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## SOEP-IS 2024 – DIPS3\_HOURLY: Smartphone Sensing on the Hourly Level (DIPS Project)

Michael Krämer, Vanessa Brandes, Martin Gerike, Yannick Roos, Ramona Schoedel, Cornelia Wrzus, and David Richter

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and David Richter

2026

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# 1 Introduction

## Overall Project Description

The DIPS3 study was part of a larger DFG-funded project on “Personality and social relationship dynamics: Short- and medium-term processes in daily life” with Cornelia Wrzus and David Richter as principal investigators. This project had the overall goal to investigate the dynamic, interdependent short-term and medium-term processes that define multiple social relationships and to better understand how these processes differ between people depending on diverse personality characteristics. To this aim, several modes of data collection were employed jointly, such as active daily diary assessments and passive smartphone sensing of behavioral indicators related to social contact (for measurement properties of these social contact indicators, see Roos et al., 2023). The project was given Institutional Review Board approval by Johannes Gutenberg University Mainz (Process Number: 2018JGU-psychEK-002).

## DIPS3 Data Collection

The third part of data collection within this project was integrated into the SOEP-IS in wave 2022 with the goal of recruiting members of this already existing panel study to take part in an additional, opt-in data collection with a smartphone app. As reported in Roos et al. (2024), 2,507 participants took part in the SOEP-IS study in 2022 of which 1,322 (53%) reported initial interest in the smartphone study and 844 (34%) fulfilled all requirements (i.e., regularly using a smartphone running on Android Version 6.1 or higher). Finally, roughly 15% of the 2022 SOEP-IS sample, that is,  $N = 386$  participants, took part in the 14-day smartphone study and answered at least one daily diary. A detailed examination of sample selectivity and different person-related sampling biases associated with selection into mobile sensing studies (including the DIPS3 study) will be available in Schoedel et al. (2024).

At the end of the 2022 interview, SOEP-IS respondents were asked if they owned a smartphone running on Android OS Version 6.1 or higher and if they were interested in participating in an additional 14-day smartphone study. Those who agreed to participate were sent a postal invitation to take part in the study along with instructions on how to install and set up the PhoneStudy app which runs on Android OS (for more information on the app, see <https://phonestudy.org/en/>). Respondents were informed during the onboarding process about the study procedure and data protection. Informed consent was obtained during the setup of the app.

After the installation of the app, respondents received daily notifications to fill out a brief questionnaire on their mood and social interactions each evening for 14 days. Questionnaires were available each day from 8:00 p.m. to 4:00 a.m. of the following day. Respondents were instructed to answer the questionnaire right before going to bed and received up to two reminders between 8:00 p.m. and 12:00 a.m. Additionally, smartphone sensing ran on the respondents' phones, passively gathering data on anonymized social interactions, phone and app usage, and contact entries. Respondents received 40€ for participation.

Additional study documentation materials including the wording of all items in English and German, the recruitment flyer, and a report on different app versions can be found on <https://osf.io/zhc49/>. Here, we only present the translated, English version of the items.

## Hourly-Level Data

Raw data of smartphone sensing cannot be shared publicly due to privacy concerns and potential identification of respondents due to the richness of these data, especially when

linked with the SOEP-IS panel data. Therefore, for this data release, we selected only the most meaningful behavioral indicators and aggregated them over time.

The second of the three DIPS3 datasets presents the smartphone sensing data on the hourly level with each individual observation defined as an hourly interval, that is, from one full hour to the next, over the entire study period. The very first interval of each respondent starts with the hour of installing the PhoneStudy app and the last interval ends with the hour of deinstallation of the study app.

The purpose of this aggregation time window was to provide a more fine-grained temporal resolution of the smartphone sensing indicators. Thereby, temporal dynamics in these continuously assessed indicators can be examined. Data can be linked to the daily-level data via the “pid” and “n\_days” identifiers.

