Measuring How People Spend Their Time

Linda L. Stinson

Office of Survey Methods Research,
Bureau of Labor Statistics,
Washington, DC 20212

telephone: 202-606-7528 FAX: 202-606-7426
Stinson_L@BLS.gov

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Abstract

Time-use studies typically have a single focus: the duration of human activities. That is, they ask respondents to report everything they did during a 24-hour period along with some indication of the starting and stopping times of those actions. This chronological reporting procedure avoids many of the pitfalls of other survey estimation procedures and is less subject to distortion due to social desirability bias. But there are many methodological considerations to take into account when designing a time-use survey. Decisions concerning reporting procedures and mode of data collection may influence data quality. Likewise, the choice of follow-up probes and the treatment of simultaneous activities can determine the amount of information available for accurate and reliable coding of activities. This paper will describe the methodological decisions our working group faced when designing a time-use survey and introduce the choices that we made.

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Key Words: time-use survey, survey methodology

I. Introduction to Time-Use Surveys

No matter what academic discipline or scientific field one may pursue, sooner or later the topic of **"time"** generally forces its way into the arena of discussion. Hence we find:

- *physicists theorizing on the relationship between time and space;*
- *philosophers and theologians speculating on time and eternity;*
- *physicians and psychologists debating the nature of biological clocks;*
- *anthropologists describing the effect of time on cultural evolution;*
- *historians treating time like their own personal data set;*
- *statisticians conducting time-series analyses; and*
- *economists debating to what extent time is money.*

Is it any wonder then that, since the early 1920s, one country after another has taken an interest in measuring and understanding how its citizenry spends their time?

While time-use research (*i.e.*, the actual enumeration of the activities people perform) may have originated within the social sciences and the time management domain of the business world, international governments have also been quick to recognize the value of this information. Time-use surveys can be used to ask and answer such research questions as:

- *How much time do people spend commuting to work?*
- *How much time is spent waiting for health care or other services?*

- *How much time is spent caring for children and who is doing it?*
- *Is inflation low because people spend time shopping around for bargains?*
- *Would the amount of time spent on unpaid work alter the Gross National Product?*
- *Has our increasing technology given us more leisure time or less?*
- *What do retirees do after leaving the workforce?*

The list of policy-relevant issues of interest to governments worldwide and which can be illuminated with time-use data could extend on and on. Consequently, the question at hand is not so much *"why?"* time-use data should be collected, but rather, *"how?"* it can be collected well.

Typically, a time-use survey or time diary asks respondents for a sequential listing of all the activities in which they have engaged during the course of a single 24-hour period. This single focus upon "a day in the life of a respondent" is simple enough in principle. However, as with any other survey design, there are a number of different approaches that may be followed when collecting time-use data, each with their accompanying ramifications on data appearance and quality.

The goal of this paper is, therefore, to document the series of methodological options with which the Bureau of Labor Statistics (BLS) time-use survey working group was faced. I will also present some of the methodological choices that we suggested and provide insights into the rationale for our selections.

II. Methodological Considerations

Time-use research may be rather unique in the world of social science analysis in that it has a long history of international cooperation and is often animated by a desire to make cross-national comparisons (Szalai, 1972). Consequently, certain standards and procedures for time-use data collection have been established and are generally recognized within the field as successful practices (Harvey, 1993). However, within this normative framework, there still remain several methodological options to be considered and challenges to be confronted.

A. Mode

Since time-use research began during the era of face-to-face interviews and continues to be popular in localities where telephone data collection is non-normative, it is not surprising to discover the widespread popularity of the paper diary. The "Time Clock" is an example of one early attempt to use a paper and pencil format to collect time-budget information (see Exhibit 1) in the United States. This data collection instrument was used by the United States Department of Agriculture in the 1920s and 1930s to create a daily time record for homemakers.[1] Homemakers were instructed to draw lines on the time wheels to mark the beginning and ending times of their activities and to describe the activity inside the intervening spaces. Since those early days, paper time diaries have continued to evolve until today we find examples such as that prepared by the Australian Bureau of Statistics (see Exhibit 2). But in all cases, the heart of the time diary is preserved: a verbatim description of the day's activities is collected along with an assignment of the approximate starting and stopping times for each activity, recorded either in free format or in fixed 5 – 10 minute intervals.

In both Canada and the United States, the drive for cheaper, faster, and easier data collection has generally resulted in a great push for surveys to become both computerized and telephone administered. In line with this trend, both the "1985 American's Use of Time Project" headed by John Robinson and conducted by the Survey Research Center at the University of Maryland[2] (Robinson and Godbey, 1997) and the Canadian General Social Survey (Frederick, 1995) have demonstrated that in North America, information about the use of time can be successfully collected over the telephone. Since our proposed sampling frame included a ready-made list of telephone numbers,[3] our working group followed the North American precedent and opted for a computerized telephone format.

The option to collect time-budget information by telephone does have, however, certain implications. One implication is that when information is collected by telephone from centralized calling centers there are new opportunities to monitor interviews and improve the quality of the entire data collection process. In any survey situation, the capacity to increase the precision, efficiency, and accuracy of data collection is extremely valuable. It may be even more valuable for time-use interviews built, as they are, upon the collection of verbatim accounts of activities elicited from respondents by interviewers using skills that may best be referred to as "flexible interviewing" (Schober and Conrad, 1997). A second implication is that telephone data collection almost certainly precludes the possibility of collecting diaries from an entire household due to the difficulties inherent in trying to make contact with all household members

[1] The author would like to express her thanks to Susan Chapman of the Reference Section at the National Agricultural Library in Beltsville, Maryland for locating, reproducing, and sharing this early time diary from the Department of Agriculture.

on a designated day.[4] While statistical arguments may be made that the design effects produced by collecting clusters of activities within households are detrimental to survey standard errors and should be avoided (Guerts and De Ree, 1993), other social scientists may argue that the social dynamism produced by the intertwining of household members' activities demands that households be studied in toto. At any rate, it seems most likely that any study design requiring data collection from an entire household would not find our proposed method of telephone collection optimal.

