

## TRANSPORT FINDINGS

# How do the Swiss Spend their Time?

Caroline Winkler<sup>1</sup> , Kay W. Axhausen<sup>1</sup> <sup>1</sup> Institute for Transport Planning and Systems, ETH Zurich

Keywords: Smartphone diary, time use, working from home, gender differences, paid and unpaid work

<https://doi.org/10.32866/001c.108600>

---

## Findings

---

Time use statistics are widely documented in order to track societal trends. The most reliable and widely used collection method for time use data are diaries in which a person documents all activities participated in for a given period. This study uncovers daily time use patterns across the entire adult population of German-speaking Switzerland with such data. The findings are the first diary-based account of time use for the region and illuminate important differences between genders and based on parenthood status in terms of paid and unpaid work, as well as working from home.

### 1. Questions

How do the German-speaking Swiss allocate their time each day? Do men enjoy more leisure than women? How are they spending their time at home? Who is responsible for household chores? How popular is working from home (WFH)?

### 2. Methods

Time use statistics are regularly documented in countries across the world in order to track societal change. Data presented here stem from the TimeUse+ (TU+) survey (2022/2023; Winkler et al. 2023), a smartphone-based time use, travel, and expenditures diary conducted in German-speaking Switzerland following all major COVID-19 lockdowns. Each of the 1,302 survey participants aged 20 to 82 (Mean 45.07; SD 14.34) completed two questionnaires and a four-week smartphone-based diary. This study uses diary data at a person-day level and employs weighted Mann-Whitney-U tests and a multinomial logistic regression in addition to descriptive statistics. See the Supplemental Information (SI) for details regarding data collection and the analytical framework applied.

### 3. Findings

#### *How do the Swiss allocate their time each day?*

[Table 1](#) summarizes time use allocation for all activities included in the TU+ survey. The table format mirrors that employed by the American Time Use Survey (ATUS) and German Time Use Survey (ZVE) to ensure comparability and is the first of its kind in German-speaking Switzerland.

Further, [Figure 1](#) presents their comparison for activity participation across four major activity groups: sleeping, personal care, and eating (maintenance); paid work; unpaid work; and leisure. ATUS and ZVE statistics are presented alongside two Swiss surveys (Swiss Labour Force Survey SLFS and TU+; see SI for details). A gender difference in leisure is apparent across three data sources,

Table 1. Summary of time use allocation across all activities

Activity	Average duration per day (SD) in hours:minutes			Percent engaged per day			Average duration per day given engagement (SD) in hours:minutes		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Personal care <sub>a</sub>	0:42 (0:43)	0:36 (0:41)	0:47 (0:44)	77.33	72.75	81.93	0:54 (0:41)	0:50 (0:41)	0:58 (0:42)
Sleeping or resting <sub>b</sub>	8:50 (2:21)	8:54 (2:24)	8:47 (2:18)	100.00	100.00	100.00	8:50 (2:21)	8:54 (2:24)	8:47 (2:18)
Eating or cooking <sub>h</sub> <sub>ab</sub>	1:21 (1:12)	1:14 (1:06)	1:28 (1:17)	81.27	78.04	84.52	1:40 (1:07)	1:35 (1:00)	1:44 (1:13)
Paid work <sub>ab</sub>	3:50 (4:05)	4:11 (4:15)	3:30 (3:53)	59.92	61.24	58.59	6:24 (3:22)	6:49 (3:22)	5:58 (3:19)
Studying <sub>ab</sub>	0:25 (1:22)	0:23 (1:19)	0:27 (1:25)	17.65	15.40	19.91	2:21 (2:28)	2:27 (2:28)	2:17 (2:27)
Leisure <sub>h</sub> <sub>b</sub>	1:51 (2:15)	2:00 (2:24)	1:43 (2:28)	68.85	68.49	69.21	2:42 (2:15)	2:55 (2:24)	2:29 (2:05)
Digital leisure <sub>h</sub>	0:59 (1:25)	1:03 (1:33)	0:55 (1:17)	49.54	47.96	51.12	1:59 (1:27)	2:12 (1:36)	1:48 (1:16)
Traveling	1:05 (1:07)	1:08 (1:10)	1:03 (1:05)	91.78	92.05	91.50	1:11 (1:07)	1:14 (1:09)	1:09 (1:04)
Exercising	0:20 (0:46)	0:22 (0:49)	0:19 (0:42)	28.64	27.48	29.81	1:11 (1:01)	1:18 (1:06)	1:04 (0:55)
Leisure <sub>b</sub>	0:48 (1:41)	0:50 (1:44)	0:47 (1:37)	35.01	34.28	35.73	2:18 (2:09)	2:26 (2:13)	2:11 (2:04)
Gastronomy	0:37 (1:08)	0:39 (1:09)	0:36 (1:07)	43.04	45.86	40.22	1:27 (1:20)	1:26 (1:20)	1:29 (1:20)
Shopping <sub>a</sub>	0:14 (0:31)	0:11 (0:30)	0:16 (0:32)	36.46	31.07	41.86	0:37 (0:42)	0:36 (0:44)	0:39 (0:40)
Unpaid work <sub>h</sub> <sub>a</sub>	0:44 (1:16)	0:36 (1:07)	0:53 (1:23)	51.18	45.51	56.87	1:27 (1:27)	1:19 (1:20)	1:33 (1:32)
Unpaid care work <sub>a</sub>	0:37 (1:34)	0:25 (1:12)	0:49 (1:51)	29.75	26.87	32.63	2:04 (2:18)	1:32 (1:54)	2:29 (2:31)
Other	1:21 (2:26)	1:16 (2:24)	1:27 (2:05)	54.35	50.71	58.00	2:30 (2:50)	2:30 (2:52)	2:29 (2:48)
Unacc. <sub>b</sub>	0:14 (0:39)	0:13 (0:38)	0:14 (0:40)	51.28	51.46	51.11	0:27 (0:51)	0:26 (0:50)	0:28 (0:52)

