weighted
Public (LEAs)	89.4	90.4	93.7	93.5
Private	67.9	66.0	84.8[1/]	83.9[1/]

Notes:

1. Response rates for the combined School and Teacher Demand and Shortage Surveys.

Sources:
Round 1 Unweighted: Kindel (1989).
Round 1 Weighted: NCES (1991c).
Round 2: Gruber, Rohr and Fondelier (1993).

Table 4.2 Teacher Demand and Shortage Survey Weighted Response Rates for Public Districts by State

State	Response Rate		State	Response Rate	
	Round 1	Round 2		Round 1	Round 2
Alabama	97.0	96.3	Montana	88.6	95.1
Alaska	100.0	96.2	Nebraska	91.8	97.3
Arizona	92.1	90.4	Nevada	100.0	100.0
Arkansas	95.9	91.3	New Hampshire	84.1	92.9
California	90.4	91.3	New Jersey	83.9	86.3
Colorado	95.5	98.2	New Mexico	87.9	95.0
Connecticut	61.1	77.0	New York	91.0	95.7
Delaware	94.7	100.0	North Carolina	88.1	94.0
District of Columbia	100.0	100.0	North Dakota	93.6	94.4
Florida	92.5	92.0	Ohio	98.2	89.4
Georgia	81.3	92.3	Oklahoma	97.7	98.5
Hawaii	100.0	100.0	Oregon	98.5	91.2
Idaho	97.3	95.5	Pennsylvania	84.2	94.4
Illinois	93.4	91.8	Rhode Island	100.0	91.9
Indiana	97.6	95.8	South Carolina	83.9	92.8
Iowa	89.8	98.4	South Dakota	97.4	98.2
Kansas	85.4	99.6	Tennessee	91.6	100.0
Kentucky	86.5	92.3	Texas	90.1	95.2
Louisiana	91.7	90.1	Utah	97.4	96.0
Maine	88.1	92.0	Vermont	99.2	86.9
Maryland	87.9	87.5	Virginia	90.8	90.7
Massachusetts	83.5	94.1	Washington	81.4	97.0
Michigan	96.6	90.2	West Virginia	87.3	98.2
Minnesota	87.3	92.1	Wisconsin	85.0	96.3
Mississippi	93.0	96.7	Wyoming	92.5	96.1
Missouri	92.0	93.8	TOTAL	90.8	93.5

Sources: NCES (1991c) and Gruber, Rohr and Fondelier (1993).

Table 4.3 Teacher Demand and Shortage Survey Weighted Response Rates for Private Schools by Association Group: Round 1

Association Group	Response Rate (Percent)
Total	66.0
Area Sample	49.0
Association of Military Colleges and Schools - US	91.7
Catholic	84.3
Friends	77.8
Episcopal	65.6
Jewish	53.2
Lutheran	83.2
Seventh-day Adventists	71.7
Christian Schools International	88.5
American Association of Christian Schools	38.8
National Association of Private Schools for Exceptional Children	65.3
American Montessori Society	73.6
National Association of Independent Schools	63.7
Other	54.5

Source: NCES (1991c).

Table 4.4 Teacher Demand and Shortage Survey, Losses from Initial Sample Selected: Round 2 (Unweighted)

Type of School	Initial Sample	Percent Out of Scope	Percent In Scope	In Scope					
				Interview			Noninterview		
				Frequency	Percent of Sample	Percent of In Scope	Frequency	Percent of Sample	Percent of In Scope
Public (LEAs)	5,424	3.5	96.5	4,867	89.7	93.0	365	6.7	7.0
Private	See Table 2.8 for results for the combined School and Teacher Demand and Shortage questionnaires.								

Source: Gruber (1992).

Table 4.5 Teacher Demand and Shortage Survey Unweighted Item Response Rates

Sector	Range of Item Response Rates (Percent)	Percent of Items with Response Rates:	
		≥ 90%	< 75%
Round 1			
Public (LEAs)	40 - 100	74	12
Private	16 - 100	70	18
Round 2			
Public (LEAs)	85 - 100	90	0

Sources:
NCES (1991c).
Gruber, Rohr and Fondelier (1993).