B. Follow-Up Probes

Throughout the years, it has become increasingly clear that accurate coding and the complete analysis of activities requires more than a simple verbatim record of their content. Other elements are deemed essential for providing the context necessary for interpreting these verbatim accounts. This additional contextual information generally includes follow-up probes asking for (1) the locations where activities occurred, (2) the identities of other persons who were present and/or participating, and (3) other activities that may have been performed simultaneously.[5]

The classic example typifying the importance of such additional contextual information is found in the activity of "eating." Based upon contextual circumstances, the classification of "eating" can range from: (a) ***personal care*** when the activity is performed alone or with

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[2] The University of Maryland team headed by John Robinson also used telephone data collection for their 1995 time-use survey sponsored by the Environmental Protection Agency.
[3] Our proposed sampling frame is the list of month-in-sample 8 participants in the Current Population Survey.
[4] A "designated day" is statistically selected and assigned so that the activities recorded in time-use studies will be representative. This is necessary in order that activities, such as those performed outside the home, are not overestimated.

household members exclusively, (b) ***work time*** when eating on the job or during work-related functions, or (c) ***socializing*** when food is consumed in a social situation or location with non-household members (Becher, 1997). While it may be possible to glean some contextual information from preceding activities (*e.g*., eating in a restaurant is preceded by travel to the restaurant), nevertheless, this information may not always be sufficient (*e.g.*, eating alone in a restaurant versus joining friends at a restaurant to socialize).

In most paper diaries, this additional contextual information is recorded by checking an appropriate column (see Exhibit 3). Studies suggest, however, that when respondents are instructed to complete their own time-budget diaries, the information about the presence of other people is not always recorded correctly. The 1979 nationwide time-use study conducted by the Central Statistical Office of Finland found that only a third of the respondents correctly filled in the column identifying time spent "in the company of others." In many cases, respondents only reported the time actively involved with others in mutual activities and failed to identify time spent passively in the company of others. Many others made vague or careless entries rendering the data unclear (Niemi, 1983). However, since we are proposing that our time-use information will be collected by telephone, interviewers should have an opportunity to probe for complete and accurate answers.

Following the example of Statistics Canada's telephone administered time-use interview, we propose that after each activity reported, interviewers will ask either, "*Where were you*?" or

[5] The final report issued by the Expert Group convened by the United Nations Statistical Division to discuss a "Trial International Classification for Time-Use Activities" cited "for whom," "with whom," and "location" as the important context variables that should be collected in time-use studies (United Nations Secretariat, 1997).

"Were you still… ?" For each activity, there will be only one answer collected and it will be recorded in one of the following categories:

PLACE:
<1> at respondent's home
<2> at work place
<3> at someone else's home
<4> at other place (include park, neighborhood)

OR IN TRANSIT:
<5> in car (driver)
<6> in car (passenger)
<7> walking
<8> in bus or subway (includes street cars, commuter trains or other public transit)
<9> on bicycle
<10> other (*e.g.*, airplane, train, motorcycle)

Also following Statistics Canada, we propose that for each activity the interviewer will then ask either, *"Who was with you?"* or *"Were you still…?"* in order to get a complete list of other persons present. Interviewers will use the following list to record all that apply:

<1> alone
<2> spouse/partner
<3> child(ren) of the household under 15 years
<4> parent(s) or parent(s) in-law in the household
<5> other member(s) of the household (include children of 15 or more)
<6> child(ren) of the respondent less than 15 years old outside the household
<7> child(ren) of the respondent 15 or older outside the household
<8> parent(s) or parent(s) in-law outside the household
<9> other family member(s) outside the household
<10> friend(s)
<11> other persons(s)

Taken together these additional probes for "locations" and "other persons present" should provide enough information for accurately identifying and coding social situations and any ambiguous events. Beyond even that, however, these responses provide an opportunity for

further probing, should a specific interest ever arise. For example, if there was an interest in having a supplemental "Child Care Module" attached to the time-use interview, response #3 (*i.e.*, children of the household under 15) to the *"Who was with you?"* question could be programmed to trigger additional child care questions attached either to the specific activity where the flag was evoked or at the end of the completed 24-hour activity report as a separate battery of questions. Likewise, the location "work place" could be used to trigger additional "work schedule" questions or an "in-transit" response could be used to signal additional questions on "commuting patterns." The possibilities are almost limitless and confirm the importance of this additional contextual information.

Finally, our working group is proposing that a final contextual probe should be added at the end of the interview in order to identify clearly all the activities for which respondents were paid.[6] The exact wording of the question will, no doubt, need to be tested in order to assure us that it also helps respondents identify "self-employed activities." But despite the need for additional clarification of the wording, the fundamental necessity for some type of "paid work" question was abundantly clear during our 1997 time-use pilot test. Without it, we were not able in all cases to separate "market" from "non-market" work, a coding distinction that will, most likely, always be of paramount interest to the Bureau of Labor Statistics.

C. Coding Schemes

Throughout the world, most of the currently used activity classification systems have evolved from the original structure developed by Alexander Szalai for the Multinational Time-Use

[6] During the 1997 BLS pilot test, we tested the following "paid work" question: "Of all the activities that you did yesterday, did you get paid for any of them?" The note to interviewers instructed them to only include work that was paid to respondents in the form of money (cash, check, etc.) and to not include bartering or exchange services.

Project of the 1960s. These activity codes are typically arranged into mutually exclusive behavior groups that cover all aspects of human activity. These primary divisions of behavior generally include:

- personal care activities;
- employment related activities;
- education activities;
- domestic activities;
- child care activities;
- purchasing goods and services;
- voluntary work and care activities;
- social and community activities;
- recreation and leisure; and
- travel time.

Not only do the current classification systems attempt to reflect meaningful distinctions between specific activities for the purposes of tabulation, but they also try to prioritize those distinctions in such a way that they provide a solid conceptual basis for the analytic endeavor.

One such temporal typology developed by Dagfinn Ås (1978, 1982) and based on the ideas of V.D. Patrushev (Niemi et al., 1986, p.13), identifies all time as either (a) *necessary time* serving basic physiological needs, (b) explicitly *contracted time* related to gainful employment and school attendance, (c) *committed time* to which one is obligated, but for which a substitute service could be purchased, or (d) *free time* which remains when the other three types have been accounted for. Within this over-arching scheme of "time commitment," all the primary divisions of activities are clustered and interpreted. Perhaps due to the cohesion of this system, time-use studies from all over the world have been analyzing and reporting their results using this structural framework. Such a typology should also assist coders in distinguishing between

activities that may have multiple layers of meaning and which may not be readily identifiable in their classification.

