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1993 SESTAT: ITEM NONRESPONSE

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INTRODUCTION

This report examines item nonresponse in the 1993 SESTAT surveys.[1] Even with careful planning, some nonsampling error, such as item nonresponse, is unavoidable. Item nonresponse which includes questions purposely or unintentionally left blank may be caused by unclear skip instructions, a lack of applicable response categories, or other reasons, such as questions that request sensitive information. In this report, we identify 1993 SESTAT problem areas and, whenever possible, offer potential solutions.[2] The report begins by summarizing item nonresponse across the three SESTAT surveys. A discussion of the main problem areas follows.

BACKGROUND

The three SESTAT questionnaires are almost identical because a majority of the SESTAT questions are core questions; that is, they are repeated in each SESTAT questionnaire. This facilitates inter-survey comparisons of item nonesponse. On the other hand, differences in mode of administration and the extent to which the data were "cleaned" prior to producing the nonresponse frequencies complicates these comparisons. For example, the NSCG and SDR used a mail questionnaire with telephone follow-up data collection strategy while the NSRCG was conducted entirely via CATI. Because completing interviews by computer-assisted telephone

[1]The three SESTAT surveys include the National Survey of College Graduates (NSCG), the National Survey of Recent College Graduates (NSRCG), and the Survey of Doctorate Recipients (SDR).

[2]These findings can only be viewed as preliminary since all of the data had not yet been processed at the time that these item nonresponse tables were produced. All of the NSRCG data had been processed, but the SDR and NSCG tables include only mail questionnaires. The NSCG tables include all of the mail returns, while the SDR tables include only about a third of the mail questionnaires.

interviewing (CATI) automatically eliminates almost all item nonresponse, we can expect greater item nonresponse differences between the mail surveys, the NSCG and SDR, although reported levels of item nonresponse should vary notably between these two mail surveys since the NSCG item nonresponse frequencies were run on unedited data, while the SDR mail data had been manually edited.

Based on mode and level of prior editing, the three surveys represent a continuum. The NSCG, with its unedited mail questionnaire, data should have the greatest percentage of item nonresponse errors while the NSRCG data, collected using CATI, should have the lowest level since all appropriate skip patterns and most consistency checks had been programmed into the questionnaire. Thus, we would expect SEST AT item nonresponse to be minimized to its fullest extent on the NSRCG. With fully or partially edited mail datas only residual nonresponse error should remain after editing and coding procedures have been applied;[3] the SDR should occupy the middle position.

OVERVIEW

As shown in Table I, item nonresponse was highest in the unedited NSCG mail data. Although half of the items had less than three percent item nonresponse, nearly 40 percent had item nonresponse of ten percent or more. Most of this item nonresponse is attributable to respondents who tended to mark only the "yes" responses in questions with a series of response categories that asked for a "yes" or "no" answer.[4]

[3]The SESTAT editing rules referred to here were primarily rules for "back-coding" responses. The back-coding that was permitted on SEST AT follows basic industry standards and was fairly traditional (for example, back-coding a filter question based on the skip pattern that was followed). For a complete listing of all the editing rules, see the SESTAT Editing Decisions Memo, November 1993.

[4]Every legitimate response opportunity was counted as a separate data item. Consequently, a question with seven yes/no response categories counted as seven data items, while a "Mark One" question with seven response categories counted as one data item.

TABLE 1

SUMMARY OF NONRESPONSE ERRORS[a]

	NSCG Data Items		SDR Data Items		NSRCG Data Items	
Error Rate	N = 153	Percent	N = 181	Percent	N = 228	Percent
< 1%	36	23.5	104	57.4	164	71.9
1% to< 3%	41	26.8	47	26.0	37	16.2
3% to< 5%	6	3.9	8	4.4	2	0.9
5% to< 10%	10	6.5	15	8.3	23	10.1
10% or more	60	39.2	7	3.9	2	0.9
Total	**153**	**99.9**	**181**	**100.0**	**228**	**100.0**
Mean		**11.3**		**2.6**		**1.4**

[a]The number of data items shown in this table represent the number for which frequencies were provided.

