

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

This study of national attitudes and behaviors of alcohol drinking and alcohol-involved driving will use a probability sample of respondents, aged 16 and older, living in households with land-based or hardwire telephones in the United States. Since the interest and focus of this study is the *prevalence* of alcohol in conjunction with driving, a national probability sample is most appropriate.

The eligible target sample will be all persons aged 16 and older residing in telephone households in the United States. The total sample of 6,000 persons will be sufficient to allow the study findings to be broadly generalized to the U.S. population, and will also allow for various analyses to be performed on key sub-groups including youth, and drivers who drove after drinking in the past month. The sample will consist of a random sample of 6,000 persons selected from the 50 States plus the District of Columbia. The following sections describe sampling, questionnaire administration, and data analysis:

NOTE ON CELL PHONE USAGE:

Because the increased usage of cell phones has been a concern in the market research industry, NHTSA, on the advice of their OMB desk officer, completed a recent study of cell phone users. The following information provides an overview of that study:

In total, 502 interviews with persons on cell phones (averaging about seven minutes) were completed in 2007. Forty-one percent were cell phone only — 59% also had a landline at home. The largest difference between the two groups (those with and those without a landline) was that the cell phone only respondents tended to be younger (58% were ages 20 to 29 vs. 13% among cell phone and landline group). There was also a higher percentage of cell phone only users who had incomes less than \$30,000, had graduated high school but not gone to college, were Hispanics and nonwhites, and were households with only one person aged 16 and older. There was little difference on geographic variables and sex. The cell phone-only subsample was then asked to participate in the Motor Vehicle Occupant Safety Survey (MVOSS), either by going to an Internet site or by calling the contractor back on a 1-800 number. Fully 57% of the cell phone-only sample went on to complete the MVOSS. There was little difference between those who completed the MVOSS survey and those who did not complete it.

The OMB statistician at the Department of Transportation Desk was contacted to discuss whether to incorporate the cell phone sample into the much larger sample that went through the MVOSS. It was agreed not to do so based on the extent of differences observed and implications for bias of weighting the cell phone-only sample. Therefore, for the drinking and driving study, we will make the same assessment — that no observed or implied differences are likely to exist for cell phone-only users. Instead, we will make every effort to ensure adequate representation among those who would likely be cell phone only, those between the ages of 20 and 29.

1. Describe (including numerical estimate) the potential respondent universe and any sampling method.

a. Respondent universe

The respondent universe theoretically consists of all persons of driving age (aged 16 or older as of their last birthday). However, since the survey will be administered by telephone, the sampling universe will be persons aged 16 or older living in non-institutionalized dwellings with working telephones (approximately 235 million, according to the U.S. Census Bureau

estimates). Also, since interviews will be conducted in only English and Spanish, any person who does not speak one of these two languages will be excluded from this study. The study will sample from all telephone households in the United States, including Alaska, Hawaii, and the District of Columbia, and will include both drivers and non-drivers.

It is not anticipated that the use of a telephone household sample will bias estimates of drinking and driving or of estimates of general public opinion towards these issues. Research has shown that telephone service for many households is intermittent, and that gains or losses in service are associated with changes in their financial situation, (Keeter, 1995). By implication, telephone coverage is not a static binary phenomenon, but rather, the telephone population at any given point includes households that were recently part of the non-household population. Households with intermittent telephone service are similar on a variety of important demographic characteristics to households who usually lack telephones (Keeter, 1995; Brick, Waksberg, and Keeter, 1994). Thus, post-stratification data weighting using key demographic variables can ensure the correct coverage in the final sample of persons such as those in non-telephone households.

b. Statistical sampling methods

This study will use a two-stage sampling procedure to achieve a random representative sample of the driving public aged 16 or older. The total number of surveys to be completed nationwide will be 6,000. At the first stage, a stratified sample design (stratified by Census Region) will be used to sample telephone households. The sample will be allocated across the four Census Regions based on proportional allocation (i.e. the sample size allocated to each region will be roughly proportional to the 16 years of age and older population of that region). After selection of a household, one household member (16 years of age or older) will be selected at random at the second stage of sampling. To ensure adequate representation of the younger age group (aged 16 to 24), that age group will be slightly oversampled to include about 1,000 completed interviews nationwide from that age-group. For the purpose of sampling telephone households (telephone numbers), the truncated Casady-Lepkowski Random Digit Dial (RDD) method (1993) will be employed.

