

Daniela Rohrbach-Schmidt | Anja Hall

# BIBB/BAuA- Employment Survey 2018

Version 1.0



# DATA- AND METHODOLOGICAL REPORT

No. 1/2020

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Version 1.0

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## Data availability

Access to the research data described in this handbook is provided as a Scientific Use File (SUF) and for selected variables via Remote Data Access and One-Site Use.

## Note on the counting method for version numbers

Changes compared to the previous version without greater relevance to content are documented by consecutive numbers after the item (second level). On the other hand, changes relevant to the content lead to sequential numbering at the first level.

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# 1 Introductory remarks

## 1.1 Subject of the manual

This data and methods report contains a documentation of the research data from the 2018 BIBB/BAuA Employment Survey of the Working Population on Qualification and Working Conditions in Germany (in German: BIBB/BAuA Erwerbstätigenbefragung 2018 – Arbeit und Beruf im Wandel, Erwerb und Verwertung beruflicher Qualifikationen). The<sup>1</sup> survey was conducted by the Federal Institute for Vocational Education and Training (BIBB) in cooperation with the Federal Institute for Occupational Safety and Health (BAuA). The research data is available in standardised form for scientific purposes via the BIBB Research Data Centre (BIBB-FDZ). Further information and materials on the data, such as the methods report of the data collecting institute, i.e. Kantar Public (GENSICKE/TSCHERSICH 2018) and the questionnaire, are available on the BIBB-FDZ website (<http://metadaten.bibb.de/metadaten/1>).

The scientific use file contains all cases included in the original data (n=20.012), but e.g. no full texts, special variables or more deeply structured regional identifiers. These can be accessed via Remote Data Access and at the guest researcher workstations at BIBB in Bonn (On-Site Use). For available variables according to data access, see Chapter 4.

## 1.2 Structure of the manual

The following section gives an overview of the survey. Chapter 2 outlines the contents of the survey and describes additional generated variables. Chapter 3 contains a short documentation of the data collection. Chapter 4 explains the data access possibilities, the data protection provisions as well as the data products and anonymisations. Chapter 5 contains notes on how to cite the data. Chapter 6 gives an overview of the employment surveys over time with a view to time comparisons. Following cited sources, the Annex contains tables on new, amended and deleted variables compared to 2012, as well as corrected variables.

## 1.3 Short description of the data record

The BIBB/BAuA Employment Survey 2018 (hereinafter also referred to as ETB 2018) conducted in cooperation with the BAuA on the topics of „Work and Occupations in Transition“ and „Acquisition and Utilization of Vocational Qualifications“ is a representative survey of core employed persons in Germany. „Core employed persons“ are at least 15 years old and work at least 10 hours a week on a paid basis.

The Employment Surveys have established themselves in science as a central survey in the field of qualification and vocational (education) research. BIBB/BAuA Employment Surveys follow the BIBB/IAB surveys conducted by BIBB and the Institute for Employment Research (IAB). Until today, seven ETBs have been concluded so that a period from 1979 (via the surveys in 1986, 1992, 1999, 2006, 2012) to 2018, i.e. more than 40 years, could be covered. The representative sample of core employed persons in Germany makes it possible to depict the chang-

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1 The field phase of the main survey took place between 2 October 2017 and 5 April 2018. With the change of the cooperation partner from the Institute for Employment Research (IAB) to the Federal Institute for Occupational Safety and Health (BAuA) in the course of the 2006 survey, it was decided to name only the second year of the survey in the name of the data set.

es in work and occupation and the qualification requirements in the world of work in Germany in a very detailed and differentiated way. At the same time, the ETBs provide a basis for more in-depth hypothesis-based research, which is included in numerous peer-reviewed scientific journals. With the 2018 wave, time comparisons are now possible for numerous indicators, which were first recorded in 2006.

The Employment Surveys allow, for example, the occupation held, which is covered by most surveys by default, to be supplemented by information on the contents of the occupation, i.e. the specific activities and occupational requirements. Most studies that follow the task-approach for Germany use the ETB's task data, which make the dataset „internationally unique“ (FEDORETS/SPITZ-OENER 2011, p. 130). The Employment Surveys also make it possible to supplement the qualification level of the respondents with the occupation they have learned. This makes sense because previous analyses have shown that the aggregate „vocational education and training“ often used in research is segmented in several ways and that the heterogeneity of non-academic vocational education and training alone cannot be adequately reflected by the category „vocational education and training“. Career opportunities therefore need to be analysed not only with regard to the question of what level of qualification is available, but also in what occupation this training has taken place. The Employment Surveys can thus make visible not only the heterogeneity in employment but also the heterogeneity in vocational training. Since the survey is designed as a repeated cross-sectional survey with changing focal points, new questions can be addressed and examined in addition to analyses over time (for more on the sub-projects and topics of the project at BIBB see HALL et al. 2019, for more on publications see the project page <https://www.bibb.de/en/2815.php>; for BAuA see <https://www.baua.de/EN/Topics/The-changing-world-of-work-and-occupational-safety-and-health/Monitoring-working-conditions/Working-conditions/BIBB-BAuA-2018.html>). In addition, ETB 2018 was used again for follow-up surveys.

The Employment Survey is distinguished from other data sources<sup>2</sup> by a number of strengths and special features (see HALL et al. 2019 for details):

1. Unique indicators on work and occupation and on the use of vocational qualifications,
2. Detailed recording of all vocational qualifications (type and duration, incl. advanced training),
3. Coding of occupations exercised and learned (KldB<sup>3</sup> 2010, 1992, ISCO<sup>4</sup> 2008, 1988),
4. Possibilities of vocational differentiation due to the high number of cases (approx. 20,000),
5. Comparisons with earlier surveys 1979, 1986, 1992, 1999, 2006, 2012 (trend analyses),
6. Possibility of follow-up surveys on special topics.

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2 The survey differs from panel data which focus on individual changes such as the Socio-Economic Panel (SOEP) and the National Educational Panel Study (NEPS) (see HALL 2018). The NEPS surveys targeting on individual competencies were designed to trace educational processes in their institutional context and to describe individual competency developments over the life course (cf. BLOSSFELD/VON MAURICE/SCHNEIDER 2011). The SOEP does not cover the concrete job tasks or the specialisation of the learned profession. Official data such as the microcensus or the microdata of the Federal Employment Agency (BA) or the IAB do not include the corresponding indicators. The potential of the NEPS for vocational training policy issues was examined in a BIBB project (7.8.142).

3 KldB: German Classification of Occupations; see subsection 2.2.2 for this.

4 ISCO: International Standard Classification of Occupations; see subsection 2.2.2.

The 2018 Employment Survey is largely comparable with the 2006 and 2012 surveys (see Chapter 2 for the questionnaire programme). The employment surveys 1979 to 2018 are presented in Chapter 6 in a comparative overview.

## 1.4 Central properties at a glance

survey title	<b>BIBB/BAuA Employment Survey 2018 – Employment Survey of the Working Population on Qualification and Working Conditions in Germany</b>
DOI	10.7803/501.18.1.1.10 (SUF)
brief description	Representative survey of 20,012 employed persons in Germany on work and occupation in transition and the acquisition and utilisation of vocational qualifications
survey year	2018
survey unit	Employed persons
thematic focus	Employment
data access options	Scientific Use File (SUF), On-Site Use /Remote Data Access
number of variables	682 (SUF); 117 (On-Site Use /Remote Data Access); including 35 full-text variables, 9 regional identifiers, 73 occupation details 3-/4-/5-digit)
basic population	Employed persons aged 15 and over with paid employment of at least ten hours per week in Germany
Weight/extrapolation	Design weights (landline sample: household transformation), adjustment weight (federal state or East/West, BIK, household size, occupational status, gender, nationality, education, age)
representative region	Spatial planning region (in German: Raumordnungsregion)
number of cases	20.012
survey procedure	CATI (Computer-assisted telephone interviewing)
selection process	ADM (further development of the Gabler-Häder process), Kish method
survey design	Longitudinal design (trend study)
remark	The study is one of a series of six other studies by BIBB/BAuA and BIBB/IAB. These are archived under the ZA study numbers ZA1243 (1979), ZA1790 (1985/86), ZA2565 (1991/92), ZA1790 (1998/99), ZA1243 (2006) and ZA7574 (2012).
links	BIBB-FDZ metadata portal: <a href="http://metadaten.bibb.de/metadaten/1">http://metadaten.bibb.de/metadaten/1</a> Project page: <a href="https://www.bibb.de/arbeit-im-wandel">https://www.bibb.de/arbeit-im-wandel</a> (in German); <a href="https://www.bibb.de/en/2815.php">https://www.bibb.de/en/2815.php</a> (English version)
headwords	Occupation, employment, main job tasks, specialist knowledge, qualification requirements, work requirements, work conditions and workloads, further training, change of learned occupation, 1st occupation, health



## 2 Survey contents at a glance and additionally generated variables

### 2.1 Survey contents at a glance

The focus of ETB 2018 is on the one hand on employment and the workplace at the time of the survey, e.g. job tasks performed and required knowledge (job-related cross-sectional part), and on the other hand on information about the job holders, e.g. their job satisfaction or workload (individual cross-sectional part). On the other hand, longitudinal variables on the interviewees' educational and occupational histories (e.g. qualification history, occupational changes, etc.) were recorded retrospectively (individual longitudinal section). However, it is not feasible to record a complete occupational history. In addition, personal and company data (sociodemographic and company-related data) were recorded. For an overview of the survey dates and the topics of ETB 2018 see Figure 1.

The data set comprises around 700 variables; a rough overview is given below:

F100ff	Current occupational activity
F200ff	Working time and place of work
F300ff	Job tasks carried out (19 indicators), key skills (6 indicators)
F400ff	Occupational requirements (requirement level, over-, under-, technical knowledge (9 indicators), work demands (13 indicators))
F500ff	Employment status/employment relationship
F600ff	Physical working conditions and stresses (12 indicators)
F700ff	Mental working conditions and stresses (11 indicators)
F900ff	Career and life goals (ETB 2018: F900_01: Career Orientation)
F1000ff	Changes in the working environment in the last two years
F1100ff	Highest general school leaving certificate
F1200ff	Vocational training (in up to 5 loops)
F1225ff	Connection between (last) training and current activity
F1300	Continuing education in the last two years
F1400ff	First occupation practised, career history (periods of interruption, unemployment, career advancement)
F1450ff	Job satisfaction (11 indicators)
F1500ff	Health complaints (24 indicators)
F1600ff	About the person (e.g. migration background, social background,)

The complete questionnaire (including screening) is available on the ETB project page (<https://www.bibb.de/arbeit-im-wandel>) and on the FDZ pages of the 2018 Employment Survey in the FDZ metadata portal (<http://metadaten.bibb.de/metadaten/1>).

In addition to the directly collected variables, further variables are added to the research data (in the data products SUF or On-Site Use/Remote Data Access). These are discussed in Section 2.2. Table A1 in the Annex contains a list of variables collected in the ETB 2018. New

and modified variables are marked accordingly.<sup>5</sup> Table A2 in the Annex lists the questions of ETB 2012 no longer asked in ETB 2018.

## 2.2 Additionally Generated Variables

In addition to the directly collected variables, a number of additional variables were generated. These include automatically generated variables and weighting variables (cf. Chapter 2.2.1), codes of open occupational and sector data in occupational and sector codes (Chapter 2.2.2), prepared variables based on plausibility checks (adjusted variables at the end of training (Chapter 2.2.3), the training loops (Chapter 2.2.4) and the economic sector (Chapter 2.2.5)) as well as prepared variables on gross monthly wages (Chapter 2.2.6) and on regional information (Chapter 2.2.7). In addition, a number of social science classifications have been compiled using standardised syntax routines (Chapter 2.2.8). Some of these additional variables can be evaluated in the SUF, others (e.g. the regional indicators below the federal state level, see Tables 7 and 8) only via the other data access possibilities.

In general, before using these additionally generated variables, it is advisable to thoroughly examine their generation; depending on the research question and research interest, other recodings may be more meaningful than those carried out there.

### 2.2.1 Automatically generated variables and weighting factors

- ▶ **intnr:** Unique identification number (generated internally)
- ▶ **int\_year, int\_mon:** Year and month of the interview (generated internally)
- ▶ **mobil:** mobile phone interview
- ▶ **Stib:** Occupational status
- ▶ **az:** Actual hours worked
- ▶ **nt:** Secondary job
- ▶ **zpalter:** Age of the target person<sup>6</sup>
- ▶ **Bula:** Federal state, Place of residence (generated on the basis of landline telephone number, in mobile telephony: by postal code (WoOrt\_ZP, for these and the other regional variables see section 2.2.7))
- ▶ **gkz** Municipal code, Place of residence (generated on the basis of the landline telephone number, in mobile telephony: by postal code (WoOrt\_ZP))
- ▶ **kkz** District code, Place of residence (generated on the basis of the landline telephone number, in mobile telephony: by postal code (WoOrt\_ZP))
- ▶ **BIK10:** BIK municipal type, 10 types, Place of residence
- ▶ **gkpol** Political municipal code, Place of residence
- ▶ **F233:** Federal State, business premises (postal code or city/municipality information)
- ▶ **F233\_GKZ:** Municipal code, business premises (postal code or city/municipality specification)

5 The filter guide can only be found in the questionnaire. The formulation of the questions is partly incomplete, partly it also varies, e.g. depending on the occupational position or the time in the company. For time comparisons, each variable must be checked for comparability over time by the researcher himself, since not all modifications are listed in Table A1. Possible modifications can generally concern the question formulation, the answer categories, the question position or the filters. There are also modifications between the 2006 and 2012 surveys (see ROHRBACH-SCHMIDT/HALL 2013, p. 23ff).

