CENTRE FOR TIME USE RESEARCH

Institute of Education

MULTINATIONAL TIME USE STUDY (MTUS)

USER GUIDE

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Institute of Education

CENTRE FOR TIME USE RESEARCH

MPRC Maryland Population Research Center

This *User Guide* is for Release 7.0 of the World 5.53 dataset (October 2020) and replaces Release 5 (October 2012), Release 4 (October 2011), Release 3 (March 2009), Release 2 (May 2005) and Release 1 (March 2003). Errors have been corrected and new variables have been added. This documentation also covers the first release of the World 5.8 and World 6.0 versions

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EXECUTIVE SUMMARY

This User Guide is the companion document to the MTUS dataset. The *Version 7* includes new data quality checks, a comprehensive revision of the weights, and new variables.

This Guide describes the structure of the MTUS dataset and identifies issues of comparability across the included surveys. It describes the national surveys and associated harmonised variables, the weighting of time use data and appropriate methods for analysing time use data.

To date, more than 110 time use surveys have been archived in the MTUS data store. This Guide relates to only the subset of those surveys included in the harmonised data files. Table 1 (Section 1.3) lists all the surveys included in the current version of the MTUS.

The *Harmonised Aggregate Files* (*HAF*) offer aggregate versions of the time use surveys and include, demographic and socioeconomic information about respondents and their households alongside the aggregated time use variables.

The *Harmonised Episode Files* (*HEF*) covers sequence of activities information. As the HEFs are large, age and sex are the only identifiers included alongside the diary information.

The *Harmonised Episode Files* Original (*HEF_OR*) tis data files contains the same information that the HEF with the particularity that contains the original number episodes of activities from the original data.

All Country HAF (HAF_ALL) contains one big HAF data file, which has been created by appending each country's HAF file.

README file for each survey includes survey-specific information for the activity coding of harmonised variables.

Whilst this *User Guide* is publicly available, access to the time use data is restricted and requires registration and authorisation. New users can apply for access by registering at: https://www.timeuse.org/user/register. Users who have accessed and used the MTUS database should reference it as follows:

> Jonathan Gershuny, Margarita Vega-Rapun and Juana Lamote (2020) *Multinational Time Use Study.v7*. Centre for Time Use Research, University College London.

Likewise, we urge users to send publications using the MTUS database to the Centre for Time Use Research (CTUR), University College London.

Disclaimer

Although we aimed for the highest level of accuracy when preparing the MTUS dataset and associated documentation, errors are possible. Users of the MTUS dataset should be careful while doing analysis. The User Guide and individual surveys include the recoding of the harmonised variables for Release **7.0** of the harmonised episode and aggregate files in detail. In addition to adding new time use surveys, the MTUS team periodically reviews and updates all time use surveys included in the dataset.

HISTORY AND DEVELOPMENT OF THE MTUS

The *Multinational Time Use Study* (MTUS) brings together more than 1.5 million diary days from over 100 randomly sampled national-scale surveys, into a single standardised format. MTUS allows researchers to analyse time spent by people in various sorts of work and leisure activities over the last 60 years and across 30 countries.

Jonathan Gershuny first developed MTUS in the mid-1980s. Working with Sally Jones at the University of Bath, he developed a single dataset with a common series of background variables and total time spent per day in 41 activities. The MTUS has expanded since then and offers harmonised episode and context information, including recent data from the *Harmonised European Time Use Survey* (HETUS), *American Time Use Survey* (ATUS), and other national- scale time use projects.

MTUS is currently managed by Jonathan Gershuny, Margarita Vega, Juana Lamote, Jagriti Tanwar, and Teresa Harms and is archived at the Centre for Time Use Research, Social Research Institute, at the University College London. The website http://www.timeuse.org/mtus/ provides access to the data and documentation, and offers advice on how to use this dataset. At present, we are undertaking a comprehensive upgrade of the MTUS, which includes removing some infrequently, used variables, adding new variables and surveys, and upgrading the documentation. These changes will include the introduction of survey metadata variables alongside the time diary variables.

MTUS is part of a collaborative project with the Minnesota Population Center and the Maryland Population Research Center. The collective goal is to provide a data extract builder to make it easier for users to create data files that contain time use, individual, and household characteristics variables. This data extract builder is called MTUS-X. The data provided in the MTUS and MTUS-X is entirely compatible. The MTUS-X interface can be accessed via https://www.mtusdata.org/mtus/.

ACKNOWLEDGEMENTS

The development of the MTUS spans several decades and has involved numerous researchers and funding sources. In particular, we acknowledge the important role played by Kimberly Fisher in the development and maintenance of the MTUS. The authors of this User Guide are particularly grateful for the contributions our international statistical partners have made to this project[i]. We especially appreciate their willingness to share their time use data and answer numerous questions about their studies.

Many individuals have contributed to the MTUS over the last decades. We offer our special thanks and appreciation to them all[ii].

We are also grateful to the funding agencies that have supported our research program over many years [iii].

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1. CHAPTER 1: OVERVIEW OF THE MTUS DATASET

1.1 Introduction

The MTUS allows researchers to analyse time spent by people in various sorts of work and leisure activities, over the last 55 years and across 30 countries.

All variables are labelled within the MTUS files with the exception of those that are not harmonised. More detailed information on the derivation of all variables from the original survey materials is accessible at: https://www.timeuse.org/mtus/surveys.

We explain the labels in the README files that accompany each individual time use survey.

Earlier versions of the harmonised dataset are available for a large number of surveys, which will be checked and added to future releases. Previous versions of the harmonised dataset include:

1. **Original files**: Episode and aggregate files, not generally available for distribution except by arrangement with the data provider. In some cases, CTUR only holds an interim version of the original data or the MTUS version of the data.

2. **World 5.53**: A harmonised aggregate file with all surveys from all countries except those conducted by the Australian Bureau of Statistics, Statistics Finland and Statistics Sweden. These surveys include diarists of all ages and additional variables, but only using the old 41-activity coding frame. In this file, each row represents a 24-hour observation period (diary).

3. **World 5.8**: Two harmonised aggregate files (one for adult diarists aged >=18 and a separate file for diarists aged <18) with all surveys from all countries except those collected by the Australian Bureau of Statistics, Statistics Finland and Statistics Sweden. These files include the same survey, household and diarist variables as World 5.53, but with summary time in both the old 41-activity and in a new and updated 69-activity coding frame. Again, each row represents a 24-hour diary (1440 minutes).

4. **World 6.0**: Two harmonised episode files (one for adult diarists aged >=18 and a separate file for diarists aged <18) with all surveys from all countries except those collected by the Australian Bureau of Statistics, Statistics Finland and Statistics Sweden. The identifier variables are sex and age as well as the diary details. Note that in these files, *episodes* represent a change in any of the following:

    a. main activity, coded in both the 41- and 69-activity coding frames
    b. secondary activity in the 69-activity coding frame
    c. location/mode of transport
    d. who else was present
    e. using information or communication technology device/s

5. **Restricted files** in versions 5.53, 5.8 and 6.0 for Australia, Germany, Finland and Sweden are released separately and require additional permission to access.

6. **Supplementary files** with additional variables for the UK http://www.timeuse.org/mtus/supplementary/) and the American Heritage Time Use Study (AHTUS) http://www.timeuse.org/ahtus/.

Version 7.0 of the MTUS (June 2020) includes three types of files:

1. ***Harmonised Aggregate Files* (*HAF*)** offer aggregate (summary) versions of the time use surveys by country, where each row in the dataset reflects a record in one 24-hour time diary. The HAFs include survey, demographic and socioeconomic information about respondents and their households alongside the aggregated time use variables. We provide HAF data file by country in the format as following: haf_AT.dta, haf_CA.dta, haf_DK.dta and so on. The AT, CA and DK are country abbreviations for Austria, Canada and Denmark.

2. ***Harmonised Episode Files* (*HEF*)** covers sequence of activities information by country. In the HEFs, each row represents one episode (reflecting a change of main activity/ secondary activity/ computer or Internet use/ location/mode of transport, or presence of others). As the HEFs are large, age and sex are the only identifiers included alongside the diary information. We provide HEF data by country.

3. **Harmonised Episode Files Original (HEF_ORIG)** is harmonized data file and the only difference between HEF and HEF_ORIG files is that the episode in HEF_ORIG is kept in the same way as it was provided in the original file. This usually happened because the original data file includes some extra variables at the episode level that justifies the existence of a new episode but they are not included in HEF.

4. **All country HAF (HAF_ALL)** contains one Harmonised Aggregate File, in which we have appended all countries' HAFs together to create one HAF, reducing user's burden to append all countries HAF files. We provide all country HAF data file as HAF_ALL.dta.

5. **Light Diaries_HAF** provides Harmonised Aggregate Files for the UK 1995 and UK 2005 light diaries(can be identified by msamp variable). Light diaries include a list of pre-coded activities from which a respondent may select and mark it on the time s/he spent doing that activity. For example, activities may include sleeping, resting, washing, and dressing and so on. More information can be found at https://jtur.iatur.org/home/article/c73705a3-2c6f-46d4-9616-0f197e40455c

Other improvements include:

1. Quality checks
2. A revision of the weighting procedures
3. New variables

1.2 Format and structure of the datasets

Currently, the harmonised surveys are saved in **SPSS** and **STATA** formats, but will eventually be available in SAS and R.

Cases

In most descriptive analyses, we encourage MTUS users to include all cases.

However, when carrying out analyses based on inferential statistics, users should be aware of the non-independence of cases and should use appropriate statistical techniques for surveys that collected multiple diaries from the same respondent. These are identified by the ID (diary identifier) variable.

Users with older versions of the MTUS dataset will note that in the past, we converted full-week surveys into a day representing the average time spent in each activity across the week. From the release of Version 5.53 onwards, each individual diary day appears independently.

In contrast with early versions of the MTUS, we no longer exclude diaries missing large amounts of time. Instead, we retain all diaries. Previous version includes a marker variable BADCASE to distinguish high quality from low-quality diaries. Section 1.8 includes a detailed discussion on issues of diary quality. Our recommended weight PROPWT assigns a zero-value to all low-quality diaries, so when the data are weighted in analysis, low-quality diaries are excluded.

Some of the early time use surveys include row cases for diary non-respondents (questionnaire respondents who did not complete a diary). However, most of the surveys do not include specific information on non-respondents in the data files. Users should take account of the original survey information recorded in the accompanying README file to investigate non-respondents. When original surveys include rows for non-diarists (people with 24-hours of no reported activity), we delete the non-diary cases.

From Version 5.53 onwards, we have carried out further data preparation before identifying low-quality diaries, as well as expanding the definition of a low-quality diary to consider factors in addition to missing time.

Imputing activities

The time use diary is a narrative account and not a series of quantitative questionnaire answers. Respondents can provide a full account of their day without necessarily completing all columns of the diary for all potential timeslots.

We impute activities in three specific instances:

1. in cases where the main activity is missing at the beginning or end of the diary day;
2. where the diarist records being at home, or at another person's home, for most of the diary day;
3. if the subsequent activities – after the initial gap at the beginning or the preceding activities before the final gap at the end of the diary day – are the types of activities

that typically precede or follow sleep (e.g. have a drink, read, shower, dress/undress), we assume the missing activity is sleep.

We make this assumption based on commonly recorded patterns of daily activity and because diaries in most time use surveys tend to start when most people in the population are asleep (usually between 12-midnight and 04:00).

In cases where 25 or fewer minutes are missing before leaving home to travel somewhere or after returning, we assume that missing activity includes a combination of personal and household care.

The documentation specific to each survey found in the conversion files includes information on the number of cases amended by these procedures. Finally, where the diarist gives location information indicating that they are not at home, but records no activity, we mark the case with the category "unknown activity away from home" in the newer 69-activity coding frame. (Note that these cases are treated as missing time in the older 41-activity coding list.)

1.3 Surveys included

The MTUS includes >100 randomly sampled national-scale time use surveys from over 30 countries. Table 1 lists all the time use surveys included in MTUS, indicating those with available Harmonised Aggregate Files (HAF) and Harmonised Episode Files (HEF).

Table 1: Surveys in MTUS

COUNTRY AND ABBREVIATION	SURVEY AND YEAR	HAF	HEF
Austria (AT)	1992	yes	yes
Australia (AU)	1974	yes	yes
	1987	yes	no
	1992	yes	yes
	1997	yes	no
	2006	yes	yes
Belgium (BE)	1966	yes	yes
Bulgaria (BG)	1965	yes	yes
	2001	yes	yes
Canada (CA)	1971	yes	no
	1981	yes	no
	1986	yes	no
	1992	yes	no
	1998	yes	no
	2005	yes	yes
	2010	yes	yes
Czech Republic (CZ)	1965	yes	yes
Germany (DE)	1965- West Germany	yes	yes
	1966- East Germany	yes	yes
	1991	yes	no
	2001	yes	no
	2012	yes	yes
Denmark (DK)	1964	yes	no
	1987	yes	no
	2001	yes	no

Spain (ES)	2002	yes	yes
	2009	yes	yes
Finland (FI)	1979	yes	yes
	1987	yes	no
	1999	yes	no
	2009	yes	yes
France (FR)	1966	yes	yes
	1974	yes	no
	1985	yes	yes
	2009	yes	yes
Hungary (HU)	1965	yes	yes
	1999	yes	yes
	2009	yes	yes
Israel (IL)	1991	yes	yes
Italy (IT)	1980	yes	no
	1989	yes	no
	2002	yes	yes
	2008	yes	yes
	2013	yes	yes
South Korea (KR)	1999	yes	yes
	2004	yes	yes
	2009	yes	yes
Netherlands (NL)	1975	yes	yes
	1980	yes	yes
	1985	yes	yes
	1990	yes	yes
	1995	yes	yes
	2000	yes	yes
	2005	yes	yes
Norway (NO)	1971	yes	no
	1980	yes	no
	1990	yes	no
	2000	yes	no
Peru (PE)	1966	yes	yes
Poland (PL)	1965	yes	yes
	2003	yes	yes
Serbia (RS)	1965	yes	yes
Sweden (SE)	1991	yes	no
	2001	yes	no
Slovenia (SI)	1965	yes	yes
	2000	yes	no
United Kingdom (UK)	1961	yes	no
	1974	yes	yes
	1983	yes	yes
	1987	yes	yes
	1995	yes	yes
	2000	yes	yes
	2005	yes	yes
	2014	yes	yes
United States (US)	1965	yes	yes
	1975	yes	no
	1985	yes	yes
	1993	yes	yes
	1995	yes	yes
	2003	yes	yes
	2004	yes	yes
	2005	yes	yes
	2006	yes	yes
	2007	yes	yes
	2008	yes	yes
	2009	yes	yes
	2010	yes	yes

	2011	yes	yes
	2012	yes	yes
	2013	yes	yes
	2014	yes	yes
	2015	yes	yes
	2016	yes	yes
	2017	yes	yes
	2018	yes	yes

Table1 shows that 95 surveys have HAFs. The 69 surveys have HEFs, while remaining 26 surveys do not have HEFs. More information on the characteristics of these surveys can be found in Table A Appendix 1. Note that Appendix 1 also includes Table B and Table C. In Table B we list all the surveys that currently do not have HAFs and HEFs. Table C combines all surveys together that have and do not have HAFs and HEFs. However, we aim to provide information on those surveys in near future.