Notes: Activity names that have the suffix <sub>h</sub> only consider time spent on the activity while at home. <sub>a</sub> denotes a significant difference ( $p < 0.05$ ) in group means for participants' activity duration for men vs. women. <sub>b</sub> denotes a significant difference ( $p < 0.05$ ) in group means for participants' activity duration for weekdays vs. weekends.

though Swiss-German adults reported participating in leisure activities to a much lesser extent than Americans and Germans. The gender difference for leisure participation is not significant in the Swiss-German context ([Table 1](#)).

Across all four data sets, men engage in significantly more paid work than women—between 20% (TU+) and 60% (SLFS). Regarding unpaid work, a gender bias toward women is evident. Commonly referred to as the *Gender Care Gap*, the amount of unpaid work taken on by women relative to men is 48% more in Germany, around 50% according to SLFS and ATUS, and up to 64% according to TU+. In Germany, this value was over 50% in 2012, i.e. the gap seems to be closing (DESTATIS 2024). In Switzerland, the same pattern seems to be true comparing the SLFS data from 2020 to 2010. In 2010, the Gender Care Gap was over 70% according to SLFS data (FSO 2021).

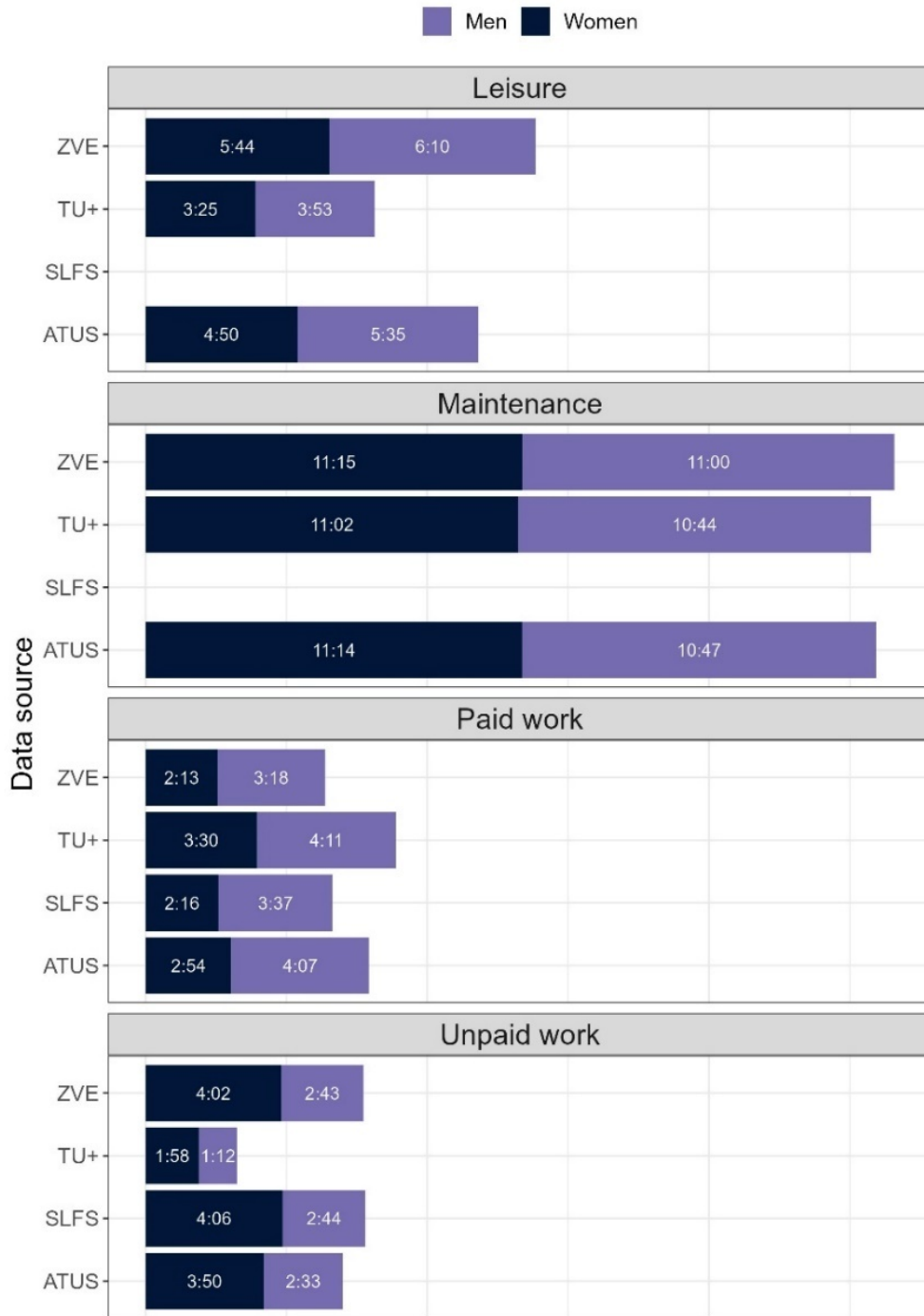


Figure 1. Daily time use in major activities across the US, Germany and Switzerland by gender

Notes: Values are in format hours:minutes. Maintenance activities include sleeping, resting, personal hygiene, and eating. Data sources are as follows: TU+ reflects TimeUse+ data collected in German-speaking Switzerland (2022/2023), SLFS the Swiss Labour Force Survey (2021), ZVE the German Time Use Survey (2022) and ATUS the American Time Use Survey (2022). The SLFS only collects data for paid and unpaid work activities. See SI for additional information regarding activity classification in each sample.

