RESEARCH DATA CENTRE (FDZ)
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at the Institute for Employment Research (IAB)

FDZ-DATENREPORT

Documentation of labour market data

09|2025 EN The IAB Job Vacancy Survey: Establishment survey on labour demand and recruitment processes, waves 2000 to 2022 and subsequent quarters 2006 to 2023

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Die FDZ-Datenreporte beschreiben die Daten des FDZ im Detail. Diese Reihe hat somit eine doppelte Funktion: zum einen stellen Nutzerinnen und Nutzer fest, ob die angebotenen Daten für das Forschungsvorhaben geeignet sind, zum anderen dienen sie zur Vorbereitung der Auswertungen.

FDZ-Datenreporte (FDZ data reports) describe FDZ data in detail. As a result, this series of reports has a dual function: on the one hand, those using the reports can ascertain whether the data offered is suitable for their research task; on the other, the data can be used to prepare evaluations.

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Abstract:

The IAB Job Vacancy Survey is a quarterly and representative establishment survey on labour demand and recruitment processes in Germany. The survey identifies the overall stock of vacancies in the German labour market, including those vacancies that are not reported to the Federal Employment Agency (FEA). The first module of the questionnaire collects information about the number and structure of vacancies, future personnel requirements, about the current economic situation and the expected development of participating establishments. The second module enquires about employer attitudes and firm use of current labour market instruments as well as the employer handling of disadvantaged people in the labour market. The third module asks for information about the last new hire and the last case of a failed recruitment effort. The Research Data Centre of the Federal Employment Agency provides the data sets of the survey waves from 2000 onwards.

Zusammenfassung:

Die IAB-Stellenerhebung ist eine quartalsweise durchgeführte und repräsentative Betriebsbefragung über das gesamtwirtschaftliche Stellenangebot sowie Einstellungsprozesse in Deutschland. Die Erhebung ermittelt die Gesamtzahl aller offenen Stellen am Arbeitsmarkt, einschließlich jener Stellen, die nicht der Bundesagentur für Arbeit (BA) gemeldet werden. Das erste Modul des Fragebogens enthält Informationen zur Zahl und Struktur offener Stellen, dem erwarteten künftigen Arbeitskräftebedarf, zur wirtschaftlichen Lage und zur Entwicklung der befragten Betriebe. Das zweite Modul erfragt die betriebliche Einschätzung und Nutzung aktueller arbeitsmarktpolitischer Instrumente sowie den betrieblichen Umgang mit am Arbeitsmarkt benachteiligten Personen. Das dritte Modul enthält Fragen zum letzten Fall einer Neueinstellung und zum letzten Fall eines gescheiterten Rekrutierungsversuchs. Das Forschungsdatenzentrum der Bundesagentur für Arbeit stellt die Datensätze der Befragungswellen ab 2000 mit allen Fragebogenteilen einschließlich der Quartalsbefragungen für externe Wissenschaftlerinnen und Wissenschaftler bereit.

Keywords:

Establishment survey, job vacancies, recruitment processes

1 Differences to previous versions

Compared to previous versions of the data (see Börschlein et al., 2024) the timeframe of the data provided was extended to include the 4th quarter of 2022 and the subsequent quarters. Within module 2 of the survey in the 4th quarter of 2022, data on employment opportunities for unemployed persons (see also Kubis/Popp, 2024), on work-related experiences with refugees from Ukraine and on increased energy costs and their possible effects were collected.
The 2nd quarter of 2023 also contains questions on the use of services provided by the employer service (*Arbeitgeber-Service)* of the Federal Employment Agency (see, e.g., Hentschke/Kubis, 2024).

Since the 1st quarter of 2023, data on job vacancies and search durations have been analysed for the professional public as part of the quarterly IAB Labour Force Monitor (see, for example, Gürtzgen/Kubis/Popp, 2023).

The 2022 survey wave has some special features that need to be considered when using the data. These features are explained in detail in Section 3.

2 Description of the data set

2.1 Short description

Table 1: Content characteristics

Category	Description
Topic/variable groups	Employment, personnel requirements, activity impediments, stopped search effort, occupations with increasing demand and with expected bottlenecks in the next 3 years, marginal employment, part-time employment, labour market reform, employment opportunities of (long-term) unemployed persons, further education of workforce, One-Euro-Jobs, labour market participation of older employees, establishment-level integration of refugees and disabled people, handling of the COVID-19 crisis, handling of the effects of the Ukraine war, experiences with Ukrainian refugees, minimum wage impact, employer service, detailed information on the last hiring and to the most recent stopped search effort
Unit of observation	Establishments
Number of observations	5,150 to 21,115 establishments
Time period	IV.2000 to III.2023
Frequency	Quarterly
Regional subdivision	East/West Germany, federal state; see “sensitive attributes” for details

Table 2: Methodological characteristics

Category	Description
Survey design	Representative sample of establishments, stratified by size, industry and East/West Germany
Participating institutions	Client: Research unit AMPI of the IAB Implementation: Economics & Data ED23 GmbH (formerly Economix Research & Consulting), Munich
Frequency of data collection	Yearly self-administered (paper or web) main survey and quarterly follow-up interviews by phone
File format/size	Stata; all data sets together ca. 315 MB
File organization	By wave

Table 3: Data access

Category	Description
Data access	Remote data access, on-site use
Degree of anonymization	Weakly anonymized
Sensible attributes	Industry classifications: WZ03 5 digits (2005-2009) WZ08 5 digits (since 2010), districts (since 2007), counties (since 2005) Establishment History Panel: Place of work: district code (ao_kreis), Classification of Economic Activities 1993, 5-digit code (w93_5), Classification of Economic Activities 2003, 5-digit code (w03_5), Classification of Economic Activities 2008, 5-digit code (w08_5)

Category	Description
Proper citation	Data: “Gürtzgen, Nicole; Kubis, Alexander; Diegmann, André; Kovalenko, Tim; Pirralha, André; Pohlan, Laura; Popp, Martin; Vetter, Franka (2025): "German Job Vacancy Survey of the IAB – Version 0022 v1". Research Data Centre of the Federal Employment Agency (BA) at the Institute for Employment Research (IAB). DOI: 10.5164/IAB.IABSE0022.de.en.v1 The data access was provided via on-site use at the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) and/or remote data execution.” Data documentation: - Diegmann, André; Gürtzgen, Nicole; Kovalenko, Tim; Kubis, Alexander; Pirralha, André; Pohlan, Laura; Popp, Martin; Vetter, Franka (2025): The IAB Job Vacancy Survey: Establishment survey on labour demand and recruitment processes, waves 2000 to 2022 and subsequent quarters 2006 to 2023. FDZ-Datenreport, 09/2025 (en), Nuremberg. DOI: 10.5164/IAB.FDZD.2509.en.v1 - Diegmann, André; Gürtzgen, Nicole; Kovalenko, Tim; Kubis, Alexander; Pirralha, André; Pohlan, Laura; Popp, Martin; Vetter, Franka (2025): IAB-Stellenerhebung: Betriebsbefragung zu Stellenangebot und Besetzungsprozessen, Wellen 2000 bis 2022 mit Folgequartalen von 2006 bis 2023. FDZ-Datenreport, 09/2025 (de), Nürnberg. DOI: 10.5164/IAB.FDZD.2509.de.v1

Details about the several ways of and the requirements for data access may be found on the website of the Research Data Centre at https://fdz.iab.de/.

