



Maryland Population Research Center

WORKING PAPER

As we Like It (Today) Americans' Favorite Daily Activities – in Real Time

PWP-MPRC-2014-001

January 2014



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AS WE (STILL) LIKE IT:
SOCIALIZING, RELIGION, KIDS REMAIN OUR FAVORITE DAILY ACTIVITIES

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ABSTRACT

The American Time-Use Survey (ATUS) conducted by the US Bureau of the Census for the Bureau of Labor Statistics has been collecting data on how Americans spend their time since 2003, using the method of the retrospective time diary, in which respondents recall all of their activities across the previous 24 hours. In 2010, the ATUS began supplementing these accounts with six psychological questions from a Social Well-Being (SWB) index on how these respondents felt as they were engaged in three of these daily activities. Thus, the ATUS basically provides a continuous national monitor of Americans' everyday quality of life (QOL) in real time.

Analysis of five of these six 2010-11 ATUS SWB ratings reveals that they largely replicate activity enjoyment ratings found in earlier and parallel time-diary studies conducted at the University of Maryland and the University of Michigan in 1985 and 1975. As in these earlier diary studies, 2010-11 ATUS respondents rated social, religious and interactive child activities most positively, and housework and health-related activities least positively. However, one major important difference in these recent ATUS ratings is the far lower ratings given to paid work activities, especially second jobs and looking for jobs. While travel activities rated about average, there was surprising variation in SWB depending on the purpose of the trip, with travel to more positive activities being rated more positively and vice versa.

BACKGROUND:

Since 2003, the American Time-Use Survey (ATUS) has been conducting daily time-diary studies as collected from large national samples by the US Census Bureau to document how American daily life is changing in real time. To aid in the interpretation of the accounts, more than 8000 ATUS respondents in 2010 and 2011 were also asked how they felt when they were engaged during these activities using a Social Well-Being (SWB) index described in Krueger et al. (2009) and Kahneman et al. (2006). That now makes it possible to identify which daily activities bring Americans most enjoyment -- and those which seem to most negatively affect the momentary quality of their lives (QOL).

As in earlier academic national diary studies (at the University of Maryland and the University of Michigan) using this basic method 30-50 years ago, 2010-11 ATUS respondents rated their social, religious and interactive child activities most positively, and their housework and health-related activities least positively. However, one major important exception in the latest ATUS SWB ratings was the far lower ratings given to paid work activities, especially those involved with second jobs and looking for jobs.

The full range of these QOL ratings, running from 6.0 as most positive and 0.0 for least positive, is shown in Table 4 (below) across 11 different types of activities. These are broken out for work and family care on the left and free-time and travel activities on the right.

In general, and as might be expected, it can be seen that more these work and family activities fall below the average score rating of 3.0, while most free-time activities on the right score above that 3.0 average. Similarly, travel activities associated free time score higher than trips related to work and family.

However, there are important exceptions to this familiar pattern. Several more interactive activities with children -- like arts, play and reading -- rated 5.0 or above on the SWB scale, as did receiving personal care at a beauty parlor or barber shop. In contrast, strenuous exercises like lifting and cardio workouts were rated below the average of 3.0 -- as were the free-time activities of smoking and relaxing. Moreover, lower ratings were found as well for Americans' most prominent free-time activity, namely TV viewing. As in earlier ATUS studies, TV consumed almost half of all free time, and these TV hours have increased since the 2007 recession -- and despite the increasing diffusion and popularity of cell phones and the flood of other recent IT technology.

METHODOLOGY:

Time-diary Studies: Until recent decades, most measures of work, family and free time were based on simple survey *estimates* made by workers of the hours they spent at work, housework or TV (e.g., "How many hours did you work last week?"), rather than on more detailed accounts that use on-site observation, electronic pagers or time diaries. The great value of these latter accounts is that workers report on *all* their daily activities, and not just their work or TV time. In accounting for time in time diaries, for example,

respondents are less prone to encounter problems of memory loss, self-projection or double counting of time than when they make time estimates.

Time-Diary Methodology: 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 — 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 24 hours of daily activity is potentially recorded, including activities in the early morning hours, when few respondents are awake.
- * The 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 highly familiar and 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, in past decades, new activity codes had to be developed to accommodate aerobic exercises, use of E-mail, I-pods and other new communications technologies). Further details on the diary method are provided in Appendix A.

