

Sample Weighting in NES
Continuous Monitoring, 1984:
A Report to the Board of Overseers,
National Election Studies

Santa Traugott
Working Paper No. 5
April, 1985

April, 1985

The sample design of most National Election Studies is one which yields equal probability at the household level. For both random digit dialing and area probability (personal) sample designs, there are unequal probabilities of selection for individuals.

This comes about because sample households have different numbers of eligible respondents, varying from one to eight or more (in some rare cases). In a household with only one eligible respondent (age 18 by election day, and a U.S. citizen) the probability of selection for that person is 1.0. In a household with two eligible adults, each adult has a probability of selection of .5. The overall probabilities of selections for the sample persons, then, cannot be said to be equal.

RDD samples have an additional source of deviation from equal probability. Since households are selected through their telephone numbers, a household with two separate telephone numbers has twice the probability of being selected as a household with only one telephone number.

Sampling literature suggests weighting (by the inverse of the selection probability) to compensate for unequal probabilities of selection. Typically, the National Election Studies have not done this because inspection of both weighted and unweighted marginals has shown very little actual difference. Moreover, weights can be quite cumbersome in analyses. Some software packages do not have provision for weights.

It is clear though, that there are samples in which the unequal probabilities of selection at the household level do make a difference, (i.e., weighted and unweighted estimates differ) and in these cases,

there is agreement that weights should be used for estimates of means and proportions. Some statisticians feel that weights should not be used in estimates of parameters in multivariate models and that respecification of the model is called for.

With current interest in "gender gaps", one has to wonder about the effects of different probabilities of selection for different size households. If most single person households are women, then overall, women have a higher probability of selection than men. (The non-response bias that some think is associated with single female households would tend to offset this).

We have done some analysis of the Continuous Monitoring data to try to determine whether selection weights should be recommended. The weight we used compensates for unequal probabilities of selection due to household size and number of separate telephone lines. Weights are the inverse of selection probability, and the two weights are multiplicative. Thus, a respondent selected from a household of three eligible adults and one phone line has a selection probability of $.333 \times 1.0$ and a weight of 3×1.00 , or 3. A four person household with two separate lines would have a selection probability of $.25 \times 2.00$ with weights of $4.0 \times .5$ for a final weight of 2.00.

Table 1 displays marginals for some variables of interest, both weighted and unweighted. The marginals are only very slightly different. Even for variables which have been linked with the gender gap--party identification and Reagan approval, there are no significant differences.

We conclude from this analysis that a departure from our previous policy of not explicitly denoting a selection weight is probably not warranted.

Table 1. "Continuous Monitoring: Weighted and Unweighted Marginals for Selected Variables

<u>Age</u>	Unweighted	Weighted
18-39	53.2	53.8
40-59	27.1	29.0
60+	19.7	17.2
%Male	44.8	46.4
<u>Race</u>		
White	89.3	89.2
Black	8.7	8.8
Other	2.1	2.0
<u>Education</u>		
Grade School	4.0	3.4
High School	40.9	42.7
College+	53.8	52.6
MD	1.3	1.2
<u>Marital Status</u>		
Married	57.1	63.8
Never married	19.0	19.8
Divorced/separated	14.0	9.6
Widowed	8.8	5.5
<u>Region</u>		
Northeast	21.9	22.1
North Central	25.5	25.7
South	30.9	33.5
West	21.7	20.9
<u>Campaign Interest</u>		
Very Much	49.4	48.6
Somewhat	36.8	37.4
Not Much	13.5	13.8

<u>Follow Public Affairs</u>	Unweighted	Weighted
Most of the time	43.9	42.7
Some	30.7	31.4
Now and then	17.6	17.8
Hardly at all	7.4	7.8

Party ID--all

Strong Democrat	15.6	15.0
Weak Democrat	19.3	19.0
Indep. Democrat	13.4	13.5
Indep. and APOLS	8.7	8.7
Indep. Republican	14.5	14.9
Weak Republican	15.4	15.7
Strong Republican	12.0	12.1

Party ID--Men

Strong Democrat	13.0	12.6
Weak Democrat	16.8	16.6
Indep. Democrat	14.7	14.8
Indep. and APOL	8.2	8.2
Indep. Republican	16.7	16.7
Weak Republican	17.2	17.8
Strong Republican	12.6	12.8

Party ID--Women

Strong Democrat	17.7	17.1
Weak Democrat	21.3	21.1
Indep. Democrat	12.3	12.4
Indep. and APOL	9.1	9.1
Indep. Republican	12.7	13.4
Weak Republican	13.9	14.0
Strong Republican	11.5	11.4

<u>Reagan Approval--All</u>	Unweighted	Weighted
Strongly approve	38.4	39.3
Approve	24.9	25.0
Disapprove	10.8	10.9
Strongly disapprove	22.5	21.7

Reagan Approval--Men

Strongly approve	44.1	44.7
Approve	25.0	24.7
Disapprove	9.7	9.6
Strongly disapprove	19.3	19.0

Reagan Approval--Women

Strongly approve	33.8	34.6
Approve	24.9	25.2
Disapprove	11.8	12.1
Strongly disapprove	25.0	23.9