6 The variable does not take into account the data in S2\_2m S2\_2j (requests for year/month of birth) at the end of the interview.

- ▶ **F233\_KKZ**: District code, business premises (postal code or city/municipality specification)
- ▶ **x1216 (y1216)**: Chronology of training/qualification loops (see section 2.2.4)
- ▶ **lguelt**: Last training shown (see section 2.2.4)
- ▶ **f1216d-j1216d**: duration of the first (last) training qualification (see section 2.2.4)
- ▶ **des2018**: Design weight (see section 3.6)
- ▶ **gew2018**: Weighting factor MZ 2017 (see section 3.6)
- ▶ **gew2018\_hr17**: Extrapolation factor MZ 2017 (see section 3.6)

### 2.2.2 Occupation and economic activity (industry/branch)

The current occupation (F100), the first occupation (F1401), the training occupations (F1203-J1203) and the parental occupations (F1609, F1610) were each coded with occupational codes for the two current and, in order to be able to carry out trend analyses with older employment surveys, also for the two older classification systems:

- ▶ German Classification of Occupations 2010 (Klassifikation der Berufe (KldB) 2010),
- ▶ German Classification of Occupations 1992 (Klassifikation der Berufe (KldB) 1992),
- ▶ International Standard Classification of Occupations 2008 (ISCO 08),
- ▶ International Standard Classification of Occupations 1988 (ISCO 88).

While in KldB 2010 the five-digit code has the finest subdivision, in the other three systems it is a four-digit code. The finest structure in each case was coded by Kantar Public. KldB 2010 has 1,286 different codes, KldB 1992 has 2,287, ISCO 08 contains 436 and ISCO 88 contains 390 codes.

There were two steps in the occupational coding at Kantar Public. First, automatic encoding was performed on the basis of electronically available directories. Terms that were not included in these lists or were written differently were then manually encoded. In order to ensure the best possible quality of the manual encoding, Kantar Public has carried out a manual double encoding for the encoding of the occupational information. This means that every term that could not be automatically encoded was classified by two different encoders, and if there were any discrepancies, an experienced encoder decided which code was the appropriate one. The concrete procedure for occupational coding and general rules for manual coding as well as special features of the respective classification systems can be found in the method report of Kantar Public (GENSICKE/TSCHERSICH 2018).

The occupational information was then provided with the 2- and 3-digit numbers. The nomenclature should be clarified using the example of current employment <F100>:<sup>7</sup>

<b>F100_kldb2010</b>	Kldb2010 5-digits
<b>F100_kldb2010_3d</b>	Kldb2010 3-digits
<b>F100_kldb2010_2d</b>	Kldb2010 2-digits
<b>F100_kldb92<sup>8</sup></b>	Kldb1992 4-digits
<b>F100_kldb92_3d</b>	Kldb1992 3-digits
<b>F100_kldb92_2d</b>	Kldb1992 2-digits
<b>F100_isco08</b>	Isco08 4-digits

<sup>7</sup> The same logic was applied to the nomenclature for the first practised occupation (F1401), the training occupations (F1203 to J1203), the father's occupation (F1609) and the mother's occupation (F1610).

<sup>8</sup> In addition, occupational sections (in German: Berufsabschnitte, 2nd level of the KldB1992) were created during the preparation in the FDZ.

<b>F100_isco08_3d</b>	Isco08 3 digits
<b>F100_isco08_2d</b>	Isco08 2-digits
<b>F100_isco88</b>	Isco88 4-digits
<b>F100_isco88_3d</b>	Isco88 3 digits
<b>F100_isco88_2d</b>	Isco88 2-digits

For the scientific use file, the respective classifications are available at 3 (current and first occupation) or 2-digit level. 5/4/3 digit codes can be evaluated via Remote Data Access/at On-Site Use (see 4.3.2).

The KldB 2010 describes in the fifth place (digit) the degree of complexity of the occupation as the level of skills, abilities and knowledge (requirement level) usually required for the exercise of a certain occupation. A distinction is made between four requirement levels. These are primarily based on the training typically required to carry out the job activity. However, the skills, abilities and knowledge can also be achieved through occupational experience or learning by doing (PAULUS/MATTHES 2013). The requirement level was written out in a separate variable <F100\_kldb2010\_AN>. The requirement level for the 1st occupation (F1401\_kldb2010\_AN) and the parental occupations (F1609\_kldb2010\_AN, F1610\_kldb2010\_AN) were also generated.

For the current occupation (F100), the first occupation (F1401) and the parental occupations (F1609, F1610), three variables were also created in accordance with BIBB's definitions of occupational fields on the basis of KldB 1992 and KldB 2010 (TIEMANN et al. 2008, TIEMANN 2018<sup>9</sup>).

	<b>KldB 2010</b>	<b>KldB 1992</b>
BIBB occupational fields	F100_kldb2010_BF	F100_kldb1992_BF
BIBB occupational main fields	F100_kldb2010_BHF_BHF	F100_kldb1992_BHF
BIBB occupational sectors	F100_kldb2010_BOF	F100_kldb1992_BOF

The economic activity/industry of current employment is recorded in full text (TF513) and assigned to<sup>10</sup> the code of the Divisions (2-digit) of the Classification of Economic Activities of the European Union (NACE Rev. 1.1 and Rev. 2) or to the German Classification of Economic Activities (WZ), 2003 and 2008 editions. The division level comprises 60/62 and 88 2-digit divisions respectively in 2003 and 2008. The coding was carried out in two steps: in a first step an automatic coding was carried out if the given term is exactly included in the list of economic activities. In a second step, the remaining terms were manually encoded. The basis for the coding of data on the economic activity according to WZ 2008 is the "Klassifikation der Wirtschaftszweige. Mit Erläuterungen – 2008" (Statistisches Bundesamt, Ausgabe 2008), for the WZ 2003 it is the „Klassifikation der Wirtschaftszweige. Mit Erläuterungen – 2003" (Statistisches Bundesamt, Ausgabe 2003). The concrete procedure for the coding of economic sectors and general rules for manual coding as well as special features of the respective classification

9 The syntax for this and the occupational sections (in German "Berufsabschnitte", see 2.2.8) can be downloaded from the metadata portal.

10 The national classification of economic activities WZ corresponds to the European classification NACE up to the fourth level (classes). The WZ has a fifth level (subclasses) in addition to NACE. WZ2003 and NACE Rev. 1.1 differ in two places: Class 52.48 of NACE Rev. 1.1 was divided into classes 52.48 and 52.49 of WZ2003 and class/group 64.2/64.20 into class/group 64.3/64.30 (Statistisches Bundesamt 2003, 2008).

systems are described in more detail in the method report of Kantar Public (GENSICKE/TSCHERSICH 2018).

### 2.2.3 Adjustment of information on completion of training

The training qualifications (vocational training degrees, recognised advanced vocational training degrees, university of applied science degrees, university degrees) of the respondents were recorded chronologically in the ETB 2018 in up to five loops. Validly recording training qualifications in surveys is anything but trivial, especially with regard to higher vocational qualifications. The degrees to be obtained at vocational schools are very heterogeneous and range from teacher training to state-recognised advanced training (e.g. to become a technician).<sup>11</sup>

Respondents often have a different understanding of terms than an official definition would suggest, and terms are confused because of their similar connotation. Experience from the ETB 2012 shows that this applies to the German terms “*Berufsfachschule*”, “*Fachschule*” and “*Fachhochschule*”, to the terms “*Fortbildung*” (which in Germany is a valid higher vocational training degree) and “*Weiterbildung*” (which is not), but also to the term “in-company vocational training”. Many respondents understand this to mean not only training regulated by Berufsbildungsgesetz (BBiG)/Handwerksordnung (HwO) (Vocational Training Act/ Crafts and Trade Code), but also general training that is completed – even if only temporarily – in a company. For example, a large number of nurses (in German: *Krankenpfleger/-innen*) and educators (in German: *Erzieher/in*) are assigned to in-company vocational training, although this involves school-based training at vocational schools, schools for the health sector or vocational schools for socio-educational occupations.<sup>12</sup> The interviewees also mention continuing training when asked about training,<sup>13</sup> especially from the 2nd loop onwards and mostly under the category “other training”.<sup>14</sup>

A complete plausibility check of the training details is thus indicated.

The occupational title, the duration of the training, the place of training, the occupational code and specific information such as the type of university degree, the type of vocational training degree and the type of training of civil servants were used to examine the information on the qualification. In order to enable an alphabetical sorting of all degrees, the cross-sectional data set was converted into a spell data set, i.e. a person who has completed three training qualifications is represented in this data set with three spells (lines). The examination and adjustment of the training qualifications was carried out in the first run according to standardised criteria. Finally, most of the data were subjected to a single case edition based on a comparison with various occupational lists<sup>15</sup>. This adjustment has been recorded in a new variable

11 In KldB 2010, educators (in German: *Erzieher/-innen*) are assigned to requirement level 2 (occupational category 83112), and in the national report on education, educators are also excluded from further education-related technical school training (cf. AUTORENGRUPPE BILDUNGSBERICHTERSTATTUNG 2014, p. 142).

12 Similar to dual vocational training, training in health care occupations is divided into a theoretical and a practical part and has the typical characteristics of dual vocational training (cf. KRÜGER 2004). Similarly, socio-pedagogical training at vocational schools has a regular and high practical component.

13 The introductory question was: “Have you completed vocational training or a course of study?”

14 „Other training” refers primarily to retraining. Many retraining courses take place in school-based training occupations, however not in vocational schools but in other educational institutions. If there is interest in a specific occupation/occupational field, an evaluation according to the classification of the occupations is therefore recommended.

15 These include, for example, the dual training occupations from the DAZUBI database, school-based training occupations and advanced training occupations which are listed in the subject series 11, series 2 and 3. Information from BA's Berufenet was also used.

(f1202neu3 to j1202neu3). The data check does not claim to be error-free. The procedure for cleaning up the training loops is described in more detail in HALL/SCHNEPF (2018).

If several degrees were completed, the information was written out, in which loop the last valid training is present (ln\_ab). For example, it may be that a respondent has indicated three training degrees, but the last one was identified as continuing training (and thus not as a valid vocational training degree). ln\_ab would then assume the value 2 (h1203neu3 would be set to -1 “no clear statement”).

The generation of the highest training qualification (max1202) is based on the adjusted training loops f1202neu3 to j1202neu3 (see höchster Ausbildungsabschluss.sps). The variable has the following values:

- 1 “Without vocational qualification”,
- 2 “Dual or school-based vocational training degree/intermediate civil servants degree”,
- 3 “Advanced vocational training degree (master, technician, commercial advanced training, etc.)”,
- 4 “University of applied science degree/university degree, senior civil servants degree.”
- 9 “Not specified”,
- 99 “implausible answer”.

Table 1 shows a comparison of max1202 with the highest training qualification on the basis of the unadjusted figures (m1202).

**Table 1: Highest educational attainment (%)**

	max1202	m1202
Without voc. qualification	8,9	8,9
Dual or school-based VET degree/intermediate civil servants degree	55,7	53,9
Advanced vocational training degree	7,6	8,4
University of applied science degree/university degree, senior civil servants degree	27,9	28,8

*BIBB/BAuA Employment Survey 2018, weighted data*

#### 2.2.4 Training loops - chronology, inserted last loop, training duration

The chronology of the loop sequence could not always be guaranteed for technical reasons. Of the 7,993 personal details for several training degrees, 7,343 (92%) are given in chronological order, 255 are not given chronologically, and for 395 cases a statement is unclear due to a lack of information. It is most common for training in the second loop to be completed before training in the first loop (sometimes with overlaps). A 1-digit variable <y1216> indicates whether the loop sequence was chronological and a 5-digit variable <x1216> indicates which training the respective loop was.

The questions F1224 and F1225 refer to the < last training > defined as follows:

- ▶ In the case of several training degrees, the training with the highest year of completion is used.

- The training must last at least twelve months. There are two exceptions: if F,G,H,I,J1212=1 (advanced training qualification “master”) or if F,G,H,I,J1217=4 (short training duration due to external examination (in German: Externenprüfung)).

If the adjusted training information < f1202neu3 to j1202neu3 > is used, it should be checked whether a “valid” training title is used. It makes sense to compare the loop shown in the interview < lguelt > with the last “valid” training < ln\_ab >.

In principle, the programming is designed in such a way that the first training loop is occupied first as < lguelt > and in each further loop it is checked whether this took place later. If this is the case, it is used (taking into account the defined duration and the two exceptions). The year is taken into account, but not the month. From this procedure it follows that if “no information” is given for the final year, the last previously valid training for < lguelt > is used. In the case of “No information” for all dates, the first training loop is set. In the case of parallel phases with the same final year, the former shall be used.

The duration of the training phases was stored in variables f1216d to j1216d (see Ausbildungsdauer\_4710.sps).

