Appendixes

Survey Methodology

Selection of the Sample

The data for this survey were collected from 1,273 telephone interviews conducted from October 30 through November 17, 1986. The sample was drawn from the noninstitutionalized civilian adult population of the United States, 18 years of age and older. Households contacted for the survey were selected by a procedure known as random digit dialing (RDD). This procedure ensures the inclusion of individuals with unlisted or not yet listed telephone numbers, as well as those with listed numbers, and thus provides a sample that reflects the total U.S. population.

The initial stage of sample construction required the development of a national-area-probability sample based on the distribution of the adult population of the United States. First, the adult noninstitutionalized population of the country was stratified by region and type of place. For regional stratification the United States was divided into four regions as follows:

- East: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, and West Virginia;
- South: Virginia, North Carolina, South Carolina, Florida, Georgia, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Texas, and Oklahoma;
- Midwest: Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, South Dakota, and North Dakota;
- West: Montana, Wyoming, Colorado, New Mexico, Arizona, Utah, Idaho, Nevada, California, Oregon, Washington, Alaska, and Hawaii.

Three categories for size of place were also employed as strata:

- **Central City:** every place defined as a central city by the Bureau of the Census;
- **Standard Metropolitan Statistical Area (SMSA)** Remainder: every place that is not a central city but is within an SMSA as defined by the Bureau of the Census; and
- NonSMSA: every town, village, hamlet or identifiable land division that is not included in any of the other categories.

Within each stratum, counties were selected as the primary sampling units. These primary sampling units were selected in proportion to the distribution of the population within the stratum. Operationally, a listing was constructed of the latest estimates of the adult population of every county within each State compris-

ing each region in rank order—$P_{ij}(A_{i80}/P_{i8\,O})$; then a running cumulative total of gross sums was produced. Next, a random number x, which was less than t/n, where t was the adult population of the stratum, was selected. The sample points (n) were then assigned according to where the numbers x, $(x + t/n)$, $(x + 2t/n)$, $(x + 3t/n)$,. . . . .$(x + (n - 1)t/n)$ fell on the running cumulative total of the adult population within that stratum. This procedure yields an appropriate number of primary sampling units (PSUs) drawn proportionately from the stratified sampling frame.

At the next stage of selection, one telephone number for each PSU was randomly selected from Louis Harris & Associates' updated library of telephone directories. As part of the RDD procedures the selected numbers were then altered by dropping the last two digits of the selected number and replacing them with randomly generated number pairs. As many two-digit randomly selected numbers as needed were appended until a working residential number was reached or until an interview was completed. Technically, this method of sampling produces an epsem sample of all published telephone banks, where the sampling fraction is $f = n/N$ for all elements in all strata.

Each eight-digit telephone number (area code and the first five digits) was generated and recorded on a sample card. Interviewers received a group of sample cards (figure 1) plus another card with five two-digit random numbers to be added to the existing partial telephone numbers. The interviewers added one set of random digits to the eight digit number on the sample card to generate a full telephone number to call.

For example, the first number called in this case would have-been (516) 964-8210. If the call resulted in a completion, the interviewer moved to the next sample card. Only one completed interview for each sample card was permitted. However, if the outcome of the call was a refusal, screenout, noneligible, terminate, or disconnect, the interviewer retained the same index card but moved to the next random digit ending: (516) 964-8232. If the number dialed resulted in a busy signal or a ringing but unanswered phone, the interviewer placed the card to the side. Busy telephones were redialed after 15 minutes. If four such calls did not result in an answered telephone, the interviewer moved to the next random digit ending.

This second stage sampling technique is known as random digit dialing. The use of RDD sampling eliminates the otherwise serious problem of unlisted telephone numbers. Nationwide, approximately 20 per-

Figure 1.1.—Sample Card

Random digits	Number
10	
32	
47	(516) 984-82-
59	
64	

SOURCE: Louis Harris & Associates, 1987

cent of all phone subscribers have unlisted phones. Moreover, significant variation occurs among demographic groups, with the number of unlisted phones reaching a high of 26 percent in the West, 29 percent in large metropolitan areas, 25 percent among those earning $5)000 to $10,000, and 32 percent among nonwhites. Thus, as directories grow out of date, noninclusion rates in cities like New York and Chicago may exceed 40 percent among some demographic groups. For these reasons, using published phone listings as the universe is inadequate for telephone surveys and inferior to using random digit dialing.

The "youngest male respondent" selection procedure was employed for this survey. A 48 to 52 male to female ratio was controlled for (of both observant and nonobservants) so that the total sample could be reported as a cross section.

These procedures should produce a national representative sample of the adult population of the United States. However, differential response rates by education, sex, race, region, and size of place can produce some sample distortions from population distribution. To correct for such biases, the demographic characteristics of the achieved sample were compared to

Census estimates and sample weights were applied to correct for differences. The final weighted sample used in this background paper should yield unbiased estimates of the adult population of the United States.

Sampling Error

It is important to note that survey results are subject to sampling error—i.e., the difference between obtained results and those that would be obtained by studying the entire population. The size of this error varies with the size of the sample and with the percentage of respondents giving a particular answer. Table 71 illustrates the range of error for samples and subsamples of five different sizes and at different percentages of response. This table can be used to determine the approximate sampling errors associated with results presented in the background paper.

These figures account only for sampling error. *Survey* research is susceptible to other errors as well, such as data handling and interviewer recording. However, the procedures used by Louis Harris & Associates are designed to keep errors of this kind to a minimum (1).

Table 71.-Sample Error (+-) at 95 Percent Confidence Level for Samples of Five Different Sizes

Percentage response	Size of sample				
	1,250	1,000	600	400	100
10 (90)	1.70/0	1.9%	2.4%	2.9 "/o	5.9%
20 (80)		2.2	2.5	3.2 3.9	7.8
30 (70)		2.5	2.8	3.7 4.5	9.0
40 (60)		2.7	3.0	3.9 4.8	9.6
50 (50)		2.8	3.1	4.0 4.9	9.8

SOURCE: Louis Harris & Associates, 1987.