Internationally, there are several existing coding schemes that are very appealing. Since they have evolved from a common source, they share many similarities. By selecting an existing classification system, we would benefit from their previous tests and code revisions, thereby saving time and money. International coding consistency is also necessary for cross-national comparisons. The following classification systems seem especially worthy of consideration:

Eurostat Classification System

The original version of the coding list adopted by Eurostat for the "Harmonized European Time-Use Survey" was developed by Iiris Niemi of Statistics Finland in 1993. Since that time, several workshops and expert panels have discussed the Eurostat coding system and refinements were made in 1995. Further refinements and adaptations have been made in close collaboration with coding experts in England, Finland, and Sweden.

Beyond the effort invested in continuous improvement, the Eurostat system offers the advantage of direct international comparability. To date, eighteen countries[7] have participated in the "Harmonized Time-Use Project" and share the common coding scheme at the level of one- and two-digit codes, while maintaining the opportunity for country-specific adaptations at the third-digit level of coding.

[7] These countries participating in the 1996/1997 pilot test include Finland, Sweden, Luxembourg, Ireland, Italy, Spain, Portugal, Greece, United Kingdom, Albania, Bulgaria, Hungary, Poland, Slovenia, Lithuania, Estonia, Latvia and the Former Yugoslav Republic of Macedonia. France and Germany have also expressed interest in joining the "Harmonized Project" and are negotiating possibilities for financing their participation. Likewise, Austria,

Australian Classification System

This system has the advantage of having been tested and critiqued since 1992, resulting in a number of revisions in 1997. The overall structure is very similar to the Eurostat system and provides international comparability, while attempting to adjust the uneven distribution of time within the major categories by redefining some of the primary categories. Some of the most interesting revisions include:

- combining "domestic activities," "child or adult care," and "purchasing" together into a single domain of "household and family care," reflecting the common thread of *"time committed to the household,"*
- separating *"free time activities"* into the four clearly distinguishable sub-categories of (1) social life and entertainment, (2) sports participation, (3) hobbies and games, and (4) mass media,
- disentangling the category of "voluntary work" so that *"committed activities"* and *"free time activities"* are more easily distinguished, thereby allowing "unpaid work activities" to be more accurately identified.

United Nations (UN) International Trial Classification System

In the autumn of 1997, the United Nations Statistical Division convened an expert panel of time-use researchers to design a "trial classification system" that would provide an international coding scheme for analyzing and understanding the use of time in all different societies. The proposed classification system differs from other existing systems in three main ways:

- The basic framework for distinguishing the economic nature of activities is the System of National Accounts (SNA).

Denmark, and the Netherlands are engaged in ongoing discussions, but have not yet reached decisions about future participation.

- All non-market production has been brought together into a single one-digit category and then further specified at the two- and three-digit levels.
- "Paid work" activities, which are normally undefined at the two- and three-digit level, have been given more detailed breakdown (See UN Report, 1997).

While aiming for international comparability, the main feature of the UN system is clearly its economic conceptualization. This classification is meant to be useful in the (a) assessment of national labor inputs into production of goods and services, (b) compilation of household satellite accounts and, above all, (c) analysis of time use within the framework of the SNA. This system was designed to be especially useful for developing countries that may lack labor force or expenditure surveys and may need to use a single national survey to address many different research and policy issues. It seems less likely to be adopted by other countries that already have years of experience with their own time-use coding schemes, as well as fully developed national statistical survey programs to address specific research needs.

Assessment

While other national classification systems are similar to these three systems because they all share a common origin, these three stand out. The Australian system is strong because it seems to have moved the furthest beyond a simple structure for the tabulation of activities and has evolved into an analytically cohesive and theoretically strong "explanation" of time use. The Eurostat system draws strength from the breath and scope of its application throughout the unified Europe. The United Nations system is appealing because of the economic foundation on which it rests.

After considering each of these coding schemes, our working group recommended a slightly modified version of the Australian system because it provides international coding comparability even while redefining some of the primary categories to be more logically consistent with the four-fold typology of time. The proposed BLS system (see Exhibit 4) shows minimal changes at the level of first-digit codes, such as expanding "child care" to include "care of all household dependents, including children, the elderly, and the disabled." At the two-digit level, there would be a few codes added to provide additional classification for the expanded one-digit categories. Finally, at the three-digit level, useful codes from other international systems would be added to provide additional clarifications.

D. Simultaneous activities

One of the most difficult problems that all time-use researchers must deal with is how to record with accuracy and completeness the pulsing dynamism of human activity. As pointed out so clearly by Alexander Szalai, there are practical limits to how well this can be done. While there are many "parallel and criss-crossing threads of activity," we are generally constrained by the linear flow of time itself to view activities as predominantly sequential in nature, rather than as pulsating energetic moments extending backwards from and forwards into their surrounding activities (Szalai, 1972). As he wrote:

> "…for whatever level of accuracy one may reach, still more minute observations could possibly prove that some activities which seemed to be carried out simultaneously were in effect alternating with one another, or that some activities which seemed to be performed consecutively were factually overlapping to some extent. Nevertheless, any time-budget study which does not grapple in some way with the problem of recording secondary or parallel activities is essentially unable to give a balanced account of the great variety of activities which fill up everyday life (p.3). "

Typically time-use studies provide respondents with an opportunity to report at least one "simultaneous" or "secondary" activity in parallel with each sequential activity mentioned (see Exhibits 2 and 3). Such studies report finding as much as three to four hours per day being spent doing more than one activity at a time (INSTRAW, 1995). Child-care activities, in particular, seem especially subject to simultaneity. However, as mentioned earlier in the discussion of follow-up probes, when respondents are left to self-record their own activities in paper diaries, the collection of simultaneous activities often suffers.[8]

Our own 1997 BLS Time-Use Pilot test found that most reports of simultaneous activities were coded either as social or personal care activities or were classified as "non-market work." On average, we found nearly two hours of either social or personal activities and an additional hour of non-market work occurring simultaneously with other activities per day. Consequently, we recognize the importance of providing a forum whereby respondents are able to report activities that may have been performed in tandem with other actions. We propose collecting this information by asking respondents, *"Were you doing anything else during that time?"* after recording (a) the starting and stopping times, (b) the location and (c) other persons present for each recorded activity.[9] By standardizing the collection of simultaneous activity through scripted questions administered by interviewers, we hope to avoid some of the measurement difficulties encountered by the self-administered paper diaries. We likewise hope to avoid undue

[8]In the minutes of the November, 1998 meeting of the Eurostat Task Force on their "Time Use Survey" pilot tests, the recommendation was made that secondary activities should not be included in satellite accounts because of the lack of data quality and the variability in reporting simultaneous housework activities between countries. Our survey hopes to avoid this pitfall by standardizing the collection of simultaneous activity through scripted questions administered by interviewers.