### 2.2.5 Economic sector

In question F512 respondents are asked to indicate whether the enterprise in which they (mainly) work belongs to the ‘public service’, ‘industry’, ‘craft trades’, ‘commerce’, ‘other services’ or ‘to another area’ < F512 >. In the ETB 2018, as in the previous surveys in 2012 and 2006, the respondents obviously deviate from the official definition in their classifications. Possible misallocations can be identified and corrected by comparing them with the industry specification < TF513 > (open specifications, WZ2008) (see Table 2).

**Table 2: Distribution of economic sectors before and after data adjustment (in %)**

	F512		F512_neu	
	frequency	percentage	frequency	percentage
1 Public service	4.832	24,1	4.416	22,1
2 Industry	4.036	20,2	3.880	19,4
3 Craft trades	2.275	11,4	2.169	10,8
4 Commerce	1.811	9	2.010	10
5 Other services	4.568	22,8	5.357	26,8
6 To another area	2.042	10,2	1.282	6,4
7 Private household	136	0,7		
100 Trade unions, interest groups, associations, chambers, clubs, private households			711	3,6
9 not specified	312	1,6	186	0,9
Total	20.012	100	20.012	100

*BIBB/BAuA Employment Survey 2018, weighted data*

The adjustment in the ETB 2018 is based on the basic procedure of the adjustment in the waves before: If respondents use sector classifications obviously deviating from the official definition, these are implemented in the adjusted variable < F512\_neu > (e.g. “Postal services” or “Telekom” from public service to other services). As in the ETB 2012 and 2006, an additional category 100 was created, comprising trade unions, interest groups, associations, chambers of commerce, associations and private households.

### 2.2.6 Imputation of gross monthly wages

Around 17 percent of respondents<sup>16</sup> to the BIBB/BAuA Employment Survey 2018 did not provide any information on their monthly gross wage ( $n=3,377$ ).<sup>16</sup> These people were therefore asked to state: “Would you perhaps tell me whether your gross monthly wage is less than 1,500 euros?”, which was still refused by 475 people. The presence or absence of values of a special variable such as wage is usually not coincidental. Missing data can affect the properties of estimators and test statistics, which has consequences for the legitimacy of inferencing from the sample to the population. The missing wages were therefore imputed on the basis of a MNAR default mechanism, analogous to the procedure used in the 2006 and 2012 Employment Surveys (for the procedure see ALDA/ROHRBACH-SCHMIDT 2011). The estimated average wages of the origin and imputed variables are again higher in 2018 than in the previous survey. Based on the weighted values of the Employment Surveys in 2012 and 2018, the average wages (wage variable without missing values) increased by around 12.7 per cent (for employees) and 14.5 per cent (full-time employees) respectively. An increase of this magnitude can also be seen in the *Verdienststrukturerhebung* conducted by the Federal Statistical Office (STATISTISCHES BUNDESAMT): Between 2011/2012 and 2017/2018, the gross monthly wages of full-time employees increased nominally by about 14 percent (STATISTISCHES BUNDESAMT 2019a). The real wage (the ratio between nominal wage and price level) increased by around eight percent during this period (STATISTISCHES BUNDESAMT 2019b).

The dispersion of wages – measured as the standard deviation – is again higher in 2018 than in the previous survey, although the ratio of the 90/10 percentile has also fallen again. However, the changes in both indicators are less pronounced in 2018 compared to 2012 than in 2012 compared to 2006. In 2018 there are again fewer low-wage cases in the sample compared to 2012, and there are also a few cases with higher wages than the maximum of the 2012 survey.

Three new variables were generated (see Table 3):

- ▶ `exp_wage_imp_miss`: Imputed wage for missing wage specification (de-logarithmized)
- ▶ `exp_wage_imp_extr`: Imputed wage for extreme values (99.5 and 0.5 percentile) / missing wage specification (de-logarithmized)
- ▶ `wage_imp_group`: Indicator for imputed wage

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<sup>16</sup> In the 2006 Employment Survey, the proportion of respondents without a valid wage statement was slightly lower at around 15 per cent. In the 2012 employment survey, the proportion was slightly higher (just under 20%).



Table 3: Comparison of imputed and unimputed values 2018, 2012 and 2006 (all figures in euro)

variable	mean (standard deviation)	quotient Percentile 90/10	quotient Percentile 80/200	valid instances
<i>Employment Survey 2018</i>				
<b>original values</b>				
original variable	3532 (3575)	5,000	2,611	16.635
Imputation 1*	3535 (3324)	4,800	2,511	20.012
Imputation 2**	3397 (2093)	4,538	2,461	20.012
<b>Logarithmized</b>				
original variable	7,932 (0,701)	1,227	1,128	16.635
Imputation 1	7,956 (0,670)	1,220	1,122	20.012
Imputation 2	7,852 (0,630)	1,211	1,120	20.012
<i>Employment Survey 2012</i>				
<b>original values</b>				
original variable	2869 (2916)	5,556	2,840	16.059
Imputation 1*	2906 (2672)	5,000	2,559	20.036
Imputation 2**	2799 (1706)	4,825	2,533	20.036
<b>Logarithmized</b>				
original variable	7,704 (0,747)	1,252	1,145	16.059
Imputation 1	7,750 (0,706)	1,233	1,128	20.036
Imputation 2	7,747 (0,666)	1,228	1,127	20.036
<i>Employment Survey 2006</i>				
<b>original values</b>				
original variable	2600 (2155)	6,429	2,917	16.954
Imputation 1*	2648 (2045)	5,625	2,769	20.000
Imputation 2**	2571 (1542)	5,625	2,720	20.000
<b>Logarithmized</b>				
original variable	7,603 (0,816)	1,284	1,151	16.954
Imputation 1	7,642 (0,789)	1,258	1,142	20.000
Imputation 2	7,642 (0,722)	1,258	1,140	20.000

\* Imputation of missing values (*Exp\_wage\_imp\_miss*); \*\* Imputation of missing values and of outliers (*Exp\_wage\_imp\_extr*). The results are based on the original variables. In the SUF, the highest wages are censored. Source: BIBB/BAuA Employment Surveys 2018, 2012 and 2006.

The previous procedure for imputing the missing wages can be further optimised by taking the following additional steps:

- (i) Imputation of missing values on the variables age and labour market experience,
- (ii) Setting the wage of people who said they earn less than 1500 euros at this value, if it is (slightly) higher according to imputation.

These settings affect the imputation variables for F518. As a rule, only the lower value ranges are affected, since the imputation result does not change for the upper values. The variables formed in this way are:

- ▶ exp\_wage\_imp\_miss1: Imputed wage missing only (de-logarithmized),
- ▶ exp\_wage\_imp\_extr1: Imputed wage for extreme values/missing wage specification (de-logarithmized).

As a result, mainly due to ii), the imputed wages are slightly below the imputed variable without these modifications (see Table 4).

**Table 4: Variant V2 (all figures in Euro)**

variable	mean (standard deviation)	quotient Percentile 90/10	quotient Percentile 80/20	valid instance
<b>original values</b>				
original variable	3532 (3575)	5,000	2,611	16.635
Imputation 1*	3495 (3321)	4,917	2,556	20.012
Imputation 2**	3357 (2087)	4,817	2,520	20.012
<b>Logarithmized</b>				
original variable	7,932 (0,701)	1,227	1,128	16.635
Imputation 1*	7,941 (0,676)	1,225	1,125	20.012
Imputation 2**	7,937 (0,635)	1,222	1,123	20.012

\* Imputation of missing values (*Exp\_wage\_imp\_miss1*); \*\* Imputation of missing values and of outliers (*Exp\_wage\_imp\_extr1*). The results are based on the original variables. In the SUF, the highest income values are censored. Source: BIBB/BAuA Employment Survey 2018.

These two additional steps do not change the basic procedure of imputing the wage variable on the basis of a MNAR default mechanism as described in ALDA/ROHRBACH-SCHMIDT 2011. It can be assumed that these refinements will not fundamentally alter results.

### 2.2.7 Regional information, distance residence – business premises

The following regional information is available (cf. 2.2.1, 2.2.8):

Bula	Federal state, place of residence
gkz	Municipality code number, place of residence
kkz	District code number, place of residence
WoOrt_ZP	Postcode, place of residence (for mobile phones)
gkpol	Political municipal code, place of residence
BIK10	BIK municipal type, 10 types, place of residence
nuts2	Nuts-2 regions, place of residence
ror	Spatial planning regions, place of residence
aab	Labour office districts, place of residence
F233	Federal state, place of business premises
F233_GKZ	Municipal code, place of business premises
F233_KKZ	District code, place of business premises
F233_PLZ	Postal code, place of business premises
F233_nuts2	Nuts-2 regions, place of business premises
F233_ror	Spatial planning regions, place of business premises
F233_aab	Labour office districts, place of business premises

In the landline phone sample, the regional information for the place of residence was generated from the area code of the telephone numbers. In the mobile telephony sample, the screening (WoOrt\_ZP) asked for the postal code (PLZ). The postal codes were converted into GKZ (according to territorial status 31.12.2016) or into KKZ, Bula, gkpol, BIK10 (nuts2, ror and aab were additionally compiled in the FDZ, cf. 2.2.8).

ETB 2018 contains, for the first time, more detailed information on the location of the business premises where the persons are employed; in the previous waves, only the federal state was surveyed. In both selection frameworks (landline and mobile telephony), the location of the business premises was asked on the basis of the postcode or municipality. The postal codes and municipal data were converted into GKZ (according to territorial status 31.12.2016) and KKZ (F233\_nuts2, F233\_ror and F233\_aab were additionally compiled in the FDZ, cf. 2.2.8).

Together with the knowledge of the place of residence of the employed persons, it is possible to determine the distance between the place of residence and the place of business. To this end, the coordinates of the longitude and latitude degrees belonging to the GKZ of the place of residence and the business premises were added to the data. The coordinates are made available via the Federal Agency for Cartography and Geodesy.<sup>17</sup> In accordance with SPIESS/DUNKELBERG (2006), the distance between the place of residence and the business premises is calculated as follows:

$$distance\_w\_b = 6378 \text{ km}^2 * \cos^{-1} (\sin(broad\_w) * \sin(broad\_b) + \cos(broad\_w) * \cos(broad\_b) * \cos(long\_w - long\_b))$$

The broad\_w indicates the latitude of the place of residence and the broad\_b the latitude of the business premises, the long\_w the longitude of the place of residence and the long\_b the longitude of the business premises. 6,378 km<sup>2</sup> correspond to the circumference of the Earth. The variable distance\_w\_b measures the distance between the place of residence and the establishment in km.

The SUF contains the regional information for the place of residence and the business premises at the level of the federal state. More detailed regional information and the variable distance\_w\_b can be analyzed via Remote Data Access or by On-Site Use.

### 2.2.8 Other Classification Variables

The BIBB-FDZ prepares common classifications of empirical social, economic and educational sciences for the research data. These are described in the metadata portal. The concrete implementation of the classifications for the individual data sets can be downloaded using the syntaxes (in SPSS and Stata) on the respective research data pages (for ETB 2018 see <http://metadaten.bibb.de/metadaten/1>). For the ETB 2018, the following classification variables were compiled (see Table 5) and added to the SUF, with the exception of spatial planning regions and employment agencies.

<sup>17</sup> Additional regional variables at community level can be downloaded from the service centre of the Federal Agency for Cartography and Geodesy; see: [http://www.geodatenzentrum.de/geodaten/gdz\\_rahmen.gdz\\_div?gdz\\_spr=deudz\\_akt\\_zeile=5dz\\_anz\\_zeile=1dz\\_unt\\_zeile=14dz\\_user\\_id=0](http://www.geodatenzentrum.de/geodaten/gdz_rahmen.gdz_div?gdz_spr=deudz_akt_zeile=5dz_anz_zeile=1dz_unt_zeile=14dz_user_id=0) (as of 04.04.2019).

Table 5: Other classification variables<sup>18</sup>

Variable names	Content	Characteristic used for operationalization	Origin variables
<b>Occupations</b>			
f1203_pr_dl10, g1203_pr_dl10, h1203_pr_dl10, i1203_pr_dl10, j1203_pr_dl10	Production and service occupations in the dual system (BBiG and HwO)	Occupational activity (training occupation) according to KldB 2010, training qualification 1st loop corrected	f1203_kldb2010, g1203_kldb2010, h1203_kldb2010, i1203_kldb2010, j1203_kldb2010, f1202neu3, g1202neu3, h1202neu3, i1202neu3, j1202neu3
F100_bsektor F1401_bsektor F100_bsegment F1401_bsegment	Occupational sectors and occupational segments	Occupational activity according to KldB 2010	F100_kldb2010_2d, F1401_kldb2010_2d
F100_blossfeld, F1401_blossfeld, F1609_blossfeld, F1610_blossfeld	Occupational classification of Blossfeld	Occupational activity according to KldB 1992	F100_kldb92_3d, F1401_kldb92_3d, F1609_kldb92_3d, F1610_kldb92_3d
F100_wib1- F100_wib3, F1401_wib1- F1401_wib3, F1609_wib1- F1609_wib3, F1610_wib1- F1610_wib3	Knowledge-intensive occupations according to three definitions (wib1, wib2, wib3)	Occupational activity according to KldB 1992; (wib1: 2-digit, wib3: 3-digit); Occupational activity according to KldB 1992, (3-digits), highest school/training qualification (wib2)	F100_kldb92_2d, F1401_kldb92_2d, F1609_kldb92_2d, F1610_kldb92_2d F100_kldb92_3d, F1401_kldb92_3d, F1609_kldb92_3d, F1610_kldb92_3d max1202, S3
F100_eseg_1, F100_eseg_2 F1609_eseg_1, F1609_eseg_2, F1610_eseg_1, F1610_eseg_2	European Socio-Economic Groups (ESEG 2008) (aggregiert *_1 und detailliert *_2)	Occupational activity according to ISCO 08, occupational status	F100_isco08_2d, F1609_isco08_2d, F1610_isco08_2d, F1611
F100_esec, F1401_esec, F1609_esec, F1610_esec,  F100_esec2	European Socio-economic Classification (ESEC) simple variant full method (esec2)	Occupational activity according to ISCO 88, occupational status (for simple Esec);  Additional: supervisory function, number of employees (full method)	F100_isco88_3d, F1401_isco88_3d, F1609_isco88_3d, F1610_isco88_3d Stib F301 F515
F100_siops08, F1401_siops08, F1609_siops08, F1610_siops08	Standard International Occupational Prestige Scale 2008 (SIOPS 08)	Occupational activity according to ISCO 08	F100_isco08, F1401_isco08, F1609_isco08, F1610_isco08

<sup>18</sup> The classifications are described in detail in the BIBB-FDZ metadata portal. The syntaxes for generation can also be downloaded there (also for occupational sections, requirement level according to 5<sup>th</sup> place of the KldB 2010 and occupational field variables; cf. subsection 2.2.2.).

