## **NEPS** National Educational Panel Study

## FDZ-LIfBi

## **Data Manual**

## NEPS Starting Cohort 6—Adults Adult Education and Lifelong Learning

Scientific Use File Version 12.0.0



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#### **Research Data Documentation**

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## **1** Introduction

## **1.1 About this manual**

This manual is intended to facilitate your work with data of NEPS Starting Cohort 6—Adults (NEPS SC6). It serves both as a first guide for getting started with the complex data and as a reference book. The primary emphasis is on practical aspects such as sample development, data structure, and variable merging. The manual is neither complete nor exhaustive, but several links to other resources are provided in the respective paragraphs.

The first chapter refers to further documentation material, requirements for data access, instructions for data citation, some general rules and recommendations, and selected user services. In the second chapter, the fundamental objectives of Starting Cohort 6 and its sampling strategy are briefly introduced. The main part of this chapter is devoted to the sample development across the waves including field times, realized case numbers, survey modes, and the measurement of competency domains. The principles of Scientific Use File data-editing processes as well as conventions for naming the data files and variables are explained in the third chapter, supplemented by missing value definitions and an overview of additionally generated variables. The fourth chapter focuses on the data structure with information about data types, identifiers, and short portraits of all available datasets in the Scientific Use File. These short portraits include recommendations on how to use the dataset as well as syntax examples for merging variables of this dataset with variables from other files. The last chapter addresses some specific issues that should be noted when working with data of Starting Cohort 6.

According to the cumulative release strategy—each new Scientific Use File contains the data of all previous survey waves plus the data of the currently prepared wave(s)—this manual will be regularly updated and revised. While the given information remain valid over time, at least the sample development has to be continuously complemented. In other words, the latest published manual replaces the previous ones. All relevant adjustments and extensions in future releases of this manual will be listed in a separate appendix.

#### **1.2** Further documentation

The data manual cannot cover all issues in detail. Hence, a bunch of supplementary reports and other materials with background information on data preparation, survey instruments, competence tests, and field work is offered (see Figure 1). This frequently updated and enhanced data documentation can be downloaded from our website at:

<sup>&</sup>gt; www.neps-data.de>Data Center>Data and Documentation
> Starting Cohort Adults>Documentation



Figure 1: NEPS supplementary data documentation

- **Release notes** All Scientific Use Files are accompanied by release notes that log changes in the data compared to prior versions and list bugs eliminated or at least known. For the latter, short syntax corrections are usually given. Please consult these notes when working with the data. See also section B.2 for a depiction of the current notes.
- **Regional data** Fine-grained regional indicators from a commercial provider (microm) are available in our On-site environment. The report describes the regional levels covered by these indicators, their content, and how to merge them to the survey data.
- **Merging matrix** This matrix provides an overview of how to link information from different datasets, taking into account the relevant identifier variables.
- **Weighting reports** These reports entail information regarding the design principles of the sampling process and the creation of weights.
- **Anonymization procedures** The document describes the anonymization measures carried out and provides an overview regarding the opportunity to access sensitive data.
- Semantic data structure file This data package corresponds to the Scientific Use File but does not contain any observations (*purged datasets*). It provides all metadata including variable names, labels and answering scheme options to be used for exploring the data structure and for preparing analyses.
- **Survey instruments** For each wave, the survey instruments are offered in the form of Scientific Use File (SUF) and field versions. While the field versions consist of the originally deployed instruments (in German only), the SUF versions are enriched by additional information

such as variable names and value labels used in the Scientific Use File. *Please note, that the competence test booklets are not publicly available*.

- **Codebook** The codebook lists all variables and their corresponding labels plus the basic frequencies by waves in concordance with the datasets in the Scientific Use File.
- **Competence tests** Information about competence testing is provided in various documentations, including general overviews and wave-specific descriptions; also, for each domain there is usually a brief description of the construct with sample items, a description of the data, and of the psychometric properties of the test.
- **Field reports** The field reports document the overall data-collection process conducted by the survey institute. This information about survey preparation, interviewer deployment, respondent tracking, initial contacts, incentives, and sample realization is available in German only.
- **Interviewer manuals** The interviewer manuals are a collection of instructions for the interviewers. In particular, they exemplify the interview process as well as the content of each of the questionnaire modules. They are available in German only.
- **NEPS Survey Papers** Finally, there is a series of NEPS Survey Papers that address several topics of more general interest. These papers are listed for download on our website at:
  - $\rightarrow$  www.neps-data.de>Data Center>Publications>NEPS Survey Papers

Additional documentation material might be available for specific cohorts and/or waves. Please visit the website above for further details.

#### **1.3** Data release strategy

NEPS data are published in the form of Scientific Use Files. They are provided free of charge to the scientific community. Each Scientific Use File consists of multiple datasets, forming a complex data structure with cross-sectional, panel and episode or spell information (see section 4). The release of NEPS Scientific Use Files follows a cumulative strategy, i. e., the latest data release replaces all former data releases. Hence, we recommend to use the most current release of a Scientific Use File.

#### File Format

All Scientific Use Files are disseminated in Stata and SPSS format with bilingual variable labels and value labels in German and English. In the SPSS format, there are separate data files for both languages. Data stored in Stata format contain both languages within one file; the switch is induced by the following Stata command:

label language [de/en]

Due to the change of encoding to "Unicode" in Stata14 and the fact that older Stata versions are not able to open such data files, the NEPS Scientific Use Files contain two Stata formats, namely Stata14 and Stata12.

#### Versioning and Digital Object Identifier

Every time a new Scientific Use File is released, the data files existing up to now are either extended, usually by information from a new survey wave, or updated with changes due to larger or smaller corrections. The three digits of the version number inform about the number of waves integrated in the specific Scientific Use File, the frequency of major updates, and the frequency of minor updates. The version number is part of all relevant designations: that of the Scientific Use File, its data files (see Table 3), and the respective Digitial Object Identifier.

Every release of a NEPS Scientific Use File is registered at da | ra and clearly labeled with a unique Digital Object Identifier (DOI, cf. Wenzig, 2012). This DOI has two main functions. On the one hand, it enables researchers to cite the utilized NEPS data in an easy and precise way (see section 1.5). This in turn is a basic precondition for any replication analysis. On the other hand, the DOI directs to a landing page with further information about the Scientific Use File and the data access options. The DOI of the current release is doi:10.5157/NEPS:SC6:12.0.0. Other releases of Scientific Use Files for Starting Cohort 6 can be accessed by substituting the version number at the end of the DOI and the URL respectively (see Table 1).

### **1.4** Data access

Access to the NEPS data is free of charge but limited to the purpose of research and members of the scientific community. Granting the right to obtain the data requires the conclusion of a Data Use Agreement. The existence of a valid Data Use Agreement entitles to work with all NEPS Scientific Use Files, i. e., the full data portfolio is at the disposal of the data recipient and all further persons involved in the agreement.

#### Application for data access

Fill in the online form for a NEPS Data Use Agreement either in German or in English. Enter a title, the duration, and a short description of the intended research project. Make sure that all project participants with NEPS data access are specified in the form and that these persons have signed the agreement. Submit one copy of the complete agreement by e-mail, fax, or post. Further instructions and the relevant forms are provided on our website at:

 $\rightarrow$  www.neps-data.de>Data Center>Data Access>Data Use Agreements

 After approval by the Research Data Center, the registered NEPS data user receives a user name and a password to log in to our website.

SUF Version	DOI	Date of release
<b>12.0.0</b> (current)	doi:10.5157/NEPS:SC6:12.0.0	2021-07-15
11.1.0	doi:10.5157/NEPS:SC6:11.1.0	2020-12-02
11.0.0	doi:10.5157/NEPS:SC6:11.0.0	2020-07-10
10.0.1	doi:10.5157/NEPS:SC6:10.0.1	2019-10-24
10.0.0	doi:10.5157/NEPS:SC6:10.0.0	2019-09-02
9.0.1	doi:10.5157/NEPS:SC6:9.0.1	2018-12-11
9.0.0	doi:10.5157/NEPS:SC6:9.0.0	2018-10-31
8.0.0	doi:10.5157/NEPS:SC6:8.0.0	2017-10-13
7.0.0	doi:10.5157/NEPS:SC6:7.0.0	2016-12-22
6.0.1	doi:10.5157/NEPS:SC6:6.0.1	2016-07-13
6.0.0	doi:10.5157/NEPS:SC6:6.0.0	2016-05-13
5.1.0	doi:10.5157/NEPS:SC6:5.1.0	2015-07-16
5.0.0	doi:10.5157/NEPS:SC6:5.0.0	2015-03-27
3.0.1	doi:10.5157/NEPS:SC6:3.0.1	2013-08-06
3.0.0	doi:10.5157/NEPS:SC6:3.0.0	2013-06-06
1.0.0	doi:10.5157/NEPS:SC6:1.0.0	2011-12-22

#### Table 1: Release history of SUF in Starting Cohort 6

- The basic Data Use Agreement permits the download of all available Scientific Use Files from our website at:
  - $\rightarrow$  www.neps-data.de > Data Center > Data and Documentation > NEPS Data Portfolio
- There are two other modes of access to the NEPS data (see below); each demanding a supplemental agreement in addition to the basic Data Use Agreement.
- Another form is provided to state changes of the Data Use Agreement regarding further project participants or a prolonged project duration.

#### Modes of data access

Three modes of accessing the NEPS Scientific Use Files are available. They are designed to support the full range of researchers' interests and maximize data utility while complying with national and international standards of confidentiality protection. Each modus corresponds to a data version that is different with regard to the accessibility of sensitive information as the three versions of a Scientific Use File vary according to their level of data anonymization.

- Download from the website = highest level of anonymization
- RemoteNEPS as browser-based remote desktop access = medium level of anonymization

• On-site access at secure working stations at LIfBi = lowest level of anonymization

While working with RemoteNEPS requires a biometrical authentication and Internet access, the On-site use of NEPS data necessitates a guest stay at LIfBi in Bamberg. More details about the three access modes and their implications for application and utilization are given on our website at:

→ www.neps-data.de > Data Center > Data Access

#### Sensitive information

The download version of a Scientific Use File contains the least amount of information. Indicators of a certain sensitivity are modified in the download data, such as aggregated categories for countries of citizenship or languages of origin. A few datasets and variables are exclusively accessible in the On-site version, e.g. the fine-grained regional indicators or open text entries. For a full picture of the availability of sensitive information, please refer to the overview on our website at:

 $\rightarrow$  www.neps-data.de>Data Center>Data Access>Sensitive Information

The hierarchical concept of data dissemination translates into an onion-shaped model of datasets. The most sensitive on-site level represents the outer layer with the remote and download levels being subsets of these data. That is, any data contained within a less sensitive level are also included in the higher level(s). A detailed list of variables offered at the different levels together with notes on the generation of the three data versions can be found for each release of a Scientific Use File in the respective report on "Anonymization Procedures".

#### 1.5 Publications with NEPS data

Referencing the use of data from the National Educational Panel Study (NEPS) is essential for a good scientific practice as well as for revealing the scientific value of this study. The following citation rules apply to all publications based on NEPS data of Starting Cohort 6.

It is obligatory to acknowledge the NEPS study in general and to indicate the utilized data version by including a phrase like this in your publication:

This paper uses data from the National Educational Panel Study (NEPS): Starting Cohort 6—Adults, doi:10.5157/NEPS:SC6:12.0.0. From 2008 to 2013, NEPS data was collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). As of 2014, NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network.

Please also add these bibliographic details to your list of references:

Blossfeld, H.-P., Roßbach, H.-G., & von Maurice, J. (Eds.). (2011). Education as a Lifelong Process: The German National Educational Panel Study (NEPS). [Special Issue] Zeitschrift für Erziehungswissenschaft, 14.

Authors of any kind of publications based on NEPS data are requested to notify the Research Data Center about their articles and to provide an electronic version or a special print or a copy. All reported publications are listed in the NEPS Bibliography on our website at:

→ www.neps-data.de > Data Center > Publications

#### **Citing documentation**

To refer to any of the documentation material published in the *NEPS Research Data Documentation Series* (e.g. this manual), please make use of the following citation templates:

FDZ-LIfBi. (2021). Data Manual NEPS Starting Cohort 6– Adults, Adult Education and Lifelong Learning, Scientific Use File Version 12.0.0. Bamberg, Germany, Leibniz Institute for Educational Trajectories, National Educational Panel Study

Or another example:

Schönberger, K., & Koberg, T. (2017). *Regional Data: Microm*. Bamberg, Germany, Leibniz Institute for Educational Trajectories, National Educational Panel Study

If no author is given, please take a universal NEPS instead:

NEPS (Ed.). (2021). *Starting Cohort 6: Adults (SC6), Wave 12, Questionnaires (SUF Version 12.0.0)*. Bamberg, Germany, Leibniz Institute for Educational Trajectories, National Educational Panel Study

If a document has not been published in this series, please refer to the author and the title as in the following citation of a field report by one of our survey institutes:

Steinwede, J., & Aust, F. (2012). *Methodenbericht, NEPS Startkohorte 5 – CATI-Haupterhebung Herbst 2010, B52*. Bonn, Germany, infas

## 1.6 Rules and recommendations

Working with NEPS data is bound to a couple of rules that are codified in the Data Use Agreement. Each data user has to confirm these rules by his or her signature. The already mentioned obligation to cite the study and to indicate any kind of publication resulting from the use of NEPS data (see section 1.5) are just two examples. The major part of rules refers to issues of data privacy and the requirements of a careful data handling.

7

## Introduction

#### Rules

- Avoidance of re-identification: Any action aimed at and suitable for re-identifying persons, households, or institutions is strictly forbidden. This also includes the combination of NEPS data with other data that allow for a re-identification of persons. In case of any accidental re-identification, the Research Data Center has to be informed immediately and all individual data gained therefrom have to be kept secret.
- Avoidance of data disclosure: NEPS data are exclusively provided on the basis of a valid Data Use Agreement—for a defined purpose (research project) and to a defined group of persons (data recipient and further project members that are involved in the contract). Any use for commercial or other economic purposes is not permitted just as any transfer of the data to third parties. Please handle the provided NEPS data with strict confidentiality!
- Regulations on using the Federal State label: For NEPS data collected in connection with schools or higher education institutions it is not allowed to use Federal-State-related information directly or indirectly contained in the data for analyses aiming at direct comparisons of the German Federal States (Bundesländer), or aiming at direct conclusions to be drawn about a Federal State, or aiming at a reconstruction of the concrete Federal State affiliation of persons, households, and institutions. Any kind of ranking between the Federal States based on NEPS data is prohibited.

Please note that violation of these rules may lead to severe penalties as stated in the NEPS Data Use Agreement. If there is any doubt or question regarding the given regulations, please contact the Research Data Center (see section 1.8). The same applies in case of encountering any deficiencies in data quality or any security leaks with regard to NEPS data protection and data security.

#### Recommendations

In addition to the binding rules, there are some recommendations for the use of NEPS data:

- As a matter of course: Always be critical when working with empirical data! Although a big effort is being made to ensure the integrity of the provided data we cannot guarantee absolute correctness. Notices on problems or errors in the data are welcome at any time at the Research Data Center.
- Enhanced understanding of the data: Consult the documentation and survey instruments! The analysis of complex data necessitates a precise idea of how the information were collected and edited. All relevant material is available online (see section 1.2).
- Facilitated handling of the data: Utilize the tools that are offered! Several user services are provided to support NEPS data analyses—reaching from specific Stata commands (e.g., for an easy and adequate recoding of missing values) to a meta search engine (e.g., for an interactive exploration of all instruments) to a discussion forum (e.g., for the clarification of questions). These tools are also available online, see section 1.7 for more details.

### 1.7 User services

In addition to a comprehensive data documentation there are several user services to support researchers working with NEPS data. First and foremost, the Research Data Center maintains a regularly updated and enhanced website with detailed information on all available Scientific Use Files, a complete list of NEPS projects, a NEPS bibliography, a reference to NEPS events, and a NEPS newsletter. All subsequently introduced services and tools can also be reached via this website:

→ www.neps-data.de > NEPS

#### NEPSforum

The *NEPSforum* is an open online discussion platform for experienced users as well as for persons who are searching for NEPS related information. It offers the opportunity to exchange with NEPS staff members and with other researchers in a transparent dialogue. That way, the forum will become a rich archive of knowledge with practical solutions for numerous problems and questions. We highly encourage you to browse the forum first when struggling with NEPS issues or when help is needed with specific data matters. If there is no available solution, please take the opportunity to share your question by posting it to the forum. Active participation requires no more than a one-time registration. The entire NEPS user community will benefit from a broad participation. You can find the *NEPSforum* at:

→ www.neps-data.de > Data Center > NEPSforum

#### NEPSplorer

The *NEPSplorer* facilitates an interactive and quick full text search through all instruments of released NEPS surveys, with the exception of competence tests. The tool is particularly suitable for getting a first idea of the availability of constructs, items, and variables in the datasets. It is currently based on keyword search with several filtering options, but a hierarchical construct search will be added soon. The *NEPSplorer* offers some helpful functions such as displaying univariate statistics, listing relevant metadata, and enabling registered users to create their own personal watch list of interesting items. As a web application—a mobile version aligned for smartphone usage is also available—the *NEPSplorer* relies on the most up-to-date information; any correction in the metadata is thus instantly visible. Start the tool here:

 $\rightarrow$  www.neps-data.de>Data Center>Overview and Assistance>NEPSplorer

#### NEPStools

NEPStools is a free to use collection of Stata commands that is created and supplied by the Research Data Center. The package includes some programs ("ado files") that make NEPS data handling easier. As an example, the nepsmiss command automatically recodes all of the numeric missing values (-97, -98, etc.) into Stata's "Extended Missings" (.a, .b, etc.) with correctly recoded value labels. Another example ist the infoquery command that displays additional attributes of the variable such as the question text and the initial variable name in the instrument. The NEPStools set can be easily installed from our repository through Stata's built-in installation mechanism:

```
net install nepstools, from(http://nocrypt.neps-data.de/stata)
```

A description of the programs and further information are given on the website at:

→ www.neps-data.de > Data Center > Overview and Assistance > Stata Tools

#### **User trainings**

The Research Data Center offers a series of regular user training courses at the Leibniz Institute for Educational Trajectories in Bamberg. The standard 2-day courses are free of charge. On the first day, there is a general introduction to the design of the NEPS study, the structure of NEPS Scientific Use Files, the terms and conditions of data access and data usage, and the handling of documentation materials. The second day is more focused on data of a certain starting co-hort and on selected methodological and/or theoretical concepts. Both parts come along with guided hands-on sessions. A crucial aspect of all user trainings is the sensitization of participants to issues of privacy and data protection. In this context, participation is obligatory for those who want to enroll in the biometric authentication system in order to gain access to the NEPS remote or On-site environment. A schedule of all training dates together with information on how to register for a course can be retrieved from our website at:

→ www.neps-data.de > Data Center > User Training

## 1.8 Contacting the Research Data Center

The Research Data Center at the Leibniz Institute for Educational Trajectories (Forschungsdatenzentrum, FDZ-LIfBi) accounts for large parts of the NEPS data preparation and documentation process, for the data dissemination, and for the user support including individual advice. We welcome your feedback at any time to further improve our products and services. This particularly applies to this manual as the guiding document to facilitate your work with NEPS data of Starting Cohort 6.

Please contact us with your questions, comments, requests, and suggestions:

E-mail: fdz@lifbi.de Web: → www.neps-data.de>Data Center>Contact Data Center Phone: +49 951 863 3511

## Sampling and Survey Overview

## 2.1 Adult education and lifelong learning

As part of this NEPS substudy, data on educational and professional careers as well as on competence acquisition across adult life courses are being collected.

In order to be able to study adult education, the entire spectrum of educational activities and learning processes (formal, nonformal, and informal), and decisions resulting in their participation, as well as the respondents' previous life course (especially the course of education and occupation, relationships, and children) are recorded in detail. Similar to the lack of knowledge concerning adult education in Germany, very little information is available on competencies and their changes after school. This is why this substudy collects data on competencies in reading, mathematics, sciences, and ICT literacy as well as data on noncognitive skills (such as personality, motivation, and social skills). The data should enable researchers to:

- trace the aquisition of education across the adult life course and to follow the course of education and employment of younger cohorts after their job entry;
- study why individuals decide to participate or not to participate in formal or nonformal learning activities after their initial vocational training;
- describe the competencies of different groups of adults in Germany and to explain competence development in adulthood as well as the importance of the employment situation in this context;
- analyze the impact of specific educational contexts in adult life, especially that of the employment situation and family constellation, on educational choices and participation in further training;
- estimate the returns of formal qualifications, competencies, and professional experience in terms of wages, occupational careers, and in other areas of life (e.g., well-being or volunteer work);
- generate empirical results on competencies of migrants, their resources, their participation in and returns from further training;
- identify opportunities and obstacles for learning processes and education in later adult life.

The field time of the adult survey already started in 2007, that is, prior to the foundation of the National Educational Panel Study. The adult survey 2007/08 was conducted by the Institute for Employment Research (IAB) under the name of *Working and Learning in a Changing World* (ALWA). After that, the data collection of the adult survey continued under the umbrella of the NEPS from November 2009 to June 2010 (see section 2.2 for details).

## 2.2 Sampling strategy

The target population of respondents in Starting Cohort 6 comprises all persons born between 1944 and 1986 who live in private households in Germany, irrespective of the language they speak, their nationality or their employment status. Persons living in shared facilities (old people's homes, prisons, etc.) are excluded. The sample is made up of four subsamples which, taken together, provide a representative picture of the adult population in Germany:

- ALWA: The data of the first wave of the Scientific Use File come from the survey Working and Learning in a Changing World (Arbeiten und Lernen im Wandel, ALWA, see Antoni et al., 2011) conducted in 2007 by the Institute for Employment Research (IAB). The ALWA subsample includes all respondents of this survey from the birth cohorts 1956 to 1986 who agreed to participate in a panel study. These respondents were transferred to the actual NEPS study.
- Refreshment 2009: With the start of the actual NEPS survey in 2009, which corresponds to the second wave in the Scientific Use File, the initial sample became refreshed with additionally sampled persons of the birth cohorts 1956 to 1986.
- Enhancement 2009: Parallel to this first refreshment, the sample was also enhanced to include persons born between 1944 and 1955.
- Refreshment 2011: A second sample refreshment took place two years later in the 2011 survey, which corresponds to the fourth wave in the Scientific Use File. This refreshment covers persons of the entire age spectrum of the Starting Cohort 6 sample, i.e. the birth cohorts 1944 to 1986.

The individual subsamples were drawn in 2007, 2009 and 2011 based on a two-stage selection process with municipalities (Gemeinden) as primary sampling units (PSU) and addresses of target persons as secondary sampling units (SSU). The selection of municipalities at the first stage was made only once in the context of the ALWA sampling. All later samplings refer to these municipalities, that is the enhancement subsample and the refreshment subsamples were drawn from within the same communities as the ALWA subsample.

- Selection of municipalities (PSU): On the basis of population data provided by the German Federal Statistical Office and the statistical offices of the German Laender, all German communities were initially stratified according to Federal States, administrative districts, and degree of urbanization (BIK categorization). Within each stratum, municipalities were then randomly selected with a probability proportional to the extrapolated size of the target resident population. In the end, 281 sample points were drawn representing 250 municipalities. Due to the proportional sampling design, larger cities are included in the sample more than once, i.e. they are represented by two or more sample points.
- Selection of addresses (SSU): For each selected sample point, an equal number of personal addresses of the target population was then drawn from the registers of the residents' registration offices. The selection was again made at random with a randomly chosen address as the starting point and a systematic inclusion of further addresses at a given interval.

For the additional subsamples in 2009 respective 2011, the number of cooperating municipalities that provided addresses decreased from 250 to 240 respective 242 (corresponding to 271 respective 273 sample points). In addition, the target population for the enhancement subsample 2009 and the refreshment subsample 2011 was adjusted to also include persons born between 1944 and 1955.

For each sample point, 152 addresses were selected for the ALWA subsample, 24 addresses for the refreshment subsample of 2009, 43 addresses for the enhancement subsample of 2009, and 63 addresses for the refreshment sample of 2011. The resulting gross samples consist of 22,656 individuals (ALWA; of the total of 42,712 addresses, only persons with identifiable telephone numbers were considered for field work), 6,547 individuals (Refreshment 2009), 11,465 individuals (Enhancement 2009), and 17,111 individuals (Refreshment 2011). It should be noted that 8,997 persons who participated in the first ALWA survey, who agreed to be contacted again, and who belonged to the birth cohorts 1956 to 1986 have been integrated into the NEPS gross sample for the second wave.



Figure 2: Longitudinal sampling design of Starting Cohort 6

The sampling design and its consequences for the derivation of sampling weights are described in Hammon et al., 2016. Detailed remarks on the recruiting process are given in the NEPS field reports of survey waves 2 and 4 (in German only). All documents are available on our website at:

> www.neps-data.de>Data Center>Data and Documenation
>Starting Cohort Adults>Documentation

## 2.3 Competence measures

The collection and provision of data on the development of competencies and skills throughout the life course is a key element of the German National Educational Study (NEPS). Competence measurements are carried out across different waves in all NEPS starting cohorts covering domain-general and domain-specific cognitive competencies as well as metacompetencies and stage-specific competencies.

Data from the competence tests pass through an editing process before they get integrated into the Scientific Use File. This data preparation enables users to work with scored items and test scores such as the sum or mean of correct answers. Detailed descriptions on how these scores were estimated can be found in separate reports for the respective competence domains (see section 1.2). The scores are compiled in a dataset named xTargetCompetencies. This dataset is structured in the so-called wide format, that is, all responses of a single respondent are represented in one row of the data matrix. As a consequence, variable names for competence scores follow a specific nomenclature. It not only allows for the identification of the respective domain, the target group, the testing modus, and the kind of scoring, but also informs about the repeated administration of a test item in a different wave or starting cohort (see section 3.2.2).

The next table shows the schedule of competence measures in Starting Cohort 6 with domains by waves including test modus. The overview contains released data as well as data that is not yet published.

		2010/11 Wave 3	2012/13 Wave 5	2014/15 Wave 7	2016/17 Wave 9	2021/22 Wave 14	2024/25 Wave 17
		$(24-67 \text{ v.})^2$	$(26-69 \text{ v}_{.})^{3}$	(28-71 v.)	(30-73 v.) <sup>4</sup>	(35-75 v.)	(38-75 v.)
Domain-General Competencies DGCF: Cognitive Basic Skills	dg			C			
Domain-Specific Competencies							
Reading Competence <sup>1</sup>	re	Р	Р	—	С	—	С
Reading Speed	rs	Р	Р	_	—	_	
Vocabulary: Listening Comprehension at Word Level <sup>1</sup>	vo			С			
Mathematical Competence <sup>1</sup>	ma	Р	_	_	С	_	С
Scientific Competence <sup>1</sup>	sc		Р	_		С	
Metacompetencies							
ICT Literacy <sup>1</sup>	ic	—	Р	_	—	С	_

Table 2: Schedule of competence measures. P = Paper-Based Test (proctored), C = Computer-Based Test (proctored)

<sup>1</sup> Subsequent to the respective competence test the target persons had to assess their own test performance (Procedural Metacognition, mp).

<sup>2</sup> Wave 3: Randomized allocation of reading and mathematics competence tests to split sample (50% with three domains: re, rs, ma / 50% with two domains: rs, ma or rs, re).

<sup>3</sup> Wave 5: The first-surveyed target persons of the refreshment sample were tested in their reading competencies (re, rs); the target persons of the initial sample were tested in their scientific and ICT literacy competencies (sc, ic).

<sup>4</sup> Wave 9: The target persons of the refreshment sample were tested in their reading competencies (re) only, while the target persons of the initial sample were tested in their reading and mathematics competencies (re, ma).

## 2.4 Survey overview and sample development

This section informs about the progress of the Starting Cohort 6 sample. For each survey wave included in the current Scientific Use File there is a short characterization in terms of field time, number of realized cases, relevant subsamples and domains of competence testing (if appropriate), survey modus, and the institution(s) responsible for collecting the data. A more detailed insight into all relevant field work issues is provided by the *Field Reports* of the survey institutes, which are available on the website (in German only) as part of the data documentation for each (sub-)study:

→ www.neps-data.de>Data Center>Data and Documentation
>Starting Cohort Adults>Documentation

Figure 3 starts with an overview illustrating the panel progress of Starting Cohort 6 in terms of field times and survey modes from wave 1 to 12.



Figure 3: Survey progress of Starting Cohort 6 (waves 1 to 12)

## 2.4.1 Wave 1: 2007/2008 (ALWA)



Figure 4: Field times and realized case numbers in wave 1

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

- **Sample** Sample from the population register (with the selection stages municipalities and individuals); random selection of individuals from the resident population in Germany, independent of employment status, nationality and German language skills (see section 2.2)
- Mode of survey Computer-assisted telephone interviews (CATI)
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.2 Wave 2: 2009/2010 (1st NEPS survey)



Figure 5: Field times and realized case numbers in wave 2

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

**Sample** Sample from the population register, corresponding to the ALWA sampling strategy (see section 2.2)

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

**Sample** Sample from the population register, corresponding to the ALWA sampling strategy, but focussed on the birth cohorts 1944 to 1955 (see section 2.2)

- Mode of survey Computer-assisted telephone interviews (CATI); computer-assisted personal interviews (CAPI) for those who could not be reached by telephone or insisted on a personal interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.3 Wave 3: 2010/2011 (2nd NEPS survey)



#### Figure 6: Field times and realized case numbers in wave 3

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

- Mode of survey Computer-assisted personal interviews (CAPI) including paper-based competency tests (PAPI); computer-assisted telephone interviews (CATI) for those who could not be interviewed in person or insisted on a telephone interview
- Data collection infas Institute for Applied Social Sciences, Bonn

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### 2.4.4 Wave 4: 2011/2012 (3rd NEPS survey)



#### Figure 7: Field times and realized case numbers in wave 4

#### Samples

#### Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- **Sample** Sample from the population register, corresponding to the ALWA sampling strategy, including all birth cohorts from 1944 to 1986 (see section 2.2)
- Mode of survey Computer-assisted telephone interviews (CATI); computer-assisted personal interviews (CAPI) for those who could not be reached by telephone or insisted on a personal interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.5 Wave 5: 2012/2013 (4th NEPS survey)





#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted personal interviews (CAPI) including paper-based competency tests (PAPI); computer-assisted telephone interviews (CATI) for those who could not be interviewed in person or insisted on a telephone interview
  - Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.6 Wave 6: 2013/2014 (5th NEPS survey)

	2013											
	01	02	03	04	05	06	07	08	09	10	11	12
Total sample									n=	=10,63	39	
Initial sample									n	=4,55	5	
Refreshment sample 2009									n	=1,07	3	
Enhancement sample 2009								n=1,774				
Refreshment sample 2011									n	=3,23	7	

#### Figure 9: Field times and realized case numbers in wave 6

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted telephone interviews (CATI); computer-assisted personal interviews (CAPI) for those who could not be reached by telephone or insisted on a personal interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.7 Wave 7: 2014/2015 (6th NEPS survey)



Figure 10: Field times and realized case numbers in wave 7

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

Mode of survey Computer-assisted personal interviews (CAPI) including computer-based competency tests (CBA); computer-assisted telephone interviews (CATI) for those who could not be interviewed in person or insisted on a telephone interview

Data collection infas - Institute for Applied Social Sciences, Bonn

## 2.4.8 Wave 8: 2015/2016 (7th NEPS survey)



Figure 11: Field times and realized case numbers in wave 8

#### Samples

#### Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted telephone interviews (CATI); computer-assisted personal interviews (CAPI) for those who could not be reached by telephone or insisted on a personal interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.9 Wave 9: 2016/2017 (8th NEPS survey)





#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted personal interviews (CAPI) including computer-based competency tests (CBA); computer-assisted telephone interviews (CATI) for those who were not designated for testing or insisted on a telephone interview
  - Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.10 Wave 10: 2017/2018 (9th NEPS survey)



Figure 13: Field times and realized case numbers in wave 10

#### Samples

#### Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted personal interviews (CAPI); computer-assisted telephone interviews (CATI) for those who were not designated for testing or insisted on a telephone interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.11 Wave 11: 2018/2019 (10th NEPS survey)



Figure 14: Field times and realized case numbers in wave 11

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted personal interviews (CAPI); computer-assisted telephone interviews (CATI) for those who were not designated for testing or insisted on a telephone interview
- Data collection infas Institute for Applied Social Sciences, Bonn

## 2.4.12 Wave 12: 2019/2020 (11th NEPS survey)



Figure 15: Field times and realized case numbers in wave 12

#### Samples

Initial sample Panel start 2007/08 (ALWA)

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1956 to 1986

Sample Follow-up survey with respondents willing to participate in the panel

#### Enhancement sample 2009 Panel start 2009/10

Target persons Adults of birth cohorts 1944 to 1955

Sample Follow-up survey with respondents willing to participate in the panel

#### Refreshment sample 2011 Panel start 2011/12

Target persons Adults of birth cohorts 1944 to 1986

- Mode of survey Computer-assisted personal interviews (CAPI); computer-assisted telephone interviews (CATI) for those who were not designated for testing or insisted on a telephone interview
- Data collection infas Institute for Applied Social Sciences, Bonn

# **3** General Conventions

The compilation of NEPS Scientific Use Files follows two general paradigms on how to edit the source data (i. e., the data that is delivered to the LIfBi Research Data Center by the survey agencies). There may be exceptions to these principles that are explicitly noted in the respective documentation material.

The first and foremost paradigm in creating NEPS Scientific Use Files is the one of unaltered data. Wherever possible, the data editing procedures do neither change nor destruct the content of the original data. We consider this to be the basis for preserving the full research potential of the collected data. For this reason, no corrections are made during the entire data editing process to ensure the content validity of the source data. As a consequence, this means that the data in the Scientific Use File may contain implausible values, unless corresponding controls were already provided in the survey instrument. Only in rare cases, in which the responsible developers of a variable require the removal of clearly implausible information, these values are replaced by the special missing code *implausible value removed* (-52, see Table 6). The most prominent (and only systematic) exception to this general paradigm concerns the recoding of open responses that could originally have been recorded directly as closed responses (see section 3.4 for details). NEPS Scientific Use Files are equipped with a dataset EditionBack–ups that contains backup information for all content that has been modified by such recoding procedures (see section 4.5.5 for details).

The second paradigm is to integrate the data as much as possible without compromising the usability of the Scientific Use File. The underlying assumption is that for a vast majority of data users it is far more comfortable to reduce already integrated data for a specific analysis as opposed to correctly compile the relevant information from scattered source data themselves. In the end, each Scientific Use File contains only a few dozen integrated panel and spell datasets according to a general structure (see section 4.3 and section 4.4 for details), even if the compilation is based on several hundred separate source dataset files.

In addition to these two basic principles of data editing, there are several conventions for the data structure of all NEPS Scientific Use Files. The aim of this structuring is to ensure a maximum of consistency between the data of the different starting cohorts. In other words, a researcher who is familiar with the data logic of a particular NEPS cohort should be able to immediately recognize this structure when starting to work with data from another NEPS cohort. These conventions are explained in more detail in the following sections.

## 3.1 File names

The naming of the data files in NEPS Scientific Use Files follows a series of rules that are summarized in Table 3. The different elements are concatenated with an underscore (\_) to generate the complete file name.
Element	Definition					
SC[1-6]	Indicator for the starting cohort					
	<ol> <li>1 = Newborns</li> <li>2 = Kindergarten</li> <li>3 = Fifth-grade students</li> <li>4 = Ninth-grade students</li> <li>5 = First-year university students</li> <li>6 = Adults</li> </ol>					
[filename]	Meaning of the file name					
	<i>Prefix</i> : x = cross-sectional file; sp = spell file; p = panel file					
	<i>Keyword</i> : indicates the content of the corresponding file (e.g., data file xTarget contains cross-sectional data from the target questionnaire; spSchool contains spell data from the school history)					
	File names of generated datasets do not have a prefix and always start with a capital letter (e.g., CohortProfile, Weights)					
[D,R,0]	Indicator for the confidentiality level					
	<ul> <li>D = Download version</li> <li>R = Remote access version</li> <li>O = On-site access version</li> </ul>					
[#]-[#]-[#](_beta)	Indicator for the release version					
	<i>First digit</i> : the main release number is incremented with every fur- ther wave in the Scientific Use File; e.g., the first digit 5 implies that data of the first five survey waves are included in the release					
	Second digit: the major update number is incremented with every bigger change to the Scientific Use File; major updates affect the data structure, so updating the syntax files may be necessary					
	<i>Third digit</i> : the minor update number is incremented with every smaller change to the Scientific Use File; minor updates affect the content of cells, so updating the syntax files is not necessary					
	_beta: this suffix indicates a preliminary Scientific Use File release which allows users to test the data before the main release; the beta release is no longer available after the main release					

Table 3: Naming conventions for NEPS file names

For instance, the file SC6\_CohortProfile\_D\_12.0.0.dta refers to the *CohortProfile* data of *Starting Cohort 6* in its *Download* version of the Scientific Use File release *12.0.0*.