[9] The dilemma that follows upon the collection of secondary activities is the problem of constraining everything to total into a 24-hour day for analytic purposes. One approach would be to ask respondents to somehow apportion "weights" to any activities performed simultaneously so the overlapping time can be re-distributed. Due to the magnitude of the respondent burden and issues of measurement error, we have decided not to follow this approach.

respondent burden by not asking respondents to provide a subjective assessment of how they think their parallel activities should be apportioned for analytic purposes.

III. Conclusion

When making methodological decisions one is always reminded of delicately woven fabric that unravels easily when interlocking threads are pulled. In just such a way, even gentle tugs to the methodological threads that are knit together into study designs can cause inestimable damage to the fabric of a study. Therefore, it is necessary, as much as possible, to consider all the possible ramifications when changing tried and true methods. For these reasons, we do not suggest changes to traditional time-use approaches lightly. Instead, we look gratefully to the work of leaders in the field and value their many and varied experiences with different modes of data collection, follow-up probes, coding schemes, and treatments of simultaneous activities. In all cases, we have tried to begin by studying the methodological work that has gone on before us; we have tried to stand on the backs of giants.

Instead we are investigating *post hoc* analytic procedures that would take advantage of aggregate information to create utility functions that would supply the necessary weights.

REFERENCES

Ås, Dagfinn. 1978. "Studies of Time-Use: Problems and Prospects." *Acta Sociologica* 2:125-141.

Ås, Dagfinn. 1982. "Designs for Large Scale Time-Use Studies of the 24-Hour Day," *It's About Time*, International Research Group on Time Budgets and Social Activities.

Becher, Angie. 1997. "Identifying Non-Market Work: A Look at Coding Issues." Paper presented at the Time Use, Non-Market Work, and Family Well-being Conference co-sponsored by the Bureau of Labor Statistic and the MacArthur Network on the Family and the Economy, Washington, D.C., November 20-21, 1997.

Frederick, Judith. 1995. *As Time Goes By. Time Use by Canadians. (*Catalogue 89-544E) Ottawa, Ontario: Statistics Canada.

Geurts, Jose, and Jos De Ree. 1993. "Influence of Research Design on Time Use Estimates." *Social Indicators Research* 30:245-284.

Harvey, Andrew. 1993. "Guidelines for Time Use Data Collection." *Social Indicators Research* 30: 197-228.

International Research and Training Institute for the Advancement of Women. 1995. *Measurement and Valuation of Unpaid Contribution. Accounting Through Time and Output*. Santo Domingo, Dominican Republic: United Nations INSTRAW.

Niemi, Iiris. 1983. *The 1979 Time Use Study Method.* (No. 91) Helsinki: Central Statistical Office of Finland.

Niemi, Iiris, Salme Kiiski, and Mirja Liikkanen. 1986. *Use of Time in Finland 1979.* Helsinki: Central Statistical Office of Finland.

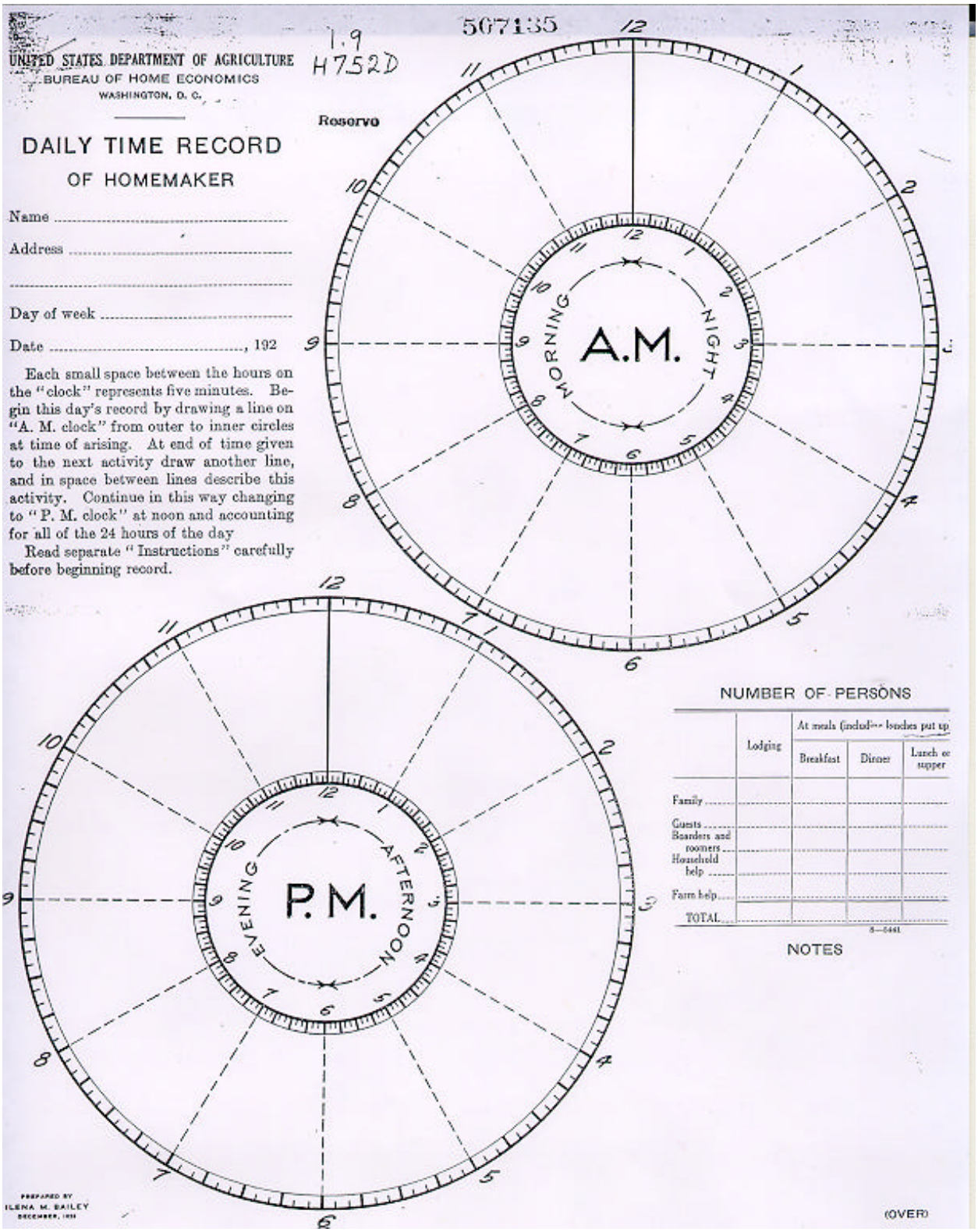
Robinson, John, and Geoffrey Godbey. 1997. *Time For Life. The Surprising Ways Americans Use Their Time*. University Park, PA: The Pennsylvania State University Press.