2.2 Overview

The IAB Job Vacancy Survey is a quarterly and representative establishment survey on labour demand and recruitment processes in Germany (see also Bossler et al., 2020). The survey identifies the overall stock of vacancies in the German labour market, including those vacancies that are not reported to Germany’s Federal Employment Agency (FEA). Only this total number allows for valid and unbiased conclusions about labour demand in the economy as a whole. This is because the reporting quota, which is the share of vacancies reported to the FEA among all vacancies, greatly fluctuates over time and exhibits systematic differences between industries, regions and occupations.

Since 1989, the survey has been conducted in the 4th quarter of every year using a multi-part Paper-and-Pencil questionnaire. Since 2002 establishments have the option to respond to the survey online as well. The web questionnaire is as identical as possible to the Paper-and-Pencil questionnaire. Module 1, formerly called main questionnaire, enquires information about the number and structure of vacancies, about future personnel requirements, about the current economic situation and the expected development of participating establishments. Module 2, formerly called special questionnaire, has been used since 2000 in the context of SGBII to survey employers' assessment and use of current labour market policy instruments. In addition, data are collected on how establishments deal with people who are disadvantaged in the labour market. Module 3, formerly called additional questionnaire, collects information about the last new hire and the last case of a failed recruitment effort. This regular and detailed enquiry into hiring processes is a unique characteristic of the IAB Job Vacancy Survey, providing information on the characteristics of the position, the person hired, search and recruitment channels including the use of job placement services, search and recruitment durations, figures on applicants, hiring difficulties as well as any compromises made. Module 3 is only answered by establishments who have hired at least one new employee in the previous year or have tried to fill an open position.

Modules 1 and 3 are basically the same in each wave, apart from editorial changes and possible shifts in focus. Module 2, however, can change in each wave. Since 2000, it contains employer attitudes and firms' use of current labour market instruments. From 2005 to 2013, the main focus was on the workfare scheme One-Euro-Jobs. During this period, it targeted only those industries in the public sector in which the vast majority of One-Euro Jobs was offered and carried out.

Starting in 2005, short follow-up telephone interviews on the core questions have been conducted among participants of the main survey in the first three quarters of the following year. These quarterly telephone follow-up interviews complement the main survey in the respective 4th quarter. They serve to update the most important data points in module 1, including the number of employees, the assessment of current workforce developments and the number of vacancies. In the 2019 survey wave, additional quarterly follow-up interviews took place in the 4th quarter of 2020 and in the 1st quarter 2021. In the 2021 survey wave, starting with the main survey in the 4th quarter of 2021, an additional quarterly follow-up interview took place in the 4th quarter of 2022.

The data collected in the survey waves from 2000 onwards are available to external researchers via the Research Data Centre (FDZ) of the FEA. The survey waves include the data from all modules including the quarterly follow-up interviews. Since September 2015, all documentation including variable and value labels, data reports and code books, is also available in English.

2.3 Population and sample of the main survey

The population of the main survey in the 4th quarter of every year is all establishments in Germany with at least one employee subject to social security contributions in June (until wave 2004) or December (waves 2005 and later) of the preceding year, excluding private households. "Establishment" is an economic unit according to the establishment identifier concept of the establishment identifier service of the FEA (Bundesagentur für Arbeit, 2020).

A new stratified random sample is drawn every year from this population. It is stratified by region, establishment size category as well as industry, creating a three-dimensional sampling matrix. Table 4 summarizes the stratification variables. During the waves 2005 to 2013, an additional sample was drawn for the public sector in order to collect information on One-Euro-Jobs. Only in the year 2005, another additional sample was drawn to increase the number of observations due to a low response rate. In both cases, the additional samples were drawn only after removing already-drawn establishments from the population.

Table 4: Stratification variables of the gross samples 2000–2022

Variable	Divisions
Region	2000–2003: West Germany including West Berlin, East Germany including East Berlin since 2004: West Germany, East Germany including all of Berlin
Establishment size (Total number of employees)	2000–2003: 1–9, 10–19, 20–49, 50–199, 200–499, 500+ 2004: 1–9, 10–19, 20–49, 50–99, 100–199, 200–499, 500–999, 1000+ 2005–2013: 1–9, 10–19, 20–49, 50–199, 200–499, 500–999, 1000+ since 2014: 1–9, 10–19, 20–49, 50–249, 250–499, 500–999, 1000+
Industry	2000–2002: 22 Industries based on German classification 1973 2003: 14 Industries based on German classification 1973 2004–2009: 28 Industries based on German classification 2003 2010–2014: 23 Industries based on German classification 2008 since 2015: 24 Industries based on German classification 2008

Of the gross sample, all establishments that wish not to be contacted in future waves are removed from the distribution sample, which forms the basis for the response rate stated in Table 5.

All establishments included in the sample are contacted by mail at the beginning of October and are asked to participate in the survey. The postal mailing includes a cover letter, a privacy/data protection statement, paper questionnaire as well as instructions on how to fill out the questionnaire and answers to frequently asked questions. A few weeks later, a second postal mailing with a cover letter reminding recipients to participate is sent out, keeping the same scope and content. Both cover letters include the telephone number of the IAB Job Vacancy Survey hotline that answers any questions that employers might have about the survey and also takes comments. The field phase usually lasts until the beginning of January, while most responses are received between mid-October and the beginning of December.

