SEX AND THE GSS : Nonresponse Differences

By

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Looking at the marginals for respondent's sex on the 1972-1978 General Social Surveys, we find a significant linear decline in the proportion male of 1.03 percent per annum (Table 1).[1] It falls from 50.0 percent in 1972 to 42.0% in 1978. When the marginals are corrected by a household weight (the survey design leads to an undersampling of respondents in households with a large number of adults, see Stephenson, 1978a), the proportion male is adjusted upwards, but the linear decline

TABLE 1

MARGINAL TREND IN PROPORTION MALE, 1972-1978

	1972	1973	1974	1975	1976	1977	1978
A. Raw Marginals							
Percent Male	50.0 (1613)	46.6 (1504)	46.6 (1484)	45.0 (1490)	44.6 (1499)	45.3 (1530)	42.0 (1532)
	Model: Significant linear trend, slope = 1.03% per annum						
B. Marginals Adjusted for Number of Adults							
Percent Male	51.2 (1613)	47.4 (1504)	49.0 (1482)	46.3 (1490)	47.3 (1497)	46.6 (1530)	43.3 (1525)
	Model: Significant linear trend, slope = 0.96% per annum						

in the proportion male is virtually unchanged. The proportion male falls from 51.2 percent in 1972 to 43.7 percent in 1978 and the decline is 0.96 percent per annum (Table 1). This decline in the proportion

[1] For the tests used to model the data and determine the slope, see Taylor, 1976.

male is a bit surprising since the Bureau of the Census shows no change whatever in the male share of the residential population eighteen years and over between 1972 and 1978.

The explanation is that the apparent trend in the GSS figures is entirely an artifact of a change in sampling technique from probability sampling with quotas, PSQ (used in 1972, 1973, 1974, and on half of the 1975 and 1976 surveys), to full probability sampling, FPS (used in half of the 1975 and 1976 surveys and in 1977 and 1978). When the figures are disaggregated into the PSQ and FPS results, we find that there is no change within the two series (Table 2). Each shows a constant or no change model for the proportion male. This artifact thus completely explains away the apparent trend, but leaves one old problem unsolved and reveals a new problem.

The old problem is that although we have accounted for the erroneous trend in the proportion male, we have not made it go away. This artifact not only gives us incorrect estimates of the trend in the sex distribution, but also distorts all other variables closely associated with sex. To take the extreme example, the percentage difference between men and women on keeping house averages 48.2 percent (i.e., the proportion of males keeping house minus the proportion of females keeping house equals 48.2 percent averaged over each survey from 1972 to 1978).[2] This means that the 8.0 percent decline in the proportion male between 1972 and 1978 would artificially lead to a decrease in the proportion keeping house of 3.9 percent between those years (i.e., 48.2 * 8.0 = 3.86). In most instances the distortion will be much less since in the above

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[2]Since the sex difference on keeping house was narrowing during this period, this average greatly simplifies the actual relationship.

TABLE 2

MARGINAL TREND IN PROPORTION MALE BY SAMPLING TECHNIQUES, 1972-1978

	1972	1973	1974	1975	1976	1977	1978
A. PSQ, Raw Marginals							
Percent Male	50.0 (1613)	46.0 (1504)	46.6 (1484)	48.1 (755)	48.0 (755)	--	--
	Model: Constant, pooled estimate = 47.7%						
B. PSQ, Marginals Adjusted for Number of Adults							
Percent Male	51.2 (1613)	47.4 (1504)	49.0 (1484)	48.3 (755)	47.9 (755)	--	--
	Model: Constant, pooled estimate = 49.0%						
C. FPS, Raw Marginals							
Percent Male	--	--	--	41.8 (735)	43.0 (744)	45.3 (1530)	42.0 (1532)
	Model: Constant, pooled estimate 43.2%						
D. FPS, Marginals Adjusted for Number of Adults							
Percent Male	--	--	--	44.2 (735)	43.3 (742)	46.6 (1530)	43.4 (1525)
	Model: Constant, pooled estimate = 44.6%						

