

Harmonizing Daily Life: An Introduction to MTUS and MTUS+

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1. What is MTUS?
2. Why bother to harmonise time-use data?
3. Data access
4. Understanding the MTUS data structure
5. From MTUS to MTUS+: what changes and why?
6. Working with MTUS: possibilities and limitations

Part 1: What is MTUS?

The origins of MTUS

- In the 1960s, **Alexander Szalai** led the first large **multinational comparative time-use study**, collecting diary data from 12 urban areas across different countries.
- In the early 1980s, **Jonathan Gershuny** and **Sally Jones** launched the **Multinational Time Use Study (MTUS)** to make comparative time-use research easier and more accessible.
- The key idea was to identify a **minimum common denominator** across national surveys and harmonize them into a common format.



J Gershuny in the 80s

Image generated with Chat GPT
in June 2026

Part 2: Why harmonise time-use data?

Why harmonise time-use data?

- Raw microdata from diary-based time-use surveys are complex (this complexity reflects their richness).
- That complexity can vary substantially across surveys.
- Even when diary instruments used in different countries are quite similar.

	hid	pid	serial	timefrom	timeto	multiple	simult	major	act
1	1	1	001	04:00	05:00	2		1	321
2	1	1	002	05:00	05:30	2		1	322
3	1	1	003	05:30	06:00	2		1	750
4	1	1	004	06:00	09:00	2		1	711
5	1	1	005	09:00	09:30	2		1	712
6	1	1	006	09:30	10:00	2		1	182
7	1	1	007	10:00	10:30	2		1	121
8	1	1	008	10:30	11:00	2		1	750
9	1	1	009	11:00	12:00	2		1	611
10	1	1	010	12:00	14:00	2		1	182
11	1	1	011	14:00	14:30	2		1	110
12	1	1	012	14:30	15:00	2		1	110
13	1	1	013	15:00	17:00	2		1	341
14	1	1	014	17:00	17:30	2		1	719
15	1	1	015	17:30	18:00	2		1	921
16	1	1	016	18:00	20:00	2		1	341
17	1	1	017	20:00	20:30	2		1	311
18	1	1	018	20:30	21:00	2		1	110
19	1	1	019	21:00	04:00	2		1	131

Microdata from a low-income country

Timeslot	Act	Sametime	Fulltime	Timeper	Activity_code
09h00-09h30	Activity1	No	30	30.00	910
09h30-10h00	Activity1	No	15	15.00	910
09h30-10h00	Activity2	No	15	15.00	90
10h00-10h30	Activity1	Yes	30	15.00	420
10h00-10h30	Activity2	Yes	30	15.00	930
10h30-11h00	Activity1	Yes	15	7.50	420
10h30-11h00	Activity2	Yes	15	7.50	620
10h30-11h00	Activity3	No	15	15.00	930
11h00-11h30	Activity1	No	30	30.00	930
11h30-12h00	Activity1	No	30	30.00	930
12h00-12h30	Activity1	No	30	30.00	930

Microdata from another low-income country

	ID	kohdetun...	jasen	WCaI_PVK	WCAL_...	ptoil1	ptoil2	ptoil3	ptoil4	ptoil5	ptoil6
1	AK01_037101	AK01_0371	1	529.12	0.88	011	011	011	011	011	011
2	AK01_037101	AK01_0371	1	1206.58	2.01	011	011	011	012	011	011
3	AK01_040101	AK01_0401	1	1150.06	1.91	011	011	011	011	011	011
4	AK01_040101	AK01_0401	1	498.04	0.83	011	011	011	011	011	011
5	AK01_040102	AK01_0401	2	965.07	1.61	011	011	011	011	011	011
6	AK01_040102	AK01_0401	2	417.93	0.70	011	011	011	011	011	011
7	AK01_063602	AK01_0636	2	368.05	0.61	011	011	011	011	031	011
8	AK01_063602	AK01_0636	2	839.30	1.40	011	011	011	031	011	011
9	AK01_064401	AK01_0644	1	214.88	0.36	011	011	011	011	011	011
10	AK01_064401	AK01_0644	1	565.08	0.94	011	011	011	011	011	011
11	AK01_064402	AK01_0644	2	229.42	0.38	011	011	011	011	011	011

Microdata from a rich country

Why harmonise time-use data?