Earlier Diary Surveys in the United States There have been roughly decade-interval (1965, 1975, 1985, 1992–1995, 1998–2001) national time-diary surveys by academic survey firms from which to make trend comparisons with the current American Time-Use Survey (ATUS). The ATUS has also moved from face-to-face personal interviews to telephone interviews, and from “tomorrow” diaries to “yesterday” diaries based on the recall of what respondents did yesterday). In chronological order;

1) 1965 U.S. Time-Use Study In the fall of 1965, as part of a multinational time-use study, the University of Michigan Survey Research Center (SRC) surveyed 1,244 adult respondents, ages 19 to 65, who kept a single-day “tomorrow” diary in the Fall of 1965 (and Spring of 1966). With funding support from the National Science Foundation (NSF), interviewers first visited personally respondents in their homes and explained the diary procedure (see Appendix A). They then left behind a diary form to be filled out by the respondent for the following day. The interviewer then returned on the day after that “diary day” to collect and edit the completed diary. Respondents were asked how much satisfaction they derived from different activities in general, but these data were not extensively analyzed in Robinson (1977).

2) 1975 U.S. Time-Use Survey In the fall of 1975 again with NSF support, the Michigan SRC personally surveyed 1,519 adult respondents and 887 of their spouses

(aged 18 and older) in their homes, who provided verbatim retrospective “yesterday” diaries. These respondents were subsequently reinterviewed across the winter, spring, and summer months of 1976, mainly by telephone, with single-day diaries being collected at each reinterview. Respondents in waves 2 and 4 of these interviews were also asked to give general enjoyment ratings to 20+ activities on a 0-10 scale, where 0 meant “Dislike a great deal” and 10 meant “Enjoy a great deal”. Average scores on these 1975 general activity scales are ordered and shown in Table 1 (alongside the parallel diary-based ratings collected in 1985, as described next).

3) *1985 U.S. Time-Use Survey* With NSF support in 1985, the SRC at the University of Maryland again collected single-day diaries from more than 5,300 respondents aged 18 and older across the year employing the same basic open-ended diary approach and coding as the 1965 and 1975 studies, using personal, telephone, and mail-back diaries for either yesterday or tomorrow diaries. In the telephone interviews, diary respondents were also asked to rate each diary activity on the 0-10 scale employed in the 1975 Michigan study, as noted in Table 1. In other words, in addition to the usual diary follow-up questions on secondary activities, location and with whom, respondents were also asked to rate how much they enjoyed it. This difference in rating formats will be discussed in more detail below in connection with Table 1.

4) *1990s U.S. Time-Diary Collections*: Two national diary studies were conducted by the Maryland University SRC by national random digit dial (RDD) telephone procedures, one between 1992 and 1994 with 9,386 respondents and a second one in 1995 with 1,200 respondents. All interviews in both phases used the retrospective diary (or yesterday) method for the previous day across the year. Two further yesterday diary studies were conducted by the University of Maryland (with support from the National Science Foundation), one in 1998 ($n = 1200$) and the other in 1999–2001 ($n = 978$). No enjoyment scale questions were asked in any of these studies, although some general activity enjoyment or preference questions were asked.

5) *2003-2013 Bureau of Labor Statistics’ ATUS*. The Bureau of Labor Statistics has now collected more than 100,000 daily diaries continuously across the year since 2003, using the telephone yesterday method with a CPS sample and a more detailed set of activity categories, as described at www.bls/tus.gov and archived at www.atus-x.

A detailed comparison of the methods and results of these US time-series data can be found in Fisher et al. (2007). Parallel data from more than 30 other countries can be found at www.timeuse.org. Included in this multinational archive is a 1986 UK diary study, which used similar activity ratings to those used in the 1985 US survey. Gershuny (2012) has recently reanalyzed both data sets to show they provide virtually the same order and results across the two countries, despite being designed quite independently about the same time.

Comparing 1975 General and 1985 Diary Ratings: A comparison of average ratings of activities in the 1975 general and 1985 diary ratings is shown in Table 1. The first 1975 University of Michigan study asked respondents how much they enjoyed the specific activities (Work, Sleep, etc.) *in general*. The next 1985 University of Maryland study, shown on the left side of Table 1, used the same 0-10 enjoyment scale, but administered in “real time”, that is as it was experienced while respondents were engaged

in it during their diary day (as in the Krueger-Kahneman SWB scales described in Tables 2-4 below). There are ratings for more activities in the 1985 study than in 1975, because more activities mentioned, or mentioned in more detail, in the context of the diary (activities like sex or work breaks). The diary ratings also differ because they are being done by “doers” rather than the entire sample. Thus, a sports participant or organizational leader will probably rate that activity higher when they are doing it, compared to someone who doesn’t play sports or attend meetings, thus rating them lower in enjoyment on the general scale.

It can be seen in Table 1 that the two methods (general and diary) still do inter-correlate highly (.70), pointing to many of the same conclusions. For example, activities with children and socializing with others rate near the top in both scales, vs. housework along with grocery shopping near the bottom. At the same time, even those activities rated near the bottom of enjoyment are not rated that negatively (about 5 on a 0-10 scale), so that they do not seem to be that much of a drag on daily life. (It should be noted that the diary activity ratings were almost identical for men and women, although men rated household tasks lower than women in the 1985 general ratings.)