Table 5: Sample development 2000–2022

Wave	Address file date	Average sampling ratio	Gross sample	Distribution sample	Net sample	Response rate
2000	31-12-1999	1.3%	28,486	28,266	7,578	26.8%
2001	30-06-2000	1.3%	27,994	27,827	7,347	26.4%
2002	30-06-2001	1.3%	27,418	27,147	5,773	21.3%
2003	30-06-2002	1.8%	37,789	37,421	7,310	19.5%
2004	30-06-2003	2.7%	56,926	56,699	11,707	20.6%
2005	31-12-2004	3.9%	78,032	69,702	11,742	16.8%
2006	31-12-2005	3.9%	75,290	69,231	13,537	19.6%
2007	31-12-2006	3.8%	75,128	73,635	14,381	19.5%
2008	31-12-2007	3.8%	77,543	75,035	13,652	18.2%
2009	31-12-2008	3.8%	77,537	74,998	15,288	20.4%
2010	31-12-2009	3.7%	77,739	75,000	15,124	20.2%
2011	31-12-2010	3.6%	77,685	74,660	15,139	20.3%
2012	31-12-2011	3.6%	79,181	75,006	13,807	18.4%
2013	31-12-2012	3.6%	77,214	75,486	14,019	18.6%
2014	31-12-2013	3.6%	76,767	75,073	12,750	17.0%
2015	31-12-2014	3.9%	85,556	83,639	12,852	15.4%
2016	31-12-2015	4.0%	110,140	85,000	11,588	13.6%
2017	31-12-2016	5.1%	120,102	109,988	14,614	13.3%
2018	31-12-2017	5.2%	134,848	109,988	14,528	13.2%
2019	31-12-2018	5.1%	114,613	109,986	13,906	12.6 %
2020	31-12-2019	7.1%	159,979	155,004	20,115	13.0 %
2021	31-12-2020	5.1%	126,418	109,991	12,815	11.7%
2022	31-12-2021	6.2%	146,065	134,991	14,078	10.4%

2.4 Extrapolation procedure of the main survey

Details and background information on the current extrapolation procedure are described in the IAB Research Report No. 4/2016 (Brenzel et al., 2016). To compute the establishment weights, the following steps are taken:

1. Computing the design weights for every cell of the sampling matrix as the inverse of the respective sampling ratio.

2. Multiplication of the design weights with a weight computed from non-response modelling. The latter is based on a logistic regression model using the establishment size category, industry, average daily wage and average employee age from administrative data of the FEA as auxiliary variables. The non-response weight is the inverse of the estimated response propensity.

3. Calibration of the weights from step 2 as the starting weights of a generalized regression estimator (GREG) with the aim of exactly matching the anchor variables “number of establishments” and “number of employees subject to social security contributions” in all cells of the sampling matrix.

As the anchor variable “number of employees subject to social security contributions” has to be estimated for the most recent survey wave (see Hutter, 2020), the calibration procedure is repeated after 18 months based on the updated information on the actual number of employees, resulting

in a revised set of extrapolation weights. The data sets at the Research Data Centre will only contain revised extrapolation weights; as a consequence, every new survey wave is available in the Research Data Centre no earlier than 18 months after the end of the field phase. Previously published results by the IAB in the form of press releases and policy reports usually rely on preliminary weights, which is why they cannot be replicated exactly using the Research Data Centre data based on revised weights; the differences typically lie within the respective 95% confidence interval.

The retrospective application of the new extrapolation procedure on the waves 2000 to 2014 required recoding the different establishment size categories of the original sampling matrices (see Table 4) into a consistent division of six classes of size (1–9, 10–19, 20–49, 50–249, 250–499, 500+). The industry classification in the waves 2000 to 2009 was recoded into consistent 16 classifications of the German classification edition 2003. Between 2010 and 2014, the original sampling matrices already contained the still-current 23 classifications of the German Classification edition 2008. Since 2015, 24 classifications of the German Classification edition 2008 have been used for extrapolation analogous to the sample matrix.

2.5 Sampling and extrapolation of the quarterly follow-up interviews

In each subsequent quarter, establishments are drawn from the participants of the main survey of the 4th quarter. The target number of establishments is 9,000 per quarter. The net sample of the main survey therefore is the gross sample of follow-up interviews of the three subsequent quarters.

For each of the three subsequent quarterly surveys a separate establishment weight is available, comprised of the establishment weight of the main survey in the 4th quarter of the original year and the result of another non-response model for the respective subsequent quarter.

3 Special features of the survey waves

3.1 Survey wave 2022

3.1.1 Reduced cleansing of the data

In previous waves, there were plausibility checks and adjustments for some variables in order to correct bias, for example due to implausible answers. From wave 2022 onwards, the assessment and decision on the plausibility of values and any adjustments to the data are largely the responsibility of the users. Only variables relevant for the extrapolation relating to employment and personnel requirements continue to be corrected.

3.1.2 Modified coding of missings

From wave 2022 onwards, missing values are coded according to the reason for being missing. The coding can be found in Table 6. It should be noted that in the survey waves up to 2022, still no differentiation is made according to the reason for being missing.

Table 6: Coding of missings

Codierung	Grund
`.a`	Not specified
`.b`	Questionnaire break-off
`.k`	Not applicable (filter)
`.l`	Not applicable (design)
`.u`	Inconsistent value
`.v`	Incomplete data (generated variable)
`.w`	Other missings
`.z`	No participation in quarterly survey

3.2 Survey wave 2021

3.2.1 Additional quarterly follow-up interview

Similar to the COVID-19 pandemic in the 2019 survey wave (see Section 3.4.1), the Russian war against Ukraine created the need for up-to-date and short-term information about the establishments' situation. Against this background, the 2021 survey wave was extended by an additional quarterly follow-up interview in the 4th quarter of 2022. A sub-sample of the surveyed establishments from the main survey of the 4th quarter of 2021 was surveyed again by telephone. The 2021 survey wave is therefore a panel survey with a measurement before the start of the Ukraine war and further measurements in the course of 2022, after the start of the war. The quarterly surveys in the 3rd and 4th quarters of 2022 were expanded to include additional questions on how establishments were dealing with the effects of the Ukraine war and on work-related experiences with Ukrainian refugees. The 2021 survey wave, including the additional quarterly survey, is also referred to as "Ukraine Panel".

For the “Ukraine-Panel”, independent, specifically labeled extrapolation weights are provided, analogous to the regular weighting procedure. The weights carry the suffix `_ukraine` and accordingly have the variable names `q421_greggew_ukraine`, `q122_greggew_ukraine`, `q222_greggew_ukraine`, `q322_greggew_ukraine` and `q422_greggew_ukraine`. In the 4th quarter of 2021 and the 1st, 2nd and 3rd quarters of 2022, the weights with the `_ukraine` suffix correspond to the regular extrapolation weights without the suffix. As the follow-up interview in the 4th quarter of 2022 is extraordinary, no regular weight is available for this quarter of the 2021 wave, only the weight with the suffix `_ukraine`. Since the regular 2022 survey wave was also in the field at the same time in the 4th quarter of 2022, the wave identifier (`year`) should be used to identify the additional quarterly survey. This is shown in Table 8.

The analyses reported by the IAB on job vacancies in the 4th quarter of 2022 are based on the 2022 survey wave. The additional quarterly follow-up interview of the 2021 survey wave was not used for this purpose.

