DATA AVAILABLE

FROM THE

TIME-USE DIARY,

WAVE 4 OF COHORT 98

IN

GROWING UP IN IRELAND

December 2023

Contents

1. Introduction

Data collection for the fourth wave of Cohort 98 (at 20 years) of the *Growing Up in Ireland* study included a self-complete diary, consisting of a one-day Time-Use Diary. The Time-Use Diary recorded details on the activities of the 20-year-old over a 24-hour period. The purpose of the current document is to outline the following:

- Which data are available
- How these data were collected
- The response rate achieved on this component of the project
- Characteristics of the Time-Use Diary sample
- How the data were prepared for dissemination
- How the data should be matched to the main Anonymised Microdata File (AMF) or Researcher Microdata File (RMF) from the fourth wave of Cohort 98.

2. Overview of the Time-Use Diary

The Time-Use Diary divided the "Diary Day" into 96 15-minute intervals (time slots). It contained a total of 24 pre-coded activities as follows:

1. SLEEPING (including time trying to get to sleep, trying to get up, resting)
2. PERSONAL CARE OR GETTING READY (showering, washing, dressing, brushing teeth or hair, doing make-up, getting changed or ready or for going to bed)
3. EATING (breakfast, lunch, dinner, tea)
4. TRAVELLING (including travel to and from college, work or leisure and domestic trips etc.)
5. AT COLLEGE
6. AT WORK
7. STUDY (doing college work or studying)
8. JUST HANGING WITH FRIENDS (both outside and inside the home)
9. SPENDING TIME WITH FAMILY
10. AT THE GYM, DOING SPORT OR PHYSICAL EXERCISE (including training or matches)
11. ATTENDING A SPORTS EVENT
12. USING THE INTERNET, E-MAILING (including social networking, browsing etc.)
13. PLAYING COMPUTER GAMES (including PlayStation, PSP, X-Box or Wii)
14. TALKING ON THE PHONE OR TEXTING
15. MUSIC LESSONS (PRACTISING MUSIC), DRAMA CLASSES ETC
16. WATCHING TV, FILMS, VIDEOS OR DVDS
17. LISTENING TO MUSIC
18. READING FOR PLEASURE OR INTEREST (not for work or college/study)
19. HOUSEWORK (preparing food, tidying bedrooms, feeding pets)
20. HOBBIES AND OTHER LEISURE ACTIVITIES
21. OUT SHOPPING TO BUY THINGS (groceries, clothes etc.)

22. GOING TO DISCOS, BARS ETC.
23. GOING TO PARTY OR OTHER SOCIAL EVENT (in people's houses)
24. OTHER

A copy of the Time-Use Diary can be found at https://www.growingup.gov.ie/pubs/Appendices_20Yr-Design-Report.pdf

From this, one can see that the Time-Use Diary was set out as a rectangular matrix of 24 rows (representing the pre-coded activities) by 96 columns (each representing a 15-minute time slot in the "Diary Day"). The 20-year-olds were asked to draw a horizontal line to indicate the activities in which they were principally involved throughout the Diary Day[1].

Variable names are prefixed with 'd' to represent the fourth wave of the data, (e.g. the variable name for the question T3. When did you fill in the diary? Will be dT3). The AMF will have total time spent on an activity rather than time slots, the RMF will include both total time spent and time slots.

Although the 20-year-old was encouraged to record just one activity for each time slot, up to three activities could potentially be recorded concurrently in the TIME-USE DIARY. For example, a 20-year-old may have been eating dinner at the same time as watching TV, so both activities may have been recorded under the same time slot. In situations where multiple activities were recorded, it was not possible to ask respondents to prioritise the activities in any way. While the level of multiple activities recorded in the *Growing Up in Ireland* Time-Use Diary was quite low, the data have been prepared in such a way as to leave it up to the analyst to decide how best to prioritise in such cases. It was worth noting that the levels of multiple activities are potentially under-reported as respondents were encouraged to only enter their main activity.

In addition to the core information regarding activities undertaken, the 20-year-old was also asked to:

(a) Describe if the Diary Day was: a work day; a college day; a weekend day; a holiday or family celebration; a day when something special was happening in your home (someone sick/visiting, a crisis, etc.)