What is highlighted in Table 1 are two important daily activities that go in opposite directions depending on the diary vs. general time perspective. Work, for example is rated highly (8.0) among activities in general. However, it falls toward the lower half (7.0) of activities in diary real time, suggesting that it has an aura of enjoyment in general (perhaps because one is glad just to have a job or workplace social connections, offsetting the misery and ambiguity of unemployment) that conceals the everyday disappointments and disasters at the workplace that one experiences on a day-to-day basis.

On the other hand, TV is rated very low in general, but above average – and above work – on a daily basis. Put into words respondents seem to be saying, “TV programs in general are a waste of my time, but the shows I saw last night were pretty good”. (This distinction becomes important, because in Table 4 it will be seen below that TV is rated below average in its SWB score-- as well as in enjoyment in general in Table 1). Thus, some diary responses may be expected to be less stable (or reliable) because they can shift due to momentary circumstances. At the same time, they do capture emotional reactions as they are happening “in real time”.

One important distinction between the enjoyment ratings in Table 1 and the SWB diary ratings described next is that they are on a single 0-10 scale for all activities, as opposed to the five items in Tables 2 and 3, which are each asked using on 0-6 unipolar scales. Because of this greater breadth and coverage, however, that meant that they could only be asked for three of the activities in the diary, missing the opportunity to examine the full ebb and flow of daily emotions (to test Gershuny’s (2012) intriguing “diminishing utility” hypothesis for example).

QOL Ratings in ATUS 2010-11: Based on a promising set of pilot-study results by a largely Princeton University team of prominent social scientists (e.g., Krueger et al. 2009; Kahnemann et al. 2004), in 2010, the ATUS began supplementing their time-diary accounts by asking six psychological Social Well-Being (SWB) questions on how these respondents felt as they were engaged in these specific diary activities. After reporting

these diary activities, with support from the National Institutes of Health, ATUS respondents were now asked how they felt while doing *three* of them (chosen at random) using the six adjective scales running from 0 (no such feelings) to 6 (maximum such feeling). After deleting the one adjective that did not correlate with the others (“meaningful”), the distribution of their responses to the other five scales (sad, pain, tired, stress and reversed-scored happiness) are shown in Table 2, along with their overall average scores on a 0-6 scale.

While Table 2 shows how these respondents generally felt on each the five major SWB adjective scales in ATUS, Table 3 shows that these five disparate items/adjectives are still significantly related to each other, despite their covering a wide range of emotions, both positive and negative. Indeed, in the last column of Table 3, it can be seen that the five can be reduced to form a single dimension of SWB using a factor analysis. This provides a justification for summing the five items into a single overall SWB index, potentially running from 0 (most positive on all 5) to 30 (most negative on all five), with the average score of 3.0 in Table 2, indicating how strongly positively these diary activities were rated.

At the same time, Table 3 indicates that these SWB intercorrelations are not that strong, being below .20 for two of them with (reverse-scored) happiness. Even the negative correlation between the virtual antonyms sad and happy is only -.32, indicating the aversion most respondents felt about rating daily activities negatively (as evident in Table 1). Thus, more than 70% of respondents gave absolute zero ratings to the adjectives “sad” and “tired” in rating their daily activities. Nonetheless, the five items do intercorrelate as well as other accepted scales in the attitude literature, although there may be lessons to be learned from activities that bring people happiness that are also stressful or tiring.

These average scores were then subtracted from 13.0 to generate a higher positive score for each activity, with higher scores now reflecting a higher SWB to improve interpretation. These are then ranked by SWB activity score in Table 4, as described in more detail below.

RESULTS:

The overall results shown in Table 4 thus outline and rank more than 100 diary activities according to the type of activity and from top to bottom in how they scored on the five-item SWB measure. This is done horizontally across columns (from work to personal care to free time activities and travel) and vertically in ordered rows, with highest SWB ratings at the top (about 6.0) to lowest ratings at the bottom (0 or below). As noted in Table 4, the average rating was 3.0 on this SWB scale. Overall, it can be seen that the highest ratings (6.0) are for religious educational activities like Bible study, followed by attending social parties (6.0) and a variety of arts participation activities (5.9). In contrast, lowest ratings were given to job searches (0.0), being at medical or doctor’s offices (0.0) and its attendant travel (0.1), and working at one’s second job. (0.1), along with financial management at home.