Table 2. Summary of time use allocation at home by employment status and weekday

Activity	Average hours per day (SD) in hours:minutes							
	Employed, has children		Employed, no children		Other (unemployed, student, other)		Retired	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Sleeping, resting, and personal care	8:31 (2:22)	9:41 (2:43)	8:46 (2:27)	9:51 (2:49)	9:09 (2:30)	9:45 (2:39)	9:04 (2:16)	9:09 (2:24)
Eating or cooking	1:20 (1:04)	1:38 (1:12)	1:05 (0:56)	1:21 (1:08)	1:27 (1:11)	1:31 (1:18)	2:04 (1:26)	2:00 (1:19)
Leisure	1:17 (1:44)	2:13 (2:24)	1:24 (1:44)	2:33 (2:44)	2:10 (2:22)	2:38 (2:42)	2:45 (2:24)	3:16 (2:39)
Digital leisure	0:35 (0:56)	0:52 (1:18)	0:51 (1:17)	1:10 (1:44)	1:09 (1:33)	1:10 (1:33)	1:06 (1:28)	1:05 (1:28)
Studying	0:07 (0:32)	0:09 (0:34)	0:07 (0:36)	0:10 (0:41)	0:51 (1:44)	0:55 (2:03)	0:16 (0:42)	0:11 (0:34)
Paid work (WFH)	1:23 (2:34)	0:24 (1:08)	1:09 (2:25)	0:31 (1:30)	0:39 (1:32)	0:16 (0:52)	0:45 (1:32)	0:28 (1:11)
Unpaid household work	0:38 (1:12)	0:56 (1:33)	0:26 (0:56)	0:45 (1:18)	0:38 (1:03)	0:35 (1:00)	0:53 (1:19)	0:47 (1:16)
Unpaid care work	1:06 (1:60)	1:24 (2:19)	0:02 (0:21)	0:04 (0:23)	0:39 (1:45)	0:38 (1:35)	0:07 (0:33)	0:08 (0:49)
Exercising	0:05 (0:19)	0:07 (0:22)	0:06 (0:19)	0:09 (0:27)	0:09 (0:27)	0:07 (0:21)	0:11 (0:30)	0:13 (0:34)
Online shopping	0:03 (0:14)	0:05 (0:26)	0:03 (0:14)	0:04 (0:16)	0:06 (0:23)	0:07 (0:24)	0:08 (0:27)	0:08 (0:25)
Other activities	0:37 (1:40)	0:51 (1:57)	0:34 (1:32)	0:52 (1:54)	0:51 (2:02)	0:55 (2:04)	1:32 (2:18)	1:33 (2:15)
Time outside of the home	8:17 (4:48)	5:40 (4:34)	9:25 (4:41)	6:31 (4:54)	6:12 (4:44)	5:23 (4:43)	5:09 (4:01)	5:02 (4:30)