(b) Indicate when the Diary was completed (ticking one box only): now and then during the Diary Day; at the end of the Diary Day; the day after the Diary Day; later (about how many days after?)

3. Administration of the Diary

The Time-Use Diary was included as an integral component of the main interview in the 20-year-old's home. After the main household interview, the interviewer explained the Diary to the 20-year-old. A completed sample version of a Time-Use Diary was left with the 20-year-old, along with a pen-

[1] The format of Time-Use Diary used in *GUI (Growing Up in Ireland)* is referred to in the literature as a 'light' Time-Use Diary, requiring the respondent only to enter a tick in each cell of the 24 by 96 matrix for the Diary Day. This in contrast to a so-called 'heavy' Time-Use Diary format which requires the respondent to record their activities as a continuous narrative throughout the day. Either the exact start and finish times are recorded in the "heavy" Time-Use Diary along with the descriptive narrative of activities or the narratives are inserted into 10-20 minute time-slots. Although the 'light' Time-Use Diary provides less detailed information, it is substantially less onerous for the respondent to complete. This was an important consideration in the context of an already intensive interview schedule administered to the participants in *GUI*.

and-paper version of the Diary itself for completion and return to the Study Team. Head office pre-selected the day of the week on which the Time-Use Diary should be completed (the "Diary Day") and this was written on the front of the Diary. This was done to ensure a random allocation of days of the week, including weekend days. A pre-paid return envelope was also left and the 20-year-old was asked to post the completed Diary directly back to Head Office. To ensure as high a response rate as possible, two reminder mail shots were subsequently issued to those families who had not responded within 4-6 weeks of the main interview.

4. Response Rates

A total of 2,665 Diaries were returned from the 5,190 20-year-olds who were interviewed in the main *Growing Up in Ireland* Wave 4 study. In certain instances, Diaries were deemed unusable if they had more than 5 hours unrecorded. However, 2,624 Diaries contained usable data for analysis, representing an effective response rate of 51% of those who participated in the main study. Table 1.- shows the characteristics of the respondents.

Table 1: Summary response rates of Time-Use Diary Survey, Cohort 98 at 20 years of age.

	N	Response Rate
Total 20-year-olds in main study	5,190	
Total Diaries returned	2,665	**51.3%**
Provided Usable TIME-USE DIARY	2,624	**50.5%**

5. Characteristics of the Sample

5.1 Day of the Week

A perfect randomisation of Time-Use Diaries across the seven days of the week should have resulted in 14.3% of completed diaries for each day. Table 2 shows that Mondays and Saturdays were over-reported (17.8% and 14.9%, respectively) with Wednesdays, Thursdays and Sundays being under-represented (13.4%, 13.3% and 12.1%, respectively). In some cases, the respondent completed the Time-Use Diary on a day other than was specified by Head Office. This alternative date was recorded on the Diary and is coded on the data file. The reader should note that no attempt has been made in the weight assigned to the Time-Use Diaries to adjust for day of the week on which the Diary was completed.

Table 2: Distribution of completed Time-Use Diaries by day of the week it was completed

Diary Day:	N	%
Monday	467	17.8
Tuesday	371	14.1
Wednesday	353	13.4
Thursday	349	13.3
Friday	378	14.4
Saturday	390	14.9
Sunday	319	12.1
Total	2624	100

5.2 Month of the Year

As with the main family-based data collection for Wave 4 of Cohort 98, the Diary data were primarily collected between August 2018 and July 2019 (90.5%). However, due to initial non-completion and subsequent delays returning the Diary, 9.5% of Diaries were returned later than July 2019 (Table 3, below).

Given leads and lags of postal reminders issued after the Diary first being left with respondents, the month in which it was completed is not spread evenly throughout the year. Analysts may wish to note this, as seasonality may be relevant for some types of analysis. Table 3 presents a summary distribution of the completed and usable Diaries by month of completion (based on date TIME-USE DIARY was completed).

Table 3: Distribution of completed Time-Use Diaries by month of completion.

