

# DeZIM.panel

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### Method & Data Report

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## Inhalt

1	Introduction .....	1
2	Overview .....	2
3	Survey instruments .....	5
4	Field phase .....	7
4.1	Field phases .....	7
4.2	Survey Duration .....	9
5	Population and response .....	9
5.1	Population .....	9
5.1.1	Initial recruitment sample 2021 (aw0) .....	10
5.1.2	Extension recruitment sample 2023 (dw0) .....	10
5.2	Response rates .....	11
5.2.1	Return bw1 .....	12
5.2.2	Return bs1 .....	13
5.2.3	Return bw2 .....	14
5.2.4	Return bw3 .....	15
5.2.5	Return bw4 .....	16
5.2.6	Return cw1 .....	17
5.2.7	Return cw2 .....	18
5.2.8	Return cw3 .....	19
5.2.9	Return cw4 .....	20
5.2.10	Return dw1 .....	21
5.2.11	Return dw2 .....	22
5.2.12	Return dw3 .....	23
5.2.13	Return ds1 .....	24
5.2.14	Return dw4 .....	25
5.3	Weighting .....	26

6	Data curation and anonymization.....	28
6.1	Editions of scientific use files (SUF) and data access .....	28
6.2	Data structure .....	29
6.3	Survey wave naming scheme .....	29
6.4	Variable naming scheme .....	30
6.5	Open coded variables.....	31
6.6	Aggregated and ex-post coded variables ("_g").....	31
6.7	Versionized ("_v") and harmonized ("_h") variables .....	31
6.8	Example: Versionizing, harmonization, aggregation.....	32
6.9	Missing conventions.....	33
6.10	Using notes command in Stata.....	36
	Literature .....	38

## List of tables

Table 1:	Project overview .....	2
Table 2:	Core modules across waves and survey period .....	8
Table 3:	Survey duration by wave (in minutes) .....	9
Table 4:	Return bw1 after delivery .....	12
Table 5:	Return bw1 according to overrepresented groups .....	12
Table 6:	Return bs1 after delivery .....	13
Table 7:	Return bs1 according to overrepresented groups.....	13
Table 8:	Return bw2 after delivery .....	14
Table 9:	Return bw2 according to overrepresented groups .....	14
Table 10:	Return bw3 after delivery .....	15
Table 11:	Return bw3 according to overrepresented groups .....	15
Table 12:	Return bw4 after delivery .....	16
Table 13:	Return bw4 according to overrepresented groups .....	16
Table 14:	Return cw1 after delivery .....	17
Table 15:	Return cw1 according to overrepresented groups.....	17
Table 16:	Return cw2 after delivery .....	18
Table 17:	Return cw2 according to overrepresented groups.....	18

Table 18: Return cw3 after delivery .....	19
Table 19: Return cw3 according to overrepresented groups.....	19
Table 20: Return cw4 after delivery .....	20
Table 21: Return cw4 according to overrepresented groups.....	20
Table 22: Return dw1 after delivery.....	21
Table 23: Return dw1 according to overrepresented groups .....	21
Table 24: Return dw2 after delivery.....	22
Table 25: Return dw2 according to overrepresented groups .....	22
Table 26: Return dw3 after delivery.....	23
Table 27: Return dw3 according to overrepresented groups .....	23
Table 28: Return ds1 after delivery.....	24
Table 29: Return ds1 according to overrepresented groups.....	24
Table 30: Return dw4 after delivery.....	25
Table 31: Return dw4 according to overrepresented groups .....	25
Table 32: Comparison of unweighted cell percentages by gender, education, and age group.....	27
Table 33: Missing codes.....	34

## 1 Introduction

To better reflect the post-migrant society in Germany, the DeZIM.panel was set up in 2021, which allows a representative, longitudinal survey of the population (Dollmann et al. 2022). The DeZIM.panel is a survey infrastructure recruited by letter that can be used to determine current moods and trends among people of full age (born 2004 or earlier) living in Germany. For this purpose, people without a migration history as well as people with a migration history are interviewed. The latter groups are overrepresented in the DeZIM.panel, especially people from Turkey, from other Muslim-majority countries, from states with which West Germany concluded recruitment agreements between 1955 and 1973, from the former USSR and Romania as well as the descendants of these people. As a result, the DeZIM.panel provides enough cases for comparisons and analyses within these groups – making it a unique infrastructure in the German survey landscape. As a multi-topic online access panel, the DeZIM.panel aims to track the impact of external events as well as short- and long-term changes in public opinion, with a particular focus on immigrants and their descendants. In this way, developments can be recorded, and data can be provided that is of particular interest to researchers in the fields of integration, migration, and racism. Integration indicators, experiences of discrimination, xenophobic and racist attitudes as well as national and ethnic identities are recorded as part of the respective surveys.