Examining each of these 11 types of activities in turn:

Paid Work: Time working at one's main job was one of the lowest rated overall activities (1.6), although still more highly than the near-zero rating for one's second job just noted. Both these ratings are significantly lower than in the previous Table 1 enjoyment ratings, in which work ratings were closer to the middle of the 0-10 enjoyment scale, being higher in the Juster-Stafford 1975 general ratings than the 1985 diary ratings (Robinson 2009). Moreover, it goes counter to conclusions from other more general overall questions, in which, for example, far more respondents generally do say they enjoy themselves more in their free time (35%) than at work (5%), most respondents said they enjoyed them about equally (60%) in both 1975 and 2009 (Robinson (2011). As noted below, ATUS respondents also rate their commute to work well below average (2.3).

Housework: Perhaps not surprisingly, and consistent with earlier diary studies, most routine housework activities receive below average ATUS SWB ratings (2.2 to 2.5), the lowest being for repairing or regulating heating or cooling conditions (1.1) and financial management (0.1). The table also shows some housework activities that have higher SWB scores, such as cooking and preparing food (3.1), presenting it to others (3.5) and walking the dog or other pets (4.7).

Child care: Again, as in previous studies, activities involving child care rate above average in the ATUS scores, especially those involving more interaction with children, like arts and crafts (5.8), play (5.4) and reading (5.0). Ratings are notably lower for more custodial or physical care (3.2), planning conversations (3.1), sports activities (3.3) and especially homework help (2.9). More general supervision rates slightly higher (4.0).

Shopping: Here, shopping rates somewhat higher relatively in the ATUS ratings than in previous diary studies, being slightly above the overall average for non-grocery food shopping (3.5), general or durable-good (non-food) shopping (3.4), and gas refueling (3.3). Ratings drop below average for straight grocery shopping (2.8). In terms of other personal care services, ratings climb to 4.7 for banking activities (presumably to receive money) and to 5.4 for direct personal care services (like beauty parlors or barber shops). In sharp contrast, time at medical care facilities (-1.2) rates near the bottom -- as noted above.

Personal Care: Activities involving eating or drinking rate slightly above average at 3.8. Previous time-use studies had shown that sleeping and grooming activities rated higher than eating, but these were not rated in the ATUS study.

Education: Attending classes were rated well below average (2.1), but doing related homework rated even lower (1.5)

Religion and Other Organizations: As noted initially above, religious activities were among the highest-rated ATUS activities, moreso for attending usual regular services (5.7) than special services like funerals, prayer or weddings (4.2), although rising to 6.2 for more specialized religious events. Volunteering activity also rates well above average (7.0), although that drops to 3.3 if computer use is involved.

Social Life: Socializing and visiting activities in general (4.3) rate notably above average in ATUS, but that soars to 6.0 if the event involved is described as a party. In contrast if the contact involved is done by telephone ratings drop to a below average 2.7 in general, and 3.0 talking with family members (but 3.7 with non-family members). Ratings for attending social events, in contrast, are considerably higher – to 5.3 for going to the movies and to 5.9 for arts events.

Recreation: Some very high ratings are given to fitness activities, like swimming (5.6), basketball (5.3) and golf (5.1) and playing games (4.9). Arts and crafts hobby activities are rated somewhat lower (4.4), as are walking (4.0), biking (4.1), running (3.5) and “working out (3.9), dropping to 2.5 and 1.7 for the more strenuous activities of weightlifting and cardio workouts.

Media and communication: By far the most common free-time and leisure activity of TV viewing rates a below average 2.7, but that is above the averages for the other passive activities of relaxing (2.2) and smoking/drinking/reflecting (2.5). In contrast, using other mass media rates well above average, 4.2 for reading, 4.5 for radio listening and 4.7 for recordings and other audio.

Travel: Finally, the ATUS ratings reveal an impressive range of SWB ratings within the single category of travel, usually mirroring the ratings for the above activities to which they are connected. Even though they may involve the same vehicles and traffic conditions, travel connected with social and recreational (and food) activities rate 4.5 or above on the SWB index, while commuting to work or school are below 2.5, or trips for medical or other personal needs below 1.5. Travel for family or household needs rates close to the overall average SWB score of 3.0.

SUMMARY

Using this new derived five-item SBW scale, then, these national ATUS ratings of activities in Table 4 largely replicate the general feelings about engaging in various daily activities identified in previous time studies in Table 1 and in Gershuny (2012), using a simple enjoyment scale as its QOL measure. Social and visiting activity, interactive activities with children and religious/volunteer activities top the list of favorite daily activities as rated in “real time”, as well as in general. Routine household tasks and attending to medical and other personal needs rate at the bottom. That also tends to be the ranking reported from the community study in Table 3 of Krueger et.al (2009).

What is most interesting, surprising, important – and troubling -- in these new ATUS ratings, however, is the notably lower SWB ratings given to paid work activities. This perhaps reflects a disturbing trend (especially as it affects moonlighting on second jobs and job searches), which presumably are taken simply to keep one’s based household needs afloat. The sample sizes involved may be less than optimal, but the finding that these ratings are so far below the norm remains cause for some alarm. These findings are also at odds with several responses US workers give to general survey questions about the role and importance of work in their lives (Robinson and Godbey (1999).