Month:	Household Interviews	Time-Use Diaries
Aug 2018	4.6%	2.3%
Sep 2018	10.4%	8.4%
Oct 2018	13.9%	11.7%
Nov 2018	13.3%	8.7%
Dec 2018	12.5%	9.2%
Jan 2019	17.2%	12.1%
Feb 2019	10.1%	7.2%
Mar 2019	7.8%	8.7%
Apr 2019	5.5%	11.3%
May 2019	3.4%	2.5%
Jun 2019	0.9%	5.5%
Jul 2019	0.3%	12.5%
Total	**100%**	**100%**

The reader is again reminded of the differential time lag in some instances between completion of the main family-based questionnaires and the Diary. This is especially so in situations in which the latter was returned in response, for example, to the second reminder mail shot.

5.3 Completion Date

As outlined in Table 4, most Time-Use Diaries (53.2%) were completed on the diary day itself, with 16.5% of respondents completing it *now and then during the day* and 36.7% at the *end of the day*. It was completed the *day after the Diary Day* by 30% of respondents and the remaining 12.1% completed it *on a later date*. The day of TIME-USE DIARY completion date was not recorded in just 4.7% of completed diaries.

Table 4: Completed Time-Use Diaries by day on which the diary was completed

Diary completed:	N	%
Now and then during the Diary	434	16.5
End of Diary day	962	36.7
Day after Diary day	787	30.0
Other day	317	12.1
Not recorded	123	4.7
Total	2,624	100

5.4 Nature of the Diary Day

Table 5 summarises whether or not the Time-Use Diary day was described by participants as: a "work day"; a college day; a weekend day; or a "holiday or family celebration/day when something special was happening in your home (someone was sick, someone was visiting, a family crisis)". The table shows that 39.8% of diaries were completed on what was described by the respondent as a "work day". The figures in Table 5 add up to more than 100% as respondents could answer more than one category, for example, a respondent could say that the diary was filled in on a day which was both a work day and a day that something special was happening in the home.

Table 5: Description by respondent of the Diary Day.

	Weekda
Work day	39.8%
College day	35.9%
Weekend day	26.5%
Holiday or family celebration or Something special happening at home	7.1%

6. Characteristics of Diary Respondents

Table 1 indicated an overall response rate of 50.5% for usable Diaries among participants in the main study. There was some differential response in terms of the characteristics of 20-year-olds and their families who returned a usable Diary. Table 6 shows the response rates across a number of 20-year-old and family characteristics.

Significant differences in response rates were observed according to most characteristics. Those in two-parent families compared to those in one-parent families (53% versus 38%). 20-year-olds whose Primary Caregiver had a higher level of education (leaving certificate or higher were more likely to return a completed diary (50-53%). Females were more likely to fill out the time-use diary than males (54% versus 47%). However, parental employment (particularly primary caregiver) does not seem to make a difference as to whether a 20-year-old fills out the time-use diary or not.

Table 6: Time-Use Diaries Response Rates according to 20-year-old/Family Characteristics.

		Response Rate	p-value
20-year-old's gender	Male	47%	<0.001
	Female	54%	
Family Type	One-Parent Family	38%	<0.001
	Two-Parent Family	53%	
Household Income Quintiles	Lowest	43%	<0.001
	2nd Quintile	51%	
	3rd Quintile	53%	
	4th Quintile	51%	
	Highest	52%	
	Missing	30%	
PCG Economic Status	Employed Full-time	51%	0.992
	Employed Part-time	51%	
	Not Employed	51%	
SCG Economic Status	Employed Full-time	53%	<0.001

	Not Employed	51%	
	No SCG Present	38%	
PCG Education	None or primary	38%	<0.001
	Junior Certificate or equivalent	44%	
	Leaving Certificate or equivalent	53%	
	Certificate/Diploma	52%	
	Degree +	50%	
Household social class	Professional Managers	55%	<0.001
	Managerial and Technical	51%	
	Non-manual	52%	
	Skilled manual	46%	
	Semi-skilled	45%	
	Unskilled	47%	

7. Reweighting the Diary Data

The differential response by family background characteristics has implications for the representativeness of the Diary data. To ensure that they are representative of the entire population of 20-year-olds in Ireland a system of statistical weights was generated and included in the archived data file. As with all statistical surveys this is best practice, and these weights should be applied in all analyses.