Mean item nonresponse ranged from a high of 11.3 percent on the unedited NSCG mail data to a low of 1.4 percent using CATI on the NSRCG. At 2.6 percent, the edited SDR mail data had a mean item nonresponse which approached that of the NSRCG CATI data. This mean of 2.6 percent compares favorably with the mean item nonresponse achieved on a large mail survey with telephone followup of education-related professionals conducted by National Center for Education Statistics (NCES) in 1982. In 1982, the NCES High School and Beyond Study (HS&B) mailed a questionnaire to high school principals or guidance counselors in 1,015 sampled schools. Although not identical to the SDR, the NCES study involved professionals with at least a bachelor's degree. Its mean item nonresponse across 174 data items was 4.3 percent[5], and the average fell to 2.6 percent after applying additional editing rules. Some of the rules were similar to the SESTAT yes\no editing rules, and others extended beyond what the SESTAT rules permitted; for example, some rules did not count blanks as missing responses if it appeared that the respondent only neglected to enter a "zero" to indicate "none." In 1982 NCES also sponsored a mai1 telephone follow-up study of about 12,000 young adults. In this survey item nonresponse was higher, averaging 4.4 percent after all editing rules had been applied.

Table I illustrates two important points:

- CATI interviews resulted in very little item nonresponse.
- Most of the higher item nonresponse on the self-administered mail questionnaires could be eliminated by applying the SESTAT editing rules.

About a quarter of the unedited NSCG response categories had item nonresponse rates of below one percent, and about half were below three percent. While this is good, nearly three-quarters of the NSRCG data items, using CATI, had item nonresponse percentages below 1 percent, and

[5]These data are from an unpublished paper by Calvin Jones, "Data Quality Issues in the High School and Beyond Database."

almost 90 percent were below 3 percent. It is encouraging to note, however, that the SESTAT editing rules brought the edited SDR mail data to within five percentage points of the NSRCG CATI data when all response categories with item nonresponse below three percent are considered.

Even more striking was how using CATI reduced the number of items with major nonresponse problems. Whereas 60 response categories on the NSCG (39 percent) had nonresponse rates at 10 percent or higher, only two data items on the NSRCG (1 percent) fell in that range. Again, the edited SDR mail data, which illustrate item nonresponse remaining after applying the SESTAT editing rules, approached the NSRCG rate with only seven response categories (3.9 percent) in that range. Furthermore, the mean SDR item nonresponse drops to 1.7 percent --nearly identical to the NSRCG average of 1.4 percent when three SDR outliers are deleted from the calculation. The three item nonresponse problems (B13f, C1b, and A28b) are easily corrected. We discuss them later.

SERIOUS ITEM NONRESPONSE PROBLEMS (10 Percent or Higher)

Having discussed item nonresponse broadly across the three SESTAT surveys, we now discuss response categories or question types that exhibited nonresponse problems. Examining unedited mail data, such as that of the NSCG, provides the fullest range of potential item nonresponse problems. In the NSCG, 60 of the response categories (39 percent) had item nonresponse rates of above 10 percent. These 60 response categories, however, are associated with only 12 questions; 9 of which are questions that require "yes/no" responses for a lengthy number of responses categories, and 3 ask the respondent to enter zero to indicate "none" (for example, had no children within a certain age range).

TABLE 2

ITEM NONRESPONSE[a]

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
LABOR FORCE STATUS						
A1	A1	B4	Working Reference Week? (**yes/no**)	<1.0	<1.0	<1.0
A2	A2	B5	In Not Working: Looking for Work? (**yes/no**)	<1.0	<1.0	<1.0
A3	A3	B6	Reasons Not Working? (**mark all that apply**)	<1.0	<1.0	<1.0
A4(0)	A4(0)	B7(0)	Never Worked? (**mark box**)	1.5		
A4(M)	A4(M)	B7(MM)	Month Last Worked? (#)	<1.0	4.2	2.3
A4(Y)	A4(Y)	B7(YY)	Year Last Worked ? (#)		2.1	4.5
A6	A6	B9_SOC	Job Code—Last Job (#)	<1.0[e]	3.2	<1.0
CURRENTLY EMPLOYED						
A7	A7	B10	Full- or Part-Time?	<1.0	<1.0	<1.0
A8	A8	B11	Reasons Working Part-Time? (**mark all that apply**)	1.2	3.7	1.0
A9	A9	--	If Full Time: Previously Retired? (**yes/no**)	1.1	<1.0	--
--	A11	--	Postdoctoral Appointment (**yes/no**)	--	1.0	--
A11	A12	B13	Employer Educational Institution? (**yes/no**)	<1.0	<1.0	<1.0
A12	A13	B14	If Yes: Type of Educational Institution (**mark one**)	<1.0	<1.0	<1.0
--	A14	--	Faculty Rank (**mark one**)	--	1.9	--
--	A15	--	Tenure Status (**mark one**)	--	1.9	--
A13	A16	B15	If No, Not Educational Institution: Type of Noneducational Institution (**mark one**)	<1.0	<1.0	<1.0