The DeZIM.panel data is prepared, anonymized, and documented within the framework of the DeZIM.fdz, the research data center of the DeZIM Institute. This data is made available as Scientific Use Files (SUF) for the scientific community to facilitate scientific data reuse. The SUF are offered via various access methods: via download, via remote access and on-site on the premises of the DeZIM Institute. Access to DeZIM data is regulated by law. The prerequisites for using a SUF are a scientific research purpose, employment at a scientific institution and the conclusion of a data usage contract. In addition to the data sets, documentation materials for the data sets are provided.

In the following chapter, the central data and working modalities of the studies are summarized in tabular form. The survey instruments used are discussed in chapter three, the field phases in chapter four and the population, response, and the weighting concept in chapter five. A description of the individual steps of data preparation and anonymization can be found in chapter six.

## 2 Overview

For orientation, the report is preceded by a brief overview of the most important data and working modalities of the study. The current data release contains data from the recruitment waves, the regular waves and additional short surveys.<sup>1</sup>

In total, two recruitment waves were realized by infas. The first recruitment sample (aw0) targeted people born between 1954 and 2004. The sampling and execution was conducted in 2021, a sample of 9,168 participants was realized. The second recruitment wave (dw0) was designed as complementary extension sample to the first recruitment wave, to cover the whole adult population in Germany. As a result, elderly people born earlier than 1954 were targeted. The second recruitment wave was conducted in 2023 and a sample of 2,547 people was realized. For further information, please refer to chapter 5.1 and the data and method reports provided by infas (Ruland and Sandbrink, 2022; Link et al., 2024), available in German only.

After the initial recruitment, regular waves were conducted every three months. The last wave included in the data set being dw4 (12<sup>th</sup> wave). Participants of the first recruitment wave were invited to all regular waves, participants of the second recruitment wave were invited to the regular waves starting with dw2 (10<sup>th</sup> wave).

Additional to the regular waves, two short surveys were conducted. The first short survey (bs1) was conducted in spring 2022 to measure reactions to the war in Ukraine. The second short survey (ds1) was conducted in autumn 2024, to measure reactions to the state elections in Saxony and Thuringia.

**Table 1: Project overview**

Title	DeZIM.panel - Recruitment waves, regular waves and short surveys
Responsible institution	DeZIM Institute
Survey institute	DeZIM Institute
Funding	Federal Ministry from Family Affairs, Senior Citizens, Women and Youth (BMFSFJ)
Population	All persons of full age living in Germany, with or without a migration history, with an oversampling of people from Turkey and from other majority Muslim countries, from states with guest worker agreements and re-settlers from the East.
Survey method	Recruitment waves by infas, CAWI or PAPI Regular waves and short surveys, CAWI via Tivian EFS
Survey period	aw0: 12.03.2021 – 05.09.2021 dw0: 23.12.2022 – 24.11.2023 bw1: 24.11.2021 – 31.03.2022 bs1: 28.02.2022 – 07.03.2022 bw2: 31.03.2022 – 28.06.2022 bw3: 27.06.2022 – 15.09.2022 bw4: 26.09.2022 – 31.12.2022

<sup>1</sup> Please note: We use wave abbreviations to refer to the waves. See section 6.3 for an explanation of the wave abbreviations.

