TIME for LIFE

The Surprising Ways Americans Use Their Time

Second Edition

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With a Foreword by Robert D. Putnam

that their sense of self is continually reshaped by an increasingly diverse and expanding chorus of voices with whom they interact. As new technologies proliferate and contacts with other people expand, individuals develop more short-term strategies to deal with the unique problems that result. Thus, Gergen sees the problem of modern life more in the realm of the *perception of what is necessary* than in the realm of what to do with the time available.

In this book we argue that our time-diary data provide similar glimpses into the increasingly fragmented lives of individuals, perhaps in response to an expanding perception of what is necessary. Such perceptions have made people less able to accurately judge how they use their time as they assume more diverse role responsibilities with more spontaneous daily schedules.

We continue to be enormously impressed by the pioneering work of Sebastian De Grazia in his classic *Of Time, Work, and Leisure* (1962). Although strident, preachy, and sexist by today's standards, De Grazia's observations about the overriding dominance of work and the tyranny of the clock in American life seem as apt in the 1990s as thirty-five years ago. His crucial distinction between leisure and free time still seems lost on American culture, and his leisure ideal offers a challenge that our culture seems incapable of addressing, much less meeting. His observation that "TV has the evening whipped into shape" seems most prophetic, although we suspect that even he would be surprised by the extent to which TV has dominated free time in our time diaries.

Finally, our conclusions are in keeping with the recent arguments of media economist Robert Samuelson (1995) and political scientist Robert Putnam (1995b). It is at heart a basically *optimistic* message: America continues to make progress in regard to increasing free time, just as Samuelson says it does in terms of income. Incomes, on average, are increasing rather than decreasing, and the poverty rate has declined by almost 25 percent since 1945. If, as Putnam argues, the "social capital" of Americans is eroding, as people spend more of their free time with television, it is largely because of the choices Americans have made about their free time. People are doing better than they think they are, but their perceptions of what is happening are increasingly flawed. It may be difficult to find or to appreciate, but *there is time for life*.

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Measuring How People Spend Time

> You have to accept the idea that subjective time with its emphasis on the now has no objective meaning. . . . The distinction between past, present and future is only an illusion, however persistent.
>
> —Albert Einstein

If time has become such a scarce resource for millions of Americans, how they "spend" it or "use" it becomes a question of central importance—and a surprisingly difficult one to answer. How many hours were you in the office last week? How much television do you watch? How often do you work out? Are you spending "quality time" with the kids?

All these questions have a subjective element, and the answers reflect one's "lifestyle" and self-image. There is a good deal of room for self-service, and

thus error, in our estimates. (*Of course* I work long hours, spend lots of time with my kids, spend only a few hours with television, and exercise a lot!)

At first glance, the matter of answering these time-estimate questions may seem straightforward. After all, the modern concept of time envisions time as linear, a simple line with a beginning and an end, clearly ticked off in uniform seconds, minutes, and hours. Because time is a universal medium by which our activities are bound together, it should be a simple task to measure how people spend their time.

But time expenditure is actually an extraordinarily complex concept to estimate accurately. Recalling details about time spent involves complicated calculations, and American culture judges people by what they do. People are often called on to construct answers that put them in a positive light.

Chase and Godbey (1983), for instance, asked members of specific swimming and tennis clubs in State College, Pennsylvania, how many times they had used the club during the last 12 months. Their responses were then checked against the sign-in system each club had. These sign-in systems seemed highly accurate, because to get into the locker rooms or onto the courts club members were required to sign their names in a book or on a card used to reserve a court.

In both cases, almost half of all respondents overestimated the actual number of times they participated by more than 100 percent! Such inaccuracies probably reflect both the difficulty with recall and the fact that respondents wanted to believe they played more tennis or swam more frequently than they had, since doing so would not only make them healthier, it would be getting their money's worth at the club.

There is a rich body of historical data from national samples that relies solely on the time-estimate approach—on time spent working (from the U.S. Bureau of Labor Statistics), doing volunteer work (from ACTION, 1975), traveling (from the U.S. Department of Transportation), and watching television (Roper Organization, General Social Survey). A central question concerning such research is whether the answer will be accurate. There is mounting evidence that it won't be.

Problems with Time Estimates

The various steps survey respondents take in answering time-estimate questions cause problems. Asking someone "How many hours do you work?" or "How many hours do you watch TV?" assumes that each respondent:

- Interprets "work" or "TV" the same way.
- Separates the most important activity (the primary activity) from other activities that are taking place simultaneously but are ancillary or less important (secondary activities).
- Undertakes the work of searching memory for all episodes of work or television yesterday or the last week.
- Is able to properly add up all the episode lengths across the day yesterday or across days in the last week.
- Feels comfortable describing this duration to an interviewer when it may not be a typical day or week.
- Avoids reverting to social norms, stereotypes, or images of themselves about how much a "normal" person ought to work, like the normal 40-hour workweek.

Any of these obstacles may be problematic in obtaining completely accurate responses regarding time use. This is particularly true in the survey context, in which respondents are expected to provide on-the-spot answers in a few seconds. What seems at first to be a simple estimate task turns out to involve several steps that are quite difficult to perform, even for a respondent with regular and clear work hours (or viewing patterns) and a repetitive daily routine.