# **General Conventions**

# 3.2 Variables

The naming conventions for variables in NEPS Scientific Use Files aim to ensure maximum consistency both between the panel waves and between the starting cohorts. The names also refer to different characteristics and thus allow the data user an orientation regarding the contents of the variables. The principles of these naming conventions are exemplified in Figure 16. It has to be noted that a separate nomenclature is used for variables from competence measurements. Section 3.2.1 offers a detailed description of the general naming conventions for NEPS variables; the logic of naming competence variables is introduced in section 3.2.2.



Figure 16: General variable naming (left) and competence variable naming (right)

## 3.2.1 Conventions for general variable naming

A variable name consists of up to four elements: the respondent type, the domain of information, an item number, and an optional suffix providing further information.

Table 4: Conventions for	variable names
--------------------------	----------------

Digit	Description								
1	Respondent type								
	Indicator to which group of respondents the variable refers; note that variables related to the target person start with t even if the target person was not the actual informant (e.g., generated variables, list data from schools/kindergartens) $t = Target person$								
	p = Parent of target person								
	e = Educator/childminder								
	h = Head/manager of institution (information about school/kindergarten)								

(...)

## Table 4: (continued)

Digit	Description								
2	Topic/domain								
	Indicator to which theoretical dimension or educational stage the variable refers								
	1 = Competence development								
	2 = Learning environments								
	3 = Educational decisions								
	4 = Migration background								
	5 = Returns to education								
	6 = Interest, self-concept and motivation								
	7 = Socio-demographic information								
	a = Newborns and early childhood education								
	b = From kindergarten to elementary school								
	c = From elementary school to lower secondary school								
	d = From lower to upper secondary school								
	e = From upper secondary school to higher ed./occ. training/labor market								
	f = From vocational training to the labor market								
	g = From higher education to the labor market								
	h = Adult education and lifelong learning								
	s = Basic program								
	x = Generated variables								
3–7	Item number								
	Indicator for the item number which typically consists of four numeric characters								
	plus one alphanumeric character								
8–11	Suffixes (optional, see below)								
	Indicator for several types of variables; separated from the previous characters by an underscore								

## Suffixes

Generated variables: The \_g# suffix indicates a generated variable; the running number after \_g is in most cases a simple enumerator (e.g., \_g1). Since scale indices are generated by a set of other variables, they are also identified by a \_g# suffix. Note that scale indices are named after the first of the set of variables from which they were generated. In this case, numbering is only relevant if the first variable is identical for several scale indices. The number after \_g is in most cases a simple enumerator. However, there are two types of generated variables that assign specific meanings to digits, namely regional and occupational variables. The former are based on the Nomenclature of Territorial Units for Statistics (NUTS):

# **General Conventions**

- g1: Indicator for East or West Germany
- g2: NUTS level 1 (federal state/Bundesland)
- g3: NUTS level 2 (government region/Regierungsbezirk)
- g4: NUTS level 3 (district/Kreis)

Generated variables for occupational classifications and prestige indices (see also section 3.4):

- g1: KldB 1988 (German Classification of Occupations 1988)
- g2: KldB 2010 (German Classification of Occupations 2010)
- g3: ISCO-88 (International Standard Classification of Occupations 1988)
- g4: ISCO-08 (International Standard Classification of Occupations 2008)
- g5: ISEI-88 (International Socio-Economic Index of Occupational Status 1988)
- g6: SIOPS-88 (Standard International Occupational Prestige Scale 1988)
- g7: MPS (Magnitude Prestige Scale)
- g8: EGP (Erikson, Goldthorpe, and Portocarero's class categories)
- g9: BLK (Blossfeld's Occupational Classification)
- g14: ISEI-08 (International Socio-Economic Index of Occupational Status 2008)
- g15: CAMSIS (Social Interaction and Stratification Scale)
- g16: SIOPS-08 (Standard International Occupational Prestige Scale 2008)
- Versions of variables: If question formulations, interviewer instructions, etc. change between panel waves to such an extent that sufficient meaning equivalence is no longer guaranteed, the answers to these questions are stored in different versions of a variable. The data for the latest and most current version of a question are provided under the variable name without any version suffix. Previous item versions are identified by var\_v1 for the data before the question was modified for the first time, var\_v2 for the data before the question was modified for a second time, and so on. Versionized ariables are listed in ??.
- Harmonized variables: The suffix var\_ha indicates a harmonized variable in which common information from different versions of a variable is integrated. This is often done by aggregating detailed value characteristics into common superordinate categories. In other words, a harmonized variable reflects the lowest common denominator of information from a variable and its version(s).

- Wide format variables: The \_w# suffix indicates variables that are stored in wide format. Note that this suffix does not necessarily imply a wave logic. The presence of a set of variables var\_w1, var\_w2, ..., var\_w10 may mean that there are up to 10 values for this variable per person or episode. This is the case, for example, if the corresponding item in the survey instrument was repeatedly measured in a loop. Another example concerns the date of the competence measurement within a survey wave if it took place on two different days.
- Confidentiality level: The \_D, \_R, or \_0 suffix indicates variables that have been modified during the anonymization process (see section 1.4). The suffix \_0 signalizes that data in this variable is only available via on-site acces; \_R refers to variables where access to detailed information is only possible via RemoteNEPS and on-site stay; and \_D means that data in this variable has been extracted from the corresponding \_0 or \_R variable to make at least some information available in the download version of the Scientific Use File. The confidentiality suffixes stand either alone (e.g., country of birth: t405010\_R) or in combination with other suffixes (e.g., district of place of birth: t700101\_g3R).

## 3.2.2 Conventions for competence variable naming

The naming of variables from competence measurements and direct measures follows an alternative logic. In contrast to other data files, the competence datasets (xTargetCompetencies and xDirectMeasures in Starting Cohort 1) are structured in wide format; that is, all values for a single respondent are represented in one row of the data matrix. Thus, the integration of information from several competence domains collected across several survey waves requires specific conventions for variable naming. Competence variables are characterized by three name components and supplementing suffixes. The first component indicates the competence domain of the measurement (two characters, e.g., vo for vocabulary). The second part identifies the target group and the survey wave or class level in which the measurement was first used (two or three characters, e.g., k1 for kindergarten children during the first wave). The target group identification does not necessarily indicate the cohort or testing wave of the measurement. Please refer to the explanations in the next section for the special features of repeatedly used test items. Some competence measurement are not designed for specific age groups, but are implemented unmodified in different cohorts and testing waves. In these cases the target group is defined as ci (cohort invariant). The third component denotes the item number. Table 5 contains a list of all possible specifications of the three parts of a competence variable name.

The additional suffixes inform about the mode of test execution if more than one survey modus has been applied for a measurement and about the sort of item score and overall competence score. There is a distinction between scored items named [varname]\_c and scored partial credit-items named [varname]s\_c. The latter is relevant if more than one correct solution is possible (e.g., value 0 = 0 out of two points, value 1 = 1 out of two points, value 2 = 2 out of two points), whereas the former is applied for dichotomous solutions (value 0 = not solved, value 1 = solved). In addition to the item scores, several aggregated

scores are provided for competence measurements. They are indicated by \_sc[number] and a few special suffixes for Starting Cohort 1. A letter appended to the suffix indicates that more than one aggregated score for a competence measurement is available (e.g., \_sc3a, \_sc3b for different sum scores of any test). Detailed descriptions on how the aggregated competence scores were estimated can be found in the domain-specific documentation reports. The last part of Table 5 shows all possible suffixes and their meanings.

Table 5: Conventions for competence variable names

## Part I: Competence Domain (2 chars)

ba	Business administration and economics
bd	Backwards digit span: Phonological working memory
са	Categorization: SON-R subtest
cd	Cognitive development: Sensorimotor development
de	Delayed gratification: Executive control
dg	Domain-general cognitive functions (DGCF): Cognitive basic skills
ds	Digit span: Phonological working memory
ec	Flanker task: Executive control
ef	English foreign language: English reading competence
fa	FAIR: Concentration abilities
gr	Grammar: Listening comprehension at sentence level
hd	Habituation-dishabituation paradigm
ic	Information and communication technology literacy (ICT)
ih	Interaction at home: Parent-child interaction
ip	Identification of phonemes: Phonological awareness
li	Listening: Listening comprehension at text/ciscourse level
lk	Early knowledge of letters
ma	Mathematical competence
md	Declarative metacognition
mp	Procedural metacognition
nr/nt	Native language Russian/Turkish: Listening comprehension
on	Blending of onset and rimes: Phonological awareness
or	Orthography
re	Reading competence
ri	Rimes: Phonological awareness
rs	Reading speed
rx	Early reading competence
sc	Scientific competence
st	Scientific thinking: Science propaedeutics
vo	Vocabulary: Listening comprehension at word level

Part II: Target Group (1 char), followed by wave or grade (1-2 digits)

(...)

## Table 5: (continued)

- n# Newborns in wave #
- k# Kindergarten children in wave #
- g# Students at school in grade #
- s# University students in wave #
- a# Adults in wave #
- ci Cohort invariant (for instruments administered unchanged in all cohorts)

## Part III: Item number (3-4 chars)

For some competence domains, these item numbers follow a certain scheme, but for most competence domains they only indicate the different items

## Part IV: Suffixes (starting with an underscore)

_pb	Paper-based test modus (proctored)
_cb	Computer-based test modus (proctored)
_wb	Web/Internet-based test modus (unproctored)
_c	Scored item variable (s_c for partial credit-items)
_scl	Weighted likelihood estimate (WLE) <sup>12</sup>
_sc2	Standard error for the WLE <sup>2</sup>
_sc3	Sum score
_sc4	Mean score
_sc5	Difference score (for procedural metacognition)
_sc6	Proportion correct score (for procedural metacognition)
_p	Maximum value for an item (only in Starting Cohort 1)
_b	Minimum value for an item (only in Starting Cohort 1)
_m	Mean value for an item (only in Starting Cohort 1)
_s	Sum value for an item (only in Starting Cohort 1)
_n	Number value for an item (only in Starting Cohort 1)

## Identification of repeated test items

In some competence measurements identical items are implemented in different testing waves (e.g., mathematics). Identifying repeatedly measured test items in NEPS data can be easily done by looking for competence variables with an identical word stem. If the same test item is surveyed in different survey waves or starting cohorts, the variable name is equiped with an additional suffix. It is important to know that the two or three characters for the target group

<sup>1</sup> WLEs and their standard errors are estimated in tests that are scaled based on models of Item Response Theory (cf. Pohl and Carstensen, 2012).

<sup>2</sup> WLEs and their standard errors are corrected for test position; uncorrected WLEs and standard errors are indicated by an additional u in the suffix (\_sc1u, \_sc2u).

(second part of the variable name) always indicate the wave or cohort in which the item was initially used. The word stem is then fixed and does not change when the item is used again in later waves or other cohorts. If the variable name does not contain a suffix for repeated use, then the second part of the word stem refers to the target group of the realized measurement. However, if the variable name includes a suffix for repeated use, then the values of the variable do not refer to the target group according to the word stem, but to the target group according to the suffix. The suffix that points to the repeated use consists of two parts: The first element indicates the starting cohort of current item administration and the second element indicates the cohort or testing wave of current item administration.

The following example illustrates this logic: The competence variable vok10067\_sc2g1\_c is a vocabulary item (vo) that was initially measured during the first kindergarten survey wave (k1). However, the values in this variable reflect the scored measurements of this item's repeated use among the target persons of Starting Cohort 2 in the course of the survey wave in grade 1 (\_sc2g1), and thus two years after the first measurement.

## 3.2.3 Labels

As a rule, the seven-digit variable names are not sufficient to uniquely identify the respective contents of the variables and to differentiate sufficiently between items. All variables therefore have *variable labels* for more detailed description. In addition, most variables contain *value labels* for the respective value characteristics. All information is available in German and English and is typically displayed directly in the editor of the statistics program, e.g. for frequency calculation or when searching the data (applies to SPSS and Stata, see also section 1.3). For users of R, see section B.1 for hints on this.

In addition to the variable and value labels, the datasets also contain extended characteristics for variables. These include the question text from the survey instrument, any associated interviewer instructions and filter conditions, as well as other meta information. All extended features can be accessed directly within data files. Stata users apply the infoquery command for this, which is part of the *NEPStools* package (see section 1.7). SPSS users will find the additional meta information in the "Variable View" at the end of each variable line.

As explained in more detail in section 4, NEPS data from different waves are integrated as much as possible. For panel data, this primarily means that many variables contain information from multiple waves. In most cases of such a data integration, the meta information between the waves does not change. However, if there are changes to the meta information of a repeatedly measured item, and if these changes are not significant enough to store the information in separate variables, the assignment of meta information follows a general rule: **All meta information available in a dataset always corresponds to the most recently instrument in which the respective item was used.** 

A concrete example is the adaptation of interviewer instructions or question texts from the informal salutation ("Du") to the formal salutation ("Sie"). Since these changes are not expected

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to have any effect on how a question is answered, the corresponding values across multiple waves get integrated into one variable. If you request the meta information of such a variable in the dataset, the wording of the latest item formulation will be displayed (in the given example with the formal salutation "Sie"). In case of uncertainties regarding the continuity of meta information of a variable across different waves, we recommend to consult the respective *survey instruments* for the individual waves.

## 3.3 Missing values

The NEPS data contain various missing codes to differentiate between various types of missing values. All missing codes have negative values or are defined as system missing. Depending on the statistics program used, you must ensure that these codes are processed correctly. In the offered SPSS datasets, the missing codes are already defined as missing values. When using Stata, the missing codes must first be excluded from the analyses by the user as missing values. For this purpose the command nepsmiss is available in the *NEPStools* package (see section 1.7). The general recommendation is to always carefully check the frequency distributions of the relevant variables before running an analysis.

We distinguish between three types of missing codes, which are summarized in Table 6 and described in more detail below.

#### tab:MissingCodes

**Item nonresponse:** The first type of missing codes occurs when a person has not (validly) replied to a question.

- The most common cases of item nonresponse are *refused* (-97) answers and *don't know* (-98) answers.
- Missing values specified by the survey agency due to an incorrect use of the instrument are coded as *implausible value* (-95).
- Within the competence data, there is a special missing code indicating that a question or test item was *not reached* (-94) due to time constraints or other test setting restrictions. It usually signals that the respondent had to quit the test somewhere before this point.
- Other missing codes refer to various categories of *item-specific nonresponse* (-20, ...,-29) such as -20 for "*stateless*" in the citizenship variable p407050\_D.

**Not applicable:** The second type of missing codes occurs when an item does not apply to a respondent.

 The code missing by design (-54) is assigned when respondents in a (sub)sample have not been asked the respective questions. This is usually the case if the administered survey instrument contains (sub)sample-specific questionnaire modules. The code is also used for the

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more general case where values of a variable are not available due to the design of the survey (e.g., measurement rotation with either easier or heavier test tasks).

- If the respondent him-/herself or the interviewer indicates that a particular question is not applicable to the person, the missing value is coded as *does not apply* (–93). If, on the other hand, filtering takes places automatically via the survey instrument, the coding of the filtered out questions depends on the survey mode: in CATI and CAPI interviews, a system missing value (.) is assigned for this; in all other modes the respective code is *filtered* (–99).
- Missing values that cannot be assigned to any of the above categories are coded as unspecific missing (-90). This missing code usually occurs in PAPI questionnaires when a respondent has not answered a question for unknown reasons.

**Edition missings:** The third type of missing codes is defined in the process of data preparation for the Scientific Use File.

- If in the data edition process certain values which are not considered to be meaningful are requested to be removed, the missing code *implausible value removed* (–52) is assigned in their place. As a rule, however, all values from the field instruments are included in the Scientific Use File without further plausibility checks (see section 3). Only in exceptional cases, when the responsible item developers explicitly recommend a removal of implausible answers, this missing coding is done.
- Sensitive information that is only available via remote and/or on-site access is encoded in the more anonymized data access option as *anonymized* (–53).
- In general, coding schemes are used to generate variables (e.g., occupational coding; see section 3.4). However, if the information from the original data is not sufficient to generate a suitable value, the missing code *not determinable* (–55) is used instead.
- If a person was not present during the interview or did not complete a questionnaire at all, even though it was administered to the person, the concerning variables receive the code not participated (-56). This missing code is special in that target persons without survey data for a certain wave (e.g., due to illness) are usually not included in the corresponding datasets. This missing code is only used in the special cases of datasets that integrate several waves in wide format (e.g., xTargetCompetencies) or that also contain observations for non-participating persons in a wave (e.g., CohortProfile).

## 3.4 Generated variables

## Coding and recoding of open responses

At various points in the NEPS survey instruments there are so-called open questions where respondents can or should enter their answers as text. A typical example is information about occupation.

The open text format allows respondents to specify anything they want. A practical way to deal with the resulting string information is to code and recode the information for further processing and later analyses. In general, coding describes the process of assigning one or more codes from selected category schemes to the string information, e. g. the classification of occupational data according to DKZ (database of documentation codes, *Datenbank der Dokumentationskennziffern*) or WZ (classification of economy branches, *Klassifikation der Wirtschaftszweige*).

The term "recoding" is used here to describe the process of assigning a code from an already presented closed answer scheme. This usually applies to semi-open question formats where respondents enter a text under the category "other", but which can be assigned ad hoc to one of the given closed answer categories. The recoding therefore does not define any new codes; the presented answer scheme of the respective question is not extended.

The most common and comprehensive coding scenarios in the fields of occupation, education, branches, courses, and regional information are processed by the Research Data Center (FDZ-LIfBi) itself. Other coding tasks are distributed among the responsible departments at the LIfBi in Bamberg and the partners in the NEPS consortium.

## **Derived scales and classifications**

The (re-)coding of open answers or string entries into primary classifications (such as DKZ2010 or WZ08) is a first and essential step towards making this information available within the NEPS Scientific Use Files in a user-friendly and analyzable way. The standardized derivation of further classifications or scales, especially in the area of educational qualifications and occupational titles, is a second and no less important step. At least three types and objectives of derivations can be distinguished:

- Derivations from primary classifications (and originated from string entries/open answers) into other classifications that function as a standard schema in other studies or international comparisons, e.g. ISCO instead of KldB in the field of occupations
- Derivations from primarily closed response schemes into general classifications and schemes using auxiliary information, e.g. ISCED or CASMIN from school certificate and training data plus additional information on the type of school/training
- Combination of the two types, e.g. EGP class scheme via derived ISCO classification plus information on self-employment and supervisory status

Figure 17 shows the derivation paths for several occupational scales and schemes provided in the NEPS. A detailed description of the standard derivations for educational attainment (ISCED, CASMIN and Years of Education) can be found in the corresponding documetation report by Zielonka and Pelz, 2015.



Figure 17: Derivation paths for several occupational scales and schemes provided in the NEPS

# Table 6: Overview of missing codes

Code	Meaning	Note
ltem nonresp	onse	
-94	not reached	only relevant for instruments with time restrictions (e.g., competency test measures)
-95	implausible value	assigned by the survey agency (e.g., multiple an- swers to a one-answer question in PAPI mode)
-97	refused	as default answer option to the question
-98	don't know	as default answer option to the question
–20,,–29	various	item-specific missing with informative value label (e.g., "no grade received" for question about school grades)
Not applicabl	e	
-54	missing by design	question not included in (sub)sample-specific instru- ment (e.g., not asked in all waves)
-90	unspecific missing	in PAPI mode (e.g., question not answered, empty field)
-91	survey aborted	respondent quit interview, in CAWI mode
-92	question erroneously not asked	question not asked by mistake, in CAWI and CATI
-93	does not apply	as default answer option to the question
-99	filtered	filtered out question, in other than CATI/CAPI mode
•	system	filtered out question, in CATI/CAPI mode
Edition missir	ngs (recoded into missing)	
-52	implausible value removed	only at the request of the responsible item developers
-53	anonymized	sensitive information removed (e.g., country of birth of parents in the download version)
-55	not determinable	not sufficient information to generate the variable value (e.g., net household income t510010_g1)
-56	not participated	in case of unit nonresponse, only used in certain datasets

# 4 Data Structure

## 4.1 Overview

The broad objectives and the large size of the longitudinal NEPS surveys inevitably lead to a complex database. The crucial task is to organize this data in a well-structured, reproducible and user-friendly way, while at the same time preserving a maximum level of detail in the data. To meet this challenge, a number of additionally generated variables and datasets is included in the Scientific Use File to facilitate the preparation and analysis of the data.

In principle, all information collected in the course of a panel wave is appended to the information from previous waves in the corresponding data file, together with the required identifiers. Data files containing longitudinal information from several waves are denoted with a p in the file name. For example, the pTarget file(s) contain(s) information from the target persons' interviews with one row in the dataset representing the information of one target in one wave.

This convention does not apply to all longitudinal data. For example, there are competence measurements that were repeatedly carried out with the same target persons. However, since the instruments, i.e. the content of competence tests, vary over time, the corresponding information is structured in wide format (for more details, see section 3.2.2 or section 4.5.36). Such cross-sectionally structured data files with one line representing information of a respondent from all waves are marked with a x.

Another type of data structuring refers to episode data. For the information collected prospectively and retrospectively using iterative question sets, the Scientific Use File provides life areaspecific spell datasets. These datasets are marked by a preceding *sp*. An example is the file spEmp, which informs about current and former episodes of employment.



Figure 18: Different types of data structures

In addition to interview and test data provided by the respondents as well as episode data, there are also so-called paradata or derived information. These data files can be identified by

# Data Structure

the leading capital letter in the name (e.g. Weights or CohortProfile). In most cases, these datasets correspond to the panel structure.

## 4.2 Identifiers

The multi-level and multi-informant design of the NEPS and the distribution of survey information across different datasets requires the use of multiple identifiers. The following identifier variables are relevant in this Starting Cohort for linking data:

- ID\_t identifies a target person. The variable ID\_t is unique across waves and samples (and also starting cohorts).
- wave indicates the sample wave in which the data was collected.
- **splink** uniquely identifies episodes/spells across all datasets within each person. It is used to link data from Biography with Education or episode modules such as spVocTrain

In addition, there are other identifier variables to indicate a target person's membership in a particular test group (ID\_tg in CohortProfile, not applicable to all starting cohorts) and to indicate the interviewer who conducted the respective interview (ID\_int in Methods datasets). However, these identifiers are not relevant for the merging of information from different datasets and are negligible for most empirical applications.

## 4.3 Panel data

As mentioned above, all information from subsequent survey waves are appended to the already existing data files (as far as possible). This method of data processing generates *integrated panel data* files in a long format as opposed to providing one separate file per wave (where each file contains only the information from a single wave). When working with the integrated panel data in the NEPS Scientific Use Files, the following points should be considered:

- A row in the dataset contains the information of one respondent from one survey wave.
- This means that more than one identifier variable is needed to identify a single row for uniquely selecting and merging information from different datasets. These are usually ID\_t and wave.
- It also means that although not all variables were administered in each survey wave, the integrated structure of the dataset contains cells for all variables of all waves. If no data is available, e.g. because a variable was not queried in a particular wave, the corresponding cells are filled with a missing code (see section 3.3).
- Once information about a variable has been surveyed from one individual across multiple waves, the corresponding data is distributed across multiple rows in the dataset.

This long format is usually the preferred data structure for the analysis of panel items with information from several waves. However, cross-sectional information is often also required, e.g. because it depicts time-invariant characteristics or was collected only once for other reasons. In most analysis scenarios, the combined set of relevant variables is not measured in a single wave. Therefore, the corresponding data cannot be analyzed together straightaway because it is stored in *different rows* of the dataset. Cross-tabulating these variables in their current state results in an L-shaped table in which all observations of one variable fall into the missing category of the other variable and vice versa. The best way to deal with this issue depends very much on the intended analysis and the methods used. Two typical procedures are:

- First, the integrated panel data file is split into wave-specific subfiles so that each dataset contains only information from one wave. The relevant information from these subfiles is then merged together by using only the respondent's identifier (ID\_t) as key variable. The wave variable is not needed here and remains neglected. Before this step, variables may need to be renamed to make them wave-specific identifiable. The result is a dataset with a cross-sectional structure in which the information of a respondent is summarized in one single row (wide format). Stata's reshape command (and similar tools in other software packages) basically follow this strategy.
- Alternatively, the panel structure is retained and the values from observed cells are copied into the unobserved cells. If, for example, the place of birth was only surveyed in the first wave, the corresponding value can be transferred to the respective cells of the other waves of the respondent. This method is particularly useful for time-invariant variables (e.g. country of birth, language of origin), which are usually collected only once in a panel study.

## 4.4 Episode or spell data

Handling cross-sectional data is usually not a problem. Most data users also know how to work with and analyze panel data. Episode or spell data, on the other hand, present a particular challenge for understanding data processing. The following explanations should help to deal with this data format in a meaningful and appropriate way.

In episode data, there is one row for each episode that was captured during the interview. Usually, a start date and an end date describe the duration of an episode. The remaining variables in such spell datasets contain additional information about that episode. These characteristics are chronologically linked to the episode. This means (especially for time-variant variables like ISEI or CASMIN) that the respective values indicate the status *at the given time of the episode*, and not necessarily the current status which is valid nowadays.

To give an example: In the spell dataset spEmp there is a period of time for a certain respondent in which he or she worked without interruption in a particular job. If this person changes to a new job, this marks a new episode which is stored in a new data row. Further changes in this context may also lead to new episodes, e.g., a change of employer or the conclusion of a new employment contract (but not if the salary, working hours or other characteristics of the respective job change). Episodes can therefore be understood as the smallest possible units of one's life history, in this case the employment biography. As soon as there are several relevant changes in such a biography episode, this is reflected in a new data row.

In addition to such (time dependent) episode data, which we call *duration spells*, there are two other types of episode spells in our data:

- Occurring events or the transition from one state to another (e.g., change of marital status, change of educational level) are recorded in *event spells* with one row describing one state.
- the existence of children, partners, etc., is recorded in *entity spells* with one row per entity.

Regardless of the type of episode, two variables are usually necessary to identify a single row in the data file, namely the respondents' identifier ID\_t and an episode, event or entity numerator, such as spell or child. More detailed information on the required identifier variables can be found on the respective data file pages in in section 4.5. Please also note section 4.4.3 for a further complication of this matter.

One general remark: be aware that the number of episodes per se is independent of the survey wave. During one interview (one wave), there may be several episodes (several rows) recorded, or no episode at all. Also, the dates given in the episode relate to the time the episode was valid, whereas the wave relates to the interview date. They might not even overlap!

You should consider those two entities (spell and wave) as completely unrelated. Although there might be some situations where you have the need to know *when* the information of an episode has been collected, you are best advised to ignore the variable wave in episode data completely.

Do not try to use the variable wave to merge episode data to panel data. Although this might seem like the proper way to do this, episode data may contain multiple (or none) rows per wave and ID, while panel data contain exactly one row for every wave (of an ID). Such a merge results in the panel data obtaining an episode structure, which totally messes up the data.

A better approach seems prior to conduct such a merge, try to aggregate the episode data to *one information* for each interview date, or even just one information for the whole life course, so that in the end, you do not have more rows than waves (per respondent).

## 4.4.1 Edition of the life course

The life course data in the NEPS Starting Cohorts consists primarily of information on episodes of school attendance, participation in vocational preparation measures and vocational training or university education. Further it consists of information on exercise of compulsory or voluntary services (military module), employment and unemployment episodes, as well as spells of parental leave. We refer to these activities as *main activities*.

The episodes, grouped by episode type, are recorded independently in separate modules. The aim of recording these activities is to obtain chronologically complete life histories on the employment and training careers of our respondents. This requires two different edition steps of the data:

 After the episodes have been collected in the longitudinal modules, the first step in the edition process of the life courses already takes place during the interview. The episodes are summarized in the data revision module and put into their chronological order. Subsequently, they are checked for chronological gaps and overlaps. This test is carried out by a cooperative clarification of chronological gaps between interviewee and interviewer.

If chronological gaps are discovered in the data revision module, these are closed by subsequently recording additional episodes of the above-mentioned *main activities*. If there is no main activity for the examined period, the interviewee can close it with a so-called gap activity (see the gap module in section 5.3.11). In addition, gaps can be closed in the data revision module by adjusting the dates of the episodes between which a gap exists.

Chronological overlaps of episodes are discussed in the data revision module together with the interviewee. This may lead to a change of the dates of the episodes involved in the overlap. For inaccurate or missing dates, estimates are calculated in addition to the original dates, as far as there are reasonable indications for good estimates. For example, the imprecise specification about the starting month of an episode "Summer" is replaced by the value 7 "July" and saved in the biography file. In this way, even episodes with incomplete date specifications can be included in the chronological test and checked for gaps or overlaps with temporally adjacent episodes in the overall context of the life course (for general and specific functionality of the data revision module, see Ruland et al., 2016 and Matthes et al. 2005, 2007).

The result of this examination of the life courses during the interview are largely complete and time-consistent life courses.

2. Despite this meticulous examination during the interview, there are still minor inaccuracies in the consistency of life courses after the survey. For example, one-month overlaps of episodes are not edited in the data revision module. The same applies to gaps between successive episodes of up to two months. The test in the data revision module can also be interrupted or skipped at the request of the interviewee so that it was not carried out or not carried out completely.

For these reasons, a second, automated step of processing the time data of the life courses takes place after the end of the interview during data edition. The results of these temporal adjustments are also saved in the biography file. The automated edition is divided into several successive edition steps.

The first step is to remove one-month overlaps of episodes. A one-month overlap between two episodes is, in our definition, when the end date of a preceding episode is identical to the start date of the following episode. The procedure here is to shorten the end date of the previous episode by one month. The prerequisite is that the previous episode is longer than one month, otherwise this one-month episode would be shortened to the duration of zero. If the duration of the previous episode is only one month, the start date of the following episode is shortened by one month. If both episodes have a duration of one month, the dates are not edited.

Subsequently, one to two-month gaps between successive episodes are automatically closed. If the gap has a duration of one month, the end date of the previous episode is extended by one month. If there is a two-month gap, the start date of the following episode is additionally brought forward by one month.

Finally, chronological gaps in the life course that are larger than two months are closed by inserting new episodes for these gaps in the biography file, which close these gaps completely. These episodes are marked as *data edition gap* in the sptype variable of the biography file.

All these changes of the time specifications described are exclusively made in the biography file. The respondents' original information on the start and end dates of the episodes remain in the data files of the longitudinal modules (also see Künster 2015a, 2015b).

## 4.4.2 Revoked episodes

In order to reduce seam bias, spell data are preloaded by prior wave information. This information from previous waves can be revoked by the respondent during the current interview. Spell datasets therefore also contain information about revocations (variables disagint, disagwave). The reasons for a revocation or contradiction are manifold; they depend mainly on the information that is presented to the respondent to remember the episode (see the questionnaires for the exact wording of the episode data collection).

If an episode is later revoked by the respondent, this episode is marked accordingly in the dataset. The respective information is collected again in the current interview and saved as a new episode in the actual data collection wave. The updated spell is not flagged as a corrected spell. The identification of related spells (=previously given information plus their correction in the following wave) is up to the data user. Please note: Since it is technically impossible to specify a start date for an episode prior to the last interview date, virtually all corrected spell episodes are left-censored. The only exception are episodes that started on the interview date of the last wave.

In addition to the possibility of revoking an episode in the course of the subsequent survey wave, there is also the possibility of revoking an episode during the interview. For this purpose, a *check module* is used after the biographical information has been recorded. It ensures that the life course is captured as completely as possible. The biographical episodes asked in the thematically structured questionnaire modules are already examined in the interview for their chronological plausibility.

To verify the temporal consistency of the events across the questionnaire modules, a complete overview of all types of events is created. For this purpose, all recorded biographical episodes

are displayed in tabular form in the check module. If gaps or overlaps are indicated, the respondent will be asked again. He or she can then make corrections, add new episodes, or revoke already recorded episodes. The identification of episodes revoked in the check module is possible in the spell datasets by the variable spms==20 "Biography: Type of event (edited)".

The addition of new episodes in the check module is indicated in the variable ts23550=4 "Episode mode" (in spEmp). A detailed description of the functionality of the check module for reported life courses is given in Hess et al., 2012 (in German language), which can be found on the documentation page:

> www.neps-data.de>Data Center>Data and Documentation
> Starting Cohort Adults>Documentation

#### 4.4.3 Subspells and harmonization of episodes

There is one important circumstance to consider when working with NEPS spell data. Biographical episode data are collected retrospectively. During an interview, the respondents are asked about all episodes that have occurred since the last interview (in the first interview it is since birth or a certain age). If an episode is finished at the time of the interview, the respondent reports a corresponding end date and the spell is completed. Difficulties arise when the episode is not yet finished at the time of the interview, i.e. it is still *ongoing*.

Such an episode appears as right-censored in the dataset. In the next interview, this episode is then queried using preloads in the course of *dependent interviewing* in such a way that the respondent can report whether it has been finished in the meantime or whether it continues. Technically this leads to several rows in the data structure, which can be distinguished by the variable subspell:

- first (right-censored) data row reported in initial wave (subspell=0 if this is the only subspell for the episode, subspell=1 if there are other subspells)
- continued episode reported in next wave(s) (subspell=2, subspell=3, etc.)

To make it easier for data users to work with these spread episode data, they are also summarized in a data line (record) according to defined rules. This data line reflects the most current information on the episode. This means that for completed episodes, the information valid at the end of the episode is selected and for episodes that were not yet completed at the last interview time, the information valid at the last interview time is selected. We call this process of summarizing information about an episode from different survey waves *episode harmonization*. It is described in detail below.

Episodes are defined by the assignment to a respondent (ID\_t), by the type of episode (e.g., training episode), by an episode ID (splink, which typically consecutively numbers the episodes of the same type of episode of a case), and by the start and end date of the respective episode.

If an episode both begins and ends within the data collection period of a survey wave, then it can be assumed that this episode has been completely recorded with all the desired information (see figure 19, spell 1). In the SUF data of the corresponding longitudinal data file, there is a single data line for this episode, which contains the complete information.



Figure 19: Logic of subspells

However, there are many episodes that have not yet ended at the time of the interview of a survey wave, but are still ongoing at that time. Such persistent episodes are updated in the subsequent survey wave in which the respective person takes part. This means that further information on these episodes is recorded in the subsequent survey waves until the respondents report the episodes as finished (see figure 19, spell 2). In such cases, the information on an episode is stored separately in the SUF in one data line for each survey wave, so that the information on this episode is divided over several data lines and one data line of this episode, as well as the episode ID. There is, however, an additional variable subspell, which consecutively numbers the data lines that belong to one episode that was recorded over several survey wave, i.e., those that began and ended during the period covered by the survey wave, the variable subspell contains the value 0. The same applies to episodes that were recorded for the first time in the current survey wave and that were still ongoing at the time of the interview (see figure 19, spell 3).

The episode file for the cases shown in figure 19 corresponds to the data structure listed in table 7 before an episode harmonization. For the sake of simplification, the table contains data

from three consecutive surveys/waves, each conducted in december of the years 2009-2011. There is only one row of data for the first episode of the example case, because it was completed before the survey time of wave 2, i.e., it was completely recorded in this wave. Accordingly, the value of subspell is 0.

For the second episode, there are three data lines with the information on this episode from waves 2-4. The subspell variable for the second episode numbers the partial episodes from 1-3. The end of the second episode was reported in the fourth survey wave.