The completed sample of Diaries is effectively a subsample of the main sample of 20-year-olds. As noted in Table 1, a total of 2,624 Diaries were completed in respect of the 5,190 20-year-olds in the main study. Statistically adjusting the data involved re-weighting the Diary file to adjust it from a base of 2,624 to 5,190 in such a way as to ensure that the sub-sample of 20-year-olds in respect of whom Diaries had been completed were representative (in terms of the socio-demographic structure) of the full sample of 5,190 20-year-olds.

To do this a non-response weight was initially calculated, to account for differential response/non-response in completing the Diaries. This non-response weight for the Diary sub-sample was based on the following controls:

- 20-year-old's gender (female, male)
- Family type (1-parent, 2-parent)
- PCG's employment status (not employed; employed part-time; employed full-time)
- SCG's employment status (not employed; employed; no resident SCG)
- PCG's education (primary or less; lower secondary; leaving cert and/or tech/vocational; non-degree; primary degree or higher)
- Family Social Class (Professional; Managerial; Non-manual; Skilled Manual; Semi-skilled manual; Unskilled Manual; Class not assigned)
- Family income quintile (Lowest income quintile, 2nd income quintile, 3rd income quintile, 4th income quintile, highest income quintile)

The final Diary weight was calculated as the product of this Diary non-response weight and the full family weight assigned to the main survey record. This effectively meant that the sub-sample of 20-year-olds for whom Diaries had been completed was re-weighted to the full sample in the main study.

The system used for generating the weights was based on a minimum information loss algorithm which ensured that the distribution of 20-year-olds by their socio-demographic characteristics in the completed Time-Use Diary dataset matched the distribution of all 20-year-olds in the population. The weights themselves were generated using an iterative approach which involved the fitting of column marginals from the completed sample of Time-Use Diaries to those of the population of 20-year-olds as a whole. The program used for generating the weights is known as GROSS. It was developed for the ESRI in 1996 and has been used on all survey work carried out by the Institute since that time. A weighting factor (WGT20YRTU) is provided on the Diary data file. This will give the same percentage breakdown as the population. WGT20YRTU will yield 2,624 cases (the number of completed and usable Diaries). The weighting factor will sum to the total number of relevant cases in the completed sample of Diaries. The analyst should use the weighting factor in all analyses.

As noted, WG20YRTU statistically adjusts the 2,624 respondents in respect of whom a usable Diary was returned to provide representative estimates for the population of all 20-year-olds as a whole. Effectively, the weighting factor in question adjust the 2,624 respondents with a completed Diary to the total population of 20-year-olds, just as the weighting factor does when applied to the full sample of 5,190 respondents in the main AMF and RMF for the 20-year-olds. In other words, the full weighted AMF/RMF containing 5,190 cases should give the same estimated population breakdown as the weighted subsample of 2,624 cases which was included in the Diary data file.

Table 7 compares summary details on the weighted breakdown of the 5,190 cases in the full AMF/RMF data with those from the 2,624 subsample of cases in respect of whom Diaries are available. In interpreting the table, it is important to note that the table contains some variables which were included in the re-weighting procedure and some which were not[2]. The table indicates clearly that there is virtually no difference between the weighted breakdown of the full AMF/RMF (with 5,190 cases) and the subsample for whom usable Diaries were returned (2,624 cases).

Table 7: Comparison of weighted breakdowns of 5,190 cases in full AMF/RMF data with those from 2,624 cases in the subsample for whom usable Diaries are available.

	weighted wgt_20yr		weighted wgt20yrTU	
	N	%	N	%
	5190	100	2624	100
20-year-old's Gender				
Male	2634	51%	1320	50%
Female	2556	49%	1304	50%
Household Type				
one-parent family	1049	20%	504	19%
two-parent family	4141	80%	2120	81%
Family equivalised income				
Lowest	1007	19%	492	19%
2nd	977	19%	495	19%
Middle	1020	20%	519	20%
4th	1028	20%	522	20%
Highest	1115	21%	574	22%

[2] One would, by definition, expect that the weighted breakdown of the controlled variables in the sub-sample of 2,624 cases from whom Time-Use information is available would correspond with the breakdown from the weighted AMF/RMF file of 5,190 cases.