1.4 Technical information on the time use surveys

Table 1 (Appendix 1) provides detailed information on each of the time use surveys included in the MTUS, including:

1. County and country code
2. Survey year (many countries have multiple surveys)
3. Survey period (data collection period)
4. Sample size (number of invited participants)
5. Response rate (percentage)
6. Age range of sample
7. Household (more than one household member)
8. Number of diary days (1–7 days)
9. Completion mode (face-to-face, paper, CATI, CAPI, web, app)
10. Type of diary (tomorrow, yesterday, stylised/questionnaire)
11. Timeslot in diary (1–30 minutes, generally 5–15 minutes)

1.5 File naming conventions

We have standardised the way files are named in the MTUS. The name of each file distinguishes the:

Country (2-letter code)
Kind of file: Aggregate file (**HAF**) or episode file (**HEF**)
Type of file (extensions **dta** for data files; **sps** or **do** for program files)

1.6 Missing value conventions

MTUS variables always have positive or zero values to indicate substantive information. Negative values are used only to identify missing values. We also adopt a special convention for cases where weights cannot be constructed for particular cases.

1. Missing value **-7** is used in circumstances where we can create a variable for the survey, but cannot create one for the diarist (or diary) because the respondent was not asked for the information in the diary or the information was not relevant to that respondent[1].

2. Missing value **-8** refers to conditions where we can create the harmonised variable for the particular time use study, but no information is recorded for the case (i.e. item non-response or insufficient information to create the variable for that case).

3. Missing value **-9** applies to situations where the harmonised variable could not be computed for the survey, with exceptions[2]. We use -9 with time use activity variables to distinguish true **0**s (i.e. the diarist did not record any time in this activity, although in theory could have done so) from cases where no time is recorded in the activity because the time use category could not be created for the particular survey.

4. A new value **-5** may appear in some variables. This denotes variables that will be included in future versions of the MTUS.

5. A new value **-6** may appear in some variables. This denotes variables is in under revision

1.7 README files

Each time use survey archived in the MTUS has an associated *README* file that contains information specific to the survey. Two sets of variables: main and core are included. It is important that users refer to the relevant README file before starting any data analysis. Those surveys for which a very limited information has been provided in README file, we aim to update the information in near future.

1.8 Data preparation

Before beginning the data conversion, the MTUS team undertakes a series of procedures to maximise data quality and prepare them for users. Appendix 2 details this process for users who are interested in understanding data harmonization process. We also carry out a series of quality checks during the post-harmonisation process.

1.9 Identifying good- and poor-quality diaries

[1] Although this missing value option potentially applies to all variables, it is mainly used for AGEKIDX, AGEKID2, WORKHRS, EMPSP, PARNTID1, PARNTID2, PARTID and EMPINCLM.

[2] The exceptions apply to weights and case identifier variables, although the identifier of spouse or parents can have a -8 value if this could not be created for a case.

Diaries with very low episode counts and/or missing basic activities (sleeping and eating, except in special circumstances such as 24-hour work shifts or religious fasts) do not provide adequate accounts of the day. Furthermore, diaries with long periods of missing time do not account for enough of the day to allow imputation of what is likely to have taken place during the missing periods.

For this reason, MTUS zero weights identify very low quality diaries. We consider a low-quality diary as one that:

1 missing age or sex of diarist only
2 missing day of week diary completed only
3 missing 91+ minutes only
4 fewer than 7 episodes only
5 missing 2 of four basic activities (In this exceptional case we are not providing zero weight and we allow to the researcher to decided it if he/she wants to include it in the analysis)
6 missing 3-4 of four basic activities
7 there is more than one condition missing

We define four basic activities necessary for daily functioning as:

1. **eating** or **drinking** measured by time spent in these activities, time recorded working with food (e.g. set/clear table, food preparation/cooking), or being in a location where the diarist is likely to be around food and drink (e.g. attending a dinner party or going to a pub or restaurant);
2. **sleep** or **rest**, including doing nothing, thinking and time out;
3. **personal care**, including self-care/grooming, receiving personal services (e.g. visiting the hairdresser, doctor);
4. **free time/leisure**, including exercise, travel, excursions, gardening and dog walking.

Only good-quality diaries can have positive values in the MTUS weight PROPWT. Low quality diaries should have **0** values for this weight.

We make five exceptions to the quality rules outlined above:

Exception 1

Diarists may neglect to include brief travel episodes, but record a set of activities, indicating that they did travel and where in the day this travel took place. These diaries include patterns of continuous activity with a change in location, such as eating breakfast at home, then doing paid work at the office, but with no report of travel between the two locations. We handle these cases by creating a flag variable for unreported travel (**0**=no missed travel, **1**=missed travel).

If the diary includes two of the four basic activities, one of the two missing activities is exercise or travel, and missing travel patterns can be flagged, then we count this as a good diary; we do not alter the diary record in these cases. MTUS users need to make their own adjustments to the diary entries if they wish to account for such travel.

Exception 2

Diarists may not record any personal care activities, particularly if they are short or fleeting. These diaries report continuous patterns of activity and transitions where personal care is highly likely to have occurred. If these patterns are present, we create a flag variable for unreported personal care (**0**=no missed personal care, **1**=missed personal care).

If the diary is missing two basic activities, one of the missing activities is personal care, and unreported personal care patterns can be flagged, then we count this as a good diary. We do not alter the diary record in such cases. MTUS should make their own adjustments to the entries made by the diarists if they wish to account for such personal care.

Exception 3

In cases where the diarist reports caring activities (child- or adult-care) and the variable CARER can be flagged (**1**=yes) or the diary includes any time spent caring, and also meets the other four good diary criteria, it counts as a good diary.

Exception 4

In cases where the diarist reports being at home (ELOC=1) or in another person's home (ELOC=2) all day (>1000 minutes, defined as no travel), records at least two of the basic activities and a minimum of 12 episodes, but otherwise meets the other four good diary criteria, counts as a good diary.

Exception 5

Other diaries including only two of the basic activities and 15 or more episodes count as good diaries.

Although some early time use surveys include row cases for non-respondents who did not complete a diary, most do not include specific information on non-respondents in the data files. Whilst the MTUS format provides a suitable platform for analysing good- and low-quality diaries, users need to take careful account of the original survey documentation in the README files to investigate non-respondents. When original surveys include rows for non-diarists (people with no reported activity for 24-hours), we delete the non-diary cases.

1.10 Variables from older versions of MTUS no longer in use

The MTUS has evolved with time. In addition to adding a number of variables, we have dropped some variables that were available in earlier versions. Users who have worked with previous versions of the files can find out more about the changes and variables no longer in use in Appendix 3.

2. CHAPTER 2: ACTIVITY CODES

2.1. History of time use diary activity coding frames

Most modern coding frames derive from, or have been otherwise influenced by, the first cross-nationally comparable time use surveys carried out in the mid-1960s. Alexander Szalai, who directed the research consortium, developed a 90-activity coding frame to classify the activities reported by diarists.

In the late 1990s, Eurostat developed a four-digit activity coding frame for time use studies, which is used for the Harmonised European Time Use Surveys (HETUS). The latest (2019) HETUS coding frame can be accessed via: https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-19-003. Although the majority of time use surveys carried out in Europe use the HETUS coding frame, other countries have developed their own.

The United Nations Development Programme and UN Statistics Division developed an international classification of activities (ICATUS), and these codes have been used in UN-sponsored time use studies collected to measure gender equality and domestic work.

The US Bureau of Labor Statistics (BLS) began collecting the first continuous set of time diary data for the American Time Use Study (ATUS) in 2003, and developed a coding lexicon partly based on internal data needs of the US government but also modelled from the coding list developed by the Statistics Canada and the Australian Bureau of Statistics (ABS). Current and previous ATUS coding lexicons can be accessed via: https://www.bls.gov/tus/lexicons.htm.

New daily activities emerge with technical and social change (e.g. the diffusion of computers, mobile phones, and social media). To accommodate this, we have created a more detailed harmonised 69-activity coding frame, which corresponds more closely with other coding frames, including the HETUS, ATUS and ICATUS.

In the following section, we describe the 25- and 69-activity coding frames used in the current version (Release 7.0) of the MTUS and also the AV41. Tables mapping the original activity codes of each survey harmonised into the MTUS are detailed in the survey-specific README files. In the summary MTUS files, where each row represents a time use diary, the total time spent across the 25 categories and separately across the 69-activity categories sums to 1440 minutes; the total number of minutes in a 24-hour day.

Users are advised to become familiar with the coding of activities in order to avoid misinterpretations of some of the results.

2.2. MTUS 25-activity and 69-activity coding frames

The default value for all time use variables that can be created is **0**. If a category cannot be created, variable should be coded as **-9**. The value of 0 should indicate that the diarist did not record any time in an activity, even though he/she had an opportunity to report such an activity. In some cases, no diarists in a sample report a particular activity, even though the survey allowed for such activity to be recorded. These circumstances could have 0 values for the variable in all cases. Nonetheless, it should be possible to distinguish cases where no diarist spent time in that activity.

The current version (Release 7.0) of the MTUS includes three main activity lists with 25, 41 and 69 categories. Appendix 4 provides detailed descriptions of each activity, with examples and notes.

Table 2: Harmonised activity codes (69-category)

Activity code	Description
MAIN/SEC 1	Imputed personal or household care
MAIN/SEC 2	Sleep and naps
MAIN/SEC 3	Imputed sleep
MAIN/SEC 4	Wash, dress, care for self
MAIN/SEC 5	Meals at work or school
MAIN/SEC 6	Other meals or snacks
MAIN/SEC 7	Paid work - main job (not at home)
MAIN/SEC 8	Paid work at home
MAIN/SEC 9	Second or other job not at home
MAIN/SEC 10	Unpaid work to generate household income
MAIN/SEC 11	Travel as a part of work
MAIN/SEC 12	Work breaks
MAIN/SEC 13	Other time at workplace
MAIN/SEC 14	Look for work
MAIN/SEC 15	Regular schooling, education
MAIN/SEC 16	Homework
MAIN/SEC 17	Leisure/other education or training
MAIN/SEC 18	Food preparation, cooking
MAIN/SEC 19	Set table, wash/put away dishes
MAIN/SEC 20	Cleaning
MAIN/SEC 21	Laundry, ironing, clothing repair
MAIN/SEC 22	Home/vehicle maintenance/improvement
MAIN/SEC 23	Other domestic work
MAIN/SEC 24	Purchase goods
MAIN/SEC 25	Consume personal care services
MAIN/SEC 26	Consume other services
MAIN/SEC 27	Pet care (other than walk dog)
MAIN/SEC 28	Physical, medical child care
MAIN/SEC 29	Teach, help with homework
MAIN/SEC 30	Read to, talk or play with child
MAIN/SEC 31	Supervise, accompany, other child care
MAIN/SEC 32	Adult care

MAIN/SEC 33	Voluntary work, civic, organisational activity
MAIN/SEC 34	Worship and religious activity
MAIN/SEC 35	General out-of-home leisure
MAIN/SEC 36	Attend sporting event
MAIN/SEC 37	Cinema, theatre, opera, concert
MAIN/SEC 38	Other public event, venue
MAIN/SEC 39	Restaurant, café, bar, pub
MAIN/SEC 40	Party, reception, social event, gambling
MAIN/SEC 41	Imputed time away from home
MAIN/SEC 42	General sport or exercise
MAIN/SEC 43	Walking
MAIN/SEC 44	Cycling
MAIN/SEC 45	Other out-of-doors recreation
MAIN/SEC 46	Gardening/forage, hunt/fish
MAIN/SEC 47	Walk dogs
MAIN/SEC 48	Receive or visit friends
MAIN/SEC 49	Conversation (in person, phone)
MAIN/SEC 50	Other in-home social, games
MAIN/SEC 51	General indoor leisure
MAIN/SEC 52	Artistic or musical activity
MAIN/SEC 53	Written correspondence
MAIN/SEC 54	Knit, crafts or hobbies
MAIN/SEC 55	Relax, think, do nothing
MAIN/SEC 56	Read
MAIN/SEC 57	Listen to music, iPod, CD, audio book
MAIN/SEC 58	Listen to radio
MAIN/SEC 59	Watch TV, DVD, video
MAIN/SEC 60	Play computer games
MAIN/SEC 61	Send e-mail, surf internet, computing
MAIN/SEC 62	No activity but mode of recorded travel
MAIN/SEC 63	Travel to or from work
MAIN/SEC 64	Education-related travel
MAIN/SEC 65	Travel for voluntary/civic/religious activity
MAIN/SEC 66	Child/adult care-related travel
MAIN/SEC 67	Travel for shopping, personal or household
MAIN/SEC 68	Travelling for other purposes
MAIN/SEC 69	No recorded activity

Table 3: Harmonised activity codes (25-category)

	Activities	Description	Includes categories
1	Sleep	Sleep and naps	main2 + main3
2	Eatdrink	Meals or snacks	main5 + main6
3	Selfcare	Wash, dress, care for self	main1 + main4
4	Paidwork	Paid work and related activities	Σ main7 to main14
5	Educatn	Schooling, education, homework	Σ main15 to main17
6	Foodprep	Food preparation, cook, wash dishes	main18 + main19
7	Cleanetc	Cleaning, laundry, regular housework	main 20 + 21 + 23
8	Maintain	Maintain home/vehicle, re-fuel	main22
9	Shopserv	Purchase goods, consume services	Σ main24 to main26

10	Garden	Gardening/forage	main46
11	Petcare	Pet care (including walk dog/s)	main27 + main47
12	Eldcare	Look after adults needing help or care	main32
13	Pkidcare	Physical, medical and routine child care	main28 + main31
14	Ikidcare	Play (incl. sports), read to, teach child	main29 + main30
15	Religion	Worship and religion, meditation	main34
16	Volorgwk	Voluntary, civic, organisational activities	main33
17	Commute	Travel to/from work or education	main63 + main64
18	Travel	Other travel (incl. leisure)	main62 + Σ 65 to 68
19	Sportex	Participate in sports or exercise	Σ main42 to main44
20	TVradio	Watch television, listen to radio	Σ main57 to main59
21	Read	Read (paper and e-books)	main56
22	Compint	Email, texting web, program, comp games	main60 + main61
23	Goout	Cinema, concert, museum, watch sports	Σ 35 to 41 + main45
24	Leisure	Other leisure, incl. time with family, friends	Σ main48 to main55
25	Missing	No main activity reported	main69

2.3. Context and episode variables

These context variables are include into the harmonised episode-level files (HEF). Are episode level variable, however we include the additional diary variables of sex, age and ocombwt propwt and badcase for convenience, as well as the identifier variables necessary for matching with the HAF file.