One consequence is that, when asked to provide daily and weekly estimates of several activities, survey respondents give estimates that add up to considerably more than the 168 hours of time each of us has available each week. In the studies of Verbrugge and Gruber-Baldine (1993), average estimated weekly times totaled 187 hours, and their list of activities did not include time for church-going, shopping for durable goods or professional services, and adult education. In Hawes et al.'s (1975) national survey, estimated weekly activities averaged at more than 230 hours; and in our own studies of college students, the totals reached more than 250 hours. Thus, the estimate approach has a built-in bias toward overreporting, much as described in the analysis of hours at work in Chapter 5 and the analysis of housework in Chapter 6.

Basically, time-estimate questions encounter the same types of problems that arise from expecting respondents in surveys to answer almost any "simple" question put to them. Survey researchers have fallen into the trap of accepting answers from respondents on almost any type of question. Often, these answers provide quite misleading results, as in the case of the survey question "Where do you get most of your information?" to which most respondents say "TV." However, when we conducted more-detailed studies of

actual information acquisition, television viewers turned out to be *less* likely than users of other media to have picked up news information (Robinson and Levy, 1986). The simple question, when broken into the constituent information expected of respondents, is beyond the ability of most respondents to answer accurately.

Because of such difficulties, the time-diary studies reported in this book take a "micro-behavioral" approach to such questions, breaking each part of the question into easier and more answerable components of that micro-level behavior. Rather than ask about a vague reference period, such as a week, an "average" week, or a "typical" day, respondents are asked specifically about "yesterday," the complete day freshest in their memory.

As an example, take this popular survey question: "How many hours of TV do you watch on an average day?" The usual average estimate is about 3 hours a day. In the 1970s, when we also asked "How many hours of TV did you watch yesterday?" and looked at all days of the week, the average was closer to 2.5 hours for the average day. The major reason for this response difference in the two questions was that far more respondents reported zero hours "yesterday" than on an average day, indicating that respondents translated the "average day" question into "the average day *that you watch TV*." The "average" day thus became one in which television is viewed, not the occasional day when none was seen. It is these subtle respondent strategies that subvert the ability to provide the accurate estimates that are expected of them—and why we put more faith in the micro-behavioral method of the time diary.

To illustrate the problems with time-estimate data, suppose we ask you on the spot to respond to this question, which government surveys, such as the Current Population Survey of the U.S. Census Bureau, regularly ask the public:

> How many hours did you work last week?
> Your answer: ___ hours.

Most survey respondents come up with an answer in 3 to 10 seconds, although an appropriately thoughtful answer would require at least three times as much response time (see Chapter 5).

There is no guarantee, then, that because the U.S. government collects data about time use it must be correct. Despite the reliance of the federal government on statistics related to time (e.g., years of life expectancy, weeks of work), no government agency is responsible for measuring work time accurately, raising serious questions concerning the productivity of the American worker. Thus, the most commonly quoted sources of information about how long Americans work may be, quite simply, inaccurate.

The tendency to assume we spend a good deal of time behaving admirably and little time with less admirable behavior is strong. At many universities, professors are asked to report their hours of work per week in various categories such as teaching, preparation for teaching, and funded research. The information is then acted on by university administrators and often the state government. At Penn State University, the average hours reportedly worked is 52 hours a week, and almost no professor reports working less than 25 hours a week. A few, however, report working longer than 90 hours a week. Working 90 hours a week would entail working from 7:00 a.m. to 10:00 p.m. six days a week with no breaks for food, the bathroom, or anything else. Then again, how many professors can be expected to recall accurately how long they worked during the last seven days precisely using such arbitrary and vague categories?

Alternatives to Time Estimates and Time Diaries

Several methods of estimating time durations are likely to produce more accurate estimates than the estimate approach, because, like the time diary, they also are sensitive to the equal property of time across individuals—the recognition that at any instant of time "everyone has to be somewhere," with only one activity or set of activities occurring at a given time. These alternative methods include:

1. The Experience Sampling Method (ESM) of Csikszentmihalyi (1991), in which respondents write down what they are doing when an electronic beeper goes off at random points during the day.
2. Direct observation studies, such as those by anthropologists in Third World countries in which observers rather than respondents keep time records of what natives in a particular society do across the day (McSweeney, 1980). In the same way, we have recently employed American college students to "shadow" a person they know across the day, and then verified later retrospective diary reports against those observations. The classic study of this type is Barker and Wright's (1948) observation of *One Boy's Day*, which cataloged more than 500 separate activities during that one day.

3. Electronic trackers, such as those used by parole officers to verify whether those out on parole stay within certain locations. More recently, media rating services have developed electronic badges for TV and radio audience members to wear that record when they are within receiving range of an operating television or radio.
4. On-site verification, in which an observer can count the number of people at a particular site (for example, a church, theater, or school) at a particular time, and then project that to the larger population under study (Chapin, 1974; Barker and Barker, 1961; Hadaway et al., 1993).
5. Telephone coincidental studies, in which respondents report what they were doing when the telephone rang. Such studies need to employ careful procedures to appropriately weight the households in which no one was home when the telephone rang, or what the other people in the household were doing when it rang; otherwise, one can generalize only to the population that is both at home and willing to pick up the phone.
6. The random-hour technique, in which respondents report on a smaller segment of the day and not on the full day. By so reducing the descriptive task, respondents can focus more carefully on these smaller periods of behavior.