As previously mentioned, the universe of residential telephone listings will be stratified by Census Region. In the first stage of selection, a probability sample of households will be selected within each region, where households are defined as non-institutional places of permanent residence. For the second stage, within each sampled household, a respondent will be randomly selected for inclusion from all eligible members belonging to that household.

In the Casady-Lepkowski method, the Telcordia frame of all possible telephone numbers (containing both listed and unlisted numbers) is separated into two strata: a “high-density” stratum [stratum 1] consisting of 100 banks — a bank consists of 100 numbers with one or more listed residential numbers — and a “low-density” stratum [stratum 2] consisting of all the remaining numbers in the Telcordia frame. About 52% of the numbers in the high-density stratum are expected to be working residential numbers, whereas in the low-density stratum, the corresponding percentage is about 2%. In the standard Casady-Lepkowski procedure, a stratified simple random sampling design is used (i.e., simple random samples are drawn from each stratum).

A significant savings in the cost of sampling in the two strata is taken advantage of by determining the optimal sample size of each stratum. Considering the extremely low hit rate in the low-density stratum, and the significant increase in cost that sampling from the low stratum

would entail, the truncated Casady-Lepkowski design recommends sampling only from the high stratum. Thus, a high-density stratum will be constructed in each of the four major geographical Census Regions, by matching area code and exchange combinations with geographical areas. In each region, a RDD sample will then be drawn from the high-density stratum of that region. The difference between the two strata in terms of demographic (age, sex, and race) and other characteristics at the national level appears to be relatively small and generally not statistically significant (Brick and Kulp (1994): Bias in List-Assisted Telephone Samples: presented at AAPOR) and hence sampling only from the high-density stratum is not expected to introduce any bias in the estimates.

The final stage of selection occurs at the household level. Once a telephone number has been selected for inclusion, we must randomly select one person aged 16 or older living in that household to participate. The household-level selection will be made using the most recent birthday method, which represents a true random selection of household members, and is considered much less intrusive than the purely random selection method or grid selection, because these latter methods require enumeration of all household members in order to make a respondent selection. Once a person has been selected for inclusion in the study, that person cannot be replaced by another person in the household. If the selected person refuses to participate, refusal conversion attempts will be employed.

The sample data will be weighted to generate unbiased estimates. Within each Census Region, the selection probability of the households may differ depending on the number of residential telephone lines reaching that household. At the first stage of weighting, this will be corrected by weighting each household by the inverse of the number of telephone lines in the household. The second stage of weighting will adjust for unequal selection probability of individual household members selected using the within household sampling process. The selection probability of a household member will decrease with the increase in the number of eligible persons within that household. A weight equal to the number of eligible persons will be applied to each respondent. This will also include adjustments to correct for any oversampling that may be carried out within a household. To avoid extreme weights, it may be necessary to truncate the number of telephone lines and/or the number of eligible household members while using those numbers in the calculation of first and second stage weights. The third stage of weighting will use post-stratification weighting procedures so that the weighted distributions of the sample match the known demographic characteristics of the U.S. population within each Census Region. This weighting will be based on demographic characteristics like age, race/ethnicity, and gender.

c. Cell phone only subsample

Approximately 900 out of the 6,000 interviews to be completed for NHTSA during administration of the 2008 National Survey of Drinking and Driving Attitudes and Behavior will be conducted with respondents who do not have landline telephones at home but have cell phones that they use (i.e., cell phone only). The methods that the Contractor will use to contact cell phone users and conduct interviews with them shall be designed to assure the safety of respondents (e.g., interviewing will not be conducted if the respondent is driving or otherwise unable to complete the interview), and shall be reviewed and approved by an Institutional Review Board. The