3.2.2 Editorial improvements to the English questionnaire

Compared to the previous waves, some changes were made to the English translation of the German questionnaire. These changes only affect the English translation and not the underlying German questionnaire instrument.

3.3 Survey wave 2020

3.3.1 Methodological experiments

The 2020 wave was used to test different options for further developing the survey design with the help of methodological experiments. In the 4th quarter of 2020, three alternative survey modes (sequential web-first mixed-mode design, web-only mode, mail-only mode) were implemented in addition to the previous standard design (concurrent web-mail mixed-mode). While the majority of the gross sample, about 110,000 establishments, was assigned to the previous standard design mode, the alternative survey modes were assigned to approximately 15,000 establishments of the gross sample. Another methodological experiment was implemented within the alternative survey modes to test the effect of an additional reminder letter by mailing such a letter to a subset of establishments. This additional reminder, referred to as the “pre-due-date reminder”, aimed to remind potential participants that the first participation deadline was approaching. Furthermore, an alternative order of individual questions included in the section last case of a new hire, was experimentally tested in the sequential and in the web-only survey mode - exclusively in the web questionnaire. This experiment did not change the wording of the questions. The observations from all experimental groups are part of the regular sample and there are extrapolation weights for all observations. The experimental groups can be identified using the variable `experiment2020`.

In the following quarter, i.e. in the 1st quarter of 2021, the methodological experiments were carried on and the continuation of the self-administered survey modes was tested in the follow-up surveys. For this purpose, the participating establishments of the four survey modes (concurrent web-mail mixed-mode, sequential web-first mixed-mode, web-only and mail-only modes) from

the 4th quarter of 2020 were each divided into two groups of equal size. One group was interviewed by telephone as in previous waves, while the other group was contacted with the same mode design implemented in the 4th quarter. The variable `q121_modus` indicates whether the establishment participated in the survey by telephone, mail or web. In the 2nd and 3rd quarters of 2020, the follow-up survey was conducted exclusively by telephone, as in previous waves.

3.3.2 Requesting consent for linking administrative data

Since the 2020 survey wave, establishments' consent to linking survey data and administrative data is explicitly requested in the questionnaire. For all establishments that have not given consent, there is no possibility of record linkage with administrative data (for further details on data linking see Section 4.5).

3.3.3 Revision of data and weights due to errors in data preparation

Our data quality checks identified errors in the processing of data export from the web questionnaire for individual variables in the 2020 wave. As some of these errors also affected variables relevant for extrapolation, a recalculation of the extrapolation weights was carried out as part of the error correction. After careful consideration, it was decided not to revise the IAB publications using the 2020 wave, as the results based on the corrected data differ only marginally from the published results. All data now published in the FDZ already include the revised extrapolation weights and corrected data. Earlier waves are not affected by the error in the data exports from the web questionnaire.

3.4 Survey wave 2019

3.4.1 Additional quarterly follow-up interviews

The COVID-19 crisis has substantially increased the need for short-term and valid information on job openings and operational management in general. To address this need for information, the 2019 survey wave was extended to include additional quarterly follow-up interviews in the 4th quarter of 2020 and in the 1st quarter of 2021. In these two quarters, a subsample of the surveyed establishments from the 4th quarter of 2019 was surveyed again, as in the regular quarterly follow-up interviews. Thus, the 2019 survey wave represents a panel survey with a measurement prior to the outbreak of the pandemic in the 4th quarter of 2019 and further measurements during the course of the pandemic. Beginning in the 2nd quarter of 2020, all quarterly follow-up interviews were expanded to include additional questions about the impact of the COVID-19 pandemic on establishments. The 2019 survey wave, supplemented by the two additional quarterly follow-up interviews, is also referred to as the "COVID Panel".

Similar to the "Ukraine Panel", independent extrapolation weights are provided for the COVID Panel, analogous to the regular weighting procedure (see Section 4.2). The extrapolation weights for the COVID Panel are specifically labelled. The weights carry the suffix `_covid` and accordingly have the variable names `q419_greggew_covid`, `q120_greggew_covid`, `q220_greggew_covid`, `q320_greggew_covid`, `q420_greggew_covid`, and `q121_greggew_covid`. In 1st, 2nd, and 3rd quarter of 2020, the weights with the `_covid` suffix correspond to the regular extrapolation weights without the suffix. Since the quarterly follow-up

interviews in the 4th quarter of 2020 and in the 1st quarter of 2021 are exceptional and supplementary, no regular weights are available for these two quarters of the 2019 wave, but only the weights with suffix `_covid`. Since the regular 2020 survey wave was in the field at the same time in Q4 2020 and Q1 2021, the wave identifier (`year`) should be used to identify the additional quarterly surveys. This is shown in Table 8.

The analyses reported by the IAB on job vacancies in the 4th quarter of 2020 and in the 1st quarter of 2021 are based on the 2020 survey wave. The additional quarterly follow-up interviews of the 2019 survey wave were not used for this purpose.

3.4.2 Experimental data from the 2019 survey wave

In the 4th quarter of 2019, a survey experiment was implemented in addition to the regular main survey. The experiment was conducted to investigate the effects of additional explanatory information on questions in module 3 on the response behaviour of establishments (for more information on the experimental design and results, see Küfner/Sakshaug/Zins, 2021). For the experiment, a separate sample was drawn and - in contrast to the main survey – a survey using single web mode was conducted. The regular main survey in the 4th quarter of 2019 and all subsequent quarterly follow-up interviews were not part of the experiment and were not affected or influenced by the experiment. The main survey stands on its own and forms the central basis for substantive analyses.

Data from this experimental survey are part of the 2019 annual wave provided to the FDZ. These observations can be identified via the `experiment2019` indicator variable. There are no extrapolation weights available for these experimental observations. Hence, using these observations for weighted analyses is not possible (`q419_greggew == .`). However, the use of the experimental data can provide added value for exploratory and unweighted purposes, for example for investigating the varying response behaviour of establishments, and is therefore available to users at the FDZ. It should be noted that with the exception of the analyses conducted as part of the survey experiment, no additional quality testing of the experimental data took place. Also, it was not investigated to what extent deviations in the survey design have an influence on possible selection effects or measurement effects and thus on the comparability with the main survey. Record linkage with administrative data is not possible (see Section 4.5). Therefore, by default, we recommend excluding these experimental data (`drop if experiment2019 == 1`) for substantive analyses.