### *How do the Swiss spend their time at home?*

The heterogeneity implicit in time use, however, can be better understood at a more granular level. At-home activity participation is increasingly relevant, as technological advances and shifts caused by the COVID-19 pandemic have increased at-home time in paid work and leisure. [Table 2](#) presents a summary of time spent at home given engagement, split into groups based on employment status, which is highly correlated with age, and thereby a proxy for time use over the lifespan.

First, activity participation is starkly different between people who engage in paid work (i.e. are employed) compared to those who do not. Not-employed individuals spend their time at home more similarly across all days of the week. Second, employed individuals spend more time out of the household overall. Their at-home behavior is different on weekdays compared to weekends. Third, the presence of children shapes adults' lives to perhaps an even greater extent than paid work. Overall, compared to employed individuals without

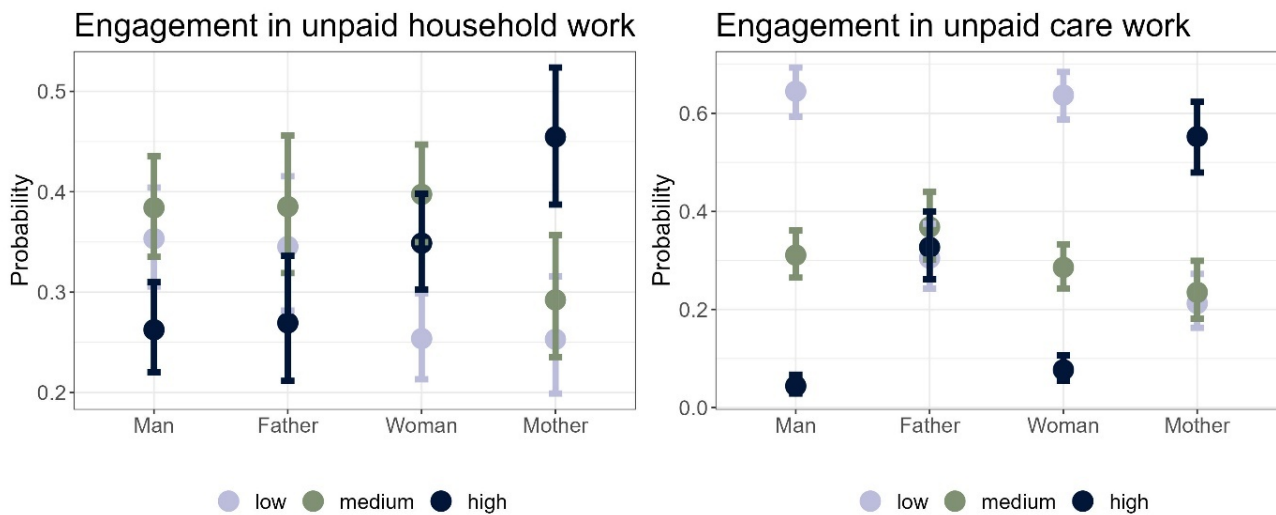


Figure 2. Engagement in unpaid work activities based on gender and parenthood status (Mean and 95% CI; note differing scales)

Note: Low activity engagement reflects a time investment of 15 minutes or less per day, on average. Medium corresponds to 5 – 40 minutes per day, while high corresponds to more than 40 minutes per day, on average.

children, those with children engage in more WFH, as well as unpaid work, while enjoying less leisure at home. They also spend more time outside of the home on weekends.

### *Who takes care of the unpaid work in Swiss households?*

Thus far, we have identified both gender differences ([Table 1](#)) and parenthood differences ([Table 2](#)) in terms of unpaid work, reflecting the Gender Care Gap. We explore these relationships one step further by predicting the likelihood of different levels of engagement in unpaid work (low/medium/high) according to a person's gender and parenthood status (method elaborated in the SI). As evident in [Figure 2](#), general household work and care work are categorically different; there is much more variability in the relationship considering unpaid household work, and women, especially mothers, are more likely to fall into the high engagement category. The relationship is significant and more pronounced for unpaid care work.