	cw1: 12.12.2022 – 28.03.2023
	cw2: 28.03.2023 – 18.06.2023
	cw3: 19.06.2023 – 11.09.2023
	cw4: 18.09.2023 – 08.12.2023
	dw1: 11.12.2023 – 07.03.2024
	dw2: 18.03.2024 – 18.06.2024
	dw3: 24.06.2024 – 26.08.2024
	ds1: 29.08.2024 – 15.09.2024
	dw4: 16.09.2024 – 25.11.2024
Gross sample (“Einsatzstichprobe”):	$n_{\text{wave aw0}} = 6,719$
Panel-ready individuals <sup>2</sup>	$n_{\text{wave dw0}} = 1,075$
	$n_{\text{wave bw1}} = 6,719$
	$n_{\text{wave bs1}} = 4,855$
	$n_{\text{wave bw2}} = 6,655$
	$n_{\text{wave bw3}} = 6,557$
	$n_{\text{wave bw4}} = 6,523$
	$n_{\text{wave cw1}} = 6,500$
	$n_{\text{wave cw2}} = 6,439$
	$n_{\text{wave cw3}} = 6,368$
	$n_{\text{wave cw4}} = 6,293$
	$n_{\text{wave dw1}} = 6,326$
	$n_{\text{wave dw2}} = 7,360$
	$n_{\text{wave dw3}} = 7,307$
	$n_{\text{wave ds1}} = 5,962$
	$n_{\text{wave dw4}} = 7,236$
Realized interviews <sup>3</sup>	$n_{\text{wave aw0, finished}} = 9,168$ ( $n = 6,719$ gave panel consent)
	$n_{\text{wave dw0, finished}} = 2,547$ ( $n = 1,075$ gave panel consent)
	$n_{\text{wave bw1, finished}} = 3,686$ ; $n_{\text{wave bw1, interrupted}} = 99$
	$n_{\text{wave bs1, finished}} = 2,626$ ; $n_{\text{wave bs1, interrupted}} = 38$
	$n_{\text{wave bw2, finished}} = 3,571$ ; $n_{\text{wave bw2, interrupted}} = 126$
	$n_{\text{wave bw3, finished}} = 3,698$ ; $n_{\text{wave bw3, interrupted}} = 39$
	$n_{\text{wave bw4, finished}} = 3,608$ ; $n_{\text{wave bw4, interrupted}} = 28$
	$n_{\text{wave cw1, finished}} = 3,677$ ; $n_{\text{wave cw1, interrupted}} = 43$
	$n_{\text{wave cw2, finished}} = 3,598$ ; $n_{\text{wave cw2, interrupted}} = 86$
	$n_{\text{wave cw3, finished}} = 3,584$ ; $n_{\text{wave cw3, interrupted}} = 37$
	$n_{\text{wave cw4, finished}} = 3,530$ ; $n_{\text{wave cw4, interrupted}} = 44$

<sup>2</sup> The gross and net samples differ in part from the previous releases due to a revised data processing procedure.

<sup>3</sup> For the recruitment waves, the possibility of interrupted interviews was not considered.



	<p><math>n_{\text{wave dw1, finished}} = 3,675</math>; <math>n_{\text{wave dw1, interrupted}} = 60</math></p> <p><math>n_{\text{wave dw2, finished}} = 3,913</math>; <math>n_{\text{wave dw2, interrupted}} = 84</math></p> <p><math>n_{\text{wave dw3, finished}} = 3,808</math>; <math>n_{\text{wave dw3, interrupted}} = 41</math></p> <p><math>n_{\text{wave ds1, finished}} = 2,740</math>; <math>n_{\text{wave ds1, interrupted}} = 36</math></p> <p><math>n_{\text{wave dw4, finished}} = 3,892</math>; <math>n_{\text{wave dw4, interrupted}} = 60</math></p>
Survey duration (only finished)	<p>bw1: 22 minutes (median), 26 minutes (mean)</p> <p>bs1: 8 minutes (median), 10 minutes (mean)</p> <p>bw2: 27 minutes (median), 32 minutes (mean)</p> <p>bw3: 18 minutes (median), 21 minutes (mean)</p> <p>bw4: 17 minutes (median), 20 minutes (mean)</p> <p>cw1: 23 minutes (median), 26 minutes (mean)</p> <p>cw2: 27 minutes (median), 32 minutes (mean)</p> <p>cw3: 19 minutes (median), 22 minutes (mean)</p> <p>cw4: 21 minutes (median), 25 minutes (mean)</p> <p>dw1: 26 minutes (median), 30 minutes (mean)</p> <p>dw2: 23 minutes (median), 28 minutes (mean)</p> <p>dw3: 18 minutes (median), 21 minutes (mean)</p> <p>ds1: 11 minutes (median), 13 minutes (mean)</p> <p>dw4: 25 minutes (median), 28 minutes (mean)</p>
Survey languages	<p>Recruitment waves:</p> <p>aw0 (CAWI): German, English, Russian, Turkish, Arabic</p> <p>aw0 (PAPI): German</p> <p>dw0 (CAWI): German, Greek, Italian, Spanish, Turkish</p> <p>dw0 (PAPI): German, German-Greek, German-Italian, German-Spanish, German-Turkish</p> <p>Regular waves:</p> <p>bw1 – cw3: German, English, Russian, Turkish, Arabic, Portuguese</p> <p>cw4 – dw4: German, English, Russian, Turkish, Arabic</p> <p>Short surveys:</p> <p>bs1: German, English</p> <p>ds1: German, English, Russian, Turkish, Arabic</p>
Citation of data	<p>Dollmann, Jörg; Jacobsen, Jannes; Lietz, Almuth; Schmälzle, Michaela; Siegel, Madeleine; Zimmermann, Stefan; Köhler, Jonas; Boerschmann, Vivian; Mayer, Sabrina J.; Chouaibi, Doreen; Kalter, Frank (2025): DeZIM.panel Data Release 5.0.0. Dataset. Version: 5.0.0. Berlin: Deutsches Zentrum für Integrations- und Migrationsforschung (DeZIM).</p>