Contractor shall obtain a frame of cell phone numbers that is separate from the frame that will be used to interview respondents on landline telephones. Potential respondents will be contacted on their cell phones, and asked a series of questions to ascertain whether they are cell phone only. If the respondent also has a landline at home, then the person will be screened out as ineligible for the survey. If the person has no landline, then s/he will be asked to participate in the survey. We will incorporate an experiment into the design to assess whether a cash incentive helps increase the response rate. The eligible respondents (i.e., those who are cell phone only) will be randomly assigned to one of two groups. One group will be offered a \$10 cash incentive to participate in the study, the other group will not be offered the incentive. Respondents will be encouraged by the interviewers to set up an appointment time when the interviewers can call them back to conduct the full interview. The interview will include specific questions about shared cell phones, zip code and number of cell phones to weight the data at the end.

2. Describe the procedures for the collection of information

a. Data collection

Telephone interviews with 6,000 persons aged 16 or older living in the United States is scheduled to occur over a three-month period from January through March 2008.

All sample management, interview scheduling, conducting and monitoring of interviews, and progress reporting of data collection will be handled by the CATI system (described above). A comprehensive data collection plan is proposed to ensure that high response rates, high data quality, and low respondent burden are achieved. The plan is structured to optimize telephone coverage and contact with respondents, and to minimize no contacts and refusals. Interviewer recruitment, training, and monitoring procedures are designed to support these aims.

The CATI programming process includes specification of data locations, question text, responses and corresponding codes, acceptable response ranges, consistency checks, interviewer instructions, skip patterns, and help screens. Two kinds of range and consistency checks are programmed: hard and soft checks. Responses outside the hard range will not be accepted by CATI. Soft range checks prompt the interviewer to verify the response. The questionnaire design and layout must pass a strict internal hard copy “proofing review” before it can be sent to the programming stage. After the questionnaire is programmed, it passes through two additional separate proofing stages with extensive testing before interviewing can begin. Separate questionnaires will be programmed in both English and Spanish.

b. Interviewing plan:

Once a telephone number is selected for inclusion, an interviewer will make an initial call to reach the household. If there is no answer, or if a person aged 16 or older is unavailable at the time of the first call, up to six additional calls (over different days and time periods as presented

below) will be made to reach the selected household and to randomly select a respondent. After reaching a respondent, if necessary, up to seven additional calls will be made to complete the interview. This “7x7” call design is used to attain a high response rate.

Because the number of contacts attempted and the not-at-home patterns of households are key factors in determining response rates, a temporally varied call design is important. The following call schedule will be used for both the initial contacts for selection of designated respondent and subsequent calls for completion of the interview:

<i>Calling Period</i>	Respondent's Local Time	Number of Attempts
Weeknights	5:00 p.m. to 7:59 p.m.	2
Weeknights	8:00 p.m. to 9:59 p.m.	2
Weekends	Saturday 11:00 a.m. to 5:00 p.m.	3
	Sunday 1:00p.m. to 4:00 p.m.	

All interviewers assigned to the project are experienced Gallup interviewers. These interviewers will receive training specific to this project. Representatives from NHTSA will be invited to be part of this training to verify that training and all other procedures are being performed. Remote monitoring of telephone interviewing is also available for external monitoring of interviews.