For the other two datasets, see:

Aggregated on the daily level:

[https://www.diw.de/documents/publikationen/73/diw\\_01.c.936884.de/diw\\_ssp1430.pdf](https://www.diw.de/documents/publikationen/73/diw_01.c.936884.de/diw_ssp1430.pdf)

Short surveys after calls:

[https://www.diw.de/documents/publikationen/73/diw\\_01.c.936889.de/diw\\_ssp1432.pdf](https://www.diw.de/documents/publikationen/73/diw_01.c.936889.de/diw_ssp1432.pdf)

## References

Roos, Y., Krämer, M. D., Richter, D., Schoedel, R., & Wrzus, C. (2023). Does Your Smartphone “Know” Your Social Life? A Methodological Comparison of Day Reconstruction, Experience Sampling, and Mobile Sensing. *Advances in Methods and Practices in Psychological Science*, 6(3), 1–12.

<https://doi.org/10.1177/25152459231178738>

Roos, Y., Krämer, M. D., Richter, D., & Wrzus, C. (2024). Persons in contexts: The role of social networks and social density for the dynamic regulation of face-to-face interactions in daily life. *Journal of Personality and Social Psychology*. Advance online publication.

<https://doi.org/10.1037/pspp0000512>

Schoedel, R., Reiter, T., Krämer, M. D., Roos, Y., Bühner, M., Richter, D., Mehl, M. R., & Wrzus, C. (2024). Person-Related Selection Bias in Mobile Sensing Research: Robust Findings from Two Panel Studies [Manuscript submitted for publication].

## 2 Identifiers

Data was processed by adding general identifiers to track study progress over time and provide easier filtering. Temporal observations are defined as hourly intervals, that is, from one full hour to the next, over the entire study period. The very first temporal observation of each participant starts with the hour of installing the PhoneStudy App and the last temporal observation ends with the hour of deinstallation of the Study App.

### pid – Person ID

---

1233703	349
1247702	356
1344403	342
2001401	349
2012702	346
2037404	344
2043004	355

...	(381 rows omitted)	132280
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

Same person identifier as in SOEP-IS data files.

### subsample – Subsample

---

0	[0] no	109559
1	[1] yes	25162
-1	No answer	0
-2	Does not apply	0
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

During the study period, an older, outdated app version was distributed for a restricted time window due to a technical error (N = 72 with outdated version; N = 313 with correct version). This older app version differed slightly in some wordings of the daily diary items. Here, we present documentation for the correct app version that the majority of respondents installed. For more details on this matter and an extensive comparison of the two app versions, see OSF repository.

<https://osf.io/zhc49/>

### syear – Survey Year

---

2022		134721
-1	No answer	0
-2	Does not apply	0
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

**n\_days** - Study Day Count

---

0	4704
1	8973
2	9233
3	9207
4	9208
5	9212
6	9189
... (16 rows omitted)	74614
-7 Only available in less restricted edition	102
-8 Question this year not part of survey	72
-9 Missing due to a terminated interview	57
-10	48
-11	48
-12	42
-13	12

Counts the number of days after installation starting with 1 at the day after installation where the first daily diary was available to be answered. In contrast to n\_diary, this variable takes into account when respondents fill out a questionnaire the following day or have gaps when they skipped a questionnaire. Negative values indicate days before a person answered their first daily diary.

**n\_hour** - Hour of the day

---

1	6176
2	6174
3	5950
4	5780
5	5767
6	5748
7	5723
... (19 rows omitted)	93403
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

Counts the hours over which data are aggregated per person and per study day going from 0 to 23.

**day** - Day of the Week

---

0	[0] Monday	19103
1	[1] Tuesday	19083
2	[2] Wednesday	19338
3	[3] Thursday	19648
4	[4] Friday	19307
5	[5] Saturday	19135
6	[6] Sunday	19107
...	(2 rows omitted)	0
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### weekend – Weekend

---

0	[0] no	96479
1	[1] yes	38242
-1	No answer	0
-2	Does not apply	0
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

## 3 Texts

Smartphone sensing data is aggregated to track the number of text messages sent per hour as well as the aggregated count of typed characters within these text messages. Only texts typed in various communication apps are taken into account. Texts typed into search or navigation bars within those apps have been excluded. SMS texts were also not considered because of low occurrence.

