NATIONAL TIME-DIARY STUDY
OF METHODOLOGY

SECTION 1: SAMPLE DESIGN

The random digit dial (RDD) sample was selected using the Mitofsky-Waksberg (Waksberg 1978) Random Digit Dialing two-stage cluster design. This design gives all households an equal chance of inclusion in the survey, regardless of whether or not their phone number is listed. A frame of all possible clusters, defined as banks of 100 telephone numbers, was generated (stratified by Census region) from the Bellcore Master Data File, a listing of all area code-exchange combinations in the United States. A systematic selection of clusters was then made from this frame. One telephone number was randomly generated in each selected cluster and called. If it was a household, the cluster was retained; if it was not, the cluster was excluded.

Since this was a year-long study, the process of selecting clusters was done once at the beginning of the study and again after six months with a newer release of the Bellcore tape. 115 clusters were released in July 1994 and another 144 were released in February of 1995 for a total of 259. The average cluster size was approximately *7.5.*

The goal was to get approximately 100 interviews per month and an approximately equal number of interviews for each day of the week. The eligible population was adults, 18 or older, residing in telephone household in the continental United States. Within each sample household, the target respondent was selected at random from among all adults residing there. The next birthday selection method was used. In this procedure, the interviewer asks to interview the adult, 18 or older, who will have the next birthday. This

method avoids the bias of selecting whoever answers the phone or happens to be home at the time of the call. It provides a random respondent without having to ask intrusive questions about household composition.

SECTION 2: TRAINING AND MONITORING INTERVIEWERS

Preceding the pretests, interviewers went through a structured training session. There was a mix of experienced and newly recruited interviewers. Experienced interviewers are best able to identify characteristics of the study which could potentially pose problems. However, less experienced interviewers are more often likely to notice additional problems that may have been naturally or dealt with by the more experienced interviewers.

In the pretest training session, interviewers were given an outline of standard pretest procedures and specific items to be aware of such as:

- Respondent reaction to the survey introduction
- Any issues regarding selecting the random respondent (general population)
- Identifying question wording which is ambiguous or awkward to read
- Inconsistencies in question logic
- Respondents' comments about questions (to be recorded verbatim)
- Inconsistencies in skip patterns

Following pretests, a debriefing was held in which interviewers and supervisors reviewed any problems encountered and made suggestions for improvements in the questionnaire. Based on the pretest results, the final version of the questionnaire was developed.

Prior to main data collection, group training sessions were conducted. These training sessions were repeated throughout the year data collection period as new interviewers were added to the study. The training sessions provided information on the background and goals of the study. This included:

- Purpose of the study
- Sponsor and project director

- Eligible respondent
- Goals of the study
- Target cooperation rate
- Schedule
- Refusal conversion plans

The interviewers were trained in procedures used in identifying the correct respondent. This entailed problem solving exercises in addition to written instructions. The supervisors coached each interviewer by asking questions that a respondent might ask.

A major part of the training involved persuading reluctant respondents to cooperate. The training manual contained suggested responses to a number of questions frequently asked by reluctant respondents. The supervisors assumed the role of respondent in this exercise. This practice continued until all interviewers could handle these situations correctly and comfortably.

The next stage of the training required interviewers to go through the questionnaire noting the question-by-question instructions and skip patterns. Interviewers read the survey instrument repeatedly to supervisors in order to familiarize themselves with the questionnaire and to learn how to correctly pace the interview. Interviewers spent additional time on the diary section of the questionnaire. Interviewers were trained on what constituted acceptable diary data and on what were acceptable non-directive probes to use when the data given by the respondent was not adequate. Other special issues concerning diary data that interviewers were made aware of included:

- Accurately recording all activities, even those of very short duration
- Accounting for all the time within the 24-hour reference period
- Noting the presence of any smokers

Finally, interviewers worked in pairs, with one interviewer acting as the respondent. Then, the pair switched roles, providing an opportunity for both to act as the interviewer. At

the end of the training session, each interviewer completed “live” practice interviews with non-study households. These practice cases were monitored by supervisors. The number of practice cases completed by each interviewer was dependent upon their performance. If the supervisor noted any problems, interviewers were retrained in these areas before being placed on the study.