3. Describe methods to maximize response rates and to deal with issues of non-response

Response rates are one measure of the extent to which a data set accurately reflects the characteristics and responses of a given population. Groves (1989) suggests that non-response rates are actually a composite of two factors whose underlying causes may be substantially different: non-contacts and non-interviews (i.e., refusals). The CASRO response rate for the 2004 administration was 44%. CASRO response rates near 30% are generally standard for national RDD samples. The 1993, 1995, 1997, 1999, and 2001 executions of this study achieved response rates at or above the current industry average at the time. Gallup expects to achieve a similar response rate to what was achieved in the 2004 administration.

a. No Contacts/Non-Response:

In accordance with OMB requirements, Gallup proposes to conduct a non-response bias study once the primary data collection has been completed. In a recent work, Groves¹ reports that there is no consistent relationship between response rates and non-response bias. As such, a lower response rate may not necessarily cause or result in non-response bias. However, it does not imply that this finding will be true in all circumstances. We, therefore, plan to undertake a separate non-response bias study to examine the non-response patterns and to assess the potential for non-response bias in this survey.

The pool of non-respondents for this study will consist of two groups: (i) Non-contacts (sampled cases without any human contact after primary data collection) and (ii) Refusals (sampled cases with human contact but with no completed interviews). The goal will be to complete about 200 interviews from the group of non-respondents. Only core questions within the survey will be asked in the non-response study. The mode of data collection for the non-response study will be telephone using a 7x7 call design, with up to seven calls devoted to contacting the household, and up to seven calls to interview the targeted respondent. We anticipate a data collection period of about four to six weeks to complete the call design and achieve the targeted number of completed surveys.

The non-response bias analysis will involve conducting an analysis of demographic characteristics using census or similar external data sources. The estimates based on non-respondents will also be compared, to the extent possible, to estimates based on respondents or those based on external data. If necessary, we may, for the purpose of better understanding the non-response patterns, investigate the suitability of examining select subgroups within the group of respondents for the main study. We may, for example, examine: (i) those that are "easiest to reach and interview" as measured by records of calls in our CATI system; and (ii) those that are "more difficult to reach" (require more callbacks) compared to group (i) above. The goal of the non-response bias study will be to detect if significant and policy-relevant differences exist between the survey estimates for respondents and the non-respondents.

b. Refusals:

Refusals appear to be increasing and tend to account for a major proportion of non-responders with the potential for non-response bias. Although the reasons are unclear, the immense expansion of telemarketing activities, a possible tendency toward greater resistance to perceived intrusions into the privacy of one's home, and the increasing telephone saturation among certain market segments of the population, may all contribute. Because of the prominence of the Gallup name, and the skill of its interviewing staff, our refusal rate is well below the industry average.

At Gallup, an interaction with a respondent is only coded as a refusal if an interviewer has encountered two "soft refusals" after a description of the study, (e.g. "I am really not interested." or "I'm too busy to talk to you now.") or a hard refusal (e.g. "I'm not interested; don't call again." or "No, I don't want to do it!"). Any case where the person hangs up before the interviewer can complete the introduction will be called back at least once.

Gallup has conducted several in-house assessments to measure the impact of the "Gallup" name

¹ Groves, Robert M. 2006. "Nonresponse rates and Nonresponse Bias in Household Surveys." *Public Opinion Quarterly* 70: 646-675.

in conducting such random digit dial studies and has determined that, given the same interviewers and interviewing procedures, we experience a significant increase in the overall response due to our name. Respondents seem to understand the legitimacy of the research and are generally more willing participants when the “Gallup” name is used in the introduction. Intense interviewer training, the use of the Gallup name, and explanation of the importance of the study will all help to improve response rates and discourage non-response.

4. Describe any tests of procedures or methods to be undertaken

Prior to the initiation of the study, the questionnaire will be tested with a sample of 18 randomly selected persons aged 16 or older. The goal of the pilot test is to assess the workability of newly added or modified question wordings, and to check the flow and general understandability of survey questions. In addition, Gallup will further test the survey on a group of approximately 10 Gallup associates, most of whom will actually work on the study. The purpose of these administrations to Gallup staff will be to test the survey instrument on a wider sample and familiarize interviewers with the survey instrument. Adjustments will be made to the survey as necessary based on the results of the pilot tests. None of the data collected in the pilot tests will be used in the final analysis.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the contractors who will actually collect and analyze the information.

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