Variable names	Content	Characteristic used for operationalization	Origin variables
<b>Occupations</b>			
F100_siops, F1401_siops, F1609_siops, F1610_siops	Standard International Occupational Prestige Scale 1988 (SIOPS 88)	Occupational activity according to ISCO 88	F100_isco88, F1401_isco88, F1609_isco88, F1610_isco88
F100_egp,  F1609_egp, F1610_egp	Erikson-Goldthorpe-Portocarero-(Class)-Schema (EGP)	Occupational activity according to KldB 1992 (3-digits), occupational status, number of employees, authorization to issue technical instructions, number of employees for which interviewee is direct superior  Occupational activity according to ISCO 88 (4 digits), up to 15 years continuous living together with father, occupational status, number of employees (father/mother)	F100_kldb92_3d, Stib, F302, F500, F501, F504, F505, F515  F1609_isco88, F1610_isco88, F1608, F1611 and F1612
F100_isei08, F1401_isei08, F1609_isei08, F1610_isei08	International Socioeconomic Index of Occupational Status (ISEI 2008)	Occupational activity according to ISCO 08	F100_isco08, F1401_isco08, F1609_isco08, F1610_isco08
F100_isei, F1401_isei, F1609_isei, F1610_isei	International Socioeconomic Index of Occupational Status (ISEI)	Occupational activity according to ISCO 88	F100_isco88, F1401_isco88, F1609_isco88, F1610_isco88
<b>Sociodemography</b>			
Casmin	Comparative Analysis of Social Mobility in Industrial Nations (CASMIN)	highest school/training degree	S3, max1202,
Mig	migrant background	Mother tongue, citizenship	F1606_1 - F1606_13, F1606_17 F1607_1
<b>Economic activity/industry branch</b>			
TI_KI	Knowledge- and technology-intensive industries	Classification of economic activities 2008	WZ2008
Sector08, Branche08	Economic sectors 2008 in 21/10 categories	Classification of economic activities 2008	WZ2008
Sector03, Branche03	Economic sectors 2003 in 21/10 categories	Classification of economic activities 2003	WZ2003
<b>Region</b>			
nuts2, F233_nuts2	NUTS 2 regions place of residence, business premises	district code	kkz, F233_KKZ
ror, F233_ror	Spatial planning regions place of residence, business premises	district code	kkz, F233_KKZ
aab, F233_aab	Employment agency districts place of residence, business premises	district code	kkz, F233_KKZ

## 3 Data collection

As in the previous surveys in 2006 and 2012, the data were collected by Kantar Public (formerly TNS Infratest Sozialforschung). A detailed description of the data collection can be found in the method report (GENSICKE/TSCHERSICH 2018). It can be downloaded from the [BIBB-FDZ metadata portal](#) on the 2018 Employment Survey website.

### 3.1 Survey instrument and method

The survey instrument of ETB 2018 was developed and updated by BIBB and BAuA on the basis of the last survey. The GESIS Leibniz Institute for the Social Sciences conducted a cognitive pretest at the end of 2016 to test the comprehensibility and difficulty of individual new BIBB questions. One-hour qualitative interviews were conducted with 15 persons who were quoted according to certain criteria. The interview was based on an evaluation questionnaire which, in addition to the questions to be tested, contained a series of follow-up questions which were intended to reveal the different problems of the test persons in answering the questions (cf. OTTO et al. 2016).

At Kantar Public, the survey instrument was converted into a programme for computer-assisted telephone interviews (CATI). Following the questionnaire coordination, the questions for determining the number of target persons and the selection of the target person within the framework of the landline sample were developed and coordinated with BIBB and BAuAthe client. In the sampling system of the ETB 2018 there are two changes compared to the ETB 2012, which made a new development of the interview start necessary:

- ▶ Conversion to a dual-frame sample (30 % mobile phone share),
- ▶ Identification of the target person for fixed line at household level among all persons aged 15 and over who work at least 10 hours a week or who have interrupted their work for a maximum of 3 months (2012: selection among all persons in the household aged 15 and over).

The screening interview itself was essentially identical to that of the 2012 survey wave. Two field pre-tests were carried out before the start of the main survey. The field work of the first pretest took place from 31 July to 10 August 2017, the second pretest from 12 September to 18 September 2017. In the first pretest, 200 interviews were conducted with employed persons, in the second pretest 100 interviews were conducted.

As in the two previous surveys, the data of ETB 2018 were collected via computer-assisted telephone interviews (CATI).

### 3.2 Population and structure of the sample

The basic population of ETB 2018 includes German-speaking employees in Germany aged 15 and over who work at least ten hours a week. The definition of gainfully employed was the person who, at the time of the survey, was engaged in a paid or income-related activity. This definition had to be clarified in several places:

- ▶ Persons who had interrupted their activities for a short period, i.e. for a maximum of three months, were included. This could be maternity leave or parental leave or special leave for another reason.

- ▶ Also included were persons who were engaged in remunerated work in addition to an apprenticeship or a course of study or as part of a legal clerkship or specialist training.
- ▶ Family helpers were also interviewed. They count as employed although they are defined, among other things, as working in the business or business of the other family member without fixed remuneration.
- ▶ Foreigners were included in the investigation if they spoke sufficient German.

On the other hand, people who volunteer their paid work were not interviewed. Excluded were also persons in an employment relationship which is a necessary part of training, as well as activities in the context of an internship. Also excluded were persons doing military or voluntary service and persons who were in a voluntary social or ecological year.

In recent years, developments on the mobile communications market and changes in the communication behavior of the population have led to a situation in which a number of people can be reached exclusively by mobile phone and no longer have a fixed line (= mobile-only). This group could not be neglected, as it now accounts for around twelve percent of all people who can be reached by telephone. In addition, these are persons with specific characteristics, which is why the ETB 2018 was designed as a dual-frame sample. The proportion of interviews on mobile telephony was set at 30 percent (proportion of interviews carried out). The dual-frame survey was conducted with two comparable selection frames as a combined landline and mobile sample. Both sampling frames referred to the same basic population and could be merged *ex post* on the basis of a design weighting in such a way that together they form a representative image of the basic population. 6,004 interviews of the 20,012 interviews are from the mobile telephony sample (further details can be found in the Kantar Public method report by GENSICKE/TSCHERSICH (2018)).

### 3.3 Implementation of the survey

The interviews were conducted by Kantar Public Munich between 2.10.2017 and 5.4.2018; a total of 20,012 complete interviews are available. Over the entire field period 847 interviewers were deployed; on average, each interviewer interviewed 23.6 employed persons. The average net interview duration was 41 minutes (median). The average total duration including the time for the contact phase and the screening interview was 44 minutes. Details on the training courses and other quality assurance measures can also be found in the methods report (cf. GENSICKE/TSCHERSICH 2018).

The field result for the usage and cooperation rate can be calculated in different ways. The calculation according to AAPOR (American Association for Public Opinion Research) includes the refusals of the contact persons, which usually occur before a target person could be selected. This calculation results in a response rate of eleven percent and a cooperation rate of twelve percent. If, on the other hand, the cooperation rate and the response rate are calculated exclusively at the level of the selected target persons, the response rate is 43 percent and the cooperation rate 47 percent (Table 5 in the methods report shows the allocation and calculation of the quotas in detail, see GENSICKE/TSCHERSICH 2018).

During and after data collection, extensive plausibility checks were carried out (cf. GENSICKE/TSCHERSICH 2018, p.25f). In a few cases in which anomalies were discovered, the necessity of data cleansing and the possibilities of a meaningful cleansing were examined and, if necessary, carried out. A list of the corrected variables can be found in Table A3 in the Annex.

### 3.4 Unit nonresponse

Unit nonresponse can lead to nonresponse bias (NRB) if it is not randomly distributed across the target population. A possible NRB is a consequence of the respective design of the survey and the procedures and methods used (cf. KOCH AND BLOHM 2015). NRB is also characteristic-specific phenomenon and can only be identified by reference to one or more survey variables of interest. The NRB may have different strengths for different variables. It occurs when there is a relationship between the probability of participation and a variable of interest. The probability of participation depends on the accessibility of the given survey mode and finally, among other things, on the topic of the survey, its length and the behaviour of the interviewers (cf. *ibid.*, p. 2).

The ETB 2018 tried to keep the problem of nonresponse as low as possible. To this end, a number of measures have been taken to minimise problems of accessibility and responsiveness. This includes the implementation of the ETB 2018 as a dual-frame sample with a mobile telephony share of 30 percent, the use of experienced, well-trained and appropriately rewarded interviewers, the definition of a sufficiently long field time and fixed specifications for termination and number of contact attempts.<sup>19</sup> In addition, the interviewers were able to access a range of additional information on the study (e.g. on the purpose, data protection, etc.) in the contact interview if the interviewee asked questions. During the initial contact, all contact persons were informed that it was a matter of a scientific study on the subject of “Working in Germany” (see questionnaire). In the course of the screening interview, the interviewees were asked, among other things, to provide the information that this study was concerned with the occupational activity, working conditions and occupational qualifications of the interviewees and that the interview would last about 30 minutes. Respondents were able to arrange appointments at any time and on any day of the week except Sunday and interrupt started interviews at any time and continue them at a different time. Respondents from the mobile sample were able to provide a landline number for (continuing) the interview.

The probability of a person participating in ETB 2018 can thus be greater or smaller, depending on how easily the person can be reached in the fixed or mobile network, whether the topic “Working in Germany” and the comparatively long interview time have a positive or negative influence on their participation. An NRB could occur when there is a link between the willingness to participate and the variables collected in the main interview. For example, one can assume that people with particularly long working hours are less accessible by telephone (and particularly in the fixed network) and less willing to participate in view of the long interview time. This could lead to a distortion of the work-related variables in the data set (e.g. gross hourly wages, working hours).

Looking at unit non-response in the landline and mobile telephony selection frame (cf. GENSICKE/TSCHERSICH 2018, p. 20), it can be seen that the proportion of random sample-neutral non-responses among all contacts in the landline sample is<sup>20</sup> somewhat higher than in the mobile telephony sample. In addition to the selection frame, the extent to which gender and the number of contact attempts determine the chances of participation vs. non-participation (ROHRBACH-SCHMIDT 2018) can be investigated for some of the refusals among the target persons (n=11,363). Bivariate analyses show that the risk of refusal is higher in the mobile than

19 The maximum number of contacts in the landline sample was six, in mobile telephony sample it was three, because unused numbers are more common in mobile communications (cf. GENSICKE/TSCHERSICH 2018, pp. 10–11).

20 In the case of the higher proportion of unit non-responses due to „maximum number of contacts reached“ compared to the landline sample, it can be assumed that a large proportion of non-allocated telephone numbers are among them (GENSICKE/TSCHERSICH 2018, pp. 20–21).



in the landline sample and higher among men than among women. The risk of refusal also increases with the number of contact attempts. This could mean that people who are more difficult to reach would more often refuse an interview. A multivariate analysis shows that these characteristics “explain” only a very small part of the differences in the risk of denial between individuals (pseudo-R<sup>2</sup>=0.8%). In addition, the likelihood of refusal increases comparatively little due to these factors. The average predicted refusal probability in the model is 35.1 percent. It is 6.9 percentage points higher for multivariate mobile communications than for fixed networks and 4.9 percentage points higher for men than for women.<sup>21</sup> With each additional contact attempt, the probability of refusal increases by 0.8 percentage points (between the minimum and maximum number of contact attempts (1–12) the predicted probability varies between 34% and 42%).

In 581 cases among the refusers with selected disposition codes (n=11,363), information is also available from a brief interview on the highest school leaving certificate and age. The other refusers were not willing to participate in a brief interview (cf. GENSICKE/TSCHERSICH 2018, Section 4.5). The risk of denial can be determined for this small group of deniers against persons with a successful net interview (non-deniers) depending on these characteristics. Due to the very small number of cases – only for about five percent of the refusals with the selected disposition codes (n=11,363) or 0.26 percent of the refusing target persons in total these additional data are available – the significance of the results should be interpreted with caution. It can be presumed that the 581 cases are also a specific group of deniers. The proportion of men in this group is slightly higher (58.4%) than in the group of refusing persons with the selected response codes (54.1%) or in the net interviews (50.3%). The multivariate model, which includes the highest school-leaving certificate and age, has a low model fit. Analogous to the results above, the probability of refusal is higher for men (+0.7 percentage points) and for persons in mobile communications (+0.9 percentage points). In contrast to the model for the larger group of deniers, there is a negative correlation with the number of contact attempts. Persons with a university degree refuse somewhat less often (-0.7 percentage points) than persons with a lower secondary school leaving certificate. The older the target person, the higher the probability of refusing an interview.