### texts\_outgoing\_freq – Number of Texts Sent

---

0	119201
1	6787
2	3319
3	1832
4	1156
5	734
6	461

...	(30 rows omitted)	1231
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### texts\_outgoing\_length – Character Count of Texts Sent

---

0		119205
1		78
2		384
3		142
4		278
5		164
6		195
...	(1031 rows omitted)	14275
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

## 4 App Usage

Smartphone sensing data is aggregated on an hourly level to track participants' usage of different apps per hour. This includes continuous tracking of the frequency of opening an app and the time period using each app. Smartphone sensing starts after setup of the Phone-Study app and is active until the app is uninstalled. App usage duration times are given in minutes. For more details on the app categorization procedure, see Schoedel et al. (2022).

### comm\_app\_freq – Communication Apps: Frequency

---

0		86980
1		11717
2		9253
3		6530
4		4760
5		3479
6		2623
...	(49 rows omitted)	9379
-3	Implausible value	0
-4	Inadmissible multiple response	0

-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

Schoedel, R., Oldemeier, M., Bonauer, L., & Sust, L. (2022). Systematic categorisation of 3,091 smartphone applications from a large-scale smartphone sensing dataset. *Journal of Open Psychology Data*, 10(1), 7.

<https://doi.org/10.5334/jopd.59>

### comm\_app\_time – Communication Apps: Duration

---

0		86980
0.0000166654586791992		29
0.0000166694323221842		18
0.0000333309173583984		8
0.0000333348910013835		12
0.0000333388646443685		1
0.0000499963760375977		5
...	(43759 rows omitted)	47668
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### socmed\_app\_freq – Social Media Apps: Frequency

---

0		117232
1		4485
2		3852
3		2623
4		1796
5		1229
6		843
...	(35 rows omitted)	2661
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

**socmed\_app\_time** – Social Media Apps: Duration

---

0	117232
0.0000166654586791992	24
0.0000166694323221842	10
0.0000333309173583984	19
0.0000333348910013835	18
0.0000333388646443685	3
0.0000499963760375977	4
... (16388 rows omitted)	17411
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**audio\_app\_freq** – Audio Entertainment Apps: Frequency

---

0	130075
1	1550
2	1024
3	630
4	405
5	230
6	128
... (21 rows omitted)	679
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**audio\_app\_time** – Audio Entertainment Apps: Duration

---

0	130075
0.0000166654586791992	5
0.0000166694323221842	3
0.0000333309173583984	3
0.0000333348910013835	8
0.0000333388646443685	1
0.0000500003496805827	10
... (4090 rows omitted)	4616
-3 Implausible value	0

-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### career\_app\_freq – Career Apps: Frequency

---

0	133672	
1	273	
2	225	
3	102	
4	32	
5	19	
6	12	
... (10 rows omitted)	386	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### career\_app\_time – Career Apps: Duration

---

0	133672	
0.0000166654586791992	10	
0.0000166694323221842	6	
0.0000333309173583984	6	
0.0000333348910013835	6	
0.0000499963760375977	1	
0.0000500003496805827	10	
... (661 rows omitted)	1010	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### create\_app\_freq – Creativity Apps: Frequency

---

0	134199
1	69
2	46
3	25
4	14
5	12
6	6
... (6 rows omitted)	350
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### create\_app\_time – Creativity Apps: Duration

---

0	134199
0.0000166654586791992	1
0.0000166694323221842	1
0.0000499963760375977	1
0.000233332316080729	1
0.00115000009536743	1
0.00121666590372721	1
... (174 rows omitted)	516
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### dating\_app\_freq – Dating Apps: Frequency

---

0	133815
1	165
2	127
3	97
4	41
5	17
6	22
... (21 rows omitted)	437
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0

-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### dating\_app\_time – Dating Apps: Duration