Of further concern is the below average ratings given to Americans' most prevalent free-time activity of TV viewing. TV may serve to offset the even-lower rated activity of paid work, but it still rates notably lower than almost all other choices of a free-time activity. Earlier results from Kubey and Csikszentmihalyi (1990) suggested TV was not that much lower in enjoyment ratings than other activities, but that it was more deficient on adjectives "challenging" and "alertness" (not included in the present SWB ratings). Thus, both findings suggest that engaging in more active free-time activities could be one road to improving America's collective SWB.

At the same time, these results do raise questions about the efficacy and efficiency of the five-item SWB approach used in the ATUS, echoing many of the concerns raised by initial results from the Princeton team, as raised by Michelson (2009), Bittman (2009), Juster (2009) and Gershuny (2009). One step to resolve some of the discrepancies, particularly about work in Table 4 vs. Table 1, would be to examine whether the results on the enjoyment scales in Table 1 continue to replicate today.

**TABLE 1: Enjoyment Ratings from Diary Activities vs. in General
(1985 and 1975 national data, from Robinson and Godbey 1999, Appendix O)**

10-ENJOY A GREAT DEAL

!	1985 Diary (average = 7.0)	1975 General (average = 6.8)
!		
!	9.3 Sex	
!	9.2 Play sports	
!		
!	8.7 Playing/read with children	8.9 Child care
!	8.5 Church, religion	8.6 Play with children
!	8.5 Sleep	
!	8.2 Meals away	
!	8.2 Socialize, visit others	
!	8.0 Socialize with family	8.0 Socializing, talking
!	8.0 Work breaks	8.0 <i>Work</i>
!		
!	7.9 Reading	
!	7.8 Meals at home	7.8 TV
!	7.5 Sleep	
!	7.4 Hobbies, crafts	7.4 Eating
!	7.2 Exercise	7.4 Washing, dressing
!	7.2 Baby care	7.3 Church, religion
!	7.2 Organizations	
!	7.0 <i>Work</i>	7.0 Reading
!	7.0 Bathing	
!		
!	6.6 Cooking	6.8 Hobbies
!	6.6 Other shopping	6.5 Play sports
!	6.4 Child care	6.5 Cultural events
!	6.4 Help others	
!	6.3 Work commute	6.2 Cooking
!	6.1 Dressing	
!		
!	5.8 Other housework	5.9 TV
!	5.5 Grocery shopping	
!	5.5 Home repairs	
!	5.2 Pay bills, financial etc.	5.1 Home repairs
!	5.0 Yardwork	5.0 Organizations
!		
!	4.9 Clean house	4.6 Grocery shopping
!	4.9 Laundry	
!	4.8 Health care, doctor	
!	4.7 Car repair	
!		4.3 Other shopping
!		4.2 Clean house

0- DISLIKE A GREAT DEAL

TABLE 2: PERCENT OF RESPONDENTS GIVING EACH SWB SCALE SCORE

SCORE	SAD	PAIN	TIRED	STRESS	HAPPY *	
0	76%	70%	30%	51%	5%	
1	7	7	9	11	2	
2	5	6	14	12	6	
3	5	6	17	11	16	
4	3	5	19	7	19	
5	3	3	4	4	23	
6	2	3	7	4	30	
	100%	100%	100%	100%	100%	
Average	0.65	0.92	2.3	1.42	4.29	
Reverse score					1.71	SUM =7

TABLE 3: SWB ITEM INTERCORRELATIONS AND FACTOR LOADINGS

	SAD	PAIN	TIRED	STRESS	HAPPY *	FACTOR LOADING
SAD		0.37	0.27	0.49	0.32	0.75
PAIN			0.34	0.34	0.17	0.67
TIRED				0.37	0.17	0.62
STRESS					0.32	0.77
HAPPY						0.54

(6.0= Highest SWB to 0.0 Lowest SWBL)