The non-response analyses show that there are differences in the willingness to participate in ETB 2018 with regard to the selection frame, gender and the number of contact attempts. However, the effect strengths are not particularly large. Whether these differences in the willingness to participate lead to a distortion of results in the evaluation of ETB variables cannot be answered conclusively. One way of investigating a suspected bias is to check certain results for their sensitivity to the investigated population. For example, analyses could be carried out separately for the two selection frames, separated by gender or divided by survey variables related to accessibility (e.g. working hours).

### 3.5 Analysis of the willingness of taking part in follow-up surveys

At the end of the interview, respondents were asked to agree to possible follow-up surveys (F1620\_ZP). 17,408 of the 20,012 respondents gave their consent, and 2,604 refused; the willingness to participate in a follow-up survey in the ETB 2018 is 87 percent and thus ten percentage points above the willingness to conduct a follow-up survey in the ETB 2012 (cf. ROHRBACH-SCHMIDT/HALL 2013).

<sup>21</sup> An interaction effect between gender and selection frame is statistically significantly negative: while the probability of men’s refusal varies between the selection frames by only about 2.5 percentage points, the difference for women is 12 percentage points (29% in fixed networks, 41% in mobile networks).

A multivariate selection model (see Table 6) has a low explanatory power (pseudo-R<sup>2</sup>= 1.65%) and in 2018 shows no significant or at most very small differences in the willingness to conduct a follow-up survey with regard to central characteristics: Women are 1.7 percentage points less willing than men to take part in the survey. People with university entrance qualifications are 1.6 percentage points more willing than people with intermediate school leaving certificates; between the ages of 20 and 60 the willingness decreases significantly, but only by 0.6 percentage points (not shown on the basis of predictive margins). Persons without German citizenship are 5.4 percentage points less willing than persons with German citizenship. Compared with workers, the willingness of salaried employees, civil servants as well as self-employed persons is between 3.1 and 3.5 percentage points higher. In the mobile telephony sample, it is 1.9 percentage points higher than in the landline sample. There are no differences in marital status, number of weekly working hours and place of residence (federal state).

Against the background of the high willingness rate and the results of the selection model, systematic bias in the willingness to participate in a follow-up survey cannot be assumed.

**Table 6: Selection model of willingness to participate in follow-up surveys**

	odds ratio	Sig.	AMEs
Sex Female	-.16	***	-.017
<i>Highest school leaving certificate (Ref.: Realschule, Mittlere Reife)</i>			
Hauptschulabschluss (n=2,856)	-.10	**	-.012
Fachhochschulreife, Abitur (n=6,352)	.15	***	.016
No school leaving certificate (n=54)	-1.0	***	-.161
Other/not available (n=79)	-.89	***	-.137
Age in years	-.00	***	-.000
No German citizenship (n=628)	-.42	***	-.054
<i>Marital status (Ref.: Married, n=11,058)</i>			
Single (n=5,752)	-.01		-.002
Divorced (n=2,532)	.08		.009
Widowed (n=563)	-.05		-.006
Registered civil partnership (n=43)	.61		.054
K.A. (n=64)	-1.71	***	-.314
<i>Occupational status (Ref.: Worker, n=2,188)</i>			
Salaried employees (n=13,882)	.29	***	.035
Civil servant (n=1,770)	.26	**	.031
Self-employed (n=1,496)	.28	**	.034
Freelancer (in German: freiberuflich tätig) (n=497)	.27		.034
Freelance collaborator (in German: Freie Mitarbeiter/-in) (n=66)	-.01		-.001
Assisting family member(s) (n=46)	.01		.001
Target Person cannot decide between worker/employee/-r (n=44)	.48		.054
K.A. (n=23)	-.01		-.001
Weekly working time in hours	.02		.000
Mobile telephony (n=6,004)	.17	***	.019
Federal states <sup>1</sup>	Yes	Yes	
Pseudo-R <sup>2</sup>	0.0165		

BIBB/BAuA Employment Survey 2018, unweighted data. n=20,012. Notes: <sup>1</sup>The coefficients for the Federal States are not shown. There are no statistically significant correlations. Significance levels: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.

### 3.6 Weighting<sup>22</sup>

Telephone-based surveys on landlines have two design components that affect the proportionality of the mapping:

- ▶ the selection probability for telephone households depending on the number of connections that can be used for calls, and
- ▶ the selection probability for persons depending on the number of persons in the household belonging to the target population.

In the mobile telephony sample, the selection of persons is realized as a simple random selection of mobile numbers: The contacted (main) user of the device is the target person. On the other hand, a two-stage selection procedure is used in the fixed network sample. In the contact phase, a target person is randomly selected within the respective household using the Kish Selection Grid. In addition to design components, there is a second group of issues which limit representativeness and need to be corrected: Lack of accessibility and non-response are sources of possible selectivity. These are offset by an adjustment weight, i.e. by adjusting the sample data to known marginal distributions in the population.

The adjustment weight adjusts the sample structures to those of the population by means of weighting factors (calibration). As part of the structural adjustment, the reference statistics used were the official data from the 2017 Microcensus, which (by convention) represent the population and the structural features of interest in a comparable manner. As part of the calibration process for establishing the weighting factors, it was systematically checked whether and to what extent disproportionate dropouts occurred. For this purpose, the net sample realised was compared with the distributions of the population. After defining the relevant characteristics for an adjustment, the weighting model is implemented with multidimensional marginal distributions. An iterative weighting process was set up, which results in weighting factors that adjust the realized sample to all specified target distributions with predefined accuracy and minimum variance. Due to the changed screening procedure, the default weighting in 2018 was applied directly to the structures of the employed population aged 15 and over, while in 2012 the default weighting was applied in a former step to the total population aged 15 and over (GENSICKE/TSCHERSICH 2018).

The reference structures for the weighting provided special evaluations of the 2017 microcensus. The following combinations of marginal distributions were used:

- ▶ State x 10er BIK (spatial classification systematic)
- ▶ State x household size
- ▶ West/East x household size
- ▶ occupational status
- ▶ West/East x Gender x Nationality
- ▶ Marital status x Sex x Age (6 groups)
- ▶ West/East x Education x Age (15–50 years, 51+)
- ▶ State x Gender x Age (6 groups)
- ▶ Gender x Age (6 groups)
- ▶ State x Gender

A comparison between sample and reference structure (MICROCENSUS 2017) can be found in Table 7 of the Methods Report (see GENSICKE/TSCHERSICH 2018).

<sup>22</sup> See also chapter 7 in GENSICKE/TSCHERSICH (2018).

The sample size of the ETB 2018 was extrapolated on the basis of the 37,434,116 core employees of the Microcensus 2017 (employed persons with 10 or more hours weekly working time, aged 15 and over, excluding trainees) ( $\text{gew2018\_hr17} = \text{gew2018}/20012 * 37434116$ ).

## 4 Access to data, data protection provisions, data products and anonymisation

### 4.1 Data access

The data from the 2018 Employment Survey are available as a Scientific Use File (SUF) for scientific evaluation. SUFs serve research interests and are made available to users via download. This requires an anonymising processing of the data. The use of this anonymous research data is subject to guidelines and requires a formal application to the BIBB-FDZ. The SUF is provided by GESIS – Leibniz Institute for Social Sciences, Data Archive for Social Sciences. The study is archived in the ZA study catalogue under the number ZA7574 and can be ordered there. For this purpose, an application for use must be completed and sent by post or fax to the address below. Once the application has been approved by BIBB, GESIS will make the data available via ftp download.

BIBB – Federal Institute for Vocational Education and Training  
research data centre  
P.O. Box 201264  
53142 Bonn, Germany  
Germany (German)  
Fax: +49 - (0)228 - 107 - 2020

Additional variables (full texts, more detailed regional information and occupational classifications) can be evaluated via controlled Remote Data Access (RDA), in the guest researcher stations at BIBB, Bonn (On-Site Use) or via a ZV application. Controlled Remote Data Access allows the analysis of weakly anonymous research data on the processing of executable syntax programs created by users. Data users can download structural data sets (game data) from the BIBB-FDZ metadata portal for this purpose. The game data has the same structure and characteristic values as the original data. They thus make it possible to create evaluation programs (in the Stata or SPSS analysis programs) with which the BIBB-FDZ then evaluates the original data. The output checked for confidentiality is finally sent back to the users. Visiting scientists can analyse weakly anonymised research data at the isolated PC workstations in the BIBB-FDZ's own guest room. For researchers who already use a SUF and would like to use variables for their scientific research purposes that are not included in the SUF due to possible re-identification risks, it is possible to apply for data access to additional special variables (ZV).

### 4.2 Data protection regulations

Access to the research data of the BIBB-FDZ Employment Survey 2018 is subject exclusively to the principle of data economy and compliance with applicable data protection regulations, in particular Article 89 of Regulation (EU) 2016/679 (Data Protection Basic Regulation DS-GVO) and Section 27 of the Federal Data Protection Act (BDSG 2018).

Accordingly, research data may be passed on to independent scientific research for a limited period of time in order to carry out scientific projects if it is not possible to establish a reference to a survey unit (“anonymity”). In order to achieve this without exception, in the case

of the SUF, special technical and organisational data security measures must be set up by the institute receiving the data or by the researchers to prevent unauthorised access to the data.

It is recommended that researchers who are authorised to access and use the data be particularly obliged to comply with data protection regulations (cf. SUF Guidelines for Use of the BIBB-FDZ).

The staff of the BIBB-FDZ only inspect the researchers' research questions, methods and analyses for the purpose of providing advice, improving the BIBB-FDZ service and ensuring compliance with data protection regulations. BIBB employees who do not belong to the BIBB-FDZ are not given any insight into the activities of the researchers.

## 4.3 Data products and anonymisations

### 4.3.1 Scientific Use File (SUF)

The SUF contains all cases contained in the original data (n=20.012), but e.g. no full texts, special variables and regional identifiers. These variables can be evaluated via Remote Data Access and at the guest researcher workstations at BIBB in Bonn (On-Site Use, see Section 4.3.2). The anonymisations (coarsening and deletions) carried out for the SUF are shown in Table 7 below:

Table 7: Anonymisation in the SUF

group	variable names	variable content	anonymisation
Screeningvar. <sup>1</sup>	E101-E600	Screening part of the questionnaire	removed
<b>Internally Generated Var.</b>	int_tag JahrMonatTag	Day/date of the interview	removed
<b>full texts</b>	TF100 TF101 TF102 TF300 TF321 TF513 TF1105 TF1203 TF1203a TF1204 TF1217 TG1203 TG1203a TG1204 TG1217 TH1203 TH1203a TH1204 TH1217 TI1203 TI1203a TI1204 TI1217 TJ1203 TJ1203a TJ1204 TJ1217 TF1400_01 TF1401 TF1402 TF1606 TF1609 TF1609a TF1610 TF1610a TF1609	Full texts occupational information, full texts economic activity (industry/branch), full texts work equipment, other full texts	Deleted (can be evaluated via On-Site Use/ Remote Data Access)
<b>Residence information</b>	gkz kkz WoOrt_ZP	Municipality code, District code, postcode (with mobile telephony)	removed
<b>Business premises location information</b>	F233_GKZ F233_KKZ F233_PLZ	Municipality code, District code, postcode	removed
<b>Personal data/ Household</b>	Anzmobilf Anztelf isdn Q10031 Q10032a F1620b_ZP	Number of mobile phones used Number of landline connections Telephone connection ISDN Number of persons employed in HH Number of persons employed in HH Name of respondent	removed
<b>Occupational codes</b>	F100*,F1401*,F1203*- J1203*,F1609*,F1610*	Occupational codes 5-/4-/3-digit	3-digits (F100, F1401)/2-digits (F-J1203, F1609, F1610)
<b>Nationality</b>	F1607_15	Nationality: Stateless	Add.w.F1607_99: F1607_99n "Nationality: not specified new"
<b>Gross monthly wage</b>	F518	Gross monthly wage respondent open	Values >50,000 replaced by mean value +/- multiples of 1000 (maintaining ranking): F518_SUF, exp_wage_imp_miss_SUF, exp_wage_imp_miss1_SUF

<sup>1</sup> Exceptions: S1 (gender), S2 (month/year of birth).

### 4.3.2 Variables for Remote Data Access and One-Site Use

In addition, three data sets with additional variables can be analysed at the guest researcher workstations at BIBB in Bonn (On-Site Use), and Remote Data Access (cf. Table 8). Test data with the additional variables (with the exception of full texts) can be requested from the BIBB-FDZ.