### *Are the Swiss still working from home?*

Recent findings document a dissonance between how many days employees would like to WFH compared to a lesser amount of days that employers are willing to allow for employees to WFH (Aksoy et al. 2022; Anderson et al. 2023). Though only preliminary statistics exist for Swiss employees, the range echoes global numbers: about 46% of individuals have the option to WFH and those who do report WFH 1.65 days and would prefer being able to WFH 2.31 days, on average, only considering weekdays (Heimgartner and Axhausen 2024). According to the TU+ questionnaire data, 55% of employed individuals have the option to WFH, and they do so for 1.83 days per week, on average.

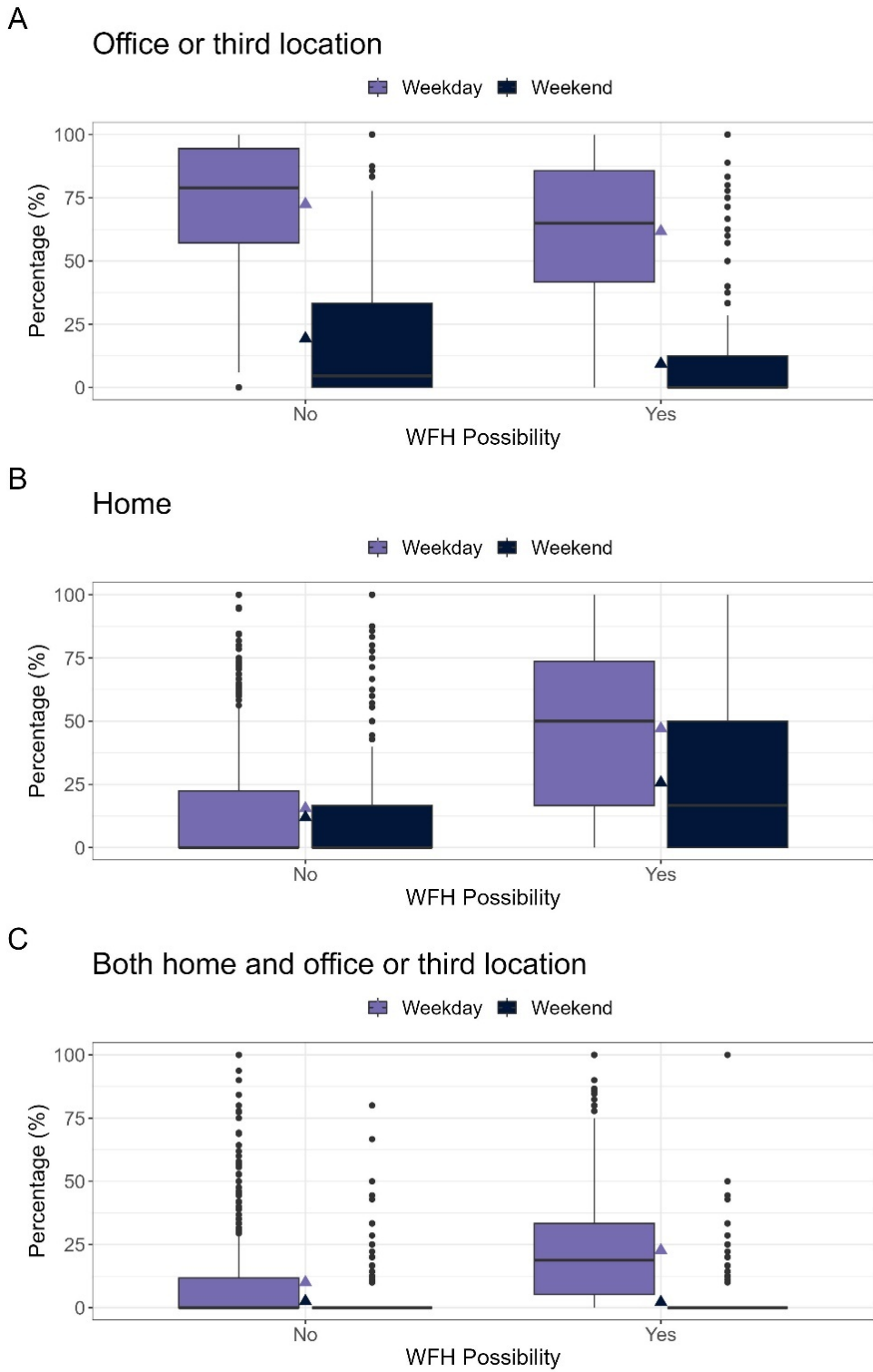


Figure 3. Distribution of percent participation in paid work by WFH possibility status

Note: Triangles represent weighted mean values.