example, we have compared the years with the largest change in the proportion male with the variable showing the greatest sex difference. For example, the item next most strongly associated with sex is fear of walking alone at night (d = 39.1). Since this item only appeared in 1973, 1974, 1976, and 1977, the maximum distortion is only 0.78 percent between 1973/74 and 1976. Likewise, church attendance which is also associated with sex (d = 12.0 percent) would show an artificial increase

of 1.04 percent between 1972 and 1978. In brief, the artifactual decline in the proportion male can create up to a 3.9 percent distortion in marginal trends of other items, although the distortion will most often be less than 1 percent and frequently will be trivial.

To eliminate the distortion the best option is post-stratification weighting. The Bureau of the Census figures show that the proportion male in the universe sampled by the GSS was approximnately 47.6 percent male.[3] To get the proper sex distribution, one needs to divide the proportion male on the Census by the proportion male on the GSS. For example, in 1977,, the weight for males would be 47.6/45.3 = 1.058, and for females 52.4/54.7 = 0.9580. This is, of course, no perfect solution to distortion and results in an additional loss of sample efficiency (Stephenson, 1978b), but it should minimize the problem.

The new problem that the explanation brings to light is that the PSQ and FSP procedures come up with significantly different estimates of the proporotion male (raw: PSQ-FSP = 4.5 percent; adjusted: PSQ-FPS = 4.4 percent). The PSQ estimates are quite close to the Census estimates (raw: Census - PSQ = -0.1 percent; adjusted = -1.4 percent), but the FPS are much further off the mark (raw: Census - FPS = 4.4 percent; adjusted: 3.0 percent). This means that while the PSQ gets an adequate sex distribution, the FPS undersamples males. Although the FPS is a commonly acknowledged as a superior design (Stephenson, 1978b), its performance is inferior to the PSQ on getting the correct sex distribution.

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[3]The residential population 18 years and over was between 47.6 and 47.7 percent male between 1972 and 1978. Figures provided by the Current Population Survey for 1975-1977 that even more closely approximated the GSS universe were within 0.1 - 0.2 percent of these estimates.

This results from the fact that the PSQ includes quotas on sex that are based on the 1970 Census returns and it is therefore assured of getting the correct sex distribution (Stephenson, 1978b , and King and Richards, 1972).[4] FPS, on the other hand, selects households and targets respondents according to a completely random or equal probability process that is unrelated to the sex of individuals.

The standard reason that is offered to explain why too few males are found in FPS surveys is nonresponse. The literature appears unanimous on the issue that men are harder to get than women (i.e., more likely to be temporary nonrespondents) and generally finds that men are less likely to be interviewed than women despite call-backs and conversion attempts (i.e., more likely to be final nonrespondents).[5] Before turning to this explanation, we decided to test some alternative hypotheses.

First, we checked to see if our surveys were finding enough males. We examined the household enumeration folders (HEFs) for the FPS for 1975-1977. These forms list the age and sex of all household members. Since any informed adult member of the household can provide the necessary information for the HEFs, they are similar in procedures to how the Current Population Survey collects its demographic data

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[4]Adjusting for number of adults probably leads to an overweighting of males since the collected sex distribution is fixed by the quotas irrespective of household size.

[5]Men were found to be more likely to be final nonrespondents by Hawkins, 1977; Gannon, Nothern and Carroll, 1971; Weaver, Holmes, and Glenn, 1975; Hawkins, 1975; Lowe and McCormick, 1955; and Lundberg and Larsen, 1949. Men were more likely to be temporary but not final nonrespondents in Filion, 1976 and Crossley and Fink, 1951. Sudman, 1966, found men to be more likely temporary nonrespondents, but did not study final nonresponse.

and like the CPS avoids the problem of having to conduct an interview with a particular individual in each household. The HEFs found that 47.7 percent of the adults over eighteen are male, just what the CPS finds. This means that the GSSs are finding the right sex distribution among adults, but failing to come up with correct sex distribution among respondents.[6]

Knowing that there are an adequate number of males out there, the question then becomes why too few of these turn up as respondents. Several hypotheses that attributed this to interviewer/ing bias were formulated.