ATUS CODE	WORK	HOUSEWORK	CHILD CARE	SHOP	PERSONAL	EDUCATION	ORGANIZ'N	SOCIAL	RECREATION	MEDIA	TRAVEL	ATUS CODE										
	5	2	3	9 10 11	1 4 11	6	14 15	12 13	12 13	12 16	18											
6.0 -	MAIN JOB		ART	PERS CARE			REL EDUC	PARTY				- 6.0										
5.9 -							OTH ARTS	- 5.9														
5.8 -								- 5.8														
5.7 -							REL SERVICE	- 5.7														
5.6 -							SWIM	- 5.6														
5.5 -								- 5.5														
5.4 -							PLAY	- 5.4														
5.3 -							MOVIES	BASKETBALL				- 5.3										
5.2 -							PHYS OKID	FISH				- 5.2										
5.1 -								GOLF				RELIGION	- 5.1									
5.0 -							READ TO	VOLUNTEER				PARTY	- 5.0									
4.9 -							WALK PET	PICK OTH KID				BANK							AUDIO	- 4.9		
4.8 -																				GAMES	RECREATION	- 4.8
4.7 -																					- 4.7	
4.6 -							WAIT KID											RADIO	EAT	- 4.6		
4.5 -																				- 4.5		
4.4 -																				- 4.4		
4.3 -							SUPERVISE								REL PRACTICE	SOCIAL	CRAFTS	READ	VOLUNTEER	- 4.3		
4.2 -																			ARTS	- 4.2		
4.1 -																			BIKE	SOCIAL	- 4.1	
4.0 -							SHOW FOOD	PICK UP				OTH FOOD								WALK	PETS	- 4.0
3.9 -																				WORK OUT	GAS	- 3.9
3.8 -																				OTHER SHOP	- 3.8	
3.7 -												OTH SHOP								GROCERY	- 3.7	
3.6 -																				OTH ADULTS	- 3.6	
3.5 -																				OTH KIDS	- 3.5	
3.4 -								SPORT				GAS			VOL-CMPTR					HH MGT	- 3.4	
3.3 -																				FOOD	- 3.3	
3.2 -																				OTH KIDS	- 3.2	
3.1 -							COOK	PHYSICAL				TALK/PLAN								- 3.1		
3.0 -																				LAWN/REPR	- 3.0	
2.9 -																				CAR REPR	HOMEWORK	- 2.9
2.8 -							MAIL	GROCERY												BANK	- 2.8	
2.7 -							FEED PET													- 2.7		
2.6 -							EMAIL													TV	- 2.6	
2.5 -							DISHES	LIFT				SMOKE								- 2.5		
2.4 -	PLAN	CLASS	- 2.4																			
2.3 -	OTH HOUSE	COMMUTE	- 2.3																			
2.2 -	CLEAN	RELAX									- 2.2											
2.1 -	HEAT REPAIR										- 2.1											
2.0 -											- 2.0											
1.9 -			- 1.9																			
1.8 -											- 1.8											
1.7 -											- 1.7											
1.6 -											CARDIO	- 1.6										
1.5 -	2nd JOB	HH FINANCE	MEDICAL								PERS CARE	- 1.5										
1.4 -	JOB SEARCH										- 1.4											
1.3 -											- 1.3											
1.2 -			- 1.2																			
1.1 -		- 1.1																				
1.0 -		- 1.0																				
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APPENDIX A: Further Details on Time-Diary Studies

In each of the U.S. time-diary studies, a standard series of questions has been used by sequentially “walking” respondents through a 24-hour period. Question wording from the 1998 academic diary study is shown in Figure 1. Starting at some point in the diary day (usually midnight or 4 AM of the diary day), the randomly-chosen respondent is asked “What were you doing?” (Q1). Responses to this query are commonly known as “primary” activities because they are thought to be the most salient or determining activity for respondents at the time. (In 1998 but not in ATUS), respondents were also asked, “Did you do anything else?” (Q4) at the same time you did each “primary activity.” These “anything else” reports are referred to as “secondary” activities because they capture time spent in simultaneous “multi-tasking” activities that are presumably not the major focus of attention (Scheuch 1972); for example, respondents might report getting a child dressed for school (primary activity) while also listening to the radio (secondary)).

Respondents also report the location of each (primary) activity (Q2A) and identify the other people present during the activity (Q5). Figure 2 shows the diary entries for one respondent in this study, an employed married woman aged 43 with two children under age 18, who completed her diary in late June. As the recounting of her day began at midnight, she was working for the subsequent 20 minutes (until 12:20am). She then drove home, which took 40 minutes, where she watched half an hour of TV (while also engaged in cleaning up her home), followed by 45 minutes of dishwashing. She went to sleep at 2:15 am and got up at 7:45 am, whereupon she drank coffee and then got her 16-year-old son out of bed.

She ate lunch at noon, and subsequently did another hour and a half of house cleaning and dusting, and watched another half hour of TV. That was followed by an hour of bill paying and another hour of TV viewing. She then took a half hour each for showering and for dressing, prior to an hour’s dinner with her husband and children. At that point (6:30 PM), she drove back to work, where she worked again until midnight.

Totaling up her day, she put in 6.5 hours of paid work and 6.3 hours of housework. Getting her children up took another 0.8 hour. She spent only 5.5 hours sleeping, 1.5 hours eating and an hour grooming. She watched 2.5 hours of TV, which was her only free time during the day. She was on the road for 1.2 hours and at her workplace for 6.5 hours, and she spent the remaining 16.3 hours of the day at home, mostly with her children when she was not alone.