**Table 8: Variables for Remote Data Access and One-Site Use**

group	variable names	variable content	data set
<b>full texts</b>	TF100 TF101 TF102 TF300 TF321 TF513 TF1105 TF1203 TF1203a TF1204 TF1217 TG1203 TG1203a TG1204 TG1217 TH1203 TH1203a TH1204 TH1217 TI1203 TI1203a TI1204 TI1217 TJ1203 TJ1203a TJ1204 TJ1217 TF1400_01 TF1401 TF1402 TF1606 TF1609 TF1609a TF1610 TF1610a TF1609	Full texts occupational information, full texts economic activity (industry/branch), full texts work equipment, other full texts	vt_1.0 (35 variables) <a href="https://doi.org/10.7803/501.18.1.4.10">doi:10.7803/501.18.1.4.10</a>
<b>Residence/ Business premises location information</b>	gkz, F233_gkz kkz, F233_kkz ror, F233_ror aab, F233_aab distance_w_b	municipality code District code Spatial planning regions Employment agency districts Distance from residence to business premises	reg_1.0 (9 variables) <a href="https://doi.org/10.7803/501.18.1.3.10">doi:10.7803/501.18.1.3.10</a>
<b>Occupational codes</b>	F100*,F1401*,F1203*- J1203*,F1609*,F1610*	Occupational codes 5-/4-/3-digit	sv_1.0 (73 variables) <a href="https://doi.org/10.7803/501.18.1.5.10">doi:10.7803/501.18.1.5.10</a>

<sup>1</sup> The complete bibliographic citation can be found in the information in the metadata portal.



## 5 Citations

Any work that uses or refers to a data record available in the BIBB-FDZ must contain one of these sources in the form of a bibliographic citation in the bibliography or footnote. Please pay attention to the correct (used) data set version - recognizable by the last two digits of the DOI number. In addition to citing the research data itself, we also recommend that you refer to the corresponding BIBB-FDZ data and method reports.

- Proposal for a reference to the title page/imprint of publications:

*This paper uses data from the 2018 BIBB/BAuA Employment Survey of the Working Population on Qualification and Working Conditions in Germany [doi:10.7803/501.18.1.1.10](https://doi.org/10.7803/501.18.1.1.10). The study was carried out by the Federal Institute for Vocational Education and Training and the Federal Institute for Occupational Safety and Health.*

- Bibliographic citation (SUF)<sup>23</sup>

<b>Title of the data:</b> BIBB/BAuA-Erwerbstätigenbefragung 2018 – Arbeit und Beruf im Wandel. Erwerb und Verwertung beruflicher Qualifikationen.	<b>Short form (German):</b> BIBB/BAuA-Erwerbstätigenbefragung 2018	<b>Short form (English):</b> BIBB/BAuA Employment Survey 2018
<b>English title of the data:</b> BIBB/BAuA Employment Survey of the Working Population on Qualification and Working Conditions in Germany 2018		
<b>BIBB-FDZ Data and Methodological Report:</b> ROHRBACH-SCHMIDT, Daniela; HALL, Anja (2020): BIBB/BAuA Employment Survey 2018, BIBB-FDZ Data and Methodological Reports No. 1/2020. Version 1.0. Bonn: BIBB. ISSN 2190-300X	<b>DOI (für SUF):</b> <a href="https://doi.org/10.7803/501.18.1.1.10">doi:10.7803/501.18.1.1.10</a>	<b>Study no. GESIS (SUF):</b> ZA7574

### Bibliographical citation of the data set (German):

HALL, Anja; HÜNEFELD, Lena; ROHRBACH-SCHMIDT, Daniela (2020): BIBB/BAuA-Erwerbstätigenbefragung 2018 – Arbeit und Beruf im Wandel. Erwerb und Verwertung beruflicher Qualifikationen. suf\_1.0; Forschungsdatenzentrum im BIBB (Hrsg.); GESIS Köln (Datenzugang); Bonn: Bundesinstitut für Berufsbildung. [doi:10.7803/501.18.1.1.10](https://doi.org/10.7803/501.18.1.1.10)

### Bibliographic citation of the data set (English):

HALL, Anja; HÜNEFELD, Lena; ROHRBACH-SCHMIDT, Daniela (2020): BIBB/BAuA Employment Survey of the Working Population on Qualification and Working Conditions in Germany 2018. suf\_1.0; Research Data Center at BIBB (ed.); GESIS Cologne (data access); Bonn: Federal Institute for Vocational Education and Training. [doi:10.7803/501.18.1.1.10](https://doi.org/10.7803/501.18.1.1.10)

23 The DOI numbers for other data products of the ETB 2018 (see table 8) are listed on the FDZ web pages.

## 6 The Employment Surveys over time

The survey methodology of the Employment Surveys has changed over time. Until 1991/92, the survey was carried out personally and orally, in 1998/99 as a CAPI (Computer assisted personal interview) and in 2006 as a CATI (Computer assisted telephone interview). With the change of the survey method, the order of the questions has also changed in part, which is why position and question order effects must continue to be taken into account in a time comparison. The same applies to the filtering of the questionnaire.

The occupational and economic activity (branch of industry) codes were adjusted over time to the current classifications (cf. Table 9).<sup>24</sup> It should be noted in particular that up to the BIBB/IAB survey in 1998/99 the branch of industry code differed from the German classification of economic activities (WZ). The WZ 2003 is used from the 2006 survey onwards.

**Table 9: Occupational and economic sector codes in the BIBB employment surveys**

	1979	1985/86	1991/92	1998/99	2005/2006	2011/2012	2017/2018
<b>Current occupation</b>	KldB 1988 or 1970 B0		KldB 1988 BK	KldB 1992 BK	KldB 1992 BK*)	KldB 1992 BK*)	KldB 1992 BK*)
				KldB 1988 BK	KldB 1988 BK	KldB 2010 (5-digit)	KldB 2010 (5-digit)
					KldB 2010 (5-digit)		
<b>Occupation learned</b>	KldB 1988 or 1970 BK	KldB 1988 BK	KldB 1988 BK	KldB 1992 BK KldB 1988 BK	KldB 1992 BK*)	KldB 1992 BK*) KldB 2010 (5-digit)	KldB 1992 BK*) KldB 2010 (5-digit)
	School-based vocational qualifications according to the specialisation system of the StBA (main subjects)						
<b>Branch of industry</b>	BIBB's own classification system				WZ03/NACE**	WZ03,08/NACE**	WZ03,08/NACE**

Comments: B0= Berufsordnung, BK=Berufsklasse, StBA=Statistisches Bundesamt (German Federal office of statistics); KldB=Classification of occupations

\*) incl. ISCO 88 as a transfer from KldB 1992, from 2011/2012 onwards also ISCO 08

\*\*) WZ 2-digits

Time comparisons with the BIBB/IAB surveys also require a *standardization of the sample basis* (lowest common denominator). This concerns the employment status (in 1991/92 also unemployed persons and retrainees in East Germany were recorded), the age (in 1979 only persons up to 65 years were surveyed), the working time<sup>25</sup> ( $\geq 10$  h/week), the occupational status

24 The KldB 1988 is not coded for the waves 2012 and 2018. The Federal Employment Agency provides a transfer key from KldB 2010 (5-digits) to KldB 1988 (3-digits) (BA 2019), but in most cases the transfer is not clear. The provision of the KldB 1988 in the ETB 2018 is therefore waived or left to the researchers to carry out a recoding.

25 For example, in the 1998/99 survey only 'persons aged 15 and over with a regular paid job of at least 10 hours per week' should be interviewed. Nevertheless, a few interviews (n=18) were conducted with people who worked less than ten hours a week.

(assisting family members are surveyed only from 1998/99), West Germany (East German employed persons only from 1991/92) and the German citizenship (employed persons with foreign citizenship only from 1991/92). Table 10 shows a summary of the respective populations.

**Table 10: Overview of the Employment Surveys**

Year	Persons interviewed	No. of cases	Data collecting institutes
<b>BIBB/IAB-Surveys</b>			
<b>1979</b>	Labour force (age 15-65) <ul style="list-style-type: none"> <li>▶ including unemployed</li> <li>▶ without apprentices</li> <li>▶ without foreigners</li> </ul>	28.828	GfK Nürnberg Marplan Offenbach
<b>1985/1986</b>	Employed persons (age 15-65) <ul style="list-style-type: none"> <li>▶ without unemployed</li> <li>▶ without apprentices</li> <li>▶ without foreigners</li> </ul>	26.361  IAB:14.846 BIBB:11.515	Getas Bremen Emnid Bielefeld Infratest München
<b>1991/1992</b>	In total <i>former West-German federal states:</i> Employed persons** <ul style="list-style-type: none"> <li>▶ without unemployed</li> <li>▶ without apprentices</li> <li>▶ including foreigners*</li> </ul> <i>former East-German federal states:</i> Employed persons** <ul style="list-style-type: none"> <li>▶ including unemployed</li> <li>▶ including retrainees</li> <li>▶ without foreigners</li> </ul>	34.277  24.090   7.851 1.880 456	Infratest München Marplan Offenbach   InfratestBurke Berlin EMMAG Berlin
<b>1998/1999</b>	Employed persons (age 15 +)** <ul style="list-style-type: none"> <li>▶ without apprentices</li> <li>▶ including foreigners*</li> </ul>	34.343	InfratestBurke München Infas Bonn (CAPI-Erhebung)
<b>BIBB/BAuA-Surveys</b>			
<b>2005/2006</b>	Employed persons (age 15 +)** <ul style="list-style-type: none"> <li>▶ without apprentices</li> <li>▶ including foreigners*</li> </ul>	20.000	TNS Infratest Sozialforschung (CATI)
<b>2011/2012</b>	Employed persons (age 15 +)** <ul style="list-style-type: none"> <li>▶ without apprentices</li> <li>▶ including foreigners*</li> </ul>	20.036	TNS Infratest Sozialforschung (CATI)
<b>2017/2018</b>	Employed persons (age 15 +)** <ul style="list-style-type: none"> <li>▶ without apprentices</li> <li>▶ including foreigners*</li> </ul>	20.012	Kantar Public München (CATI)

\* with adequate German language skills

\*\*with regular paid employment of at least 10 hours per week

The contents of the survey have partly changed between the waves (for 2018 compared to 2012 see Table A1). In time comparisons, each variable must be checked for comparability over time by the researcher himself. Possible modifications may concern question formulation, answer categories, question position or filters.

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# Appendix

**Table A1: List of variables of ETB 2018 and change compared to ETB 2012**

The survey was conducted only in German language. The translation of the list of variables below (and the 2018 questionnaire available online) is oriented towards the 2012 English translation, but where better English translations were found, those from 2012 were not adopted. Thus there may be slight differences between the English translation, although there were no changes in the question program for the corresponding variables. Whether there has been a change in the German questionnaire can be seen from column 2.

variable		Question (not always complete, without filter)
az		How many hours in total did you work in this activity last week?
nt		Secondary employment
Stib		What is your occupational status in your activity as < show activity from F100-102>? Are you ...
S1		May I ask? Are you male or female?
S2j, S2m		When were you born? Please tell me the month and year of your birth.
F100		What occupational activity are you currently engaged in?
F101		This is a very important information for our study. Would you please tell me what your current occupational activity is?
F102		Can you tell me more about this occupational activity? Does what you do have a more specific name?
F103		Are you currently working in your desired occupation or would you rather work in another occupation?
F200		In your occupational activity, how many hours per week is your weekly working time agreed with the employer without overtime?
F200P		This is an unusually high number of hours. Have you agreed this with your employer?
F204		How is your overtime or extra work compensated?
F206		And how long do you actually work for an average of one week, including your secondary employment?
F206P		This is an unusually high number of hours. Is that correct?
F208		How often do you manage to take your family and private interests into account when planning your working hours?
F209		Do you normally work between 7 and 19 o'clock?
F209_01		Do you work shifts?
F210	mod. <sup>1)</sup>	In which shifts do you work in your activity?
F211	new	Which shifts are these?
F210_01		Is that stressful to you?
F216_01 F216_02 F216_03 F216_04 F216_09	mod.	Have you agreed the following in your activity? Standby duty On-call duty Work on call None of it not specified
F220	mod.	Do you normally work at least once a month on Saturdays?
F223	mod.	Do you normally work at least once a month on Sundays?

variable		Question (not always complete, without filter)
F228	new	Do you work for your company - even if only occasionally - from home?
F229	new	How frequently does this occur?
F230	new	Is it so-called telework?...
F230_01	new	Is this teleworking contractually agreed with you? ...
F230_02	new	Is it contractually agreed that you can work from home?
F231	new	As a rule, how many hours per week do you work from home on average?...
F231_01	new	How many days a week are the hours you work at home usually spread over?
F231_02	new	Are the hours you work from home fully, partially or not at all counted as working time?
F232	new	If your company would allow you to work at home temporarily, would you accept this offer?
F233_PLZ	mod.	Can you tell me the postal code of your business premises?
F233_GKZ		If you do not know these exactly, please tell me the city or the municipality in which your business premises is located.
F233_Bula		In which federal state is your business premises located?
F300		What is the most important working tool for your activity as <...>? (TF300)
F301		Do you have employees for whom you are the direct superior?
F302		And how many is that?
F302_01	new	What level of management would you assign yourself to?
F303		I would now like to list a few selected activities. Please tell me how often these activities occur in your work, whether frequently, sometimes or never.
F304		Manufacturing, producing goods and commodities
F305		Measuring, testing, quality control
F306		Monitoring, control of machines, plants, technical processes
F307		Repairing, renovating
F308		Purchasing, procuring, selling
F309		Transporting, storing, shipping
F310		Advertising, Marketing, Public Relations, PR
F311		Organizing, planning and preparing work processes. What is meant here are work processes of others..
F312		Developing, researching, constructing
F313		Training, instructing, teaching, education
F314		Gathering information, researching, documenting
F315		Providing advice and information
F316		Entertaining, accommodating, preparing food
F317		Nursing, caring, healing
F318		Protecting, guarding, monitoring, regulating traffic
F319		Working with computers
F320		Use of the Internet or e-mail processing
F321		Cleaning, waste disposal, recycling
F322		Have we forgotten an activity you do frequently?
F323		Does your activity have anything to do with renewable or regenerative energies?
F324		Is your company active in this field?
F324		Do you use computers exclusively as users or does your use go beyond the pure application?