Schober, Michael, and Frederick Conrad. 1997. "Conversational Interviewing." *Public Opinion Quarterly* 61:576-602.

Szalai, Alexander, ed. 1972. *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries*. The Hague: Mouton.

United Nations Secretariat, Statistical Division. 1997. *Expert Group Meeting on Trial International classification for Time-Use Activities.* Report of the meeting held in New York, October 13-16, 1997.

Exhibit 1



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF HOME ECONOMICS
WASHINGTON, D. C.

1.9
H752D

567135

Reserve

DAILY TIME RECORD
OF HOMEMAKER

Name .....

Address .....

.....

Day of week .....

Date ....., 192

Each small space between the hours on the "clock" represents five minutes. Begin this day's record by drawing a line on "A. M. clock" from outer to inner circles at time of arising. At end of time given to the next activity draw another line, and in space between lines describe this activity. Continue in this way changing to "P. M. clock" at noon and accounting for all of the 24 hours of the day

Read separate "Instructions" carefully before beginning record.

MORNING
A.M.
NIGHT

AFTERNOON
P.M.
EVENING

NUMBER OF PERSONS

	Lodging	At meals (including lunches put up		
		Breakfast	Dinner	Lunch or supper
Family				
Guests				
Boarders and roomers				
Household help				
Farm help				
TOTAL				

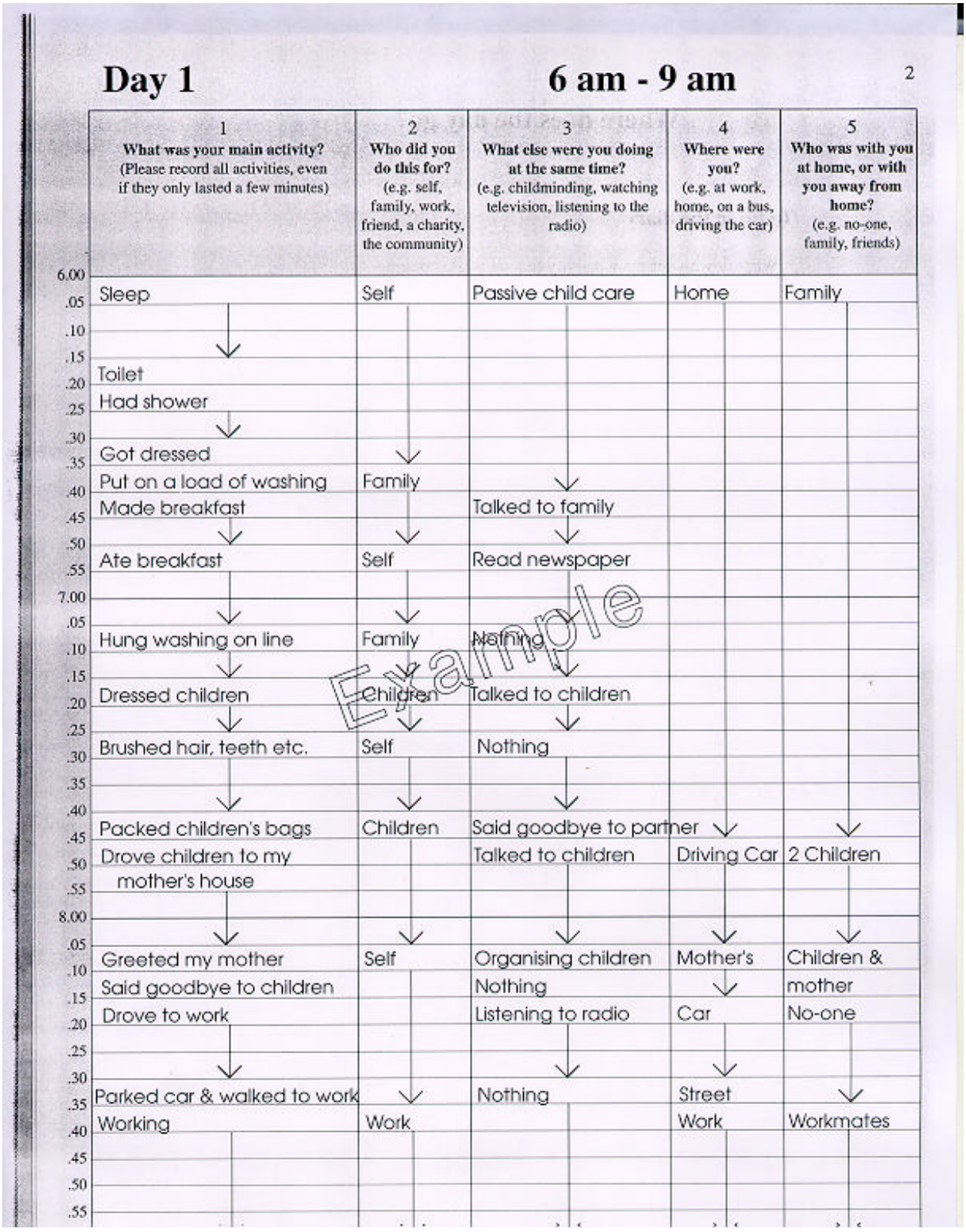
S—6441

NOTES

PREPARED BY
ILENA M. BAILEY
DECEMBER, 1931

(OVER)