- Raw microdata from diary-based time-use surveys are complex (this complexity reflects their richness).
- That complexity can vary substantially across surveys.
- **Without harmonisation, comparative time-use research is very time-consuming, and not easy**

Part 3: Data access

go to CTUR's website... click on 'survey data' ...



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We are
hiring!




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Division for Inclusive Social Development webinar
WTUS - A New Generation of Data for Understanding Unpaid Care Work

14 April 2024
10 - 11:00 am EDT

Accurately measuring unpaid care work - even as children, housework, and family support - has long been a challenge, as traditional surveys rely on printed questionnaires prone to bias, with inaccuracies and ambiguities estimated. Time use diaries provide more reliable data by recording full-day activities, reducing recall errors and capturing daily complexity.

The International Time Use Study (ITUS) has long supported this research and ITUS4 advances the next evolution, expanding global coverage, integrating more detailed activity classifications (such as ICA720), and better capturing professional activities as essential types of unpaid care work. It also enhances household-level data, allowing researchers to better understand how family structure shapes care responsibilities.

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Multinational Time Use Study

Survey data

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Multinational Time Use Study

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The Multinational Time Use Study (MTUS) brings together more than a 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 55 years and across 30 countries.

Access MTUS

1. [Register for a free MTUS account](#)
2. Already a registered user? [Log in to your account](#)

Once logged in to your account, [access and download the MTUS data here](#).

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 Professor Jonathan Gershuny and Juana Lamote. This site provides access to the data and documentation, and offers advice on the use of this dataset. At present we are undertaking a wholesale upgrade of the MTUS that includes removing some

Multinational time use study release version 11

> <https://doi.org/10.5522/04/28682660>



Cite

Download all (503.94 MB)

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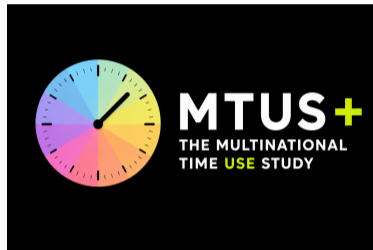
Dataset posted on 2026-04-20, 11:00 authored by Juana Lamote de Grignon Pérez, [Jonathan Gershuny](#), Margarita Vega-Rapun, [Oriol Sullivan](#)

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This will all change soon

- Creation of a dedicated **MTUS collection within the UCL Research Data Repository**.
- MTUS can be used free-of-charge by anyone that has been (1) **registered as a CTUR user**, (2) agree to **not redistribute files** of MTUS files to third parties, (3)
- Users must **cite MTUS** and share resulting publications, and are encouraged to contribute corrections and enhancements back to the project.



Potential logo for the new

MTUS collection

CTUR's website

www.timeuse.org/mtus

UCL Data repository

https://rdr.ucl.ac.uk/articles/dataset/Multinational_time_use_study_release_version_11/28682660

There will be a new path soon!!

Part 4: Understanding the MTUS data structure

- The Harmonised Aggregated File or HAF
- The Harmonised Episode File or HEF

The Harmonised Episode File

In the HEF, each row represents an episode – **period of time where the activity and all diary fields remain unchanged**. The remaining columns tell you things about that period of time.

epnum	start	end	time	main	sec	eloc	mtrav	alone	sppart	child	oad
1	0	90	90	sleep and...	.	at own home	not applica...	No	Yes	No	No
2	90	110	20	wash, dres...	.	at own home	not applica...	No	Yes	No	No
3	110	120	10	meals or s...	.	at own home	not applica...	No	Yes	No	No
4	120	150	30	watch TV,...	.	at own home	not applica...	No	Yes	No	No
5	150	160	10	travel to/fr...	.	travelling	travel by c...	No	Yes	No	No
6	160	180	20	travel to/fr...	.	travelling	travel by c...	-8	-8	-8	-8
7	180	350	170	paid work-...	.	at workplace	not applica...	No	No	No	Yes
8	350	360	10	unpaid wor...	.	at workplace	not applica...	No	No	No	Yes