3.4.3 Revision due to deviant behaviour of interviewers

In the 2nd quarter of 2021, routine data quality checks identified conspicuous data patterns and time trends. A detailed investigation substantiated the suspicion that one interviewer had systematically manipulated interviews. The interviewer was found to manipulate responses to a filter question, as (s)he conducted a strikingly large fraction of interviews stating that the surveyed establishments had no vacancies. As a result of this falsified information, no further questions had to be asked about the structure of the vacancies, which shortened the survey duration considerably. During the investigation, another interviewer showed deviating behaviour and was identified in the 1st quarter of 2020. All interviews of these two interviewers were - also retrospectively - excluded from the entire 2019 survey wave. The two interviewers did not conduct any interviews in earlier survey waves.

New extrapolation weights were calculated as part of a revision. In addition, all IAB publications and figures published on the website containing observations of the falsified interviews were revised. The data now published in the FDZ exclude the observations of the two interviewers and include the revised extrapolation weights. Data previously published in the FDZ are not affected by the interview falsification. Further information on the detection of the deviant interviewer behaviour, the revision of data, and the improved quality assurance of the telephone interviews are recorded in the FDZ method report by Bossler et al. (2022).

3.5 Survey wave 2016

3.5.1 Vignette study on the effect of the minimum wage level

In the 2nd quarter of 2017, a vignette experimental study was implemented a. This study examined the establishment response to an increase or decrease in the national minimum wage. The two questionnaire variants are documented in the respective code plans. The corresponding data are part of the data set and the level of the specified minimum wage, which varies across the questionnaires, can be taken from the variable `q217_mindestlohn`.

4 Usage notes for users of the data set

4.1 Structure of the data set

Each wave's data are stored in a separate Stata format data file. Each file contains the variables of modules 1, 2 and 3 and, since 2005, the data from the follow-up telephone interviews in the three subsequent quarters. Hence, the files do not contain the four quarters of a calendar year, but instead the data of the 4th quarter plus the subsequent follow-up interviews. This structure is useful as the participants of the follow-up interviews are recruited from the participants of the main survey in the 4th quarter of the respective original year. This creates an unbalanced panel with four data points, while the 2019 and 2021 survey waves have six and five data points, respectively.

With some exceptions (Table 7), all variable names carry a prefix consisting of the number of the respective quarter as well as the year minus 2000. The establishment weight `greggew` (see Section 4.2) is therefore called `q312_greggew` in the 3rd quarter of 2012. Table 8 shows how the quarterly data are allocated to the data files as well as the respective variable name prefixes. The meaning of the variables and their possible values can be found in the variable table as well as the codebooks for each wave on the website of the FDZ under Establishment and Enterprise Data: German Job Vacancy Survey of the IAB – Version 0022 v1. To save space, the variable names in the codebooks do not carry their respective prefixes.

Table 7: Control variables that carry no prefix

Variable name	Meaning
`key`	Anonymized establishment identifier
`jahr`	Survey wave
`hf`	Module 1 (Main questionnaire) filled out
`sf`	Module 2 (Special questionnaire) filled out
`zf`	Module 3 (Additional questionnaire) filled out
`fragebogen`	Combination of `hf`, `zf` and `sf`
`gebiet04`	Region (West/East Germany including all of Berlin)
`bl, bl_agg`	Federal state (NUTS 1), federal state (aggregated)
`wz03_16/wz03_28`	2000–2009: 16/28 industries based on German classification 2003
`wz08_23`	Since 2010: 23 industries based on German classification 2008
`wz08_24`	Since 2015: 24 industries based on German classification 2008
`wz*_3st`	2000-2004: Original industry classification from FEA address file (3 digits)
`wz*_5st`	Since 2005: Original industry classification from FEA address file (5 digits)[1)]
`kreis`	Since 2007: district (NUTS 3)[1)]
`rbezirk`	Since 2005: county (NUTS 2)[1)]
`gesamtausfueller`	Since 2013: respondent is superior unit, not single establishment
`erh_form`	Survey mode (paper &pencil/web or telephone interviews)
`antwort`	Since 2011: Response received by mail or web

1) Sensitive attribute: provided to external users only upon request

Table 8: File names and variable name prefixes

File name	Quarter	Variable name prefix	Wave (year)
iabse_00	4th quarter 2000	q40_	2000
iabse_01	4th quarter 2001	q41_	2001
iabse_02	4th quarter 2002	q42_	2002
iabse_03	4th quarter 2003	q43_	2003
iabse_04	4th quarter 2004	q44_	2004
iabse_05	4th quarter 2005 (main survey)	q45_	2004
	1st quarter 2006 (subsequent follow-up interviews)	q16_	2004
	2nd quarter 2006 (subsequent follow-up interviews)	q26_	2004
	3rd quarter 2006 (subsequent follow-up interviews)	q36_	2004
	(…)		
iabse_19	4th quarter 2019 (main survey)	q419_	2019
	1st quarter 2020 (subsequent follow-up interviews)	q120_	2019
	2nd quarter 2020 (subsequent follow-up interviews)	q220_	2019
	3rd quarter 2020 (subsequent follow-up interviews)	q320_	2019
	4th quarter 2020 (subsequent follow-up interviews – Additional)	q420_	2019
	1st quarter 2021 (subsequent follow-up interviews – Additional)	q121_	2019
iabse_20	4th quarter 2020 (main survey)	q420_	2020
	1st quarter 2021 (subsequent follow-up-interviews)	q121_	2020
	2nd quarter 2021 (subsequent follow-up-interviews)	q221_	2020
	3rd quarter 2021 (subsequent follow-up-interviews)	q321_	2020
iabse_21	4th quarter 2021 (main survey)	q421_	2021
	1st quarter 2022 (subsequent follow-up-interviews)	q122_	2021
	2nd quarter 2022 (subsequent follow-up-interviews)	q222_	2021
	3rd quarter 2022 (subsequent follow-up-interviews)	q322_	2021
	4th quarter 2022 (subsequent follow-up interviews – Additional)	q422_	2021
iabse_22	4th quarter 2022 (main survey)	q422_	2022
	1st quarter 2023 (subsequent follow-up-interviews)	q123_	2022
	2nd quarter 2023 (subsequent follow-up-interviews)	q223_	2022
	3rd quarter 2023 (subsequent follow-up-interviews)	q323_	2022

4.2 Using the sampling weights

For descriptive analyses, the sampling weights must be used to infer the underlying population from the net sample.[1] For regression analyses, sampling weights usually are not used when all stratification variables (see Table 4) are included in the model specification (see Bossler/Geis/Stegmaier, 2018; Winship/Radbill, 1994).