The third episode was recorded in the fourth survey wave. This episode continues, but since only a part of the episode has been reported so far, subspell is also initially given the value 0. This does not change until further information for this episode is recorded in a subsequent survey wave.

ID_t	splink	wave	subspell	start_m	start_y	end_m	end_y	ongoing	var1	var2
1	300001	2	Θ	may	2005	april	2009	no	3	5
1	300002	2	1	june	2009	december	2009	yes	1	
1	300002	3	2	june	2009	december	2010	yes		•
1	300002	4	3	june	2009	july	2011	no		8
1	300003	4	Θ	august	2011	december	2011	yes	2	4

Table 7: Data lines of the example case in the SUF before spell harmonization

For episodes that last over several survey waves, the NEPS does not collect the same information in each survey wave. In the wave in which an episode is recorded for the first time, all unchangeable core information about this episode is collected. In the case of training episodes, this includes the type of training (e.g., vocational training or studies), the exact designation of the training occupation and some other parameters that distinguish this training from other training. This of course also includes the start date of the episode. This information will not be requested again when this episode is updated in later survey waves. Instead, additional characteristics of the episode, such as current pay, are recorded in these waves. As soon as the interviewee reports the episode as completed, information regarding the end is recorded. Such information is, for example, the achieved completion of a training episode and of course the end date of the episode. In this respect, the information on an episode, which was updated via different survey waves, is divided over the individual partial episodes (subspells) of this episode. The number of the partial episodes varies depending on the total duration of the episode.

In order to make it easier for data users to work with the data of updated episodes, the information from the partial spells of episodes is summarized in an additional data line. Therefore, besides the data lines for the partial episodes, there is also a data line that gives an overall overview of the updated episode and is referred to as the *harmonized episode*.

Thus, episode harmonization is only used if there are several partial spells for an updated episode from different survey waves. An update of episodes is only carried out in the Starting Cohort 6 for the following SUF files: spChild, spChildCohab, spEmp, spGap, spMilitary, spPar-Leave, spPartner, spResidence, spSchool, spUnemp, spVocPrep, spVocTrain.

The data line for the harmonized episode is added to the already available records in the longitudinal file. The variable subspell always has the value 0 for harmonized episodes. In our example case shown above, an additional data line would be added for the second episode as a summary of the three partial episodes of this episode in the longitudinal file (see table 8), since only the second episode has several partial spells in different survey waves.

ID_t	splink	wave	subspell	start_m	start_y	end_m	end_y	ongoing	var1	var2
1	300001	2	Θ	may	2005	april	2009	no	3	5
1	300002	2	1	june	2009	december	2009	yes	1	
1	300002	3	2	june	2009	december	2010	yes		•
1	300002	4	3	june	2009	july	2011	no		8
1	300002	4	Θ	june	2009	july	2011	no	1	8
1	300003	4	0	august	2011	december	2011	yes	2	4

Table 8: Data lines of the example case in the SUF before spell harmonization

Since a harmonized spell is a summary of all partial spells of an updated episode, exactly one piece of information must be selected from the partial spells for each variable, which is then transferred to the harmonized spell. In most cases the rule for selecting the relevant information that is transmitted is obvious. But if it is not, the following rules are applied:

- first For all questions that are only asked when a new episode is entered, i.e., when the episode is reported for the first time, the information for the harmonized spell is taken from the first partial episode because it can only be found there and is valid for the complete duration of the episode (see var1 in table 8).
- **last** For information that is either updated in every survey wave or that can only be found in the last partial spell after the end of the episode, the information for the harmonized spell is taken from the last partial episode (see var2 in table 8).

There is an exception concerning the application of the harmonization rule *last*. If an already established question in the longitudinal modules is generally not asked in a certain survey wave, then the undetermined value of the associated variable is replaced with the value -54 *missing by design* during data edition. The reasons for not asking the question can be manifold. If this question follows the harmonization rule *last*, the value -54 is not stored into the harmonized episode. Instead, the existing partial episodes of the episode concerned are searched for a value that deviates from the value -54 and this value is stored in the harmonized episode. The same procedure is used with the value -55 *not applicable*. The idea is that the value determined in this way is a good estimate of the missing last information on this item of this episode.

- **first nonmissing** The harmonization of most of the variables follows either the selection rule *first* or *last*. However, there are exceptions to this rule. An exception occurs, for example, if a new variable is introduced when recording episodes, which basically follows the *first* rule, but which should also be collected for episodes updated in the current survey wave. In such cases, the information on this variable is then also contained in the data for updated episodes, but is not in the first partial spell, but in a later partial episode. In these cases, the first valid value to be found in any partial spell of an episode is selected.
- **last nonmissing** There is a similar exception for variables that measure a changing state until a target state is reached. In the case of employment episodes, this can be, for example,

changing from a fixed-term position of a specific job to a permanent one. In cases in which an employment is temporary when it is first recorded, the question about the time limitation of the position is asked each time the episode extends over several survey waves. This continues until the employment either ends or the state of employment changes to *permanent*. Once this change from fixed-term to permanent job has been completed, the question of a time limitation is no longer asked when the episode is updated, since the reverse change from a permanent to a fixed-term job within the same job is hardly considered realistic. The information about the delimitation of the episode is therefore not necessarily in the first or last part of the spell. Here the last valid value of a partial spell of this episode is relevant. Therefore, in this case, the *last nonmissing* rule (last valid value to be found in the partial spells of an episode) is used for harmonization.

There is another exception in cases in which the continuation of an episode in the current survey wave is contradicted by the respondent during the life course assessment in the data revision module (see Ruland et al., 2016 for more information). This exception only affects episode types that are included in the life course assessment in the data revision module (episodes from the data files spSchool, spVocPrep, spVocTrain, spMilitary, spEmp, spUnemp, spParLeave, spGap). In such cases, we assume that the partial spells recorded in previous waves of the survey contain correct information on this episode up to the part of the episode that was contradicted, because they were subjected to a life course revision carried out together with the respondent in the previous waves of the survey. According to this logic only the part of the episode recorded in the current survey wave is contradicted by the respondent and not the complete episode. The information already collected and stored in a data line on the current partial spell (which was contradicted in the data revision module) can still be found in the longitudinal file, but is marked in the variable spms with the code -20 as episode canceled in the data revision module. During the harmonization, this cancellation has been considered by only filling the harmonized episode with values from the partial spells that are not marked as canceled, i.e., all partial spells except for the contradicted partial spell of the current survey wave. The end date of this episode is set to the interview time of the survey wave in which the last, uncontradicted information on this episode was recorded.

Coded occupational information is recoded in the harmonized episodes based on the information available there. Therefore, there may be differences between the values of the partial episodes and the harmonized episodes for these generated variables.

The Research Data Center keeps track on which harmonization rule was applied to variables of the longitudinal data for which episodes were updated across survey waves. Those harmonization tables are currently not publicized, but you can obtain the rules for specific variables upon request.

Data users can decide whether they want to use the harmonized spells for data analysis or whether the information from the subspells that reflects the changes in characteristics of these episodes over time is important to them. Both information are available in the longitudinal data files.

If the harmonized episodes are to be used, including the episodes that only consist of a single partial spell and therefore did not have to be harmonized, then it is sufficient to select all records for which the value of the variable subspell is 0.

keep if subspell==0

Thereafter, all episodes should be excluded that were contradicted in the data revision module (variable spms = -20) and which at the same time do not belong to the harmonized episodes (variable spext = 0)<sup>1</sup>. As described above, this step already has been included in the harmonization process for the harmonized episodes.

If, on the other hand, you do not want to use the harmonized episodes but the original partial spells of the episodes, then all records should be dropped where the variable subspell has the value 0 and simultaneously the variable spext has the value 1. Subsequently, it is also necessary to exclude all partial episodes that were contradicted in the data revision module (variable spms == -20).

## 4.5 Data files

In the following section, every data file of this Starting Cohort is explained in a subsection, including a data snapshot and an example of data usage (in Stata). The examples are written so that everyone knowing Stata should easily understand it. You also do not need additional ado files installed, although you are highly advised to use the nepstools (see section 1.6).

To ease your understanding of the relationship of those files, Figure 20 provides an overview. The edges in this graph symbolize how a data file may be linked to other files. This is not meant to document every possible data link you could do but rather tries to give you an idea which data files relate most. By clicking on a node, you get directed to this data file's explanatory page.

You need to set the following globals for the Stata examples to work. Just adapt and copy the lines below to the top of the syntax files or execute them in your Stata command line before running the syntax:

```
** Starting Cohort
global cohort SC6
** version of this Scientific Use File
global version 12-0-0
** path where the data can be found on your local machine
global datapath Z:/Data/${cohort}/${version}
```

**<sup>1</sup>** Also the variable spgen indicates whether an episode was originally reported as finished (spgen=0) or whether it is a harmonized (generated) episode (spgen=1).



**Figure 20:** Graphical overview of all data files. Each node represents one data file. Relations are indicated by connection lines. Files with a dashed border are not available in the Download version of the Scientific Use File. Click on a data file to get more information.

4.5.1 Basics

		« go back to	overview	
Description	Exemplary va	riables		
Compilation of up-to-date information about respondents in a simple data format	ID_t tx29000	ID target Age at interview (years)	month	
File structure wide format: 1 row = 1 respondent	t70000m t70000γ t700001	Date of birth: month Date of birth: year Gender	ſ	
ID_t Other ID variables useful for linkage	tx27000 Family status tx29003 Mother tongue: Germa tx29004 Citizenship: German			
none Number of variables / number of rows in file	tx29005 t741001 tx20000	ersons) Id		
99 / 17,140 Contains data from waves	tx29060 tx29904	currently employed Main spells of typ (number)	oe 'Emp'	
1 2 3 4 5 6 7 8 9 10 11 12	tx29007 t400500_g1 t400500_g3	Age at migration to Generation status Group of origin	Germany	
Exemplary data snapshot				
ID_t         tx29000         t700001         tx29005           8004732         52.67         [m] male         yes           8006178         32.92         [w] female         yes           8006267         55.58         [m] male         yes           8009232         47.83         [w] female         yes           8002141         59.83         [w] female         yes	t741001 3 2 2 3 2 3 2	tx29060 yes yes yes yes yes	tx29904 5 2 2 5 4	

This file contains up-to-date basic information about the respondents, including sociodemographic variables such as age at the time of the interview (tx29000), gender (t700001), place of birth in Germany (tx29005), number of persons in the household (t741001), current employment status (tx29060), etc. The dataset also contains meta information about certain biographical episodes such as the number of main employment spells (tx29904). All information is generated from the pTarget file and various spell files. The Basics dataset is updated prospectively with each new release of a Scientific Use File. The data structure is cross-sectional reflecting the latest information available on the respondents (which can originate from different survey waves). This simplified structure is intended to give a first impression of the data. However, it should be used with caution as it may not contain the most appropriate information about the respondent. **The main purpose of this file is to get an overview of the data.** For **analyses, the original panel or spell files should be used!** 

« go back to overviev

#### Example 1 (Stata): Working with Basics (find R example here)

\*\* open the data file use \${datapath}/SC6\_CohortProfile\_D\_\${version}.dta, clear \*\* merge the data from Basics, enhancing every entry in CohortProfile \*\* (i.e. every wave, this is why m:1 merge is needed) \*\* with information from Basics merge m:1 ID\_t using \${datapath}/SC6\_Basics\_D\_\${version}.dta \*\* change language to english (defaults to german) label language en \*\* tabulate gender by wave tab wave t700001 \*\* please note that now, you have the most recent information known about respondents \*\* in every wave. This does not have to be equal to the information actually surveyed \*\* in that wave! \*\* Proceed at your own risk! 4.5.2 Biography

				« go back to o	VEIVIEW
Description			Exempla	ry variables	
Integrated and	dedited life cours	e data	ID_t	ID target	
File structure			splink	Link for spell merging	
chall formate 1	row - 1 opicodo	of 1 respondent	wave	Wave	
spen ionnat. 1	row – repisoue	or i respondent	sptype	Spell type	
ID variables needed	I to identify a single row	,	startm	Episode start (month)	
ID t splink			starty	Episode start (year)	
			endm	Episode end (month)	
Other ID variables u	useful for linkage		endy	Episode end (year)	
			spms	Type of event	
wave sprype			splast	Episode is ongoing	
Number of variable	s / number of rows in fi	le			
10 / 222,153					
Contains data from	waves				
1 2 3 12	4 5 6 7	8 9 10 11			
Exemplary data sna	pshot		1	1	
ID_t	splink	wave	sptype	starty	endy
8003108	300001	1	30	1981	1981
8006002	260005	12	26	2003	2019
8009533	260004	2	26	1994	1995
8019907	270002	9	27	2013	2015
8021526	220002	4	22	1970	1972

" go back to overview

The file Biography serves to facilitate the analysis of complex life course data collected both retrospectively and prospectively. The dataset puts together harmonized episodes with educational and employment relevance from the following duration spell files: spSchool, spVocPrep, spVocTrain, spMilitary, spEmp, spUnemp, spParLeave, and spGap. The variable sptype is provided to identify the source of each episode.

In contrast to the "raw" biographical data from each of the module-specific spell modules, the Biography file provides more consistent life course data that has been additionally checked and edited. In particular, inconsistencies in the individual life course data were identified and corrected during the interview with the help of a "check module". Corrected times are stored in the duration spell files as \_g1 variables. For example, the variable ts2311y\_g1 in spEmp contains the starting date of an employment episode which was corrected within the check module. Such corrected times form the basis for further adjustments that are implemented in

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the data editing process for Biography. Essentially, the following measures are taken to ensure the integrity of the life course data in this file:

- All subspells have been removed, i. e., Biography contains only completed, harmonized, or right-censored episodes (subspell=0).
- Episodes revoked by respondents during the interview or in the subsequent survey wave (see section 4.4.2) are deleted, unless the episode was re-recorded in the current wave. Revoked episodes are included in the original spell files and can be identified there with the corresponding marker variables (spms or disagint).
- Starting and end dates of episodes are smoothed and corrected, i. e., overlaps of one month and more between adjacent episodes have been resolved.
- Gaps between adjacent episodes that do not exceed two months are closed; gaps of more than two months are defined as specific gap episodes (edition gaps) within the Biography file.

Due to the additional editing steps and the compilation of spells from different biographical modules, it is recommended to use the Biography dataset as a starting point for life course analyses.

Example 2 (Stata): Working with Biography (find R example here)

```
** open the data file
use ${datapath}/${cohort}_Biography_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** check out which spell modules you can merge to this file
tab sptype
** check that you will need splink to merge information
** from other modules to this file
** (command gives no result, which means approval)
isid ID_t splink
```

## 4.5.3 Children

							« go back to	overview		
Description		Exemplary variables								
Generated dataset regarding the child(ren) of the respondents child Child number										
File structure					tx27100 Child (biological/adopted/fos-					
entity forn	nat: 1 row :	= 1 child of 1	respon	dent	ter)					
ID variables ne	eded to identif	y a single row			- tx2710m	Child	: date of birth (mo	onth)		
ID_t child					- tx2710y	lived	with a child	ar)		
Other ID varia	bles useful for l	inkage			tx27131	lives	with child (last into	erview)		
none					tx27199	Child	deceased			
Number of var	riables / numbe	r of rows in file								
9 / 28,52	2									
Contains data	from waves									
			9 1							
Exemplary dat	a snapshot						I			
ID_t	child	t>	27100	tx27101	tx27	10m	tx2710y	tx27130		
8004512	3	Biological	child	[m] male	7	Мау	1997	1		
8004557	⊥ 2	Biological	child	[w] Temale	Janu	ary ril	1086 TAA2	1		
8011358	2	Biological	child	[m] male	АР 1	ulv	2001	1		
8005626	3	Adoptive	child	[w] female	l	May	1987	1		
		•				-				

The file Children simplifies the information available in spChild, supplemented by data from spChildCohab (cohabitation status). The dataset mainly contains information on the number of children (child), the sex of the children (tx27101), their date of birth (tx2710m/y), and their cohabitation status (tx27130). All biological, step, foster and adopted children as well as other children with whom the respondent has ever cohabited are taken into account (see tx27100).

**Example 3 (Stata):** Working with Children (find R example here)

```
** open the data file
use ${datapath}/SC6_Children_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
```

\*\* verify that you will need ID\_t and child (child number)
\*\* to merge information from other modules to this file
\*\* (command gives no result, which means approval)
isid ID\_t child
\*\* check distribution of variable child as a child counter
tab child

## 4.5.4 CohortProfile

				« go ba	ck to overview	
Description		Exemplary variables				
Paradata on th	e cohort's panel sa	mple	ID_t	ID target		
File structure			wave	Wave		
long format: 1	row = 1 responder	it in 1 wave	cohort sample	NEPS Starting Cohort Sample	ī.	
ID variables needed	to identify a single row		tx80220	Participation/drop-o	ut status	
ID_t wave			— tx80521	Data available: Su person	rvey Target	
Other ID variables us	seful for linkage		tx80522	petence test		
none				Target person NEPS sub samples		
Number of variables / number of rows in file						
15 / 184,902						
Contains data from v	waves					
1 2 3 4 12	4 5 6 7 8	9 10 11				
Exemplary data snap	oshot	t00220		t00501	t00500	
ID_T 8001497	wave 7	tx80220		TX80521	TX80522	
8001756	9	Participation		ves	ves	
8004765	7	Participation		yes	yes	
8007018	3	Participation		yes	yes	
8010795	9	Participation		yes	yes	

The CohortProfile dataset includes all target persons of the panel sample. It applies to all study participants with an initial agreement to take part in the survey. For each respondent in each wave, the CohortProfile contains basic information on participation status (tx80220), the availability of survey data (tx80521), or the availability of competence data (tx80522). In addition, there are variables available that indicate when the interview (intm/y) and competency testing (testm/y) was conducted.

#### It is strongly recommended to use this data file as a starting point for any analysis!

Example 4 (Stata): Working with CohortProfile (find R example here)

```
** open the data file
use ${datapath}/SC6_CohortProfile_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
```

# Data Structure

```
** how many different respondents are there?
distinct ID_t
** as you can see, in this file there is an entry for every
** respondent in each wave
tab wave
** check participation status by wave
tab wave tx80220
```

# 4.5.5 EditionBackups

						« go back to overview				
Description						Exem	plary variables	'S		
Backup of original data that were modified dur- ing the data edition process				lur-	ID_t wave datase		t	ID target Wave Dataset name		
long format: 1 row = 1 changed value of a vari- able in a datafile				ari-		varna merg	me evars	Variable name ID-Variables for merg- ing		
ID variables needed to identify a single row					sourcevalue_num			Original value (if nu- meric)		
dataset varname ID_t wave splink subspell part- ner child				art-		editvalue_num sourcevalue_str		New value (if numeric) Original value (if string)		
Other ID variables useful for linkage						editvalue_str New value (if			ue (if string)	
mergevars										
Number of vari	ables /	number of rows in file								
14 / 1,168	3									
Contains data f	rom wa	ves								
1 2 3 12	4	5 6 7 8	9 10							
	<u> </u>									
Exemplary data	a snapsh wave	lot dataset	varname		merge	vars	sourceval	ue num	editvalue num	
8000511 8007013 8007577 8008077	2 2 2 2	spSchoolExtExam spSchoolExtExam spSchoolExtExam spSchoolExtExam	ts11302 ts11302 ts11302 ts11302	ID_t ID_t ID_t ID_t	wave wave wave wave	exam exam exam exam		7.00 7.00 7.00 7.00	4.00 4.00 4.00 3.00	
8009019	2	pTarget	t731306		ſD_t	wave		5.00	2.00	

The dataset EditionBackups consists of single values that have been changed or modified in the data edition process. These single values can potentially originate from all other datasets. EditionBackups contains both the original and the changed value of a particular variable in a particular data file (i. e., one change or edition per row). The following variables are provided for each change:

- varname and dataset specify the name of the variable affected by an edition and the respective data file
- mergevars lists the identifier variables that are required to merge the information back to the respective data file

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# **Data Structure**

- sourcevalue\_[num/str] contains the original, unaltered value; variables with the suffix \_num refer to values from numeric variables and variables with the suffix \_str refer to values from string variables (if the variable is numeric, \_str is used to store the value label for this value instead)
- editvalue\_[num/str] contains the result of the modification, i. e. the value into which the original value was changed; these values correspond exactly to the values in the respective data file (again, there is a version for both numeric and string variables or the label).
- ID\_t, wave, ... are the different identifier variables needed to merge the orginal values to the respective data files

Example 5 (Stata): Working with EditionBackups (find R example here)

```
** In this example, we want to restore the original
** values in variable t520003 (weight in kg) in datafile pTarget
** open the datafile
use ${datapath}/${cohort}_EditionBackups_D_${version}.dta, clear
** only keep rows containing data of the aforesaid variable
keep if dataset=="pTarget" & varname=="t520003"
** check which variables we need for merging
tab mergevars
** then keep the merging variables and the variable with
** the original values (for cross-checking, we also keep the
** variable editvalue, which contains the values found in pTarget)
keep ID_t wave sourcevalue_num editvalue_num
** rename the variables to emphasize affiliation
rename sourcevalue_num t520003_source
rename editvalue_num t520003_edit
** temporary save this data extract
tempfile edition
save `edition'
** open pTarget
use ${datapath}/${cohort}_pTarget_D_${version}.dta, clear
** add the above data
merge 1:1 ID_t wave using `edition', keep(master match)
** check all edition made
list ID_t wave t520003* if _merge==3
** replace the variable in the datafile with its original value
replace t520003=t520003_source if _merge==3
```
4.5.6 Education

							« go back to	overview
Description					Exemplary	variab	les	
Generated of trajectories	dataset for t	ransitions i	n educational		– ID_t – number datem	ID tai Sort i valid	rget number since (month)	
spell forma spondent		— datey — tx28101 — tx28102	valid since (year) Recent CASMIN years of education = f(CASMIN)					
ID variables nee	eded to identify a	a single row			tx28103	кесе	nt ISCED-97	
ID_t numbe			tx28109	Chan tion	nange in educational classifica- on			
Other ID variab	les useful for lin	kage			splink	Link for spell merging		
splink exam tx28100					exam Exam number tx28100 Source of information of edu			
Number of varia	ables / number o	of rows in file				tiona	l qualification	
11 / 53,48	2							
Contains data fr	rom waves							
1 2 3 12	4 5	6 7 8	9 10 11					
E a subscriber de la								
Exemplary data	snapsnot	datev	±x28101	±x28102	+x28	103	snlink	±x28100
8002843	3	1981	4	13	0.20	8	240001	24
8020413	2	1973	5	13		3	220003	22
8020633	3	1988	5	13		3	220003	22
8004342	3	1981	5	13		3	220003	22
80241/1	T	1972	Ţ	9		T	220001	22

The data file Education provides longitudinal information on transitions in the educational careers of respondents. It contains only persons who have completed lower secondary education or higher. To generate the dataset, information on the educational attainment from spSchool (Hauptschule, Realschule, (Fach-)Abitur), spVocPrep (participation in vocational preparation measures) and spVocTrain (all successfully completed trainings) is taken into account. In addition, data from spVocExtExam and spSchoolExtExam were integrated. A total of three measures of educational attainment are available: CASMIN (tx28101), years of education (tx28102, derived from CASMIN), and ISCED-97 (tx28103). The variables splink, exam and tx28100 can be used to merge information from the original spells.

In the Education file, the transitions are stored in a long event time format. This means that each row represents a transition in at least one classification (CASMIN and/or ISCED-97). Since

ISCED-97 and CASMIN follow different concepts, some educational transitions are covered by only one of these two classifications. Months and years for the transition dates are contained in the variables datem and datey. As a rule, the transitions over time reflect upwards transitions at CASMIN level or up- and sidewards transitions at ISCED-97 level (CASMIN is ordinal, while ISCED-97 has some nominal elements). However, it can also happen that a transition from a higher to a lower degree takes place over time (e.g., by completing a training course after university graduation). In order to determine the highest educational attainment for all respondents, the maximum entry must be selected for each person, for CASMIN in Stata for example by the command:

bysort ID\_t: egen [varname] = max(tx28101)

#### Example 6 (Stata): Working with Education (find R example here)

```
** we want to merge the school type from spSchool to this datafile.
** For this to work, we first have to prepare spSchool and keep only
** harmonized episodes (subspell==0)
use ${datapath}/SC6_spSchool_D_${version}.dta, clear
label language en
keep if subspell==0
tempfile temp
save `temp'
** now, open the Education data file
use ${datapath}/SC6_Education_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** check out which spell modules you can merge to this file
tab tx28100
** only keep school episodes
keep if tx28100==22
** check that you will need splink to merge information
** from other modules to this file
** (command gives no result, which means approval)
isid ID_t splink, miss
** merge the previously generated temporary data file
merge 1:1 ID_t splink using `temp', keep(master match) keepusing(ts11204)
** see that this only added information to the rows corresponding to spSchool
tab tx28100 _merge
```

# 4.5.7 FurtherEducation

Description				Exemplary v	ariables		
Generated dataset for all t further education File structure		Ill training courses and		ID_t number wave	ID target Sort number Wave		
spell format: 1 row = 1 course of 1 respondent			oondent	course	Link for spell merging Course number		
ID variables nee	ded to identify a s	ingle row		tx28200	Origin course inform	ation	
ID_t number				tx2821y	Course attendance (date/in- terval) Start (year)		
Other ID variables useful for linkage				tx2822y	Course attendance (date/in-		
wave splink course				terval) End (year)			
			tx2822c	Course attendance is	ongoing		
Number of variables / number of rows in file				tx28201	Source of course dating		
10 / 05 07	n			tx28202_R	Course content		
10 / 85,97	3						
Contains data fr	om waves						
1 2 3 12	4 5 6	7 8 9	10 11				
Exemplary data	snapshot	'			,		
ID_t	number	splink	course	tx28200	tx2821y	tx2822y	
8002157	3	260003	701	spCourses	2014	2014	
8004382	2	260004	40Z	spcourses	2011	2011	
8004986	5	260003	301	spcourses	2010	2011	
8006249	2	260003	401	spCourses	2011	2011	

Information about the respondents' participation in further education measures is spread across several spell files. The generated file FurtherEducation integrates data on courses from the specific datasets spCourses, spFurtherEdu1, and spVocTrain into a consolidated format. These courses are stored there as duration spells in long format. Start and end dates of courses were imputed if the available information was not precise (e.g., *spring*) or missing. Since the third wave (2nd NEPS survey 2010/11), the start and end dates for further courses (spFur-therEdu1) are no longer collected. Instead, respondents are asked if they have attended any courses since the last interview. In these cases, the date of the last interview was coded as the start date and the date of the current interview as the end date. This means that the start and end dates here only indicate the time interval in which the course was attended. The variable tx28201 can be used to see whether the course dates have been asked directly or whether they are derived from interview or episode dates. Information on the content of the courses is

#### « go back to overview

available as open answers and in coded form using a classification of the Federal Employment Agency (*Kompetenzkatalog der Bundesagentur für Arbeit*).

All respondents who reported at least one participation in further education are included in FurtherEducation. It should be noted that this file, in contrast to spCourses and spFurtherEdu1, does not only contain course participations from the last year, but also from the previous life course. The latter originate from spVocTrain and are vocational trainings, which can be classified as courses and trainings related to further education. The variable course (course number) allows to link the courses with the original files spCourses, spFurtherEdu1 and spVocTrain. For a subset of courses that have a course number, additional information from spFurtherEdu2 can be added. There is also a second subset of courses that can be linked to spells from spVocTrain or spEmp because they have been reported within the context of these spells or (in case of spells from spVocTrain) because they are derived directly from them. The variables ID\_t, course, and splink make it possible to match these original spell data to FurtherEducation. The following overview shows which courses are included in FurtherEducation and with which spells they can be linked in the original files.

- course=valid & splink=missing: episode of further education reported in the further education module; stored in spFurtherEdu1; the spell is right-censored or was completed within the last 12 months
- course=missing & splink=24.... (Vocational Training): episode of vocational training related to further education and participation; stored in spVocTrain; the spell was completed more than 12 months ago
- course=valid & splink=24.... (Vocational Training): episode of vocational training related to further education and participation; stored in spVocTrain; the spell is right-censored or was completed within the last 12 months
- course=valid & splink=25.... (Military/Civilian Service): episode of further education reported in the course module; triggered by spells in spMilitary; courses are stored in spCourses; the triggering spell is right-censored or was completed within the last 12 months
- course=valid & splink=26.... (Employment): episode of further education reported in the course module; triggered by spells in spEmp; courses are stored in spCourses; the triggering spell is right-censored or was completed within the last 12 months
- course=valid&splink=27....(Unemployment): episode of further education reported in the course module; triggered by spells in spUnemp; courses are stored in spCourses; the triggering spell is right-censored or was completed within the last 12 months
- course=valid & splink=29.... (Parental Leave): episode of further education reported in the course module; triggered by spells in spParLeave; courses are stored in spCourses; the triggering spell is right-censored or was completed within the last 12 months
- course=valid & splink=30.... (Gap): episode of further education reported in the course module; triggered by spells in spGap; courses are stored in spCourses; the triggering spell is right-censored or was completed within the last 12 months

# Example 7 (Stata): Working with FurtherEducation (find R example here)

\*\* open the data file
use \${datapath}/SC6\_FurtherEducation\_D\_\${version}.dta, clear
\*\* change language to english (defaults to german)
label language en
\*\* Check the source module of contained courses
tab tx28200

4.5.8 MaritalStates

					« go back to overview
Description				Exemplary	variables
Generated	dataset for all	l marital states		ID_t number	ID target Sort number
entity form spondent	at: 1 row = 1	L marital state c	of 1 re-	datem datey tx27000 problem	Change since (month) Change since (year) Family status Problematic case (information)
ID_t numbe	er				
Other ID variab	les useful for linka	ge			
none					
Number of varia	ables / number of	rows in file			
6 / 19,255					
Contains data fi	rom waves				
Exemplary data	snapshot	datam	datav		++27000
8000679	number 1	March	1972	married/	in registered civil partnership
8021161	1	June	2013	married/	in registered civil partnership
8011556	3	June	2019	married/	in registered civil partnership
8002142	1	September	2016	married/	in registered civil partnership
8022691	3	June	2001	married/	in registered civil partnership

The generated file MaritalStates is derived from information in spPartner and lists all marital states with their entry date. Only persons who are or were married are included in this file. There is an auxiliary variable problem that marks and documents problematic cases (e.g., when a divorce is reported before marriage).

#### Example 8 (Stata): Working with MaritalStates (find R example here)

```
** open the data file
use ${datapath}/SC6_MaritalStates_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** Look at the distribution of family status
tab tx27000
```

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4.5.9 Methods

					×٤	go back to overview	
Description				Exemplary	variables		
Paradata fro	om the CATI/C	API interviews of t	the	ID_t	ID target		
target perso	ns			wave	Wave		
File structure				tx80107	Sample: Fi	rst participation in	
long format:	: 1 row = 1 tar	get in 1 wave			wave .		
		80000 - 00000		tx80209	Interview:	Length of interview	
ID variables need	ded to identify a sir	ngle row			(minutes)		
ID t wave				tx80210	Interview: Ir	icentive (euro)	
ID_t wave				ID_int	Interviewer:	ID	
Other ID variable	es useful for linkage	5		tx80301	Interviewer:	Gender	
ID int				tx80302	Interviewer: Age group		
iD_iiit				tx80400	Willingness:	panel participation	
Number of varial	bles / number of ro	ows in file					
45 / 101,50	02						
Contains data fro	om waves						
1 2 3 12	4 5 6	7 8 9 10	11				
Exemplary data s	snapshot						
ID_t 8003012	wave 7	tx80209	1D_int 1371	[w]	tx80301 female	tx80302	
8006080	3	26.68	1409	Lw]	n] male	30-49 years	
8007630	5	123.85	1398	[r	m] male	30-49 years	
8010344	11	46.72	2735	[w]	female	50-65 years	
8022426	10	45.99	2415	[1	m] male	up to 29 years	

This dataset provides a variety of information about data collection such as gender ( $t \times 80301$ ) and age ( $t \times 80302$ ) of the interviewer, the interview date (intm, inty), the interview duration ( $t \times 80209$ ), and the individual survey participation status ( $t \times 80220$ ).

It should be noted that Methods contains all respondents contacted, regardless of whether an interview was conducted or not (see variable  $\pm x80207$  for more details). For this reason, the data file Methods consists of more cases than the file pTarget.

Example 9 (Stata): Working with Methods (find R example here)

```
** open the data file
use ${datapath}/SC6_Methods_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
```

# Data Structure

\*\* check out participation status by wave
tab wave tx80220
\*\* how many different interviewers did CATI surveys?
distinct ID\_int
\*\* create one single variable containing the interview date
generate intdate=mdy(intm,intd,inty)
format intdate %td
list intd intm inty intdate in 1/10

# 4.5.10 MethodsCompetencies

		« go back ti	
Description	Exemplary v	ariables	
Paradata of the realization of competence mea- sures	ID_t wave	ID target Wave	
File structure	splitgr	Split group	
long format: 1 row = 1 target in 1 wave	iiw tlesz1_2	Interview location Start Timekeeping Re	eading
ID variables needed to identify a single row	tlesz2_2	End Timekeeping Rea	ading
ID_t wave	tmlintro_2 tmlz2_2	Start Metacognition End Metacognition R	Reading Reading
Other ID variables useful for linkage	tmatz1_2	Start Timekeeping N	umeracy
none	tmatz2_2	End Timekeeping Nu Duration TBT-module	meracy e in sec
Number of variables / number of rows in file	tictstart	Start Timekeeping T	ask book-
89 / 33,288		let ICT End Timekeeping Tas	
Contains data from waves			
1 2 3 4 5 6 7 8 9 10 11 12			
Exemplary data snapshot			
ID_t wave spli	tgr iiw	tlesz2_2	tbtdauer
80050113only booklet Numer80054893only booklet Numer80063253only booklet Read80101173both tests, booklet Reading fi80114113both tests, booklet Reading fi	acy 1 acy 1 ing . rst . rst .	· 1 1	-54 -54 -54 -54 -54

Analogous to other method files, this dataset also contains paradata about the interview situation, in particular about the realization of the competence tests. Available variables include sample splits (splitgr), interview location (iiw) and different start and end markers for different modules (e.g., reading, ICT).

#### Example 10 (Stata): Working with MethodsCompetencies (find R example here)

```
** open the data file
use ${datapath}/SC6_MethodsCompetencies_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** look at the distribution of split groups
** note that this has only been conducted in wave 3
```

# Data Structure

tab splitgr wave

4.5.11 pTarget

Description Exemplary variables Data from respondents CATI/CAPI interviews ID target ID\_t wave Wave File structure tx20000 Number of children in houselong format: 1 row = 1 target in 1 wave hold t700101\_g1 Municipality of birth (West-ID variables needed to identify a single row /East) ID\_t wave t34005a Number of books t700001 Gender Other ID variables useful for linkage t70000y Date of birth: year splink t405010 g2 Country of birthplace (categorized) Number of variables / number of rows in file tx20000 Number of children in house-1,170 / 114,734 hold Satisfaction with life Contains data from waves t514001 t733001 Current family status 2 3 4 5 6 7 8 9 10 11 1 t400500\_g1 Generation status 12 t514004 Satisfaction with family life t66003a\_g1 Global self-esteem Exemplary data snapshot t405010\_g2 t400500\_g1 ID\_t wave tx20000 t700001 t70000y t514001 t514004 [m] male 8007196 1978 2 3 1 5 3 10 8020901 4 1 [w] female 1966 1 8 6 8 8022580 4 [w] female 1970 1 9 10 9 1 7 8023609 4 2 [w] female 1982 8 1 10 8023939 4 2 [m] male 1967 7 8 9 1

The data in the file pTarget comes from computer-assisted telephone (CATI) or personal (CAPI) interviews. Since several questions are asked repeatedly over different survey waves, data integration takes place in a long format. This means that for each new survey wave there is an additional row for each target participating in that wave. Target persons can be uniquely identified by the variable ID\_t, but rows can only be identified by the combination of the variables ID\_t and wave. Since rows exist only for those respondents for whom answers from the respective survey wave are available, there are fewer rows in pTarget than in the CohortProfile.<sup>2</sup>

2 The CohortProfile contains all respondents in the panel sample, regardless of their participation in any wave.

« go back to overview

The dataset pTarget provides hundreds of variables and thus contains most of the information collected. Some of the variables describe sociodemographic characteristics such as gender (t700001), year of birth (t70000y), country of birth ( $t405010_g2$ ), or generation status ( $t400500_g1$ ). Other variables contain information on the household context such as the number of children (tx20000) or subjective assessments such as satisfaction with life (t514001) or family life (t514004).