During data collection, interviewers were monitored from the onset of the study to its completion. Supervisors regularly monitored each interviewer’s calls and rated them on:

- Introduction and respondent selection
- Properly administering the questionnaire (reading the questions verbatim, probing, keeping respondents on track)
- Correctly recording the respondents’ answers
- Refraining from personal comments
- Guiding the respondent, through the use of neutral probes, to provide the required level of detail for the diary
- Probing for best estimates of the amount of time spend on activities
- Pacing the interview to allow respondents appropriate amounts of time to recall facts or activities

As part of SRC monitoring procedures, key questions or items were noted on the monitoring form for special attention. Interviewers were specifically rated on their performance regarding these points. In addition to monitoring, the Field Manager received daily reports on each interviewer’s response rate and refusal rate. Interviewers who experienced difficulties were retrained by a supervisor. If there was no improvement after the retraining, the interviewer was removed from the study.

An experienced telephone supervisor was on duty at all times to monitor quality and handle any problems. Shifts were scheduled during the day and in the evenings on both weekdays and weekends. All telephone numbers in the sample were tried up to 20 times. Respondents who initially refused were recontacted by a specialist in refusal conversion.

SECTION 3: FINAL SAMPLE DISPOSITION

A total of 1200 interviews were collected between July 16, 1994 and July 20, 1995. The overall survey rates and results Table 1. The following are the definitions of each row shown in the survey rate tables:

- Sample released is total number of phone numbers selected for the study.
- Non-households include businesses, group homes such as nursing homes and dormitories, disconnected numbers, fax machines, etc.
- Household status unknown numbers are numbers that were called at least twenty times but were never contacted; the household status could not be ascertained.
- Households include all phone numbers that were determined to be a household.
- Interviews are all households where the correct respondent completed the interview through a time diary.
- Refusals are households that refused to complete the interview or terminated the interview before or in the diary section.
- Non-contacts include households in which only a home recorder or answering machine could be reached and households in which the respondent was identified but never reached for an interview.
- Problems are cases in which the respondent was unable to complete the interview due to lack of comprehension of English or some physical problem such as difficulty in hearing or speaking.

The overall response rate is defined as the number of completed interviews over me total number of identified telephone households. Response rate in the following tables is the percentage beneath the interviews complete figure. The refusal rate is the number of households where the selected respondent refused over the total number of identified telephone households. The refusal rate in the following tables is the percentage beneath the total refusals.

Table 1: Final Sample Dispostion

Sample released	3,612 phone numbers (including 1,603 non-households and 154 buildings where household status is not known)	
Households	1855	100%

Interviews	1200	65%
Refusals	345	18%
Noncontacts	223	12%
Problems	87	5%

SECTION 4: CODING OF THE TIME DIARIES

In order to be included in the data set, respondents must have completed a 24-hour time diary. In the 24-hour time diary the respondents were asked to report all activities they did during a full 24 hour period called the diary day. In this study the diary day is always defined as the day before the interview. If a respondent is interviewed on Tuesday, the diary day would start midnight Sunday night, and end at midnight Monday night. Activities were recorded in the order they occurred on the diary day starting from midnight. There are five time-diary-related answers recorded for each reported activity:

1) Start time of the activity (equivalent to previous activities end time)
2) Actual description of the activity
3) Location where activity occurred
4) End time of the activity
5) Whether smoking occurred during the activity.