the HEF is the file that looks like the diary instrument

Time: 7am-10am Morning (am)	What were you doing? Please write down one main activity.	If you did something else at the same time, what else did you do?	Did you use a smartphone tablet, or computer?	Where were you? Location, or mode of transport	Alone	Spouse/ partner	Mother	Father	Child aged 0-7	Other person	Others you know
7am-7.10	<i>Woke up the children</i>		<input type="checkbox"/>	<i>At home</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.10-7.20	<i>Had breakfast</i>	<i>checked emails</i>	<input checked="" type="checkbox"/>	↓	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.20-7.30	" "	<i>Talked with my family</i>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.30-7.40	<i>Cleared the table</i>	<i>Listened to the radio</i>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.40-7.50	↓	↓	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.50-8am	<i>Helped the children dressing</i>	<i>Talked with my children</i>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8am-8.10	" "	↓	<input type="checkbox"/>	↓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.10-8.20	<i>Went to the day care centre</i>	↓	<input type="checkbox"/>	<i>on foot</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The Harmonised Aggregated File

In the HAF, each row represents a **persons day**. The remaining columns tell you how much did that person in that day devote to different activities.

hldid	persid	id	sleep	eatdrink	selfcare	paidwork	educatn	foodprep
101000170000004501	1	1	390	45	135	750	0	0
101000170000004501	2	1	660	15	75	0	0	345
101000190000001901	1	1	525	30	45	705	0	60
101000190000003901	1	1	435	40	45	700	30	0
101000190000003901	2	1	540	15	30	390	0	90
101000190000005901	1	1	660	120	0	0	0	105
101000190000005901	4	1	570	75	30	30	495	0
101000190000009901	3	1	570	30	45	660	0	0
101000190000009901	5	1	720	60	60	0	390	0

Dimension	Aggregated File	Episode File
Unit of analysis	Diary	Episode
File size	Small	Large
Ease of use	Very easy	Not so easy
Usage	Large	Small
Info beyond activity	None	All
Timing of activities	No	Yes
Demog info	Yes	No

Getting rid of Readme Files: the SVY variables

- from **Readme Files** ...
- ... to self-documenting datasets
- survey metadata stored directly in SVY variables
- ⇒ the **Readme Files** are being **replaced** by the **SVY variables** like `svyrep` `svylight` `svyinterval` `svyndays` `svyminage` `svystart` `svyhhs` ...

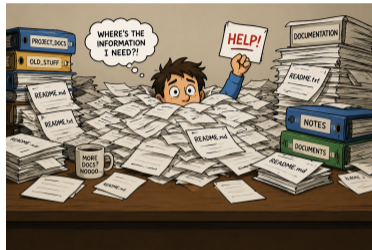


Image generated using ChatGPT
(OpenAI) June 2026.

A note on weights: estimating an average day

When working with time use data, **you can't forget the weights**. Many surveys intentionally oversample weekends, without adjustment, estimates may not represent an “average day”.

```
. tab day
```

day of the week diary kept	Freq.	Percent	Cum.
Sunday	4,068	24.61	24.61
Monday	1,612	9.75	34.36
Tuesday	1,666	10.08	44.43
Wednesday	1,605	9.71	54.14
Thursday	1,706	10.32	64.46
Friday	1,699	10.28	74.74
Saturday	4,177	25.26	100.00
Total	16,533	100.00	

```
. tab day [aw=propwt]
```

day of the week diary kept	Freq.	Percent	Cum.
Sunday	2,268.2857	14.29	14.29
Monday	2,268.2857	14.29	28.57
Tuesday	2,268.2857	14.29	42.86
Wednesday	2,268.2857	14.29	57.14
Thursday	2,268.2857	14.29	71.43
Friday	2,268.2857	14.29	85.71
Saturday	2,268.2857	14.29	100.00
Total	15,878	100.00	

MTUS recommended weight, **PROPWT** makes sure that is the case. The original survey weight, **OCOMBWT** may or may not do that.

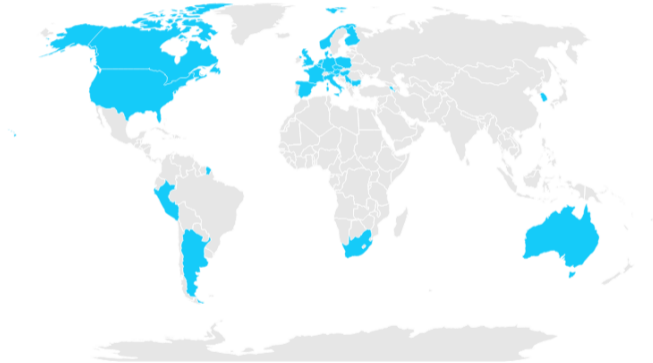
If you want more info about the HAF or HEF ...