Example 11 (Stata): Working with pTarget (find R example here)

```
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```

# 4.5.12 pTargetCORONA

			« go ba	ck to overview	
Description		Exemplary	Exemplary variables		
Data regarding the impact of the demic on respondents life	corona pan-	ID_t wave	ID target Wave		
File structure		t514001	Satisfaction with life	e	
long format: 1 row = 1 target in 1 v	vave	tm00001	Impact: Coronaviru no	us infection -	
ID variables needed to identify a single row		tm00007	Impact: Quarantine	e - no	
ID_t wave			Employment status navirus pandemic	before coro-	
Other ID variables useful for linkage		- tm00015	Systemically impor	tant profes-	
none			sion Change Working tir		
Number of variables / number of rows in file					
185 / 2,678					
Contains data from waves					
Exemplary data snapshot					
ID_t wave	t514001	Τ	tm00013	tm00015	
8002298	9	I was I was	s employed s employed	no ves	
8003068	7	I was	s employed	no	
8009668 . 8022821 .	5 8	I was I was	s employed s employed	no no	

This data has been established to investigate the medium and long-term effects of the corona pandemic on skills development and educational pathways over the life course. The following questions aire in particular:

- How do learning environments change and which potentials and risks become clear through the beginning digitalization of learning?
- Are there effects on upcoming educational decisions and are there medium and long-term effects on social educational inequality
- What are the effects on educational outcomes, such as income, but also non-monetary returns, e.g., health and labor market participation

Data is collected by means of a cross-cohort questionnaire program adapted to the current situation of the respective participants. In order to collect this data in a timely manner, the first questions were administered via online survey in Starting Cohorts 2-6 in May 2020. As this time

span did not overlap with regular waves, data from this survey is marked with a missing wave (wave==.). The integration of the corresponding questions is planned in an additional module on the corona pandemic for the forthcoming main surveys in all Starting Cohorts.

### Example 12 (Stata): Working with pTargetCORONA

```
** open the file
use ${datapath}/${cohort}_pTargetCORONA_D_${version}.dta, clear
label language en
```

```
** note that the wave is missing for some cases,
** as this reflects the pre-wave survey in may 2020
tab wave
```

```
** but rows can be uniquely identified by \ensuremath{\text{ID\_t}} and wave isid \ensuremath{\text{ID\_t}} wave
```

# 4.5.13 pTargetMicrom

						« go back to	overview
Description					Exemplary varia	bles	
Small-scale place of res	regional in idence	dicators	on responde	nts'	ID_t wave regio	ID target Wave Indicator for	enrich-
panel forma of 1 respon	at: 1 row = dent	1 region	al level in 1 w	/ave	— ID_regio	ment level System-free I richment leve	D of en-
ID variables nee	eded to identify	a single rov	w		mso_k_ausland	Share foreigne	ers
ID_t wave r	egio	nkage			mso_k_familie — mbe_k_haustyp mgm_k_dom	Family structu Type of house Dominant mid	re crom geo
ID_regio	ables / number	r of rows in t	file		mgs_k_dom	milieu® Dominant submilieu	geo-
180 / 146	682				mmo_k_volume	n Move volume	
105 / 140,	082				<pre>_ mpi_k_dichte</pre>	Car density	
Contains data fr 1 2 3 12	a de la comercia de l	6 7	8 9 10	1)	mas_k_berufsuv mas_k_krankzuv mlt_k_primlt kkr_w_summe	<ul> <li>Occupational insurance</li> <li>Additional hea ance</li> <li>Primary Limbi</li> <li>Total purchasi</li> <li>in euros</li> </ul>	disability Ilth insur- c Type ng power
Exemplary data ID_t 8005603	snapshot wave 5	regio 1	ID_regio 110159	mso_k_aus	land mbe_k_ 3	_haustyp mp 1	i_k_dichte
8005604 8006615 8007409 8008133	5 5 5 5	1 1 1 1	124770 163102 109641 161958		8 1 2 2	2 1 2 2	5 8 8 8

The data file pTargetMicrom is only available via **On-site** access. The file is not included in the Download and Remote versions of the Scientific Use File.

The data include details about the respondent's residence at five different regional levels, distinguishable by the variable regio: house area, street section, postal code, postal code 8, municipality. All these levels are available for each respondent and each wave.65All these levels are available for each respondent in wave 5 (data for waves 1, 3 and 7 have been enriched at a basic level).

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Numerous regional indicators are provided, e.g. the percentage of foreigners, unemployment rate, family and age structure, milieu types, car type density, distribution of insurances, etc. To clarify, this information does **not** refer to individuals, but to regional units to which respondents belong via their place of residence. Accordingly, the unemployment rate, for example, indicates the proportion of unemployed people in the population of a given region.

Please note that a separate documentation exists for this data file on the website (see section 1.2), which not only lists all variables, but also explains the background of the data.

#### Example 13 (Stata): Working with pTargetMicrom (find R example here)

```
** open Microm datafile. Note that this data file is only available OnSite!
use ${datapath}/${cohort}_pTargetMicrom_0_${version}.dta, clear
label language en
*** additionally to ID_t and wave, line identification in this file is done
*** via variable regio, denoting the regional level of information
isid ID_t wave regio
*** tabulating wave against regio shows availability of all levels
*** in wave 5 and 7, but only the most detailled level available
*** in wave 1 and 3 (usually housing level)
tab wave regio
*** only keep housing level
keep if regio==1
*** now you can enhance CohortProfile with regional data
merge 1:1 ID_t wave using ${datapath}/${cohort}_CohortProfile_0_${version}.dta
```

# 4.5.14 pTargetRegioInfas

				« go n	ack to overview	
Description			Exemplary	Exemplary variables		
Small-scale regio place of residence	nal indicators on re ce	spondents'	ID_t regio tx44288	ID target Regional level Share residents 0-2	L4 years (in %)	
panel format: 1 spondent	row = 1 regional le	vel of 1 re-	tx44289 — tx44294	Share residents 1 %) Purchasing power	5-24 years (in per resident	
ID variables needed to ID_t regio	identify a single row		tx44298	(EUR) Companies in to (trade indicator) Share retail (in %)	otal per km²	
none	number of rows in file		tx44001 tx44318	Residents per hous Share single-perso (in %)	s <b>ehold</b> n households	
67 / 46,596	ves		tx44242 tx44312	Type of residential Share agriculture (	area in %)	
1 2 3 4 12	5 6 7 8	9 10 11				
Exemplary data snapsh	not					
ID_t	regio	tx44294		tx44298	tx44001	
8007090	2	29630		28.69	1.85	
8006589	2	17947		242.94	1.94	
8002015 8002016	1	10502		88.34 11 77	1.85	
8008206	1	21928		64.26	2.29	

The data file pTargetRegioInfas is only available via **On-site** access. The file is not included in the Download and Remote versions of the Scientific Use File.

The data include details about the respondent's residence at four different regional levels, distinguishable by the variable regio: street section, quarter, postal code, and municipality. Information on all these levels is only available for the second wave (1st NEPS survey, 2009/2010). The regional indicators available in this file include the purchasing power per resident in EUR (tx44294), the total number of companies per km<sup>2</sup> (tx44298), the average number of residents per household (tx44001), and so on. As in pTargetMicrom these data do **not** refer to the respondents themselves, but to the regional levels in which the respondents live (i. e., the unemployment rate, for example, indicates the proportion of unemployed people in the population of a given region such as the municipiality).

# « go back to overviev

Please note that a separate documentation exists for this data file on the website (see section 1.2), which not only lists all variables, but also explains the background of the data.

#### Example 14 (Stata): Working with pTargetRegioInfas (find R example here)

```
** open datafile. Note that this data file is only available OnSite!
use ${datapath}/${cohort}_pTargetRegioInfas_0_${version}.dta, clear
label language <mark>en</mark>
** identification in this file is done
** via variable regio, denoting the regional level of information
isid ID_t regio
** existing regional levels are:
tab regio
** only keep housing level
keep if regio==1
** save to temporary file
tempfile regio
save `regio'
** now you can enhance CohortProfile with regional data
use ${datapath}/${cohort}_CohortProfile_0_${version}.dta, clear
label language en
```

```
merge 1:1 ID_t wave using `regio'
```

4.5.15 spChild

						« }	go back to overview	
Description					Exemplary	variables		
Spell data on	all childre	n of the resp	ondents		ID_t	ID target		
File structure					child	Child number		
entity format	t: 1 row = 1	1 child of 1 re	spondent		– subspell – wave	Number o Wave	f subspell	
ID variables need	ed to identify a	a single row			ts3320m	Date of	birth of the child	
ID_t child subspell					— ts3320y	(month) Date of birth of the child (year)		
Other ID variables useful for linkage					ts33203	Gender of the child Biological child, adoptive or fos- ter child		
wave			-	- ts33204				
Number of variab	oles / number o	of rows in file			ts33209 Employment Child			
78 / 198,46	8			-	ts33301	School en pleted	rollment already com-	
Contains data from	m waves							
1 2 3 12	4 5	6 7 8	9 10 11					
Exemplary data si	napshot			1		I	·	
ID_t	child	subspell	wave	ts3320y	1	ts33203	ts33204	
8004905	1	1	1	1999	[r	n] male	Biological child	
8008276	1 3	1	2	1972	ן רעק	nj mate female	Biological child	
8011263	5 1	1	∠ 2	1989	Lw] Fr	n] male	Biological child	
8020974	1	1	4	1990	[r	n] male	Biological child	

The data set spChild informs about all biological, foster and adopted children of a respondent as well as about every other child that currently lives or has lived with the respondent (e.g., children of former and current partners). For the latter, episodes were only recorded if the interviewee and the child lived in the same household. The variable ts33204 can be used to distinguish the child type. In the case of twins and higher orders of multiple births, separate episodes are generated for each child. The variable child counts up the children per respondent. Note that a child episode was skipped in the interview when the respondent reported that the child was deceased. In addition to sociodemographic characteristics such as year of birth (ts3320y) and gender (ts33203), the data mainly contain educational and employmentrelated information on the children.

Spell data on living with children can be found in the file spChildCohab; spell data on parental leave related to the children are stored in the file spParLeave.

# « go back to overview

```
Example 15 (Stata): Working with spChild (find R example here)
** open the data file
use ${datapath}/SC6_spChild_D_${version}.dta, clear
** switch to english language
label language en
** only keep full or harmonized episodes
keep if subspell==0
** generate the total count of children for each respondent
** you can do this either by taking the maximum child number:
bysort ID_t: egen children=max(child)
** or counting the number of rows:
bysort ID_t: gen children2=_N
** which both computes the same result
assert children==children2
** recode rough values (e.g. end of year) to real months
replace ts3320m=ts3320m-20 if ts3320m>20
** compute the age of one's children today
** first, create a Stata monthly date (months since 1960m1) of the birth variables
generate birth_ym =ym(ts3320y,ts3320m)
** then, create the same for the current date
gen now_ym=mofd(date(c(current_date), "DMY"))
** the age is then easily computed
gen age=(now_ym-birth_ym)/12
summarize age
```

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# 4.5.16 spChildCohab

					« go back t	o overview	
Description				Exemplary variables			
Spell data or children	n all episode	s of cohabita	ation with	ID_t child spell	ID target Child number Spell number cohabi	tation with	
spell format: 1 responden	: 1 row = 1 co t	bhabitation e	episode of	subspell wave ts33203	child Number of subspell Wave Gender of the child		
ID_t spell sul	bspell			ts3331m	Start date Living tog (month)	ether Child	
Other ID variables useful for linkage child wave				ts3332m	(year) End date Living toge	ether Child	
Number of variab	oles / number of r <b>7</b>	ows in file		- ts3332y	(month) End date Living toge (year)	ether Child	
Contains data fro	4 5 6	789	10 11				
Exemplary data s	napshot						
ID_t	child	spell	subspell	wave	ts3331y	ts3332y	
8005277	1	102	6	6	1992	2013	
8006035	2	202	6	7	2008	2014	
8010296	2	202	1	1	1992	2007	
8023477	2 3	202 303	2 2	3 5	2003	2011 2012	

If a respondent lives together with one or more children in a household, the duration of the cohabitation is registered in spChildCohab. Cohabitation episodes are connected to the respective child via the number in the variable child. Please note that the periods of cohabitation from the year of the beginning (ts3331y) to the year of the end (ts3332y) do not necessarily coincide with the dates of birth and death; for direct information on the children rather consult the spChild dataset.

Example 16 (Stata): Working with spChildCohab (find R example here)

\*\* open the data file
use \${datapath}/SC6\_spChildCohab\_D\_\${version}.dta, clear

```
** switch to english language
label language en
** only keep full or harmonized episodes
keep if subspell==0
** recode rough values (e.g. end of year) to real months
replace ts3331m=ts3331m-20 if ts3331m>20
replace ts3332m=ts3332m-20 if ts3332m>20
** generate the following durations in months:
\star a) the total duration of a cohabitation episode
gen cohab_duration = ym(ts3332y,ts3332m) - ym( ts3331y, ts3331m)
\star b) the total duration a respondent lived together with specific child
bysort ID_t child (spell): egen total_duration_per_child = total(cohab_duration)
\star c) the total duration a respondent lived together with any child
bysort ID_t (child spell): egen total_duration_per_target = total(cohab_duration)
** to work with the latter information in other files, you could do
** which gives you a cross-sectional display of cohabitation time for every
respondent
keep ID_t total_duration_per_target
duplicates drop
```

4.5.17 spCourses

					« go back		
Description				Exemplary va	ariables		
Spell data o	n courses a	and trainings	ID_t wave	ID target Wave			
entity form more course	at: 1 row = es of 1 resp	= 1 episode v oondent	splink sptype t271001	Link for spell merging Spell type Total duration of train courses			
ID_t wave s	plink		course_w1 t271011_w	1st course number 1 Course duration			
Other ID variabl	es useful for lin <b>"se_w</b> *	Ikage	course_w2 t271011_w2 course_w3	2nd course number Course duration 3rd course number			
Number of variables / number of rows in file				t27800a	Start date Episode (month)		
69 / 31,26	<b>2</b> rom waves			t27800c t27800c	t278000 Start date episod t27800c End date Episod t27800d End date Episod		
1 2 3 12	4 5	6 7 8	9 10 11				
Exemplary data	snapshot						
ID_t	wave	splink	sptype	course_w1	course_w2	course_w3	
8005461	5	260001	26	501	502	503	
8006414	3	260005	26	301	302	303	
8008034	5	260005	26	501	502	503	
8008409 8010239	11 12	260014	26	1101	1102	1103	
0010239	12	200002	20	1201	1202	1203	

The file spCourses indicates courses and trainings attended since the last interview (or within the last 12 months to the first interview) during episodes of employment (spEmp), unemployment (spUnemp), parental leave (spParLeave), military or civilian service (spMilitary), and episodes from the spGap module. The start and end dates of the spells correspond to the original episodes from the modules just mentioned, in which a course was taken. For each of these episodes, information on up to five (up to three until wave 9) courses is included in a wide data format. The dataset covers all course spells that were recorded in these modules (see sptype for identification). Spells may also be included if no course was taken during this episode. The only criterion for inclusion in spCourses is that a person has provided information about at least one course. Note that the course numbers in this dataset are stored in wide format (course\_w1, ..., course\_w5), while in the other course files (spFurtherEdu1, FurtherspEdu2) there is only one single enumerator (course).

« go back to overview

Basic information from this dataset is integrated into the generated file FurtherEducation. If you are not necessarily interested in the details from spCourses, we recommend using FurtherEducation instead.

Example 17 (Stata): Working with spCourses (find R example here)

```
** open the data file
use ${datapath}/SC6_spCourses_D_${version}.dta, clear
** check which modules provided course information
tab sptype
** only keep courses from employment spells
keep if sptype==26
** save this datafile for later usage
tempfile courses
save `courses'
** open the employment module
use ${datapath}/SC6_spEmp_D_${version}.dta, clear
** add the temporary datafile from above;
** note that this is an m:1 merge, as there are still subspells in spEmp
merge m:1 ID_t wave splink using `courses', assert(master match) nogenerate
\star\star you now have the spEmp datafile, enhanced with information from spCourses,
** and can proceed with this in the usual way
```

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4.5.18 spEmp



The comprehensive dataset spEmp covers all episodes of the respondents' regular employment, also traineeships. Information on second jobs is only collected for activities that are ongoing at the date of the interview. Vacation jobs, volunteering, and internships are not included. New episodes are created at the following events:

- Change of employer
- Change of occupation
- Interruption of employment (e.g., due to unemployment or military service)

The file provides information about the start and end dates of each episode (ts2311y, ts2312y), as well as net income (ts23410), type of required vocational training (ts23228), actual working time per week (ts23223\_g1), and so on.

```
Example 18 (Stata): Working with spEmp (find R example here)
```

```
** open the data file
use ${datapath}/SC6_spEmp_D_${version}.dta, clear
** only keep full or harmonized episodes
keep if subspell==0
** save this file temporarily
tempfile tmp
save `tmp'
** open the Biography data file
use ${datapath}/SC6_Biography_D_${version}.dta, clear
** merge the previously created temporary data file to this
merge 1:1 ID_t splink using `tmp' , keep(master match)
** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e., the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.
tab sptype _merge
```

### 4.5.19 spFurtherEdu1

					« go back to overview		
Description				Exemplary variables			
Spell data o	n additional	courses		ID_t	ID target		
File structure				wave	NEDC		
entity forma	at: 1 row = 1	course of 1 res	spondent	course	NEPS wave Course number		
ID variables nee	ded to identify a	single row		t271044	Start of course (month)		
				t271045	Start of course (year)		
ID_t course				t271047	End of course (month)		
Other ID variabl	es useful for linka	ige		t271046	End of course (year)		
Wave			t271048	Course is ongoing			
Wave				t271049	Termination Course		
Number of varia	ables / number of	rows in file		t272000_R	Content other course		
20 / 24,94	4						
Contains data fr	om waves						
1 2 3 12	4 5 6	5 7 8 9	10 11				
Exemplary data	snapshot						
ID_t	wave	course	t271045	t271046	t271048		
8005096	2	203 201	2009	2010	yes, course is ongoing		
8007645	2	201	2008	2009	no		
8009399	2	204	2009	2010	no		
8011678	2	202	2009	2009	no		

The data set spFurtherEdu1 contains information about other courses that the respondent has attended since the last interview (in the first interview within the last 12 months) and has not reported in spCourses or spVocTrain. This includes both professional trainings (similar to spCourses) as well as courses for private purposes (e.g., cooking course, yoga course, NLP coaching). In addition to the content of the respective course, the start date (t271045) and end date (t271046) as well as the current status (t271048) are available.

Information from this dataset is integrated into the generated file FurtherEducation. If you are not necessarily interested in the details from spFurtherEdu1, we recommend using FurtherEducation instead.

#### Example 19 (Stata): Working with spFurtherEdu1 (find R example here)

```
** open the datafile
use ${datapath}/SC6_spFurtherEdu1_D_${version}.dta, clear
```

\*\* One row contains information for one course. The only possibility to use \*\* this file is to merge it to the data for this respondents wave (we use the \*\* CohortProfile). We have to reshape the file so one row contains one wave. bysort ID\_t wave (course): gen course\_nr=\_n reshape wide course t\*, i(ID\_t wave) j(course\_nr) \*\* create a temporary datafile for later merge tempfile spfurther save `spfurther' \*\* open CohortProfile use \${datapath}/SC6\_CohortProfile\_D\_\${version}.dta, clear \*\* merge data merge 1:1 ID\_t wave using `spfurther', assert(master match) nogen \*\* Please note that you now have multiple variables added to CohortProfile, \*\* one set of variables for each course reported in spFurtherEdu1

# 4.5.20 spFurtherEdu2

			« go back to overview			
Description	Exemplary variables					
Spell data with addi lected courses	tional information c	on se-	ID_t wave	ID target Wave		
File structure			course	Course number		
entity format: 1 row =	= 1 course of 1 respo	ndent	t323520	Care support thro	ugh social cap-	
ID variables needed to identi	fy a single row		t279040	professional/priva	te reasons	
ID_t course			t279046 t272040	Course costs Empl Provider	oyer	
Other ID variables useful for	inkage		t279041	Motivation for	course atten-	
wave				dance		
			t272043	Certificate		
Number of variables / number	er of rows in file		t272003	Course assessmen	t: learned new	
40 / 52,263				things		
Contains data from waves						
1 2 3 4 5 12	6 7 8 9 1	0 11				
Exemplary data snapshot						
ID_t wave	course	t279046		t279041	t272043	
8002772 9	901	fully	no	effort at all	1	
8003219 4	401	fully	a	lot of effort	1	
8020059 7	702	fully	а	lot of effort	1	
8024768 4	402	fully	а	lot of effort	1	

Using the survey instrument, two courses from the modules spVocTrain, spCourses and spFurtherEdul are randomly selected. For both courses the respondent is asked to provide additional information such as costs incurred by the employer (t279046), motivation for course attendance (t279041) and certificates (t272043). This information is contained in the dataset spFurtherEdu2.

#### Example 20 (Stata): Working with spFurtherEdu2 (find R example here)

```
** Two possibilities to use spFurtherEdu2
** A) Merge data to spCourses
** open spCourses datafile
use ${datapath}/SC6_spCourses_D_${version}.dta, clear
```

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# **Data Structure**

```
** one row contains information for up to three courses.
** To make merging possible, you first have to reshape the datafile
** so one row contains only one course
reshape long course_w, i(ID_t wave splink) j(course_nr)
rename course_w course
** merge spFurtherEdu2 using ID_t and course
merge m:1 ID_t course using ${datapath}/SC6_spFurtherEdu2_D_${version}.dta, keep(
master match)
** ----
** B) merge to spFurtherEdu1
** open spFurtherEdu1 datafile
use ${datapath}/SC6_spFurtherEdu1_D_${version}.dta, clear
** merge spFurtherEdu2 using ID_t and course
merge 1:1 ID_t course using ${datapath}/SC6_spFurtherEdu2_D_${version}.dta, keep(
master match)
```

# 4.5.21 spFurtherEdu3

					« go back to	overview	
Description				Exemplary variables			
Spell data	Spell data on German language courses				ID target	Gormon	
File structure				gcourse		German	
entity form spondent	nat: 1 row = 2	L German	course of 1 re-	wave t416510 t41652m	Course) Wave Duration of course Start of German	course	
ID_t gcours	se	a single row		t41652y	(month) Start of German cour	se (year)	
Other ID variables useful for linkage				t41653m End of German course (month)			
wave				t41653yEnd of German course (year)t416540Termination Course			
Number of var	iables / number o	of rows in file	2	nepswave	NEPS wave		
11 / 512				t416500	t416500 Attended German course 1		
Contains data f	from waves						
123	8 4 5						
Exemplary data	a snapshot						
ID_t	gcourse	wave	t41652m	t41652y	t41653m	t41653y	
8009179	201	2	May Mid-year/Summer	2005	November Mid-year/Summer	2005	
8021576	401	2 4	Januarv	2003	March	2009	
8022196	401	4	November	1991	June	1992	
8022619	401	4	April	1990	January	1992	

Information on courses in German as a foreign language is only collected for migrants. The dataset spFurtherEdu3 lists the start date (t41652m/y), the end date (t41653m/y) and the duration of German courses attended by respondents with migration background.

#### Example 21 (Stata): Working with spFurtherEdu3 (find R example here)

```
** Two possibilities to use spFurtherEdu3
** A) Merge data to spCourses
** open spCourses datafile
use ${datapath}/SC6_spCourses_D_${version}.dta, clear
** one row contains information for up to three courses.
** To make merging possible, you first have to reshape the datafile
```

```
** so one row contains only one course
reshape long course_w, i(ID_t wave splink) j(course_nr)
rename course_w gcourse
** merge spFurtherEdu3 using ID_t and gcourse
merge m:1 ID_t gcourse using ${datapath}/SC6_spFurtherEdu3_D_${version}.dta, keep(
    master match)
** ----
** B) merge to spFurtherEdu1
** open spFurtherEdu1 datafile
use ${datapath}/SC6_spFurtherEdu1_D_${version}.dta, clear
** rename course variable to match variable name in spFurtherEdu3
rename course gcourse
** merge spFurtherEdu3 using ID_t and course
merge 1:1 ID_t gcourse using ${datapath}/SC6_spFurtherEdu3_D_${version}.dta, keep(
    master match)
```

4.5.22 spGap

				« go back to overvie				
Description				Exemplary	xemplary variables			
Spell data o	n reported ga	ap episodes		ID_t	ID target			
File structure				spall	Spoll number			
spell format	ll format: 1 row = 1 gap of 1 respondent				Number of subspell	of subspell		
ID variables nee	ded to identify a s	ingle row		wave	wave Wave			
ID t spell su	ID t spell subspell			spms Check module: type of event				
	•			ts29901	Auxiliary variable Cur	rent gap		
Other ID variables useful for linkage				ts29300	Episode mode			
wave splink	ave splink			ts2911m	Start date Gap (month)			
				ts2911y	Start date Gap (year)			
Number of variables / number of rows in file				ts2912m	Start date gap (month)			
29 / 42 165				ts2912y	Start date gap (year)			
	-			ts2912c	Ongoing of gap episo	de		
Contains data fr	om waves							
1 2 3 12	4 5 6	7892	10 11					
Exemplary data	snapshot							
ID_t	spell	subspell	wave	ts29901	ts2911y	ts2912y		
8005623	2	2	2	1	1999	2010		
8008799	3	2	3	1	1995	2011		
8008936	3	2	3	1	1999	2011		
8022779	1 1	1	4	1 1	2008 2009	2012		
	-	-	•		2000	2012		

Gaps in the individual life histories are identified by a "check module". Such gap episodes are contained in the file spGap with start dates (ts2911m/y) and end dates (ts2912m/y). The spells here refer to different types of gaps that are indicated by the variable ts29101.

Example 22 (Stata): Working with spGap (find R example here)

```
** open the data file
use ${datapath}/SC6_spGap_D_${version}.dta, clear
** only keep full or harmonized episodes
keep if subspell==0
** save this file temporarily
tempfile tmp
save `tmp'
```

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\*\* open the Biography data file
use \${datapath}/SC6\_Biography\_D\_\${version}.dta, clear
\*\* merge the previously created temporary data file to this
merge 1:1 ID\_t splink using `tmp' , keep(master match)
\*\* you now have an enhanced version of Biography, enriched by
\*\* information from the spell module. The number of total episodes
\*\* (i.e., the amount of rows in the Biography file) did not change.
\*\* Verify this by tabulating the spell type by the merging variable
\*\* generated during the merge process.
tab sptype \_merge

4.5.23 spMilitary

					« go back	lo overview	
Description				Exemplary variables			
Spell data on military or civilian service and years of voluntary work		and	ID_t splink subspell	ID target Link for spell merging Number of subspell			
spell format	: 1 row = 1 epis	ode of 1 respon	dent	spell	Spell number		
ID variables nee	ded to identify a sing	le row		ts21201	Wave Type of milita	ry service	
ID_t spell su	ıbspell			ts2111m	episode Start Military serv	ice episode	
Other ID variables useful for linkage wave splink				- month ts2111y Start Military service episode			
Number of variables / number of rows in file			ts2112m	ts2112m End Military service episode -			
26 / 6,591				- ts2112y	month End Military servi	ce episode -	
Contains data fro	om waves	7 8 9 10	11	ts21202	f training during		
					Check module: (year, edited)		
Exemplary data	snapshot						
ID_t	splink	subspell	spell	wave	ts2111y	ts2112y	
8001275	250001	1	1	2	2009	2010	
8006290	250001	2	1	2	2007	2008	
8010386	250001	2	1	2	2007	2008	
0U12213 8022788	250001	2	1	∠ 5	∠⊎⊎3 2012	2009	
8022788	250001	1	1	5	2012	20	

The dataset spMilitary contains episodes of military or civilian service as well as years used for voluntary work in the social or environmental sector with respective start dates (ts2111m/y) and end dates (ts2112m/y). Regular or professional soldiers are regarded as employed and are therefore more likely to be found in the employment file spEmp.

#### Example 23 (Stata): Working with spMilitary (find R example here)

\*\* open the data file
use \${datapath}/SC6\_spMilitary\_D\_\${version}.dta, clear

```
** only keep full or harmonized episodes
keep if subspell==0
** save this file temporarily
tempfile tmp
save `tmp'
** open the Biography data file
use ${datapath}/SC6_Biography_D_${version}.dta, clear
** merge the previously created temporary data file to this
merge 1:1 ID_t splink using `tmp' , keep(master match)
** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e., the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.
tab sptype _merge
```
4.5.24 spParLeave

				« go back to				
Description				Exemplary variables				
Spell data o File structure spell format of 1 respond ID variables nee ID_t spell su Other ID variable wave child s	n periodes of t: 1 row = 1 p dent ded to identify a si ubspell es useful for linkag splink	parental leave parental leave ngle row	episode	ID_t child spell subspell wave ts2711m ts2711y ts2712m ts2712y ts2712c th27100	ID target Child number Spell number Number of subspell Wave Start Parental leave (month) Start Parental leave (month) End Parental leave (year) End Parental leave (month) Ongoing of parental leave Employment after parental			
Number of varia 31 / 12,798 Contains data fr 1 2 3 12	ables / number of ro 8 om waves 4 5 6	ows in file 7 8 9	10 11					
Exemplary data	snapshot child	spell	subspell	wave	ts2711y	ts2712y		
8002987 8004776 8007736 8012228 8023359	1 1 2 2 1	103 103 202 202 101	2 1 3 4 2	2 9 6 12 12	2002 2016 2011 2016 2018	2010 2016 2013 2019 2020		

For each child (except for deceased children, see spChild), information is collected on whether the respondent has taken parental leave. Each parental leave episode adds one row to the dataset spParLeave, including information on the beginning of the leave (ts2711m/y) and its end (ts2712m/y). According to the study design, periods of maternity leave do not count as parental leave. These periods are usually added to the respective employment episode. This means that an employment spell is not interrupted if the mother only takes maternity leave without additional parental leave.

Example 24 (Stata): Working with spParLeave (find R example here)

```
** open the data file
use ${datapath}/SC6_spParLeave_D_${version}.dta, clear
** only keep full or harmonized episodes
```

keep if subspell==0
\*\* save this file temporarily
tempfile tmp
save `tmp'
\*\* open the Biography data file
use \${datapath}/SC6\_Biography\_D\_\${version}.dta, clear
\*\* merge the previously created temporary data file to this
merge 1:1 ID\_t splink using `tmp' , keep(master match)
\*\* you now have an enhanced version of Biography, enriched by
\*\* information from the spell module. The number of total episodes
\*\* (i.e., the amount of rows in the Biography file) did not change.
\*\* Verify this by tabulating the spell type by the merging variable
\*\* generated during the merge process.
tab sptype \_merge

4.5.25 spPartner

			« go back to overvie				
Description			Exemplary	Exemplary variables			
Spell data on	partners in the	household	ID_t	ID target			
File structure			partner	Partner number			
entity format: 1 row = 1 partner of 1 respondent			ts31204	Number of subspell Partner born	in Ger-		
ID variables need	led to identify a single i	row		many/abroad			
ID t nartner	subspell		ts31211	Partner German			
ib_t partier	subspen		ts31203	Gender of partner			
Other ID variables useful for linkage			ts3131y	Date when couple moved in to-			
wave			ts21/1m	Marriage date (mont	b)		
Number of variab	les / number of rows i	n filo	+c21/1y	Marriage date (month			
			ts3141y	Data of birth Dorts or	(		
98 / 109,82	7		ts3120m	ts3120m Date of birth Partner (month)			
			ts3120y	20y Date of birth Partner (year)			
Contains data from	m waves		ts31206	Age at moving Partne	ir.		
1 2 3	4 5 6 7	8 9 10 11					
12							
Exemplary data si	napshot						
ID_t	partner	subspell	ts31203	ts3120m	ts3120y		
8012451	1	1	[w] female	August	1969		
8024546	2	1	[m] male	September	1951		
8006595	1	1	[m] male	February	1961		
8011282	1	1	[m] male	October	1974		

The dataset spPartner covers the respondent's partnership history. The subjective reports of the respondents define whether they live in a relationship and whether they cohabit with their partner or not. A comprehensive set of additional questions refers to the current partner, including gender (ts31203) and date of birth (ts3120m/y). For former partners, only information about the year of birth and education is available. Information about the current partner is collected regardless of the status of cohabitation, while former partners are only included in the survey if they have lived together with the respondent. The enumerator variable partner identifies partners *within* respondents. This variable is coded with 1 for the first partner and counts up to the last (current) partner.

#### Example 25 (Stata): Working with spPartner (find R example here)

\*\* open the data file
use \${datapath}/SC6\_spPartner\_D\_\${version}.dta, clear