---

0		133815
0.0000166654586791992		5
0.0000333309173583984		3
0.0000333348910013835		3
0.000150001049041748		1
0.000199997425079346		1
0.0012500007947286		1
...	(549 rows omitted)	892
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### finance\_app\_freq – Finance Apps: Frequency

---

0		130660
1		1733
2		884
3		485
4		261
5		116
6		70
...	(21 rows omitted)	512
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### finance\_app\_time – Finance Apps: Duration

---

0		130660
0.0000166654586791992		14

0.0000166694323221842	7
0.0000333309173583984	14
0.0000333348910013835	19
0.0000333388646443685	2
0.0000499963760375977	4
... (3597 rows omitted)	4001
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### food\_app\_freq – Food Apps: Frequency

---

0	133229
1	425
2	342
3	165
4	76
5	44
6	39
... (12 rows omitted)	401
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### food\_app\_time – Food Apps: Duration

---

0	133229
0.0000166654586791992	2
0.0000166694323221842	3
0.0000333309173583984	2
0.0000333348910013835	4
0.0000499963760375977	2
0.0000500003496805827	3
... (1127 rows omitted)	1476
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0

-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### game\_app\_freq – Game Apps: Frequency

---

0	129515	
1	1942	
2	1258	
3	631	
4	409	
5	204	
6	129	
... (30 rows omitted)	633	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### game\_app\_time – Game Apps: Duration

---

0	129515	
0.0000166654586791992	33	
0.0000166694323221842	13	
0.0000333309173583984	15	
0.0000333348910013835	11	
0.0000333388646443685	2	
0.0000499963760375977	6	
... (4475 rows omitted)	5126	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### health\_app\_freq – Health Apps: Frequency

---

0	130678
1	2231
2	836
3	309

4	141
5	80
6	27
... (12 rows omitted)	419
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### health\_app\_time - Health Apps: Duration

---

0	130678
0.0000166654586791992	12
0.0000166694323221842	8
0.0000333309173583984	10
0.0000333348910013835	11
0.0000499963760375977	8
0.0000500003496805827	4
... (3519 rows omitted)	3990
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### internet\_app\_freq - Internet Apps: Frequency

---

0	113844
1	7844
2	5585
3	2778
4	1601
5	988
6	611
... (27 rows omitted)	1470
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**internet\_app\_time** – Internet Apps: Duration

---

0	113844
0.0000166654586791992	30
0.0000166694323221842	9
0.0000333309173583984	11
0.0000333348910013835	17
0.0000499963760375977	5
0.0000500003496805827	9
... (17672 rows omitted)	20796
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**know\_app\_freq** – Knowledge Apps: Frequency

---

0	133462
1	416
2	240
3	113
4	53
5	32
6	27
... (12 rows omitted)	378
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**know\_app\_time** – Knowledge Apps: Duration

---

0	133462
0.0000166654586791992	5
0.0000166694323221842	1
0.0000333309173583984	5
0.0000333348910013835	2
0.0000500043233235677	1

0.0000666618347167969		1
...	(894 rows omitted)	1244
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### news\_app\_freq - News Apps: Frequency

---

0		129477
1		2317
2		1287
3		644
4		319
5		146
6		91
...	(13 rows omitted)	440
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### news\_app\_time - News Apps: Duration

---

	0	129477
0.0000166654586791992		70
0.0000166694323221842		27
0.0000333309173583984		42
0.0000333348910013835		63
0.0000333388646443685		7
0.0000499963760375977		22
...	(4483 rows omitted)	5013
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

**orientat\_app\_freq** – Orientation Apps: Frequency

---

0	131221
1	1432
2	947
3	387
4	174
5	74
6	39
... (19 rows omitted)	447
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**orientat\_app\_time** – Orientation Apps: Duration

---

0	131221
0.0000166654586791992	18
0.0000166694323221842	10
0.0000333309173583984	8
0.0000333348910013835	4
0.0000333388646443685	1
0.0000499963760375977	4
... (2961 rows omitted)	3455
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**photo\_app\_freq** – Photography Apps: Frequency

---

0	125172
1	3652
2	2241
3	1252
4	671
5	423
6	253
... (37 rows omitted)	1057
-3 Implausible value	0