Each of these techniques requires minimal memory work or recall on the part of the respondent, and as a result is usually considered to provide more "objective" measures of what people do. At the same time, only the shadow technique covers a very long period of time or can give much dynamic insight into where these various activities fit into the overall lifestyles of the individuals being observed.

To some extent, that limitation applies to our one-day diary approach as well. People may be involved in an unusual day as far as their normal activities are concerned. Thus, nearly 40 percent of respondents in our first national time-diary study claimed that our diary day was unusual in some way for them.

One way around this problem is to have respondents keep week-long diaries instead, an approach that has been used in national studies in England and Holland. The problem is one of cooperation rates, however, with the cooperation rate in both countries being only about 40 percent. At the same time, Gershuny and his colleagues (1986) in England report that those who kept diaries differed little from those who did not, in terms of their estimates of how they spent time.

For American samples, the counterintuitive result has been that respondents who agree to cooperate in single-day diary studies are more likely to lead highly active lives than those who refuse. Thus, respondents in the 1975 national survey who agreed to be reinterviewed three months after the initial data collection were more likely to report longer work and housework times in their initial diaries and also less likely to watch television and to sleep.

That result was replicated in the 1985 study, even though the design of the study was different in that respondents were first interviewed by telephone, then mailed another diary to keep on one day for the following week and finally asked to return the completed diary. Again, those who returned the diaries (for a cash reward) differed from those who did not return them, in terms of their busier lifestyles. These results are consistent with "the more, the more" principle of time allocation, in which already busy people are more likely to participate in a given activity (except television) than those who are initially less active. Such results also challenge Hochschild's (1989) assumption that busier women are underrepresented in time-diary studies.

Features of the Time Diary

The measurement logic behind this approach to time studies follows from that employed in the most extensive and well-known diary study: the Multinational Time Budget Study of Szalai et al. (1972). In that study, roughly 2,000 respondents from each of 12 different counties kept a diary account for a single day. The same diary procedures and activity codes were employed in each country in 1965. Respondents were chosen in such a way that each day of the week was equally represented. That equal-day allocation was very important for several European countries in the study, because many workers in those countries were on 5-1/2-to-6-workday schedules, so that their weekend activities were very different from those in the United States.

Figure 5 illustrates how the diary was filled out by one American respondent in these studies. This respondent was asleep at midnight as the new day began, and he woke up to do exercises at 5:45 A.M. He went to the bathroom and then got his bike out to take a 10-minute trip to the health club. Returning home at 7:10, he took a shower and got dressed until 7:45. After breakfast, he took the bus to work and worked from 8:45 until 1:00 p.m. He took off to buy a birthday present until 1:50, at which time he returned to work and ate lunch for 20 minutes. He then continued working until 4:45, at which time he took a bus home, arriving home at 5:40. Once home, he placed a marathon 2 hours and 20 minutes of phone calls and then went out

Figure 5. Sample Completed Time Diary

Time Began (1)	Time Ended (2)	Duration in Minutes (3)	Activity (4)	Assigned Activity Code (5)	Location Code (6)
0:00 (12 Midnight)	5:45 AM	345	Sleeping at Night	45	5
5:45 AM	6:00 AM	15	Did Stretching Exercise	80	5
6:00 AM	6:05 AM	5	Went to Bathroom, Used Toilet	40	4
6:05 AM	6:10 AM	5	Went Out to Backyard to Get Bike	89	11
6:10 AM	6:20 AM	10	Traveling, Bicycling	82	59
6:20 AM	7:00 AM	40	Went to Health Club, Exercising	80	31
7:00 AM	7:10 AM	10	Traveling, Bicycling	82	59
7:10 AM	7:15 AM	5	Got Home and Put Bike Away	89	11
7:15 AM	7:35 AM	20	Took Shower	40	4
7:35 AM	7:45 AM	10	Got Dressed	47	5
7:45 AM	8:10 AM	25	Eating a Meal or Snack	43	1
8:10 AM	8:15 AM	5	Traveling, Walking	9	53
8:15 AM	8:16 AM	1	Waited at Bus Stop	9	54
8:16 AM	8:35 AM	19	Traveling, in Transit	9	55
8:35 AM	8:45 AM	10	Traveling, Walking	9	53
8:45 AM	13:00 PM	255	Working (at Main Job)	1	21
13:00 PM	13:10 PM	10	Traveling, Walking	3	53
13:10 PM	13:40 PM	30	Went Shopping for Birthday Gifts	31	24
13:40 PM	13:50 PM	10	Traveling, Walking	3	53
13:50 PM	14:10 PM	20	Went into Office Kitchen and Ate Lunch	6	21
14:10 PM	16:45 PM	155	Working (at Main Job)	1	21
16:45 PM	16:55 PM	10	Traveling, Walking	9	53
16:55 PM	17:00 PM	5	Waited for Bus	9	54
17:00 PM	17:35 PM	35	Traveling, in Transit	9	55
17:35 PM	17:40 PM	5	Traveling, Walking	9	53
17:40 PM	20:00 PM	140	Talked on Phone	96	5
20:00 PM	20:10 PM	10	Traveling, Walking	49	53
20:10 PM	22:00 PM	110	Eating a Meal or Snack	44	28
22:00 PM	22:10 PM	10	Traveling, Walking	49	53
22:10 PM	22:20 PM	10	Changed Clothes	47	5
22:20 PM	24:00 PM	100	Sleeping at Night	45	5
	Total in Minutes	1,440			

SOURCE: Wiley, Robinson, et al., 1991.

for supper. Returning home at 10:10, he got ready for bed and was asleep by 10:20, which is what he was doing as the day ended at midnight.