```
** switch to english language
label language en
** only keep full or harmonized episodes
keep if subspell==0
** to find out if a respondent is or was ever been married,
** check out if the indicating variable ever stated a marriage
bysort ID_t: egen married = max(ts31410==1)
** look at the data
list ID_t partner ts31410 married in 1/20, sepby(ID_t)
** reduce the datafile, so you have one single row for each respondent
keep ID_t married
duplicates drop
** you now can save this datafile and merge it to, e.g., CohortProfile
tempfile married
save `married'
use ${datapath}/SC6_CohortProfile_D_${version}.dta, clear
merge m:1 ID_t using `married', nogen keep(master match)
```

4.5.26 spResidence

Description       Exemplary variables         Spell data on the residential history       ID_t       ID target         File structure       spell format: 1 row = 1 residential episode of 1       spell       Spell       Spell number         spell format: 1 row = 1 residential episode of 1       respondent       spell       Spell number       spell       Spell number         ID variables needed to identify a single row       ID_t spell subspell       H21102       Place of residence in Germany / abroad         Other ID variables useful for linkage       wave th21111_*       Number of variables / number of rows in file       th21106       Start date Place of residence (residence episode (year)         1       2       3       4       5       6       7       8       9       10       11         12       1       5       1       Germany       2002       2008       Baden-Wuerttember         Exemplary data snapshot       1       5       1       Germany       2002       2008       Baden-Wuerttember								« go back to over new	
Spell data on the residential history       ID_t       ID_t arget         File structure       subspell       Number of subspell         spell format: 1 row = 1 residential episode of 1       spell       Spell number         respondent       spell subspell       Spell number         ID_t spell subspell       wave       Wave         User in the residential episode of 1       wave       Wave         ID variables needed to identify a single row       H21102       Place of residence in Germany / abroad         Ub variables useful for linkage       th21103_g2       Country of place of residence (categorized)         wave th21111_*       Number of variables / number of rows in file       th21108       End date place of residence episode (year)         1       2       3       4       5       6       7       8       9       10       11         12       3       4       5       6       7       8       9       10       11         12       4       5       6       7       8       9       10       11         12       1       5       1       Germany       2002       2008       Baden-Wuerttember         80029262       1       5       1       Germany       <	Description					Ex	xemplary var	ables	
spell format: 1 row = 1 residential episode of 1         respondent         ID variables needed to identify a single row         ID_t spell subspell         Other ID variables useful for linkage         wave th21111_*         Number of variables / number of rows in file         24 / 72,667         Contains data from waves         1 2 3 4 5 6 7 8 9 10 11         12         ID_t subspell spell wave th21103_g2         th21103_g2         Contains data from waves         1 2 3 4 5 6 7 8 9 10 11         ID_t subspell spell wave th21103_g2         th21108         Etemplary data snapshot         TD_t subspell spell wave th21103_g2         th21108         tb21108         tb21109         Current place of residence (RS West //East)         /East)         tb21111_g1         Place of residence (RS West //East)         /East)         tb21111_g2         Subspell spell wave tb21103_g2         tb21108       tb21108         tb21109       tb21108         tb21111_g1         Place of residence (RS West //East)         /East)       /East)         tb21111_g2       Saden-Wuerttember	Spell data	on the resi	dential ł	nistory		IC	D_t Jbspell	ID target Number of subspell	
ID_t spell subspell   Other ID variables useful for linkage   Wave th21111_*   Number of variables / number of rows in file   24 / 72,667   Contains data from waves   1 2 3 4 5 6 7 8 9 10 11   12   12   12   12   13   14   15   16   17   17   18   19   19   10   11   12   13   14   15   15   16   16   17   18   19   10   11   10   11   12   13   14   15   15   16   17   18   192   2007   2007   2007   2007   2007	spell form responde	nat: 1 row = nt	1 reside	ential ej	oisode of 1	st st w	pell ogen vave 121102	Spell number Generated spell Wave Place of residence in Ger-	
Other ID variables useful for linkage       (categorized)         wave th21111_*       (categorized)         Number of variables / number of rows in file       th21106         24 / 72,667       th21111_g2         Place of residence (RS Federal State)         th21109       current place of residence (RS Federal State)         th2111_g1       Place of residence (RS Wester)         12       12         Subspell spell wave th21103_g2       th21106         th21109       th21111_g1         Place of residence (RS Wester)         12       5         Subspell spell wave th21103_g2       th21106         Subspell spell spell may experiment       formany 2002         Subspell spell spell for the spell	ID_variables n	subspell	ty a single r	'OW		tł	 -21103 σ2	many / abroad	
Number of variables / number of rows in file       End date place of residence         24 / 72,667       th21108       End date place of residence (RS Federal State)         1       2       3       4       5       6       7       8       9       10       11         12       3       4       5       6       7       8       9       10       11         12       3       4       5       6       7       8       9       10       11         12       4       5       6       7       8       9       10       11         12       5       1       6       7       8       9       10       11         12       10_t       subspell       spell       wave       th21103_g2       th21106       th21111_g1       Place of residence (RS Westers)         10_t       subspell       spell       wave       th21103_g2       th21106       th21111_g1       th21111_g1         8002962       1       5       1       Germany       2002       2008       Baden-Wuerttember         8004593       1       3       6       Germany       2013       2013       North Rhine-Westphali	Other ID varia	ables useful for 1111_*	linkage		th21103_g2		(categorized) Start date Place of residence		
24 / 72,667       episode (year)         Contains data from waves       th21111_g2       Place of residence (RS Federal State)         1       2       3       4       5       6       7       8       9       10       11         12       3       4       5       6       7       8       9       10       11         12	Number of va	ariables / numbe	er of rows i	n file		th21108		End date place of residence	
1       2       3       4       5       6       7       8       9       10       11         12       12       12       12       12       12       12       12       12       12       12       12       12       10       11       11       11       11       11       11       11       11       12       12       10       11       11       12       12       10       11       12       10       11       12       10       11       111       111       11       11	24 / 72,6	567				th21111_g2		episode (year) Place of residence (RS Fed- eral State)	
Exemplary data snapshotID_t subspell spell wave th21103_g2 th21106 th21108 th21111_g8002962151Germany20022008Baden-Wuerttember8004593136Germany20132013North Rhine-Westphali8005038151Germany19922007Bavari	1 2 12	3 4 5	6 7	8	9 10 11			Current place of residence Place of residence (RS West- /East)	
ID_t         subspell         spell         wave         th21103_g2         th21106         th21108         th21111_g           8002962         1         5         1         Germany         2002         2008         Baden-Wuerttember           8004593         1         3         6         Germany         2013         2013         North Rhine-Westphali           8005038         1         5         1         Germany         1992         2007         Bavari	Exemplary da	ata snapshot							
8002962         1         5         1         Germany         2002         2008         Baden-Wuerttember           8004593         1         3         6         Germany         2013         2013         North Rhine-Westphali           8005038         1         5         1         Germany         1992         2007         Bavari	ID_t	subspell	spell	wave	th21103_g2	th21106	th21108	th21111_g2	
8004593         1         3         6         Germany         2013         2013         North Rhine-Westphali           8005038         1         5         1         Germany         1992         2007         Bavari	8002962	. 1	. 5	1	Germany	2002	2008	Baden-Wuerttemberg	
8005038 1 5 1 Germany 1992 2007 Bavari	8004593	1	3	6	Germany	2013	2013	North Rhine-Westphalia	
	8005038	1	5	1	Germany	1992	2007	Bavaria	
8006673         1         7         5         Germany         2002         2013         Berlin (Total           8012854         1         3         4         Germany         2009         2011         Bavari	8006673 8012854	1	7 3	5 4	Germany Germany	2002 2009	2013 2011	Berlin (Total) Bavaria	

The dataset spResidence shows the retrospectively surveyed places of residence of the respondents. The data not only reflect the current residence (at the time of the interview), but also the individual relocation history with start (e.g.,th21106) and end date (e.g.,th21108) for each episode. For data protection reasons, the places of residence are only accessible at the federal state level (th21111\_g2, in the Download version) and the administrative district level (th21111\_g3R, in the RemoteNEPS version). For foreign places of residence, the respective country is indicated (th21103\_g2).

Please note that this residential history is **not** collected for the entire sample, but only for a small subpopulation. Only respondents who have already participated in the ALWA study (wave 1, see section 2.2) are asked questions about their previous places of residence.

#### « go back to overview

```
** open the data file
use ${datapath}/SC6_spResidence_D_${version}.dta, clear
** switch to english language
label language en
** only keep full or harmonized episodes
keep if subspell==0
** find all persons who live or ever lived in Bremen
bysort ID_t: egen bremen = max(th21111_g2==4)
\star\star reduce the datafile, so you have one single row for each respondent
keep ID_t bremen
duplicates drop
** you now can save this datafile ...
tempfile bremen
save `bremen'
** .. and merge it to, e.g., CohortProfile
use ${datapath}/SC6_CohortProfile_D_${version}.dta, clear
label language en
merge m:1 ID_t using `bremen', nogen keep(master match)
** please note that data in spResidence is only available for the ALWA-sample!
tab tx80105 bremen, miss
```

Example 26 (Stata): Working with spResidence (find R example here)

4.5.27 spSchool

				« go back to overv				
Description				Exemplary variables				
Spell data or	n general scho	oling history		ID_t splink	ID target Link for spell merging			
File structure				subspell	Number of subspell			
spell format	: 1 row = 1 so	chooling episode	e of 1	spell	Spell number			
respondent				wave	Wave			
ID variables need	ded to identify a sin	gle row		ts11204	Type of school			
ID_t spell su	bspell			ts1111m	Start date School month	episode,		
Other ID variable	Other ID variables useful for linkage				Start date School epis	ode, year		
wave splink				ts1112m ts1112y	End month School episode End year School episode			
Number of varia	bles / number of ro	ws in file		ts11209	School-leaving qualification			
64 / 38,484	1			ts11214 Aspired school-leat		ving qualifica-		
Contains data fro	om waves			ts11218	Final grade Leaving ce	ertificate		
1 2 3 12	4 5 6	/ 8 9 10	10					
Exemplary data s	snapshot	subspell	snell	wave	ts1111v	ts1112v		
8001138	220004	2	4	3	2009	2010		
8004274	220004	2	4	2	2007	2008		
8004580	220004	2	4	2	2006	2008		
8010194 8010194	220003 220003	4 5	3 3	6 7	2010 2010	2013 2014		

The file spSchool covers the general educational history of each respondent from school entry to (expected) completion, including

- periods of primary schooling,
- completed secondary school episodes leading to a school leaving certificate, and
- incomplete schooling episodes that would have led to a school leaving certificate if they had been completed.

Usually, a new episode with start date (ts1111m/y) and end date (ts1112m/y) is generated when the school type changes. This means that a change from one Gymnasium to another is not recorded here. As a result, a single schooling episode can take place at more than one location.

In such cases, only information about the last location is considered. A new episode is created each time a school type is changed, even if both schools offer the same certificate.

Example 27 (Stata): Working with spSchool (find R example here)

\*\* open the data file use \${datapath}/SC6\_spSchool\_D\_\${version}.dta, clear \*\* only keep full or harmonized episodes keep if subspell==0 \*\* save this file temporarily tempfile tmp save `tmp' \*\* open the Biography data file use \${datapath}/SC6\_Biography\_D\_\${version}.dta, clear \*\* merge the previously created temporary data file to this merge 1:1 ID\_t splink using `tmp' , keep(master match) \*\* you now have an enhanced version of Biography, enriched by \*\* information from the spell module. The number of total episodes \*\* (i.e., the amount of rows in the Biography file) did not change. \*\* Verify this by tabulating the spell type by the merging variable \*\* generated during the merge process. tab sptype \_merge

# 4.5.28 spSchoolExtExam

					00 000		
Description				Exemplary var	iables		
Spell data of outside the	n school exa regular Ger	am certificat man educati	es acquired ion system	ID_t wave	ID target Wave		
File structure				exam	Exam number		
entity forma of 1 respond	at: 1 row = dent	1 external s	chool exam	ts11300	alification in		
ID variables need	ded to identify a	single row			was awarded		
ID_t exam			ts1130y	Date: year qu awarded	alification was		
Other ID variable	es useful for link	age	ts11302	ts11302 Awarded school-leav			
wave							
			ts11300_g1	Awarded qu	alification in		
Number of varia	bles / number o	of rows in file			Germany? (ed	lited)	
32 / 972				ts11308	Overall grade on school-		
					leaving certifi	cate	
Contains data fro	om waves						
1 2 3	4 5	6 7 8	9 10 11				
12							
Exemplary data s	snapshot						
ID_t	wave	exam	ts11300	ts1130y	ts11302	ts11300_g1	
8001924	1	1	1	2002	7	1	
8002909	10	1	1	2016	4	1	
0001201 8022230	∠ ۸	1	1	1083	5	1	
8022513	4	1	1	1985	4	1	

The file spSchoolExtExam contains information about school exam certificates which were not acquired through "regular" schooling in the German educational system. This could be:

- certificates obtained abroad and recognized by German authorities,
- certificates obtained at a German school as an external examinee (i. e., without attending class lessons), or
- certificates that are automatically awarded by skipping class levels into upper secondary education.

# « go back to overview

The dataset, for instance, informs whether the school exam certificate was awarded in Germany  $(ts11300/_g1)$ , in which month and year the certificate was obtained (ts1130m/y), and what type of certificate was acquired (ts11302).

Example 28 (Stata): Working with spSchoolExtExam (find R example here)

```
** aim of this example is to evaluate the age of the respondent
** at the exam
** first, we have to get the birth date of the respondent
use ${datapath}/SC6_pTarget_D_${version}.dta, clear
keep if wave==1 // only first wave as this data is time-invariant
keep ID_t t70000m t70000y
label language en
tempfile temp
save `temp'
** now, open the data file
use ${datapath}/SC6_spSchoolExtExam_D_${version}.dta, clear
label language <mark>en</mark>
** merge the previously extracted birth dates
merge m:1 ID_t using `temp', keep(master match) nogenerate
** recode the two date variables (year, month) into one:
gen exam_date=ym(ts1130y,ts1130m)
gen birth_date=ym(t70000y,t70000m)
format *_date %tm
** calculate the age (in years)
gen age=(exam_date-birth_date)/12
** recode missings to .a, b.,... (not necessarily needed)
nepsmiss ts11302
** show some deviation
tabulate ts11302, summarize(age)
```

4.5.29 spUnemp

					« go back to over				
Description					Exemplary variables				
Spell data o	on unemployn	nent episo	des		ID_t	ID target			
File structure					subspell	Number of subspell			
spell forma	it: 1 row = 1 e	pisode of 1	responde	nt	spell wave	Spell number Wave			
ID variables ne	eded to identify a s	single row			ts2511m	Start Unemploymen	t episode		
ID_t spell s	ubspell				ts2511y	(month) Start Unemploymen	t episode		
Other ID variab	oles useful for linka	ge				(year)			
wave splink					ts2512m	End Unemployment (month)	episode		
Number of variables / number of rows in file					ts2512y	End Unemployment	episode		
33 / 29 20	22 / 20 201					(year)			
55 / 25,20					ts25202	Receiving unemploym	nent bene-		
Contains data f	rom waves					fits or assistance at st	art		
123	8 4 5 6	78	9 10 1	.1	ts25203	Registered unemplo present/at end	yment at		
12					ts25205	Number Job application	ons		
Exemplary data	a snapshot								
ID_t	subspell	spell	wave	ts2511m	ts2511	y ts2512m	ts2512y		
8000485	4	2	8	2	201	.3 12	2014		
8009010	1	1 7	2 5	2	201	.⊎ 3 2 10	2010 2012		
8009114	2	2	5	8	201	.1 11	2012		
8012546	1	5	1	1	200	3 11	2007		

The dataset spUnemp contains all episodes of unemployment, regardless of whether a person was registered as unemployed or not. Questions on unemployment registration and the receipt of social benefits refer to both the beginning (ts2511m/y) and the end (ts2512m/y) of an unemployment episode.

Example 29 (Stata): Working with spUnemp (find R example here)

```
** open the data file
use ${datapath}/SC6_spUnemp_D_${version}.dta, clear
** only keep full or harmonized episodes
keep if subspell==0
```

\*\* save this file temporarily tempfile tmp save `tmp' \*\* open the Biography data file use \${datapath}/SC6\_Biography\_D\_\${version}.dta, clear \*\* merge the previously created temporary data file to this merge 1:1 ID\_t splink using `tmp' , keep(master match) \*\* you now have an enhanced version of Biography, enriched by \*\* information from the spell module. The number of total episodes \*\* (i.e., the amount of rows in the Biography file) did not change. \*\* Verify this by tabulating the spell type by the merging variable \*\* generated during the merge process. tab sptype \_merge

# 4.5.30 spVocExtExam

					- 60 Maio		
Description			_	Exemplary va	ariables		
Spell data on quired outside	vocational train e the regular Ge	ing certificates ac erman VET system	-	ID_t wave	ID target Wave		
File structure				exam	Exam number		
entity format exam of 1 res	:: 1 row = 1 e pondent	xternal vocationa	-	ts15301_g1	Professional/spectral tle (KldB 1988) Professional/spectral	cialization ti-	
ID variables neede	d to identify a single	row		610001_61	tle (ISCO-08)		
ID_t exam			-	ts15301_g6	Professional/specture tle (SIOPS-88)	cialization ti-	
Other ID variables	useful for linkage			ts1530m Date of external examination			
wave			-		(month)		
Ware				ts1530y	Date of external	examination	
Number of variable	es / number of rows i	n file			(year)		
24 / 875			_	ts15304	External examination qualifi-		
217 070					cation		
Contains data from	n waves		_				
1 2 3 12	4 5 6 7	8 9 10 11					
Exemplary data sna	apshot						
ID_t	wave	exam	ts153	Om	ts1530y	ts15304	
8000983	2	1		11	1975	19	
80109122	2 4	1		3	1996 2011	19	
8023679	4	1		1	1999	19	
2020010	•	-		-	1000	15	

The file spVocExtExam contains information on vocational training certificates acquired outside the "regular" German VET (*Vocational Education and Training*) system. This could be:

- certificates obtained abroad and recognized by German authorities, or
- certificates obtained in a German vocational training exam as an external examinee (i. e., without participation in lessons or courses registered with German authorities).

This includes in particular the second and third state examinations for graduates of medical and legal studies. Among other things, the dataset provides information on the respective examination date for the acquisition of the certificate (ts1530m/y) and the type of qualification acquired through the external examination (ts15304).

# « go back to overview

```
Example 30 (Stata): Working with spVocExtExam (find R example here)
```

```
** aim of this example is to evaluate the age of the respondent
** at the exam
** first, we have to get the birth date of the respondent
use ${datapath}/SC6_pTarget_D_${version}.dta, clear
keep if wave==1 // only first wave as this data is time-invariant
keep ID_t t70000m t70000y
label language en
tempfile temp
save `temp'
** now, open the data file
use ${datapath}/SC6_spVocExtExam_D_${version}.dta, clear
label language <mark>en</mark>
** merge the previously extracted birth dates
merge m:1 ID_t using `temp', keep(master match) nogenerate
** recode the two date variables (year, month) into one:
gen exam_date=ym(ts1530y,ts1530m)
gen birth_date=ym(t70000y,t70000m)
format *_date %tm
** calculate the age (in years)
gen age=(exam_date-birth_date)/12
** recode missings to .a, b.,... (not necessarily needed)
nepsmiss ts15304
** show some deviation
tabulate ts15304, summarize(age)
```

4.5.31 spVocPrep

:									
Description					Exemplary variables				
Spell data o	on vocation	al preparation	n measures		ID_t	ID target			
File structure					splink	Link for spell merging			
spell forma	at: 1 row = 1	Lepisode of 1	respondent		spell subspell	Spell number Number of subspell			
ID variables ne	eded to identify	y a single row			spgen Generated spell				
ID t spell subspell				-	wave	Wave			
ib_t spen s	ubspen				ts13103	Type of measure			
Other ID variab	oles useful for li	nkage			ts1311m	Start Vocational p	reparation		
wave				-		(month)			
					ts1311y	Start Vocational p	reparation		
Number of variables / number of rows in file						(year)			
28 / 1,457	7				ts1312m End date vocational preparation				
Contains data f	from waves				+-12121	End date vocational preparation			
Contains data from waves					(vear)		reparation		
						(waar)			
	3 4 5	6 7 8	9 10 11			(year)			
1 2 3 12	3 4 5	6 7 8	9 10 11			(year) Ongoing of the			
1 2 3 12	3 4 5	6 7 8	9 10 11			(year) Ongoing of the preparatory year			
1 2 3 12	3 4 5	6 7 8	9 10 11			(year) Ongoing of the preparatory year Termination Vocationa			
1 2 3 12	3 4 5	6 7 8	9 10 11			(year) Ongoing of the preparatory year Termination Vocationa tion			
123	8 4 5	6 7 8	9 10 11			(year) Ongoing of the preparatory year Termination Vocationa tion			
1 2 3 12	<b>3 4 5</b>	6 7 8	9 10 11			(year) Ongoing of the preparatory year Termination Vocationa tion			
1   2     12	B 4 5	6 7 8 subspell	9 10 11 wave	ts1311m	ts1312c ts13201	(year) Ongoing of the preparatory year Termination Vocationa tion	ts1312y		
1   2     12   Exemplary data     ID_t     8002156	3   4   5       a snapshot     spell     2	6 7 8 subspell	9 10 11 wave 7	ts1311m 8	ts1312c ts13201 ts1311 201	(year) Ongoing of the preparatory year Termination Vocationa tion y ts1312m 3 7	ts1312y 2014		
1         2         3           12         3         12	a snapshot 2 4	6 7 8 subspell 2 2	9 10 11 wave 7 2	ts1311m 8 9	ts1312c ts13201 ts1311 201 200	(year) Ongoing of the preparatory year Termination Vocationa tion y ts1312m 3 7 16 7	ts1312y 2014 2008		
1         2         3           12         3         12	a snapshot	6 7 8 subspell 2 2 1	9 10 11 wave 7 2 7	ts1311m 8 9 9	ts1312c ts13201 ts1311 201 200 201	(year) Ongoing of the preparatory year Termination Vocationa tion y ts1312m 3 7 6 7 4 10	ts1312y 2014 2008 2014		
1         2         3           12         3         12           12         3         12           12         3         12           12         3         12           12         3         12           12         3         12           12         3         12	8     4     5       a snapshot     spell       2     4       1     1	6 7 8 subspell 2 2 1 3	9 10 11 wave 7 2 7 9	ts1311m 8 9 9 9 9	ts1312c ts13201 ts1311 201 200 201 201 201	(year) Ongoing of the preparatory year Termination Vocationa tion y ts1312m 3 7 6 7 4 10 4 7	ts1312y 2014 2008 2014 2016		

The file spVocPrep describes episodes of vocational preparation after general schooling like

- pre-training courses,
- years of basic vocational training, and
- work preparation courses of the Federal Employment Agency (Bundesagentur für Arbeit).

Data were collected on the duration from the beginning (ts1311m/y) to the end (ts1312m/y)of a vocational preparation measure, including possible interruptions.

# Example 31 (Stata): Working with spVocPrep (find R example here)

\*\* open the data file

use \${datapath}/SC6\_spVocPrep\_D\_\${version}.dta, clear \*\* only keep full or harmonized episodes keep if subspell==0 \*\* save this file temporarily tempfile tmp save `tmp' \*\* open the Biography data file use \${datapath}/SC6\_Biography\_D\_\${version}.dta, clear \*\* merge the previously created temporary data file to this merge 1:1 ID\_t splink using `tmp' , keep(master match) \*\* you now have an enhanced version of Biography, enriched by information from \*\* the spell module. The number of total episodes did not change. Verify this \*\* by tabulating the spell type by the merging variable generated. tab sptype \_merge

4.5.32 spVocTrain

				« go back it		
			Exemplary variables			
the history	of vocational ed	lucation	ID_t spell subspell	ID target Spell number Number of subspell		
:: 1 row = respondent	= 1 vocational t	training	ts15201 ts1511m	Type of vocational tra Start date Vocationa episode (month)	ining al training	
ed to identify a	single row		ts1511y	Start date Vocationa	al training	
bspell			ts1512m	episode (year) End date Vocationa	l training	
s useful for linka	age		ts1512v	End date Vocationa	l training	
			(31312)	episode (year)	i training	
oles / number of	f rows in file		ts15215 Company size of training com-			
				pany Vocational qualificatio		
m waves						
4 5 6	5 7 8 9	10 11				
napshot						
spell	subspell	ts1511m	ts1511y	ts1512m	ts1512y	
1	1	8	2005	1	2008	
4	2	10	2004	10	2008	
3	1	8	2004	10	2007	
2	∠	Ŧ	2013	Ø	2013	
	the history : 1 row = respondent ed to identify a bspell s useful for linka oles / number of m waves 4 5 6 napshot spell 1 4 3 2	the history of vocational ed : 1 row = 1 vocational respondent ed to identify a single row bspell s useful for linkage oles / number of rows in file m waves 4 5 6 7 8 9 napshot spell subspell 1 1 1 4 2 3 1 2 2 2 2	the history of vocational education : 1 row = 1 vocational training respondent ed to identify a single row bspell s useful for linkage oles / number of rows in file m waves 4 5 6 7 8 9 10 11 napshot spell subspell ts1511m 1 1 8 4 2 10 3 1 8 2 2 2 1	the history of vocational education       ID_t         spell       subspell         : 1 row = 1 vocational training       ts1511m         respondent       ts1511y         ed to identify a single row       ts1511y         bspell       ts1512m         s useful for linkage       ts1512y         m waves       ts15215         4       5       6       7       8       9       10       11         napshot       subspell       ts1511m       ts1511y       ts15219         a       1       8       2005       2       1       2004         3       1       8       2005       2       1       2013	the history of vocational education       ID_t       ID target         spell       Spell number         subspell       Number of subspell         ts1511m       Start date Vocational training         respondent       episode (month)         ed to identify a single row       ts1511y         bspell       ts1511y         s useful for linkage       ts1511y         bles / number of rows in file       ts15215         m waves       ts15219         4       5       6         spell       subspell         ts1521s       ts1511m         ts1521s       Aspired vocational qualification         ts1521s       subspell         ts1521s       ts1511m         ts1521s       ts1512m         a       1         1       1         2       1         2       1         2       1	

The dataset spVocTrain comprises all further trainings, vocational and/or academic, with start dates (ts1511m/y) and end dates (ts1512m/y) that a respondent has ever attended. These include in detail:

- vocational training and retraining
- training at technical schools such as schools of public health, full-time vocational schools (without the years of basic vocational training), other vocational schools and master craftsmen's colleges
- training in specialized fields of medicine
- accredited training courses for obtaining licenses (only up to wave 9)

- doctorate or habilitation/postdoctoral thesis
- higher education at universities, universities of applied sciences, universities of applied sciences, universities of applied sciences for continuing vocational education and universities of applied sciences for administrative sciences and commerce. Note: Only the main subjects are surveyed. New episodes are generated in this context as soon as:
  - the main subject is changed during the course of study, or
  - the desired or attainable degree changes in the course of the study (e.g., from MA to teaching certification).

On the other hand, episodes are continued when a location is changed, unless the main subject changes as well.

Trainings for licenses are comparable to courses in the files spCourses, spFurtherEdu1 and spFurtherEdu2 and can therefore be identified by the spell indicator course. This enumerator variable makes it possible to link information about the few courses contained in this dataset with the courses in the files just mentioned. Interruptions to vocational training, so-called interruption episodes, are stored in wide format; this should be noted when working with the harmonized spell data.

Example 32 (Stata): Working with spVocTrain (find R example here)

```
** open the data file
use ${datapath}/SC6_spVocTrain_D_${version}.dta, clear
** only keep full or harmonized episodes
keep if subspell==0
** save this file temporarily
tempfile tmp
save `tmp'
** open the Biography data file
use ${datapath}/SC6_Biography_D_${version}.dta, clear
** merge the previously created temporary data file to this
merge 1:1 ID_t splink using `tmp' , keep(master match)
** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e., the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.
tab sptype _merge
```

# 4.5.33 spVolunteerWork

					« go back t	o overview	
Description				Exemplary var	riables		
Spell data spondents	on volunt	teer positions	held by re-	ID_t wave	ID target Wave		
File structure				volunteer	Volunteering number	-	
entity forma of 1 respon	at: 1 row dent	= 1 volunteer v	work activity	t262950_g1 t262951_g1 t261902	Volunteering - societ Volunteering - main o Duration of activity	al areas contents	
ID variables nee	ded to ident	ify a single row		t261903	Volunteering - time e	expendi-	
ID_t volunte	eer			t262961	<b>ture</b> Volunteering - Requ	irement	
Other ID variabl	es useful for	linkage			Organizational talent		
wave				t262962	Volunteering - Requ	irement nce	
Number of varia	ables / numb	er of rows in file		t262964	Volunteering - Requ	irement	
26 / 11,71	7				Specialist knowledge		
Contains data fr	om waves						
123	4 5	6 7 8	9 10 11				
TD +	wave	volunteer		+262950	g1	+261903	
8004945	6	601	Spo	rt and exerci	se o	once a month	
8004976 8012744 8022445	10 6 10	1001 601 1002	Emergency and am Leisure time a Cu	bulance servi and sociabili lture and mus	ce several t ty several t ic less	mes a month times a week frequently	
8024145	10	1002	C	ivic activiti	es c	once a month	

The data file spVolunteerWork contains up to three reported volunteer work activities per participant. In addition to the area of activity concerned ( $t_{262950_g1}$ ) and the time spent on it ( $t_{261903}$ ), the dataset also provides information on the requirements of the volunteer work activity and the proportion of women and persons with a migrant background in it.

#### Example 33 (Stata): Working with spVolunteerWork (find R example here)

```
** open the data file
use ${datapath}/SC6_spVolunteerWork_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** evaluate which ids are needed to identify single rows
isid ID_t volunteer
```

4.5.34 Weights

			« go bacl	to overview		
Description		Exemplary variables				
Sample weights for various applications		ID_t	ID target			
File structure	(	subsample	Sample			
wide format: 1 row = 1 target		psu	Subsample Sample: Primary Sampling			
ID variables needed to identify a single row			Unit (Point number	)		
ID t		stratum	Sample: Stratum			
		w_t2_cal	Cross-sectional wei	ght for TP		
Other ID variables useful for linkage			participating in way	re 2, calibr.		
none			to microcensus			
Number of variables / number of rows in file						
40 / 17.140						
10 / 1/)110						
Contains data from waves						
1 2 3 4 5 6 7 8 9 10 12	11					
Exemplary data snapshot						
ID_t sample	sut	osample	psu	stratum		
8012538 2007 (ALWA)	2007	(ALWA)	253	810		
8006776 2007 (ALWA) 8004230 2007 (ALWA)	2007	(ALWA) (ALWA)	190	503 810		
8005384 2007 (ALWA)	2007	(ALWA)	27	802		
8024670 2010 (NEPS)	2010	(NEPS)	2	2079		

Weighting variables (starting with w\_) are included in the Weights dataset. The dataset also contains identifiers for primary sampling units (psu) and stratification (stratum). Given the rather complex structure of the panel sample, there are no final recommendations or general rules for the use of design and adjusted weights. Detailed information on weight estimation can be found in Hammon et al., 2016 as well as in further reports at the documentation website (see section 1.2).

There are also no general rules on how the use of weights makes a possible analysis more stable. Weights may help to highlight important features of the analysis or at least serve as a robustness check for the analysis performed.

Example 34 (Stata): Working with Weights (find R example here)

```
** open Weights datafile
use ${datapath}/SC6_Weights_D_${version}.dta, clear
```

```
** note that this file is cross-sectional, although the weights
** seem to contain panel logic
d w_t*
** only keep weight corresponding to all waves
keep ID_t w_t23456789_std
** create a "panel" logic, i.e., clone each row
expand 9
** then create a wave variable
bysort ID_t: gen wave=_n
** save as temporary file
tempfile weights
save `weights', replace
** open CohortProfile
use ${datapath}/SC6_CohortProfile_D_${version}.dta, clear
** and merge weight
merge 1:1 ID_t wave using `weights', nogen
** note that this weight is only non-zero if respondents participated in
** all waves
tab wave tx80220 if w_t23456789_std!=0
```

# 4.5.35 xPlausibleValues

					« go back	to overview
Description				Exemplary va	ariables	
Plausible Valu	les of compete	nce data		ID_t	ID target	
File structure				wave_w3	Row contains	data from
			_		wave 3 (2010/20	)11)
wide format:	1  row = 1  resp	ondent		wave_w5	Row contains	data from
ID variables neede	d to identify a single	row			wave 5 (2012/20	)13)
			—	wave_w9	Row contains	data from
וט_נ					wave 9 (2016/20	)17)
Other ID variables	useful for linkage			maa3_pv1	Math: cross-sec	tional plau-
			-		sible value 1	
wave_w*				maa3_pv2	Math: cross-sec	tional plau-
Number of variable	es / number of rows	in file			sible value 2	
127 / 11 540			_	maa3_pv10	Math: cross-sectional plau-	
127 / 11,540	)				sible value 10	
Contains data from	n waves			maa3_pv1u	Math: longitud	inal plausi-
					ble value 1	
1 2 3	4 5 6 4					
Exemplary data sn	apshot					
ID_t	wave_w3	maa3_pv1	maa	3_pv2	maa3_pv10	maa3_pv1u
8006936	1	0.3721	0	.8951	0.2955	0.4152
8005279	1	1.5290	1	.7767	2.2411	1.6189
8007871	1	0.7424	0	.5952	0.6573	0.6751
8009173	1	0.8679	1	.1020	0.5420	0.9662
0004033	T	T.300T	0	.9034	1.2917	1.5004

Plausible Values (PV) are a way of describing the competencies of individuals at the group level. They allow (unbiased) estimates of effects at the population level that are adjusted for measurement errors. In contrast to point estimators such as Weighted Likelihood Estimates (WLE), the use of Plausible Values is suitable for more precise inferential statistical tests in correlation and mean value analyses.

Plausible Values are based on the individual answers in the competence tests and additional background characteristics (e.g. gender, age, socioeconomic status). For each person, the probability distribution of his or her competence is first determined and then several values are randomly drawn from it (hence *Plausible Values*). Hypothesis tests for the specific question of interest are calculated for each of these values and combined into an overall result.

Please find more information on Plausible Values in the corresponding NEPS Survey Paper (Scharl et al., 2020) and on our website:

 $\rightarrow$  www.neps-data.de > Data Center > Overview and Assistance > Plausible Values

#### Example 35 (Stata): Working with xPlausibleValues

```
** open datafile.
use ${datapath}/${cohort}_xPlausibleValues_D_${version}.dta, clear
label language en
** as the 'x' in the filename indicates, this is a cross sectional file
** (no wave structure). You can verify this by asking if one row is
** solely identified by the respondents ID
isid ID_t
** note that competence testing has been conducted in multiple waves.
** An indicator marks if a row contains information for a specific wave.
tab1 wave_w*
** see more on how to work with this data in the Survey Paper mentioned above!
```

# 4.5.36 xTargetCompetencies



The file xTargetCompetencies contains the data of the competence tests with the respondents. Currently, these are cognitive basic skills as domain-general competency as well as reading, listening comprehension, mathematics, and scientific competence as domain-specific competencies as well as ICT literacy as metacompetency. Scored item variables and aggregated scale variables are available in a cross-sectional wide format (for an overview of the timing of the competence measures see Table 2; for a description of the naming conventions see section 3.2.2).

Please note that **not** all respondents took part in the competence tests. Since the assessments could only be carried out in CAPI (personal) mode, there is no corresponding data available for persons interviewed in CATI (telephone) mode. In addition, those respondents who had severe

visual impairments or were even blind were excluded from the competence measurement. The variables wave\_w\* allow you to select those respondents for whom only data from a particular wave is available.

Example 36 (Stata): Working with xTargetCompetencies (find R example here)