Primary Caregiver Primary Economic Status				
not employed	1846	36%	921	35%
part-time hours (<35 hours)	893	17%	457	17%
full-time hours (>=35 hours)	2451	47%	1246	47%
Secondary Caregiver Primary Economic Status				
not employed	436	8%	218	8%
Employed	3705	71%	1902	72%
no resident SCG	1049	20%	504	19%
Primary Caregiver Highest Level of Education				
none or primary	253	5%	118	5%
lower sec	759	15%	377	14%
hi sec /techvoc /uppsec+tech	2232	43%	1136	43%
non degree	809	16%	414	16%
Primary degree +	1137	22%	579	22%
Family's Social Class				
professional workers	597	12%	309	12%
managerial and technical	1795	35%	916	35%
non-manual	1075	21%	544	21%
skilled manual	722	14%	367	14%
semi-skilled	690	13%	347	13%
Unskilled	138	3%	66	3%
all others gainfully occupied /unknown	173	3%	75	3%
Drumcondra reading at 9				
Lowest	914	18%	451	17%
2nd	951	18%	479	18%
Middle	992	19%	500	19%
4th	1062	20%	539	21%
Highest	1159	22%	597	23%
Missing	112	2%	58	2%

8. Data Issues

8.1 Time-Use Diary Data Issues

As with all questionnaire-based data there were some data quality issues with the raw Time-Use Diary data returned from the field. These issues most notably related to missing or implausible data. Some initial data edits, described briefly below, were made to the data by the Study Team in preparing the Time-Use data for release. Notwithstanding the initial edits already included in the archived data file, analysts are advised to carry out standard checks on distributions prior to their analysis.

Missing data (missing time-slots) was the main issue in preparing the data. Missing time slots between 12.00am and 6.00am were coded as sleeping time. Other than that, it was decided not to try to impute for any missing time. Cases which were missing for 5 or more hours out of the day (equal to twenty 15min time slots) were dropped from the dataset as it was deemed that these would have been of limited value in analysis and could be better addressed in the statistical adjustment (re-weighting of the data). A total of 41 such cases were dropped from the dataset. The remaining cases with missing time slots have been left unedited. The analyst should decide on how best to handle such cases in the course of analysis.

The *Growing Up in Ireland* Study Team carried out initial checks on the plausibility of the Time-Use data returned from the field to identify any obvious, systematic errors in completion of the diaries. Checks such as respondents not sleeping during the night-time, sleeping during the day-time, going to college at weekend and so on revealed small numbers of cases in which 20-year-olds were reported as being involved in an activity pattern which may seem implausible. In many of these situations, there could arguably be a plausible explanation: apparently implausible sleeping patterns could be ascribed to illness, some others to sleep-overs; attendance at college at weekends could be related to a number of plausible reasons – extra classes or grinds. As there is no way of definitively deciding on the accuracy or otherwise of the small number of cases involved it was decided to retain the data in the dataset as they were recorded by the respondent, with a view to the analyst deciding on their inclusion or otherwise in a given piece of research.

One of the assumptions underlying the light Time-Use Diary format is that the activity recorded in each time period lasts for the full 15 minutes. This may result in an overestimation of the time spent on some activities. For example, washing hands before meals may be recorded for a 15 minute block under 'personal care' when, in fact, the time actually spent on the activity may be much less. Analysts may wish to acknowledge this potential limitation.

9. Summary Breakdown of Data

9.1 Breakdown of Time-Use Diary Data

Table 8 gives a summary breakdown of the activities in which 20-year-olds were engaged over the course of the Diary day, broken down separately for weekdays and weekends. As 20-year-olds may have been engaged in more than one activity at a given time, totals add to more than 24 hours / 1,440 minutes.

Table 8: Summary breakdown of time spent in various activities a) Weekday b) Weekend and c) in total.