According to TU+ data, 82.4% of employed adults engaged in paid work on any given weekday, while 31.0% did on weekends. Across an entire week, people who have the option to WFH did so on an average of 2.74 days, while those who do not did so on 1.13 days (not taking duration into consideration). [Figure 3](#) depicts the distribution of the engagement in paid work based on location and whether an employee is allowed to WFH. WFH seems to be

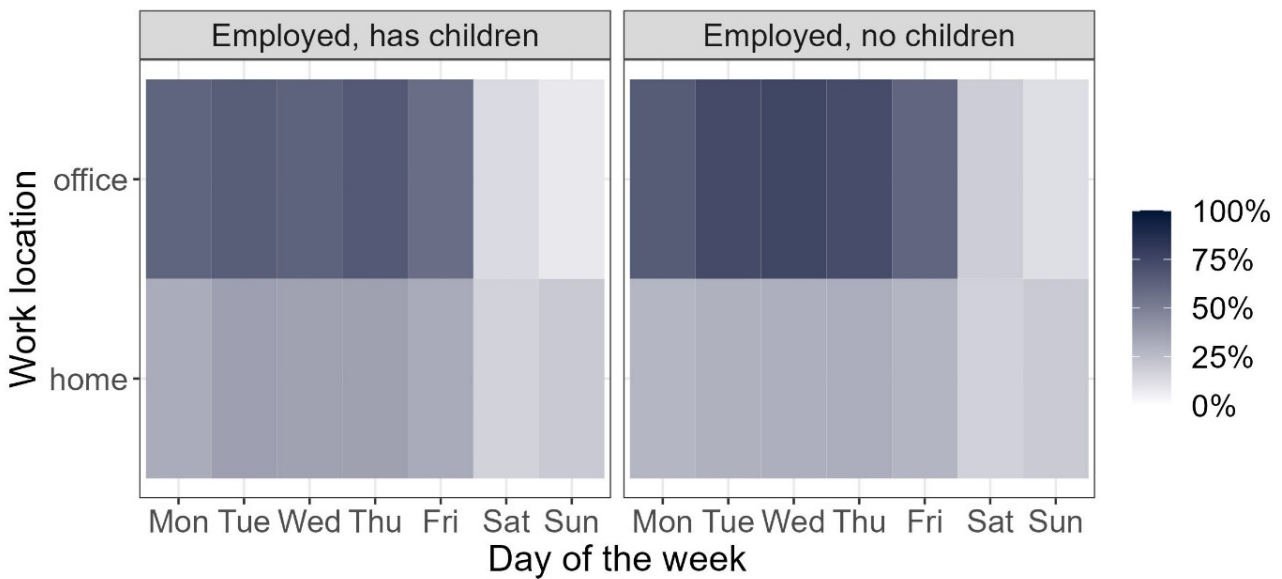


Figure 4. Work location frequency by day of the week

Note: Office also includes third, non-home work location

done by everyone, even those who say they do not have the option to do so. Individuals who do have the opportunity to WFH work from *both* home and the office on about 22.7% of weekdays and engage in WFH on 26.7% of weekend days. Future studies should not exclusively inquire about a 5-day workweek when investigating WFH, as WFH is used in a flexible, hybrid manner.

Extending the analysis and tying back to the parenthood status differences identified for time spent at home (especially concerning unpaid care work; see [Table 2](#) and [Figure 2](#)), [Figure 4](#) shows that employees without children work outside of the home most often on Wednesdays followed by Tuesdays and Thursdays and that employees with children WFH slightly more than their counterparts across weekdays.

### Acknowledgements

The authors gratefully thank the Swiss National Science Foundation (SNSF) for supporting the TimeUse+ project (Grant Number 189001) and the entire TimeUse+ team for the data collection.

Submitted: January 20, 2024 AEDT, Accepted: March 14, 2024 AEDT



This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CCBY-SA-4.0). View this license's legal deed at <https://creativecommons.org/licenses/by-sa/4.0> and legal code at <https://creativecommons.org/licenses/by-sa/4.0/legalcode> for more information.