```
** open datafile
use ${datapath}/SC6_xTargetCompetencies_D_${version}.dta, clear
** change language to english (defaults to german)
label language en
** as the 'x' in the filename indicates, this is a cross sectional file
** (no wave structure). You can verify this by asking if one row is
** solely identified by the respondents ID
isid ID_t
** note that competence testing has been conducted in multiple waves
** an indicator marks if a row contains information for a specific wave
tab1 wave_w*
\star\star to work with competence data, you might want to merge it to CohortProfile.
** if you want to keep the panel logic (and not only add all competencies
** to every wave), you need a mergeable wave variable in xTargetCompetencies.
** in this example, we focus on math competencies which have been tested in wave 3.
generate wave=3
** now, remove cases which did not took part in the testing
drop if wave_w3==0
** and reduce the dataset to the relevant variables
keep ID_t wave maa3_sc1 maa3_sc2
** save a temporary datafile
tempfile tmp
save `tmp'
** and merge this to CohortProfile
use ${datapath}/SC6_CohortProfile_D_${version}.dta, clear
merge 1:1 ID_t wave using `tmp', nogen
```

5

# **Special Issues**

# 5.1 Introduction and life course concept

A key characteristic of Starting Cohort 6 data is its rich life course information. Starting in 2007, Starting Cohort 6 was the first NEPS cohort to implement a modularized life course measurement, which still makes for a key advantage of the data (for the general conception of Starting Cohort 6, see Allmendinger et al. 2011, 2019, and also section 2.1). Modularized life course measurement means that longitudinal information on the respondent's biography is collected through customized self-reports within predefined domains of life. These domains cover different kinds of activities, such as vocational training, partnership, employment or further training. For each domain, spells are collected one after another in the life course interview. Thus, full personal biographies are recorded domain by domain. We will often refer to these life-domain-specific parts of the life course interview as life course modules throughout this section.

The modularized life course measurement is a remarkable improvement in the collection of life course data as it implements key insights from cognitive psychology and neuroscientific research into survey research. The approach benefits the empirical analysis because it leads to more accurate and complete life course data (Ruland et al., 2016). Interviewee burden is reduced by pre-structuring life courses by separating them into life domains and thereby giving interviewees (more) easily accessible stimuli that strengthen their mental recalling and reporting of biographical events. As Drasch and Matthes, 2013 show, the modularized measurement leads, among others, to higher data quality, e.g., more reported unemployment episodes. In contrast to less structured calendar measurements that essentially ask what happened first, what next, what next, what next, the modularized approach reduces the risk that respondents forget or omit episodes, for instance, overlapping, parallel, or unpleasant ones – thus, it reduces streamlining of life courses and underreporting of life events (Ruland et al., 2016). Thereby, survey researchers not only get more complete life course data but also more precise information, especially with regard to dates and durations of certain activities. This is a great deal for longitudinal data collection and analysis because it reduces the measurement error and the confounding bias. Having more precise life course information on an independent variable, for instance, leads to less biased estimates of that variable as data is less noisy. Having more precise life course information in a dependent variable (e.g., in sequence or event history analyses), decreases the variance of the error terms – a fact that likewise strengthens causal analysis.

However, the life-domain-centered (i.e., modularized) approach has its downside, too. Above all – as the flip side of gaining more complete and less stream-lined biographies – it leads to the reporting of more overlapping events across life domains. A respondent might, for instance, report having an employment of 32 hours per week while attending full-time vocational training at the same time or being on parental leave while being unemployed. In a second step of the

life course interview – processed by software in the computer-assisted interview – the domainspecific life histories are therefore compiled into a full, cross-domain life course. This merging step includes coherence checks across life domains. For instance, when a respondent reports full-time employment parallel with full-time schooling, he or she is asked to sort this overlap out. In order to keep the individual checking of coherence in the life course data manageable and time-efficient, this verification is only applied to the occupational (esp., employment and unemployment) and the educational modules (esp. vocational training and further training) but not to the further life course modules like those on partnerships and children.

How life course information is compiled and checked across life domains (modules) in the Starting Cohort 6 life course interview is set forth in Ruland et al., 2016. Adding to them and the conceptual overview given in Allmendinger et al., 2019, we provide an in-depth information about the Starting Cohort 6 life course measurement in this chapter (also see section 4.4 for more general information about episode data). In particular, we provide detailed information about the various modules of the life course interview with a special focus on key definitions and changes across waves, respectively (cf., section 5.3 and table 9 for an overview).

Table 9 gives an overview on module names, numbers, and their main content. Module names and numbers refer to the structuring of the questionnaire in the programming template. Please note that besides in this chapter, module numbers are only to be found in the field version of the survey instrument and in field reports. No reference to these numbers is used in other documentation, such as SUF instruments, codebooks, NEPSplorer, or SUF data. For more information about the available documentation, see section 1.2.

Module	Number	SUF-files	Main contents
Vocational Training	24 AB	spVocTrain	The module captures all vocational or academic educational spells.
Military	25 WD	spMilitary	The module records all episodes of mili- tary, civilian and voluntary services.
Employment	26 ET	spEmp	The module captures information on all employment episodes that respondents report on gainful employment, e.g., all activities leading to income.
		pTarget	Additional panel information on differ- ent topics are available for selected em- ployment episodes.
Job Tasks	26b ET	pTarget	The job task module collects various job task types that describe the main employment spell.

#### **Table 9:** List of life course modules in Starting Cohort 6

Module	Number	SUF-files	Main contents
Unemployment	27 AL	spUnemp	The module records all current and past periods during which participants were unemployed, independently of any reg- istration with the Federal Employment Agency.
Further Training Activities	35 KU	spCourses	The course module collects further train- ing activities in the life course modules.
	31 WB	spFurtherEdu1 spFurtherEdu2	The further training modules capture all further training activities that were not reported in the previous modules.
Partnerships	28 PA	spPartner	Information on partners are collected, such as gender, date of birth, migration background, nationality, highest educa- tional degree, current employment sta- tus and current profession.
Children	29 KI	Children spChild spChildCohab	The modules capture information on re- spondents' children and
Parental Leave	29 EZ	spParLeave	parental leave episodes.
Retirement	38 RE	pTarget	The module captures different types of retirement, the individual experience of retiring as well as reasons for employment alongside retirement.
Residence History	21 WG	spResidence	In this module, episodes of place of res- idence are collected and updated over the life course (ALWA study) <sup>3</sup> .
Gap	50 LU	spGap	The gap module covers all temporal gaps between the main life course activi- ties and collects the activities practiced within these gap periods.

# Table 9: (continued)

**3** ALWA: *Working and Learning in a Changing World*. Respondents of the ALWA study were already surveyed by the IAB in 2007/2008 and later transferred to the NEPS. For more information, see section 2.1

# 5.2 Differences between initial survey and panel survey

In order to ensure that the retrospective record of the educational trajectory and the employment history is precise and complete, the survey is structured by life domains. The life history is split into different survey modules. Each of them covers the topic associated with that domain and captures corresponding activities, for example the (monthly) duration of school attendance.

In the initial survey (usually in the year of the first wave of a particular subsample) the entire biography of an interviewee is recorded retrospectively. Those initial surveys took place for the ALWA subsample in 2007/2008 and for the NEPS subsamples in the waves of 2009/2010 and 2011/2012. In order to collect the biographical data, the activities within each module are recorded, starting with the first activity and ending with the current activities (the ongoing activities at the date of the interview, if applicable). An exception to this approach is the partner module, as its starting point is the current partner followed by information about former partners.

Once the biography was initially recorded, the participant's biography is updated in each consecutive panel wave. Hence, the data from previous waves is used to adapt the questionnaire. Firstly, follow-up questions concerning activities recorded in the previous interview are asked. The interviewee can object preloaded information in case it was recorded incorrectly in the earlier interview, otherwise the respective episode continues. Secondly, new activities are recorded that have started (and ended) since the last interview. Those new activities are also recorded chronologically per wave until the date of the current interview. Thereby, biography data are completed wave by wave, in each case referring to information from the previous wave.

# 5.3 Further information on data files

# 5.3.1 Vocational Training

SUF file spVocTrain Module 24 AB

The vocational training module captures vocational or academic education for example vocational training, college education or post-graduate degrees. Even if the educational activity is not completed, it is recorded in this module. If an individual participates in multiple educational activities at the same time, all activities are recorded as individual episodes. If an episode is no longer ongoing, the episode's end is the day of graduation or the day of dropout.

Amongst others, the vocational training module enquires about the type of vocational training taken; the location and duration of the training; the type of contract including salary; the degree obtained in addition to the vocational training degree and the grade; as well as the satisfaction with the vocational training and for dropouts, the reasons for dropping out of the educational activity.

For college degrees, a new episode is captured if the major subject or the type of degree to be acquired changes. Changes in minors or changes in colleges are disregarded. For post-graduate degrees, characteristics of the degree are recorded.

Respondents are being asked if there have been any interruptions during their vocational training. If this is the case, respondents can report up to three so called *interruption episodes*. These are stored in wide format and only include the start and end date of the interruption. This should be kept in mind when working with the harmonized spell data.

In general, further training activities are captured in the further training module or the course module (see section 5.3.6). In some cases, trainings are recorded in this vocational training module, for example if they lead to a license in case of particular IHK<sup>4</sup> courses.

After general vocational training, the module enquires about further educational episodes made in the context of external examinations (*Externenprüfungen*).

# **Special issues**

Grades

- No grades were recorded in the first wave for the vocational training degree or the Ph.D.
- The second and third wave recorded grades only in the cross-section, i.e., for the last college degree or the last Ph.D. Grades for degrees other than college or Ph.D. were not surveyed.
- In wave 4, grades of degrees were integrated into the longitudinal survey for vocational training of any kind and Ph.D.s.

#### ALWA

ALWA (wave==1) does not provide information on the location of the vocational degree provider. Data users can apply a *best-guess* approach by using the data file spResidence, which contains the history of a respondent's places of residence.

#### Wave-specific

For wave 11, licensed courses and IHK courses are not captured in the vocational training module as it was before. The idea was that respondents report them directly in the further training module (see section 5.3.6) to save overall survey time. For wave 11 these courses are stored in the data file spFurtherEdu1. Unfortunately, it then turned out

4 Industrie- und Handelskammer (Chamber of Commerce and Industry)

that this change leads to an underreporting of such courses. Thus, this process has been changed again for wave 12 and beyond to the following:

- IHK courses are again reported in the vocational training module and are hence stored in the spVocTrain data file.
- Licensed courses are now captured in the course module (see section 5.3.6) and are therefore now stored in the data file spCourses.

#### 5.3.2 Military

**SUF file** spMilitary

Module 25 WD

#### **Changes over time**

#### Wave 1 - 5

In the first survey waves the military module has been used to collect episodes of basic military services, community services and alternative services, as well as episodes of voluntary social years, ecological years or European voluntary services.

#### Wave 5

The categories were expanded to also include federal voluntary service and voluntary military service.

#### Wave 6

Basic military service, community service and alternative service were removed due to the decision of the federal cabinet in 2011 to abolish these compulsory services. Since this wave, the episode types in this module consist exclusively of voluntary services. Also, an additional category, international youth voluntary service, was added.

#### 5.3.3 Employment

**SUF files** spEmp, pTarget

Modules 26 ET

In Starting Cohort 6 the longitudinal information on employment has two components: The information on employment episodes is covered by the annual employment module of the questionnaire (26 ET) and the data is stored in the spEmp data file.

Additional information on employment is gathered at larger intervals as supplementary employment modules in the questionnaire (26a ET - 26f ET). This additional information is stored in the pTarget data file.

# Content in spEmp

The data file spEmp captures information on all employment episodes that respondents reported on gainful employment, e.g., all activities leading to income. This includes regular employment, but also traineeships and secondary jobs. Vacation jobs, volunteering, and paid or unpaid internships are not covered by the spEmp file.

Due to the modular recording of the life course, the collected information on the employment situation is not restricted to one job at the same time but also contains information on parallel jobs. There is no restriction to a specific number of parallel jobs.

In the questionnaire of the employment module, the introduction statements give specific anchors for respondents to report regular employment, traineeships and secondary jobs. However, note that these different employment types can be reported anytime in the course of the module. It is also important to note that the spEmp data file does not contain a clear information from the respondent whether a job represents a main or a secondary employment or whether a job is a main or secondary activity in comparison to activities reported in the other life course modules. Since such a decision highly depends on the research question of interest, we strongly recommend a conception-based and thorough edition of the employment episodes together with the life course data of Starting Cohort 6 that suits the underlying research purpose. As a starting point Rompczyk and Kleinert, 2017 provide an instruction on how to edit the life course data of Starting Cohort 6. You can also find more information about this in section 4.4 of this data manual.

The employment episodes in the spEmp data file cover information on the following topics:

- Occupation coded in different German and international classifications
- General employment type and detailed information about the employment type, e.g., supervision and management tasks, temporary employment, whether the reported employment is situated in the subsidized labor market, whether the reported job is contract work or seasonal employment
- Working hours and for respondents at the age of 55 years or older, whether they take part in a partial retirement scheme
- Company characteristics and conditions for the participation in further training, courses and seminars
- Gross and net earnings for employees as well as the profit before and after taxes for selfemployed

#### Changes over time in spEmp

#### Wave 13

ts23217 Seasonal work is no longer recorded as one continuous episode at a time, but each episode of seasonal work separately.

#### Wave 11

New variables:

- ts23208 Mini-jobs
- ts23247 termination of the job (dismissal/quitted)
- ts23248 Chain contracts for fixed-term contracts

Other changes:

- ts2333m and ts2333y items deleted in questionnaire
- ts23320, ts2332m, ts2332y, ts23244, ts23245, ts23246 comprehensive filter adjustments in the questionnaire<sup>5</sup>
- ts23552 no longer asked whether subsequent employment with the same employer was already reported
- ts23229, ts23230, ts23231, ts23232, ts23233, ts23234, ts23243 yearly updates introduced
- ts23410-ts23546 in addition to the yearly income updates, for all completed episodes, the complete income information is collected at the end of the employment spell.

Wave 10

ts23215 value 1 "ABM jobs [labor market measure jobs]" deleted in questionnaire.

Wave 8

New variables:

- ts23256 Student job or other job
- ts23257 Relation/relevance to studies (student employment)

#### Wave 7

New variables: ts23553 contractual working time currently/at the end.

**<sup>5</sup>** complex filters in the questionnaire were simplified and made clearer e.g., by filtering all respondents into a time stamp variable and then defining new groups for filtering into the next items. The adjustments also include corrections of filters for some of the mentioned variables.

#### Wave 5

ts2312m, ts2312y, ts23219, ts23221, ts23223 additional interviewer references added, which imply a change in the definition of employment episodes and working time (due to the introduction of items on partial retirement schemes, cf. th32218 in pTar-get).

#### Wave 4

New variables:

- ts23251 Type of employment
- ts23237 Additional Items in the questionnaire to differentiate for the place of work in Berlin Berlin Mitte/Berlin Pankow/Berlin Lichtenberg
- ts23239 Country of working location (open text)
- ts23552 Subsequent employment with the same employer already reported
- ts23531 Special payment: 13th month salary
- ts23541 Special payment: 13th month salary (gross)
- ts23532 Special payment: 14th month salary
- ts23542 Special payment: 14th month salary (gross)
- ts23533 Special payment: Christmas bonus
- ts23543 Special payment: Christmas bonus (gross)
- ts23534 Special payment: Holiday pay
- ts23544 Special payment: Holiday pay (gross)
- ts23535 Special payment: bonus, profit-sharing, gratification
- ts23545 Special payment: Bonus, share of profits, gratuity (gross)
- ts23536 Special payment: other
- ts23546 Special payment: other (gross)

# Content in pTarget

A special feature of collecting information on employment in Starting Cohort 6 is the additional panel information that goes beyond the episode data of the spEmp data file and is stored in the pTarget data file. However, this additional information is not available for every topic on employment in every wave. Table 10 shows all additional topics related to employment ever covered and in which waves the topics were covered. For example, in the first, second and third waves, only the main questions on employment were covered, whereas the job tasks were covered in the fourth, eighth and twelfth waves. It is important to note that this additional

panel information is only collected for the main employment episode if there are several parallel employment episodes at one time. It is up to the respondent to decide which episode this is.

#### Changes over time in pTarget

To allow for longitudinal analyses, the questionnaire holds the phrasing of the questions as constant as possible. However, the phrasing of some of the questions had to be adjusted over the years. Furthermore, the module does not ask all questions within a particular topic in every wave. Thus, the number of variables in each topic can vary across the waves. You can find further information on documentation and changes within the questionnaire in additional documentation (see section 1.2 for more information).

	1	2	3	4	5	6	7	8	9	10	11	12
Annual questionnaire		Х	Х	Х	Х	Х	Х	Х	х	х	х	х
Job Tasks				х				х			х	
Occupational Change						Х		х		х		
Health burden of work						Х				х		
Social capital and work climate				х		х				х		
Language use with colleagues						Х				х		
Social capital & labor market resources				х			х				х	
Work-Life-Conflict											х	
Job characteristics											х	х
Time and performance pressure											х	
Digitalization of work												Х

#### Table 10: Items on employment by wave

#### NEPS-ADIAB: employment data linked to administrative data of the IAB

As an option to add more information on the employment reported in the NEPS survey, e.g., on income or on the company, the Research Data Center of the Institute for Employment Research (FDZ-IAB) offers administrative data containing additional labor market information of the NEPS respondents. The linkage of these data is conditional on the consent of the survey respondents. Furthermore, the administrative data only cover the following employment status: employment liable to social security (since 1975), marginal employment (since 1999), receipt of benefits under the SGB III legal system (since 1975), or SGB II (since 2005), registered as a jobseeker at the Federal Employment Agency (since 2000), or (planned) participation in labor market policy measure (since 2000). Therefore, the administrative data do not cover all types of employment, such as self-employment or civil service. For a detailed data report as well as information of labels and frequencies, see Bachbauer and Wolf, 2020.

5.3.4 Job Tasks

SUF file pTarget Modules 26b ET

Starting Cohort 6 contains further information about job tasks performed in an employment episode that is stored in pTarget (variables th34300 to th34395). In case a respondent reports multiple parallel employment episodes, the job task information is collected only for the main employment. In this case, the respondent him- or herself decides which episode spell (stored in spEmp) is the main gainful activity. The user can merge the data on job tasks from pTarget to the main employment spell by using the variable splink.

The job task data contains information on how much respondents read or do math in their jobs, whether they do calculations, work with money, measure something, operate a computer and what ICT skills they need for this. Furthermore, it contains information about whether respondents solve difficult problems, often learn new things or whether their work involves different routines. The data further contains information on how autonomously they can perform their work, whether they are exposed to physical exposures during work and whether they interact with others. For further information see Matthes et al., 2014.

So far, the job task module has been queried every 4 years (in wave 4, wave 8, and wave 12). In order not to disturb the panel character of the task variables, the individual questions in the job task module were not changed. Only the definition of computers (th34330) had to be updated in the interviewer instruction in wave 12.

#### 5.3.5 Unemployment

SUF filesspUnemp, pTargetModule27 AL

The unemployment module captures all periods during which participants were unemployed. Participants are considered unemployed if they are registered as unemployed or if they are not working, but actively seeking work.

#### Content

When a respondent participates in the NEPS survey for the first time, the module records current and past unemployment episodes retrospectively over the entire life course. In the subsequent waves, the module collects all current and past unemployment episodes since the last interview. In addition, the data provides further information on the unemployment episode,
the application process and on further training during unemployment. The data file contains information on the following topics:

- Registration of unemployment, receipt of unemployment benefit
- Number of job applications and job interviews
- Courses/further training during unemployment, financed by the employment agency
- Job search efforts in the last four weeks (file pTarget)
- Possibilities to start a new job within two weeks (file pTarget)

## **Special issues**

The module does not distinguish between different types of unemployment. Therefore, no new unemployment episode starts when changes occur (e.g., in registration of unemployment or benefit). Therefore, there are no consecutive unemployment episodes, as the module records the entire period of unemployment in one piece. Furthermore, the module does not record unemployment episodes for periods immediately before the end of training or employment, even if the respondent is already registered as a job seeker because of the three-month registration deadline in German employment agencies.

## **Changes over time**

In the first and third wave, variables on job search efforts (th09211) and possibilities to start a new job (th09212) are not available.

# 5.3.6 Further Training Activities

**SUF files** spCourses, FurtherEducation, spFurtherEdu1, spFurtherEdu2

Modules 35 KU, 31 WB

Further training activities are captured throughout the questionnaire mainly in two particular modules: First, the course module (35 KU) collects further training in the life course modules, such that respondents recall context-specific further training activities, for example courses taken during employment or during parental leave episodes. Second, the further training module (31 WB) captures all further training activities of all respondents in Starting Cohort 6, which have not been reported in earlier modules.

In addition, the vocational training module (see section 5.3.1) captures licensed courses and other vocational trainings which were identified as further training courses.

## **Content: Course module**

When respondents state having participated in further training within an episode, this statement triggers the course module. For up to five courses per episode, the course module records the content, duration and motivation (occupational vs. private reasons) for the course. Further training activities are not recorded exactly to the date, but rather the respondents recall all training activities since the last interview or since the beginning of an episode.

#### **Content: Further training module**

Towards the end of the interview, the further training module captures all further training activities (classes, courses and seminars) in which the respondents participated since the last interview and have not yet reported. The module records all types of further training including classes taken out of personal interest, such as cooking or yoga classes.

At the beginning of the module, the interviewer reads all further training activities collected through the course module to the respondent and asks whether the respondent has participated in any other further training activities since the last interview. The further training activity's name is recorded in the further training module along with its content, duration and completion. Additionally, information on the motivation (private vs. occupational), whether the class was mandatory and whether the respondent received a certificate is captured.

Further information on randomly chosen courses are also collected within this module, for example (among others) financial support for the course, provider of the training and evaluation of the course.

Irrespective of having participated in a further training activity, the module asks about informal learning in five questions, i.e., whether the respondent has participated in any informal learning activity such as reading scientific literature, attending a conference or learning with online apps or programs.

#### Special issues and changes over time

#### Assignment of further training activities across waves

Further training activities that were not completed at the time of the interview are not incorporated in the next wave as a preload, which means that they might be reported again. It is not evident to assign a further training activity from the last wave to the next:

 The respondent would have to phrase the name of the further training activity exactly the same way in both waves.

- A respondent can report two different further training activities within the same field, even if the content and names of the further training activities are the same, for example two yoga classes.
- For the download SUF: Only the categorical variable for further training course content (tx28202\_g13) allows the assignment of a training activity from the previous wave to the next. However, due to data protection reasons, the course content is aggregated and categorized in this variable, therefore identically categorized courses have a high likelihood of actually being different further training activities.

# Assignment of vocational training to further training

Vocational training courses are being integrated into the data file FurtherEducation when it pertains to licensed courses (ts15201\_v1 == 13 OR ts15201 == 14) or vocational trainings which were identified as further training during the data edition process (ts15291\_g12 == 2).

## Double recording of IHK courses

In some rare cases, IHK courses are recorded in the vocational training module, but are then not assigned to the list of courses that is read to the respondent at the beginning of the further training module. Therefore, it is possible that the respondent reports this course a second time. However, it is not evident to identify these doubly recorded courses. This error was fixed in wave 12.

## Additional information on further training activities

Starting in wave 11, additional information on further training activities is no longer only surveyed for randomly chosen courses, but for all courses. Therefore, these information are now stored in spFurtherEdu1 instead of spFurtherEdu2. This applies to the following items:

- Private vs. occupational reasons for further training participation
- Motivation for participating
- Whether the course was mandatory and who made it mandatory
- Certificates<sup>6</sup>

## Randomly chosen further training activities

 Out of all further training activities collected throughout the interview, one is chosen randomly. For the randomly chosen further training activity, additional questions are asked, for example on the learning atmosphere, the courses' structure and its difficulty. Before wave 11, two further training activities were chosen randomly.

<sup>6</sup> Please note that in wave 12 there were changes on the value scale of the certification variable in the vocational training module and the further training module. These changes made it necessary to create two variable versions. The old version of the variable can be identified by the suffix \_v1 added to its variable name.

Further training activities, randomly chosen for additional questions, were meant to only include further training activities that had already been completed. However, until and including wave 12, further trainings from the course module were also chosen when they were not yet completed at the time of the interview. This error was corrected while wave 12 was in the field but the SUF data file spFurtherEdu2 still contains additional information on ongoing further training activities from the course module. No mistakes were made for the further training module and the vocational training module. Thus only completed further training activities were chosen from these two modules.

## Merging FurtherEdu2 with FurtherEducation

- The variable course, which is important for the merging process between FurtherEducation and FurtherEdu2, has many missings for courses which were reported in the vocational training module. This has two reasons:
  - 1. Only licensed courses have a value assigned in the course variable because only these courses are taken into consideration in the random selection process for the additional detailed questions.
  - 2. Licensed courses which were completed a long time ago (more than 12 months to last interview) are also not considered in the random selection process and thus have a missing value in the course variable. In order to merge the two data files, courses with missings have to be dropped.
- When merging the data files FurtherEdu2 with FurtherEducation, five further training episodes from the vocational training module cannot be merged. This is due to small errors in recording further training activities and ensuing difficulties in assigning the additional information collected in the further education module for randomly chosen further training to the further training episode captured in the vocational training module. Therefore, these five cases have to be excluded in the analyses.

## Licensed and IHK courses

Licensed courses and IHK courses were no longer captured in the vocational training module (see section 5.3.1) starting in wave 11. The idea was that respondents report them directly in the further training module and hence save survey time overall. For wave 11 these courses are stored in the data file spFurtherEdu1. Unfortunately, it then turned out that this change lead to an underreporting of such courses. Thus, this process has been changed again for wave 12 and beyond to the following:

- IHK courses are again reported in the vocational training module and are hence stored in the spVocTrain data file.
- Licensed courses are now captured in the course module. Therefore, new courses of this type are now stored in the data file spCourses.

# 5.3.7 Partnerships

SUF file spPartner

Module 28 PA

The NEPS uses the following partnership definition:

A partnership is a fixed relationship of two people living together or apart – independently of the legal status (married, married and living apart, divorced, widowed, registered partnership).

For participants entering the survey for the first time, the module records the current partnership at the time of the interview and asks for preceding partnerships. After the first survey participation, the module records all partnerships since the last interview that correspond to the definition of partnership. For subsequent interviews, if the partner did not change since the last interview, the interviewer asks whether there has been a change in legal status of the partnership, if the partner acquired an additional degree or professional qualification, and the current employment situation of the partner.

In case there has been more than one partnership since the last interview, the interviewer starts with the first and ends with the current partnership. The module also asks for additional information on the partner such as gender, date of birth, migration background, nationality, highest degree, current employment status, and current profession – whereas the last two points are only asked for the current partnership.

The module does *not* record multiple overlapping partnerships.

# Changes over time

## Wave 11

 The module takes the legal introduction of the marriage for all in 2017 into account. Starting with wave 11 registered same-sex partnerships are only continued or annulled. The module asks respondents living in a same-sex partnership whether they married their partner. If this applies, the survey handles the same-sex partnerships like other marriages. Therefore, same-sex marriages are only identifiable by comparing the sex of the partners.

## Wave 13

Living Apart Together (LAT) partnerships are couples having an intimate relationship but live at separate addresses. Up to wave 13 these partnerships were not treated in the partner module but in a cross-sectional module. As a result, these partnerships were not continued but treated as new partnerships in each cross-section in which the respondent participated. Consequently, respondents had to answers all questions on the LAT partnerships and partner in every wave, irrespective of the continuation of the same partnership. As of wave 13, the partner module captures all new and continuing partnerships, irrespective of living together or apart. For existing partnerships, the module asks whether the partnership continues. For marriages, if respondents answer this question in the affirmative, the module assumes that also the marriage continues. If partnerships are discontinued, the module asks whether the marriage still persists and records the divorce date, if applicable. For unmarried partnerships, which already existed in the last wave, the module records whether a marriage took place, followed by the question whether the partnership is prolonged. If the partnership is discontinued, or was discontinued at the time of the last interview, the module captures whether the marriage (or registered partnership) is also discontinued by now.

- The survey now records the death of a partner at three points in the partner module. If the partner is deceased, the module records the date of death. The module asks no further questions on the deceased partner.
- The introduction of the LAT concept in the partner module resulted in changes in the way the module captures the history of cohabitation. Up to wave 13, the survey assumed that partners either live together or apart but did not cover discontinuity in cohabitation. Now, the module covers cases where partners do not steadily cohabit.
- Starting with wave 13 the survey of the partners' education, training, and employment changed. The module does no longer provide the possibility to disagree with information given in earlier waves on this topic, as the respondents seldom used this possibility. The information on the partners education, surveyed previously, is now used to filter question on the highest school-leaving qualification of the partner (as *obtaining a high school diploma* makes questions on the highest school-leaving qualification redundant).
- Starting with wave 13, the survey records the contact frequency for all partners captured in the partner module.

## 5.3.8 Children and Parental Leave

SUF files Children, spChild, spChildCohab, spParLeave

Modules 29 KI, 29 EZ

Information on respondents' children and parental leave episodes are captured throughout the questionnaire in two modules: First, the children module (29 KI) collects data on respondents' children and related living conditions. Second, the parental leave module (29 EZ) captures information on parental leave episodes as part of the life course.

## **Content: Children module**

The children module is queried for all respondents of the study. Respondents without children

are only asked about their further care activities. Respondents with children pass through the whole module. Information on all adopted, foster, biological and children living in the same household are collected.

There is an item loop for every child. It consists of items on sociodemographic information, episodes of living together in one household and episodes of parental leave.

If the respondent reports an episode of parental leave, a redirection to the parental leave module (see below) follows, as well as a redirection to the course module (see section 5.3.6) in case of further training activities during this episode. Back in the children module, child-specific information on the childcare situation, educational aspirations, the current activity status, and educational and vocational certificates are recorded.

In the end of the module, there are some general cross-sectional questions about the respondent's engagement in childcare and further care activities.

## **Content: Parental Leave**

The parental leave module was created in wave 13 as a decoupling of items from the children module. Respondents are redirected to the parental leave module if they indicate an episode of parental leave in the children module or in the data revision module. The episode dates are recorded in the original module. Information on administrative issues, and the re-entry into employment are part of the parental leave module.

Since a parental leave is recorded in form of a life course episode, parental leave episodes are considered during the life course check in the data revision module. Often such an episode runs parallel to e.g., an employment episode, even if the respondent was not working during the parental leave. This is due to the fact that in the interview all other life course episodes are collected before the recording of parental leave.

#### **Changes over time**

#### Wave 12

 Items on the care situation of every child (as part of the child loop) are added to the module.

#### Wave 13

- The items on the employment re-entry after parental leave are decoupled as a new module. Thereby, it is possible to collect the information although a parental leave episode is added to the life course during the data revision module.
- The definition of parental leave has changed. Previously, the respondents were asked to indicate parental leave only if they had a legal right to this parental leave and did not work more than 30 hours per week. As of wave 13, the definition of a parental leave is up to the respondents.

## 5.3.9 Retirement

SUF file pTarget Module 38 RE

Variables regarding retirement are part of the pTarget data file. The module captures different types of retirement, the individual experience of retiring, as well as reasons for employment alongside retirement.

## Content

The module captures whether respondents currently receive pension payments, such as a statutory pension or state pension, a widower's pension, or a disability or invalidity pension. Furthermore, it records whether the respondents receive private/corporate pension funds or basic income support. For the first pension payment, the module records the month and the year as well as several information on the individual experience considering the entrance in retirement.

Retired respondents can update annually whether they currently work alongside the retirement or if they plan to do so. The module also captures possible reasons for working alongside retirement. If respondents are in partial retirement, the module asks about the time of the active phase respectively. Considering partial retirement and the date of partial retirement, it is important to distinguish which partial retirement model the respondents attended (block model or part-time model).

## **Target group**

Besides respondents who were retired in earlier interviews, respondents who are 55 years and older at the time of the interview automatically enter this module. Irrespective of the age, respondents having a gap in their life course enter the data revision module and can declare a retirement episode.

## **Changes over time**

The module on retirement was introduced in wave 5, to face the maturing panel and the resulting increase in the share of retired individuals. Since then, the NEPS survey records information on retirement annually without substantive changes.

# 5.3.10 Residence History

SUF file spResidence Module 21 WG

The residence history is only collected for respondents who have been sampled for the ALWA study. Respondents who joined Starting Cohort 6 with the NEPS survey only indicate their current place of residence at the time of the interview (stored in data file pTarget).

In this module, episodes of place of residence are collected and updated over the life course. First, it is recorded whether the place of residence is in Germany. If it is in Germany, the community is identified; if the place of residence is abroad, the country is identified. A list of communities and countries, which is stored in the module, helps to enter the respondent's information.

The aim is to collect all places (local communities) a respondent resided in since birth.

In addition to changes of residence due to moves, we are also interested in relocations of at least one month's duration for professional or educational reasons (as well as au pair activities).

Episodes cover the period between moving in and leaving the residence at the respective location. If the respondent stays in more than one location at the same time, the data records two individual episodes (that simply overlap in time).

## **Capturing parallel residence episodes**

- The stay in the two places of residence is regular and important
- The interviewee resides in each residence for at least three days per week
- The module captures the location where the respondent lives and the location where the respondent works. If these are not fixed addresses, the item "changing locations" is available.
- If an interviewee is registered with his/her parents (for example as a student), but only stays there once a month, the study location will be captured as place of residence instead.

#### No new residence episode starts if the respondent

- moves within the same location or community
- commutes daily between two locations
- is on vacation (less than three months)

# **Special Issues**

5.3.11 Gap

SUF file spGap Module 50 LU

Immediately after collecting the main activities of the life course of a respondent with the modules school, vocational preparation, vocational training, military, employment, unemployment and parental leave, the data revision module checks, among other things, whether there are any chronological gaps between these main activities. If this is the case, these chronological gaps are closed in collaboration with the interviewee, either by specifying an additional main activity by the interviewee that closes the gap, or by specifying an activity that is not covered by the main activities, a so-called gap activity.

In the first case, the survey instrument branches from the data revision module back to the corresponding module for the main activity. There, a new episode with a main activity will be collected to close the chronological gap in the life course. Then, the survey instrument filters back into the data revision module.

In the second case, i.e., if no main activities were exercised in the chronological gap, the gap module will be activated. Here, other activities can be specified to fill the chronological gap, such as *housewife/househusband*, *sick/unable to work*, *retirement* et cetera. In this respect, unlike the main activity modules, the gap module is only used within the data revision module to fill in chronological gaps.

One exception to the closing of chronological gaps in the data revision module is the main activity *parental leave*. Since the recording of parental leave episodes does not take place in a standalone module, but is embedded in the child module and is done there specifically for each child separately, a direct return from the data revision module to the corresponding main activity module is not possible. Instead, an episode of parental leave recorded in the data revision module is treated as a gap activity. This means that instead of the main activity module, the gap activity module will be activated and the parental leave is recorded there, but without specific reference to a child and only regarding information to start and end date of the episode. As of survey wave 12, additional information on the employment of the interviewed person during this parental leave is collected in the gap module in the same way as in the parental leave module (see section 5.3.8).

Although the gap module is only used to fill chronological gaps, it is possible that gap activities and main activities overlap chronologically. On the one hand, this can be the case if after collecting a gap activity, other activities are collected in the data revision module and these activities overlap chronologically confirmed by the interviewed person. On the other hand, there may be chronological overlaps if a gap activity persisted at the time of the interview and was pursued further in the subsequent survey wave. In this case, the gap episode is continued regardless of the existence of a gap for this period in the life course.



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B.1 R examples

In this Appendix, you will find R usage examples that correspond to the Stata usage examples in the main body of the data manual. Before working with R, it is recommended to set a working directory and to install the package *readstata13*:

#### Example 37 (R): Setting working directory

```
setwd("C:/User/..../Desktop/R_examples")
#set working directory
install.packages("readstata13")
#install the package readstata13 that reads Stata files
library(readstata13)
#import the package readstata13 into library
```

If you'd like to work with the English version of the data, it is recommended to switch the language in Stata first, save the Stata file and then import it in R. The language can be switched by running the command label language en in Stata.

To import a data set, use:

## Example 38 (R): Importing the data

```
'** here based on the example of the data set spEmp:'
spEmp = read.dta13("SC5_spEmp_D_version.dta", convert.factors = T)
#convert.factors = T converts value labels from Stata into factor label in R
#i.e. "1", "2" data class: integer becomes "yes", "no" data class: factor
```

The following step is not absolutely necessary. However it is recommended, if you attach great importance to keep the variable labels handy during your analysis. After importing the data set, you can display an overview over all variable labels by running the command varlabel(spEmp). However, this command doesn't work anymore after modifying the data by e.g. deleting or merging variables, since the single variable labels aren't attached to the single variable names. To prevent that, following steps are necessary:

Example 39 (R): Assigning variable labels

```
'** here based on the example of the data set spEmp:'
#install and integrates the package "Hmisc"
install.packages("Hmisc")
library(Hmisc)
```

```
#First, create a dataframe with all variable names and labels for spEmp
spEmp_meta = data.frame(attr(spEmp,"names"),attr(spEmp,"var.labels"))
#renames the columns in "names" and "labels"
colnames(spEmp_meta) = c("names", "labels")
spEmp_meta_names = as.vector(spEmp_meta$names)
#extracts the column "names" as vector "spEmp_meta_names"
spEmp_meta_labels = as.vector(spEmp_meta$labels)
#extracts the column "labels"as vector "spEmp_meta_labels"
names(spEmp_meta_labels) = spEmp_meta_names
#assigns the names to the labels, so that the vector "spEmp_meta_labels" is now a
named vector
#this procedure produces the same result as the following command:
#spEmp_meta_labels = c(ID_t = "Target-ID", splink = "Link für Spell-Merging",
 subspell = "Teilepisodennummer", ... for all variables)
for(i in seq_along(spEmp)){
 label(spEmp[,i]) = spEmp_meta_labels[i]
}
#assigns variable labels that are stored in spEmp_meta_labels to the single columns
label(spEmp)
label(spEmp$subspell)
#Now the variable labels are assigned to the single columns
```

#### Example 40 (R): Working with Basics

#### Example 41 (R): Working with Biography

'\*\* import the data file'
Biography =

Example 42 (R): Working with Children

```
'** check that you will need ID_t and child (child number)
** to merge information from other modules to this file'
anyDuplicated(Children[,c("ID_t","child")])
#returns "0" if there are no duplicates.
#If there are duplicates this command returns the index of the first duplicate
```

'\*\* check distribution of variable child as a child counter'
addmargins(table(Children\$child))

Example 43 (R): Working with CohortProfile

#### Example 44 (R): Working with EditionBackups