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	10.34882/dezim.panel.onsite.5.0.0

### 3 Survey instruments

The questionnaire development is coordinated by the team of the DeZIM panel. The questionnaires mostly feature standardized instruments, with questionnaires adopted to the specific requirements of recruitment waves, regular waves and short surveys.

The questionnaire of each **recruitment wave** (aw0, dw0) focuses on sociodemographic variables, to provide a broad range of variables for weighting and data analysis for the whole sample. The questionnaires were made available to participants in online (CAWI) and paper (PAPI) mode by infas.

All **regular waves** are conducted as online surveys by the team of the DeZIM.panel. The questionnaire of each regular wave contains four different parts differing in their intent and potential for data analysis. The first part consists of survey instruments measuring subjective well-being and the assessment of the individual life situation. Those questions are asked in the same way in every regular wave, which offers possibilities to track developments over time in panel perspective.

The second part consists of recurring core modules, of which each is asked once per year. The topics of the core modules are political institutions, political attitudes and political behaviour (Module 1), social values and attitudes (Module 2), health and well-being (Module 3) and work, education and experiences of discrimination (Module 4). Table 2 shows which core module was surveyed in which wave. The general idea of the recurring core modules is to cover central constructs from various thematic areas that are of interest to a variety of researchers as independent variables, moderators, or dependent variables. Since each core module generally contains the same questions in each year, these instruments provide various possibilities for panel analysis. All questions were either taken from other established surveys or tested in advance and are generally asked to the entire panel. The core modules and questions on current topics are curated by the DeZIM.panel team in consultation with the scientific departments of the DeZIM Institute.

The third part consists of survey instruments admitted by employees of the DeZIM Institute, the DeZIM Research Community and the BMFSFJ (Federal Ministry from Family Affairs, Senior Citizens, Women and Youth), who can submit suggestions and thus have the opportunity to collect cross-sectional and longitudinal data. In contrast to the recurring modules, these questions can be based on current (political) events. If possible, also those questions should be asked to the entire panel and should have been tested in advance.

The fourth part of the questionnaire consists of questions covering current topics, for example elections, engagement for Ukrainian refugees or the impact of rising inflation. The questions are developed by the DeZIM.panel team.

**Short surveys** focus on a specific event, thus most of the survey time is dedicated to questions for the specific topic and research focus.<sup>4</sup>

The questionnaires of all recruitment waves, regular waves and short surveys can be found in the documentation. The translated questions and answer options of all regular waves and short surveys can be found in the codebook.

All questionnaires are initially created in German and then translated into other languages. The regular waves are translated into English, Arabic, Russian, and Turkish. Additionally, regular waves were translated into Portuguese up to wave cw3. However, since only a small number of participants made use of the Portuguese version, the translation was subsequently discontinued. The short survey, which aimed to measure reactions to the war in Ukraine (bs1), was only translated into English due to the short preparation time for this survey. The questionnaire of the second recruitment wave was translated into Greek, Italian, Spanish and Turkish, due to the specific target population of elderly migrants in Germany. To guarantee the quality of the survey translations, the initial translation is reviewed by a second translator.

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<sup>4</sup> Some of the questions of the short survey to measure reactions to the war in Ukraine (bs1) were included in the Consortium for the Social, Behavioural, Educational and Economic Sciences's standard questionnaire for collecting socio-demographic and crisis-related variables (RatSWD 2023).

## 4 Field phase

### 4.1 Field phases

The field phases of all regular waves and short surveys are managed by the team of the DeZIM.panel. The recruitment waves were conducted by infas. The sampling process of the recruitment waves is described in detail in the method and data reports of aw0 (Ruland and Sandbrink, 2022) and dw0 (Link et al., 2024). An overview of all field phases can be found in Table 2. In this chapter, the field phases are described in detail for the regular waves and short surveys.

For regular waves, all participants are invited, who

- confirmed their willingness to participate in a panel survey in a recruitment wave,
- did not unsubscribe from the panel survey,
- have a valid email address or postal address.