1. **DAY**: Day of week diary was kept
2. **TIME**: Duration of activity in minutes
3. **CLOCKST**: Start time on 24-hour clock
4. **START**: Start minute, **END**: End minute
5. **EPNUM**: Episode number
6. **MAIN**: Main activity (69-category list) /**CORE:**25 category list /**AV**:41 category list
7. **SEC**: Secondary activity (69-category list)
8. **INOUT**: Inside or outside,
9. **ELOC**: Location
10. **ICT**: Used information communication technology during activity
11. **MTRAV**: Mode of travel/transport
12. **ALONE**: Alone or with strangers, **CHILD**: Child aged <18 present, **SPPART**: Spouse or partner present, **OAD**: Other adult present

DAY: Day of week diary kept

This variable records the day of the week when the diary was kept. Note that some older surveys only include whole week averages (value 8) or distinguish weekdays but not weekend days (value 9).

Table 4: Day of week

Value	**Label**
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday

6	Friday
7	Saturday
8	Whole week average
9	Weekday

TIME: Duration of activity in minutes

We calculate this variable by subtracting START from END. Many time use surveys include a variable for the duration of the episode in minutes, although some files include errors in the variable. In some cases, described in more detail in relation to the activity variables below, we modified the definition of an episode.

Users converting original surveys in the MTUS format should double-check their calculations for time against the duration variable in the original file and carefully check any inconsistencies; the variable TIME should be the variable calculated by the converter of the survey.

CLOCKST: Start time on 24-hour clock

This variable represents the time on the 24-hour clock when the activity started, which is reported as a 4-digit number. The digit/s prior to the decimal represents the hour; the two digits following the decimal represent the minute. Midnight is recorded as 0.00.

10.35 (thirty five minutes past 10AM)
20.35 (thirty five minutes past 8 PM)

START: Start minute
END: End minute

There are two ways to represent time in the diary episode file:

1. time as reported on the 24-hour clock;
2. time in terms of the number of minutes that have elapsed since the start of the diary observation period.

All the surveys included in the MTUS cover an observation period of 24-hours (1440 minutes), and all surveys begin at a point on the 24-hour clock where the majority of the observed population are likely to be asleep (midnight to 06.00).

As people lead their lives in 24-hour cycles, we harmonise the concept of time in Version 6.0 by reporting the start and end minutes of each episode in the 1440-minute observation period. The first episode in all diaries has a start value of 1, and the last episode in all diaries has an end value of 1440.

EPNUM: Episode number

A new episode begins whenever there is a change in the main activity, or the secondary activity or co-presence/ IT/device use or location/ mode of transport. The first episode for each diary day has a value of 1.

Episode (n+1) = epnum(n)+1

We generate the episode number after cleaning and harmonising the files. Consequently, the number of episodes in the MTUS may differ from the number of episodes in the original

dataset, as the definition of an episode is determined by the variables included in MTUS. In case that you want to check the original file, please regere to the HEF_or

MAIN: Main activity (69-category list)

Refer to Section 2.2 and Appendix 4 for detailed information on the MTUS 25-and 69-activity coding frames.

AV: Main activity (41-category list)

The 41-activity coding frame is no longer used and has been replaced by a 69-activity coding frame and a shorter 25-activity version. See Appendix 3 for more detailed information.

SEC: Secondary activity (69-category list)

Secondary activities use the same 69-category activity list as the main activities. However, secondary (simultaneous) activities do not sum to 1440 minutes. The degree of detail in the secondary activity column varies considerably between surveys.

Researchers using time use data should consider their analytic needs when deciding whether and how to include secondary activities. In some cases, certain combinations of secondary activities will count as new activities added to primary activity episodes. However, the total time spent in the 24-hour observation period across this expanded and customised list of activities must total 1440 minutes. Which secondary activity combinations are relevant will vary by the focus of the research.

Some surveys allow diarists to report more than one secondary activity (i.e. simultaneous activities). Where this occurs, we split the episode into sub-episodes that sum to the same duration of the original episode, one new episode for each reported secondary activity. In these cases, we code the main activity and contextual information to apply across all elements of the split episode, except where there is a clear transition to travel. Users can identify these cases because the sub-episodes have the same value for the variable CLOCKST (the start time of the episode on the clock), while all unsplit episodes have different values for CLOCKST.

INOUT: Inside or outside
ELOC: Location

There are nine location and three inside/outside codes, plus two codes to use if the location is unknown. Table 5 details the location codes, including descriptions and examples. We draw these location codes both from separate location variables and from embedded information in the original activity codes.

Table 5: Location

Value		Description
INOUT =	-8	Location unknown
INOUT =	1	Inside
INOUT =	2	Outside
INOUT =	3	Travelling
ELOC =	-8	Location unknown
ELOC =	1	At own home
ELOC =	2	At another's home
ELOC =	3	At workplace

ELOC =	4	At school
ELOC =	5	At services or shops
ELOC =	6	At restaurant, café, bar,
ELOC =	7	At place of worship
ELOC =	8	Travelling
ELOC =	9	Other locations

Users should note that the degree of specification about whether an activity is undertaken inside or outside is highly variable by survey, and caution should be used with this variable for cross-country and cross-time analysis. During this process, we have checked any inconsistencies between the original location codes and the embedded activity codes, and we comment on such cases in the conversion programs for each survey. Some location codes are collapsed into a general "other" code and, where possible, we use the activity codes to break down "other" locations.

For example, if there is no location code for school, but the diarist records the activity as formal schooling that takes place away from home, we code the location as school. Similarly, if a diarist reports attending a religious service, and the location is "other not at home", we code the location as place of worship. If the diarist was travelling (including on foot and by bicycle), ELOC has the value of 8

ICT: Used information communication technology during activity

We include a marker of whether the diarist used one or more forms of information technology (computer, mobile, tablet, etc.) during the activity. Recent surveys use diaries that include a column (field) where respondents can mark whether they used different types of technology. If such a column is available, then we use this column to create the 0/1 marker variable (0= not used or unknown and 1=used). In many cases, however, we can only identify this information from the activity coding frame.

Table 6: ICT

Value	**Description**
ICT = 0	no/not known if computer, mobile, web used
ICT = 1	computer, mobile phone, web used

MTRAV: Mode of travel/transport

Most surveys that collect mode of travel/transport gather this information in a separate column, but in some cases, the mode of transport is recorded in the activity codes. We use any available information in the data to code MTRAV. In cases where the diarist records an activity such as walking for pleasure, jogging or hiking, and no mode of transport is recorded, we code MTRAV as walk/on foot. Where an activity is coded as a sport that also involves physically active travel (e.g. cycling, riding a horse), and no mode of transport is recorded, we code MTRAV cycle or other physically active transport.

For those cases where we identify unrecorded travel, we record the mode of transport as travel by unspecified means. Table 7 lists the travel variables.

Table 7: Mode of travel/transport

Value	Description
MTRAV = -8	Activity missing
MTRAV = -7	Not travelling
MTRAV = 1	Travel in car/truck, on motorcycle (incl. taxi)
MTRAV = 2	Travel on public transport
MTRAV = 3	Walk / on foot
MTRAV = 4	Cycle, other physically active transport
MTRAV = 5	Travel by other/unspecified transport

ALONE: Alone or with strangers
CHILD: Child aged <18 present
SPPART: Spouse or partner present
OAD: Other adult present

Collection of the who else is present data varies more across the surveys than other information harmonised into the MTUS, therefore creating a single "who else was present" variable for a majority of surveys is not feasible. Instead, we opted to create four flags. As with the other ancillary information, these flag variables are based on a combination of who else is present column information as well as activity codes (and any other relevant information in the diary). For example, some surveys have activity coding frames that mark the presence of others in certain activities. A code for "physical care of children" implies that at least one child is present to receive this care. "Watch TV alone" similarly would indicate that other people are not present.

The variable "alone" does not necessarily mean that no other person was present with the diarist. If given the option of alone in a who else is present matrix, some diarists will select alone when travelling on public transport, shopping or relaxing at home, as it is the respondent's own judgement that is recorded. In these cases, the alone designation implies that the diarist is not engaging with other people, although he or she may moderate her or his behaviour on account of the presence of others. The alone flag marks cases where the diary instrument had an option for the respondent to indicate specifically that he or she was alone. Interaction (e.g. talking) should help determine how to apply this variable rather than co-presence.

Most time use surveys do not ask diarists to count the exact number of other people present. Users should be aware that the presence of children or other adults will not necessarily allow them to identify which children or other adults were present, only which children or other adults were present. The MTUS does not distinguish household children from non-household children, or the diarist's own children from other children, although some original surveys make these distinctions. In the case of MTUS, the flag that a child was present simply means at least one person aged over18 was with the diarist.

Where the diarist is in a couple and the "who else is present" column allows us to distinguish if the spouse or partner was present, we mark this in the spouse column. Some surveys do not distinguish the presence of the spouse from the presence of other household adults. In these cases, we code the presence of the spouse for those cases where we can make this determination. In households comprising only a couple or of a couple and children, the presence of another household adult necessarily suggests the presence of the spouse. In households that include more than one couple, or a couple and other adults, the presence of the spouse cannot be determined. We comment on these matters in the individual survey documentation and README files.

The OAD variable covers the presence of any other adult, including the presence of the spouse/partner. However, SPPART and OAD are not mutually exclusive, as this allows us to create a maximally relevant code for the surveys harmonised into the MTUS. Users can make more detailed distinctions with some original datasets, although not with others.

Table 8: Who else was present

Value	**Description**
ALONE = 0	Others reported present
ALONE = 1	No others reported present
CHILD = 0	Child not reported present
CHILD = 1	With child
SPPART = 0	Spouse/partner not reported present
SPPART = 1	With spouse/partner
OAD = 0	Other adults not reported present
OAD = 1	With other adults

Individual time use survey documentation and the associated README files include more detailed information on these variables.

3. CHAPTER 3: DIARY, DEMOGRAPHIC AND SOCIO-ECONOMIC VARIABLES

The MTUS contains identifiers (identical to the original survey identifiers wherever possible), as well as harmonised diary, demographic and socio-economic variables. Most original datasets contain a larger number of such variables. In the context of MTUS, we prioritise variables available in a large majority of time use datasets.

This section lists the categories of the harmonised variables. Details of the specific conversions appear in the survey-specific README documents. The harmonised variables cluster into the following five sets:

1. Diary, survey and case information
2. Household-level variables
3. Person-level demographic variables
4. Employment and education
5. Health
6. New variables

3.1. Diary, survey and case information

COUNTRY\ISOCOUNTRY: Country where study conducted
SURVEY: Year the survey began
SWAVE: Longitudinal study wave marker
MSAMP: Multiple samples and type of sample
HLDID: Household identifier
PERSID: Person/diarist identifier
ID: Diary identifier
PARNTID1: Person identifier of 1st parent of diarist
PARNTID2: Person identifier of 2nd parent of diarist
PARTID: Person identifier of spouse or partner
DAY: Day of week diary kept
CDAY: Calendar day diary kept
MONTH: Month diary kept
YEAR: Year diary kept
DIARY: Diary order

COUNTRY: Country or region of study

This variable records the country where the survey was carried out. Table 1 lists of the countries included in the MTUS and the associated country code (ISOCOUNTRY).

SURVEY: Year the survey began

This variable records the 4-digit year in which time use survey data collection began. If the survey finished the following year, users should record the year the survey commenced.

SWAVE: Longitudinal study wave marker

This variable is relevant only for time use surveys that are longitudinal.

Table 9: Longitudinal study wave

Value	**Label**
0	Not longitudinal
1	Wave 1
2	Wave 2
3	Wave 3
4	Wave 4

MSAMP: Multiple samples using the same diary instrument

Table 10 lists the relevant surveys for users who require this information.

Table 10: Multiple sample

Value	**Label**
0	One sample
1	Szalai representative sample Belgium
2	Szalai representative sample West Germany
3	Szalai non-representative Jackson city Michigan US
4	Szalai non-representative 44 metropolitan areas US
5	Szalai non-representative Osnabruck city West Germany
6	Szalai non-representative East Germany
7	Szalai non-representative Slovenia in Szalai Yugoslavia
8	Szalai non-representative Serbia in Szalai Yugoslavia
9	other Szalai non-representative samples
10	West Germany
11	Basque country in Spain
12	BBC sample UK
13	UK non-representative 1983
14	UK non-representative 1987 - main sample drawn from SCELI
15	UK non-representative 1987 - spouses and additional HH
16	UK light diary
17	USA special sample

HLDID: Household identifier

This variable uniquely identifies households for studies where more than one household member completed a diary. For surveys in which only one person per household completed a diary and no household identifier is included in the original data, HLDID=0.

For surveys in which only one person per household completed a diary, but a household identifier is included, HLDID takes the original value for the corresponding variable. If the household identifier is combined with a higher-level identifier (e.g. sampling region), then the value of HLDID should combine the larger group identifier and the household identifier, so that each HLDID uniquely identifies one household.

In limited cases, the original survey data does not include a household identifier, even though the study collected a diary from more than one person in the household. In these cases, we construct a household identifier using a combination of other variables that enable us to make a unique identification. Full details of these cases are explained in the survey conversion files.

If the household identifier maps to other data but is not relevant to the time use survey, or if the household identifier needs to be computed or adjusted in any way, an explanatory note will be included in the README file. The household identifier should enable users to match MTUS data back to the original time use survey.

PERSID: Person/diarist identifier

This variable uniquely identifies diarists within sampled households. For surveys with only one diarist per household, this identifier should uniquely identify each diarist. Use the original person-level identifier to allow users to match back to the original data. If no identifier was included with the data collection, construct an identifier from a combination of person and household-level variables that allows the unique identification of diarists.

ID: Diary identifier

This variable uniquely identifies each diary kept by each diarist. Normally, if the survey collected three diaries per participant, ID would have values between 1 and 3. Keep the original diary identifier if there is one to allow users to match MTUS data back to the original data. If the survey collected only one diary per diarist, ID should = PERSID.

PARNTID1: Person identifier of 1st parent of diarist

This variable records the person-level identifier of the first parent of the diarist if that parent also completed a diary.

In cases where only one person per household completed a diary, this variable is coded as -9.

If multiple household members completed diaries, and the diarist does not live with a parent, this variable takes a value of -7.

If the diarist lives with a parent and this parent should have, but did not, complete a diary or cannot be identified, this variable takes a value of -8.

If both parents are in the same household and completed diaries, this variable takes the value of the parent with the lower personal identifier.

PARNTID2: Person identifier of 2nd parent of diarist

This variable records the person-level identifier of the second parent of the diarist if the parent also completed a diary.

In cases where only one person per household completed a diary, this variable is coded as -9.

If multiple people completed diaries in the household and the diarist does not live with a parent or only lives with one parent, this variable takes a value of -7.

If the diarist lives with two parents and both parents should have but did not complete a diary or cannot be identified, this variable takes a value of -8.