The task of keeping the diary may create some recall difficulties, but is fundamentally different from the task of making long-term time estimates. The diary keeper’s task is to recall one day’s activities in sequence, which should be similar to the way the day was structured chronologically for the respondent and to the way most people store their activities in memory. Rather than having to consider a long time period, the respondent need only focus attention on a single day (yesterday). Rather than working

Figure 1. Time Diary Question Wording

	Next, I would like to ask you about the things you did yesterday. I want to know only the specific things you did yesterday, not the things you usually do. Let's start at midnight [fill day of week before diary day], that is, the night before last.
Q1)	What were you doing [fill in day of week before diary day] at midnight?
	***If person reported traveling, ask question Q2B
Q2A)	Where were you?
Q2B)	How were you traveling?
Q3)	What time did you finish?
Q4)	At any time while you were (REPEAT ACTIVITY) did you do anything else? (like talking, reading, watching tv, listening to the radio, eating, or caring for children)
Q5)	While you were (REPEAT ACTIVITY) who was with you?
Q6)	What did you do next?
Source: CATI Transcript, 1998-99 Family Interaction, Social Capital, and Trends in Time Use Study.	

Figure 2. Sample of Completed Time Diary

Married woman, aged 43, with two children < age 18 (diary completed on a Thursday in June)

What did you do?	Time Began	Time Ended	Where Were You:	With Whom?	Doing Anything Else?
Working	Midnight	12:20	Work	Coworker(s)	No
Traveling home from work	12:20	1:00	Car	—	Listening to the radio
Watching TV	1:00	1:30	Home	—	Cleaning house
Washing dishes	1:30	2:15	Home	—	No
Sleeping	2:15	7:45	Home	—	No
Drinking coffee	7:45	8:15	Home	Spouse	Talking
Woke 16-year old son up	8:15	8:30	Home	Children	No
Washing clothes	8:30	11:00	Home	Children	Additional clothes care
Watching TV	11:00	11:30	Home	—	Additional clothes care
Woke 14-year old daughter up	11:30	12:00	Home	Children	Watching TV
Eat lunch	12:00	12:30	Home	Children	Watching TV
Cleaned up and dusted	12:30	2:00	Home	—	Clothes care
Watching TV	2:00	2:30	Home	Children	No
Paid bills	2:30	3:30	Home	—	Watching TV
Watching TV	3:30	4:30	Home	—	Clothes care
Bathing/showering	4:30	5:00	Home	—	No
Dressing	5:00	5:30	Home	Children	Watching TV
Eating dinner	5:30	6:30	Home	Spouse, Children	Talking
Traveling to work	6:30	7:00	Car	—	Listening to the radio
Working	7:00	Midnight	Work	Coworker(s)	Visiting and socializing

Source: 2000 National Survey of Parents.

from some list of activities whose meanings vary from one respondent to another, respondents simply describe their day's activities in their own words.

The diary technique also presents respondents with a task that gives them little opportunity to distort activities in order to present themselves in a particular light. They are given few clues about a study's interest in one activity or another, because the diary is simply intended as a complete record of any and all activity on that day. Some respondents may wish to portray themselves as hard workers or light television viewers, but in order to do so they must also fabricate the activities that precede and follow the one they want to misreport. Further, it is only a one-day account, and on any given day respondents probably realize that 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 wish to report it.

Automatic procedures can be built into the diary recording procedures conducted by Computer Assisted Telephone Interviewing (CATI) to facilitate complete and reliable reporting. Whenever respondents report consecutive activities that involve different locations, for example, they can be reminded that there needs to be some travel episode to connect them. Activity periods that last more than two hours automatically involve the probe "Were you doing anything else during that time or were you doing (activity) for the entire time?" Moreover, all periods across the day must be accounted for, in order that the diary account does total to all 1,440 minutes of the day (across the 24 hours).

Activity Coding: The largely open-ended diary reports are coded using a basic activity coding scheme like that developed for the 1965 Multinational Time Budget Research Project (by Szalai 1972). As shown in outline form in Figure 3, the Szalai code first divides activities into non free-time activities (codes 00–54,59) and free-time activities (codes 55–58, 60–99); non free-time activities are further subdivided into paid work (including commuting, which is usually referred to as "contracted time" in the time-diary literature), into three categories of family care (housework, childcare, and obtaining goods and services, or unpaid work that is often referred to as "committed time" in the literature), the three basic aspects of personal care (sleeping, eating, and grooming), and educational activities. The remaining free-time activities are coded under the five general headings of 1) information seeking (including the Internet); 2) organizational activity; 3) entertainment and socializing; 4) recreation; and 5) communications. 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.