Those invited by email receive up to six reminders in addition to the initial invitation. People who did not provide an email address or provided an incorrect email address in the recruitment wave are invited to the online survey by letter with a link to the survey and receive another postal reminder letter. Participants invited online are informed that the field phase ends on a specific date, normally around six weeks after the first invitation. No end of the field phase is communicated to participants invited by letter. All responses received up to the start of field phase of the next wave are included in the dataset resulting in field phase of around 3 months.

All participants receive an incentive after participation (postpaid) in the form of a voucher (Amazon, Zalando, buecher.de, Goodbuy) worth of €10. Starting with bw2, it is possible to have the €10 transferred to a provided bank account.

At the end of the field phase, respondents are additionally motivated to take part in the survey by a raffle. During each raffle week, from Monday to Friday, one person is randomly drawn from all those who have completed the survey up to that point. The winner is awarded with €200 in the form of a desired voucher or bank transfer.

In case of short surveys, different conditions apply for the field phase. For the first short survey about reactions to the war in Ukraine (bs1), only participants were invited, we could contact via email. Following the initial invitation, one reminder was sent. As incentive for their participation, a raffle of 20 x €100 vouchers for [wunschgutschein.de](https://wunschgutschein.de) was conducted.

For the second short survey on reactions to the state elections in Saxony and Thuringia, only participants who could be contacted via email were invited. In this short survey, all invited participants were assigned to one

of two groups. The goal of the split design was to measure the effect of the election results on variables such as mental health, emigration intentions and political engagement. The first group was invited three days before the election (29<sup>th</sup> September 2024). The second group was invited on the election day (1<sup>st</sup> September 2024), after the first exit polls were published at 6.15 p.m. Two days after the initial invitation, a reminder was sent to each group. Participants who completed the survey received a €5 postpaid incentive, which could be redeemed either as an Amazon voucher or via bank transfer.

**Table 2: Core modules across waves and survey period**

Wave	Field phase	Postal invitation	Postal Reminder	Core Module
aw0	12.03.2021 – 05.09.2021			Sociodemographics
dw0	23.12.2022 - 24.11.2023			Sociodemographics
bw1	24.11.2021 – 31.03.2022	08.12.2021	13.01.2022	Politics
bs1	28.02.2022 – 07.03.2022	--	--	Reactions to the war in Ukraine
bw2	31.03.2022 – 28.06.2022	05.04.2022	09.05.2022	Attitudes & Values
bw3	27.06.2022 – 15.09.2022	01.07.2022	27.07.2022	Health & Well-being
bw4	26.09.2022 – 31.12.2022	06.10.2022	26.10.2022	Work, Education & Experiences of Discrimination
cw1	12.12.2022 – 28.03.2023	15.12.2022	18.01.2023	Politics
cw2	28.03.2023 – 18.06.2023	31.03.2023	02.05.2023	Attitudes & Values
cw3	19.06.2023 – 11.09.2023	19.06.2023	30.08.2023 <sup>5</sup>	Health & Well-being
cw4	18.09.2023 – 08.12.2023	28.09.2023	23.10.2023	Work, Education & Experiences of Discrimination
dw1	11.12.2023 – 07.03.2024	18.12.2023	24.01.2024	Politics
dw2	18.03.2024 – 18.06.2024	29.03.2024	06.05.2024	Attitudes & Values
dw3	24.06.2024 – 26.08.2024	01.07.2024	29.07.2024	Health & Well-being
ds1	29.08.2024 – 15.09.2024	--	--	State elections Sachsen / Thüringen
dw4	16.09.2024 – 25.11.2024	16.09.2024	17.10.2024	Work, Education & Experiences of Discrimination

<sup>5</sup> Due to a technical error, the postal reminder was sent out later than in other waves. As participants were still able to take part until the field start of the following wave (18.09.2023), this had no effect on the opportunity to take part.

## 4.2 Survey Duration

An estimate of the average survey duration is announced in the first email invitation and on the welcome page of the questionnaire. As far as the actual interview duration is concerned, Table 3 shows the arithmetic mean, the standard deviation, the median as well as the interquartile range (IQR). The median is always slightly below the arithmetic mean. As mentioned previously, wave bs1 is a short survey, i.e. it was designed to be substantially shorter than the regular waves. Table 3 also shows the IQR resulting from the first and third quartile. For instance, in wave bw1, this means that 50% of the participants took between 17 and 31 minutes to complete the survey.