- just open the data! nicely labelled and quite self-explanatory.
- you can have a look at the [MTUS codebook](#), that will give you some more info on the files.
- a new users guide will be published soon.

Part 5: From MTUS to MTUS+: what changes and why?

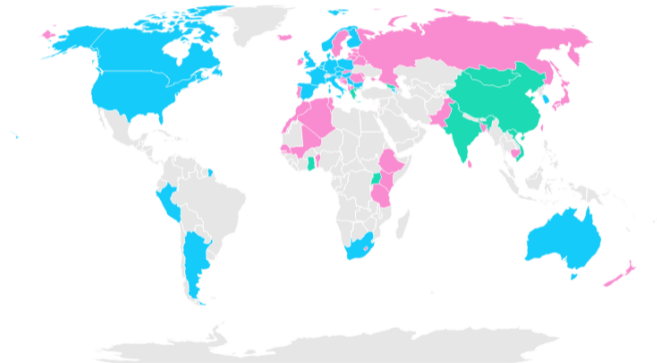
- Expanded country coverage
- New activity classifications
- Improved household structure measures (will skip)
- From a single HAF to user-defined files

Current MTUS coverage



Key points

- high-income countries: Europe, North America, Australia
- very similar surveys in many ways
- similar activity schemes
- This reflected the early geography of large-scale time-use research



Key points

- Diary-based time-use data now exists across a much broader global landscape
- Major expansion in: Asia, Africa, Latin America and LMICs in general.
- now the pool of surveys is more heterogeneous

ICATUS vs HETUS: One-digit classifications

ICATUS 2016	HETUS
1. Employment and related activities	1. Employment
2. Production of goods for own final use	
3. Unpaid domestic services for household	3. Household and family care
4. Unpaid caregiving services for household	
5. Unpaid volunteer, trainee and other	4. Volunteer work and meetings
6. Learning	2. Study
7. Socializing, community part. and religion	5. Social life and entertainment
8. Culture, leisure, mass-media and sports	6. Sports and outdoor activities 7. Hobbies and games 8. Mass media
9. Self-care and maintenance	0. Personal care

- HETUS is the activity scheme recommended by EUROSTAT. It is widely used in Europe
- ICATUS was designed by the UN to have a scheme that could be used in LMICs too. Widely used among LMICs
- re SNA work, that means that in rich countries all we know is whether people are working or not, while in LMICs we know what exactly they are doing
- the reverse is the case for Leisure activities
- the other groups are quite comparable

Employment in Hetus and IcatuS in detail

HETUS (6 codes)

- 110 Main job and second job
- 111 Working time in main and second job
- 120 Activities related to employment
- 121 Lunchbreak
- 129 Other employment-related activities
- 910 Travel to/from work

ICATUS (46 codes)

- **Employment in corporations and institutions (1 code)**
 - 110 Employment in corporations, government and non-profit institutions
- **Market production in household enterprises (18 codes)**
 - 121–129 Agriculture, livestock, forestry, fishing, mining, manufacturing and construction
 - 131–139 Trade, transport and paid services
- **Employment-related activities (5 codes)**
 - 141, 142, 150, 160, 170
- **Travel (2 codes)**
 - 181 Employment-related travel
 - 182 Commuting
- **Own-use production of goods (20 codes)**
 - 211–250 Agriculture, food processing, construction, water/firewood collection and related production

1. ORIGINAL DIARY (ICATUS-COMPATIBLE)

TIME	WHAT I WAS DOING
06:00-06:30	<u>Collected water from the well</u>
06:30-07:00	<u>Fed the chickens</u>
07:00-08:00	<u>Harvested vegetables in the field</u>
08:00-08:30	<u>Prepared vegetables for sale</u> (washed and sorted)
08:30-09:30	<u>Sold vegetables in the market</u>
09:30-10:00	<u>Walked home carrying firewood</u>
10:00-11:00	<u>Processed rice (pounding and winnowing)</u>