TABLE 2 (*continued*)

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
CURRENT JOB: Occupation						
A15	A18	B17	Job Code – Reference Week (#)		<1.0	<1.0
A16	A19	B18[d]	Code 141 in A15? (**yes/no**)	6.4	<1.0	
A17A	A20A	B19A	Technical Expertise: Natural Sciences? (**yes/no**)	17.8	5.8	<1.0
A17B	A20B	B19B	Technical Expertise: Social Sciences? (**yes/no**)	29.3	6.0	<1.0
A18	A21	B20	Licensure/Certification Recommended	1.0	1.7	1.0
CURRENT JOB: Related to Highest Degree						
A19	A22	B21	Principal Job Related to Highest Degree?	<1.0	<1.0	<1.0
A20A	A23A	B22A	If Not Related, Reasons Work Outside Field: Pay? (**yes/no**)	9.8	<1.0	<1.0
A20B	A23B	B22B	Reasons Work Outside Of Field: Working Conditions? (**yes/no**)	12.0	<1.0	<1.0
A20C	A23C	B22C	Reasons Work Outside Of Field: Location? (**yes/no**)	13.1	<1.0	<1.0
A20D	A23D	B22D	Reasons Work Outside Of Field: Career Change? (**yes/no**)	11.9	<1.0	<1.0
A20E	A23E	B22E	Reasons Work Outside Of Field: Family? (**yes/no**)	13.5	<1.0	<1.0
A20F	A23F	B22F	Reasons Work Outside Of Field: Not Available? (**yes/no**)	13.9	<1.0	1.1
A20G	A23G	B22G	Reasons Work Outside Of Field: Other specify? (**yes/no**)	55.7	<1.0	<1.0
A21	A24	B23	Work Outside Of Field: Most Important Reason?	3.1	1.4	<1.0
CURRENT JOB: Work Activities						
A22A	A25A	B24A	Work Activities: Accounting? (**yes/no**)	11.5	<1.0	<1.0
A22B	A25B	B24B	Work Activities: Applied Research? (**yes/no**)	14.2	<1.0	<1.0

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
A22C	A25C	B24C	Work Activities: Basic Research? (**yes/no**)	16.2	<1.0	<1.0
A22D	A25D	B24D	Work Activities: Computer Applications? (**yes/no**)	12.9	<1.0	<1.0
A22E	A25E	B24E	Work Activities: Development? (**yes/no**)	15.3	<1.0	<1.0
A22F	A25F	B24F	Work Activities: Design? (**yes/no**)	15.4	<1.0	<1.0
A22G	A25G	B24G	Work Activities: Employee Relations? (**yes/no**)	13.6	<1.0	<1.0
A22H	A25H	B24H	Work Activities: Management? (**yes/no**)	9.9	<1.0	<1.0
A22I	A25I	B24I	Work Activities: Production? (**yes/no**)	17.6	<1.0	<1.0
A22J	A25J	B24J	Work Activities: Professional Services? (**yes/no**)	14.1	<1.0	<1.0
A22K	A25K	B24K	Work Activities: Sales? (**yes/no**)	15.6	<1.0	<1.0
A22L	A25L	B24L	Work Activities: Quality Management? (**yes/no**)	16.2	<1.0	<1.0
A22M	A25M	B24M	Work Activities: Teaching? (**yes/no**)	14.8	<1.0	<1.0
A22N	A25N	B24N	Work Activities: Other--Specify? (**yes/no**)	52.7	<1.0	<1.0
A23(A)	A26A	B25(1^{st})	Work Activities: Most Hours Activity	3.2	1.9	<1.0
A23(B)	A26B	B25(2^{nd})	Work Activities: 2^{nd} Most Hours Activity	7.0	2.8	<1.0
CURRENT JOB: Supervision/Salary/Etc.						
A24	A27	B26	Supervise Others? (**yes/no**)	<1.0	<1.0	<1.0
A25A	A28A	B27A	# Supervised Directly?	3.6	1.4	<1.0
A25B	A28B	B27B	# Supervised Through Subordinates?	44.3	31.6	<1.0
A26(s)	A29(s)	B28(AMT)	Salary Reference Week Job: Amount	4.7[e]	3.9	6.8
A26(t)	A29(t)	B28(PER)	Salary Time Period (**mark one**)	4.0	4.8	6.8
A27	A30	B29	Salary Full-Time? (**yes/no**)	1.9	1.9	<1.0
A28	A31	B30	Federal Government Support Work (**yes/no**)	<1.0	<1.0	2.3
A29	A32[d]	B31	Which? (**mark all that apply**)	1.6	<1.0	9.0