Exhibit 2

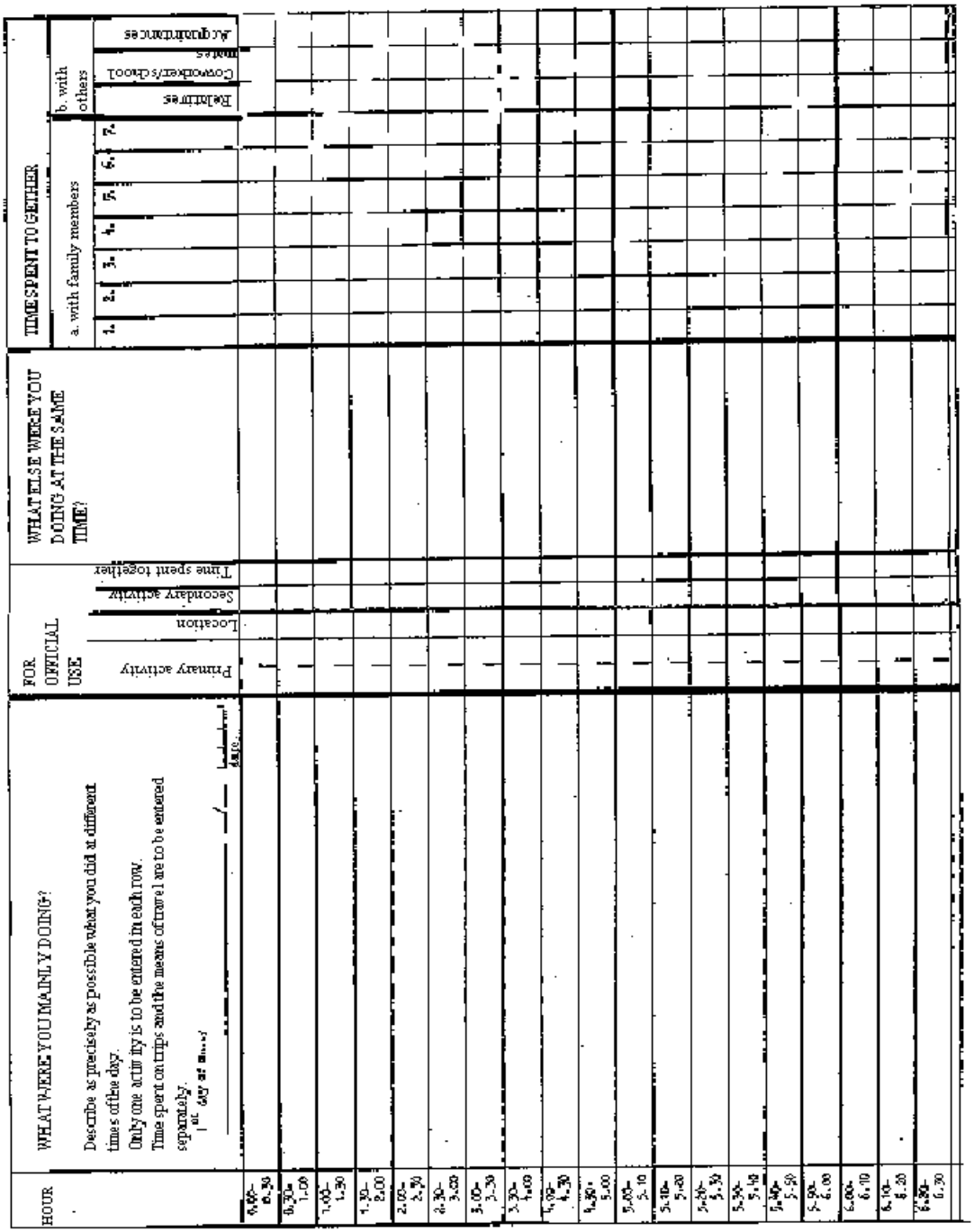


Day 1 — 6 am - 9 am

2

	1 What was your main activity? (Please record all activities, even if they only lasted a few minutes)	2 Who did you do this for? (e.g. self, family, work, friend, a charity, the community)	3 What else were you doing at the same time? (e.g. childminding, watching television, listening to the radio)	4 Where were you? (e.g. at work, home, on a bus, driving the car)	5 Who was with you at home, or with you away from home? (e.g. no-one, family, friends)
6.00	Sleep	Self	Passive child care	Home	Family
.05					
.10					
.15	Toilet				
.20	Had shower				
.25					
.30	Got dressed				
.35	Put on a load of washing	Family			
.40	Made breakfast		Talked to family		
.45					
.50	Ate breakfast	Self	Read newspaper		
.55					
7.00					
.05	Hung washing on line	Family	Nothing		
.10					
.15	Dressed children	Children	Talked to children		
.20					
.25	Brushed hair, teeth etc.	Self	Nothing		
.30					
.35					
.40	Packed children's bags	Children	Said goodbye to partner		
.45	Drove children to my		Talked to children	Driving Car	2 Children
.50	mother's house				
.55					
8.00					
.05	Greeted my mother	Self	Organising children	Mother's	Children &
.10	Said goodbye to children		Nothing		mother
.15	Drove to work		Listening to radio	Car	No-one
.20					
.25					
.30	Parked car & walked to work		Nothing	Street	
.35	Working	Work		Work	Workmates
.40					
.45					
.50					
.55					

Exhibit 3


HOUR
WHAT WERE YOU MAINLY DOING?
Describe as precisely as possible what you did at different times of the day.
Only one activity is to be entered in each row.
Time spent on trips and the means of travel are to be entered separately.
FOR OFFICIAL USE
Primary activity
Location
Secondary activity
Time spent together
WHAT ELSE WERE YOU DOING AT THE SAME TIME?
TIME SPENT TOGETHER
a. with family members
1.
2.
3.
4.
5.
6.
7.
b. with others
Relatives
Coworker/school mates
Acquaintances
6.00– 6.30
6.30– 7.00
7.00– 7.30
7.30– 8.00
8.00– 8.30
8.30– 9.00
9.00– 9.30
9.30– 10.00
10.00– 10.30
10.30– 11.00
11.00– 11.30
11.30– 12.00
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18.00– 18.30
18.30– 19.00
19.00– 19.30
19.30– 20.00
20.00– 20.30
20.30– 21.00
21.00– 21.30
21.30– 22.00
22.00– 22.30
22.30– 23.00
23.00– 23.30
23.30– 24.00