If both parents are in the same household and completed diaries, this variable takes the value of the parent with the higher personal identifier.

PARTID: Person identifier of spouse or partner

This variable records the person-level identifier or the spouse or partner of the diarist if the spouse or partner also completed a diary.

In cases where only one person per household completed a diary, this variable is coded as -9.

If multiple people completed diaries in the household and the diarist does not have a spouse or partner, this variable takes a value of -7.

If the diarist has a partner who should have but did not complete a diary or who cannot be identified, this variable takes a value of -8.

DAY: Day of week diary kept

This variable records the day of the week when the diary was kept. Note that some older surveys only include whole week averages (value 8) or distinguish weekdays but not weekend days (value 9).

Table 11: Day of week

Value	**Label**
1	Sunday
2	Monday
3	Tuesday
4	Wednesday
5	Thursday
6	Friday
7	Saturday
8	Whole week average
9	Weekday

CDAY: Calendar day diary kept

This variable takes a value between **1** and **31** where the information has been released, or **-9** if the information is not available. This variable appears here partly allow matching of additional information relevant to specific days (e.g. weather conditions, sunrise and sunset on the diary day, whether the collection day took place before or after a major event), and partly allow testing of potential minor variations in activities across months (e.g. closer or further away from when most people get paid).

MONTH: Month diary kept

This variable records the month when the diary was kept. Some surveys only record the quarter or season when the survey was carried out. In such cases, we assume that the survey was conducted during the first month of the quarter even though the data collection was actually spread throughout the quarter. These cases are documented in the survey-specific README documents.

Table 12: Month of year

Value	**Label**
1	January
2	February
3	March
4	April
5	May
6	June
7	July
8	August
9	September
10	October
11	November
12	December

YEAR: Year diary kept

This variable records the year when the diary was kept as four digits.

DIARY: Diary order

This variable records the order (1–7) in which diaries were completed in cases where time use surveys collected more than one diary per person. For surveys that collected only one diary per participant, this variable takes the value 1. A weekly average (value 8) can also be used.

Table 13: Diary order

Value	**Label**
1	First diary day
2	Second diary day
3	Third diary day
4	Fourth diary day
5	Fifth diary day
6	Sixth diary day
7	Seventh diary day
8	Weekly average

BADCASE: Marker of low-quality cases

This variable distinguishes good-quality diaries from various categories of low-quality diaries. We define quality diaries as those that have:

1. Invalid values for the day of the week the diary was kept as well as a significant proportion of basic background variables about the diarist, including age and sex;

2. no more than 90 minutes missing time per 24-hour diary (calculated after diary processing and filling in gaps in main activities with information recorded in other sections of the diary);
3. at least 7 episodes per-24 hours (defined from the original sequence data as a change in main activity, secondary activity or location);
4. at least 3 of the 4 basic activities (described in Section 1.8) which most people undertake at least once per day.

Table 14 shows 31 values that should be used for BADCASE.

1 missing age or sex of diarist only
2 missing day of week diary completed only
3 missing 91+ minutes only
4 fewer than 7 episodes only
5 missing 2 of four basic activities (In this exceptional case we are not providing zero weight and we allow to the researcher to decided it if he/she wants to include it in the analysis)
6 missing 3-4 of four basic activities
7 there is more than one condition missing

3.2. Household-level variables

HHTYPE: Household type
HHLDSIZE: Number of people in the household
NCHILD: Total number of children aged under 18 in the household
AGEKIDX: Age of youngest child in household (categories including adults)
AGEKID2: Age of youngest child in household
INCORIG: Original household income
INCOME: Total household income grouped
OWNHOME: Whether diarist's household owns or rents home
URBAN: Urban or rural household
COMPUTER: Does the household have a computer
VEHICLE: Does the household have an access to a private vehicle

HHTYPE: Household type

This variable records the type of household in which the diarist lived at the time of the survey. It is computed from a household type variable or a household grid (when available) and from a combination of marital status and household size, when no household type classification was available. Where there is inconsistency in the reporting in the survey, the converter should opt for the most logical solution and document the process of coding this variable in the code file.

One-person households have only one member. In instances where a household size variable suggests that there is only one household member, but the person is also a parent and not in a couple, and at least one child also lives in the household, then the household type should be coded as 4.

Values 2 and 3 mark instances where a household includes a couple (cohabiting or married). If the pair are the only people residing in the household (and the household size =2) then the appropriate code is 2.

If a couple lives in the household with at least one other person, then the code is 3, including:

1. lodgers in the reference person's household;
2. a multi-couple household;
3. a reference person who is a widow/widower or divorced person and has a child who has a partner that lives in the same household;
4. a couple and their children.

If two or more people live in the household, and no household member is in a couple (e.g. student share households), then the appropriate code is 4. A crosstab of CIVSTAT and HHTYPE should produce no cases of a person with CIVSTAT=1 and HHTYPE=4.

Table 15: Household type

Value	Label
1	One person household
2	Couple alone
3	Couple + others
4	Other household types

In some surveys, we cannot identify cohabiting couples, and these people may be miscoded as HHTYPE =4. Other surveys make the identification of single parent households difficult. If there are potential miscodes in this variable, they should be noted in the documentation.

In contrast to FAMSTAT, this variable is a household characteristic and all household members should be coded the same way.

HHLDSIZE: Number of people in household

This variable records the total number of household members. In some surveys, the size of large households is capped, with the value **n** meaning "n or more members". These cases are documented in the survey-specific README files.

In some surveys, household size is not presented directly or in full. In such cases, we make the best possible calculation based on the information available (e.g. summing number of income earners + non-income earners, number of people listed on the household matrix, 2+ the number of children for couple households with children, etc.). Any instances where this information is incomplete for a survey should be documented in the associated README file.

General notes on the three household child variables

If a household member is a dependent child, someone will have a legal responsibility for looking after that child, and the presence of the child in the household will likely have some impact on the behaviour of other household members.

NCHILD values 1 and higher, AGEKIDX values 1, 2 and 3, and AGEKID2 values 0 to 17 indicate that a child of this age lives in the household. The relationship of the child to the other household members does not matter. In some cases, a child may also be the household reference person. If a 17-year-old lives alone or a 16 and 17-year-old married

couple live together alone, the NCHILD, AGEKIDX and AGEKID2 should have values in the child present range.

In some instances, one adult is the parent of the other (or one is the child of the other). We also code these relationships in the value of AGEKIDX=4 and values of >18 for AGEKID2. AGEKIDX=4 and AGEKID2>17 apply only when the relationship between two people in the household is that one is the child of the other. If no child aged <18 lives in the household and no household member is the child of another household member, then the appropriate codes are: NCHILD=0 and AGEKIDX and AGEKID2= -7.

NCHILD: Number of children under 18 in household

This variable records the total number of children aged under 18 in the household. The children are not necessarily the diarist's own children. If the diarist is aged <18, NCHILD should be >0, even if the diarist is married.

This variable is highly comparable across countries, though there are some surveys with limited information about household composition and different age bands (such as the number of children aged <15 or <12). We made adjustments and corrections when possible. Users are asked to consult the README documents for more detailed explanation

AGEKIDX: Age of youngest child in household (categories including adults)

This variable records grouped information on the age of the youngest child in the household. If no household member is the child of another household member, this variable takes the value -7.

Table 16: Age of youngest child by category

Value	Label
1	Youngest child aged between 0-4
2	Youngest child aged between 5-12
3	Youngest child aged between 13-17
4	Youngest child aged >18

If the survey has different cut-off points in categories of age of the youngest child, or only reports information on the diarist's children rather than children residing in the diarist's household, a note should be recorded in the README file.

AGEKID2: Age of youngest child in household

This variable records the actual age of the youngest child in the household. If a household member is aged <18, then this variable has a positive value (unless the exact age is unknown). If no household member is aged <18 and no household member is the child of another household member, this variable takes the value -7. In the unlikely event that a child in the household is aged older than 80, the age should be top-coded at 80; that is, the value 80 means 80 or older.

INCORIG: Original household income

This variable records the household income as originally recorded in the surveys. This variable is not harmonised (see INCOME for the harmonised variable).

Note that when merging data from different surveys, the original value labels for this variable will be lost because they are survey-specific. Labels should be recorded in the README documents.

INCOME: Total household income grouped

This variable records the annual household income, recoded in quartiles.

Table 17: Household income group

Value	Label
1	Lowest 25%
2	Middle 50%
3	Highest 25%

Income often has a high percentage of cases with missing values. In addition, in many surveys, data on household income is collected and/or coded in income groups rather than interval values. As a result, the identification of the cut-off points for the first quartile (lowest 25%) and fourth quartile (highest 25%) may not be precise.

OWNHOME: Whether diarist's household owns or rents home

These values indicate whether a diarist's household owns or rents accommodation.

Table 18: Housing tenure

Value	Label
1	Own (outright or on mortgage)
2	Rent
3	Other arrangement

URBAN: Urban or rural household

This variable indicates whether or not the diarist lives in an urban area.

Table 19: Urban vs rural

Value	Label
1	Urban/suburban
2	Rural/semi-rural

Survey-specific README files include definitions of "urban" and "rural".

COMPUTER: Does the household have a computer

This variable indicates whether the diarist's household has a home computer/laptop or internet access at home.

Table: 20: Computer in household

Value	Label
0	No
1	Yes

VEHICLE: Does the household have access to a private vehicle

This variable indicates the private transport options available in the diarist's household. In most developed countries, the question of access to animal (for transport) is not asked. Most surveys ask whether the household has a car or the number of cars the household members have access to. A smaller number of surveys ask whether the household members have access to a bicycle. Often the number of cars and ownership of a bicycle are separate questions.

Table 21: Private vehicle in household

Value	Label
0	No
1	Animal only
2	Non-motorised vehicle
3	1 car or motorcycle
4	2+ cars or motorcycles

3.3. Person-level demographic variables

SEX: Sex
AGE: Age
FAMSTAT: Individual-level family status
SINGPAR: Whether diarist is a single parent
RELREFP: Relation to household reference person
CIVSTAT: Civic status
COHAB: Respondent is cohabiting
CITIZEN: Whether the diarist is a citizen

SEX: Sex

Table 22: Sex

Value	Label
1	Man
2	Woman

AGE: Age

This variable records the age of respondents (up to 3 digits). For surveys in which age is recorded in categories, we recode age into a continuous variable by assigning the mid-point of each age group (e.g. 17 for age group 15–19). When surveys only include the year of birth of respondents, we compute AGE by subtracting the year of birth from the year of the survey. To protect the anonymity of the oldest diarists, we top-code age at 80 (i.e. the value 80 means aged 80 or older).

FAMSTAT: Individual-level family status

This variable is an individual characteristic, which means that not every member of a household will be coded the same way (in the case of multi-member surveys). It records the presence of children in the household irrespective of whether those children are the diarist's own children.

Table 23: Individual-level family status

Value	Label
0	Adult aged 18 to 39 with no co-resident children <18
1	Adult 18+ living with 1+ co-resident children aged <5
2	Adult 18+ living with 1+ co-resident children 5-17, none <5
3	Adult aged 40+ with no co-resident children <18
4	Respondent aged <18 and living with parent(s)/guardian(s)
5	Respondent aged <18, living arrangement other or unknown

SINGPAR: Whether diarist is a single parent

This variable records whether or not the diarist is a single-parent (i.e. a sole parent living with her or his children).

Table 25: Diarist is single parent

Value	Label
0	No
1	Yes

RELREFP: Relation to household reference person

This variable indicates the relationship of the diarist to the household reference person. In the MTUS, the reference person usually is the person who answered the household questionnaire (generally person identifier 1). In some cases, this may be the person the survey designates, as the head of the household.

Table 26: Relationship to household reference person

Value	Label
1	Person 1
2	Spouse/ Common-law partner
3	Child
4	Parent
5	Sibling
6	Son/Daughter-in-law
7	Father/Mother-in-law
8	Brother/Sister-in-law
9	Other Relative
10	Not related

CIVSTAT: Civic status

This variable records the diarist's couple status.

Table 27: Civic status

Value	Label
1	Diarist in couple, lives with spouse/partner
2	Diarist not in a couple

This variable is highly comparable across countries apart from the fact that most of the earlier surveys did not include "cohabiting" (i.e. cohabiting or common law partners) as a separate category. It is not possible to know how people living in such unions declared their marital status.

COHAB: Respondent is cohabiting

This variable indicates whether or not the diarist is cohabiting or legally married. People not in couples are coded as -7.

Table 28: Respondent cohabiting

Value	Label
-7	Not in a couple
0	Married/civil partnership
1	Cohabiting

CITIZEN: Whether the diarist is a citizen of the country

This variable indicates whether or not the diarist is a citizen or national of the country in which she or he completed the diary.

Table 29: Citizenship

Value	Label
0	No
1	Yes

3.4. Employment and education variables

EMPSTAT: Employment status
EMP: In paid work
UNEMP: Unemployed
STUDENT: Whether the diarist is a student
RETIRED: Whether the diarist has retired
EMPSP: Employment status of spouse/partner
WORKHRS: Hours paid work last week including overtime
EMPINCLM: Original monthly income from employment or self-employment
OCCUP: Occupation
SECTOR: Sector of employment
EDUCA: Educational level-original study code

EDCAT: Harmonised level of education

EMPSTAT: Employment status

This variable reflects attachment to the labour market. Diarists who are retired, students, seeking work, or looking after family, but who worked at least some hours during the week prior to the survey (or whatever the period of reference was in the original questionnaire) should be coded as working part-time. Category 4 indicates no attachment to the labour market. Situations where it is not possible to make this distinction are noted in the associated README file for the survey.

Table 30: Employment status

Value	Value Label	Description
1	Employed full time	Employed/self-employed (including military service), full-time hours
2	Employed part time	Employed/self-employed (including military service), part-time hours
3	Employed, unknown status	Employed/self-employed (including military service), hours of work unknown
4	Not in paid work	Other Unemployed, looking for work Retired Homemaker Currently attending school Currently on maternity leave Disability retirement/leave

EMP: In paid work

This variable indicates whether or not the diarist was employed or self-employed (i.e. had a paid job) during the week prior to the survey (or whatever the period of reference was in the original questionnaire). The value 1 means the diarist should have a value of 1 to 3 for EMPSTAT.

Table 31: In paid work status variables

Value	Label
0	Not in paid work
1	In paid work

UNEMP: Unemployed

This variable indicates whether or not the diarist was unemployed during the week prior to the survey (or whatever the period of reference was in the original questionnaire). This variable does not differentiate between diarists who were registered as unemployed, who were not working but available for work and actively seeking work, and who reported themselves to be unemployed. Diarists coded as 1 can be working short hours, and the work hour's variable should reflect these hours if the diarist has some employment.

Table 32: Unemployed status

Value	Label
0	Not-unemployed
1	Unemployed

STUDENT: Whether diarist is a student

This variable indicates whether or not the diarist was a student during the week prior to the survey (or whatever the period of reference was in the original questionnaire). This variable was coded from a question about whether or not the diarist was a student (or was enrolled in school/education).