The establishment weight greggew must be used for variables from modules 1and 2, except for questions on the last person hired into a One-Euro-Job. For questions from module 3 on the last new hire, the hiring weight (establishment weight multiplied with the number of new hires, since 2004 with the number of new hires subject to social security contributions) must be used. For questions on the last case of failed recruitment effort, the stopped search weight (establishment weight multiplied with the number of stopped search efforts) must be used. Table 9 summarizes

[1] When using weights in descriptive analyses, analogue unweighted results must always be provided as well. The weighted and the corresponding unweighted result tables must always be listed one directly below the other. This will speed up the check for compliance with data protection laws.

the proper weights for each module. The data from the follow-up telephone interviews in the three subsequent quarters each have their own establishment weight `greggew`, which differs from the main survey's establishment weight by carrying a different quarter-specific variable name prefix. As described in Sections 3.1.1 and 3.3.1, separate extrapolation weights are available for Ukraine and COVID panels.

These weights are sampling weights by nature, so that in STATA, the weight type `pweights` must be specified, requiring the use of commands that support this type (`svyset`, `svy:tabulate`, `regress`). When using the commands `tabulate` (without `svy:`) and `summarize`, the weight type `iweight` can be used as well; this, however, precludes the interpretation of standard errors, for example after chi² tests. If it becomes necessary to test for statistically significant differences between groups during descriptive analyses, the `ttest` command must not be used as it does not allow for any sampling weights. Instead, a univariate regression with the group variable as the sole regressor should be used with the proper weight variable specified in `pweights`, consulting the p-value of the group variable (see STATA example 1) for the significance of the difference between the groups.

Table 9: Correct sampling weight variable by wave and module

Modules	Correct weight variable	
Module 1 and follow-up telephone interviews		`greggew`
Telephone interviews – COVID Panel		`greggew_covid`
Telephone interviews – Ukraine Panel		`greggew_ukraine`
Last new hire	2000-2003: Since 2004:	`greggew*f10` `greggew*f11_04`
The last case of a stopped search effort		`greggew*f422`
Module 2 (except for Last person hired into a One-Euro-job)		`greggew`
Last person hired into a One-Euro-Job		`greggew*p29`

4.3 Questions with multiple responses

At several points in the questionnaire, multiple responses are possible. As it is not clear a priori whether a non-checked box means "no" or is a missing value, checked boxes are encoded as "1" while non-checked boxes are encoded as a missing value (.). In practice, all non-checked boxes of a particular question will usually be recoded into "0" ("no") if at least one box within that item battery has been checked (see STATA example 2).

A few questions allow respondents to check "other" and fill out a free text field. The content of these free text fields is not provided to external researchers to prevent identifying of respondents. Common answers are, however, recoded into a variable with the suffix `u` (German for "Umbuchung", recode), which is provided, and the meaning of which is disclosed in the respective value labels in the (test) data sets.

In case a free text answer already exists as a possible answer in the questionnaire, it is appropriately recoded. That is why for every question that allows responding with "other", each answer's variable

exists twice, once with the original content, and once including such recodes. Variables “including recodes” receive the suffix `iu` (German for “inklusive Umbuchungen”, including recodes). For example, if in the questionnaire on the last new hire, the only search channel chosen is “other search channel”, and the free text field contains “was recommended to us”, the variables receive the values shown in Table 10.

Table 10: Example of recoding a free text answer

Variable name	Label	Value
zf97	Search channel: via own employees/personal contacts	**.** (not checked)
zf9n	Other search channel	1 (checked)
zf9txt*	Other search channel: free text	„was recommended to us“
zf9u	Recoded into…	11 (personal contacts)
zf97iu	Search channel: via own employees/personal contacts (including recodes)	1 (checked or recoded into)
zf9niu	Other search channel	0 (not checked, or recoded from)

* not included in data set at the Research Data Centre

4.4 Classifications of industries and occupations

An establishment’s industry is not asked for in the questionnaire but taken instead from the address file of the FEA during the drawing of the sample. As Table 4 shows, this was done until 2003 according to the German Classification of Economic Activities, 1973 edition 1973 (WZ73), from 2004 to 2009 according to the 2003 edition (WZ03), and from 2010 on according to the 2008 edition (WZ08). The provided data set, however, contains the classification WZ03 from 2000 to 2009 with 16 and 28 classifications (from 2000 to 2003 in recoded form) and classification WZ08 from 2010 on. The FDZ provides the original five-digit codes from the address file of the FEA to external users only upon request.

Several parts of the questionnaire ask respondents to specify occupations. Since determining the proper occupational codes is too much to ask of respondents, the questionnaire instead inquires about occupations in free text, which is coded into two classifications by the survey institute, as shown in Table 11. In a few cases, the responses to the occupation items were too general to find a proper code, requiring the definition of custom codes outside the official classification, which are listed in Table 12.

Table 11: Occupational classifications by wave

Wave	Occupational classification	Variables
Classification 1 (German system)		
2000-2011	German Classification of Occupations 1992 (KldB92), 3-Digit	`c[1-5], bkz[1-3], f418_c[1-5], f423_c[1-5], f424c_[1-5], code, codeab, c430-c432`
Since 2012	German Classification of Occupations 2010 – First Version (KldB2010), 5-Digit	`kb10_*`
Classification 2 (international system)		
2000-2004	None	

Wave	Occupational classification	Variables
2005-2011	International Standard Classification of Occupations, 1988 Edition (ISCO-88)	`isco*, isc1-3, f418isc*, f423isc*, f424isc*, i430-i432`
Since 2012	International Standard Classification of Occupations, 2008 Edition (ISCO-08)	`isco08_*`

Table 12: Supplement of KldB2010 for responses without detailed activity description (n.o.s.)

Category	Code	Label
Technical assistant w/o detailed activity description	99001	Production assistant, production hand, aide
	99002	Factory specialist, technical specialist, journeyman
	99003	Technician, foreman, master craftsman
	99004	Engineer, qualified engineer
	99005	Technical assistant n.o.s.
Commercial assistant w/o detailed activity description	99101	Comm. aides
	99102	Businessman, fund manager
	99103	Business administrator
	99104	MBA
	99105	Commercial assistant n.o.s.
Service assistants w/o detailed activity description	99201	Service staff, supporter, appointment manager
	99202	Service specialist, advisor, inspector, non-teaching staff
	99203	Consultant, temporary employment agency
	99204	Senior consultant
	99205	Service assistants n.o.s.
Managers w/o detailed activity description	99301	(does not occur)
	99302	(does not occur)
	99303	Team manager, managing staff, site manager, department head
	99304	Director, manager, managing director
	99305	Managers n.o.s.
IT assistants w/o detailed activity description	99401	IT staff (requirement level 1)
	99402	IT professional
	99403	IT specialist
	99404	IT expert
	99405	IT profession, IT assistant n.o.s.
Teachers w/o detailed activity description	99501	School assistant
	99502	Qualified teacher
	99503	Teacher
	99504	Lecturer, teacher with a university degree
	99505	Teacher n.o.s.
Workers in training w/o detailed activity description	99611	Trainee
	99621	Intern/volunteer
	99691	Other workers in training
Workers w/o detailed activity description	99901	Helper, temporary assistant, semi-skilled employee, unskilled worker
	99902	Professional, worker, assistant
	99903	Specialist
	99904	Expert
	99905	Workers n.o.s.