variable	Question (not always complete, without filter)
F325_01 F325_02 F325_03 F325_04 F325_05 F325_06 F325_07	Which of the following IT activities do you perform? Software development, programming, system analysis Develop, produce IT technology or hardware IT administration e.g. of networks, IT systems, databases, web servers Website design and support IT consulting, user support, training IT sales Other
F327_01 F327_02 F327_03 F327_04 F327_05 F327_06	How often does it occur in your work, ... that you have to react to problems and solve them? that you have to make difficult decisions on your own? that you have to recognize and close your own gaps in knowledge? that you have to take responsibility for other people? that you have to convince others and negotiate compromises? that you need to communicate with other people professionally?
F400	What type of training is usually required for performing your activity as <show activity from F100-102>? A completed vocational training, a university of applied sciences technical degree or university degree, an advanced training degree, e.g. as a master or technician, or is no vocational training degree required?
F401	Is for your activity as <...> a rather short briefing < at the workplace> sufficient for the exercise of your activity or is a longer induction < in the company> necessary?
F402	And is it usually necessary to attend special training courses or seminars?
F403_01 F403_02 F403_03 F403_04 F403_05 F403_06 F403_07 F403_08 F403_10 F403_11	For each area, please tell us whether you need this knowledge for your current occupational activity as < > and if yes, whether basic knowledge or specialist knowledge. Legal knowledge Knowledge of project management Knowledge in the medical or nursing field Knowledge in mathematics, calculus, statistics Knowledge of German, written expression, spelling Knowledge of PC application programs Technical knowledge Commercial or business knowledge Do you need in your activity as < > basic or specialist knowledge in English? Do you need in your activity as < > basic or specialist knowledge in other languages besides English and German?
F404 F404_01 F404_02 F404_03 F404_09	How well do you have to speak English? Do you need to be confident in speaking, writing or business fluent? Confident in speaking Confident in writing Business fluent not specified
F409	Do you feel in your activity as <...> usually up to the requirements of your occupational knowledge and skills, rather overchallenged or rather underchallenged?
F410	And do you usually feel up to the demands of the amount of work or the workload, rather overchallenged or rather underchallenged?



variable		Question (not always complete, without filter)
		I'll now read you some work demands. Please tell me on each point how often this occurs in your work, whether frequently, sometimes, rarely or never. How often in your work does it occur ...
F411_01		. . that you have to work under strong deadline or performance pressure?
F412_01		Is that stressful to you?
F411_02		... that the execution of the work is prescribed to you in every detail?
F412_02		Is that stressful to you?
F411_03		... that one and the same operation is repeated in every detail?
F412_03		Is that stressful to you?
F411_04		... that you find yourself confronted with new tasks in your work, which you first have to think about and familiarise yourself with?
F412_04		Is that stressful to you?
F411_05		... that you improve existing procedures or try something new?
F411_06		... that you get disturbed or interrupted at work, e.g. by colleagues, bad material, machine malfunctions or telephone calls?
F412_06		Is that stressful to you?
F411_07		... that you are prescribed an exact number of pieces, a certain minimum output or the time to do a certain task?
F412_07		Is that stressful to you?
F411_08		... that things are demanded of you that you have not learned or that you do not master?
F412_08		Is that stressful to you?
F411_09		... that you have to keep an eye on different types of work or processes at the same time?
F412_09		Is that stressful to you?
F411_12		... that you have to go to the limits of your capabilities?
F412_12		Is that stressful to you?
F411_13		... that you have to work very fast?
F412_13		Is that stressful to you?
F411_14	new	... that you find it difficult to switch off after work?
F411_15		... that that your job puts you in situations that stress you emotionally?
F500		<i>Workers:</i> Which of the following groups do you belong to?
F501		Are you an employee with ...:
F502		Are you employed as master or foreman
F503	mod.	Do you carry out your tasks predominantly according to instructions or predominantly independently?
F504		Are you a civil servant in the lower, middle, upper or higher level of the civil service?
F503_01	new	Do you have specialist responsibility as a project, group or team leader?
F503_02	new	Do you have autonomous budget responsibility in your activity?
F505	mod.	Are you formally entitled to give technical instructions to other employees?
F506		Are you an independent master?
F507		Are you currently in a temporary or permanent employment relationship?
F509		Are you employed by a temporary employment agency that places you with other companies?

variable		Question (not always complete, without filter)
F510		How long have you been working for your current employer?
F511_j F511_m		And since when do you carry out your activity as <...> on your current workplace?
F512		<i>Economic sector:</i> Does the company in which you work belong to...
F513		And what industry does the company belong to? Please tell me as precisely as possible, ... (TF513)
F515		How many people are roughly employed in the company where you work, including <<owners and>> apprentices?
F515_01	new	Does your company have a works council or a staff council?
F516	mod.	What is the current economic situation of your company?
F517		How high do you estimate the risk that you will be dismissed from the company in the near future?
F518		Now to your monthly gross wage, i.e. salary before deduction of taxes and social security. Please don't include child benefit. What is your monthly gross wage from your activity as <...>?
F519		Would you then perhaps tell me: Does your monthly gross wage amount to less than 1500 Euro?
F520		Is your activity <...> a so-called minor employment, also called a mini-job, with a salary of up to 450 Euro per month?
F524	new	The legal minimum wage was introduced in January 2015. Did you previously earn <in your main occupational activity at that time> a gross hourly wage of less than € 8.50?
F525	new	Has your gross wage increased due to the introduction of the minimum wage?
F600_01		Let us now come to various working conditions and whether this occurs frequently, sometimes, rarely or never during your activity as <show activity from F100-102>.
F602_01		Work standing up. How often does this happen?
F600_02	new	Is that stressful to you?
F602_02	new	Work at least one hour continuously in a seated position. How often does this happen?
F600_03		Is that stressful to you?
F602_03		Loads of more than < for male respondents: 20 kg, for female respondents: 10 kg use > lift and carry
F600_04		Is that stressful to you?
F602_04		Work with smoke, dust or under gases, vapours
F600_05		Is that stressful to you?
F602_05		Work under cold, heat, moisture, humidity or draughts.
F600_06		Is that stressful to you?
F602_06		Working with oil, grease, dirt
F600_07a		Is that stressful to you?
F602_07a		Performing work with your hands that requires a high degree of skill, fast sequences of movements or greater forces
F600_07b		Is that stressful to you?
F602_07b		Working in a bent, squatting, kneeling position or working overhead
F600_07c1	new	Is that stressful to you?
F600_07c2	new	In which posture exactly do you work? Do you work frequently ....
F600_07c3	new	in a stooped posture
F600_07c9	new	in squatting or kneeling posture
		overhead
		not specified

variable		Question (not always complete, without filter)
F600_09		Work in bright light or with poor or insufficient illumination.
F602_09		Is that stressful to you?
F600_09a	new	Is the artificial lighting at your workplace very dark or very bright?
F600_09b	new	Is the light blinding you?
F600_12		Working under noise
F602_12		Is that stressful to you?
F600_12a	new	Working under disturbing noises
F602_12a	new	Is that stressful to you?
F600_12b	new	What is the main cause of noise pollution?
F600_13		Handling microorganisms such as pathogens, bacteria, moulds or viruses
F602_13		Is that stressful to you?
F605	new	Do you work more than half of your working hours outdoors?
F605_01	new	Are you regularly informed about the dangers of solar radiation?
F700_02		How often does it happen that ... you can plan and schedule your own work yourself?
F701_02		Is that stressful to you?
F700_03		that you have influence on the amount of work assigned to you?
F701_03		Is that stressful to you?
F700_06		that you can decide for yourself when to take a break?
F701_06		Is that stressful to you?
F700_07		How often do you feel that your job is important?
F701_07		Is that stressful to you?
F700_08		How often does it happen that you are not informed in time about drastic decisions, changes or plans for the future?
F701_08		Is that stressful to you?
F700_09		that you do not receive all the information necessary to carry out your activities properly?
F701_09		Is that stressful to you?
F700_10		that you feel part of a community at your workplace?
F701_10		Is that stressful to you?
F700_11		How often do you feel the cooperation between you and your <colleagues> is good?
F701_11		Is that stressful to you?
F700_12		How often do you get help and support for your work from colleagues when you need it?
F701_12		Is that stressful to you?
F700_13		And how often do you get help and support for your work from your line manager when you need it?
F701_13		Is that stressful to you?
F700_14	new	How often does your direct supervisor give you praise and recognition for doing a good job?
F701_14	new	Is that stressful to you?
F900_01		How strongly do you pursue the goal of a career? Very strong, strong, not much or not at all?
F1001_01		Please now tell me whether the following changes have been made in your <direct working environment> in the last two years.
F1001_02		New manufacturing or process technologies
		New computer programs

variable		Question (not always complete, without filter)
F1001_03		New machines or plants
F1001_04		New or significantly modified products or materials
F1001_05		New or significantly changed services
F1001_06		Have there been significant restructuring or reorganisation affecting your immediate working environment?
F1001_07		Have there been any workforce reductions or redundancies in your immediate environment in the last two years?
F1001_08		Were freelancers, temporary employees, interns or temporary workers increasingly used?
F1001_09		Have you been assigned a new direct supervisor in the last two years?
F1001_10		Have stress and work pressure increased, are they the same or have they decreased?
F1001_12		Have the occupational requirements of your work increased during this time, have they remained the same or have they decreased?
F1002_01		Relocation or outsourcing of parts of a company
F1002_02		Merger with another company
F1002_03		Expansion or strong growth of the company
S3		What is your highest general school leaving certificate?
S4		Which German school leaving certificate does this certificate correspond to?
F1104		What year did you graduate?
F1105	new	In which country did you graduate? In Germany or in another country?
F1108*		What was your overall grade at graduation? Very good, good, satisfying or sufficient? *Question will be asked in 2018 to all with school-leaving qualifications (2012 only school-leavers with <i>Abitur</i> )
F1200		Have you completed vocational training or a course of study?
F1201		Do you have one or more degrees?
F1200_01		Are you currently a pupil, student or in training?
F1202		What degree did you graduate from? An in-company vocational training or apprenticeship, a school-based vocational training e.g. at a vocational school, a university of applied sciences degree or university degree, a civil servant training or another degree?
G1202-J1202		Now let's move on to your next degree. What degree did you graduate from? An in-company vocational training or apprenticeship, a school-based vocational training, a university of applied sciences degree or university degree, a civil servant training, an advanced vocational training qualification e.g. as a master, technician, business economist or another qualification?
F-J1202B		What is this degree?
F-J1203		Please tell me the exact designation or occupational title of this degree. ...
F1203a	new	Does what you've learned have a more specific name?
F-J1204		In which federal state did you graduate?
F-J1205		Did the training company at the end of your training belong to... (economic sector)?
F-J1206		How many people were employed in your training company at the time?
F-J1207		And in which training centre did you do your training?
F-J1208		And what kind of educational institution was that?
F-J1209		Was this a training to the simple service, middle service, high service or to the higher service?
F-J1210		And in which training centre did you do your training?
F-J1212		What kind of training did you graduate?
F-J1213		Was this a master training in crafts, industry or any other field?