If this type of question was not available in the original survey, use general economic activity status. Ideally, when combined with EMPSTAT, this variable should distinguish working and non-working students.

Table 33: Student status

Value	Label
0	Not a student
1	Student

In surveys where STUDENT is derived from a question about the main activity during the week prior to the survey, students may be miscoded if the survey took place during summer vacation months.

RETIRED: Whether diarist has retired

This variable indicates whether or not the diarist has retired. This variable was created from a question about retirement. If the study does not include retirement questions, the receipt of a retirement pension income is used instead.

If this information is not available, data regarding the diarist's main activity during the week prior to the survey is used to compute this variable. Ideally, when combined with EMPSTAT, this variable should distinguish working and non-working retired people.

Table 34: Retired status

Value	Label
0	Not retired
1	Retired

EMPSP: Employment status of spouse/partner

This variable records the employment status of the diarist's spouse or partner. Where the survey collected diaries from both people in the couple, each partner's own self-reported employment status is used to identify the spouse's employment status of her or his partner.

Where one partner's employment status is not reported or where only one person in the household completed a diary, we use questions about the employment status of the diarist's spouse during the week prior to the survey (or whatever the period of reference was in the original questionnaire).

Table 35: Spouse's employment status

Value	Label
1	Employed full-time
2	Employed part-time
3	Employed, unknown hours
4	Not in paid work

WORKHRS: Hours paid work last week including overtime

This variable records the number of hours of paid work reported during the week prior to the survey, including any overtime. Note that the number of hours of paid work during the last week was given priority even if data on the number of hours 'usually worked' was available.

If data on the number of paid work hours last week is not available, then WORKHRS is computed by using usual hours of paid work. When neither question is available, 7-day diaries or work schedules are used to measure hours worked during the diary week. Surveys in which this variable does not represent hours worked last week should be documented in the README file. The variable includes reported hours of paid work for any diarist who answered the question, whether or not this person reports being employed.

Values of 0 mean that the diarist reported zero hours of paid work. If diarists were not asked the question, they are given a value of -9 or -7, as appropriate. If diarists did not answer the question, they are coded as -8 for this variable.

EMPINCLM: Original monthly income from employment or self-employment

This variable records the monthly personal income from wages/employment/self-employment during the last month. This variable is not harmonised and is instead recorded in national currency. If data are only available on the personal income from wages/employment/self-employment during the last 12 months, include this variable as presented and add a note the README file.

OCCUP: Occupation

This variable details the diarist's occupation. If the diarist is not presently employed, but there is information on the diarist's most recent occupation, use this information to code occupation.

Table 36: Respondent's occupation status

Value	Label
1	**Management** (senior management, not supervisors) Code lower-level managers and self-employed professionals or small firm owners in the other codes below, for instance, include SOC codes 1110 and 1999
2	**Finance and legal professionals** For instance SOC codes 2411-2424; 3516-3541 or 3544
3	**Science and engineering professionals** For instance SOC codes 2321 or 2111-2209 or 3111-3119, or 3131 or
4	**Civil and social service professionals** For instance SOC codes 2431-2443 or 3121-3123 or 3231 or 3232 or 3551-3561 or 35634099
5	**Education and social science professionals** For instance SOC codes 2322 or 2311-2319 or 2451 or 2452
6	**Medical professionals** For instance SOC codes 2211-2309 or 3210-3229
7	**Other professionals** For instance SOC codes 2329 or 2444 or 2521-2949 or 3311-3519 or 3542 or 3543 or 3562
8	**Health, education, and social care support** For instance SOC codes 5501-6209 or 9221
9	**Clerical and office support** For instance SOC codes 4111-5109 or 9211 or 9219
10	**Security and armed forces** For instance SOC codes 9241-9249
11	**Sales, services, creative support, and cleaning** For instance SOC codes 5411-6109 or 6141-8109 or 9222-9239 or 9251 or 9259
12	**Farming, forestry, and fishing** For instance SOC codes 5111-5209 or 8223 or 9111-9119
13	**Construction, assembly &repair, moving goods, transport, extraction** For instance SOC codes 5211-5409 or 8111-8222 or 8229-8532 or 9121-9209
14	**Self-employed non-professionals**

SECTOR: Sector of employment

This variable records if employed diarists work in the public or the private sector.

Table 37: Sector of employment

Value	Label
1	Public sector
2	Private sector

EDUCA: Educational level-original study code

This variable records the diarists' education level as originally coded in the surveys, but is not harmonised. Labels should be recorded in the README file.

EDCAT: Harmonised level of education

This variable denotes the harmonised diarists' highest completed level of education. It is based on the International Classification of Education (ISCED). This variable has proved to be one of the most difficult to harmonise.

Table 38: Educational attainment variables ISCED equivalent

Value	Label	Description
1	Uncompleted secondary or	Not completed ISCED level 3
2	Completed secondary	Completed ISCED level 3 and/or attendance at level 4
3	Above secondary education	ISCED level 5 or above

More detailed information regarding the ISEC classification can be found at:
http://www.unesco.org/education/information/nfsunesco/doc/isced1997.htm

3.5. Health variables

RUSHED: Whether diarist generally feels rushed
HEALTH: Diarist's general health
CARER: Diarist looks after an adult or child with a disability
DISAB: Diarist has a disability or long-term limiting health condition

RUSHED: Whether diarist generally feels rushed

This variable indicates self-reported feelings of time pressure. If the scale includes more categories in the original, make the most logical collapse.

Table 39: Rushed status

Value	Label
0	Almost never
1	Sometimes
2	Often

HEALTH: Diarist's general health

This variable is drawn from a self-reported general health status question.

Table 40: Health status

Value	Label
0	Poor
1	Fair
2	Good
3	Very good

CARER: Diarist looks after an adult or child with a disability

This variable indicates whether the diarist provides any level of routine care to an adult who needs regular assistance with daily living or looks after a child whose disability or health condition requires more than the standard care a child of that age might typically require.

Table 41: Respondent is carer

Value	Label
0	No
1	Yes

DISAB: Diarist has a disability or long-term limiting health condition

This variable indicates whether or not the diarist has a disability or long-term health-limiting condition.

Table 42: Respondent has disability/limiting health condition

Value	Label
0	No
1	Yes

Users should note that the way disability is defined tends to vary across surveys, which may affect the degree of cross-survey comparability. We attempt to ensure consistency in the coding across time in the same country and, where possible, use health variables and not economic activity status to code this variable. When such distinctions are not possible, we add a note in the README file.

4. CHAPTER 4: WEIGHTS IN MTUS

Time use diary analysis requires two levels of weighting. First, as in all surveys, weights are needed to bring the sample in line with the population from which it was drawn. Second, weights balance seasonal variations and variations by day of the week.

Files where the case (row) is a day (e.g. World 5.3 and World 5.8) contain the following weights:

1. OCOMBWT: Original weight (population and day preferred, or whatever original weight is available, if not combined);
2. PROPWT: Proposed weight (population and day combined weight rescaled if needed).

Files where the row is the episode (World 6.0) do not contain weights.

4.1 Promoting consistency amongst the datasets

In order to promote consistency amongst the datasets and prevent surveys from countries with larger populations from apparently swamping surveys from those with smaller populations, we deflate the original weight in the computation of PROPWT. The mean of the original weight will sum to the inflation factor. Where survey designs collect diaries on a weekday and a weekend day, it is advisable to use the mean of the weekday diaries to deflate weekday diaries and the mean of the original weight for the weekend diaries to deflate the weekend diaries.

If the survey does not include a weight, OCOMBWT should be set to 1. Users will need to find official statistics describing the population by age and sex. We recommend the United Nations publication *World Population Prospects*, which contains time-series (since 1950) of the population by age and sex for each country: https://population.un.org/wpp/.

Alternative internationally-recognised sources, such as the ILO Yearbook also may be used: https://www.ilo.org/stat/Publications/Yearbook/lang--en/index.htm. If the survey has enough cases for users to split age and sex groups by employment status (using EMP, employed or not employed) – which means if there are at least 50 cases of working and not-working for each sex and age group – then also include employment status. Note that users should not include employment status for the youngest and oldest diarists if few are working, but include EMP for the working age population.

4.2 Calculating PROPWT, the main MTUS weight

Step 1

Begin from the original survey weight (deflate it if the original weight was inflated). If there is no original weight available, construct a population weight by dividing the percentage of the population expected to be in each age/sex (and in some cases employment status) group by

the percentage of actual cases in that age/sex (/employment status) category in the sample data (expected/achieved).

Step 2

Create a good-diary inflation factor by dividing the total number of diaries collected in the survey by the number of good diaries (total diaries/good diaries).

Step 3

Create an interim weight that starts with the same value of the weight in step 1.

1. Set the value of this interim weight to 0 for all low-quality diaries (BADCASE=0).
2. Multiply the interim weight by the good diary inflation factor created in step 2 for all cases (it will stay 0 for the bad diaries).

Step 4

Compute ASEWT – a sum of the weights for each age/sex (/employment status) group (across all days of the week).

Step 5

Compute two further sums. This step differs from step 4, as the sums are calculated separately for each day of the week:

1. ASEDayWT – a sum of weights for each age/sex (/employment status) group separately for each day of the week;
2. ASEDayCASE – the sum of the number of cases in each age/sex (/employment status) group for each day of the week.

Step 6

Compute an expected sum of weights (ESW) for each day of the week:

1. ESW = ASEWT / 7 (divide by 7 as there are 7 days of the week)
2. PROPWT = (ESW **/** ASEDayWT) / (ASEDayCASE / ASEDayWT)

Step 7

Check that the weight has calculated correctly. PROPWT should have a mean of 1, giving an n equal to the original total number of diary days. When the weight has been applied, the weighted frequency of the diaries by the days of the week should be evenly distributed (14.3% for each day). Similarly, each age/sex group should have an even distribution of diaries across each day of the week.

5. CHAPTER 5: HOW TO ANALYSE TIME USE DATA

5.1 The data that time diaries collect

In order to work with time use data, users should consider the nature of the data that diaries collect and the population that was sampled. Time diaries collect stories about daily life. Even when presented in the quantitative data format, the diary still represents, and can be read, as a story. Users should keep this narrative element of time use data in mind when working with the MTUS or any other time use diary dataset.

The diary as narrative

The various "fields" (main and other activities, location/mode of transport, co-presence, and so on) of a time use diary have overlapping, mutually reinforcing meanings. Primary (main) activity, the focus of a very large part of the time diary literature, provides a very narrow and rather limited version of the available material. For example, "Reading" covers just a small part of the story. There are substantive differences that emerge only when multiple fields for the same activity are combined. For instance, "Reading in the park while also keeping an eye on the children", or "Reading alone in the house while drinking a glass of wine and listening to music" or "Reading while standing on a crowded bus at rush hour" are all possible interpretations. However, the meaning or intention of the diarist's report is entirely lost when the analyst focusses exclusively on the primary activity (i.e. reading).

Time diaries sample sequences of activities

Diary instructions generally distinguish main activity from activities diarists are undertaking at the same time (i.e. secondary/simultaneous). Nonetheless, the record in the main activity column is not always the aspect of the activity considered most important to the diarist. Whilst the main activity may be eating, the most important aspect of that activity, from the diarist's point of view, may be talking with the family during the meal.

Diary accounts are mediated by the diarist

Diary accounts are mediated by participants. Diarists do not report activities they consider irrelevant, risky, embarrassing, or compromising. Some activities, such as violent acts, anti-social or illegal behaviour, never appear. Diarists in some cultures report sexual/intimate activities, whilst others do not.

Diarists focussed on a particular activity (e.g. caring for an adult, or an intensive day on the job) may forget to report essential activities such as their own personal care or eating. For example, many diarists report eating lunch at their desk or carers graze while tending to those they support. Neglecting to report does not mean that participants did not undertake a particular activity. Rather, it reflects, at least in part, what diarists consider to be inconsequential or not worth disclosing.

5.2 Constraints on daily activities

Many factors influence diarists' patterns of daily activities. Weather, general health and energy levels, financial and social resources, time constraints, basic physiological needs, care and paid work responsibilities are among the many constraints that limit the range and patterns of activities in which each people engage on any given day.

One way to measure patterns of daily activity is to follow particular individuals over extended periods of time. However, the high costs of these types of studies means that the sample necessarily must be small. The MTUS pursues a different strategy.

Time use researchers gather data on patterns and sequences of daily activity for large populations, generally over one or two 24-hour periods (although sometimes for longer periods of up to a week). Large-scale time use diary surveys reveal the activity patterns that most regularly occur across a given population and identify which groups of people are most likely to engage in different types of activities. Whilst large-sample diary surveys do not reveal the full range of activities of specific individuals, they do reveal what people with similar characteristics to any given diarist are more likely to be doing on different days and at different times.

A related consequence is that time diary surveys do not produce so-called normal distributions of activities. People only can do so much in one day, and no one is likely to undertake every activity on any given survey day. Assuming that the observation period for most time use surveys is one or two days, many sorts of activities will not be captured in a single person's diaries, even though they are undertaken regularly by those diarists. Randomly sampled diary days correctly represent the mean daily duration of activities, and the probability of participation on any one day (the "participation rate") across the population or for population subgroups, but provide no direct information about any individual's overall longer term activity patterns. To achieve this, survey designers need to add supplementary questions to the diary, asking participants if they ever undertake a particular activity, and if they do, how often they typically engage in that activity. Whilst diary data can reveal which groups of people are most likely to take up an activity, diary data do not directly reveal longer term participation rates.

Some researchers unfamiliar with the special characteristics of time diary data have over-used Tobit models on the grounds that large numbers of zero-time cases (i.e. low participation rates) appear for most activities. However, MTUS users should keep in mind that Tobit models assume that large numbers of zero cases appear because of censorship of reporting imposed by the survey design. In specific cases, zeros for some activities may represent censoring, but in general, the zeros represent real behaviour; people cannot do everything every day. For most time use diary analysis, users will need models that allow for real zeros in sequences of activities which occur over 24-hours.

The unit of analysis for diary studies is the sequence of activities, or the summary durations of activities, over 24-hour periods.