Hypothesis #1: Interviewers doctor data on age to manipulate the Kish table into giving them the respondent they want. This respondent is more likely to be an available cooperative female than an absent, hostile male.

There is no ready way to test for this, but we frankly doubt that it is being done.

Hypothesis #2: When the Kish table narrows the choice down to two respondents who are the same age and one is an available, cooperative female and the other is an absent, hostile male, the interviewer takes the female.

In theory, the interviewer is to determine who is oldest by asking birthdates in cases of ties and document this by writing the date of birth down on the HEF. We have not checked to see if birthday is usually noted, but did look at the sex of the tied cases. Now remembering that among all cases we ended up with completed interviews that were 56.9 percent female, we would have to expect to find more females turning up here for there to be evidence of bias. In fact, of the tied cases only 56.2 percent were female. This hypothesis is, therefore, not supported.

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[6]This suggests, but does not prove, that households that were not enumerated on the HEFs were probably not predominantly male households, but households with a normal sex distribution.

Hypothesis #3: The GSS accepts as valid cases in which the wrong adult was interviewed as long as this appears accidental. (The SRC American National Election Studies do the same.) In 1978, there were twenty cases of this type. It is possible that these were not accidental errors, but attempts to get easy and available respondents. (In other words, this hypothesis is the same as #1 except the interviewer did not fudge the ages to cover up her tracks.)

Of the twenty cases picking the correct respondent would have increased the number of men by six cases. This would have increased the proportion male from 42.0 percent to 42.4 percent. This is in the hypothesized direction, but obviously too small to matter--although the hypothesis itself is supported by the meager data.

In sum, it does not appear that the shortfall of men is attributable to intentional manipulation of the selection of respondents by interviewers. Thus, since the GSSs are finding enough males out there and the interviewers are not lessening their probability of selection through manipulations of the equal probability procedures, it appears that the shortfall must be a function of higher nonresponse by males.

This nonresponse could result from features of interviewing procedures, from characteristics of males, or an interaction of the two. Without getting into details about FPS interviewing procedures concerning completing the HEF, contacting the target respondent, call-backs, conversion attempts, and so forth, we simply note that with one exception these procedures do not appear to be likely to create or increase a sex differential in nonresponse. The one exception is the sex of the interviewers. Just over 96 percent of all FPS interviewers on the GSSs were conducted by female interviewers. It was hypothesized that female interviewers might be more willing or able to interview women than men. To test for this we crosstabulated sex of interviewer with sex on respondent

and found that female interviewers got 43.3 percent male while male interviewers got 52.9 percent males, a difference of 9.6 percent (prob. = .035). This difference was almost precisely the magnitude needed to explain away the shortfall of men. If male interviewers were increased from 4 to 50 percent of interviewers, we would expect on this basis to find the proportion male increase 4.4 percent (46.0 * 9.6 = 4.4 percent). This would increase the proportion male in FPS from 43.2 percent to 47.6 percent. Unfortunately we could not uncritically accept this simple and complete explanation of male nonresponse since (1) it did not represent a controlled experiment (in fact sex of interviewer is sometimes consciously considered in assigning certain interviews and conversion efforts), and (2) the great skew in the sex distribution of interviewers cautioned against overemphasizing the findings. We therefore tried to replicate the findings by crosstabulating sex of interviewer and respondent on the 1973-1974 Continuous National Survey (CNS) by NORC. We found that the difference was in the same direction as on the GSS, but trivial. Female interviewers had 42.4 percent male respondents while male interviewers had 44.0 percent (D = 1.6 percent, prob. = .7234).[7] Of course, this replication suffered from the same inadequacies as the GSS test and its negative findings should be just as suspect as the positive GSS findings. As a result, we must retain the hypothesis that sex of interviewer and respondent interact to create higher nonresponse for men as possible but unproven.[8]

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[7] For 5.9 percent of the interviewers, sex was unknown. If all were females, then the difference marginally increased to 1.7 percent, prob. = .6525.