Some 31 separate activities were recorded, along with not only the duration but also the time each of these activities began and ended, and the codes describing the activity (for example, sleep = code 45; working = code 1; talking on the phone = code 96) and where it took place. Totaling activities across the day, we see that he spent 7.4 hours (445 = 345 + 100 minutes) sleeping, 6.8 hours (410 = 255 + 155 minutes) working, and 2.6 hours (155 minutes) eating meals. To calculate his free time during the day, the 15 minutes of exercise were added to the 60 minutes for the health club visit and the 140 minutes of telephone calls, to arrive at a total of 215 minutes, or 3.6 hours. While one might prefer to classify his health-related activities as personal care, or his shopping or meal out as free time, that is not consistent with the coding scheme described below. Nonetheless, any such recodings can be made subsequently within that coding scheme.

Time diaries and other methods of measuring time have to describe what people are doing, and the descriptions must be uniform enough that all human behavior can be collapsed into a manageable number of categories. This can be seen as artificial and arbitrary, because human behavior is potentially infinite in meaning and form. What you are doing is, ultimately, an existential question with endless political and ethical overtones.

The task of keeping the time diary, while presenting some recall difficulties, is fundamentally different from the task of making estimates. The diary keeper's task is to recall all of the day's activities in sequence in his or her own terms, not in the terms of the researcher. This procedure is similar to the way the day was structured chronologically for the respondent and to the way most people store their activities in and recall them from memory. Rather than having to consider a long time period, the respondent need only focus attention on a single day. Rather than working from some list of activities, the diary keeper simply describes the day's activities in his or her own words.

The diary procedure thus avoids most of the pitfalls of the estimate approach described above. There are still problems of memory, as when respondents have trouble piecing together a particular period during the day, but overall the task is rather clear both to the respondents and to the interviewers and proceeds with few structural problems once begun.

The diary technique presents respondents with a task that gives them a minimal opportunity to distort activities in order to present themselves in a particular light. Some respondents may want to portray themselves as hard

workers or light television viewers, but in order to do so they must fabricate not only those activities but also the activities before and after them, making accounts of events later in the day more difficult. Besides, respondents can realize that this is only a one-day account and that on any given day they may work less or watch television more than usual. Moreover, respondents are not pressured to report an activity if they cannot recall it or do not want to report it.

Automatic procedures have now been built in to the diary recording procedures to ensure accurate reporting. Any time respondents report consecutive activities that involve different locations, they are reminded that some travel episode needs to be reported. Activity periods that last more than 2 hours automatically involve the probe "Were you doing anything else during that time, or were you (activity) for the entire time?" All periods across the day must be accounted for in order, so that the time-diary accounts total 1,440 minutes (see Figure 5).

In sum, the time diary is a micro-behavioral technique for collecting self-reports of an individual's daily behavior in an open-ended fashion on an activity-by-activity basis. Individual respondents keep or report these activity accounts for a short, manageable period, such as a day or a week—usually across the full 24 hours of a single day. In that way, the technique capitalizes on the most attractive measurement properties of the time variable, namely:

- All daily activity is potentially recorded (including activities that occur in the early morning hours, when most people may be asleep). Thus, the diary accounts are by definition complete across the 1,440 minutes of the day.
- All 1,440 minutes of the day are equally distributed across respondents, thereby preserving the "zero-sum" property of time that allows various "trade-offs" between activities to be examined—that is, if time on one activity increases, it must be zeroed out by decreases in some other activity.
- Respondents are allowed to use a time frame and an accounting variable that is maximally understandable to them and accessible to the way they probably store their daily events in memory.

The open-ended nature of activity reporting means that these activity reports are automatically geared to detecting new and unanticipated activities (for example, aerobic exercises; use of E-mail, VCRs, and new communications technologies), as well as capturing the full temporal context of how

daily life is experienced (when did certain activities take place, what activities preceded or followed).

In these diary accounts, respondents report on each activity in which they engage across the full 24 hours of the day and record where they were and various other aspects of each activity. It is on the entries in the "primary activity" column of the diaries that attention in this book is largely focused.

Earlier Diary Surveys

Before the 1985 national study, with 5,358 total respondents aged 12 and older, three national time-diary studies had been conducted using this general approach. These three studies and the organizations involved are:

- The Mutual Broadcasting Corporation 1954 study, in which more than 8,000 American adults aged 15 to 59 kept time diaries for a two-day period (more exact details are given in De Grazia, 1962). Unfortunately, only a few general data tables survive from this study for comparison with later studies, so we can review its results only briefly in this book. While most of these 1954 diary figures were surprisingly close to our 1965 results, the 1954 respondents reported less shopping and less away-from-home leisure time than the 1965 respondents—offset largely by more reading and more socializing in 1954; women reported less free time in our 1965 study, largely because of their increased paid work. (Robinson and Converse, 1972)
- The Survey Research Center, University of Michigan 1965 study, in which 1,244 adult respondents aged 18 to 64 kept a single-day diary of activities, mainly in the fall of that year. Respondents living in rural and nonemployed households were excluded (Robinson, 1977a). Supplementary data were collected from a community sample in Jackson, Michigan (n = 788). We make use only of the national part of the 1965–66 data, adjusting in later years for its focus on the urban and the employed.
- The 1975 Survey Research Center, University of Michigan, study, in which 1,519 adult respondents aged 18 and over kept diaries for a single day in the fall of that year (Robinson, 1976); in addition, diaries were obtained from 887 spouses of these designated respondents. These respondents became part of a panel, who were subsequently reinterviewed in the winter, spring, and summer months of 1976. About 1,500 of the original 2,406 respondents remained in this four-wave panel. Some 677 of these

respondents were reinterviewed in 1981, again across all four seasons of the year (Juster and Stafford, 1985). Because of the difference in activity between those who stayed or dropped out of the panel, we make use of of the original sample of 2,406 respondents and spouses interviewed in the fall of 1975.

Methodology of the 1985 Americans' Use of Time Project

In the 1985 study conducted by the Survey Research Center at the University of Maryland, which is of major interest in this book, single-day diaries were collected from more than 5,300 respondents aged 12 and over. Unlike the 1965 and 1975 data reviewed in this book, these data were collected across the entire calendar year of 1985. This "Americans' Use of Time" study employed the same basic open-ended diary approach as the 1965 and 1975 national studies. An important innovation in the 1985 study was the explicit attempt made to spread the collection of diary days across the entire calendar year, from January through December 1985.

The Mail-Back Sample

The data for the 1985 main (mail-back) study were collected from a sample of Americans who were first contacted by telephone using the random-digit-dial (RDD) method of selecting telephone numbers. All calls were made from the central telephone facility at the Survey Research Center of the University of Maryland at College Park.

Once a working telephone household was contacted, one respondent aged 18 or older in each household was selected at random. That person was given a brief (2- to 5-minute) orientation interview, followed by an invitation to participate in the diary/mail-out part of the study. If that respondent agreed, diaries were then mailed out for each member of the participating household aged 12 or over to complete for a particular day for the subsequent week.

Brief Call 2 and Call 3 interviews were made 4 to 6 days later to ensure that respondents had received the materials and understood how to complete them. After respondents had completed their time diaries, they then mailed all the completed forms back to the university for coding and analysis. Some 3,340 diaries from 997 households were returned using this mail-out procedure during the 12 months of 1985. It is the diaries obtained from adults

18 and over, however, that form the database for the analyses described is book. Other 1985 data included parallel diary data from 808 additional respondents interviewed in a separate personal interview sample in summer and fall of 1985, and from an additional 1,210 "yesterday" diaries ned by telephone as part of the initial contact for the mail-back es.

Telephone Sample

telephone sample consisted of the random sample of the population were contacted in the first phase of the random-digit-dial sample. This sted of the randomly selected adults (aged 18 or older) who responded he first interview. Some 67 percent of respondents contacted by telene, however, did complete a day-before diary over the telephone. This the highest response rate for any of the three data collection modes.

e Personal Sample

addition to the 1985 mail-back and telephone diaries, a separate national mple of 808 diaries was collected by personal in-home interviews. Reondents in this sample followed much the same procedures for the initial lephone sample. One adult selected at random was to complete a retrospective diary from memory for the previous day. The interviewer then left aries for all adult respondents in the household to complete for the following day.

The University of Maryland coders were extensively trained on the activity code category system and used the same complete set of coding conventions that had been developed by the Survey Research Center at the University of Michigan for its 1975 time-diary project. Each activity in the diary was coded descriptively as a separate block of 17 digits in length, which comprised the primary activity during the period (a three-digit code), the time the activity began and ended (each coded in 4-digit military time, for example, 8:00 A.M.. = 0800; 8:00 P.M. = 2000), location (1 digit), social partners (2 digits), and secondary activity (3 digits). The basic activity code categories are shown in Table 1, using the first two digits.

When this 17-digit entry for all activities in the diary was data-entered and computed, the totals were programmed into the machine to ensure that each day's diary entries added to exactly 1,440 minutes (24.0 hours). These "variable-field" data (that is, varying, depending on the number of activities

Table 1. Activity Codes for 1975 and 1985 National Studies (Based on Szalai et al., 1972)