Activity categories are typically coded in minutes per day and then converted into hours per week after ensuring that all days of the week were equally represented. In other words, the sampling units are person-days rather than persons, since the latter were only interviewed about a single day's activities. The diary data in these studies were weighted by demographic variables to match the March Current Population Survey characteristics on gender, age, education, employment status and the like and to provide equal representation of all seven days of the week.

The Szalai code has several attractive features. First, it has been tested, found to be reliable, and has been used 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 disciplines. The location

coding can be aggregated to estimate time spent in travel, outdoors, or at home, all important parameters for analyzing time-use trends.

Moreover, the ten main headings can also be conveniently split into the four “super categories” identified by Aas (1979):

- 1) Paid work (codes 01-09)
- 2) Unpaid work (10-19,20-29,30-39)
- 3) Personal care (40-49)
- 4) Free time (codes 60-69,70-79,80-89,90-99)

Under nine of these ten main headings in Table 1, there is a second _9 code to capture the travel associated with each category, so that it can be added together to total all travel during the day. It can also be added to the activity group (shopping, socializing) to give a fuller measure of the total time spent for that purpose.

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* paid work time for an employer, to the *committed* time for unpaid housework and family caregiving, to *personal* care for body and mind, and to 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 40 countries over the last two decades, including virtually all Eastern and Western European countries. In the US, the first national diary study was conducted in 1965, and it has then been replicated every decade in 1975, 1985, 1995, and 1998-2001. Since 2003, the American Time-Use Survey (ATUS) has been collecting diary data continuously by US Census Bureau for the Bureau of Labor Statistics (BLS) – with samples of more than 12,000 respondents per year leading to an overall sample base of more than 100,000 respondents since 2003. The ATUS has expanded the list of activity categories to more than 400, and that full list can be located on the front page of the website *atus-x*.

FIGURE 3: THE SZALAI 1965 TWO-DIGIT ACTIVITY CODE

00-49 Nonfree Time

00-09 Paid Work

- 00 (Not Used)
- 01 Main Job
- 02 Unemployment
- 03 (Not Used)
- 04 (Not Used)
- 05 Second Job
- 06 Eating at work
- 07 Before/after work
- 08 Breaks
- 09 Travel/to-from work

10-19 Household Work

- 10 Food Preparation
- 11 Meal Cleanup
- 12 Cleaning House
- 13 Outdoor Cleaning
- 14 Clothes Care
- 15 Car repair
- 16 Other Repairs
- 17 Plant care, gardening
- 18 Pet care
- 19 Other Household

20-29 Child Care

- 20 Baby care
- 21 Child care
- 22 Helping/teaching
- 23 Talking/reading
- 24 Indoor playing
- 25 Outdoor playing
- 26 Medical care-child
- 27 Other child care
- 28 (Not used)
- 29 Travel/child care

30-39 Obtaining Goods/Services

- 30 Everyday (food) shopping
- 31 Durable/house shop
- 32 Personal services
- 33 Medical appointments
- 34 Govt/financial services
- 35 Repair services
- 36 (Not Used)
- 37 Other services
- 38 Errands

- 39 Travel/goods and services

40-49 Personal Needs and Care

- 40 Washing, hygiene, etc.
- 41 Medical care
- 42 Help and care to others
- 43 Meals at home
- 44 Meals out
- 45 Night sleep
- 46 Naps/day sleep
- 47 Dressing/grooming etc.
- 48 Private, no report (sex)
- 49 Travel/Personal care

50-99 Free Time

50-59 Educational

- 50 Students classes
- 51 Other classes
- 52 Homework
- 53 Internet (WWW) use**
- 54 Library use
- 55 Other education**
- 56 Email /IM**
- 57 Computer games**
- 58 Other computer use**
- 59 Travel/education

60-69 Organizational

- 60 Professional/Union
- 61 Special interest
- 62 Political/civic
- 63 Volunteer helping
- 64 Religious groups
- 65 Religious practice
- 66 Fraternal
- 67 Child/youth/family
- 68 Other organizations
- 69 Travel/organizational

70-79 Entertainment/social

- 70 Sports events
- 71 Entertainment
- 72 Movies (not videos)

- 73 Theater
- 74 Museums
- 75 Visiting
- 76 Parties
- 77 Bars/lounges
- 78 Telephone/Cell phone
- 79 Travel/social

80-89 Recreation

- 80 Active Sports
- 81 Outdoor
- 82 Walking/hiking
- 83 Hobbies
- 84 Domestic crafts
- 85 Art
- 86 Music/drama/dance
- 87 Games
- 88 Other recreation
- 89 Travel/recreation

90-99 Communications

- 90 Radio
- 91 TV + videos
- 92 Records/tapes
- 93 Read Books
- 94 Read Magazines/etc
- 95 Reading newspaper
- 96 Conversations (face-to-face)
- 97 Writing letters
- 98 Think/relax
- 99 Travel/communication

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