2. SAME DIARY AFTER HARMONISATION USING A HETUS-LIKE SCHEME

TIME	WHAT I WAS DOING
06:00-06:30	} PAID WORK (work and related activities)
06:30-07:00	
07:00-08:00	
08:00-08:30	
08:30-09:30	
09:30-10:00	
10:00-11:00	

Why a single activity scheme is problematic

- A 3-digit ICATUS diary may contain dozens of distinct productive activities:
- Under a simplified HETUS-style harmonisation, many of these activities may be collapsed into a single category such as “paid work”.
- This creates a substantial loss of analytical detail
- Researchers working on LMICs are especially affected because these distinctions are often central to their analyses.
- If harmonised files become too simplified, many researchers may prefer returning to the original microdata rendering MTUS useless.

The MTUS+ solution: multiple activity schemes

- MTUS+ moves away from relying on a single harmonised activity classification.
- MTUS+ will provide multiple parallel schemes:
 - MTUS 69-category scheme
 - HETUS in 3, 2 and 1 digit versions
 - ICATUS, in 3, 2 and 1 digit versions
- This allows MTUS+ to support different research agendas simultaneously: global **comparative research** as well as **regional or single country analysis**.
- The goal is no longer a single “minimum common denominator”, but a flexible system adapted to different analytical needs.

To build the HEF like the old MTUS:

```
. epigenx main sec eloc mtrav inout alone spart child oad  
ict, did(hldid persid id) dst(4)
```

Customising the HAF file:

```
. timealloc pri_icat1 sec_icat1 ter_icat1, did(hldid persid  
id)
```

- The community contributed software `timealloc` can be installed by simply typing `ssc install timealloc` in the Stata.
- we would be very grateful if you could cite the software should you decide to use it. [Juana Lamote de Grignon Pérez, 2024. "TIMEALLOC: Stata module to manipulate diary-based time use data," Statistical Software Components S459346, Boston College Department of Economics, revised 23 Apr 2026.](#)
- a paper with the same name will be published OPEN ACCESS in the Stata Journal shortly.

Part 6: MTUS: analytical possibilities, limitations, and data quality considerations

- Measurement limitations: diarists are not always telling is very precisely what they do
- Structural or inferential limitations: a single day of data

Broad activity	Sub-activities
Sleeping	Waiting to fall asleep
Eating	Setting the table
Childcare	Reading to a child
Housework	Doing the recycling

Having an activity code is a necessary condition to be able to measure that activity ... but not a sufficient one.

Activities must be recognised, remembered, and reported by respondents.

Reporting depends largely on: duration and salience.

The same behaviour may be reported at different levels of detail.

Aggregation can improve comparability and robustness. When in doubt, aggregate!

- Most surveys provide **one diary day per respondent**.
- This creates both strong analytical opportunities and clear inferential limits.
- Some questions simply cannot be answered from a 24-hour observation window.

A one-day diary tells us a lot about populations

- ✓ Average activity duration
- ✓ Activity timing and sequences
- ✓ Differences between groups and changes over time

Less about how that time is distributed among individuals ... or within individuals over time ...

- × Habits and regularity
- × Within-person variation
- × Long-term behavioural patterns

Example: sleep

What we can estimate

- ✓ Average sleep duration in the population
- ✓ Whether women sleep more than men
- ✓ Whether sleep duration has changed over time
- ✓ The proportion of diaries with less than 7 hours of sleep

What we cannot estimate

- ✗ The proportion of people who are regularly sleeping less than 7 hours
- ✗ How much an individual's sleep varies from day to day

Thank you!

Questions and comments welcome

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Acknowledgements

- MTUS is the result of a long-standing collaborative effort, led by CTUR but made possible by many contributors.
- We are deeply grateful to **National Statistical Offices** worldwide, whose work collecting and sharing time-use data makes this project possible.
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- We would like to give special thanks to **Wenbin Wang** (Inner Mongolia University), whose collaboration, trust, and support have been essential to the integration of Chinese data into MTUS+.
- MTUS+ is being developed as a joint effort in close collaboration with **Camille Landais** and the **Child Penalty Atlas** team at LSE, whose contribution has been central to the development of the next release.