00–49 Non-Free Time	50–99 Free Time
00–09 Paid Work	50–59 Educational
00 (not used)	50 Students' classes
01 Main job	51 Other classes
02 Unemployment	52 (not used)
03 (not used)	53 (not used)
04 (not used)	54 Homework
05 Second job	55 (not used)
06 Eating at work	56 Other education
07 Before/after work	57 (not used)
08 Breaks	58 (not used)
09 Travel to/from work	59 Travel/education
10–19 Household Work	60–69 Organizational
10 Food preparation	60 Professional/union
11 Meal cleanup	61 Special interest
12 Cleaning house	62 Political/civic
13 Outdoor cleaning	63 Volunteer/helping
14 Clothes care	64 Religious groups
15 (not used)	65 Religious practice
16 Repairs (by R)	66 Fraternal
17 Plant, pet care	67 Child/youth/family
18 (not used)	68 Other organizations
19 Other household	69 Travel/organizational
20–29 Child Care	70–70 Entertainment/Social
20 Baby care	70 Sports events
21 Child care	71 Entertainment
22 Helping/teaching	72 Movies
23 Talking/reading	73 Theater
24 Indoor playing	74 Museums
25 Outdoor playing	75 Visiting
26 Medical care—child	76 Parties
27 Other child care	77 Bars/lounges
28 (not used)	78 Other social
29 Travel/child care	79 Travel/social
30–39 Obtaining Goods/Services	80–89 Recreation
30 Everyday shopping	80 Active sports
31 Durable/house shop	81 Outdoor
32 Personal services	82 Walking/hiking
33 Medical appointments	83 Hobbies
34 Govt/financial services	84 Domestic crafts
35 Repair services	85 Art
36 (not used)	86 Music/drama/dance
37 Other services	87 Games
38 Errands	88 Other computer use
39 Travel/goods and services	89 Travel/recreation
40–49 Personal Needs and Care	90–99 Communications
40 Washing, dressing, etc.	90 Radio
41 Medical care	91 TV
42 Help and care	92 Records/tapes
43 Meals at home	93 Read books
44 Meals out	94 Magazines, etc.
45 Night sleep	95 Reading newspaper
46 Naps/day sleep	96 Conversations
47 (not used)	97 Writing
48 NA activities	98 Think/relax
49 Travel/personal care	99 Travel/communication

SOURCE: Americans' Use of Time Project, University of Maryland.

reported) were then processed by a special computer program that generated "fixed-field" compilations of diary time for each of the 94 activities across the day—that is, total daily minutes spent working, cooking, watching television, and so on, for that respondent for that day.

Further details on the 1985 study are given in Robinson and Bostrom (1994).

Methodology of the 1975 Study

The 1975 study was based on data collected from a sample of Americans first interviewed in October–November 1975, as part of the 1975 fall omnibus study conducted by the University of Michigan's Institute for Social Research. It was designed to facilitate development of a fully articulated system of national economic and social accounts. Particular emphasis was placed on obtaining accurate estimates of yearly productive uses of time on a household basis for analysis using a microdata perspective (Juster and Stafford, 1985).

The respondents in the 1975 omnibus were chosen to form a representative sample of American adults 18 years of age and older living in the coterminous United States (excluding Alaska and Hawaii). As part of the time-use measurement effort, spouses of the respondents were interviewed too. The original respondents and their spouses were then reinterviewed three times during 1976 (in February, May, and September 1976), mainly by telephone. Only the first-wave personal-interview data (n = 2,406) are described in our analyses, because of the difference in activity patterns of those who stayed in this panel, compared with those who dropped out.

Methodology of the 1965 Study

The 1965 study, also conducted by the University of Michigan, interviewed an urban, largely employed sample of more than 2,000 American adults aged 18–65 who kept complete diaries of their activities for a single day. Data were collected mainly between November 1 and December 15, 1965 (with the remainder collected in the spring of 1966). The sample was deliberately chosen to be an urban and employed group conforming to the guidelines of the multinational study of which it was a part (Szalai et al., 1972). Thus residents of non-SMSAs (areas with no city greater than 50,000 in population) were excluded, as well as residents of households in which no member

aged 18 to 65 was part of the labor force; full-time farmers were also excluded. Respondents were randomly assigned to fill out diaries on either a weekday or a weekend.

Of the total sample, 1,244 adults were part of the national urban sample; another 788 adults came from the city of Jackson, Michigan, and its suburbs. Although showing basically the same patterns as the national study, the Jackson data are not included in the national results reported here, in order to make the trend comparisons more precise, but they are shown in Appendix A.

The field procedures involved the "tomorrow" approach—that is, the interviewer contacted the respondent and conducted a brief "warm-up" interview on the first day and left the diary for the respondent to enter the next day's activities. The interviewer returned to the respondent's home on the subsequent day (that is, the day after "tomorrow") to ensure that the diary had been filled out correctly and to fill in any missing parts if it had not.

Comparison of the Three Most Recent Studies

The 1965, 1975, and 1985 studies were all based on strict probability sampling methods across the nation. The major features of these national diary studies are contrasted in Exhibit 1. Only the 1985 study was spread across

Exhibit 1. Methodological Features of the National Time Diary Studies from the Americans' Use of Time Project

	1965	1975	1985
Sponsor	Univ. of Mich.	Univ. of Mich.	Univ. of Md.
Sample size	1,244	2,406	5,358
Age range	18–65	18+	12+
Months	Oct.–Nov.	Oct.–Dec.	Jan.–Dec.
Mode/Response rate	Personal (72%)	Personal (72%)	Mail-back (3,340) (51%) Telephone (1,210) (67%) Personal (808) (60%)
Diary type	Tomorrow (1,244); yesterday (130)	Yesterday (2,406)	Tomorrow (3,890); yesterday (1,468)

SOURCE: Americans' Use of Time Project.

the entire year. Moreover, the 1985 national data were mainly collected by prospective mail-back diaries, while the 1975 study employed the retrospective recall of activities done "yesterday." The 1965 and 1975 studies had somewhat higher overall response rates (72 percent and 72 percent), although not much higher than the telephone portion of the 1985 national study (67 percent). However, the 1985 study had more than twice the number of adult respondents over age 18 than the 1975 study (n = 4,939 vs. 2,406).