TOTAL:	Weekday		Weekend		Total	
	Minutes	%	Minutes	%	Minutes	%
1. Sleep	533	34%	567	37%	542	35%
2. Personal Care	49	3%	53	3%	50	3%
3. Eating	73	5%	75	5%	74	5%
4. Travel	70	4%	52	3%	65	4%
5. College	149	9%	16	1%	113	7%
6. Work	177	11%	170	11%	175	11%
7. Study	56	4%	46	3%	53	3%
8. Hanging with friends	46	3%	64	4%	51	3%
9. Spending time with family	49	3%	77	5%	56	4%
10. Gym	27	2%	22	1%	25	2%
11. Attending a sports event	3	0%	4	0%	4	0%
12. Internet	75	5%	68	4%	73	5%
13. Playing computer games	24	2%	23	1%	23	1%

14. Talking on phone/Texting	30	2%	28	2%	30	2%
15. Music lessons/drama classes etc	3	0%	4	0%	4	0%
16. Watching TV	60	4%	83	5%	66	4%
17. Listening to music	29	2%	23	1%	27	2%
18. Reading	7	0%	8	1%	7	0%
19. Housework or Chores	20	1%	21	1%	21	1%
20. Hobbies or other leisure activities	12	1%	17	1%	13	1%
21. Shopping	9	1%	16	1%	11	1%
22. Going to discos or bars	13	1%	25	2%	16	1%
23. Going to a party or other social event	8	1%	14	1%	10	1%
24. Other	3	0%	3	0%	3	0%
Total	1571	100%	1540	100%	1563	100%

10. Matching Diary data to Main GUI Cohort 98 Wave 4 data file

To complete analysis on the Diary data, the analyst will have to match it to the AMF/RMF for Cohort 98 at Wave 4. Instructions on how to do this are given below, firstly using SPSS syntax and secondly by using the SPSS drop- down menus.

The reader is reminded that there are 5,190 cases in the fourth wave of Cohort 98 and 2,624 cases in the Time-Use data. Time-Use analysis can be carried out on the matched subset of cases using the Time-Use weighting variables discussed above (WGT_20YRtu).

10.1 Using SPSS Syntax

The syntax below will open the Wave 4 Cohort 98 data file, sort it by the anonymised ID code and match to it the Time-Use data file (using the anonymised ID code). It then saves a matched file with the Wave 4 Cohort 98 data and the Time-Use data.

(Note that the analyst will need to change the file handles to the relevant file path indicating where the relevant datasets have been saved).

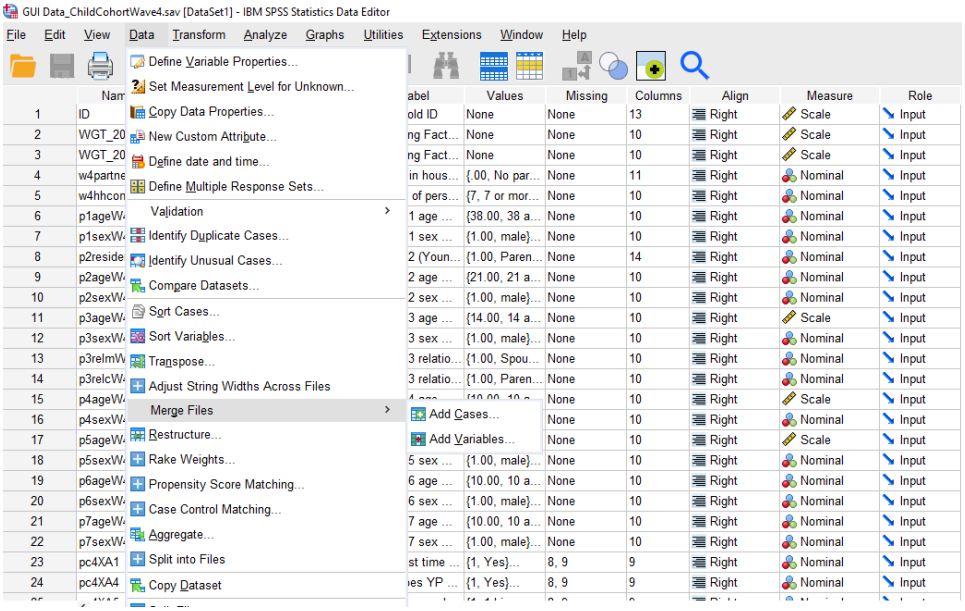
```
FILE HANDLE wave4 name = "C:\GUI\GUI Data_ChildCohortWave4.sav".
FILE HANDLE Time-Use Diary name="C:\GUI\GUI Data_ChildCohortWave4_TIME-USE
DIARY.sav".
FILE HANDLE merged name = " C:\GUI \GUI Data_Wave4andTIME-USE DIARY.sav".
GET FILE = wave4.
SORT CASES by ID.
MATCH FILES file = * / file = Time-Use Diary / by id / map.
SAVE OUTFILE merged.
```