Exhibit 4

Proposed Classification System

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
Necessary Time	1. Personal care activities	11 Sleeping	111 Sleeping 112 Nap, rest
		12 Sleeplessness	121 Insomnia, sleeplessness, "toss/turn" in bed
		13 Personal hygiene and grooming	131 showering, bathing, washing hands, brushing teeth 132 going to the bathroom 133 dressing or undressing 134 shaving, putting on make-up, combing hair etc. 139 hygiene and grooming NEC
		14 Non-professional health care	141 personal medical care (taking medication, vomiting, experiencing pain, exercise for medical conditions 142 rest because of illness, being in bed sick 143 receiving (unpurchased) health treatments from non-professionals 149 non-prof. health care/treatments NEC
		15 Eating / drinking	151 eating a meal 152 eating a snack 153 drinking non alcoholic beverages 159 eating/drinking NEC
		16 Waiting related to personal care	161 waiting to go to bed or fall asleep 163 waiting to go to the bathroom or groom 164 waiting for non-professional health care 165 waiting to eat or drink
		17 Communication about per.care	171 communication about personal care/self-maintenance
		18 Travel about personal care	181 travel related to personal care/self-maintenance
		19 Personal care NEC	191 respondent says 'personal,' 'private,' 'none of your business' or reports sexual activity 199 personal care/self-maintenance activities NEC
Contracted Time	2. Employment activities	21 Work for pay at main job	211 main job-usual hours- at work 212 main job-extra hours- overtime 213 main job-extra hours-work brought home 219 main job NEC
		22 Work for pay at other job(s)	221 other job-usual hours- at work 222 other job-extra hours- overtime 223 other job-extra hours-work brought home 229 other job NEC

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
		23 Primary production and services for income not for establishments	
			231 unpaid work in family business or farm
			232 preparing food or drink for sale
			233 domestic home crafts or hobbies done for sale or exchange
			234 building work done for income ("freelance work")
			235 petty trading, street vending, collecting, scavenging items for sale (collecting aluminum cans etc.)
			236 providing services for income (child care, computing, cosmetic services, transport or delivery etc.)
		24 Work breaks	
			241 work breaks
		25 Job search and related activity	
			251 looking at job listings
			252 filling out applications or preparing resumes
			253 interviewing for a job
			254 applying for / collecting unemployment benefits / compensation
			255 applying for / collecting welfare, food stamps or income subsidies
			259 other job search activities NEC
		26 Waiting /delays related to work or job search	
			261 waiting or delay during work hours (fire drills, shut downs, waiting for appointments or meetings etc)
			262 waiting on-site for job interviews or to fill out forms for jobs, subsidies, compensation etc.
		27 Communication about work or job search	
			271 communication associated with but not part of work (calling in sick)
			272 communication associated with job interviews, subsidies, compensation etc.
		28 Travel/commuting to/from work or job search	
			281 travel in motion
			286 waiting for buses, trains, taxis etc. related to work or job search
		29 Employment activities NEC	
			299 employment or job search activities NEC
	3. Education activities		
		31 Gen education: school/ university	
			311 attending class
			312 viewing education programs on TV for course credit
			313 unpaid student teaching; practicums
			314 special lectures outside the regular class time
			315 attending science or language labs
			316 registration activities or other administrative aspects of attending classes
			319 other school related activities NEC
		32 Job related training	
			321 job related training, career education, professional conferences

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
Committed Time	4. Domestic activities	33 Homework/study/research	331 self study (not with computers), reading etc. 332 computing or assignment work done on computer 333 group study 334 working with tutors
		36 Waiting related to education	361 breaks at place of education 362 waiting for class/training/tutorials to begin or resume
		37 Communication about education	371 communication about education
		38 Travel related to education	381 travel to classes, training, study groups
		39 Educational activities NEC	399 educational activities NEC
		41 Food/drink preparation/cleanup	411 food/ drink preparation or service (include packing lunches, making meals or snacks, cooking for parties) 412 preserving, freezing, drying food 413 home brewing 414 setting or clearing the table 415 cleanup after food preparation or meals 419 food and drink prep or cleanup NEC
		42 Laundry, care of textiles	421 washing, loading, unloading washing machine 422 hanging out or bringing in washing 423 ironing 424 sorting, folding textiles (clothes, linens etc.) 425 mending textiles, polishing shoes or other upkeep 426 making clothes, knitting, sewing (not as hobby) 427 sorting clothes for disposal; throwing out clothes 429 laundry and textile care NEC
		43 Other housework	431 interior cleaning of dwelling or related buildings 432 exterior cleaning of dwelling or related buildings 439 other housework NEC
		44 Grounds / animal care	441 gardening 442 yard or lawn care 443 harvesting home production, hunting, fishing or gathering food for household consumption 444 grounds maintenance, garage cleaning etc 445 pool care 446 care for household pets 447 care for livestock for household use only 449 other grounds or animal care NEC
		45 Home maintenance, construction, and repair	451 equipment repairs or maintenance 452 dwelling construction or design 453 interior maintenance or repair 454 exterior maintenance or repair 455 making furniture or other household goods 456 making household furnishings 457 heat/water/power maintenance, repair or provision (include gathering, cutting or stacking firewood) 458 vehicle maintenance or repair 459 home maintenance NEC

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
	5. Care for "dependent" household members (children, sick/disabled or elderly)	46 Household management	461 paperwork, bills, tax returns etc 462 budgeting money/time, organizing rosters/lists, planning/organizing/decorating for family/household events 463 selling, donating, disposing of household assets (including selling house or showing house for sale) 464 recycling 465 collecting, sorting, mail/parcels, checking messages and answering machines 466 packing/unpacking for a journey or move 467 putting away goods (groceries etc.) 468 disposing of rubbish 469 other household management NEC
		47 Communication rel. to dom. act.	471 communication, discussion, "fights" about domestic activities
		48 Travel related to domestic act.	481 travel related to household work, maintenance, or management
		49 Domestic activity NEC	499 domestic activity NEC
		51 Physical or emotional care of "dependent" household members	511 washing, dressing, feeding, grooming children 512 medical/ health care of children 513 emotional care of children 514 washing, dressing, feeding, grooming dependent hh adults 515 medical/health care of dependent hh adults 516 emotional care of dependent hh adults
		52 Teaching/ helping/reprimanding "dependent" household members	521 teaching, helping, reprimanding, training children 522 teaching, helping, reprimanding, training dependent hh adults
		53 Playing, reading, talking with "dependent" household members	531 playing, reading, talking with children 532 playing, reading, talking with dependent hh adults