[8] None of the literature on interactions between sex of respondent and sex of interviewer seems relevant to this point. For this literature, see Strasser and Stephens, 1979, and Sudman and Bradburn, 1974.

Looking at the problem of male nonresponse further, we see in Table 3 the available data from the GSSs on nonresponse by sex. Among the completed cases, 44.2 percent of the cases were males (line A). Among the nonrespondents whose sex was known, 47.4 percent were male (line B). If we then turn to the remaining 134 cases and asked what the proportion male would have to be in order for all cases to be 47.6 percent male, we find that 66.4 percent would have to be male. This is, of course, appreciably higher than the 47.4 percent found among the nonrespondents whose sex was known, but not implausibly high. This would seem to indicate that households which refuse before an HEF can be completed or with which no contact can ever be established probably tend to be predominantly male.

TABLE 3

SEX OF NONRESPONDENTS
(1975 GSS, Adjusted Figures)

	Sex of Respondents			
	Male	Female	Don't Know	Total
A. Completed cases	44.2 (325)	55.8 (410)	--	(735)
B. No interview, sex known from HEF	47.4 (46)	52.6 (51)	--	(97)[a]
C. A + B	44.6 (371)	55.4 (461)	--	(832)
D. Sex unknown	--	--	100.0 (134)	(134)
				(966)

[a]Sex was known for 104 cases but only 97 cases could be weighted by number of adults.

In brief, the problem of an underrepresentation of males on the GSS seems to result from a deep-rooted problem of nonresponse (perhaps exacerbated by the overwhelming female composition of the interviewing staff). Males are apparently less accessible and cooperative than females and while call-backs and conversion attempts reduces this problem, they do not eliminate it. In addition, the problem is not an isolated one for the GSS. FPS surveys in general have almost exactly the same underrepresentation that the GSS does. The CNS, for example, had only 42.3 percent male and the 1972-1978 pre-election surveys of the American National Election Studies averaged only 42.8 percent, both slightly lower than the pooled estimate of 43.2 percent on the GSS.[9]

Given that the problem of underrepresentation of males is pervasive in FPS surveys, the question becomes, "What can be done about it?" The best solution for dealing with existing data sets in general and the GSS in particular is post-stratification weighting. This will tend to minimize distortions created by the underrepresentation of males. For future surveys the ideal solution would be to eliminate (or at least notably reduce) the underrepresentation of males by reducing the nonresponse rate. Since the GSS, CNS, and American National Election Studies represent three top-quality FPS survey series and they all still

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[9]The proportion male on the 1972 American National Election survey were 43.2 percent (pre-election) and 42.9 percent (post-election reinterview); in 1974, 41.7 pecent; in 1976, 42.1 percent (pre-election) and 41.2 percent (post-election reinterview); and in 1978, 44.1 percent. The 1974 and 1976 election studies included embedded panels from the 1972 survey and panel attrition by males may have accounted for slightly lower response rates. The CNS may have gotten less males because it had a restricted field period that limited the possibility for call-backs.

get nontrivial and similar shortfalls of men, it appears that such an approach, while ideal, would be difficult and expensive at best. Furthermore it is not at all certain that a redoubling of standard FPS procedures for call-backs, conversions, and so forth, would significantly reduce the underrepresentation problem. A second solution would be to study in depth the causes for male nonresponse (e.g., Would more male interviewers help? Are special procedures needed to reach people (mostly men) who work the night shift or travel?) to see if improved survey techniques could be devised in order to reduce the shortfall of men and also hopefully increase the response rate in general. Until such can be accomplished, we will have to expect FPS to undercount men and take this fact routinely into consideration when analyzing the data.

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