10.2 Using SPSS Drop Down Menus

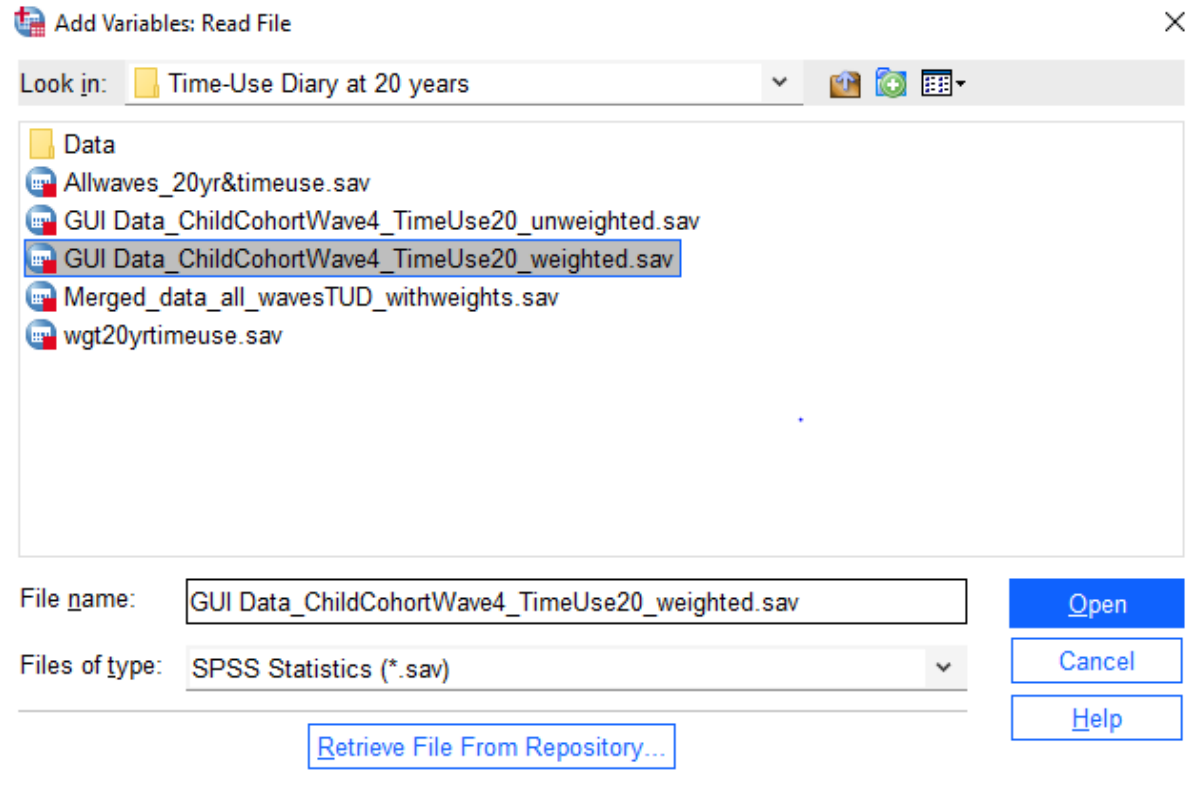
To match the fourth wave Cohort 98 data and the Time-Use data the analyst should follow the steps below:

1. Open the fourth wave data file - GUI Data_ChildCohortWave4.sav

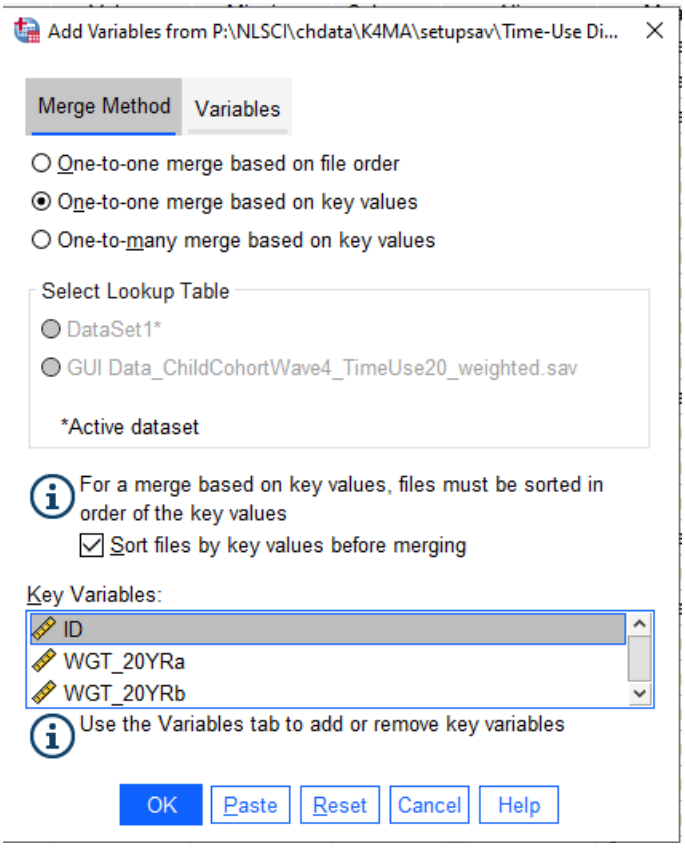
2. Click Data → Merge Files → Add variables



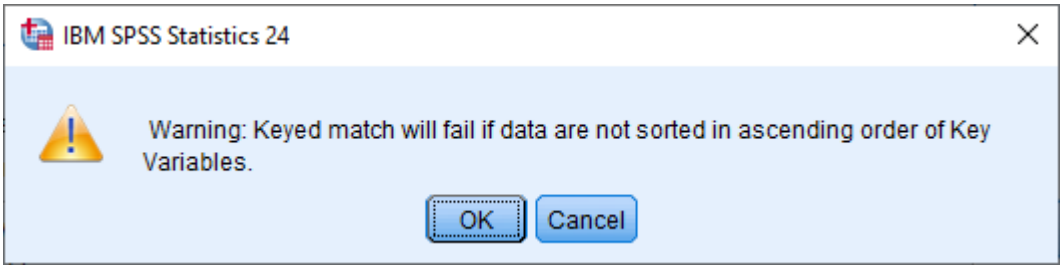
3. This will bring up the following dialog box. Click browse and select the location of the Time-Use data file – GUI Data_ChildCohortWave4_TIME-USE DIARY.sav



4. In the following dialog box tick ‘match cases on key variables in sorted files’ and (using the arrow) move the variable ‘ID’ into the Key Variables box.



5. The following warning will appear. In order to match the files they both must be pre-sorted by the key variable used for matching – in this case ‘id’. Click ‘ok’.



6. The matched file will contain 5,190 cases with all the variables from the fourth wave Cohort 98 data and the Time-Use data. The Time-Use variables will be system missing (sysmis) for any cases which are not included in the Time-Use data file.

7. This matched file should be saved under a new name (for e.g. GUI Data_Wave4andTimeUse.sav). SIMPLY SAVING THE FILE WILL OVERWRITE THE ORIGINAL FOURTH WAVE COHORT 98 FILE.

11. REFERENCES

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Riboli, E. & Kaaks, R. (1997). The EPIC Project: Rationale and Study Design. *Int J Epidemiol*, 26 (Suppl. 1), S6-14.