1. APPENDIX 1

Table A: Technical information on surveys included in the MTUS

Country	Year	Age range	Sample size	Survey period month	Response rate (%)	Diary days	Diary type	Time interval	Household members
Austria (AT)	1992	10+	25233	2	47.00%	1	On day	30 min; 00:00-05:00; then 15 minute	Yes
Australia (AU)	1974	18-69	1491	7	67% A/W, 58% Melb.	1	On day	Free	No
	1987	15+	3181	2	74.20%	2	On day	15min	Yes
	1992	15+	13806	11	82.90%	2	On day	5 min	Yes
	1997	15+	14315	8	91.00%	2	On day	5 min	Yes
	2006	15+	13617	8	72.00%	2	On day	5 min	Yes
Basque Country	1992	0+	5040	11		1			
	1997	18+	4931	5		1			
	2003	10+	5039	7		1	On day	10 min	
	2008	18+	6272	8		1			
Belgium (BE)	1966	18+	2060	1		1			No
Bulgaria (BG)	1965	18+	2064	19 days	90.00%	1			No
	2001	10+	14710	12	97.09%	2	On day	10 min	yes
Canada (CA)	1971	18-64	2138	8	72.00%	1	On day	Free	Yes
	1981	15-93	8750	3	46.00%	1	On day	Free	No
	1986	15 - 93	9618	3	78.90%	1	On day	Free	No
	1992	15-80	25233	12	77.00%	1	Recall	Free	No
	1998	15-80	10726	12	77.60%	1	Recall	Free	No
	2005	15+	19597	12	58.60%	1	Recall	Various	No
	2010	15+	15390	12	55.20%	1	Recall	Free	
Czech Republic (CZ)	1965	18-65	1847	19 days	100.00%	1	On day		No
Germany (DE)	1965-West Germany	18-65	2564	6	73.00%	1	same day/yesterday	1 min	No
	1966-East Germany	18-65	2133	6	88.00%	1	same day/yesterday	1 min	No
	1991	12+	25812	8		2	On day	5 min	Yes
	2001	10+	35503	12	95.50%	3	On day	10 min	Yes
	2012	10-85.	32105	12		3		10 min	Yes
Denmark (DK)	1964	15+	4172	2	80.40%	1	Recall	30/15 min	In limited cases
	1987	16-74	3584	3	72.70%	1	Recall	15 min	No
	2001	16-74	6617	4	70.00%	2	On day	10 min	In limited cases
Spain (ES)	2002	10-90	46774	12	86.00%	1	On day	10 min	Yes
	2009	10-90	19295	12	58.00%	1	On day	10 min	Yes
Finland (FI)	1979	10-64	12038	4	81.00%	2	On day	30 min/10 min	No

	1987	10-95	15219	12	74.00%	2	On day	30 min/10 min	No
	1999	10+	10761	12	52.00%	2	On day	10 min	Yes
	2009	15-95	7455	12		2		10 min	Yes
France (FR)	1966	18+	2072	1		1			No
	1974	18+	4633	12	66.41%	1	On day	5 min	No
	1985	15+	16047	12	66.91%	1	On day	5 min	Yes
	2009	11+	27903	12		2		10 min	
Hungary (HU)	1965	18+	1944	1		1			No
	1976	16-70	110168	1976-77		1-4	24 hrs	Free	No
	1986	16-70	158468	1986-87		1-4	24 hrs	Free	No
	1993	18+	11167	4		1	24 hrs	Free	
	1999	15+	43143	12		1-4	24 hrs	Free	
	2009	10+	8390	12	70.00%	1	24 hrs	Free	No
Israel (IL)	1991	14+	4843	6	84.90%	1 and 4 days in some cases	Recall	15 / 30 min	In limited cases
Italy (IT)	1980	20-59	2116			1			No
	1989	3+	38110	12	70.00%	1	On day	Free	Yes
	2002	3+	51206	12	91.80%	1	On day	10 min	Yes
	2008	3+	40944	12	91.70%	1	On day	10 min	Yes
	2013	4+	41229	4		1		Free	No
South Korea (KR)	1999	10+	85898	1	93.20%	2	On day	10 min	Yes
	2004	10+	63268	1	98.30%	2	On day	10 min	Yes
	2009	10+	40526	1	98.10%	2	On day	10 min	Yes
Netherlands (NL)	1975	12+	9163	1	76.00%	7	On day	15 min	No
	1980	12+	19,110	2	54.00%	7	On day	15 min	No
	1985	12+	22841	1	59.00%	7	On day	15 min	No
	1990	12+	23905	1	49.00%	7	On day	15 min	No
	1995	12+	22589	1	20.00%	7	On day	15 min	No
	2000	11+	12691	1	25.00%	7	On day	15 min	No
	2005	12+	15428	1	37.00%	7	On day	15 min	No
Norway (NO)	1971	16-74	6516	12	58.00%	2-3	On day	15 min/30 min	No
	1980	16-74	6066	10	65.00%	2	On day	15 min/ 30 min	No
	1990	16-79	6129	12	64.00%	2	On day	15 min	No
	2000	9+	7675	12	50.00%	2	On day	10 min	Yes
Peru (PE)	1966	18+	777	1		1			No
Poland (PL)	1965	18-65	2686	2	90%	1	On day/ Recall	1 min	No
	2003	15-91	40292	12	80%	2	On day	10 min	Yes
Serbia (RS)	1965	18+	1966	1		1			No
Sweden (SE)	1991	20-64	7063	10	75%	2	On day	10 min	No
	2001	20-99	7747	12	50%	2	On day	10 min	No
Slovenia (SI)	1965	10+	2004	1		1			No
	2000	10+	12273	12	52.50%	2	On day	10 min	Yes
United Kingdom (UK)	1961	15+	9292	1	69.80%	7	On day	30 min	No
	1974	5+	20252	4	60.00%	7	On day	30 min	Yes
	1983	14+	10360	4	51.00%	7	On day	15 min	Yes
	1987	17+	11332	1	70.00%	7	On day	15 min	Yes
	1995	16+	2005	2	93.00%	1	Recall	15 min	No

	2000	8+	20980	16	45.00%	2	On day	10 min	Yes
	2005	16+	4941	8	59%	1	Recall	10 min	No
	2014	8+	15271			2	On day	10 min	Yes
United States (US)	1965	19-65	2021	7	74.00%	1	On day	Free	No
	1975	18+	7088	10	72.00%	1	On day	Free	Yes
	1985	11+	3339	12	51.00%	1	On day	Free	Yes
	1993	0+	9386	24	63.00%	1	Recall	Free	No
	1995	18+	1199	13	64.60%	1	Recall	Free	No
	2003	15+	20720	12	52-57%	1	Recall	Free	No, but info on other household member exist
	2004	15+	13973	12	57.30%	1	Recall	Free	No, but info on other household member exist
	2005	15+	13038	12	56.60%	1	Recall	Free	No, but info on other household member exist
	2006	15+	12943	12	55.10%	1	Recall	Free	No, but info on other household member exist
	2007	15+	12248	12	52.50%	1	Recall	Free	No, but info on other household member exist
	2008	15+	12,723	12	54.60%	1	Recall	Free	No, but info on other household member exist
	2009	15+	13133	12	56.60%	1	Recall	Free	No, but info on other household member exist
	2010	15+	13260	12	56.40%	1	Recall	Free	No, but info on other household member exist
	2011	15+	12479	12	54.60%	1	Recall	Free	No, but info on other household member exist
	2012	15+	12443	12	53.20%	1	Recall	Free	No, but info on other household member exist
	2013	15+	11385	12		1			
	2014	15+	11592	12		1			
	2015	15+	10905	12		1			
	2016	15+	10493	12		1			
	2017	15+	10223	12		1			
	2018	15+	9593	12		1			
South Africa (ZA)	2000	10+	9873	3	94.00%	1	Recall	30 min/ 10-15 min	Yes
	2010	10+	37977	5		1			Yes

Table B: Surveys currently without HAF and HEF information

COUNTRY AND ABBREVIATION	SURVEY YEAR	HAF	HEF
Albania (AL)	2009	no	no
Armenia (AM)	2008	no	no
Austria (AT)	1981/83	no	no
	2008	no	no
Basque country	1992	no	no
	1997	no	no
	2003	no	no
	2008	no	no
	2013	no	no
Belgium (BE)	1998	no	no
	2013	no	no
Bulgaria (BG)	1988	no	no
	2010	no	no
Brazil (BR)	2009	no	no
Canada (CA)	2015	no	no
China (CN)	2008	no	no
Czech Republic (CZ)	1990	no	no
Germany (DE)	2008-09	no	no
Denmark (DK)	1975	no	no
Estonia (EE)	2000	no	no
	2009	no	no
France (FR)	1998	no	no
Ghana (GH)	2009	no	no
Hungary (HU)	1976	no	no
	1986	no	no
	1993	no	no
Ireland (IE)	2005	no	no
India (IN)	1998	no	no
Japan (JP)	1996	no	no
	2001	no	no
	2006	no	no
	2011	no	no
	2016	no	no
South Korea (KR)	2014	no	no
Lithuania (LT)	2003	no	no
Latvia (LV)	2003	no	no
Mexico (MX)	2009	no	no
Netherlands (NL)	2006	no	no
	2011	no	no
New Zealand (NZ)	2000	no	no
	2009	no	no
Pakistan (PK)	2007	no	no
Poland (PL)	2013	no	no
Portugal (PT)	1999	no	no
Romania (RO)	2001	no	no

	2011	no	no
Sweden (SE)	1984	no	no
	2010	no	no
Turkey (TK)	2014	no	no
United Kingdom (UK)	1937	no	no
	1971	no	no
	2011	no	no
United States (US)	1998	no	no
South Africa (ZA)	2000	no	no
	2010	no	no

Table C: All surveys both with and without HAFs and HEFs

COUNTRY AND ABBREVIATION	SURVEY YEAR	HAF	HEF
Albania (AL)	2009	no	no
Armenia (AM)	2008	no	no
Austria (AT)	1981/83	no	no
	1992	yes	yes
	2008	no	no
Australia (AU)	1974	yes	yes
	1987	yes	no
	1992	yes	yes
	1997	yes	no
	2006	yes	yes
Basque country	1992	no	no
	1997	no	no
	2003	no	no
	2008	no	no
	2013	no	no
Belgium (BE)	1966	yes	yes
	1998	no	no
	2004	no	no
	2013	no	no
Bulgaria (BG)	1965	yes	yes
	1988	no	no
	2001	yes	yes
	2010	no	no
Brazil (BR)	2009	no	no
Canada (CA)	1971	yes	no

	1981	yes	no
	1986	yes	no
	1992	yes	no
	1998	yes	no
	2005	yes	yes
	2010	yes	yes
	2015	no	no
China (CN)	2008	no	no
Czech Republic (CZ)	1965	yes	yes
Germany (DE)	1965- West Germany	yes	yes
	1966- East Germany	yes	yes
	1991	yes	no
	2001	yes	no
	2008-09	no	no
	2012	yes	yes
Denmark (DK)	1964	yes	no
	1975	no	no
	1987	yes	no
	2001	yes	no
	2008	no	no
Estonia (EE)	2000	no	no
	2009	no	no
Spain (ES)	2002	yes	yes
	2009	yes	yes
Finland (FI)	1979	yes	yes
	1987	yes	no
	1999	yes	no
	2009	yes	yes
France (FR)	1966	yes	yes
	1974	yes	no
	1985	yes	yes
	1998	no	no
	2009	yes	yes
Ghana (GH)	2009	no	no
Hungary (HU)	1965	yes	yes
	1976	no	no
	1986	no	no
	1993	no	no
	1999	yes	yes
	2009	yes	yes
Ireland (IE)	2005	no	no
India (IN)	1998	no	no
Israel (IL)	1991	yes	yes
Italy (IT)	1980	yes	no
	1989	yes	no
	2002	yes	yes
	2008	yes	yes

	2013	yes	yes
Japan (JP)	1996	no	no
	2001	no	no
	2006	no	no
	2011	no	no
	2016	no	no
South Korea (KR)	1999	yes	yes
	2004	yes	yes
	2009	yes	yes
	2014	no	no
Lithunia (LT)	2003	no	no
Latvia (LV)	2003	no	no
Mexico (MX)	2009	no	no
Netherlands (NL)	1975	yes	yes
	1980	yes	yes
	1985	yes	yes
	1990	yes	yes
	1995	yes	yes
	2000	yes	yes
	2005	yes	yes
	2006	no	no
	2011	no	no
	2016	no	no
Norway (NO)	1971	yes	no
	1980	yes	no
	1990	yes	no
	2000	yes	no
	2010	no	no
New Zealand (NZ)	1998	no	no
	2000	no	no
	2009	no	no
Peru (PE)	1966	yes	yes
Pakistan (PK)	2007	no	no
Poland (PL)	1965	yes	yes
	2003	yes	yes
	2013	no	no
Portugal (PT)	1999	no	no
Romania (RO)	2001	no	no
	2011	no	no
Serbia (RS)	1965	yes	yes
Sweden (SE)	1984	no	no
	1991	yes	no
	2001	yes	no
	2010	no	no
Slovenia (SI)	1965	yes	yes
	2000	yes	no
Turkey (TK)	2014	no	no

Thailand (TH)	2001	no	no
	2004	no	no
	2009	no	no
	2015	no	no
United Kingdom (UK)	1961	yes	no
	1971	no	no
	1974	yes	yes
	1983	yes	yes
	1987	yes	yes
	1995	yes	yes
	2000	yes	yes
	2005	yes	yes
	2011	no	no
	2014	yes	yes
United States (US)	1965	yes	yes
	1975	yes	no
	1985	yes	yes
	1993	yes	yes
	1995	yes	yes
	1998	no	no
	2003	yes	yes
	2004	yes	yes
	2005	yes	yes
	2006	yes	yes
	2007	yes	yes
	2008	yes	yes
	2009	yes	yes
	2010	yes	yes
	2011	yes	yes
	2012	yes	yes
	2013	yes	yes
	2014	yes	yes
	2015	yes	yes
	2016	yes	yes
	2017	yes	yes
	2018	yes	yes
South Africa (ZA)	2000	no	no
	2010	no	no

Table A, Table B and Table C: Table A presents the characteristics of each (i.e. 104) survey included in the MTUS (also see Table1). Table B exclusively lists the number of countries and survey years for which currently there are no HAF and HEF files available. Table C includes all surveys together i.e. Table1 (p9) and Table B in Appendix1 combined. Providing information on the surveys, which currently do not have HAFs and HEFs constitutes our future priority.

2. APPENDIX 2

Data preparation procedures

The World 5.53 and 5.8 Versions of the harmonised MTUS datasets are restricted to the aggregate (summary) version of the time use surveys. The MTUS includes survey, demographic and socioeconomic information about respondents (diarists) and their households (where collected) alongside the aggregated time use variables. Each row case in the W5.53 and W5.8 files represents one 24-hour time use diary. For studies where respondents completed more than one diary, individual diarists appear on a separate row for each diary they completed.

The World 6.0 files include activity sequence information. This version will only be created for a subset of datasets, since the original narrative sequence may be unavailable. (This is frequently the case for older time use surveys.)

In the World 6.0 episode files, each row case represents the diary period for which there is no change of main activity, secondary activity or location.. Where the diarist completed more than one diary, the episodes of the subsequent diary or diaries follow the episodes of the first diary. As this file is large, only the identifiers, age and sex are included in the World 6.0 file alongside the diary information. Users will need to match the World 6.0 files with the corresponding World 5.8 file for the additional background variables.

Before beginning the actual conversion, the MTUS team undertakes three steps to ensure maximum data quality:

Step 1

Check alternative options for the MTUS background variables to ensure that you are using the option with the cleanest profile compared with other reported results and the least missing data. If there are options and one is better than others, the choice should be documented in the conversion syntax. In some cases, combinations of original variables are needed to create the MTUS variables.