-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### photo\_app\_time – Photography Apps: Duration

---

0		125172
0.0000166654586791992		19
0.0000166694323221842		6
0.0000333309173583984		12
0.0000333348910013835		11
0.0000333388646443685		1
0.0000499963760375977		9
...	(8157 rows omitted)	9491
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### read\_app\_freq – Reading Apps: Frequency

---

0		134168
1		82
2		63
3		31
4		14
5		10
6		5
...	(5 rows omitted)	348
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### read\_app\_time – Reading Apps: Duration

---

0	134168
0.0000166654586791992	1
0.0000333309173583984	1
0.000116666158040365	1
0.000133335590362549	1
0.000333333015441895	1
0.000516668955485026	1
... (203 rows omitted)	547
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### security\_app\_freq – Security Apps: Frequency

---

0	130878
1	2050
2	661
3	317
4	160
5	96
6	59
... (18 rows omitted)	500
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### security\_app\_time – Security Apps: Duration

---

0	130878
0.0000166654586791992	10
0.0000166694323221842	3
0.0000333309173583984	3
0.0000333348910013835	4
0.0000499963760375977	1
0.0000500003496805827	1
... (3115 rows omitted)	3821
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0

-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### settings\_app\_freq – Settings Apps: Frequency

---

0	129553	
1	3072	
2	907	
3	426	
4	159	
5	82	
6	41	
... (25 rows omitted)	481	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### settings\_app\_time – Settings Apps: Duration

---

0	129553	
0.0000166654586791992	2	
0.0000333309173583984	2	
0.0000333348910013835	4	
0.0000499963760375977	1	
0.0000500003496805827	3	
0.0000500043233235677	3	
... (4534 rows omitted)	5153	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### shop\_app\_freq – Shopping Apps: Frequency

---

0	129438
1	1557

2	1417
3	760
4	421
5	259
6	152
... (18 rows omitted)	717
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### shop\_app\_time – Shopping Apps: Duration

---

0	129438
0.0000166654586791992	25
0.0000166694323221842	12
0.0000333309173583984	11
0.0000333348910013835	14
0.0000333388646443685	2
0.0000499963760375977	4
... (4697 rows omitted)	5215
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### spirit\_app\_freq – Spirituality Apps: Frequency

---

0	134327
1	32
2	13
3	4
4	1
-1 No answer	344
-2 Does not apply	0
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0

-9 Missing due to a terminated interview 0

### spirit\_app\_time - Spirituality Apps: Duration

---

0	134327
0.00981666644414266	1
0.0484000007311503	1
0.0717000007629394	1
0.0721666653951009	1
0.0850333372751872	1
0.0904833316802978	1
... (46 rows omitted)	388
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### time\_app\_freq - Time Apps: Frequency

---

0	126445
1	4299
2	2105
3	806
4	353
5	170
6	76
... (17 rows omitted)	467
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### time\_app\_time - Time Apps: Duration

---

0	126445
0.0000166654586791992	7
0.0000166694323221842	4
0.0000333309173583984	6
0.0000333348910013835	2

0.0000499963760375977	4
0.0000500003496805827	3
... (6253 rows omitted)	8250
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### tools\_app\_freq – Tools Apps: Frequency

---

0	121935
1	6969
2	2535
3	1213
4	681
5	365
6	215
... (31 rows omitted)	808
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

### tools\_app\_time – Tools Apps: Duration

---

0	121935
0.0000166654586791992	29
0.0000166694323221842	11
0.0000333309173583984	6
0.0000333348910013835	20
0.0000333388646443685	3
0.0000499963760375977	9
... (9237 rows omitted)	12708
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**transport\_app\_freq** – Transport Apps: Frequency

---

0	133356
1	415
2	250
3	134
4	75
5	49
6	28
... (12 rows omitted)	414
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**transport\_app\_time** – Transport Apps: Duration