The 1985 national study had more spread across the year and across days of the week, while the 1975 study oversampled Sundays and undersampled Saturdays. All studies used open-end diary entries across the full 24 hours of a single day and the same basic code for diary activities—although the 1975 and 1985 studies employed more than twice as many activity codes, using an additional third digit appended to the code in Table 1.

In addition to these U.S. national studies and the studies from Jackson, Michigan (the overall results from which are in Appendix A), we also refer to two other recent diary studies from large representative samples. The first is the 1987–88 statewide study of California, in which 1,579 respondents aged 18 and older gave retrospective diary accounts of what they did "yesterday" (Wiley, Robinson, et al., 1991). The second was the 1986 national diary study conducted in Canada with 9,000 respondents (see Chapter 19). Like the 1985 University of Maryland study, both these studies were conducted by telephone and across the entire year. The comparative results are shown in Appendix B.

Three different modes of diary collection were used for methodological comparison in our 1985 U.S. national study: personal, mail-back, and telephone. As in earlier diary studies (for example, Robinson, 1977a, 1985b; Juster and Stafford, 1985) using the basic diary recording framework in Table 1, little difference in obtained time estimates was observed (see Appendix C). This is evidence of the basic reliability of the diary method, as described below. The telephone method did result in less "Not ascertained" time (code 48 in Table 1), and also less time reported in such shorter activities as radio-listening and meal cleanup.

As in earlier diary surveys, coding was done for the open-ended diary reports using the basic activity coding scheme developed for the 1965 Multinational Time Budget Research Project (as described in Szalai et al., 1972). The Szalai et al. code (Table 1) first divides activities into non–free-time activities (codes 00–49) and free-time activities (codes 50–99). Non–free-time activities are further subdivided into paid work, family care, and per-

sonal care, with free-time activities being further subdivided under the five general headings of adult education, organizational activity, social life, recreation, and communication.

The more fine distinctions within these categories, captured in the over 250 categories developed in the 1985 study, reflect further distinctions under these broader headings. Nonetheless, the main value of the open-ended diary approach is that activities can be recorded or recombined, depending on the analyst's unique assumptions or purposes.

The Szalai et al. code has several attractive features. First, it has been tested and found to be reliable in several countries around the world. Second, and because of this, extensive prior national normative data are available for comparison purposes. Third, it can be easily adapted to include new code categories of interest to researchers who are looking into different scientific questions from various scientific disciplines.

Location, as described in the "where" category of the time diary, was coded into one of the basic location categories developed for the 1985 study (see Appendix D). The location coding can be aggregated to estimate time spent in travel, outdoors, or at home, which are all important parameters for analyzing trends in use of time. Unfortunately, these distinctions were not employed in earlier studies, so cross-time comparisons are not as exact as they are for activities.

When aggregated, then, activity-diary data have been used to provide generalizable national estimates of the full range of alternative daily activities in a society, from "contracted" time to "committed" time to personal care and all the types of activities that take place in free time. The multiple uses and perspectives afforded by time-diary data have led to a recent proliferation of research and literature in this field. Comparable national time-diary data have been collected in more than 25 countries over the last two decades, including virtually all Eastern and Western European countries.

Methodological Support for the Accuracy of Time Diaries

Two important measurement properties of social-science measures are reliability and validity. Reliability refers to the ability of a measurement instrument to provide consistent results from study to study or under different conditions—that is, do we get similar results using the same method? Validity refers to the ability of an instrument to provide accurate or valid data, in

the sense that it agrees with estimates provided by other methods (such as observation or beepers, as described above).

Reliability

In the 1965 and 1975 studies, estimates from time diaries produced rather reliable and replicable results at the aggregate level. For example, Robinson (1977a) found a .95 correlation between time-use patterns found in the 1965–66 national time diaries (n = 1,244) and the aggregate figures for the single site of Jackson, Michigan (n = 788). Similar high correspondence was found for the American data and for time-diary data from Canada, both in 1971 and in 1982 (Harvey and Elliot, 1983).

Reliability was also noted using different diary approaches. Thus, a correlation of .85 was found between time expenditure patterns found in the U.S.-Jackson time study using the "tomorrow" approach, and time expenditures for a random one-tenth of the sample, who also filled out a "yesterday diary." In a smaller replication study in Jackson in 1973, an aggregate correlation of .88 was obtained (Robinson, 1977a).

Further support for the reliability of the diaries comes from the tables in Appendixes A, B, and C, which present data that show the rather convergent results that were obtained from the telephone, mail-back, and personal interviews in the 1985 national study; and from the overall national results and those obtained in 1986 in Jackson, Michigan, in 1987–88 in California, and in 1986 and 1992 in Canada.

Validity

Almost all diary studies depend on the self-report method rather than on some form of observation. Like all verbal, and nonverbal, evidence, questions arise about the accuracy of the diaries. That can be seen as an unfortunate situation, because it leaves these self-report data open to basic questions of their being verifiable by some independent method of observation or report. But there are encouraging signs from the observational studies that have been conducted (for example, Kubey and Csikszentmihalyi, 1991).

Several studies bear directly on the validity of the time diary, in the sense of there being an independent source or quasi-observer of reported behavior. The first of these studies did not involve the time diary directly, but rather the low viewing figure from the time diaries relative to standard television rating-service figures that we found in our initial 1965 study. In this small-

scale study (Bechtel, Achepohl, and Akers, 1972), the television-viewing behavior of a sample of 20 households was monitored over a week's time by means of a video camera. The camera was mounted on top of that set, thus allowing the video camera/microphone to record all the behavior that took place in front of the television screen.