variable		Question (not always complete, without filter)
F-J1214		In which training centre did you do your advanced training?
F-J1215		And where exactly did you do your training?
F-J1216		From when until when did you do this training? Please state the month and year.
F1217		This training period is <show with x months> unusually short. What was that about?
F-J1219		How much of the occupational knowledge and skills you have acquired during this training can you use in your current activity as <...>?
F-J1219_01	new	How much has this advanced training helped you so far in terms of a higher income?
F-J1219_02	new	...and in view of a more demanding position?
F-J1219_03	new	And all in all: Has this advanced training so far...?
F-J1219_04	new	Do you have the impression that with your advanced training degree you are competing with people who have a university or technical college degree?
G-I1221		Have you completed further vocational training or a course of study afterwards?
I1223		How many other occupational or academic degrees did you graduate after that?
F1224		What overall grade did you have as the <last degree from F1203> when you graduated? Very good, good, satisfying or sufficient?
F1225		If you once compare your current occupational activity as <...> with your training as <last training>, what would you say then?
F1227		Is your activity related to <one of your previous trainings> or has it nothing to do with <your previous trainings>?
F1228_01	mod.	Why are you doing a completely different occupational activity now? ....
F1228_02		I have not found a job in the occupation I have learned.
F1228_03		I wanted to earn more money
F1228_04		I wanted to do another occupational activity
F1228_05		Better working conditions
F1228_06		Other working hours
F1228_07		For private or family reasons
F1228_08		For other reasons
F1228_09		Not specified
F1228_a	new	Would you describe the change as voluntary or more as involuntary?
F1229_01	mod.	How did you acquire the knowledge and skills that you need as < > in the first place and how did you acquire them in the second place?
F1229_02	mod.	And by which, in second place.?
F1230	new	If you now compare the requirements in your activity as <occupational activity from F100-102> with your current occupational knowledge and skills, what would you say?
F1231	new	Could your occupational activity also be carried out by someone who has learned a completely different occupation than you?
F1300		Just think of the last two years. During this time, have you attended one or more courses or training courses that have served your occupational development? ...
F1400		When did you start working for the first time? Please name the year.
F1400_kor	new	In the year <F1216_bj show> you have also started your training. We're not talking about vocational training here. May I therefore ask again when you first took up an occupational activity?
F1400_01	new	What country was that in? Was that in Germany or in another country? (TF1400_01)
F1400_02	new	And when was the first occupational activity in Germany?
F1401		Which occupational activity did you have at that time <show year>?... (TF1401)

variable		Question (not always complete, without filter)
F1402		Can you tell me more about this occupational activity? Does what you did back then have a more specific name? (TF1402)
F1407		Have you at any time since <year from F1400> interrupted your occupational activity? Interruptions also include periods of unemployment and training as well as parental leave.
F1408		How many years did you interrupt your occupational activity in total, approximately in whole years?
F1408_01	new	How many years of interruptions are attributable to your working life since <year from F1400_02> in Germany?
F1409		Have you ever been unemployed in the course of your occupational life?
F1410		How long have you been unemployed in total, approximately in whole years?
F1410_01	new	How many years are attributable to your working life since <year from F1400_02> in Germany?
F1410_02	new	Have you been working abroad for at least half a year since <year F1400>? We don't mean summer jobs or internships here.
F1410_03	new	How long have you worked abroad in total, approximately in years?
F1412	mod.	If you look at your entire working life since <year F1400>, would you say you have experienced a career advancement, a decline, no substantial change, or was that more of an ups and downs?
F1412_01	new	To what do you attach this advancement in the first place?
F1450_01		Please tell me now for different aspects of your activity as <...> whether you are very satisfied, satisfied, less satisfied or not satisfied with it
F1450_02		with the income from this activity?
F1450_03		with the current career opportunities?
F1450_04		with your current working hours?
F1450_05		with the working atmosphere?
F1450_06		with your direct superior?
F1450_08		with type and content of activity?
F1450_09		with the possibilities to apply your skills?
F1450_10		with the possibility of further education and learning
F1450_11	new	with the occupational position?
F1451		with the physical working conditions?
		And now, all in all: How satisfied are you with your work in total?
F1500_01		Please tell me if the following health problems have occurred in the last 12 months during your work or on working days.
F1500_02		lower back pain, low back pain
F1500_03a		pain in the neck, shoulder area
F1500_03b		pain in arms
F1500_04		pain in hands
F1500_05		hip pain
F1500_06a		pain in the knees
F1500_06b		swollen legs
F1500_07		pain in the legs, feet
F1500_08		headaches
F1500_09		heart pain, stinging, pain, or tightness in the chest
		shortness of breath

variable		Question (not always complete, without filter)
F1500_13		skin irritations, itching
F1500_14		sleep disorders at night
F1500_15		general fatigue, tiredness or exhaustion
F1500_16		stomach or digestive problems
F1500_17		hearing deterioration, ringing in the ears
F1500_18		nervousness or irritability
F1500_19		dejectedness
F1500_20		dizziness
F1500_21		physical exhaustion
F1500_22		emotional exhaustion
F1500_23		other complaints
		I'll tell you your complaints again. Please tell me whether you have been treated by a doctor or therapist in the last 12 months because of these complaints.
F1501_01		lower back pain, low back pain
F1501_02		pain in the neck, shoulder area
F1501_03a		pain in arms
F1501_03b		pain in hands
F1501_04		hip pain
F1501_05		pain in the knees
F1501_06a		swollen legs
F1501_06b		pain in the legs, feet
F1501_07		headaches
F1501_08		heart pain, stinging, pain, or tightness in the chest
F1501_09		shortness of breath
F1501_13		skin irritations, itching
F1501_14		sleep disorders at night
F1501_15		general fatigue, tiredness or exhaustion
F1501_16		stomach or digestive problems
F1501_17		hearing deterioration, ringing in the ears
F1501_18		nervousness or irritability
F1501_19		dejectedness
F1501_20		dizziness
F1501_21		physical exhaustion
F1501_22		emotional exhaustion
F1501_23		other complaints
F1502		How would you describe your general state of health?
F1503		Have you stayed ill at home in the last 12 months or have you called in sick?
F1505		How many working days was that in total?
F1505_01	new	Due to your longer sick leave, was your employer offering you company integration management, e.g. a reduction in the amount of work, a working time reduction or flexibilisation?
F1505_02	new	Did you accept the offer?
F1512		Have any health promotion measures been carried out in your company in the last 2 years?
F1513		Did you take part in it?

variable		Question (not always complete, without filter)
F1514	new	Do you have an officially recognised disability?
F1515	new	Do you care for someone in your private environment?
F1516	new	How many hours a week do you spend on this?
F1600	mod.	What's your marital status?
F1601		Do you live with your partner?
F1602		Do you live with a partner?
F1603		Is your partner currently employed?
F1604		Do you have any children?
F1604a		How many is that?
F1605		Do children under the age of 18 live in your household?
F1605a		How many is that?
F1605b		How old is the youngest child in the household?
F1605c		And how old is it?
F1605d	new	And how old is your oldest child?
F1605e	new	Have you made sacrifices because of your children in order to balance family and career?
F1605f	new	Were these sacrifices mainly professional or mainly private or equal in both areas?
F1605g	new	How big were the sacrifices you took?
F1606_01		What language(s) did you learn as a child as a mother tongue? German
F1606_02		English
F1606_03		French
F1606_04		Russian
F1606_05		Spanish
F1606_06		Turkish
F1606_07		Italian
F1606_08		Greek
F1606_09		Portuguese
F1606_10		Polish
F1606_11		Arabic
F1606_12		Japanese
F1606_13		Chinese
F1606_17		Other language _ _ _ _ _
F1606_99		Not specified
F1607_01		What is your nationality? Germany (German)
F1607_02		Italy
F1607_03		Turkey
F1607_04		Austria
F1607_05		Belgium, Luxembourg, Netherlands
F1607_06		Denmark, Finland, Sweden, Norway
F1607_07		France
F1607_08		United Kingdom, Ireland
F1607_09		Greece



variable		Question (not always complete, without filter)
F1607_10		Portugal, Spain
F1607_11		Poland
F1607_12		Estonia, Latvia, Lithuania, Malta, Slovakia, Slovenia, Czech Republic, Hungary, Cyprus
F1607_13		Russia
F1607_14		Other
F1607_15		Stateless
F1607_99		Not specified
S2_2j S2_2m	new	At the beginning of our conversation, you didn't want to tell me when you were born. This is very important information for us. That's why I wanted to ask again...
F1608		Have you lived with your father throughout your life until you were 15 years old?
F1609		What was your father's main occupation when you were 15 years old?
F1609a	new	Can you tell me more about this occupational activity? Does what your father did have a more specific name?
F1610		What was your mother's main occupation when you were 15 years old?
F1610a	new	Can you tell me more about this occupational activity? Does what your mother did have a more specific name?
F1611		In which occupational position was he/she active when you were 15 years old?
F1612		For how many employees did he/she perform a supervisor function?
F1620_ZP		Would you agree to be contacted again for this purpose?
F1620b_ZP		May I have your name, please, so that they can refer to you next time?

<sup>1)</sup> <...> means the fading in or fading out of certain terms e.g. the exercised occupational activity.

<sup>2)</sup> mod. means modification. Possible modifications can generally concern the question formulation, the answer categories, the question position or the filters. In time comparisons, each variable must be checked for comparability over time by the researcher himself, since not all modifications are listed here. There are also modifications between the 2006 and 2012 surveys (cf. ROHRBACH-SCHMIDT/HALL 2013, p.23ff).

Table A2: Questions not asked in ETB 2018 but in ETB 2012

Variable name of the ETB 2012	Deleted Questions
F207	If you could choose the extent of your working time yourself and take into account that your earnings would change according to the working time. How many hours a week would you like to work then?
F210_02	How many night shifts do you do on average per month?
F211	Since when do you work the night shift?
F214	Do you often have work days with more than 6 hours of work breaks that are cancelled?
F214a	Do you often take breaks from work on working days?
F214_01	Why is that? Because you have too much work, because breaks don't fit into the workflow or because you don't want to take a break yourself?
F218	Do you work - even if only occasionally - on Saturdays?
F221	Do you work - even if only occasionally - on Sundays and holidays?
F326	What percentage of your working time in your activity as <...> do you spend on average working on the computer?
F403_09	Do you need basic or specialist knowledge in the field of renewable or regenerative energies?
F411_11	How often does it happen in your work that even a small mistake or a small inattention can result in major financial losses?
F412_11	Is that stressful to you?
F508	Are you interested in a deadline removal?
F510_01	What were you doing right before that?
F510_02	When did you first work for a temporary employment agency? Please name the year.
F516*	What is the current economic situation of your company? *FIn ETB 2018, the question will only be put to self-employed persons (stib=4, 5).
F600_08	Work with strong vibrations, shocks and oscillations that you feel in your body.
F602_08	Is that stressful to you?
F600_10	Handling dangerous substances
F602_10	Is that stressful to you?
F600_11	wearing protective clothing or equipment
F602_11	Is that stressful to you?
F601	Do you work in a place where people smoke?
F601_01	Is that stressful to you?
F603	Has a risk analysis been carried out at your workplace?
F604	Were possible burdens caused by problematic work processes, working hours or insufficient co-operation taken into account?
F700_04**	that your job puts you in situations that emotionally burden you? **New variable name in ETB 2018: F411_15
F900_02	Realizing personal interests
F900_03	Earn a good income

Variable name of the ETB 2012	Deleted Questions
F900_04	Have a secure job
F900_05	Enough time for family, partner, children
F1109***	Are you currently in training, i.e. a pupil, student or apprentice? *** new variable name in ETB 2018: F1200_01 and question asked only to persons without any qualifying degree
F1110	Are you at a general school or at a vocational school or college?
1220B	Have you completed your studies before completing this training?
F1303	Do you plan to train further for your professional career in the next two years?
F1304_01	Information and communication technology and new software
F1304_02	foreign languages
F1304_03	Communication and personality training
F1304_04	Project management, executive training
F1304_05	Health care or promotion
F1304_06	Commercial or business knowledge
F1304_07	Other professional knowledge
F1304_08	Other topics
F1305	Does further training primarily serve you to take on a new job in order to keep up to date professionally, or does it have a different purpose?
F1306	Would you like your company to provide you with qualification and further training measures that are also aimed specifically at older employees?
F1403	How many employers have you worked for since then, including your current job?
F1404	Did you leave your last employer at your own request?
F1405	Have you ever performed an activity since <...> that did not require a vocational qualification?
F1411****	How did you primarily acquire the knowledge and skills you need as a <job from F100-102>? By training, by further education, by occupational experience or otherwise? ****new variable name in ETB 2018: F1229_01 and question only asked to job changer
F1411a	And how did you acquire your knowledge and skills?
F1415	Have you ever moved for professional reasons?
F1416	How do you think your professional situation will change in the next two to three years? Will it get better, stay the same or get worse?
F1417	If you were free to choose: Would you like to retire early, would you like to work until your regular retirement age or would you like to work beyond your regular retirement age?
F1418a	And what would be your main reason?
F1418b	And what would be your main reason?
F1500_10	cough
F1500_11	running of the nose or sneezing stimulus
F1500_12	eye discomfort, i.e. burning, pain, redness, itching, tears
F1504	How many times was that?

Variable name of the ETB 2012	Deleted Questions
F1506	Have you gone to work in the last 12 months, although you should have called in sick or stayed at home because of your state of health?
F1507	How many times was that?
F1508	How many working days did that total?
F1603a	What is the monthly net income of your partner? below 1500 Euro, 1500 to below 2500 Euro or above 2500 Euro?
Netz1	Do you personally at least use the Internet from time to time? If so, professionally, privately or both?
Netz2	On how many days a week do you normally use the Internet?

**Table A3: Corrected Variables**

F231_original	Original indication of working time from home, 12x 97 hours and 3x 99 hours were given. Since the working time (az) is always lower, it can be assumed that one digit of the special codes ,997' and ,999' was entered not enough.
F302_original	Original specification for the number of employees for whom the target person (ZP) is superior, n=4 cases with the value 9999 were set to 99999, since it can be assumed that it should mean ,no specification' (99999).
F518_original	Original information on wage, n=99 cases have the value 9998 or 9999 (corrected to 99998 or 99999).
F1408_original	Original data on interruption duration, n=4 cases with very high data on interruption also in relation to age were set to 99.
Iguelt	A case 8 (intnr=80559) has the value 0 on Iguelt. Since this person made a valid entry on F1202, the value was set to 1.
F1401_kldb92, G1203_isco88/ H1203_isco88, F1610_kld- b920and derived classifications (see table 5)	A total of 8 cases contain codes on the variables F1401_kldb92 (n=1), G1203_isco88/ H1203_isco88 (n=6), F1610_kldb92 (n=1), which are not available in the administrative classification. These were recoded in the research data in the FDZ based on the full text information and the information on the other occupational classifications implemented (6 cases were set to "non-codable"). The variables thus converted were used to generate the classification variables.



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