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
		54 Minding (supervising) dependent household members	
			541 supervision of children within the same room or play area
			542 supervision of children within the house, but not in the same room
			543 "passive" supervision of children not in the house (being 'on call')
			544 supervision of dependent hh adults within the same room or play area
			545 supervision of dependent hh adults within the house, but not in the same room
			546 "passive" supervision of dependent hh adults not in the house (being 'on call')
			549 other supervision of dependent hh members NEC
		55 Visiting care related establishments / schools	
			551 accompanying a child to school, daycare, sports, lessons etc
			552 accompanying a dependent hh adult to school, sports, lessons etc.
		56 Waiting associated with care of "dependent" household members	
			561 waiting associated with care of children
			562 waiting associated with "dependent" adult care
		57 Communication associated with care of "dependent" hh members	
			571 communication associated with care of children
			572 communication associated with "dependent" adult care
		58 Travel associated with care of "dependent" household members	
			581 travel associated with care of children
			582 travel associated with "dependent" adult care
		59 Care of "dependent" household members NEC	
			598 care of children NEC
			599 care of "dependent" adults NEC
	6. Purchasing activities		
		61 Purchasing or returning goods	
			611 purchasing/returning everyday consumer goods
			612 purchasing/returning durable household goods
			613 window shopping
			619 other purchasing of goods NEC
		62 Purchasing services	
			621 purchasing repair services
			622 purchasing/obtaining professional, government, administrative services
			623 purchasing personal care services
			624 purchasing medical or dental care services
			625 purchasing child or adult care services
			626 purchasing domestic/garden services
			629 other purchasing of service NEC

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
	7. Voluntary work & care	66 Waiting associated with purchases (5 minutes or more?)	661 waiting at stores, shops, markets 662 waiting in offices or for professional services 663 waiting for maintenance, repair, or cleaning services 664 waiting for personal care services 665 waiting for medical or dental care 666 waiting for deliveries of purchased goods 669 waiting related to purchases NEC
		67 Communication associated with purchases	671 scheduling appointments for service or purchases 672 placing orders for goods or services by telephone, fax or internet 673 discussing shipments, products, returned items 674 other communication about purchases NEC
		68 Travel associated with purchases	681 travel associate with purchases of goods or services
		69 Purchasing goods or services NEC	699 purchasing goods or services NEC
		72 Unpaid helping / doing favors (for households)	721 housework or cooking assistance 722 house maintenance or repair assistance 723 babysitting 724 care for disabled or ill adults 725 correspondence assistance (letters, bills, forms)
		73 Unpaid voluntary work (with org.)	731 participating with an organization working directly with recipients 732 participating with an organization not working directly with recipients
		76 Waiting associated with voluntary work or care	761 waiting related to help to other households 762 waiting related to volunteering with an organization
		77 Communication associated with voluntary work or care	771 communication related to help to other households 772 communication related to volunteering with an organization
		78 Travel associated with voluntary work or care	781 travel related to help to other households 782 travel related to volunteering with an organization
		79 Voluntary work or care NEC	798 help to other households NEC 799 voluntary work with organizations NEC

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
Free Time	8. Social & Community interaction	81 Socializing	811 talking, chatting, social conversation 812 celebrating, having parties with friends or family 813 eating, drinking with non hh members in own home 814 eating, drinking with non hh members OR hh members in public place 819 other socializing NEC
		82 Entertainment	821 attending musical performances, concerts, symphonies 822 attending plays, ballet, opera 823 attending cinema, art films, drive-in movies 824 attending fairs, circuses, parades, amusement parks, ice follies, fireworks 825 visiting zoos, botanical gardens, planetariums, observatories 826 visiting museums, art galleries, exhibitions, libraries 827 visiting historical or archeological sites etc 828 visiting casinos, bingo halls, arcades 829 entertainment NEC
		83 Attendance at sports events	831 attendance at professional or amateur sporting events 832 attendance at professional or amateur racing events 839 attendance at sports events NEC
		84 Religious / ritual activities	841 personal religious practice (meditation, prayer etc) 842 religious ceremonies, rituals 843 planning, practicing, rehearsing, decorating, preparing for religious ceremonies, celebrations, rituals 844 socializing associated with religious ceremonies/rituals 845 cleaning up after religious ceremonies , celebrations, rituals 849 religious activities NEC
		85 Community participation	851 attending meetings 852 civic ceremonies or celebrations (civil weddings, ribbon cuttings, parades, inaugurations) 853 planning, practicing, rehearsing, decorating, preparing for civic ceremonies, celebrations 854 socializing associated civic ceremonies or celebrations 855 cleaning up after civic ceremonies , celebrations 856 civic obligations (jury duty) 857 answering surveys, polls, censuses 859 community participation NEC
		86 Waiting related to social & community interaction	861 waiting for social or community interaction to begin
		87 Communication related to social & community interaction	871 communication about social or community interaction (checking on times, preparations etc.)

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
	9. Recreation and leisure	88 Travel related to social & community interaction	881 travel associated with social or community interaction
		89 Social & community interaction NEC	899 social and community interaction NEC
		91 Sport and outdoor activity	911 walking hiking, jogging, running 912 biking, cycling, skiing, skating, skate or snow boarding, horseback riding 913 ball games 914 gymnastics, aerobics, work-outs, martial arts, wrestling, yoga, ballet or other dance 915 swimming, water gymnastics, water skiing 916 boating, sailing, canoeing, rafting 917 gliding, ballooning, flying 918 camping, hunting, fishing for sport 919 other sport or exercise NEC
		92 Games, hobbies, arts, crafts	921 card, paper, board, parlor games/crosswords 922 computer games or computing as hobby 923 hobbies, collections, albums etc 924 handiwork and crafts (sewing, knitting, weaving) 925 visual or graphic arts 926 performing arts/music 929 games, hobbies, arts, crafts NEC
		93 Reading / writing	931 reading book, magazine, newspaper 932 reading CD Rom 933 being read to (in-person or books-on-tape) 934 writing for leisure/pleasure (letters, poetry, diaries, cards, books, short stories etc.) 939 reading/writing NEC
		94 Audio/visual media	941 tv watching/listening 942 video watching 943 listening to radio 944 listening to records/tapes/CDs (other than books) 945 accessing internet 949 other media use NEC
		95 Attendance at courses (except school or university)	951 attendance at personal development courses 952 attendance at art/craft/hobby courses 959 attendance at courses (ex. school/university) NEC

Time Type	Major Group (1 digit codes)	2 digit codes	3 digit codes
		96 Other free time	961 relaxing resting 962 doing nothing 963 thinking 964 worrying 965 drinking alcohol / social drinking 966 smoking 967 looking at memorabilia 968 teasing, joking around, messing around, laughing, pestering 969 other free time NEC
		97 Communication associated with free time	971 communicating about free time
		98 Travel associated with free time	981 recreational driving/riding for pleasure 982 holiday travel 989 other travel associated with free time NEC
		99 Leisure and recreation NEC	999 leisure and recreation NEC
	0. No activity	00 No activity	001 time gap with no reported activity 002 uncodeable activity