**Table 3: Survey duration by wave (in minutes)**

Wave	Announced Duration	Mean	SD	25%-Quantil	50%-Quantil Median	75%-Quantil
bw1	15-20	26	15	17	22	31
bs1	5	10	7	6	8	12
bw2	25	32	16	21	27	38
bw3	15	21	11	14	18	24
bw4	20	20	11	13	17	24
cw1	20	26	13	17	23	31
cw2	25	32	17	21	27	38
cw3	20	22	12	14	19	25
cw4	20	25	13	16	21	29
dw1	25	30	16	20	26	36
dw2	20	28	15	18	23	33
dw3	20	21	12	14	18	24
ds1	15	13	28	8	11	15
dw4	20	28	14	19	25	34

## 5 Population and response

### 5.1 Population

The population of the study consists of all people of full age (born 2004 or earlier) living in Germany with and without a migration history. Both recruitment samples are based on a random selection process based on data provided by the residents' registration offices.

### 5.1.1 Initial recruitment sample 2021 (aw0)

The first recruitment sample targeted people born between 1954 and 2004. The sampling and execution was conducted by infas in 2021. The sample includes an oversampling of people being born in Turkey, other predominantly Muslim countries, countries with which West Germany concluded recruitment agreements between 1955 and 1973 (so-called “guest workers”), individuals from the former USSR and Romania (so-called “Spätaussiedler”), as well as the descendants of these people.

The sampling process followed a two-stage stratified sampling procedure, conducted by infas. First, 57 municipalities or 60 Primary Sampling Units (PSU) were randomly selected in a Probability Proportional to Size (PPS) selection. The drawing was carried out with implicit stratification according to federal state and BIK municipality size classes. In the second step, a disproportionate approach was chosen for the selection of people (secondary sampling units) to achieve oversampling in the five subgroups with a migration history. These groups were taken into account with a higher probability of being selected. The groups were preclassified onomastically because the sample characteristics provided by the registration offices did not include any information on migration biography. The operational sample for the survey included a total of 37,583 addresses out of the 103,926 drawn addresses.. A total of 9,168 people took part in the recruitment wave, of which 6,719 agreed to take part in further follow-up surveys. For more information on the sampling process, please refer to the method and data report by Ruland and Sandbrink (2022), available in German only. A description of the achieved sample and success of the onomastic classification can be found in Dollmann et al. (2022).

### 5.1.2 Extension recruitment sample 2023 (dw0)

The second recruitment wave (dw0) was designed as a complementary extension sample to the first recruitment wave, to cover the whole adult population in Germany. As a result, elderly people born before 31<sup>st</sup> December 1953 were targeted. The second recruitment wave was conducted as a cooperation project by the DeZIM.panel and the *Nadira.panel*, with half of the recruited participants being added to each panel. The sampling and execution was conducted by infas in 2023.

The sample includes an oversampling of people being born in Turkey, other predominantly Muslim countries, countries with which West Germany concluded recruitment agreements between 1955 and 1973 (so-called “guest workers”), especially Greece, Italy and Spain, as well as the descendants of these people. The sampling process followed a two-stage stratified sampling procedure, conducted by infas. First, 300 Primary Sampling Units (PSU) were randomly selected in a Probability Proportional to Size (PPS) selection, using the distribution of people born before 31<sup>st</sup> December 1953 as measure of size. The drawing was carried out with implicit stratification according to federal state and BIK municipality size classes. In the second step, a disproportionate approach was chosen for the selection of people (secondary sampling units) to achieve oversampling in the five subgroups with a migration history. These groups were taken into account with a higher probability of being selected. The groups were preclassified onomastically because the sample characteristics provided by the registration offices did not include any information on migration biography.

The operational sample for the survey included a total of 19,733 addresses out of the 514,125 addresses drawn. A total of 5,010 people participated, of which 2,141 participants agreed to take part in further follow-up surveys. Since the achieved sample was split between the DeZIM.panel and the Nadira.panel, the second recruitment wave of the DeZIM.panel consists of 2,547 people, of which 1075 agreed to take part in further follow-up surveys. For further information, please refer to the method and data report by Link et al. (2024), available in German only.

## 5.2 Response rates

The following sections present the response rates for the regular waves and short surveys. The detailed response rates for the recruitment waves can be found in the corresponding method and data reports (Ruland and Sandbrink, 2022; Link et al., 2024). The first table shows the response rate for participants invited by email or letter. The second table shows the response rate of the five subgroups with a migration history in comparison to participant without a migration history. For the calculation of the response rate, we followed the AAPOR standard definitions (AAPOR 2023).



### 5.2.1 Return bw1

In total, 6,719 people were invited to the first regular wave of the survey. The majority of respondents (52.2%) were invited via email. People who did not provide an email address in the recruitment wave were invited by letter (45.4%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. In wave bw1, this applied to 2.5% of participants.