4.5 Linkage to other data

4.5.1 Linkage to BHP

Starting in the 4th quarter of 2010, all variables of the Establishment History Panel, version BHP 7523 v1, are available with the exception of the extension file on bankruptcies. From version IAB-SE 0022 v1 onward, a basic establishment file is provided as standard. Sensitive characteristics and other establishment characteristics in variable blocks as well as extension modules must be requested and justified separately.

In the survey waves 2010 to 2019, by participating in the survey, establishments automatically gave consent for the survey data to be linked to the administrative data from the FEA. The data protection declarations pointed this out to the establishments. Starting with the 2020 survey wave, consent to linking survey data and administrative data has been explicitly requested in the questionnaire. Based on scientific research to achieve a high level of consent (see Sakshaug/Vicari, 2018), this question is asked at the beginning of the questionnaire in order to keep the analysis potential of the linked data as high as possible. For all establishments without explicit consent, there is no possibility to link survey data with administrative data. Accordingly, no linkage of the IAB Job Vacancy Survey with the Establishment History Panel is provided.

The BHP extension data sets are named as follows:

Table 13: Filenames of the BHP administrative data sets for record linkage

Filename	Content
`iabse_0022_v1_bhp_7523_m06_v1_Basis`	BHP Basic Establishment File

`iabse_0022_v1_bhp_7523_m06_v1_1975`
…
`iabse_0022_v1_bhp_7523_m06_v1_2023`
	BHP variable blocks in yearly data

`iabse_0022_v1_bhp_7523_m06_inflow_v1` `iabse_0022_v1_bhp_7523_m06_outflow_1`	BHP extension „worker flows“
`iabse_0022_v1_bhp_7523_m06_entry_v1` `iabse_0022_v1_bhp_7523_m06_exit_v1`	BHP extension „establishment dynamics“

Please note the following points when using the data:

1. The survey and administrative data must be linked using the variable `key`, which is unique across all waves. The original establishment identifier `betnr` is not included in the BHP version provided for linkage with the IAB Job Vacancy Survey.
2. Record linkage was not possible at all for a small number of establishments that have responded for a larger unit than the establishment. For the same reason, a few `key`s have record-linked data that cannot be interpreted sensibly; they can be identified by the variable `gesamtausfueller` having a value of “1”.
3. In the 2010-2019 waves, the privacy statement sent to all establishments invited to participate was worded in such a way that participation in the survey implies consent to record linkage. With the exception of the establishments mentioned in number 2, linking is thus possible for all establishments in these survey waves. Since the 2020 wave, the explicit consent of the establishments is obtained in the questionnaire.

4. The Variable `jahr` in the BHP data sets describes the year of the BHP variables' measurement. The survey wave in which the respective establishment has responded can be identified using the additional variable `SE_jahr`.
5. Large deviations in establishment size between survey and administrative data are expected in a few cases, for example because respondents provided information on the entire company instead of just the establishment, without stating it.
6. If the sensitive variables `kreis` (IAB-SE) / `ao_kreis` (BHP) or `wz*_5st` (IAB_SE) / `w*_5` (BHP) have been requested, please note that when comparing survey and administrative data, those particular variables are measured at the time of sampling, which is one year before the field phase (see Table 5). In addition, the district information in the survey data reflects the district numbers that were valid at the time of sampling, while the district numbers in the BHP data are the ones that are valid as of 31st December 2023.

The following basic characteristics are provided as standard within the BHP Basic Establishment File:

Basic characteristics

- Serial Number (key)
- Wave of the IAB Job Vacancy Survey (SE_jahr)
- Wave of the BHP (jahr)
- Classification of Economic Activities 1973, 3-digit code (w73_3)
- Classification of Economic Activities 1993, 3-digit code (w93_3)
- Classification of Economic Activities 2003, 3-digit code (w03_3)
- Classification of Economic Activities 2008, 3-digit code (w08_3)
- Time-consistent industry codes, 3-digit (w73_3_gen, w93_3_gen, w08_3_gen) and information on the type of imputation (group_w73_3, group_w93_3, group_w08_3)
- Year of first appearance (grd_jahr)
- Year of last appearance (lzt_jahr)
- Total number of employees (az_ges)
- Total number of full-time employees (az_vz)
- Number of marginal part-time workers (az_gf)
- Mean imputed wage (gross average daily wage) for all full-time employees (te_imp_mw)
- Place of work: federal state (Bundesland) (ao_bula)

The following sensitive characteristics can be provided upon justified request:

Sensitive characteristics

- Classification of Economic Activities 1993, 5-digit code (w93_5)
- Classification of Economic Activities 2003, 5-digit code (w03_5)
- Classification of Economic Activities 2008, 5-digit code (w08_5)
- Place of work: district code (ao_kreis)

In addition to this, the provision of further characteristics within variable blocks in a yearly form is possible upon justification. The same holds for the provision of the extension modules “worker flows” and “establishment dynamics”. The justification of the necessity for achieving the research goals must be done separately for each variable block or extension module. The variable blocks and extension modules contain the following characteristics:

BHP variable blocks (annual waves):

- General employment structure (az_f az_reg az_azubi az_atz az_tz az_f_vz az_f_tz az_reg_vz)
- Structure of employees by educational and vocational qualifications (az_gq az_mq az_hq az_gq_vz az_mq_vz az_hq_vz)
- Employee age structure (az_15_19 az_15_19_vz az_20_24 az_20_24_vz az_25_29 az_25_29_vz az_30_34 az_30_34_vz az_35_39 az_35_39_vz az_40_44 az_40_44_vz az_45_49 az_45_49_vz az_50_54 az_50_54_vz az_55_59 az_55_59_vz az_60_64 az_60_64_vz az_ab65 az_ab65_vz alter_mw alter_mw_vz)
- Research and development activities (az_ingnat)
- Number of employees with non-standard job types (az_leih az_bfr)
- Structure of employees by nationality (az_d az_d_vz az_eu)
- Structure of employees by Blossfeld occupational group (az_bf_agr az_bf_emb az_bf_edi az_bf_evb az_bf_qmb az_bf_qdi az_bf_qvb az_bf_tec az_bf_semi az_bf_ing az_bf_prof az_bf_man)
- Structure of employees by level of requirement (az_niv1 az_niv2 az_niv3 az_niv4)
- Wage structure of full-time employees (az_zens te_imp_med te_imp_p25 te_imp_p75 te_imp_mw_f te_imp_med_f te_imp_med_m te_imp_mw_gq te_imp_med_gq te_imp_mw_mq te_imp_med_mq te_imp_mw_hq te_imp_med_hq te_imp_med_uq te_imp_mw_d te_imp_med_d te_imp_med_a te_imp_sum)