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
DEPARTMENT OF ENERGY QUESTIONS						
A30	A33	B32	One Energy Area Devoted Most Job Hours? (**mark one**)	2.7	3.2	<1.0
A31	A34	B33	Which Energy Source Worked on Most? (**mark one**)	1.8	2.8	<1.0
A32	A35	B34	Primary Focus of Energy-Related Work (**mark one**)	2.2	3.0	<1.0
SECOND JOB						
A33	A36	B35	Held Second Job in Reference Week? (**yes/no**)	<1.0	<1.0	<1.0
A35	A38	B37_SOC	Job Code: 2nd Job (#)	1.6[e]	1.4	1.6
A36(s)	A39(s)	B38(AMT)	Salary 2nd Job: Amount	7.8	4.7	11.1
A36(t)	A39(t)	B38(PER)	Salary 2nd Job Time Period (**mark one**)	5.0	7.8	11.1
A37	A40	B39	Second Job Related to Highest Degree? (**mark one**)	<1.0	<1.0	<1.0
PAST EMPLOYMENT						
B1	B1	--	Working April 1988? (**yes/no**)	2.3	<1.0	--
B2	B2	--	If Yes: Same Principal Employer 4/88 and Reference Week? (**yes/no**)	<1.0	<1.0	--
B3	B3	--	If Different Employer: 4/88 Principal Employer Educational Institution? (**yes/no**)	<1.0	2.0	--
B4	B4	--	If Educational Institution: 4/88 Educational Employer Type (**mark one**)	<1.0	<1.0	--
B5	B5	--	4/88 Noneducational Employer Type? (**mark one**)	<1.0	<1.0	--
B6	B6	--	4/88 Principal Occupation Same as Reference Week? (**yes/no**)	<1.0	<1.0	--
B8	B8	--	Job Code (#)	1.2	4.5	--
B9	B9	--	Same Employer/Occupation in Both 1988 & Reference Week? (**yes/no**)	1.1	<1.0	--

TALBE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
REASON FOR CHANGE: Employers/Occupations						
B10A	B10A	--	Reasons Change Employers/Occupations: Pay? (**yes/no**)	12.8	8.7	--
B10B	B10B	--	Reasons Change Employers/Occupations: Working Conditions? (**yes/no**)	16.8	8.7	--
B10C	B10C	--	Reasons Change Employers/Occupations: Location? (**yes/no**)	18.6	8.7	--
B10D	B10D	--	Reasons Change Employers/Occupations: Career Change? (**yes/no**)	18.1	8.7	--
B10E	B10E	--	Reasons Change Employers/Occupations: Family? (**yes/no**)	19.5	8.9	--
B10F	B10F	--	Reasons Change Employers/Occupations: School? (**yes/no**)	20.4	8.7	--
B10G	B10G	--	Reasons Change Employers/Occupations: Laid Off? (**yes/no**)	19.1	8.7	--
B10H	B10H	--	Reasons Change Employers/Occupations: Retired? (**yes/no**)	21.9	8.7	--
B10I	B10I	--	Reasons Change Employers/Occupations: Other--Specify? (**yes/no**)	48.0	8.8	--
CONDUCT RESEARCH OUTSIDE U.S.						
--	B11	--	Conducted Research Outside U.S.	--	<1.0	--
--	B12	--	If No: Would Consider Conducting Research Outside U.S.	--	1.2	--
--	B13A	--	Reasons that Would Influence Conducting Research Outside U.S.	--	9.0	--
--	B13B	--	Reasons: Better Foreign Language Training Opportunities	--	11.5	--
--	B13C	--	Reasons: Better Access to Information on Foreign Research Opportunities	--	10.5	--
--	B13D	--	Reasons: Better Sabbatical Leave Policy	--	11.9	--
--	B13E	--	Reasons: Family-Related Reasons	--	10.8	--
--	B13F	--	Reasons: Other—Specify	--	72.9	--