Step 2

Apparently missing main activity time in diaries is not necessarily missing. Sometimes diarists neglect to fill in the main activity column, but include relevant information elsewhere in the diary (e.g. secondary activity or location/mode of travel columns) that indicates their activity and allows us to properly code the time period.

Step 3

Check to see if other diary information facilitates the coding of time use activities. Coding lexicons and procedures can differ, especially non-HETUS time use surveys.

3. APPENDIX 3

Variables from older versions of the MTUS no longer in use

The MTUS has evolved with time. In addition to adding variables, we have also dropped some that were available in earlier versions. Here, we describe the changes and identify the variables no longer. This may be useful for users who have read research using older versions of the MTUS of who have used previous World file versions.

The 1965 Szalai surveys, which gave inspiration for the original MTUS, covered the working-age population (people aged 18–60). Therefore, older versions of the MTUS restricted the included diaries included to this age range. From the World 5.1 version onwards, all diaries are included.

From the early World versions to World 5.52, diaries missing >61 minutes of main activity time were deleted. We now include all diaries (low- and good-quality), although we 0-weight the low-quality diaries. We continue to exclude row cases of non-participants where these are included in the original data.

Some variables have evolved or been dropped. We now detail the older names and the dropped variables.

PERIOD: Survey time period
ID: Diary (case) identifier
AGE1/2: Age
AGEGR5Y: Five-year age groups
AGEKID: Age of the youngest child in household
EMPSTAT2/3: Employment status
TOTTIME: Total diary minutes per day
OPOPWT: Original population weight
ODAYWT: Original day weight
POPWT2: Post-hoc sex-age weight
DAYWT2: Post-hoc day weight
22-CATEGORY activity coding frame

PERIOD: Survey time period

This variable records the period during which the survey was carried out. The values range from 1961–69 (value ‘1’) to 2000–04 (value ‘7’). Precise information on when the survey was carried out is recorded in the variable ‘Survey’.

Note that the length of each period is not equal. Cut-off points were chosen to maximise the number of countries in each period and to ensure that there was only one survey per period for any specific country. In cases where multiple surveys were available for a country during a specific period, only one of these surveys has been included in the MTUS dataset.

Value	Label
1	1961–1969
2	1970–1975
3	1976–1984
4	1985–1989
5	1990–1994
6	1995–1999
7	2000–2004
8	2005–2009
9	2010–2014

ID: Diary identifier

In the oldest version of the MTUS, this variable served as a case ID within each survey. No consideration was given to multiple diaries per person or multiple diaries per household. Rather, this variable ranged in value from 1 to the highest number of diaries in the survey. We acknowledged this as a mistake, and in most versions of the MTUS, this variable distinguishes diaries – and taken alongside PERSID, HLDID, MSAMP, SWAVE, SURVEY, and COUNTRY– uniquely identifies cases.

AGE1/2: Age

This variable records the age of respondents (up to 3-digits). For surveys in which age was recorded in categories, we recoded age into a continuous variable by assigning the mid-point of each age group (e.g. 17 for age group 15–19). When surveys only included the year of birth of respondents, we computed AGE by subtracting the year of birth from the year of the survey. This variable was renamed as AGE for clarity from the release of Version 5.53.

AGEGR5Y: Five-year age groups

This variable, derived from AGE2, recorded respondent's age in 5-year age bands.

Value	Label
1	0 – 4
2	5 – 9
3	10 – 14
4	15 – 19
5	20 – 24
6	25 – 29
7	30 – 34
8	35 – 39
9	40 – 44
10	45 – 49
11	50 – 54
12	55 – 59
13	60 – 64
14	65 – 69
15	70 – 74
16	75 – 79
17	80+

AGEKID: Age of youngest child in household

This variable records information on the age of the youngest child in the household. If there are no children under 18 in the household, this variable takes the value -7 (even if the original survey gives a valid value for such cases).

Value	Label
1	Youngest child aged between 0 – 4
2	Youngest child aged between 5 –12
3	Youngest child aged between 13 – 17

This variable is highly comparable across surveys. However, the cut-off point for the age of the child varies across surveys. Also, in some surveys the data correspond to the diarist's children rather than children residing in the diarist's household. This variable has been upgraded to AGEKIDX which now includes a category for a child aged 18 or older in the household.

EMPSTAT2/3: Employment status

This variable has been updated and modified slightly over successive versions of the MTUS.

The first version, called simply EMPSTAT, had three categories, 1=Full-time employed, 2=Part-time employed, and 3=not employed. Diarists who reported that they were in the military, but for whom no hours of work were recorded, were coded as '3' (other, not employed). We recognised this as a mistake, and from version 5.51 onwards, changed category 3 to 'employed, hours unknown" and coded people not employed as 4. With this change, diarists who reported serving in the armed forces, or were otherwise employed but their weekly hours of work unknown, were coded as the new category 3. This recoding affected only a few surveys and very few cases, but to note the change, the variable was renamed EMPSTAT2.

With the release of Version 5.52, we amended the coding of this variable further.

In previous incarnations of the MTUS, diarists reporting working 30 or more hours per week were coded as working full-time. From the release of version 5.52, preference was given to self-declared full-time or part-time status. The variable was renamed EMPSTAT3. No further changes were added when the variable was renamed to EMPSTAT from the release of version 5.53; we thought that the variable name EMPSTAT was clearer than EMPSTAT3, which creates the expectation that two other variables also are available in the same file.

TOTTIME: Total diary minutes per day

This variable has a constant value of 1440 and was generated during tests that all diaries had been correctly coded. As this variable is just an interim check and of no research value, we no longer include it.

OPOPWT: Original population weight

In cases where original surveys included a weight that corrected for over- and/or under-sampling and non-response, but did not correct for the distribution of the days of the week, we included this weight under this column heading. This weight appeared in versions World 5.0 through to World 5.52.

ODAYWT: Original day weight

Some original surveys offered separate weights. One corrected for the variation between the observed population and the respondents, and the other for balancing the distribution of the days of the week (but not the sample variation from the observed population). If the original survey included separate weights, we used this name for the day-of-week distribution weight.

POPWT2: Post-hoc sex-age weight

For original surveys that did not include a weight that corrected for the distribution of age and sex groups in the population, we calculated such a weight on the basis of the age/sex group distribution in that country reported in an international organisation text (e.g. International Labour Organization (ILO) Year Book). This weight appeared in versions World 5.0 through to World 5.52.

DAYWT2: Post-hoc day weight

Where original surveys did not include a weight that corrected for the distribution of the days of the week, we constructed this weight. This weight appeared in versions World 5.0 through World 5.52.

General note on older weights

All the weights in earlier versions of the MTUS were post-hoc types, that is, weights that were computed by the MTUS team as opposed to 'original' weights computed by the statistical agencies in charge of administering each survey. These post-hoc weights were age-sex-employment specific and were computed based on official data published in the ILO's *Year Book of Labour Statistics.* From Version 5.0 through to 5.52, the original survey weights were included wherever possible, and ad hoc weights only constructed when original weights were not calculated.

SEXEMPWT: Sex, age, employment weight (not account for day)

This weight balanced the demographic distributions in accordance with ILO data. This older weight made use of employment data as well as sex and age, although has now been superseded. In older and younger age categories in some datasets, too few people were employed to allow meaningful weights to be based. (The earliest versions of the MTUS also used employment status, so the MTUS sample also was restricted to people aged 20 – 60 as the working-age population.) The majority of more recent surveys provide weights with the original data so account for an even wider range of demographic characteristics.

SURVWT: Weight to get 2000 per survey (not account for day of week)

This weight generally reduced the apparent size of the survey, although in a limited number of cases inflated the size of the survey in order to place all surveys on a comparable sample size. As more recent surveys tend to have significantly larger samples, and more sophisticated statistical software has become available since the mid-1980s, we no longer make this restriction.

COUNWT: Weight to get 2000 cases per country (not account for day)

This weight created an artificial balance between the countries. When the MTUS covered a smaller scope and time period, this weight served some limited research purposes of the original creators. As more countries, some of which have many surveys over decades and others have only one survey, this weight makes limited sense, so it is no longer created.

DAYWT: Weight to balance the distribution of the days of the week

This weight balances the distribution of the days of the week for the survey.

SEDWT: Sex, and age weight from ILO data (not account for day of week)

This weight balanced the demographic distributions of sex and age only in accordance with ILO data.

SEDWT2: Sex, age, employment, and day weight

SEXEMPWT * DAYWT generates this weight. This weight is the most often used in the analysis of earlier versions of the MTUS.

SEDWT3: Sex, age, employment, day and survey balance weight

SEXEMPWT * DAYWT * SURVWT generates this weight.

SEDWT4: Sex, age, employment, day, survey, and country balance weight

SEXEMPWT * DAYWT * SURVWT * COUNWT generates this weight.

22-category activity coding frame

The table below shows how the 41-category coding frame collapses into 22 categories. Half the categories directly map to one category on the AV41 code list. The SPSS syntax to convert (collapse) these activity categories is available on the user contributions page of the CTUR website: http://www.timeuse.org/mtus/contributions/

Map of the 22-category to 41-category MTUS activity coding frame

Codes	Main	Changes and similarities
paidetc	AV1	Paid work and education combined
	AV2	
	AV3	
	AV5	
hwork	AV7	Routine housework
cooking	AV6	Food preparation and cooking
eating	AV15	Meals and snacks
kidcare	AV11	Child care
shopping	AV10	Shopping (all types)
dtravel	AV12	Domestic related travel
otravel	AV17	All other non-work travel
	AV18	
perscare	AV13	Personal care activities
	AV16	
eatout	AV28	Eating out
pubsclubs	AV26	At pubs or clubs
	AV27	
spectat	AV20	Spectator
	AV22	
	AV23	
	AV24	
	AV25	
asports	AV19	Active sporting
walking	AV21	Walking
visits	AV29	Visiting or entertaining friends
	AV38	Note that we return to this collapsed category in the 69-category typology
tvrad	AV30	Televisions, radio etc.
	AV31	
	AV32	
reading	AV33	Reading books, papers or magazines Note
	AV34	that we return to this collapsed category in
	AV35	the 69-category typology
chatsets	AV36	Talking, relaxing
	AV37	
oddjobs	AV8	Non-routine domestic work
	AV9	
hobbies	AV39	Other at-home leisure
	AV40	
medical	AV14	Medically-related personal care

educ	AV4	Education (included in paidetc in the earliest versions of the MTUS)

4. APPENDIX 4

69-category activity coding frame, with examples and notes

VARIABLE	LABEL	EXAMPLES	NOTES
MAIN1 / SEC1	Imputed personal or household care	Prepare to go out or arrive home Include imputed time in gaps of 20+minutes prior to the diarist leaving the house or just after the diarist returns home	See data preparation, Step 2
MAIN2 / SEC2	Sleep and naps	Main sleep, incl. short naps Sick in bed	None
MAIN3 / SEC3	Imputed sleep	Imputed sleep	See data preparation, Step 2
MAIN4 / SEC4	Wash, dress, care for self	Personal hygiene (e.g. shower, toilet) and self-care (e.g. makeup, shave), dress, get up/ go to bed, get ready to go out	Include variables such as 'personal activities' or 'other personal activities' or any ambiguous/other variable that appears in a series of personal activity variables.
MAIN5 / SEC5	Meals at work or school	Meals at work or school	If not reported as a separate activity, use the location codes for the activity 'eating' and location canteen or lunch room at school or work.
MAIN6 / SEC6	Other meals or snacks	Eating or drinking, but not at work, school or in a restaurant, café, pub, or bar	Meals in venues where someone was not likely to have paid or only made a nominal contribution (e.g. meal at church). If eating and drinking is not broken down to distinguish eating or drinking at work, eating out, and other eating, use the location information to distinguish this category from meals at work/school and from meals eaten out.
MAIN7 / SEC7	Paid work – main job (not at home)	Paid work for the main job (or unspecified paid work) that does not take place at home	Any activity done during work hours, but not related to work (e.g. shopping, going to doctor) should be coded in their respective categories (i.e. shopping, receiving personal services). Courses/studies undertaken for work during work hours should be coded as MAIN / SEC 7. Work-related courses taken in free time should be coded as MAIN / SEC 17. Farming as the main economic activity should be coded as MAIN / SEC 7. Unpaid *help* to another business/farm should be coded as MAIN / SEC 33. Unpaid *work* for family business/farm should be coded as MAIN / SEC 9. Any unpaid work away from workplace (related to main job) but not at home or conversations about work, but not during work hours, should be coded as MAIN / SEC 7. General work-related variables to be coded as MAIN / SEC 7 (e.g. sundry work-related activities, 'other' work-related activities).
MAIN8 / SEC8	Paid work at home	Includes paid childminding at home, running a catalogue round, work brought home	None
MAIN9 / SEC9	Second or other job, not at home	Paid work for a second, third and/or small hours job that does not take place at home	Paid work or work that involves regular hours and working conditions (e.g. unpaid work in a family business)

			Includes busking or other performances for money.
MAIN10 / SEC10	Unpaid work	Unpaid work to generate household income	Includes other informal economic activity (e.g. car boot/garage sales, selling on Gumtree/eBay.
MAIN11 / SEC11	Travel as a part of paid work	Bus taxi/train/lorry driving, pilot flying as part of job Travelling to a meeting or conference for work On the road as a delivery driver, care worker, etc.	Covers travelling during paid time, not commuting to work
MAIN12 / SEC12	Work breaks	Scheduled work breaks, coffee/tea/smoking breaks at work	None
MAIN13 / SEC13	Other time at workplace	Waiting for workplace to open, waiting for a lift home from work	Time at the workplace that is not part of paid work time or a voluntary/union activity. Time that is not coded in an activity elsewhere (not education or personal care etc.)
MAIN14 / SEC14	Look for work	Job search activities, attending interviews**,** **a**ctivities related to claiming unemployment benefits	None
MAIN15 / SEC15	Regular schooling or education	Classes, lectures and tutorials	Includes lectures and tutorials viewed online
MAIN16 / SEC16	Homework	Homework, including studying at the library Preparing for an exam or education assignment or project	None
MAIN17 / SEC17	Leisure / other education or training	Leisure courses Interview/ or audition for a place on a course Course for general interest but not for a qualification (e.g. music lessons) Course for employment related qualification, but not a part of a job (i.e. for professional improvement or advancement)	Includes any activity undertaken for a formal course or qualification not during class or tutorial time or not at school (e.g. shopping for items for a course)
MAIN18 / SEC18	Food preparation, cooking	Any preparation of food or drink, including baking, making jams and preserves, canning or pickling, home brewing and wine making	Not done for pay
MAIN19 / SEC19	Set table / wash or put away dishes	Set table, lay out dishes Clean up after meal, wash or put away dishes Load or unload dishwasher	Not done for pay
MAIN20 / SEC20	Cleaning	Straighten, tidy up, routine cleaning Wash car Routine cleaning of grounds (pool, sweep patio/outdoor area	Not done for pay Does not include activities related to home repairs and redecoration or vehicle maintenance – use MAIN / SEC 22 Does not include cleaning related to food preparation or the cleaning and repair of clothing and textiles – use MAIN / SEC 21
MAIN21 / SEC21	Laundering ironing, clothing repair	Do laundry (machine/hand) Hang clothing, textiles on line/take off line Load/unload tumble dryer Put laundered clothes away Repair clothes/other textiles	Not done for pay Does not include making clothes or textiles for gifts or as a hobby (MAIN / SEC 54) Does not include making clothes or gifts for sale (MAIN / SEC 10)
MAIN22 / SEC22	Home / vehicle maintenance / improvement	Painting, decorating, landscaping Repair car or furniture Collect fuel or water	Not done for pay If done as a favour to someone else on someone else's property, code as MAIN/SEC 33