---

0	133356
0.0000166654586791992	5
0.0000333309173583984	1
0.0000333348910013835	2
0.0000333388646443685	1
0.000133335590362549	1
0.000199989477793376	1
... (1010 rows omitted)	1354
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

**visual\_app\_freq** – Visual Entertainment Apps: Frequency

---

0	128819
1	2619
2	1555
3	669
4	331
5	145
6	91
... (15 rows omitted)	492
-3 Implausible value	0

-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### visual\_app\_time – Visual Entertainment Apps: Duration

---

0	128819	
0.0000166654586791992	33	
0.0000166694323221842	17	
0.0000333309173583984	24	
0.0000333348910013835	22	
0.0000333388646443685	3	
0.0000499963760375977	7	
... (4997 rows omitted)	5796	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### weather\_app\_freq – Weather Apps: Frequency

---

0	132271	
1	1332	
2	552	
3	136	
4	39	
5	20	
6	14	
... (7 rows omitted)	357	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### weather\_app\_time – Weather Apps: Duration

---

0	132271
0.0000166654586791992	5
0.0000166694323221842	1
0.0000333309173583984	3
0.0000333348910013835	2
0.0000499963760375977	3
0.0000500003496805827	1
... (2062 rows omitted)	2435
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0
-8 Question this year not part of survey	0
-9 Missing due to a terminated interview	0

Schoedel, R., Oldemeier, M., Bonauer, L., & Sust, L. (2022). Systematic categorisation of 3,091 smartphone applications from a large-scale smartphone sensing dataset. *Journal of Open Psychology Data*, 10(1), 7.

<https://doi.org/10.5334/jopd.59>

## 5 Conversation Detection

Using the AWARE Conversation plugin from Ferreira & Mulukutla (2020), ambient audio signal around the smartphone was sampled following a cycle of one-minute sampling and three-minutes break. A privacy-protective algorithm inferred whether conversation prevailed in ambient sound around the device (binary classification “noise/”voice” where “voice” indicates conversation). This information is used to compute the proportion of detected conversation samplings per hour. In practice, the software sampled at lower rates on several devices, most likely because the operating system aborted the background process to conserve battery life. For more considerations on validity and reliability and comparison with self-report measures of in-person contact, see Roos et al. (2023).

### n\_aware - AWARE Conversations: Samplings

0	66743
1	2853
2	2720
3	3658
4	3878
5	4300
6	5147
... (76 rows omitted)	45422
-3 Implausible value	0
-4 Inadmissible multiple response	0
-5 Not included in this version of the questionnaire	0
-6 Version of questionnaire with modified filtering	0
-7 Only available in less restricted edition	0

-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

Ferreira, D., & Mulukutla, R. (2020). AWARE Plugin: Conversations.

Retrieved from [https://github.com/denzilferreira/com.aware.plugin.studentlife.audio\\_final](https://github.com/denzilferreira/com.aware.plugin.studentlife.audio_final)

Roos, Y., Krämer, M. D., Richter, D., Schoedel, R., & Wrzus, C. (2023). Does Your Smartphone “Know” Your Social Life? A Methodological Comparison of Day Reconstruction, Experience Sampling, and Mobile Sensing. *Advances in Methods and Practices in Psychological Science*, 6(3), 1–12.

<https://doi.org/10.1177/25152459231178738>

### n\_voice – AWARE Conversations: Conv. Detected

---

0	117094	
1	4975	
2	2371	
3	1486	
4	1134	
5	903	
6	734	
... (57 rows omitted)	6024	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

### prop\_voice – Proportion of Conversations

---

0	117094	
0.013333333333333333	1	
0.0136986301369863	1	
0.0149253731343284	2	
0.0161290322580645	1	
0.0163934426229508	1	
0.02	1	
... (914 rows omitted)	17620	
-3	Implausible value	0
-4	Inadmissible multiple response	0
-5	Not included in this version of the questionnaire	0
-6	Version of questionnaire with modified filtering	0
-7	Only available in less restricted edition	0
-8	Question this year not part of survey	0
-9	Missing due to a terminated interview	0

This variable is computed by dividing n\_voice by n\_aware.