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
WORK-RELATED INFORMATION						
C1A	C1A	C1A	Years Professional Full-Time Work Experience (#)	3.5	2.1	<1.0
C1B	C1B	C1B	Years Professional Part-Time Work Experience (#)	68.0	56.6	<1.0
C2	C2	C2	Attend Professional Meetings in Past Year? (**yes/no**)	1.2	1.4	<1.0
C3	C3	C3	Number of Professional Society Memberships (#)	<1.0	<1.0	<1.0
C3(0)	C3(0)	C3(0)	None	1.4		
WORK-RELATED TRAINING						
C4	C4	C4	Attend Work-Related Workshops in Past Year? (**yes/no**)	1.3	1.0	<1.0
C5A	C5A	C5A	Area: Management Training? (**yes/no**)	28.1	<1.0	<1.0
C5B	C5B	C5B	Area: Technical Training in Occupations Field? (**yes/no**)	15.5	<1.0	<1.0
C5C	C5C	C5C	Area: General Professional Training? (**yes/no**)	30.7	<1.0	<1.0
C5D	C5D	C5D	Area: Other Work-Related Training? (**yes/no**)	44.4	<1.0	<1.0
C6A	C6A	C6A	Reason Attending: Facilitate Occupations Change? (**yes/no**)	24.0	<1.0	<1.0
C6B	C6B	C6B	Reason Attending: Acquire > Skills in Field? (**yes/no**)	4.3	<1.0	<1.0
C6C	C6C	C6C	Reason Attending: Licensure/ Certification? (**yes/no**)	21.2	<1.0	<1.0
C6D	C6D	C6D	Reason Attending: Increase Advancement Opportunities? (**yes/no**)	21.0	<1.0	<1.0
C6E	C6E	C6E	Reason Attending: Recently Acquired? (**yes/no**)	22.0	<1.0	<1.0
C6F	C6F	C6F	Reason Attending: Employer Expected? (**yes/no**)	18.3	<1.0	<1.0

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
C6G	C6G	C6G	Reason Attending: Other-Specify (**yes/no**)	59.6	<1.0	<1.0
C7	C7	C7	Most Important Reason Attending Training?	2.9	1.8	<1.0
EDUCATION INFORMATION						
D1	--	A1	Attend Work-Related Workshops in Past Year? (**yes/no**)	1.3	1.0	<1.0
D2	--	A2(ST, CNTRY)	Location Last High School (**alpha to #**)	2.2	--	<1.0
--	--	A3	Attended Community College? (**yes/no**)	--	--	<1.0
--	--	A4(A-J)	Reasons for Attending	--	--	<1.0
D3	--	A4(X)	Have 2-Year Associate's Degree?(**yes/no**)	10.6	--	<1.0
--	--	A6	1st Entered College Field of Study: Education Code (#)	--	--	<1.0
--	--	A7	Undergraduate GPA	--	--	<1.0
D4	--	A9	Have Bachelor's or Higher Degree?(**yes/no**)	<1.0	--	<1.0
D5	--	A10	If Yes: Number of BA or Higher Degrees?	1.7	--	<1.0
EDUCATION GRID						
D6B1(M)	--	A11B(MM)	Month Awarded: Most Recent Degree	5.2	--	<1.0
D6B2(M)	--	A11B(MM)	Month Awarded: Second Most Recent Degree	6.0	--	<1.0
D6B3(M)	--	A11B(MM)	Month Awarded: First B.A. Degree	5.3	--	<1.0
D6C1	--	A11C	Type of Degree: Most Recent Degree (**mark one**)	<1.0	--	<1.0
D6C2	--	A11C	Type of Degree: 2nd Most Recent Degree (**mark one**)	<1.0	--	<1.0
D6C3	--	A11C	Type of Degree: 1st B.A. Degree (**mark one**)	<1.0	--	<1.0

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
D6D1	--	A11D(MJR2, MJC2)	Field of Study Most Recent Degree: Education Code (#)	<1.0	--	<1.0
D6D2	--	A11D(MJR2, MJC2)	Field of Study 2nd Recent Degree: Education Code (#)	<1.0	--	<1.0
D6D3	--	A11D(MJR2, MJC2)	Field of Study 1st B.A. Degree: Education Code (#)	<1.0	--	<1.0
ADDITIONAL EDUCATION INFORMATION						
--	--	A11E(A-H)	Sources of Financial Support	--	--	<1.0
--	--	A12A	$ Borrowed for Undergraduate Degrees	--	--	1.9
--	--	A12C	$ Borrowed for Graduate Degrees	--	--	1.3
--	D1	--	Highest Degree Since Doctorate (**mark one**)	--	1.6	--
--	D3	--	Year Degree was Awarded	--	1.6	--
--	D4	--	School-Related Costs Paid by Employer	--	<1.0	--
COURSE WORK TAKEN SINCE MOST RECENT DEGREE						
D7	D5	A13	Take College Courses Between Most Recent Degree and Reference Week? (**yes/no**)	1.5	1.5	<1.0
--	--	A13A	Enrolled But Not Classes (**yes/no**)	--	--	<1.0
--	--	A14(A-I)	Why Not Taking Classes?	--	--	
--	--	A15	Taken College Courses Since 4/15/93	--	--	1.0
--	--	A16	If No Course Taken: Likelihood of Taking Additional College Courses	--	--	
D8A	D6A	A17A	If Taking Courses Reason Taking Courses: Further Education Before Career? (**yes/no**)	28.0	<1.0	1.0
D8B	D6B	A17B	Reason Taking Courses: Prepare for Grad School? (**yes/no**)	30.2	<1.0	1.1