BHP extension modules

- Worker flows (ein_ges ein_f ein_reg ein_gf ein_azubi ein_vz ein_tz ein_f_vz ein_f_tz ein_reg_vz ein_wdr ein_wdr_f ein_bw ein_bw_f ein_bf_agr ein_bf_emb ein_bf_edi ein_bf_evb ein_bf_qmb ein_bf_qdi ein_bf_qvb ein_bf_tec ein_bf_semi ein_bf_ing ein_bf_prof ein_bf_man ein_15_19 ein_20_24 ein_25_29 ein_30_34 ein_35_39 ein_40_44 ein_45_49 ein_50_54 ein_55_59 ein_60_64 ein_ab65 aus_ges aus_f aus_reg aus_gf aus_azubi aus_vz aus_tz aus_f_vz aus_f_tz aus_reg_vz aus_temp aus_temp_f aus_bw aus_bw_f aus_bf_agr aus_bf_emb aus_bf_edi aus_bf_evb aus_bf_qmb aus_bf_qdi aus_bf_qvb aus_bf_tec aus_bf_semi aus_bf_ing aus_bf_prof aus_bf_man aus_15_19 aus_20_24 aus_25_29 aus_30_34 aus_35_39 aus_40_44 aus_45_49 aus_50_54 aus_55_59 aus_60_64 aus_ab65 aus_senio_1 aus_senio_2 aus_senio_3)
- Establishment dynamics (eintritt besch inflow besch_vor status_vor austritt besch outflow besch_nach status_nach)

4.5.2 Further linkage possibilities

It is possible to link the last case of a new hire from the IAB Job Vacancy Survey with the administrative process data of the hired individuals (IABSE-ADIAB). The linkage is currently available for the period 2010-2020. The personal data follow the "Sample of Integrated Labor Market Biographies (SIAB)" in scope and logic. Further information can be found in the FDZ Data Report 01/2023 (Lochner, 2023). The Job Vacancy Survey data can be linked using a unique key. The hired persons specified in the survey are identified in the process data using a “matching algorithm”, which is described in a separate methodology report (Lochner 2019). To additionally receive the IABSE-ADIAB data, they must be explicitly selected when requesting the data, and their use must be justified.

It is also possible to link establishment-specific wage effects (AKM effects) to the IAB Job Vacancy Survey. Further information can be found in the FDZ Method Report 03/2025 (Lochner/Wolter, 2025). The linkage is available for all waves of the IAB Job Vacancy Survey. Add-ons can be requested informally as a supplement to the project by sending an email to iab.fdz@iab.de.[2]

[2] The corresponding file and variable names are: iabse_0022_v1_akm_estab_8523_v1.dta (feff_1985_1992 feff_1993_2000 feff_2001_2008 feff_2009_2016 feff_2017_2023).

4.6 Stata examples

4.6.1 Time series of vacancies

```
/* Display a time series of vacancies from the year 2000 until the most recent

       quarter, with confidence intervals */

capture log close
log using ${log}/05a_STATABeispiel1_en,text replace
set more off

// Loop over every survey wave
forvalues Wave=2000/2022 {
       local WaveShort =strofreal(`Wave'-2000,"%02.0f")
       quietly use ${orig}/iabse_`WaveShort',clear
       quietly label language en

       /*Exclusion of experimental data */
       if `Wave' ==2019 {
              drop if experiment2019 ==1 & jahr == 2019
       }

       // Identify number of quartals
       if `Wave' <2005 {
              local Quartale 4
       }
       else {
              local Quartale 4 1 2 3
       }

       // Loop over every quarter within this survey wave
       foreach Quartal of local Quartale {
              // Form quarter-specific variable prefix
              if `Quartal' ==4 {
                     local Year =`Wave'
              }
              else {
                     local Year =`Wave' +1
              }
              local YearShort =`Year' -2000
              local Prefix q`Quartal'`YearShort'

              quietly {
              // Missing value means zero vacancies
              replace `Prefix'_f20 =0 if `Prefix'_f20 ==.
              replace `Prefix'_f40 =0 if `Prefix'_f40 ==.

              // Sum of positions to be filled immediately and later
              generate `Prefix'_Vacancies =`Prefix'_f20 +`Prefix'_f40

              // Compute extrapolated number of vacancies including 95%
              // confidence intervals, by computing the weighted mean
              // multiplied with the weighted number of firms
              mean `Prefix'_Vacancies [pweight =`Prefix'_greggew]
              matrix Result =r(table)
              quietly summarize `Prefix'_greggew
              local Firms =r(sum)
              local b        =Result[1,1] *`Firms'
              local ll =Result[5,1] *`Firms'
              local ul =Result[6,1] *`Firms'
              } // quietly

              // Display one list of results
              display as text "Vacancies in quarter " as result `Quartal' as text "
of " as result `Year' as text ": "_
              display as result %7.0f `b' as text ", 95% confidence interval: [" as
result %7.0f `ll' "; " %7.0f `ul' as text "]"
       }
}
log close
```

4.6.2 Tabulating a multi-response question

```
/* Tabulate the share of difficult hirings and the reasons for the difficulty */

capture log close
log using "${log}/05b_STATABeispiel2_en.log",text replace
set more off

use ${orig}/iabse_22,clear

/*Exclusion of experimental data */
capture drop if experiment2019 ==1

label language en

/* Create hiring weight */
generate gregneu = q422_greggew*q422_f11_04

/* Weight for all subsequent tabulations */
svyset [pweight=gregneu]

/* Share of difficult hirings */
svy: tabulate q422_zf8

/* If a reason was checked, recode all non-checked reasons as "no",
 therwise keep them on "missing" */
generate byte answered_zf8reason = q422_zf8a==1 | q422_zf8b1==1 | ///
q422_zf8c1==1 | q422_zf8e==1 | q422_zf8f==1
foreach var of varlist q422_zf8a q422_zf8b1 q422_zf8c1 q422_zf8e q422_zf8f {
       replace `var'=0 if `var'==. & answered_zf8reason==1
}

/* Make sure that a reason was checked only for difficult hirings */
assert answered_zf8reason == 0 if q422_zf8 != 1

/* Print reasons one after the other */
foreach var of varlist q422_zf8a q422_zf8b1 q422_zf8c1 q422_zf8e q422_zf8f {
       svy: tabulate `var' if answered_zf8reason
}
log close
```

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