## REFERENCES

- Aksoy, Cevat Giray, Jose Maria Barrero, Nicholas Bloom, Steven Davis, Mathias Dolls, and Pablo Zarate. 2022. "Working from Home around the World." National Bureau of Economic Research. <https://doi.org/10.3386/w30446>.
- Anderson, S.M., K.E. Asmussen, S. Saxena, I. Batur, R.M. Pendyala, and C.R. Bhat. 2023. *An Investigation of Dissonance in Telework Frequency*. Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin. Austin.
- Bonke, Jens. 2005. "Paid Work and Unpaid Work: Diary Information versus Questionnaire Information." *Social Indicators Research* 70 (3): 349–68. <https://doi.org/10.1007/s11205-004-1547-6>.
- Eurostat. 2019. *Harmonised European Time Use Surveys (HETUS) 2018 Guidelines*. Luxembourg: Publications office of the European Union.
- Federal Statistical Office (FSO). 2021. "Average Expenditure on Paid Work, Housework, Family Work and Volunteering by Gender and Family Situation. Reported Statistics from: Unpaid Work (Module of the Swiss Labor Force Survey SLFS). FSO Number Je-d-03.06.00.01." <https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb/erhebungen/sake-ua.assetdetail.17124513.html>.
- Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE). 2023. "Population Mobility Behavior, Results from the Microcensus on Mobility and Transport 2021." Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE).
- German Federal Statistical Office (DESTATIS). 2024. *Statistical Report - Survey on Time Use in Private Households - 2022*. German Federal Statistical Office. Wiesbaden. <https://www-genesis.destatis.de/genesis/online>.
- Harrell, F. 2023. *Hmisc: Harrell Miscellaneous. R Package Version 5.1.0*. <https://hbiostat.org/R/Hmisc/>.
- Heimgartner, D., and K.W. Axhausen. 2024. "Hybrid Work Arrangement Choices and Its Implications for Home Office Frequencies." In *103rd Annual Meeting of the Transportation Research Board (TRBAM 2024)*.
- Lüdecke, Daniel. 2018a. "Ggeffects: Tidy Data Frames of Marginal Effects from Regression Models." *Journal of Open Source Software* 3 (26): 772. <https://doi.org/10.21105/joss.00772>.
- . 2018b. *Sjstats: Statistical Functions for Regression Models*. (version 0.17.2). Zenodo. <https://doi.org/10.5281/ZENODO.1284472>.
- R Core Team. 2023. "R: A Language and Environment for Statistical Computing [Computer Software]." *R Foundation for Statistical Computing. R Version 4.3.1 (2023-06-16 Ucr)* – "Beagle Scouts" 4 (3.1). <https://www.R-project.org/>.
- Venables, W.N., and B.D. Ripley. 2002. *Modern Applied Statistics with S*. 4th ed. Springer. <https://www.stats.ox.ac.uk/pub/MASS4/>.
- Winkler, C., A. Meister, U. Isenschmid, K. Tejada Acosta, B.A. Le, and K.W. Axhausen. 2023. "TimeUse+ Main Study: Data and Variable Description." Travel Survey Metadata Series. IVT, ETH Zurich, Zurich: IVT.



## Supplemental Information

### *Data sources*

#### **TIMEUSE+**

Data collection year and location: June 2022 – February 2023 German-speaking Switzerland

Conducted by: Institute for Transport Planning and Systems, ETH Zurich, Switzerland

Sample demographic: Population aged 20 and older

Sample size: 1,302 individuals

Data collection method: GPS-based smartphone diary survey (four weeks) with background questionnaires (elaborated upon below)

Details: unpaid work includes unpaid household work, unpaid care work, and shopping **not** travel to unpaid work activities, as is the case for all other data sources; maintenance activities are somewhat overreported, as eating/cooking was included as a single activity (i.e. although eating is a maintenance activity and cooking is generally considered to be unpaid work). It follows that unpaid work is underreported in the data set, since cooking is not included.

Potential biases: underreporting of activities less than 10 minutes long and rounding of activities to 10 minutes; no further information when activity “other” was reported; activities eating and cooking reported as a single activity; splitting of activities at midnight (see below) rudimentary

Participation in TimeUse+ comprised three steps:

1. An initial online questionnaire (study information, consent, personal and household level socioeconomic characteristics, work preferences, and mobility tool ownership)
2. A four-week tracking period that involved downloading and using the TimeUse+ app (iOS and Android) which passively tracked participants. Participants were required to validate (correct) all locations visited and modes used, and actively log all activities and expenditures performed using preset lists provided within the app.
3. A second online questionnaires (long-term expenditures, a range of attitudinal questions and a personality inventory)

All TimeUse+ data and a field report to the study may be requested from the ETH Research Collection (<https://www.research-collection.ethz.ch/handle/20.500.11850/634868>).

All data preparation and analysis were performed in R (R Core Team 2023). As far as data preparation is concerned, the following steps were taken for the TimeUse+ diary data:

1. Assigning weights to participants with the 2021 Swiss Mobility and Transport Microcensus (FSO & ARE 2023) filtered for German-speaking Switzerland as the target population. Weighting was performed based on: age, gender, income, education level, mobility tool ownership, household size, and workload (if employed).
2. Splitting days at midnight and splitting activities proportionally between both days.
3. Public holidays were recoded as weekends. Weekdays participants took off from work could not be identified and thereby remained in the sample as weekdays.
4. Filtering out entire days if: time spent outside of Switzerland, implausible sleep duration.
5. Defining separate final data samples. The only difference is how time is allocated or categorized.