		Forage for building materials (thatch, stone or wood etc.)	
MAIN23 / SEC23	Other domestic work	Household management, accounting, pay bills Paperwork/household computing	Not done for pay Include any general unspecified housework here
MAIN24 / SEC24	Purchase goods	Grocery/routine shopping Purchase household goods, personal items (clothes, jewellery, technology) Purchase house, car, other high value items Purchase tickets (film, zoo, museum, etc.), access or membership (gym, club) Window shopping	Include goods bought in stores, over the internet, while browsing car boot or yard sale Include research to inform a purchase
MAIN25 / SEC25	Consume personal care services	Hairdresser, barber, beautician, manicure Medical / dental care, rehabilitation, physiotherapy Psychological care, counselling Alternative therapy, massage Outing to spa	Include general personal services, and services received at home Include services provided to diarist by charities, voluntary organisations, as informal help from another household, or as part of government services Yoga, Tai Chi and related exercise should go into MAIN / SEC 42
MAIN26 / SEC26	Consume other services	Pay for or arrange personal (i.e. groomer) or medical services for a pet, domestic animal, or another household member Legal, accounting, banking, postal services Dry cleaning, laundry or ironing service, arrange / pay for /manage domestic help Arrange / pay for child care, pet care, adult care	Include any services for which the diarist pays or someone pays for or donates on behalf of the diarist Include services to the household provided to the diarist's household by charities, voluntary organisations, as informal help from another household, or as part of government services
MAIN27 / SEC27	Pet care (other than walk dog)	Look after, groom, feed, provide medical care to a pet Train, teach, work with pet, working dog, horse, assistance animal General pet care	Walking dogs (or taking other pets for a walk) go in MAIN / SEC 47 General pet care with the mode of transport "walking" should go into MAIN / SEC 47 Riding horses goes into MAIN / SEC 42
MAIN28 / SEC28	Physical or medical care of child	Feeding young child, breastfeeding Bathing, changing nappy (diaper), toilet training Helping child dress, learn to walk Providing medical care to child	Include general or unspecified child care here Unpaid child care only, if paid to provide this care, code in MAIN / SEC 8 or 9 Include child care done as help to a family member, friend or neighbour
MAIN29 / SEC29	Teach child, help with homework	Help with homework Show child how to do something, teach child	Unpaid child care only, if paid to provide this care, code in MAIN / SEC 8 or 9 Include child care done as help to a family member, friend or neighbour
MAIN30 / SEC30	Read to, talk to, play with child	Read to child or read with child, conversation with child, play (inside/outside) with child	Unpaid child care only, if paid to provide this care, code in MAIN / SEC 8 or 9 Include child care done as help to a family member, friend or neighbour
MAIN31 / SEC31	Supervise, accompany, other child care	Keep an eye on, accompany child Parent/teacher meetings, filling in forms for child to attend event	Unpaid child care only, if paid to provide this care, code in MAIN / SEC 8 or 9 Include child care done as help to a family member, friend or neighbour

		Other specified child care	
MAIN32 / SEC32	Adult care	Help adult get up/go to bed, get dressed, bathe Supervise, keep an eye on adults not able to look after themselves Accompany adults (e.g. take shopping or to an appointment when they cannot do this without help) Assist with taking medication, special meals Help with filling out forms, correspondence, calls	Include care to a child with a disability which is related to the disability and not an element of standard child care here Unpaid adult care only, if paid to provide this care, code in MAIN / SEC 8 or 9 Include adult care done as help to a family member, friend or neighbour, whether or not the care recipient lives in the same household as the diarist
MAIN33 / SEC33	Voluntary work, civic organisation activity	Vote, attend public or community meeting, deal with police Formal voluntary work for an organisation Informal help to community or other household Unpaid work for union, ideological / religious / hobby or interest group Attend demonstration Scouts / guides / sea cadets, other civic activity for young people (includes adults who act as leaders) Fill in time use diary, participate in other social science study	Include activities related to meetings, promotions and fundraising for an agency that is not an employer Voluntary care of children or adults should be coded in MAIN / SEC 28 to 32
MAIN34 / SEC34	Worship and religious activity	Attend formal services at a place of worship Pray alone or with others, meditate, spiritual activity Read sacred text, religious study	Any fundraising, meetings, collective efforts to repair, restore or improve part of a sacred site should be coded in MAIN / SEC 33 Picnics or informal meals at a religious establishment go into MAIN / SEC 6; a wedding reception and the like go into MAIN / SEC 40 Include yoga here if recorded as for religious purposes, but if yoga not explicitly recorded as a religious event, code in MAIN / SEC 42
MAIN35 / SEC35	General out-of-home leisure	Unspecified or other specified leisure away from home activities	None
MAIN36 / SEC36	Attend sporting event	Attend sporting match or games Watch sport in social context (with friends, at sports bar)	None
MAIN37 / SEC37	Cinema, theatre, opera, concert	Any specified public performance	None
MAIN38 / SEC38	Other public event	Museum, art exhibition, watch public demonstration or parade Visit historic site, garden, zoo, take bus or walking tour Fair, exhibits and amusement rides at a rodeo or circus (also unspecified rodeo or circus) Go to library (not for study)	If watching the competition at a rodeo, code in MAIN / SEC 36 If watching the main performance of a circus, code as MAIN / SEC 37
MAIN39 / SEC39	Restaurant, café, bar, pub	Go out for meal or drink	If working at restaurant, pub, café, bar, code in MAIN / SEC 7 or 9 If special event like party or wedding reception, code in MAIN / SEC 40
MAIN40 / SEC40	Party, reception, social event, gambling	Event for large number of people at home	Events for one or a few people at the diarists or another's home go into MAIN / SEC 48 Include go out dancing

		Event for multiple people away from diarist's or other's home	
MAIN41 / SEC41	Imputed time away from home	No activity recorded, but location is not at home	None
MAIN42 / SEC42	General sport or exercise	Any specified sport or exercise (leisure physical activity) apart from walking, cycling, gardening, hunting & fishing	If walking or cycling grouped with other exercise, code here
MAIN43 / SEC43	Walking (not walk dogs)	Activity recorded as walking (for pleasure or as transport) Hiking, fell walking No activity recorded but mode of transport "walking" or "on foot" recorded	If main activity is transport and the mode of transport is walking and no secondary activity, code the secondary activity as walking
MAIN44 / SEC44	Cycling	Activity recorded as cycling (for pleasure or as transport) No activity recorded but more of transport "cycling" recorded	If main activity is transport and the mode of transport is cycling and no secondary activity, code the secondary activity as cycling
MAIN45 / SEC45	Other out-of-doors recreation	Camping, at the beach, caravanning Day trip countryside	None
MAIN46 / SEC46	Gardening / forage, hunt/fish	Gardening (ornamental or to produce flowers or food for the home) Pick mushrooms, gather pine cones, truffles, wild flowers Hunting or fishing	Gardening or hunting to produce good to sell later should go into MAIN / SEC 10 Not as part of a paid job
MAIN47 / SEC47	Walk dogs (or other animals)	Walk dog General pet care, mode of transport reported as walking	None
MAIN48 / SEC48	Receive or visit friends	Social occasion with people from another household in the diarist's or another's home Visit friends, have guests Meal, alcohol, tobacco with guests at own or another's home	None
MAIN49 / SEC49	Conversation	Talk with other household members Talk with people from other households outside own or other's home Telephone calls	Includes calls on mobile phones, Skype, FaceTime, Instagram
MAIN50 / SEC50	Other in-home social, games	Social activities with household members/others Games of skill (e.g. Bridge)	None
MAIN51 / SEC51	General indoor leisure	Unspecified or general indoor leisure activities	None
MAIN52 / SEC52	Artistic or musical activity	Paint or other art, compose music, play an instrument	Not for pay or to produce goods for sale
MAIN53 / SEC53	Written correspondence	Fill in forms, write poetry, prose, scripts, diaries, letters (not on computer)	Does not include paid activity, care, study or household management activity
MAIN54 / SEC54	Knit, crafts, hobbies	Knit, crafts, hobbies	Meetings or events with groups with similar interests go into MAIN / SEC 33 If producing goods for sale, put in MAIN / SEC 10
MAIN55 / SEC55	Relax, think do nothing	Just relax, think Do nothing	Does not include naps
MAIN56 / SEC56	Read	Read (books, papers, magazines, or related materials)	Does not include reading as a part of paid work or education and study

		Read Kindle, e-books	
MAIN57 / SEC57	Listen to music, audio book	Listen to records, tapes, CDs, iPod Listen to audio books or other recorded material	Does not include listening as a part of paid work or education and study
MAIN58 / SEC58	Listen to radio	Listen to radio	Include listening to radio over internet or mobile phone
MAIN59 / SEC59	Watch TV	Watch TV, video, DVD, video on demand, Netflix, streaming	Include watching programmes on-line Do not include watching lectures or other education activities on-line or on TV
MAIN60 / SEC60	Play computer games	Play alone and/or in groups off or on-line	None
MAIN61 / SEC61	Send e-mail, surf internet, computing	Includes on-line chat room Social media (Facebook, Instagram, Facetime, LinkedIn, Twitter, Pinterest)	Does not include computer use related to paid work, education, housework, care, or voluntary activity
MAIN62 / SEC62	No activity but mode of travel recorded	No activity recorded, but a mode of transport other than walking and cycling	Does not include walking and/or cycling
MAIN63 / SEC63	Travel to/from work	Commuting, including travel/from job interview or job search	None
MAIN64 / SEC64	Education-related travel	Travel to or from school or location (such as library) for study	None
MAIN65 / SEC65	Travel for voluntary, civic or religious activity	Travel to or from location for voluntary, civic or religious activity	None
MAIN66 / SEC66	Child- or adult- care travel	Take child to school/day care/ collect from school/daycare Take child or adult shopping, to event or appointment	None
MAIN67 / SEC67	Travel for personal, shopping or household care	Travel to/from shops or services Travel to run errands	None
MAIN68 / SEC68	Travel for other purposes	Travel to/from leisure activities Drive, ride train for fun, go for leisure drive	Include travel with no specified purpose here
MAIN69 / SEC69	No recorded activity	No recorded activity Incomplete, undecipherable or nonsensical entries	No mode of transport recorded and location either at home or an unknown location

5. APPENDIX 5

Existing and new[3] MTUS variables included in the HEF and HAF files

Variable	Label	HEF[4]	HAF[5]
country	Country of survey	1	1
survey	Year survey began (survey id)	1	1
swave	Longitudinal study wave marker	1	1
msamp	Multiple samples in study	1	1
hldid	Household identifier	1	1
persid	Person/diarist identifier	1	1
id	Diary identifier	1	1
sex	Sex	1	1
age	Age	1	1
day	Day of week diary kept	1	1
cday	Calendar day diary kept	1	1
month	Month diary kept	1	1
year	Year diary kept	1	1
diary	Diary order	1	1
time	Duration of activity in minutes	1	0
clockst	Start time on 24 hour clock	1	0
start	Start minute (of 1440 min 0=begin of diary)	1	0
end	End minute (of 1440 min 1440=end of diary)	1	0
epnum	Episode number	1	0
main	Main act, 69-category list	1	1
core25	Reduced core 25-activity codes	1	1
sec	Secondary act, 69-category list	1	1
av	Main act, old MTUS 41-category list	1	1
inout	Inside or outside	1	0
eloc	Location	1	0
ict	Used internet or ICT during activity	1	0
mtrav	Mode of transport	1	0
alone	Time alone or with strangers	1	0
child	Child aged <18 present	1	0
sppart	Spouse or partner present	1	0
oad	Other adult present	1	0
animal	With a pet, companion/service/domestic animal	0	1
parntid1	Person id 1st parent of diarist	0	1
parntid2	Person id 2nd parent of diarist	0	1
partid	Person id of spouse or partner	0	1
hhtype	Household type	0	1
hhldsize	# People in household	0	1
nchild	# Child aged<18 in household	0	1
agekidx	Age youngest child in hhold (incl. adult children)	0	1
agekid2	Actual age youngest child in household	0	1
income	Total household income grouped	0	1
ownhome	Owns or rents home	0	1
urban	Urban or rural household	0	1
computer	Household has computer/internet access	0	1
vehicle	Household access to a private vehicle	0	1

[3] New variables are in *italic* typeface
[4] Harmonised Episode Files
[5] Harmonised Aggregate Files

famstat	Individual level family status	0	1
singpar	Diarist a single parent	0	1
relrefp	Relation to household ref person	0	1
civstat	Is diarist in a couple	0	1
cohab	Diarist cohabiting	0	1
citizen	Diarist is citizen/national of country	0	1
wherborn	Where was the diarist born	0	1
empstat	Employment status	0	1
emp	In paid work	0	1
unemp	Unemployed	0	1
student	Student status	0	1
retired	Retirement status	0	1
empsp	Emp status spouse/partner	0	1
workhrs	Hours paid work last week including overtime	0	1
isco1	ISCO 2008 1-digit occupation	0	1
sector	Sector of employment	0	1
edcat	Harmonised highest level of education	0	1
rushed	Whether diarist usually feels rushed	0	1
health	Diarist's general health	0	1
carer	*Diarist provides adult care*	0	1
disab	Has disability/long-term health condition/s	0	1
incorig	Original household income bands	0	1
region	Region	0	1
empinclm	Original monthly labour income	0	1
occupo	Original occupation variable	0	1
educa	Education-original study codes	0	1
ocombwt	Original weight	0	1
propwt	Proposed weight	0	1

[i] The Australian Bureau of Statistics (ABS), the Austrian Central Statistical Office, the French National Institute of Statistics and Economic Studies (INSEE), the German Federal Statistical Office, the Instituto Nacional de Estadistica (of Spain), the Instituto Nacional de Estatistica (INE) (of Portugal), the Italian National Statistical Institute (ISTAT), Statistics Canada, Statistics Finland, Statistics Norway, Statistical Office of the Republic of Slovenia, Statistics South Africa, Statistics Sweden, the United Kingdom Office for National Statistics (ONS), and the United States Bureau of Labor Statistics.

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