**Table 4: Return bw1 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	3,506	3,047	166	6,719
<i>Undeliverable</i>	4	69	0	73
<i>Cleaned up sent invitations</i>	3,502	2,978	166	6,646
Welcome page opened [b]	2,365	1,531	57	3,953
Questionnaire completed [c]	2,182	1,453	51	3,686
AAPOR RR1 [b/a]	67.5%	50.2%	34.3%	58.8 %
AAPOR RR2 [c/a]	62.2%	47.7%	30.7%	54.9 %

**Table 5: Return bw1 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	465	666	565	444	976	3,583	20	6,719
<i>Undeliverable</i>	3	15	7	6	14	27	1	73
<i>Cleaned up sent invitations</i>	462	651	558	438	962	3,556	19	6,646
Welcome page opened [b]	263	327	319	265	567	2,206	6	3,953
Questionnaire completed [c]	245	283	295	249	525	2,084	5	3,686
AAPOR RR1 [b/a]	56.6%	49.1%	56.5%	59.7%	58.1%	61.6%		58.8%
AAPOR RR2 [c/a]	52.7%	42.5%	52.2%	56.1%	53.8%	58.2%		54.9%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.2 Return bs1

In total, 4,855 people were invited to the first short survey. As mentioned previously, due to the limited field time, only people who had provided us with an email address by February 28, 2022, could be invited to the short survey. Accordingly, all participants were invited by email.

**Table 6: Return bs1 after delivery**

	Total
Sent out Invitations [a]	4,855
<i>Undeliverable</i>	119
<i>Cleaned up sent invitations</i>	4,736
Welcome page opened [b]	2,713
Questionnaire completed [c]	2,626
AAPOR RR1 [b/a]	55.9 %
AAPOR RR2 [c/a]	54.1 %

**Table 7: Return bs1 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	316	459	410	315	716	2,630	9	4,855
<i>Undeliverable</i>	7	16	14	11	23	46	2	119
<i>Cleaned up sent invitations</i>	309	443	396	304	693	2,584	7	4,736
Welcome page opened [b]	161	191	218	188	404	1,549	2	2,713
Questionnaire completed [c]	153	172	214	180	392	1,513	2	2,626
AAPOR RR1 [b/a]	50.9%	41.6%	53.2%	59.7%	56.4%	58.9%		55.9%
AAPOR RR2 [c/a]	48.4%	37.5%	52.2%	57.1%	54.7%	57.5%		54.1%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.3 Return bw2

In total, 6,655 people were invited to wave bw2. The majority of respondents (71.4%) were invited via email. People who did not provide an email address or provided a not reachable email address in the previous waves were invited by letter (28.2%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. In wave bw1, this applied to 0.4% of participants.

**Table 8: Return bw2 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,749	1,877	29	6,655
<i>Undeliverable</i>	10	29	5	44
<i>Cleaned up sent invitations</i>	4,739	1,848	24	6,611
Welcome page opened [b]	3,216	554	10	3,780
Questionnaire completed [c]	3,051	510	10	3,571
AAPOR RR1 [b/a]	67.7%	29.5%	34.5%	56.8%
AAPOR RR2 [c/a]	64.2%	27.2%	34.5%	53.7%

**Table 9: Return bw2 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	460	663	560	436	967	3,549	20	6,655
<i>Undeliverable</i>	7	3	3	6	10	15	0	44
<i>Cleaned up sent invitations</i>	453	660	557	430	957	3,534	20	6,611
Welcome page opened [b]	232	312	300	249	549	2,134	4	3,780
Questionnaire completed [c]	222	265	281	234	519	2,046	4	3,571
AAPOR RR1 [b/a]	50.4%	47.1%	53.6%	57.1%	56.8%	60.1%		56.8%
AAPOR RR2 [c/a]	48.3%	40.0%	50.2%	53.7%	53.7%	57.7%		53.7%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

#### 5.2.4 Return bw3

In total, 6,557 people were invited to wave bw3. The majority of respondents (77.2%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (22.3%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. In wave bw3, this applied to 0.5% of participants.