The results of this study, as in the earlier camera-monitoring of television audiences by Allen (1968), indicated that both rating-service methods of television exposure (the Nielsen audimeters and the viewing diaries) produced estimates of viewing that were 20 to 50 percent higher than primary or secondary viewing activities reported in time diaries. In brief, the study provided considerable support for an explanation of the lower viewing times reported in time diaries than by commercial rating services. It also illustrated the need for a complete activity and open-end diary, rather than one focused only on a specific set of activities, such as television or housework.

Three more general validity studies published subsequent to Bechtel et al. provided further evidence of the validity of time-diary data. These examined the full range of activities, not just television viewing, and employed larger and more representative samples. However, none involved the independent observation of behavior as the Bechtel et al. (1972) study had.

In the first study (Robinson, 1985b), a 1973 random sample of 60 residents of Ann Arbor and Jackson, Michigan, kept beepers for a one-day period and reported their activity whenever the beeper was activated (some 30 to 40 times across the day). Averaged across all 60 respondents, the correlation of activity durations from the beeper and from the diaries was .81 for the Ann Arbor sample and .68 for the Jackson sample (across the nonsleep periods of the day).

In a second study, a telephone sample of 249 respondents interviewed as part of a 1973 national panel survey (Robinson, 1985b), respondents were asked to report their activities for a particular "random hour" during which they were awake that day—with no hint from the interviewer about what they had previously reported for that hour in their diary. An overall correlation of .81 was found between the two aggregate sets of data—that is, between the activities reported in the random hours and in the diary entries for those same random hours.

In a more recent study, Juster (1985) compared the "with whom" reports in the 1975–76 diaries of respondents with those of their spouses across the same day. Juster found that in more than 80 percent of these independently obtained husband and wife diaries agreed that their spouses were present or absent. In a separate analysis of these 1975 data, Daniel Hill (1985) found a .92 correlation between time spent on various home energy-related activities and aggregate time-of-day patterns of energy use derived from utility meters.

More recently, some preliminary studies using the "shadow" technique described above have been conducted with student samples. The students shadow someone they know across a 12-hour period of the waking day, recording all the things each person does during that observation period. The next day, that student then asks the shadowed person for an unrehearsed account of the same activities. Although the samples so far have been very small and highly unrepresentative, with some highly variable individual reporting, agreement at the aggregate level on most activities across the day is ± 10 percent.

The recent study of Presser and Stinson (1996) also bears on the validity of the diary, in that they found church attendance rates reported in time diaries were consistently lower than those reported on an estimate basis. That was also the result from observational studies of actual church attendance at the community level (Hadaway, Marler, and Chaves, 1993). While the observed rate in the community was still lower than that reported in the diaries, Presser and Stinson conclude: "The findings presented here confirm the conclusion . . . that there is a significant overreporting of religious attendance in traditional surveys. The overreport, however, is only half as large as they (Hadaway et al.) suggest (50 percent as opposed to 100 percent)."

In conjunction with the reliability studies, then, the data from these studies provide a considerable degree of assurance about the basic generalizability of time-diary data. This has been the case as well in methodological studies conducted in other countries (for example, Gershuny et al., 1986; Michelson, 1978). Nonetheless, a definitive well-controlled study needs to be conducted to update and extend these results.

The Analytic Procedures Used in This Book

In the cross-time analyses that follow, several steps have been taken to ensure comparability of diary data across the three decades of study. First, analyses have been confined to the age 18–64 segment of the population—that is, the segment most likely to be in the labor force. That was also the only age segment examined in the 1965 study. The rural segment of the population, excluded in the 1965 data collection, has been examined to see whether it is different from the nonrural population in 1975 and 1985. Per se, they are

not found to be different, as in the Chapter 12 evidence of how little difference there is between urban vs. rural people. Thus, rural respondents were combined with urban people in aggregating the 1975 and 1985 data.

More important, the technique of Multiple Classification Analysis (MCA) has been employed to control for this location difference and for other unwanted sources of differences in the data across years. In other words, when comparing housework across decades, adjustments need to be made for the fact that more women are employed and that fewer are married or have children. That is necessary to ensure comparing 1965 apples with 1985 apples in these analyses. Similarly, when comparing cross-decade data on child care, adjustment is needed for the lower percentage of respondents who have children and younger children in more recent years.

MCA was specifically designed by Andrews et al. (1973) to provide these types of statistical adjustments to survey data. What it does is effectively ensure that "other things are equal" in the analyses. An example of how the procedure works in practice is provided in Robinson, Triplett, et al. (1985). In effect, then, MCA acts as a corrective for the demographic characteristics that a "standard 1965 adult" would have had in 1985.

In more straightforward terms, the 1965 to 1985 results are shown in terms of four major subgroups: employed women, women not in the paid labor force, employed men and men not in the labor force. To simplify comparisons, these data are shown in terms of implicit hours per week, even though respondents generally kept diaries only for a single day. Here again, the MCA procedures have been useful in ensuring that day-of-the-week differences are taken into account in describing the trends that are identified.

PART 2

Work and Other Obligations