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
D8C	D6C	A17C	Reason Taking Courses: Facilitate Academic or Occupational Field Change? (**yes/no**)	26.8	<1.0	1.2
D8D	D6D	A17D	Reason Taking Courses: Acquire Further Skills in Academic or Occupational Field? (**yes/no**)	13.4	<1.0	1.1
D8E	D6E	A17E	Reason Taking Courses: Licensure/ Certification? (**yes/no**)	25.5	<1.0	1.0
D8F	D6F	A17F	Reason Taking Courses: Increase Advancement Opportunities? (**yes/no**)	22.9	<1.0	1.1
D8G	D6G	A17G	Reason Taking Courses: Employer Expected? (**yes/no**)	29.9	<1.0	1.1
D8H	D6H	A17H	Reason Taking Courses: Personal Interest? (**yes/no**)	25.7	<1.0	1.0
D8I	D6I	A17I	Reason Taking Courses: Other - Specify? (**yes/no**)	65.5	<1.0	<1.0
D10	--	--	Education Code		--	--
D11	--	A20	Degree Working on Since Most Recent? (**mark one**)	1.9	--	<1.0
D12	D8	--	School-Related Costs Paid by Employer? (**yes/no**)	1.2	1.5	--
--	--	A21(A-H)	Sources of Financial Aid	--	--	1.1
--	--	A22	Taken Courses During Reference Week (**yes/no**)	--	--	<1.0
--	--	A23SCHL	If Yes: Name of School	--	--	<1.0
--	--	A24	If Yes: Full- or Part-Time	--	--	<1.0
BACKGROUND INFORMATION						
D14	E13	D13	Marital Status (**mark one**)	1.5	1.5	<1.0
D14	E14	D14	Spouse Working in Reference Week?	2.7	<1.0	<1.0
D15A	E15A	D15A	Spouse's Technical Expertise: Natural Sciences? (**yes/no**)	27.0	<1.0	1.4

TABLE 2 *(continued)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
D15B	E15B	D15B	Spouse's Technical Expertise: Social Sciences? (**yes/no**)	36.8	<1.0	1.6
D15B	E15B	D15B	Spouse's Technical Expertise: Other – Specify? (**yes/no**)	28.6	<1.0	1.5
D16	E16	D16	Children at Home in Reference Week? (**yes/no**)	1.1	1.6	<1.0
D17A	E17A	D17A	If Yes: Number of Children Under Age 6	42.5	<1.0	<1.0
D17B	E17B	D17B	If Yes: Number of Children Aged 6 to 11	43.2	<1.0	<1.0
D17C	E17C	D17C	If Yes: Number of Children Aged 12 to 17	45.3	<1.0	<1.0
D17D	E17D	D17D	If Yes: Number of Children Aged 18 or Older	48.6	<1.0	<1.0
D18	E9	D9A	Citizenship Status? (**mark one**)	<1.0	1.3	<1.0
--	E11	D11	Year Came to U.S. to Stay	--	1.7	2.7
D20	E12	D12	Living in U.S. in Reference Week?	<1.0	1.6	<1.0
D21(M)	E1(M)	D1(MM)	Birth Month	<1.0	1.6	<1.0
D21(Y)	E1(Y)	D1(YY)	Birth Year		1.6	<1.0
--	E2	D2(ST)	Place of Birth	--	1.8	<1.0
D22	E3	D3	Live in Rural Community Before Age 18?	<1.0	1.7	<1.0
D23A	E4A	D4DAD	Father's Education Level (**mark one**)	<1.0	1.4	1.0
D23B	E4B	D4MOM	Mother's Education Level (**mark one**)	<1.0	1.6	<1.0
--	E5	D5	Hispanic Origin? (**yes/no**)	--	1.9	<1.0
--	E6	D6	If Yes: Which? (**mark one**)	--	1.7	1.0
--	E7	D7	Race (**mark one**)	--	2.3	2.0
--	E8	D8	Gender	--	1.5	<1.0