```
'** In this example, we want to restore the original
** values in variable t520003 (weight in kg) in datafile pTarget'
'** import the data file'
EditionBackups =
 read.dta13("SC6_EditionBackups_D_9-0-0.dta",
             convert.factors = T)
'** only keep rows containing data of the variable mentioned above'
EditionBackups = subset(EditionBackups,
                        EditionBackups$dataset == "pTarget" &
                          EditionBackups$varname == "t520003")
'** check which variables we need for merging'
table(EditionBackups$mergevars)
'** then keep the merging variables and the variable with
** the original values (for cross-checking, we also keep the
** variable editvalue, which contains the values found in pTarget)'
EditionBackups = subset(EditionBackups,
                        select = c(ID_t, wave, sourcevalue_num, editvalue_num))
'** rename the variables to emphasize affiliation'
names(EditionBackups)[names(EditionBackups) == "sourcevalue_num"] = "t520003_source"
names(EditionBackups)[names(EditionBackups) == "editvalue_num"] = "t520003_edit"
'** open pTarget'
pTarget =
 read.dta13("SC6_pTarget_D_9-0-0.dta",
             convert.factors = T)
'** add the data above'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
pTarget = transform(merge(
 x = cbind(pTarget, source = "master"),
 #x contains the pTarget data set plus one extra column "source",
 #where source = "master"
 y = cbind(EditionBackups, source = "using"),
 \ensuremath{\texttt{\#y}} contains the EditionBackups data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "wave")),
 #merges x and y by ID_t and wave
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
                  #in the merged dataset, source = "both" if the observations is in x
                    AND in y
                  ifelse(!is.na(source.x), "master", "using")),
```

# Appendix

#### Example 45 (R): Working with Education

```
'** we want to merge the school type from spSchool to this datafile.
** For this to work, we first have to prepare spSchool and keep only
** harmonized episodes (subspell == 0)'
spSchool =
 read.dta13("SC6_spSchool_D_9-0-0.dta",
            convert.factors = T)
spSchool = subset(spSchool, spSchool$subspell == 0)
'** open the Education data file'
Education =
 read.dta13("SC6_Education_D_9-0-0.dta",
            convert.factors = T)
'** check which spell modules you can merge to this file'
table(Education$tx28100)
'** only keep school episodes'
Education = subset(Education, Education$tx28100 == "spSchool")
'** check that you will need splink to merge information
** from other modules to this file'
anyDuplicated(Education[,c("ID_t","splink")])
#returns "0" if there are no duplicates.
#If there are duplicates this command returns the index of the first duplicate
'** merge spSchool to Education'
#After merging, Stata merge has one variable more than R, because in Stata
```

```
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Education = transform(merge(
 x = cbind(Education, source = "master"),
 #x contains the Education data set plus one extra column "source",
 #where source = "master"
 y = cbind(spSchool[,c("ID_t", "splink", "ts11204")],source = "using"),
 # y contains only the columns ID_t, splink and ts11204 from spSchool
 # plus one extra column "source" where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 # merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
                  # in the merged dataset, source = "both" if the observations is in
                   x AND in y
                 ifelse(!is.na(source.x), "master", "using")),
 #otherwise, source = "master" if the obs. is only in x
 #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 # the columns "source" in x and y are deleted
)
'** see that this only added information to the rows corresponding to spSchool'
cbind(addmargins(table(Education$tx28100, Education$source)))
```

#### Example 46 (R): Working with FurtherEducation

## Example 47 (R): Working with MaritalStates

#### Example 48 (R): Working with Methods

```
'** import the data file'
Methods =
```

```
read.dta13("SC6_Methods_D_9-0-0.dta",
             convert.factors = T)
MethodsEng =
 read.dta13("SC6_Methods_D_9-0-0_eng.dta",
            convert.factors = T)
'** check out participation status by wave'
cbind(addmargins(table(Methods$wave, Methods$tx80220)))
'** how many different interviewers did CATI surveys?'
length(unique(Methods$ID_int))
#unique ID_ints INCL. NA (missing values)
length(unique(Methods$ID_int[!is.na(Methods$ID_int)]))
#unique ID_ints EXCL. NA (missing values)
'** create one single variable containing the interview date'
Sys.setlocale("LC_TIME", "English")
#use when you have English labels
Sys.setlocale("LC_TIME", "German")
#use when you have German labels
Methods$intdate =
 as.Date(paste(Methods$intm, Methods$intd, Methods$inty, sep = '-'),
          "%B-%d-%Y")
#binds the three columns "intm", "intd" and "inty" into one new column "intdate"
head(Methods[c("intd", "intm", "inty", "intdate")], 10)
#displays first 10 rows of intd, intm, inty and intdate
```

#### Example 49 (R): Working with MethodsCompetencies

#### Example 50 (R): Working with pTarget

```
convert.factors = T)
#imports the pTarget dataset
CohortProfile =
 merge(x = CohortProfile,
       y = pTarget[,c("ID_t", "wave", "t400500_g1", "t733001")],
        by = c("ID_t", "wave"), all = TRUE)
#merges only variables "t400500_g1" and "t733001" from pTarget to CohortProfile
'** note: this information is available only in waves which have surveyed the topic'
addmargins(table(CohortProfile$wave, CohortProfile$t400500_g1))
'** if it makes sense, you can copy this information to cells of other waves.
** This copies information downwards (i.e. to late waves), unless a new
** value has been reported (which is usually what you want in a panel study'
for (i in 2:length(CohortProfile$ID_t)) {
 if(CohortProfile$ID_t[i] == CohortProfile$ID_t[i-1]) {
    if(is.na(CohortProfile$t400500_g1[i]) |
       CohortProfile$t400500_g1[i] == "Missing by design") {
      CohortProfile$t400500_g1[i] = CohortProfile$t400500_g1[i-1]
   }
 }
}
addmargins(table(CohortProfile$wave, CohortProfile$t400500_g1))
```

#### Example 51 (R): Working with pTargetMicrom

```
'** open pTargetMicrom datafile. Note that this data file is only available OnSite!'
pTargetMicrom = read.dta13("SC6_pTargetMicrom_0_version.dta", convert.factors = T)
'** additionally to ID_t and wave, line identification in this file is done
** via variable regio, denoting the regional level of information'
anyDuplicated(pTargetMicrom[,c("ID_t", "wave" ,"regio")])
#returns 0 if there are no duplicates
#If there are duplicates this command returns the index of the first duplicate
'** tabulating wave against regio shows availability of all levels
** in wave 5 and 7, but only the most detailed level available
** in wave 1 and 3 (usually housing level)'
addmargins(table(pTargetMicrom$wave, pTargetMicrom$regio))
'** only keep housing level'
pTargetMicrom = subset(pTargetMicrom, pTargetMicrom$regio == 1)
'** now you can enhance CohortProfile with regional data'
CohortProfile = read.dta13("SC6_CohortProfile_0_version.dta", convert.factors = T)
pTargetMicrom = merge(CohortProfile, pTargetMicrom, by = c("ID_t", "wave"), all =
 TRUE)
```

## Example 52 (R): Working with pTargetRegioInfas

```
'** open RegioInfas datafile. Note that this data file is only available OnSite!'
RegioInfas = read.dtal3("SC6_RegioInfas_0_version.dta", convert.factors = T)
'** identification in this file is done
** via variable regio, denoting the regional level of information'
anyDuplicated(RegioInfas[,c("ID_t", "regio")])
#returns 0 if there are no duplicates
#If there are duplicates this command returns the index of the first duplicate
'** existing regional levels are:'
table(RegioInfas;regio)
'** only keep housing level'
RegioInfas = subset(RegioInfas, RegioInfas$regio == 1)
'** now you can enhance CohortProfile with regional data'
CohortProfile = read.dtal3("SC6_CohortProfile_0_version.dta", convert.factors = T)
RegioInfas = merge(CohortProfile, RegioInfas, by = c("ID_t"), all = TRUE)
```

#### Example 53 (R): Working with spChild

```
'** open the data file'
spChild = read.dta13("SC6_spChild_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spChild = subset(spChild, spChild$subspell == 0)
'** generate the total count of children for each respondent
** you can do this either by taking the maximum child number:'
spChild = within(spChild, {children = ave(child, ID_t, FUN = max)})
'** or counting the number of rows:'
spChild = within(spChild, {children2 = ave(ID_t, ID_t, FUN = length)})
'** which both computes the same result'
identical(spChild$children, spChild$children2)
'** recode rough values (e.g. end of year) to real months'
levels(spChild$ts3320m)[levels(spChild$ts3320m) == "Beginning of the year/winter"] =
 "January"
levels(spChild$ts3320m)[levels(spChild$ts3320m) == "Spring/Easter"] = "April"
levels(spChild$ts3320m)[levels(spChild$ts3320m) == "Mid-Year/Summer"] = "July"
levels(spChild$ts3320m) [levels(spChild$ts3320m) == "Fall"] = "October"
levels(spChild$ts3320m)[levels(spChild$ts3320m) == "End of year"] = "December"
'** compute the age of one`s children today
** first, create a date of the birth variables'
```

# Appendix

```
spChild$ts3320m = match(spChild$ts3320m, month.name)
install.packages("zoo")
library(zoo)
#the zoo package is needed to transform time data
#transforms month names into month numbers
spChild$birth_ym = as.yearmon(paste(spChild$ts3320y, spChild$ts3320m), "%Y %m")
'** then, create the same for the current date'
spChild$today_ym = as.yearmon(rep(cut(Sys.Date(), "month"), length(spChild$ID_t)))
'** the age is then easily computed'
spChild$age = (spChild$today_ym - spChild$birth_ym)
summary(spChild$age)
# displays Min, Max and Mean of "age"
sd(spChild$age, na.rm = TRUE)
# displays Std.Dev. of "age"
length(spChild$age[!is.na(spChild$age)])
# displays the number of observations in "age" without NA
```

#### Example 54 (R): Working with spChildCohab

```
'** open the data file'
spChildCohab = read.dta13("SC6_spChildCohab_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spChildCohab = subset(spChildCohab, spChildCohab$subspell == 0)
'** recode rough values (e.g. end of year) to real months'
for (i in names(spChildCohab[c(16, 18)])){
 #run over the variables ts3331m and ts3332m in columns 16 and 18
 levels(spChildCohab[[i]])[levels(spChildCohab[[i]]) == "Beginning of the year/
   winter"] = "January"
 levels(spChildCohab[[i]])[levels(spChildCohab[[i]]) == "Spring/Easter"] = "April"
 levels(spChildCohab[[i]])[levels(spChildCohab[[i]]) == "Mid-Year/Summer"] = "July"
  levels(spChildCohab[[i]))[levels(spChildCohab[[i])) == "Fall"] = "October"
 levels(spChildCohab[[i]])[levels(spChildCohab[[i]]) == "End of year"] = "December"
}
'** generate the following durations in months:
* a) the total duration of a cohabitation episode'
for (i in names(spChildCohab[c(16, 18)])) {
 spChildCohab[[i]] = match(spChildCohab[[i]], month.name)
 #transforms month names into month numbers
}
install.packages("zoo")
library(zoo)
#the zoo package is needed to transform time data
```

```
spChildCohab$cohab_start =
 as.yearmon(paste(spChildCohab$ts3331y, spChildCohab$ts3331m), "%Y %m")
spChildCohab$cohab_end =
 as.yearmon(paste(spChildCohab$ts3332y, spChildCohab$ts3332m), "%Y %m")
spChildCohab$cohab_duration =
  (spChildCohab$cohab_end - spChildCohab$cohab_start)*12
'* b) the total duration a respondent lived together with specific child'
spChildCohab = within(spChildCohab,
                      {total_duration_per_child =
                        ave(cohab_duration, ID_t, child, FUN =
                              function(x) round(sum(x, na.rm = TRUE)))})
'* c) the total duration a respondent lived together with any child'
spChildCohab = within(spChildCohab,
                      {total_duration_per_target =
                        ave(cohab_duration, ID_t, FUN =
                              function(x) round(sum(x, na.rm = TRUE)))})
'** to work with the latter information in other files, you could do
** which gives you a cross-sectional display of cohabitation time per respondent'
spChildCohab = subset(spChildCohab, select = c("ID_t", "total_duration_per_target"))
spChildCohab = spChildCohab[!duplicated(spChildCohab),]
```

Example 55 (R): Working with spCourses

```
'** open the data file'
spCourses = read.dta13("SC6_spCourses_D_9-0-0.dta", convert.factors = T)
'** check which modules provided course information'
cbind(addmargins(table(spCourses$sptype)))
'** only keep courses from employment spells'
spCourses = subset(spCourses, spCourses$sptype == "Emp")
'** open the employment module'
spEmp = read.dta13("SC6_spEmp_D_9-0-0.dta", convert.factors = T)
'** merge spCourses to spEmp
** note that this is an m:1 merge, as there are still subspells in spEmp'
#Since the variable nepswave is in both data sets spCourses AND spEmp
intersect(names(spCourses), names(spEmp))
#and since the variable is not one of the merging variables, both versions
#are contained in the new merged data set as nepswave.x and nepswave.y.
#To avoid that there are two possibilities:
#1. You can include the variable in the merging process by:
spEmp =
 merge(spEmp, spCourses, by = c("ID_t", "wave", "splink", "nepswave"), all.x = TRUE)
# In that case the version from the master data set, here spEmp, is kept
```

```
#OR
#2. If you'd like to compare the both versions first, you can merge the
#data sets as usual by:
spEmp =
    merge(spEmp, spCourses, by = c("ID_t", "wave", "splink"), all.x = TRUE)
#compare the two versions of the variable nepswave by:
addmargins(table(spEmp$nepswave.x, spEmp$nepswave.y))
#and then drop one of the variables by:
spEmp$nepswave.y = NULL
'** you now have the spEmp datafile, enhanced with information from spCourses,
** and can proceed with this in the usual way'
```

**Example 56 (R):** Working with spEmp

```
'** open the data file'
spEmp = read.dta13("SC6_spEmp_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spEmp = subset(spEmp, spEmp$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge the spEmp to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spEmp,source = "using"),
 #y contains the spEmp data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
                  #in the merged dataset, source = "both" if the observations is in x
                    AND in v
                  ifelse(!is.na(source.x), "master", "using")),
 #otherwise, source = "master" if the obs. is only in x
 #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
```

)

#Since the variables wave and spms are in both data sets, Biography AND spEmp
#check before merging by: intersect(names(Biography), names(spEmp))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography\$wave.y = NULL
Biography\$spms.y = NULL
'\*\* you now have an enhanced version of Biography, enriched by
\*\* information from the spell module. The number of total episodes
\*\*\* (i.e. the amount of rows in the Biography file) did not change.
\*\*\* Verify this by tabulating the spell type by the merging variable
\*\*\* generated during the merge process.'
addmargins(table(Biography\$sptype, Biography\$source))



```
'** open the datafile'
spFurtherEdu1 = read.dta13("SC6_spFurtherEdu1_D_9-0-0.dta", convert.factors = T)
'** one row contains information for one course.
** The only possibility to use this file is to merge it to the data for this
** respondents wave (we use CohortProfile). So first, we have to remodel
** the file so one row contains one wave.'
spFurtherEdu1$course_nr = ave(spFurtherEdu1$ID_t, spFurtherEdu1$ID_t,
                             spFurtherEdu1$wave, FUN = seq_along)
spFurtherEdu1 = reshape(data = spFurtherEdu1,
                        #data in long format
                        idvar = c("ID_t","wave"),
                        #idvar is/are the variable/s that need/s to be left unaltered
                        v.names = names(spFurtherEdu1[,4:13]),
                        #v.names contains names of variables in the long format that
                        #correspond to multiple variable in the wide format
                        timevar = "course_nr",
                        #timevar is/are the variable/s that need/s to be converted to
                        #wide format
                        direction = "wide")
#direction is to which format the data needs to be transformed
'** open CohortProfile'
CohortProfile = read.dta13("SC6_CohortProfile_D_9-0-0.dta", convert.factors = T)
'** merge the data'
CohortProfile =
 merge(CohortProfile, spFurtherEdu1, by = c("ID_t", "wave"), all.x = TRUE)
'** Please note that you now have multiple variables added to CohortProfile,'
'** one set of variables for each course reported in spFurtherEdu1'
```

#### Example 58 (R): Working with spFurtherEdu2

```
'** Two possibilities to use spFurtherEdu2'
1_____
                                 -----!
'** A) Merge data to spCourses'
'** open spCourses datafile'
spCourses = read.dta13("SC6_spCourses_D_9-0-0.dta", convert.factors = T)
'** one row contains information for up to five courses.
** To make merging possible, you first have to reshape the datafile
** so one row contains only one course'
spCourses = reshape(data = spCourses,
                   # data in wide format
                   idvar = c("ID_t","wave","splink"),
                   #idvar is/are the variable/s that need/s to be left unaltered
                   varying = c("course_w1","course_w2","course_w3","course_w4","
                    course_w5"),
                   #varying are the variables that need to be converted from
                   #wide to long
                   v.names = c("course"),
                   #v.names defines the name of the variable in that the in
                   #varying defined variables are summarized
                   times = c(1,2,3,4,5),
                   #new variable "time" is created with levels 1, 2, 3, 4 and 5
                   #for the five courses
                   new.row.names = 1:150000,
                   #sets row names as numeric
                   direction = "long"
                   ##direction is to which format the data needs to be transformed
)
names(spCourses)[names(spCourses) == "time"] <- "course_nr"</pre>
#renames the variable "time" to "course_nr"
'** merge spFurtherEdu2 using ID_t and course'
#open spFurtherEdu2 datafile
spFurtherEdu2 = read.dta13("SC6_spFurtherEdu2_D_9-0-0.dta", convert.factors = T)
intersect(names(spCourses), names(spFurtherEdu2))
#common variables in the both data sets are "ID_t", "wave", "nepswave" and "course"
#Since the variables "wave" and "nepswave" are not part of the merging process,
#both versions are contained in the new merged data set
#as wave.x/wave.y and nepswave.x/nepswave.y.
'**To avoid that, there are two merging options:'
#1. You can include the variables in the merging process by:
spCourses =
 merge(spCourses, spFurtherEdu2,
       by = c("ID_t", "course", "wave", "nepswave"), all.x = TRUE)
#In that case the versions from the master data set are kept (wave.x and nepswave.x)
```

# Appendix

```
#OR
#2. If you'd like to compare the both versions first,
#you can merge the data sets as usual by:
spCourses = merge(spCourses, spFurtherEdu2, by = c("ID_t", "course"), all.x = TRUE)
#compare the two versions of the variables by:
addmargins(table(spCourses$wave.x, spCourses$wave.y))
addmargins(table(spCourses$nepswave.x, spCourses$nepswave.y))
#and then drop one of the versions by:
spCourses$wave.y = NULL
spCourses$nepswave.y = NULL
                        _____!
!_____
1_____1
'** B) merge to spFurtherEdu1'
'** open spFurtherEdu1 and FurtherEdu2 datafiles'
spFurtherEdu1 = read.dta13("SC6_spFurtherEdu1_D_9-0-0.dta", convert.factors = T)
spFurtherEdu2 = read.dta13("SC6_spFurtherEdu2_D_9-0-0.dta", convert.factors = T)
'** merge spFurtherEdu2 using ID_t and courses'
intersect(names(spFurtherEdu1), names(spFurtherEdu2))
#common variables in the both data sets are "ID_t", "wave", "course" and "nepswave"
#Since the variables "wave" and "nepswave" are not part of the merging process,
#both versions are contained in the new merged data set
#as wave.x/wave.y and nepswave.x/nepswave.y.
'**To avoid that, there are two merging options:'
#1. You can include the variables in the merging process by:
spFurtherEdu1 =
 merge(spFurtherEdu1, spFurtherEdu2,
       by = c("ID_t", "course", "wave", "nepswave"), all.x = TRUE)
#In that case the versions from the master data set are kept (wave.x and nepswave.x)
#OR
#2. If you'd like to compare the both versions first,
#you can merge the data sets as usual by:
spFurtherEdu1 =
merge(spFurtherEdu1, spFurtherEdu2,
       by = c("ID_t", "course"), all.x = TRUE)
#compare the two versions of the variables by:
addmargins(table(spFurtherEdu1$wave.x, spFurtherEdu1$wave.y))
addmargins(table(spFurtherEdu1$nepswave.x, spFurtherEdu1$nepswave.y))
#and then drop one of the versions by:
spFurtherEdu1$wave.y = NULL
spFurtherEdu1$nepswave.y = NULL
                             ......
1_____
```

#### Example 59 (R): Working with spFurtherEdu3

```
'** Two possibilities to use spFurtherEdu3'
1_____1
'** A) Merge data to spCourses'
'** open spCourses datafile'
spCourses = read.dta13("SC6_spCourses_D_9-0-0.dta", convert.factors = T)
'** one row contains information for up to five courses.
** To make merging possible, you first have to reshape the datafile
** so one row contains only one course'
spCourses = reshape(data = spCourses,
                   # data in wide format
                   idvar = c("ID_t","wave","splink"),
                   #idvar is/are the variable/s that need/s to be left unaltered
                   varying = c("course_w1","course_w2","course_w3","course_w4","
                    course_w5"),
                   #varying are the variables that need to be converted from
                   #wide to long
                   v.names = c("gcourse"),
                   #v.names defines the name of the variable in that the in
                   #varying defined variables are summarized
                   times = c(1,2,3,4,5),
                   #new variable "time" is created with levels 1, 2, 3, 4 and 5
                   #for the five courses
                   new.row.names = 1:150000,
                   #sets row names as numeric
                   direction = "long"
                   ##direction is to which format the data needs to be transformed
)
names(spCourses)[names(spCourses) == "time"] <- "course_nr"</pre>
#renames the variable "time" to "course_nr"
'** merge spFurtherEdu3 using ID_t and gcourse'
#open spFurtherEdu3 datafile
spFurtherEdu3 = read.dta13("SC6_spFurtherEdu3_D_9-0-0.dta", convert.factors = T)
intersect(names(spCourses), names(spFurtherEdu3))
#common variables in the both data sets are "ID_t", "wave", "nepswave" and "gcourse"
#Since the variables "wave" and "nepswave" are not part of the merging process,
#both versions are contained in the new merged data set
#as wave.x/wave.y and nepswave.x/nepswave.y.
'**To avoid that, there are two merging options:'
#1. You can include the variables in the merging process by:
spCourses =
 merge(spCourses, spFurtherEdu3,
```

```
by = c("ID_t", "gcourse", "wave", "nepswave"), all.x = TRUE)
#In that case the versions from the master data set are kept (wave.x and nepswave.x)
#OR
#2. If you'd like to compare the both versions first,
#you can merge the data sets as usual by:
spCourses = merge(spCourses, spFurtherEdu3, by = c("ID_t", "gcourse"), all.x = TRUE)
#compare the two versions of the variables by:
addmargins(table(spCourses$wave.x, spCourses$wave.y))
addmargins(table(spCourses$nepswave.x, spCourses$nepswave.y))
#and then drop one of the versions by:
spCourses$wave.y = NULL
spCourses$nepswave.y = NULL
1_____
                    _____
1______
'** B) merge to spFurtherEdu1'
'** open spFurtherEdu1 and FurtherEdu2 datafiles'
spFurtherEdu1 = read.dta13("SC6_spFurtherEdu1_D_9-0-0.dta", convert.factors = T)
names(spFurtherEdu1)[names(spFurtherEdu1) == "course"] <- "gcourse"</pre>
#renames the variable "course" to "gcourse"
spFurtherEdu3 = read.dta13("SC6_spFurtherEdu3_D_9-0-0.dta", convert.factors = T)
'** merge spFurtherEdu3 using ID_t and gcourses'
intersect(names(spFurtherEdu1), names(spFurtherEdu3))
#common variables in the both data sets are "ID_t", "wave", "gcourse" and "nepswave"
#Since the variables "wave" and "nepswave" are not part of the merging process,
#both versions are contained in the new merged data set
#as wave.x/wave.y and nepswave.x/nepswave.y.
'**To avoid that, there are two merging options:'
#1. You can include the variables in the merging process by:
spFurtherEdu1 =
 merge(spFurtherEdu1, spFurtherEdu3,
       by = c("ID_t", "gcourse", "wave", "nepswave"), all.x = TRUE)
#In that case the versions from the master data set are kept (wave.x and nepswave.x)
#OR
#2. If you'd like to compare the both versions first,
#you can merge the data sets as usual by:
spFurtherEdu1 =
 merge(spFurtherEdu1, spFurtherEdu3,
       by = c("ID_t", "gcourse"), all.x = TRUE)
#compare the two versions of the variables by:
```

```
addmargins(table(spFurtherEdul$wave.x, spFurtherEdul$wave.y))
addmargins(table(spFurtherEdul$nepswave.x, spFurtherEdul$nepswave.y))
#and then drop one of the versions by:
spFurtherEdul$wave.y = NULL
spFurtherEdul$nepswave.y = NULL
```

-----

#### Example 60 (R): Working with spGap

```
'** open the data file'
spGap = read.dta13("SC6_spGap_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spGap = subset(spGap, spGap$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge the spGap to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spGap,source = "using"),
 #y contains the spGap data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
           ifelse(!is.na(source.x), "master", "using")),
              #otherwise, source = "master" if the obs. is only in x
               #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spGap
#check before merging by: intersect(names(Biography), names(spGap))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
```

'\*\* you now have an enhanced version of Biography, enriched by

```
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```

#### **Example 61 (R):** Working with spMilitary

```
'** open the data file'
spMilitary = read.dta13("SC6_spMilitary_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spMilitary = subset(spMilitary, spMilitary$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spMilitary to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spMilitary, source = "using"),
 #y contains the spMilitary data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
          ifelse(!is.na(source.x), "master", "using")),
          #otherwise, source = "master" if the obs. is only in x
          #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spMilitary
#check before merging by: intersect(names(Biography), names(spMilitary))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
```

```
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```

#### Example 62 (R): Working with spParLeave

```
'** open the data file'
spParLeave = read.dta13("SC6_spParLeave_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spParLeave = subset(spParLeave, spParLeave$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spParLeave to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spParLeave, source = "using"),
 #y contains the spParLeave data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
           ifelse(!is.na(source.x), "master", "using")),
           #otherwise, source = "master" if the obs. is only in x
           #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spParLeave
#check before merging by: intersect(names(Biography), names(spParLeave))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
```

addmargins(table(Biography\$sptype, Biography\$source))

#### Example 63 (R): Working with spPartner

```
'** open the data file'
spPartner = read.dta13("SC6_spPartner_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spPartner = subset(spPartner, spPartner$subspell == 0)
'** to find out if a respondent is oder has ever been married,
** check out if the indicating variable ever stated a marriage
** you could
** ts31410 == "Yes" if respondent is married,'
spPartner$married =
 ifelse(!is.na(spPartner$ts31410) & spPartner$ts31410 == "ja", 1, 0)
spPartner = within(spPartner, {married = ave(married, ID_t, FUN = max)})
#for every ID_t with at least one married == 1, all other married observations
#are also replaced by 1 within this ID_t.
'** look at the data'
spPartner = spPartner[order(spPartner$ID_t),]
#sorts data by ID_t
head(spPartner[c("ID_t", "partner", "ts31410", "married")], 20)
#displays first 20 rows
'** reduce the datafile, so you have one single row for each respondent'
spPartner = subset(spPartner, select = c(ID_t, married))
spPartner = spPartner[!duplicated(spPartner),]
'** you now can merge this datafile to, e.g., CohortProfile'
CohortProfile = read.dta13("SC6_CohortProfile_D_9-0-0.dta", convert.factors = T)
CohortProfile = merge(CohortProfile, spPartner, by = "ID_t", all.x = TRUE)
```

Example 64 (R): Working with spResidence

```
'** open the data file'
spResidence = read.dta13("SC6_spResidence_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spResidence = subset(spResidence, spResidence$subspell == 0)
'** find all persons who live or ever lived in Bremen
** th21111_g2 == "Bremen" if respondent lives or lived in Bremen,'
spResidence$bremen =
```

```
ifelse(!is.na(spResidence$th21111_g2) & spResidence$th21111_g2 == "Bremen", 1, 0)
spResidence = within(spResidence, {bremen = ave(bremen, ID_t, FUN = max)})
#for every ID_t with at least one bremen == 1, all other bremen observations
#are also replaced by 1 within this ID_t.
'** reduce the datafile, so you have one single row for each respondent'
spResidence = subset(spResidence, select = c(ID_t, bremen))
spResidence = spResidence[!duplicated(spResidence),]
'** you can now merge this datafile to, e.g., CohortProfile'
CohortProfile = read.dta13("SC6_CohortProfile_D_9-0-0.dta", convert.factors = T)
CohortProfile = merge(CohortProfile, spResidence, by = "ID_t", all.x = TRUE)
'** please note that data in spResidence is only available for the ALWA-sample!'
table(CohortProfile$tx80105, CohortProfile$bremen)
```

Example 65 (R): Working with spSchool

```
'** open the data file'
spSchool = read.dta13("SC6_spSchool_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spSchool = subset(spSchool, spSchool$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spSchool to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spSchool,source = "using"),
 #y contains the spSchool data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
          ifelse(!is.na(source.x), "master", "using")),
          #otherwise, source = "master" if the obs. is only in x
          #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
```

)

```
#Since the variables wave and spms are in both data sets, Biography AND spSchool
#check before merging by: intersect(names(Biography), names(spSchool))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```



```
'** aim of this example is to evaluate the age of the respondent
** at the exam'
'** first, we have to get the birth date of the respondent'
#open pTargetCATI
pTarget = read.dta13("SC6_pTarget_D_9-0-0.dta", convert.factors = T)
#display value labels
levels(pTarget$wave)
#keep only the first wave as this data is time-invariant
pTarget =
       subset(pTarget, pTarget$wave == "2007/2008 (ALWA)")
#keep only ID_t, t70000m and t70000y from pTarget
pTarget =
        subset(pTarget, select = c("ID_t", "t70000m", "t70000y"))
'** now, open the data file spSchoolExtExam'
spSchoolExtExam =
 read.dta13("SC6_spSchoolExtExam_D_9-0-0.dta", convert.factors = T)
'** merge the previously extracted birth dates in pTarget to spSchoolExtExam'
spSchoolExtExam = merge(spSchoolExtExam, pTarget, by = c("ID_t"), all.x = TRUE)
'** recode the two date variables (year, month) into one:'
Sys.setlocale("LC_TIME", "English")
#use when you have English labels
Sys.setlocale("LC_TIME", "German")
```
## Appendix

```
#use when you have German labels
spSchoolExtExam$ts1130m = match(spSchoolExtExam$ts1130m, month.name)
spSchoolExtExam$t70000m = match(spSchoolExtExam$t70000m, month.name)
#transforms month names into month numbers
install.packages("zoo")
library(zoo)
#the zoo package is needed to transform time data
spSchoolExtExam$exam_date =
       as.yearmon(paste(spSchoolExtExam$ts1130y, spSchoolExtExam$ts1130m), "%Y %m")
spSchoolExtExam$birth_date =
        as.yearmon(paste(spSchoolExtExam$t70000y, spSchoolExtExam$t70000m), "%Y %m")
#recode the two date variables (year, month) into one
'** calculate the age (in years)'
spSchoolExtExam$age = (spSchoolExtExam$exam_date - spSchoolExtExam$birth_date)
'** show some deviation'
aggregate(spSchoolExtExam$age, by = list(spSchoolExtExam$ts11302),
       FUN = function(x)
                c(mean = mean(x, na.rm = TRUE),
               sd = sd(x, na.rm = TRUE), freuquency = length(x[!is.na(x)])))
#displays mean and sd of age by school-leaving qualification
sum(!is.na(spSchoolExtExam$age))
#total number of observations without NA
summary(spSchoolExtExam$age)
#display mean of age in general
sd(spSchoolExtExam$age, na.rm = TRUE)
#display sd of age in general
```

## Example 67 (R): Working with spUnemp

```
'** open the data file'
spUnemp = read.dta13("SC6_spUnemp_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spUnemp = subset(spUnemp, spUnemp$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spUnemp to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
```

Biography = transform(merge(

```
x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spUnemp, source = "using"),
 #y contains the spUnemp data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
           ifelse(!is.na(source.x), "master", "using")),
           #otherwise, source = "master" if the obs. is only in x
          #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spUnemp
#check before merging by: intersect(names(Biography), names(spUnemp))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```

## Example 68 (R): Working with spVocExtExam

```
'** aim of this example is to evaluate the age of the respondent
  ** at the exam'
'** first, we have to get the birth date of the respondent'
#open pTarget
pTarget = read.dta13("SC6_pTarget_D_9-0-0.dta", convert.factors = T)
#display value labels
levels(pTarget$wave)
#keep only the first wave as this data is time-invariant
pTarget = subset(pTarget, pTarget$wave == "2007/2008 (ALWA)")
#keep only ID_t, t70000m and t70000y from pTarget
pTarget = subset(pTarget, select = c("ID_t", "t70000m", "t70000y"))
```

```
'** open the data file spVocExtExam'
spVocExtExam = read.dta13("SC6_spVocExtExam_D_9-0-0.dta", convert.factors = T)
'** merge the previously extracted birth dates in pTarget to spVocExtExam'
spVocExtExam = merge(spVocExtExam, pTarget, by = c("ID_t"), all.x = TRUE)
'** recode the two date variables (year, month) into one:'
Sys.setlocale("LC_TIME", "English")
#use when you have English labels
spVocExtExam$ts1530m = match(spVocExtExam$ts1530m, month.name)
spVocExtExam$t70000m = match(spVocExtExam$t70000m, month.name)
#transforms month names into month numbers
install.packages("zoo")
library(zoo)
#the zoo package is needed to transform time data
spVocExtExam$exam_date =
       as.yearmon(paste(spVocExtExam$ts1530y, spVocExtExam$ts1530m), "%Y %m")
spVocExtExam$birth_date =
       as.yearmon(paste(spVocExtExam$t70000y, spVocExtExam$t70000m), "%Y %m")
#recode the two date variables (year, month) into one
'** calculate the age (in years)'
spVocExtExam$age = (spVocExtExam$exam_date - spVocExtExam$birth_date)
'** show some deviation'
aggregate(spVocExtExam$age, by = list(spVocExtExam$ts15304),
       FUN = function(x)
                c(mean = mean(x, na.rm = TRUE),
                sd = sd(x, na.rm = TRUE), freuquency = length(x[!is.na(x)])))
#displays mean and sd of age by school-leaving qualification
sum(!is.na(spVocExtExam$age))
#total number of observations without NA
summary(spVocExtExam$age)
#displays mean of age in general
sd(spVocExtExam$age, na.rm = TRUE)
#displays sd of age in general
```

## Example 69 (R): Working with spVocPrep

```
'** open the data file'
spVocPrep = read.dta13("SC6_spVocPrep_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spVocPrep = subset(spVocPrep, spVocPrep$subspell == 0)
'** open the Biography data file'
```

```
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spVocPrep to Biography'
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spVocPrep, source = "using"),
 #y contains the spVocPrep data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
          ifelse(!is.na(source.x), "master", "using")),
          #otherwise, source = "master" if the obs. is only in x
          #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spVocPrep
#check before merging by: intersect(names(Biography), names(spVocPrep))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```

## Example 70 (R): Working with spVocTrain

```
'** open the data file'
spVocTrain = read.dta13("SC6_spVocTrain_D_9-0-0.dta", convert.factors = T)
'** only keep full or harmonized episodes'
spVocTrain = subset(spVocTrain, spVocTrain$subspell == 0)
'** open the Biography data file'
Biography = read.dta13("SC6_Biography_D_9-0-0.dta", convert.factors = T)
'** merge spVocTrain to Biography'
```

```
#After merging, Stata merge has one variable more than R, because in Stata
#a merge indicator is produced during the merging process and in R isn't.
#Since we need a merge indicator here, the merge command has to be extended:
Biography = transform(merge(
 x = cbind(Biography, source = "master"),
 #x contains the Biography data set plus one extra column "source",
 #where source = "master"
 y = cbind(spVocTrain, source = "using"),
 #y contains the spVocTrain data set plus one extra column "source",
 #where source = "using"
 all.x = TRUE, by = c("ID_t", "splink")),
 #merges x and y by ID_t and splink
 source = ifelse(!is.na(source.x) & !is.na(source.y), "both",
 #in the merged dataset, source = "both" if the observations is in x AND in y
          ifelse(!is.na(source.x), "master", "using")),
          #otherwise, source = "master" if the obs. is only in x
          #and source = "using" if the obs. is only in y
 source.x = NULL,
 source.y = NULL
 #the columns "source" in x and y are deleted
)
#Since the variables wave and spms are in both data sets, Biography AND spVocTrain
#check before merging by: intersect(names(Biography), names(spVocTrain))
#and since the variables are not part of the merging process,
#both versions are contained in the new merged data set as
#wave.x/wave.y and spms.x/spms.y
#For each variable, one of the versions can be dropped by:
Biography$wave.y = NULL
Biography$spms.y = NULL
'** you now have an enhanced version of Biography, enriched by
** information from the spell module. The number of total episodes
** (i.e. the amount of rows in the Biography file) did not change.
** Verify this by tabulating the spell type by the merging variable
** generated during the merge process.'
addmargins(table(Biography$sptype, Biography$source))
```