The final data sets for all analyses include 27,197 days from 1,302 participants. The TimeUse+ team was able to impute home locations (described in the field report), but not work locations. Hence, a limitation of this work lies in its inability to distinguish between working at one's workplace and working from a third location (e.g. a café).

**SWISS LABOUR FORCE SURVEY (SLFS)**

Data collection year and location: 2020, Switzerland

Conducted by: Swiss Federal Statistical Office

Sample demographic: Population aged 15 and older

Sample size: 120,000 interviews per year

Data collection method: Online questionnaire (with the option for a telephone interview) with stylized questions regarding background information and labor market participation indicators: employment situation, occupation, salary, etc.

Potential biases: Time use data collected via stylized questions have been found to be less reliable and valid than those collected using time use diaries (e.g., for logging working time; Otterbach and Sousa-Poza, 2010; Bonke 2005).

Website for reference: <https://www.bfs.admin.ch/bfs/en/home/statistics/work-income/surveys/slfs.assetdetail.22687497.html>

### **GERMAN TIME USE SURVEY (ZVE)**

Data collection year and location: 2022-2023, Germany

Conducted by: German Federal Statistical Office (DESTATIS)

Sample demographic: Population aged 10 and older. Data used in [Figure 1](#) filtered for population aged 18 and older.

Sample size: 15,000 households

Data collection method: Household survey (background questionnaire and 3-day diary), online or smartphone-based time use diary following HETUS (Eurostat 2019) guidelines

Potential biases: Variable depending on whether a participant used the web-diary or smartphone diary. Any delay in recording activities is directly tied to recall bias. Activity durations susceptible to rounding errors, as they are reported in 10-minute intervals.

Website: <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Einkommen-Konsum-Lebensbedingungen/Zeitverwendung/Methoden/zeitverwendung.html>

### **AMERICAN TIME USE SURVEY (ATUS)**

Data collection year and location: 2022, United States of America

Conducted by: US Bureau of Labor Statistics

Sample demographic: Population aged 15 and older

#### **SAMPLE SIZE**

Data collection method: Computer-assisted telephone interview (CATI) to detail a diary about the day prior to the interview, i.e. using the “yesterday method”. Susceptible to rounding, recall, and social desirability biases as one must think back to every activity done hours prior and appeal to the interviewer.

Website: <https://www.bls.gov/opub/hom/atus/data.htm>

As is always the case, the four data collection methods implemented by the four data sources considered each entail potential biases that influence their data. This is exactly why HETUS guidelines exist: to generate comparable data, at least within the EU. Future HETUS smartphone diaries are indeed expected to include GPS technology because of its highly accurate temporal and spatial resolution. However, GPS-based methods, such as TimeUse+, are susceptible to missing data due to loss in signal, a participant’s smartphone being shut off, and the like. Design choices that led to potential biases during the TimeUse+ project were implemented to increase the app’s usability or user experience. There are many challenges to be overcome until a GPS-based time use diary

solution becomes fully viable. In the meantime, notwithstanding, it would be of great use for a Swiss federal agency to conduct a regular time use survey, either further exploring the opportunities of GPS and making data comparable to that collected with TimeUse+ or using a web or smartphone diary in line with HETUS guidelines.

### *Analytical framework*

For [Table 1](#), R package Hmisc (Harrell 2023) was used to calculate means and standard deviations, while R package sjstats (Lüdtke 2018b) was applied for the Mann-Whitney-U tests.

For the multinomial logistic regression estimated for [Figure 2](#), clustered time investment in unpaid care and unpaid household work functioned as dependent variables where a low time investment represented an average daily unpaid work engagement of less than 5 minutes, medium between 5 and 40 minutes, and high more than 40 minutes. A multinomial logistic regression using clusters of time determined post hoc was deemed appropriate, as the original continuous time use data are highly skewed and include zeros, which violates assumptions for many regression types. An ordinal logistic regression was not applied due to a violation of the proportional odds assumption. [Figure 2](#) presents how the predicted likelihood of different levels of engagement in unpaid work vary according gender and parenthood status, general household work and care work are categorically different. R package nnet (Venables and Ripley 2002) was used to and R package ggeffects (Lüdtke 2018a) was used to predict and plot the predicted probabilities.

## SUPPLEMENTARY MATERIALS

### **Supplemental Information**

Download: <https://findingspress.org/article/108600-how-do-the-swiss-spend-their-time/attachment/213488.pdf>

---