TABLE 2 *(contined)*

Question Number			Question Topic	Nonresponse[b] (Percent)		
NSCG	**SDR**	**NSRCG**		**NSCG**	**SDR**	**NSRCG**
DISABILITY SECTION						
D24A	E18A	D18A	Difficulty Seeing?	2.7	1.6	<1.0
D24B	E18B	D18B	Difficulty Hearing?	2.9	1.7	<1.0
D24C	E18C	D18C	Difficulty Walking?	2.9	1.7	<1.0
D24D	E18D	D18D	Difficulty Lifting?	2.9	1.7	<1.0
D24(0)	E18(0)	D18(0)	No Difficulty with Above Activities?	9.0	27.5	
D25	E19	D19	Earliest Age Experienced Difficulties?	9.0	1.1	3.9
D28	E22	D22	Address Correct for Future Mailing	12.3		

[a]The nonresponse frequencies combine four sources of item nonresponse: "don't know" responses, refusals, invalid blanks, and "mark one" questions with more than one response marked

[b]NSCG: N = 113,354, the entire 1993 NSCG mail response
SDR: N = 10.017, a little less than a third of the 1993 SDR mail response
NSRCG: N = 19,426 , the entire sample

[c]There are seven response categories in A8 in addition to spaces to record year retired or semiretired. The seven response categories are being reported in this table.

[d]In the CATI version of the NSRCG, B18 appears as a logic check.

[e]These response categories were based on a sample of 111,996 responses.

Questions with a Series of "Yes/No" Response Categories. The data support what we had suspected; by not marking the null (no) responses, some respondents converted questions that require a response for each “yes/no" subpart into a "mark all that apply" format. This tendency became more evident as respondents worked their way through the questionnaires. For example, at A20, the first NSCG "yes/no" question, item nonresponse averaged 12.4 percent, followed by an increase to 18.8 percent for C6 and a further increase to 25.3 percent for D8. (These averages exclude the "other-specify" response categories, since item nonresponse among the "other-specify" responses deserve separate attention and will be discussed later.) As shown in Table 2, item nonresponse for eight of the nine "yes/no" questions (AI7, A20, A22, C5, C6, D8, D15, and D28) is reduced to less than one percent after the SESTAT "yes/no" editing rules are applied. For this reason, coupled with the fact that a "yes/no" format generally collects better quality telephone data than a "mark all that apply" format, changing the "yes/no" format seems unnecessary.

Question B10 was the single "yes/no" question having residual problems after the editing rules had been applied. Although item nonresponse dropped from a mean of 18.4 percentage points on the NSCG to 8.7 on the SDR, 8.7 percent is still unacceptably high. Question B9 and its associated skip instructions appear to be the primary source of the problem. Also, the only respondents routed to B10 are those who worked both during the reference week and during the reference period five years earlier (B1=1) and, in the interim, changed either their employer or occupation. All of these respondents should have marked "no" at B9 and answered B10. Any other response from these respondents increases item nonresponse at B10.

On the NSCG, among those respondents who had worked both periods and had changed either their employer or job, 18.5 percent of the mail respondents as well as 18 percent of the interviewers who conducted personal interviews, answered "yes" (no change) or "no, not

employed during the week of April 15, 1993 " at B9. Answering B9 incorrectly led to skipping, B10 creating the nonresponse problem. Changing the order of the response categories at B9, and better labeling should minimize the nonresponse problem.

Other-Specify Response Categories. "Other-specify" item nonresponse was a problem only for "other-specify" response categories associated with "yes/no" formatted questions. This is not surprising. In the "yes/no" format, response categories with the least relevance have the highest item nonresponse. Consequently, if the listed response categories are adequate of the question asked, the "other-specify" response category should rarely be needed and thus, often left blank. In fact, 7 of the 10 NSCG response categories with the highest item nonresponse are "other-specify" response categories associated with one of the "yes/no" questions discussed above.

Entering Zero to Indicate "None." Three core questions (C1b, A25b, and DI7), required the respondent to enter a zero to indicate "none." Not entering this zero was the second most common source of item nonresponse and often caused the highest item nonresponse rates. This source of item nonresponse follows the same logic as not marking the "no" response of a "yes/no" question: the tendency to record responses only when a response category actually applies.

Among these three data items, C1b (indicating number of years of part-time professional work experience) had the highest item nonresponse, 68 and 56.6 percent, respectively on the NSCG and SDR. Similarly, item nonresponse for the number of people supervised through subordinates, was 44.3 and 31.6 percent, respectively (A25b; A28b for the SDR). D17, indicating the number of children in each of four age groups, was the third question of this type (across the four response categories, NSCG item nonresponse averaged 44.9 percent.) D17, however, is not a problem. Using the "yes/no" question edit logic, item nonresponse dropped to

fess than one percent on the edited SDR data. On CATI, where skipping response categories is almost impossible, item nonresponse on all these items was less than one percent.