## Example 71 (R): Working with spVolunteerWork

```
'** open the data file'
spVolunteerWork = read.dta13("SC6_spVolunteerWork_D_9-0-0.dta", convert.factors = T)
'** evaluate which ids are needed to identify single rows'
anyDuplicated(spVolunteerWork[,c("ID_t","volunteer")])
#returns "0" if there are no duplicates.
#If there are duplicates this command returns the index of the first duplicate
```

Example 72 (R): Working with Weights

```
'** open the data file'
Weights = read.dta13("SC6_Weights_D_9-0-0.dta", convert.factors = T)
'** note that this file is cross-sectional,
**although the weights seem to contain panel logic'
attr(Weights, "var.labels")
'** only keep weights corresponding to all waves'
Weights = subset(Weights, select = c(ID_t, w_t23456789_std))
'** create a "panel" logic, i.e. clone each row'
Weights = Weights[rep(seq_len(nrow(Weights)), each = 9),]
'** then create a wave variable'
Weights$wave = ave(Weights$ID_t, Weights$ID_t, FUN = seq_along)
'** open CohortProfile'
CohortProfile = read.dta13("SC6_CohortProfile_D_9-0-0.dta", convert.factors = T)
#value labels of "wave" in "CohortProfile" and "Weights"
#have to be synchronized before merging
levels((CohortProfile$wave))
levels(Weights$wave)
Weights$wave = as.factor(Weights$wave)
#sets "wave" in "Weights" as factor
for (i in 1:9) {
 levels(Weights$wave)[i] = levels(CohortProfile$wave)[i]
 #assigns the same value labels to "wave" in "Weights" as in "CohortProfile"
}
'** and merges Weights to CohortProfile'
CohortProfile = merge(CohortProfile, Weights, by = c("ID_t", "wave"), all = TRUE)
'** note that this weight is only nonzero if respondents participated in all waves'
with(subset(CohortProfile, w_t23456789_std != 0), addmargins(table(wave, tx80220)))
```



```
'** open the data file xTargetCompetencies'
xTargetCompetencies =
    read.dta13("SC6_xTargetCompetencies_D_9-0-0.dta", convert.factors = T)
'** as the x in the filename indicates, this is a cross sectional file
 ** (no wave structure). You can verify this by asking if one row is
 ** solely identified by the respondents ID'
anyDuplicated(xTargetCompetencies[,c("ID_t")])
#returns "0" if there are no duplicates.
#If there are duplicates this command returns the index of the first duplicate
'** note that competence testing has been conducted in multiple waves
```

```
** an indicator marks if a row contains information for a specific wave'
table(xTargetCompetencies$wave_w3)
table(xTargetCompetencies$wave_w5)
table(xTargetCompetencies$wave_w7)
table(xTargetCompetencies$wave_w9)
'** to work with competence data, you might want to merge it to CohortProfile.
\star\star if you want to keep the panel logic (and not only add all competencies
** to every wave), you need a mergeable wave variable in xTargetCompetencies.
\star\star here, we focus on math competencies, that have been tested in wave 3.'
#open the data file Cohort Profile
CohortProfile = read.dta13("SC6_CohortProfile_D_9-0-0.dta", convert.factors = T)
xTargetCompetencies$wave =
        rep(levels(CohortProfile$wave)[3],length(xTargetCompetencies$ID_t))
# take the label for wave 3 from CohortProfile, since the labels have to be equal for
 the later merge
xTargetCompetencies$wave = as.factor(xTargetCompetencies$wave)
# change the variable type of wave to factor
'** now, keep cases which did take part in the testing'
xTargetCompetencies = subset(xTargetCompetencies, wave_w3 == "ja")
'** and reduce the dataset to the relevant variables'
xTargetCompetencies =
        subset(xTargetCompetencies, select = c(ID_t, wave, maa3_sc1, maa3_sc2))
'** and merge this to CohortProfile'
CohortProfile =
 merge(CohortProfile, xTargetCompetencies, by = c("ID_t", "wave"), all = TRUE)
```

## **B.2** Release notes

The following is the release note taken from the documentation page at the time this document has been computed:

```
_____
**
** NEPS STARTING COHORT 6 - RELEASE NOTES a.k.a CHANGE LOG
** changes and updates for release NEPS SC6 12.0.0
** (doi:10.5157/NEPS:SC6:12.0.0)
**
* Changes introduced to NEPS:SC6 by version 12.0.0 *
General:
      - new data from wave 12 have been incorporated into the Scientific Use File
      - meta information for all variables have been revised and updated where
          appropriate
       - all variables relating to the dates of data collection (e.g. when the
          competency tests and cati-questionnaires took place)
             were updated and now stored centrally in the CohortProfile dataset (
                 variables tx86***). Variables intm and inty have
             been removed from all other datasets.
pTargetCORONA :
       - information on health-related limitations are also available in pTargetCORONA
           (variable t521055). However, some respondents
              indicated very strong limitations; they stated that they are in good or
                  very good physical and mental health, though.
              In these cases, it is unclear, how respondents interpreted the question
                  regarding limitations in daily activities.
       - information on satisfaction woth course of study, school or apprenticeship (
          variable t514010) is also available for those
              respondents who reviously indicated that they were employed or retired,
                  although the response option "does not apply"
             was available; in these cases, it is unclear what respondents were
                 referring to with their answer to the satisfaction
              question, so this variable should be treated with caution, depending on
                  the research question.
spVocTrain:
       - After inserting the new code 6 in item ts15216, the filtering was incorrectly
           adapted to the new code starting from item ts15253.
              The respondents who gave code 6 in ts15216 (3 respondents) were
                 filtered into the questions ts15219, ts15220, ts15265,
              t724501, ts15221 and ts15222, although they shouldn't have been asked
                 these questions. Data of these 3 respondents
             were deleted.
-----
* Changes introduced to NEPS:SC6 by version 11.0.0 *
_____
General:
```

- metadata for all variables have been revised and updated where necessary

# Appendix

	ata from the wave 11 interviews have now been integrated into the Scientific Use File
Waighta	
– in	addition to providing the new weights for wave 11, the calibrated weights of wave 8 (w_t8_cal) have been subsequently adjusted to correct an error in the educational levels classification during calibration
- fc	or wave 8, 9 and 10 the database for the nonresponse models and weighting procedures has been updated
xPlausibleVa	alues
– ne	ew dataset since release 11-0-0: provides plausible values for competency data stored in xTargetCompetencies
Methods / C – in	ohortProfile: Idicator variables for linking the NEPS datsets with data from the NEPS- ADIAB project have been added
FurtherEduca - cc	ation: ourse numbers from wave 2 suffered a coding error. This has been fixed.
pTarget:	
- va	ariables t32454g and t32552g suffered a preload error in wave 7 and wave 11 data. Values of these variables have been set to missing code –92 "(Question erroneously not asked)".
* Changes in	itroduced to NEPS:SC6 by version 10.0.1 *
Conoroli	
– th	ne spell datasets spChild, spEmp, spPartner, spSchool and spVocTrain as well as the data sets Basics and FurtherEducation derived from these spell data sets had incorrect entries due to an error in the data preparation process; values from the subspells were not correctly transferred to the corresponding subspell 0 in SUF release 10.0.0; this error has now been fixed
* Changes in	itroduced to NEPS:SC6 by version 10.0.0 *
General:	
– m – da	etadata for all variables have been revised and updated where necessary ata from the wave 10 interviews have now been integrated into the Scientific Use File
sn Partner ·	
– in	)formation of LAT (living apart together) partners from ALWA participants has been moved to the pTarget dataset
spResidence	· · · ·
spResidence: – re	: esidence information of ALWA participants has been moved to the pTarget dataset
spResidence: - re	: esidence information of ALWA participants has been moved to the pTarget dataset

SUF release led to missing values in the variables tx2821m [course participation (date/interval) starting date (month)] and tx2821y [course participation (date/interval) starting date (year) ]; this problem has now been solved Weights: - in addition to providing the new weights for wave 10, the calibrated weights of wave 5 (w\_t5\_cal) have been subsequently adjusted to correct an error in the educational levels classification during calibration \* Changes introduced to NEPS:SC6 by version 9.0.1 \* General: - renamed datafile RegioInfas to pTargetRegioInfas CohortProfile : – in SC6 SUF 9.0.0 an error in the data processing routine led to incomplete data for wave 1 respondents; this bug has been fixed with the update pTarget: - the set of generated variables on the "number of children in household" [ tx20000, tx20001, tx20002, tx20003] contained an error in calculating the age of focus children in wave 3 and above as soon as information on the children was continuously reported on waves; in these cases the children could systematically not be correctly classified into age groups; this bug has been fixed with the update \* Changes introduced to NEPS:SC6 by version 9.0.0 \* -----General: - meta data for all variables have been revised and updated where appropriate - data from the interviews in wave 9 have been incorporated into the data EditionBackups: - this new dataset is now available containing the original values of variables that have been recoded during the data preparation \_\_\_\_\_ \* Changes introduced to NEPS:SC6 by version 8.0.0 \* \_\_\_\_\_ General: - meta data for all variables have been revised and updated where appropriate - data from the interviews in wave 8 have been incorporated into the data \_\_\_\_\_ \* Changes introduced to NEPS:SC6 by version 7.0.0 \*

# Appendix

```
-----
General:
       - meta data for all variables have been revised and updated where appropriate
       - data from the interviews in wave 7 have been incorporated into the data
spVolunteerWork:
      - in wave 6 interviews, an episode module regarding volunteer work had been
          surveyed;
              this module had been missing in versions 6.0.0 and 6.0.1; this has been
                  fixed
_____
* Changes introduced to NEPS:SC6 by version 6.0.1 *
-----
General:
       - meta data for all variables have been revised and updated where appropriate
spSchool:
       - variable "School-leaving certificate" [ts11209] suffered a coding error in
          version 6.0.0;
              this also led to erroneous codings in derived educational codes ("ISCED
                 -97" [tx28103],
              "CASMIN" [tx28101], "Years of Education[tx28102]) and misleading spell
                 structure of the generated Education
              file as well as the respective data provided in the Basics file; this
                 has been fixed
* Changes introduced to NEPS:SC6 by version 6.0.0 *
_____
General:
       - meta data for all variables have been revised and updated where appropriate
       - data from the interviews in wave 6 have been incorporated into the data
       - in version 5.1.0, SPSS data sets erroneously were not equipped with MISSING
          VALUES definitions;
              this has been fixed; this can be corrected in version 5.1.0 using the
                 following SPSS syntax:
              * ----- BEGIN SPSS code ----- *.
              SPSSINC SELECT VARIABLES MACRONAME="!numvarlist"
              /PROPERTIES TYPE=NUMERIC
              MISSING VALUES ! numvarlist (-99 THRU -5)
              * ----- End SPSS code ----- *.
              This solution assumes that SPSS is installed including the Python
                 integration plugin;
              if this is not the case, the macro '!numvarlist' has to be defined
                  manually as a list of all numerical variables in the current data
                  set
       - up to wave 3 (NEPS main study 2), external exams have been recorded as part
          of the regular school or vocational training
              spell module (resulting in episodes as part of spSchool and spVocTrain,
                  respectively);
```

starting from wave 4 (NEPS main study 3), these exams are now recorded in a separate module each (resulting in events in spSchoolExtExam and spVocExtExam, respectively): with release 6.0.0 of NEPS:SC6, events from waves 1 through 3 have been moved to these separate datasets, and erased from spSchool and spVocTrain - subspell-harmonization (filling variables in generated, harmonized subspells [spgen==1] in spell data sets) still had few issues in version 5.1.0; this has been fixed; in short, these issues could been describe as follows: variables that are automatically filled by the survey instrument with pre-loaded values from an earlier interview, but should contain the original value (from a preceeding wave) in the harmonized spells, erroneously contain the later (pre-loaded) value in the harmonized sub-spell; this can lead to erroneus values especially in generated variables , e.g. coded occupations in  $\ '$ spEmp'; the following Stata syntax solves the problem (enter the desired list of variables into the local macro ' correctvarlist '; replace 'splink' with the corresponding spell identifier 'partner' or ' child ' in entity spell files): \* ----- Begin Stata code ----- \* local correctvarlist ts23201\_g\* // 'ts23201\_g\*' is an example for occupational variables in the spEmp data set local spellvar splink // 'splink' is the correct identifier in all data sets besides 'spPartner', 'spChild' and 'spChildCohab' foreach var of varlist 'correctvarlist' { bysort ID\_t 'spellvar' (subspell) : assert ID\_t==ID\_t[2] if ( spgen == 1) bysort ID\_t 'spellvar' (subspell) : assert 'spellvar'==' spellvar '[2] if (spgen == 1)
bysort ID\_t 'spellvar' (subspell) : replace 'var'= 'var'[2] if ( spgen ==1) } ----- End Stata code ----- \*

spVocTrain:

 integration of variable "Type of vocational training program" [ts15201] from wave 1 (ALWA) into newer waves has been erroneous in versions up to 5.1.0; this has been fixed

## spEmp:

in the spEmp dataset, variable "Time restriction" [ts23310] erroneously contained the unlabeled value "O" instead of the system missing value in (sub-)episodes; this has been fixed; in version 5.1.0, the following Stata syntax can be used to fix the problem:
 \* ------- Begin Stata code ------ \* replace ts23310=. if ts23310==0
 \* ------ End Stata code ------ \*

spChild:

 in version 5.1.0 and earlier, the dataset spChild erroneously contained information from wave 4 about 56 children of target persons with more than 5 children that have been

erroneously pre-loaded during field work; these children have been correctly re-administered lateron in wave 5 and all subsequent waves: thus, sub-spell information from wave 4 has been erased in the 6.0.0 release spResidence: - in version 5.1.0 and earlier, the dataset spResidence erroneously contained 1093 missing values for wave 1 participants that have left the panel before wave 3. This has been fixed. pTarget: in dataset pTarget, variables "Specialized fair/congress: professional/ personal reasons" [t272802\_w1] and "Specialized fair/congress: Learned something new" [t272802\_w1,  $t272802\_v1w1]$  as well as the corresponding variables for "Lectures [t272802 w2,t272802 w2,t272802 v1w2] and "Self-instruction programs" [ t272802\_w3,t272802\_w3,t272802\_v1w3] in version 5.1.0 and earlier erroneously were not filled for all interviewees reporting the specific further education activity; this has been fixed - the concept of reflecting migrational background in NEPS SUFs has been improved in order to also represent migrants in 3.75th generation; thus, the older variables on migrational background [t400500\_g1, t400500 g2,t400500 g3] in the pTarget dataset have been renamed using the "v1" suffix [t400500\_g1v1,t400500\_g2v1,t400500\_g3v1], and the new ones have been introduced \* Changes introduced to NEPS:SC6 by version 5.1.0 \* \_\_\_\_\_ General: - meta data for all variables have been revised and updated where appropriate - subspell-harmonization (filling variables in generated, harmonized subspells [spgen==1] in spell data sets) erroneously filled system missing values in variables that should have been filled by variable harmonization; this has been fixed as a consequence, all generated data sets that rely on these harmonized information had to be consecutively updated;

i.e. 'Biography', 'Education', 'Weights' and 'Basics'

#### spSchool:

 variable 'School attendance in Germany?' [ts11103] had erroneously been flipped with variable 'Practical vocational instruction' [ts11237] in version 5.0.0; this has been fixed

 variable 'Practical vocational instruction' [ts11237] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed

 variables 'School-leaving certificate' [ts11209] and 'Prospective schoolleaving certificate' [ts11214] had erroneously not been filled

for ALWA spells in version 5.0.0; this has been fixed

#### spFurtherEdu2:

 variables 'Financial support through social capital' [t323510] and 'Care support through social capital' [t323520] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed

spEmp:

- variable 'Auxiliary variable: Type of employment' [ts23911\_v1] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed
- variable 'Economic sector (WZ 2008)' [ts23240\_g1] had erroneously been missing for observations from the ALWA survey; this has been fixed

#### pTarget:

- variable 'Info job: personal environment 1' [t324540] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed
- variable 'Reference job' [t325520] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed
- variable 'Social circle further education: professional or personal reasons' [t32457a] had erroneously been omitted from dissemination in version 5.0.0; this has been fixed
- variables '... learned something new' [t272802 v1w\*] had erroneously been integrated into one variable in version 5.0.0; this has been fixed
- concerning ISCED-97 for mother, father: ISCED-97-category '4A' added for cases who reported both:
  - 'Abitur'etc. and vocational training (the latter does not include university degrees in this context);
- distinction between ISCED-97 '3B' and '5B' now more precise for NEPS waves when 'Berufsfachschule' vs. 'Fachschule' was reported
  - (this cannot be distinguished for ALWA, which were still coded '5B' for such cases);

#### spPartner:

- concerning ISCED-97 for partner: ISCED-97-category '4A' added for cases who reported both:
  - 'Abitur'etc. and vocational training (the latter does not include
- university degrees in this context); distinction between ISCED-97 '3B' and '5B' now more precise for NEPS waves when 'Berufsfachschule' vs. 'Fachschule' was reported
  - (this cannot be distinguished for ALWA, which were still coded '5B' for such cases);

## Weights:

- in all releases up to version 5.0.0, variable 'Primary sampling unit: point number' [psu] erroneously calculated distinct sampling points between the ALWA and NEPS samplings, even if persons were drawn from the same point in the NEPS refreshment sample; the 'old' variable has been renamed to [psu\_v1], whilst a new sample point indicator, [psu], consistently
  - numbering all sample points across all samples, has been incorporated

#### Education:

- added additional vocational and school exam information from spVocExtExam and spSchoolExtExam;
- for the sake of linking information from a source spell data set, variables ' Exam number' [exam] and
  - 'Source if information of educational qualification ' [tx28100] have been added

if the temporal order of reported events cannot be identified (same date of exams, certificates etc.) to distinguish between
 ISCED-97 '4A' (second cycle: voc. training first - then 'Abitur' etc.) and '4B' (second cycle: 'Abitur' first - then voc. training), '4A' is used as a convention;

 a (new) technical report on educational variables has been published online, please refer to it for further details on educational coding: https://www.neps-data.de/Portals/0/NEPS/Datenzentrum/Forschungsdaten/ SC6/5-1-0/TR\_Derived\_Educational\_Variables.pdf

\* Changes introduced to NEPS:SC6 by version 5.0.0 \*

#### General:

- translation for all meta data (variable and value labels, question texts, etc ) have been revised and completed
- meta data for all variables have been revised and updated where appropriate additional waves 4 and 5 have been incorporated into the data, including
- observations from a sample refreshment in wave 4 – all data editing scripts have been completely revised, and large parts have been completely rewritten to comply with NEPS' data editing
  - standards from all Starting Cohorts; this may result in slight differences on the observation level of many data sets,
    - but not its overall structure or results of an analysis, when comparing data from waves 1 through 3 with earlier release versions
- all missing values that do not comply with the official NEPS editing standards (i.e. values -9 through -5) have been recoded to an
  - equivalent value in the range -29 through -20

#### Biography:

 programs checking for overlaps and gaps between episodes have been completely and consistently re-written; this will result in different start and end dates of episodes, and a different number of data edition gaps

#### Education:

- completed vocational or school episodes but without any school-leaving qualifications or vocational degree are now classified in CASMIN as '1a' and in ISCED-97 as '0a/1A/1B', and included in the generate
- data set 'Education'
   vocational episodes with 'senior official' ('hoehere Beamte') vocational degree are now all classified in CASMIN as '3b' and in ISCED-97
  - as '5a'. (A university degree is the usual requirement to be a 'senior official' and therefore assumed.)
- the level of achieved school leaving qualification once reported cannot be decreased by future lower reports
- the level of vocational degree can be decreased by future lower reports (e.g. vocational training following university studies).
   A total 'loss' of any degree is excluded; instead the last known level
  - A total 'loss' of any degree is excluded; instead the last known level of vocational degree will be considered to classify CASMIN
  - and ISCED-97 in those cases.
- variable 'tx28102' (Years of Education), which is derived from CASMIN, now correctly classifies observations with '1a' in CASMIN level as '-20' ('no degree')
- in case of CASMIN / ISCED-97 related episodes with exactly the same end dates , only the spells leading to the highest CASMIN and ISCED-97  $\,$ 
  - level are incorporated into the generated data set 'Education'

#### pTarget:

```
    variables 't731301_g3' and 't731351_g3' (Years of Education), which are
derived from CASMIN, now correctly classify observations with
'1a' in CASMIN level as '-20' ('no degree')
```

#### spPartner:

```
    ISCED -97 ('ts31212_g1') and CASMIN ('ts31212_g2') values are only generated for integrated spells (i.e. 'subspell==0')
    variable 'ts31212_g3' (Years of Education), which is derived from CASMIN, now correctly classifies observations with '1a'
        in CASMIN level as '-20' ('no degree')
```

#### spResidence:

from wave 4 on, residential information is surveyed from the original ALWA population;
 this information, and all retrospective information from the ALWA study itself, are stored in the new data set 'spResidence'

#### spVocExtExam:

 new data from external vocational exams have been incorporated into this data set

#### spSchoolExtExam:

- new data from external school exams have been incorporated into this data set
- xTargetCompetencies:
  - data set 'xCompMethods' has been renamed to 'MethodsCompetencies' in order to comply with naming schemes in the other NEPS Starting Cohorts' Scientific Use data

#### Weights:

 all variables containing weights and other sampling-specific information have been extracted from data set 'Methods' and moved to a new data set 'Weights' in order to comply with naming schemes in the other NEPS Starting Cohorts' Scientific Use data

#### Basics:

 variable 'Birth in Germany (W/E) or abroad (reconstructed)' [t405000\_g2] has been rename from t405000\_g1 to t405000\_g2 in order to avoid overlap of variables names with other NEPS Starting Cohorts

\* Changes introduced to NEPS:SC6 by version 3.1.0 \*

#### spSchool/Education :

- missing values in ts11209 were corrected for the ALWA wave (-5 instead of -88 and -6 instead of -96);
- some resulting classification errors in file Education have been corrected

spVocTrain:

```
    recoding of missing values -88 (until today) to standardized code -5 (until today) in end dates of interruption episodes
        (ts1532m_w*, ts1532y_w*)
```

## spCourses:

 variable subspell removed; use ID\_t, splink, and wave for merging with spell files

FurtherEducation:

- wrong codes in variables containing estimated course dates (tx2821m, tx2821m, tx2822m, tx2822m) have been corrected
- missing values in tx28201 resolved

## Education:

– episodes without any general or vocational degree deleted for CASMIN, ISCED -97 and "years of education"

## Methods:

variable for day of interview (intd) added
 variable "Interviewer: ID" [ID\_int], known as [tx80300] in release version 1.0.0, had been omitted; this has been corrected and the variable integrated into the data

## pTarget:

- variable for day of interview (intd) added

\* Changes introduced to NEPS:SC6 by version 3.0.0 \*

General:

- design weights for 283 respondents from the ALWA study that temporarily dropped out in NEPS main study 1 (wave 2) can not be calculated - Wave update from Starting Cohort 6: new wave data from second NEPS main survey (2010/2011) has been fully integrated; this scientific use file comprises now three waves (ALWA 2007/2008, NEPS 2009/2010, NEPS 2010/2010); version number has been adjusted to resemble the number of cumulated wave data - sample size increase up to 11,932 adults since 283 additional cases from the ALWA subsample participated in wave 3 - Selected highlights: updated and fully integrated life course data over three waves; additional concepts (like cultural capital); data from competence assessment (introduced in 2010/2011); new regional data (microm) - new datafiles available: spChildCohab, xTargetCompetencies (competences data, wave 3), xCompMethods (para data on competence assessment, wave 3), xTargetMicrom (regional data from microm database, accessible only on-site)
  - all SPSS datasets now ship with NEPS missing values (range [-99;-5]) marked as MISSING

- preload data for interviews in wave 3 (second NEPS wave 2010/2011) have been added; this data is usually not needed, however, it might help to understand the course of an interview - metadata for all datasets has been revised and updated where appropriate - in all spell data sets, variable spstat ('Most recent (sub-)spell status') has been revised; codes 91 and 92 have been removed - in all spell data sets, for tracing the generation of edited times in Biopgraphy, original variables from the check module have been added. This includes: starting and ending times [{variable\_start\_month}\_g1, {variable\_start\_year}\_g1, {variable\_end\_month}\_g1, { variable\_end\_month }\_g1 ] as corrected by the check module, a variable marking right censoring of spell after checking routines  $[{\tt ts2312c\_g1}]\,,$  and an indicator variable 'type of event' [spms] from check module, discriminating between 'dominant' and 'side' spells IMPORTANT NOTE: Those variables have been added for the sake of completeness and traceability. We strongly recommand to rely on fully edited

episodes times that can be found in file Biography.

#### pTarget:

- variables inty/intm (interview date) have been added for usability concerns ( from file Methods)
- small coding corrections for variables t731454 and t731404
- variables fpmod, t733004, and t733005 were moved to file spPartner
- variable t731301 g2 ('Mother: CASMIN') now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55]
- variable t731351\_g2 ('Father: CASMIN') now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55]
- variable t731301\_g2 ('Mother: CASMIN') has been corrected, swapping contents of categories 7 [CASMIN 3a] and 8 [CASMIN 3b];
- variable t731301\_g3 ('Mother: Years of education = f(CASMIN)') has been updated accordingly
- variable t731351 g2 ('Father: CASMIN') has been corrected, swapping contents of categories 7 [CASMIN 3a] and 8 [CASMIN 3b];
- variable t731351\_g3 ('Father: Years of education = f(CASMIN)') has been updated accordingly
- variable t731301\_g1 ('Mother: ISCED') now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55]
- variable t731351\_g1 ('Father: ISCED') now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55]
- variable t731453 g2 ('Father's occupation (KldB 2010)') now adequately incorporates information about supervisory occupational tasks where needed
- variable t731453\_g14 ('Father's occupation (ISEI-08)') has been added - variable t731403\_g2 ('Mother's occupation (KldB 2010)') now adequately
- incorporates information about supervisory occupational tasks where needed - variable t731403\_g14 ('Mother's occupation (ISEI-08)') has been added
- a new variable t405000\_g1 ('Born in Germany or abroad (reconstructed)')

including an categories for born in east or west Germany has been reconstructed from spell information for non wave 1 respondents,

- reflecting the scale of t405000\_v1
- variables t413510\_R/t413510\_D ('Household: 1st foreign language') have been renamed to t413501\_R/t413501\_D

- multiple response variables ("Mehrfachnennungen") have been recoded for simplifying their usage: indicator variables for "refusal", "don't know", and "not in list" have been recoded to missing codes

(-98,-97,-20) in the response variables and then removed.

Following multiple response sets are affected:

1) t725001-t725013: 'repeated school years'; missing indicators t725014 and t725015 removed

- 2) t32404k-t32404s: 'Info job'; missing indicators t32404u and t32404v removed
- 3) t32502k-t32502t: 'Reference job'; missing indicators t32502u and t32502v removed
- 4) t32303k-t32303t: 'Help with application'; missing indicators t32303u and t32303v removed
- 5) t32405k-t32405s: 'Information job-related course'; missing indicators t32405w, t32405u, and t32405v removed
- 6) t32406k-t32406s: 'Information private course'; missing indicators t32406w, t32406u, and t32406v removed
- 7) t32457k-t32457s: 'Social circle further education: who?'; missing indicators t32457s, t32457u, and t32457v removed
- 8) t743021-t743031: 'Fellow occupant'; missing indicators t743032 and t743033 removed
- 9) t32091k-t32091s: 'Burt'; missing indicators t32091u and t32091v removed
- variables t731403\_g8, t731453\_g8: EGP class scheme adjusted due to errors in the derivation syntax (particularly the classes IVc and V)

#### xTargetCompetencies:

 new file containing scored items and scaled values from competences assessment that was conducted at wave 3

#### xCompMethods:

– para data on competence assessment as generated by a specialized CAPI module at wave  $\ensuremath{\textbf{3}}$ 

#### spSchool:

- variable ts11218 was recoded to -54 for spells collected in ALWA survey (wave 1); was set to system missing previously
- variable marking right censoring of spell ts1112c has been adjusted (set to system missing for spells ending in the past)

#### spMilitary:

 variable marking right censoring of spell ts2112c has been adjusted (set to system missing for spells ending in the past)

#### spVocPrep:

 variable marking right censoring of spell ts1312c has been adjusted (set to system missing for spells ending in the past)

#### spVocTrain:

- variable ts15215 was incorrectly labeled for ALWA cases (wave 1); an additional variable ts15215\_v1 containing values
  - and labels as generated in the ALWA survey corrects for that
- variable ts15214\_g1 had for some cases erroneously code -55 (not determinable ) instead of system missings (no specification in open input abbras)
- variable marking right censoring of spell ts1512c has been adjusted (set to system missing for spells ending in the past)

- variable 'Description of profession/subject (ISCO-88)' ts15291\_g3 now

- adequately incorporates information about large company size where needed variable 'Description of profession/subject (ISEI-08)' ts15291\_g14 has been added
- variable 'Aspired vocational education qualification (reconstructed)' ts15221\_v1 has been reconstructed, reporting contents for successfully completed episodes only
- variable 'Aspired vocational education qualification ' ts15221\_ha has been added
- variable 'vocational education qualification ' ts15219\_v1 no longer reports contents for episodes not successfully completed; these episodes are edited to the value -6 'no leaving certificate'

spEmp:

- ts23210\_\* was incorrectly labeled for ALWA cases (wave 1); an additional variable ts23210\_v1 containing values and labels as
  - generated in the ALWA survey corrects for that
- ts23243 was incorrectly labeled for ALWA cases (wave 1); an additional variable ts23243\_v1 containing values and labels as generated in the ALWA survey corrects for that
- variable 'Most recent (sub-)spell status' spstat has been revised; codes 91 and 92 have been removed
- variable 'Episode updating' ts23101 is now correctly sorted before ts23102 variable ts23201\_g2 ('Job description (KldB 2010)') now adequately
- variable ts23201\_g2 ('Job description (KldB 2010)') now adequately incorporates information about supervisory occupational tasks where needed
- variable ts23201\_g3 ('Job description (ISCO-88)') now adequately incorporates information about large company size where needed
- variable ts23201\_g14 ('Job description (ISEI-08)') has been added
- variable ts23221 ('Job volume at end of occupation (part-time/full-time, reconstructed)') has been reconstructed from spell information
- for wave 1 interviewees, reflecting the scale of ts23218\_v1 variable ts23201\_g8: EGP class scheme adjusted due to errors in the
- derivation syntax (particularly the classes IVc and V)
- variable marking right censoring of spell ts2312c has been adjusted (set to system missing for spells ending in the past)

#### spUnemp:

 variable marking right censoring of spell ts2512c has been adjusted (set to system missing for spells ending in the past)

## spParLeave:

 variable marking right censoring of spell ts2712c has been adjusted (set to system missing for spells ending in the past)

## spGap:

- variable marking right censoring of spell ts2912c has been adjusted (set to system missing for spells ending in the past)
- value label for variable 'Kind of gap' ts29101\_v1 has been corrected, swapping categories 6 and 7

## spChild:

 to enhance usability when analyizing child cohabition spells, those spells – previously being stored in a wide data format – have been extracted into a new data file called spChildCohab

#### spChildCohab:

- new file containing spells of cohabitation with own or other children (the data was previously stored in wide format within spChild)
- the file contains cohabation spells which might be extended over panel waves
- hence, the file has a genuine spell data format involing a spell and a subspell variable
- harmonzised spells are identified by spgen=1 and subspell=0; thus, analougsly to the other spell files
  - just select spells having subspell=0 (Stata: keep if subspell==0) for a plain and easy episode structure
- cohabitation spells are related to children in spChild via the identifier "  $% \left( r\right) =0$  child "
- variable marking right censoring of cohabitation spell ts3332c has been adjusted (set to system missing for spells ending in the past)

## spPartner:

- variables fpmod (episode mode), t733004 (living apart together, current partner), and t733005 (frequency of contact, current partner) were moved from pTarget to spPartner
- variable ts31212\_g2 ('Partner: highest educational achievement (CASMIN)') now correctly classifies observations 'other' eductional
  - degree as 'not determinable' [-55]
- variable ts31212\_g2 ('Partner: highest educational achievement (CASMIN)') has been corrected, swapping contents of categories
   7 [CASMIN 3a] and 8 [CASMIN 3b];
- variable ts31212\_g3 ('Partner: highest educational achievement (years of education=f(CASMIN))') has been updated accordingly
- variable ts31212\_g1 ('Partner: highest educational achievement (ISCED)') now correctly classifies observations 'other' eductional
  - degree as 'not determinable' [-55]
- variable ts31226\_g2 ('Partner: occupation (KldB 2010)') now adequately incorporates information about supervisory occupational tasks where needed
- variable ts31226\_g14 ('Partner: occupation (ISEI-08)') has been added
- variable ts31226\_g8: EGP class scheme adjusted due to errors in the derivation syntax (particularly the classes IVc and V)

#### spFurtherEdu1:

 variable marking right censoring of spell t271048 has been adjusted (set to system missing for spells ending in the past)

#### Methods:

- additional wave 1 & 2 rows for additional cases from ALWA
- new variable ALWAlatecomer marking the new cases who come from the ALWA sample but did not participate in wave 2
- additional weights (prob\_w3/weight\_isced\_w3/weight\_isced\_w3\_std) for wave 3
- new variable tx80220 (participation status) for indicating participation, temporary dropouts, and final dropouts

Basics:

- variable 'Highest CASMIN' [tx28101] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] variable 'Highest ISCED' [tx28103] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] variable 'Mother: CASMIN' [t731301\_g2] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] - variable 'Father: CASMIN' [t731351\_g2] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] - variable 'Mother: CASMIN' [t731301\_g2] has been corrected, swapping contents of categories 7 [CASMIN 3a] and 8 [CASMIN 3b]; variable 'Mother: Years of education = f(CASMIN)' [t731301 g3] has been updated accordingly - variable 'Father: CASMIN' [t731351\_g2] has been corrected, swapping contents of categories 7 [CASMIN 3a] and 8 [CASMIN 3b]; variable 'Father: Years of education = f(CASMIN)' [t731351\_g3] has been updated accordingly variable 'Mother: ISCED' [t731301\_g1] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] - variable 'Father: ISCED' [t731351\_g1] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55] - variable 'Mother: SIOPS' [t731403\_g6] has been added - variable 'Mother: MPS' [t731403\_g7] has been added - variable 'Mother: ISEI-08' [t731403\_g14] has been added - variable 'Mother: BLK' [t731403\_g9] has been added - variable 'Father: SIOPS' [t731453\_g6] has been added - variable 'Father: MPS' [t731453\_g7] has been added variable 'Father: ISEI-08' [t731453\_g14] has been added
variable 'Father: BLK' [t731453\_g9] has been added - variable 'Occupation of first employment (SIOPS)' [tx29075] has been added - variable 'Occupation of first employment (MPS)' [tx29076] has been added - variable 'Occupation of first employment (ISEI-08)' [tx29077] has been added - variable 'Occupation of first employment (BLK)' [tx29078] has been added - variable 'Current occupation (SIOPS)' [tx29065] has been added - variable 'Current occupation (MPS)' [tx29066] has been added - variable 'Current occupation (ISEI-08)' [tx29067] has been added - variable 'Current occupation (BLK)' [tx29068] has been added - variable 'Age at migration to Germany' [tx29007] has been added - variable 'Born in Germany or abroad (reconstructed)' [t405000\_g1] has been added

#### Education:

- variable 'Highest CASMIN' [tx28101] now correctly classifies observations

- with 'other' eductional degree as 'not determinable' [-55]
- variable 'Highest ISCED' [tx28103] now correctly classifies observations with 'other' eductional degree as 'not determinable' [-55]