The activities and where they occurred were coded into the activity and location codes shown in the Coder's manual Appendix A of this report. The coding of both location and activity was either done during the interview by the interviewers or later by trained coders. The interviewers coded over *95* percent of the location codes directly. All but eleven types of activities were entered verbatim by the interviewers. The final activity code was determined by a coder based on the activity's location code and on the activities that occurred prior and after. The interviewers directly coded the following types of activities:

- Sleeping/napping
- Bathing/showering
- Dressing/getting dressed/personal grooming
- Eating meals/ snacks
- Preparing meals/snacks

- Attending school/regular class activity
- Watching TV
- Working at a regular job
- Travel
- Playing
- Shopping

The final three activities on the list - travel, playing, and shopping - were assigned general codes by the interviewer. A coder later assigned a more specific code. Besides the coding of the location and activity verbatim, the coders had additional responsibilities. They were also responsible for reviewing the interviewer's comments and making any needed corrections to the diary. The three most common adjustments were splitting multiple activities that were reported as one activity, moving activities that were reported out of sequence, and making changes to the interviewer's pre-coded "where" or "activity" codes based on the contents of the diary or comments by the interviewer. When coders had problems in assigning a proper code for an activity or location, a supervisor made the final decision. To improve coding consistency a log of decisions was kept.

All location codes were compared with their corresponding activity codes to ensure consistency. However, activities occurring in unusual locations were coded as such, unless there was evidence of miscoding. For example, it is unusual but allowed that someone could report eating something in the bathroom, but this combination of location and activity code was allowed. We did require that the coders use travel location codes for all travel activities. For all activities that did not seem to have a logical location code, the Center checked the original diary to make sure there was no error in the coding or data entry.

A copy of the manual used by coders tor determining me proper activity-and location codes is included in Appendix A.

SECTION 5: TIME DIARY DATA SETS

There are two data sets: main.dat and diary.dat. A detailed description of each of these two files follows.

MAIN.DAT (MAIN DATA SET) - This file contains data for all 1200 interviews. There are three types of variables in the main data set. First, the main data set contains variables for all questions asked prior to and after the 24 hour time diary.

Second, the main data set includes variables that are needed to help perform proper data analysis. These variables include both the data set weights described in the final section of this methods report. Other variables include “TNA” (total number of diary activities were reported); “DATE” (date of the interview); “DAY” (day of the week for respondent’s diary). For a complete listing and description of the variables in the main data set, refer to the codebook for the main data set “Main.doc.”

Third, the main data set contains variables created from the data gathered in the 24-hour time diary. All reported activities were assigned an appropriate activity code (such as sleep, watch TV) and an appropriate location code (such as bedroom, kitchen). For a complete list of “activity” and “where” codes see appendix A. The main data set has one variable for each possible activity. The value for each of these activity variables is determined by the total number of minutes the respondent reported engaging in this activity. If the respondent never engaged in a particular activity during their diary day, the value of the variable corresponding to that activity would be “0”. If the respondent did do that activity, the amount of time, in minutes, spent engaging in that activity is stored.

The main data set also has a variable for all possible location codes. These location variables can be used to show the total number of minutes a respondent spent on the diary

day at all possible locations. Finally, for all activities it was determined whether smoking occurred during the activity. The main data set includes a variable that shows the total number of minutes spent in activities where smoking was reported.

DIARY.DAT (DIARY DATA SET) - This file contains data for all reported time diary activities. The main variables in this data set are the start and end time of the activity, the activity, activity code, the where location and the total elapsed time of the activity. For a complete description of all the variables in this file refer to the codebook file “Diary.doc.”

Both the main data set and the diary data set include a respondent identification number. Therefore, to add variables from the main data set to the diary dataset (or the reverse) the files can be merged by matching respondent identification number.

SECTION 6: THE WEIGHTS

There are 2 weights included in the main data set:

DWT - This weight should be for all analysis. It corrects for unequal probabilities of selection due to differing number of telephone lines per household and differing number of adults in the household. Since the sample was stratified by the four Census regions (Northeast, Midwest, South, and West), we also adjust the data so that the design weight properly allocates households across these four regions.

TOTWT - This weight includes the design weight (dwt) plus post-stratification weights on each Df gender, race, age, and education in order to match the sample distribution to that of the population as indicated by Census data. Neither of these weights include a weight on day of the week. Since the sample is distributed somewhat unevenly over the days of the week, it may be necessary to use such a weight depending upon the analysis being done.