Only four SDR items had item nonresponse rates above 10 percent: A28b, C1b, B13f, and E18(0). Since reducing residual item nonresponse on mail questionnaires is important, we have minor modifications to suggest for all three:

- B13f: This is an "other-specify" response category associated with a question that has three options ("a great deal," "somewhat, " and "not at all") instead of a simple "yes/no. " Applying the same "yes/no" editing rule logic, that is, any category not marked a "great deal" or "somewhat" is considered the null response, causes this item nonresponse problem to vanish.

- A28b: If we divide A28 into two separate questions, we can use the C3 format for A28b (for example, record a number or mark a "none" box.) Using this format, item nonresponse on C3 was only 1.2 percent on the unedited NSCG data.

- C1b: On the basis of telephone interviewer comments, it seems that switching "part-time" to before the “full-time" response category might lessen item nonresponse. By asking "full-time" first, it seems some respondents were calculating a "full-time equivalency" response for C1a, obliterating their perceived need to answer Clb. We could also try the C3 format.

Salary Questions

As shown in Table 1, the NSRCG had only two response categories in the item nonresponse range of 10 percent or higher, neither mentioned thus far. Both items, with item nonresponse of 11.1 percent, are associated with the salary amount and time period on the respondent's second job (B38). Of the 11.5 percent nonresponse rate, about 3 percent was due to refusals to answer, another 3 percent to "don't know" responses, and the remaining 5.1 percent classified as "not ascertained." This code is assigned after interviewing. It is used, for example, when it appears, based on a respondent's comment, that the interviewer may have asked the questions in the wrong sequence. On the basis of the comment, however, it is often difficult to determine what the appropriate question sequence was.

Because the reference week salary question is relevant to many more respondents than the salary of the second job, we also looked at that response category .On the NSRCG, item nonresponse for that question was 6.8 percent, almost half of the item nonresponse for the second salary item nonresponse, but still notably higher than that on either the NSCG or the SDR Almost all of this item nonresponse was due to refusals, at a rate of 5. 9 percent. By comparison, item nonresponse on the unedited NSCG salary data was 4 percent (reference week salary) and 5 percent (second job salary). For these two items on the edited SDR data, the nonresponse rates were 4.8 and 7.8 percent, respectively. Unless we examine the data, holding age and highest degree constant, it is difficult to ascertain whether the higher item nonresponse on salary for the NSCG is due to characteristics of the population or to a mode effect.

Other Item Nonresponse Issues

At more moderate levels of item nonrepsonse (above 3 percent and below 10 percent), few new or interesting patterns emerge. We primarily focus on the NSRCG and the SDR for this discussion.

Of the 25 NSRCG response categories in this range, 20 are associated with the question that asks which federal agencies were supporting your work. About a third of this nonresponse was due to "don't know" responses, and the other two-thirds were responses that [*sic*] been post-edited "not ascertained" by the coders. What caused this problem is not clear, but it seems limited to the NSRCG. Compared with the NSRCG's 9 percent, NSCG and SDR item nonresponse on this question was 1.6 and 0.8 percent, respectively.

Among the remaining NSRCG items, two pertained to the respondent's salary on the reference week job; as noted above, one asked for the amount of money still owed on graduate

degrees, and another for the earliest age that an indicated disability began (D19). In both of these instances, a "don't know" response was the largest cause of nonresponse.

Thirteen of the 15 SDR responses that fell into this range were blanks on "yes/no" questions, and 9 of those were associated with B10, "Why did you change jobs or occupations?"* discussed earlier. The other two items pertained to entering the months and years associated with dates. Frequently, the month was affected more than the year. For example, item nonrespo9nse on the SSDR and NSRCG for the year part of the date last worked for pay (A4/B7) was 2 percent less, while the month was left blank 4.2 and 2.3 percent of the time, respectively. Birth year, birth month, and year graduated from high school, however, did not seem to present nonresponse problems.

Conclusion

Based on these preliminary findings, item nonresponse overall did not pose a major problem for the 1993 SESTAT surveys. Although it was relatively higher on the mail questionnaires, application of the basic back-editing rules lowered the nonresponse level to a level comparable with that of the CATI data. It appears that the handful of questions with high item nonresponse can be corrected with only minor modifications.