**Table 10: Return bw3 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	5,064	1,463	30	6,557
<i>Undeliverable</i>	10	3	0	13
<i>Cleaned up sent invitations</i>	5,054	1,461	30	6,545
Welcome page opened [b]	3,485	301	8	3,794
Questionnaire completed [c]	3,404	286	8	3,698
AAPOR RR1 [b/a]	68.8%	20.6%	26.7%	57.9%
AAPOR RR2 [c/a]	67.2%	19.5%	26.7%	56.4%

**Table 11: Return bw3 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	454	653	547	430	948	3,506	19	6,557
<i>Undeliverable</i>	1	3	2	0	1	6	0	13
<i>Cleaned up sent invitations</i>	453	650	545	430	947	3,500	19	6,544
Welcome page opened [b]	236	292	308	243	549	2,162	4	3,794
Questionnaire completed [c]	228	267	298	238	535	2,128	4	3,698
AAPOR RR1 [b/a]	52.0%	44.7%	56.3%	56.5%	57.9%	61.7%		57.9%
AAPOR RR2 [c/a]	50.2%	40.9%	54.5%	55.3%	56.4%	60.7%		56.4%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.5 Return bw4

In total, 6,523 people were invited to wave bw4. The majority of respondents (80.7%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (19.3%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. In wave bw4, this applied to 0.03% of participants.

**Table 12: Return bw4 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	5,263	1,258	2	6,523
<i>Undeliverable</i>	24	12	0	36
<i>Cleaned up sent invitations</i>	5,239	1,246	2	6,487
Welcome page opened [b]	3,545	153	2	3,700
Questionnaire completed [c]	3,470	137	1	3,608
AAPOR RR1 [b/a]	67.4%	12.2%	100.0%	56.7%
AAPOR RR2 [c/a]	65.9%	10.9%	50.0%	55.3%

**Table 13: Return bw4 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	450	650	544	431	939	3,490	19	6,523
<i>Undeliverable</i>	6	3	3	6	5	13	0	36
<i>Cleaned up sent invitations</i>	444	647	541	425	934	3,477	19	6,487
Welcome page opened [b]	238	298	305	247	533	2,075	4	3,700
Questionnaire completed [c]	231	268	299	245	516	2,045	4	3,608
AAPOR RR1 [b/a]	52.9%	45.8%	56.1%	57.3%	56.8%	59.5%		56.7%
AAPOR RR2 [c/a]	51.3%	41.2%	55.0%	56.8%	55.0%	58.6%		55.3%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.6 Return cw1

In total, 6,500 people were invited to wave cw1. The majority of respondents (82.0%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (17.9%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. In wave cw1, this applied to 0.1% of participants.

**Table 14: Return cw1 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	5,331	1,166	3	6,500
<i>Undeliverable</i>	18	15	0	33
<i>Cleaned up sent invitations</i>	5,313	1,151	3	6,467
Welcome page opened [b]	3,640	113	2	3,755
Questionnaire completed [c]	3,571	104	2	3,677
AAPOR RR1 [b/a]	68.3%	9.7%	66.7%	57.8%
AAPOR RR2 [c/a]	67.0%	8.9%	66.7%	56.6%

**Table 15: Return cw1 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	449	647	543	430	937	3,475	19	6,500
<i>Undeliverable</i>	7	5	2	2	6	11	0	33
<i>Cleaned up sent invitations</i>	442	642	541	428	931	3,464	19	6,467
Welcome page opened [b]	237	283	307	255	540	2,126	7	3,755
Questionnaire completed [c]	233	268	300	250	526	2,095	5	3,677
AAPOR RR1 [b/a]	52.8%	43.7%	56.5%	59.3%	57.6%	61.2%		57.8%
AAPOR RR2 [c/a]	51.9%	41.4%	55.2%	58.1%	56.1%	60.3%		56.6%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.7 Return cw2

In total, 6,439 people were invited to wave cw2. The majority of respondents (72.5%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (16.5%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by letter, who never participated in a survey after the recruitment wave – additionally to being invited by email. In wave cw2, this applied to 11.0% of participants.

**Table 16: Return cw2 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,665	1,063	711	6,439
<i>Undeliverable</i>	0	18	0	18
<i>Cleaned up sent invitations</i>	4,665	1,045	711	6,421
Welcome page opened [b]	3,498	81	165	3,744
Questionnaire completed [c]	3,395	63	140	3,598
AAPOR RR1 [b/a]	75.0%	7.6%	23.2%	58.1%
AAPOR RR2 [c/a]	72.8%	5.9%	19.7%	55.9%

**Table 17: Return cw2 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	444	639	539	426	925	3,447	19	6,439
<i>Undeliverable</i>	0	6	1	1	2	8	0	18
<i>Cleaned up sent invitations</i>	444	633	538	425	923	3,439	19	6,421
Welcome page opened [b]	243	291	302	255	533	2,114	6	3,744
Questionnaire completed [c]	231	258	292	247	511	2,053	6	3,598
AAPOR RR1 [b/a]	54.7%	45.5%	56.0%	59.9%	57.6%	61.3%		58.1%
AAPOR RR2 [c/a]	52.0%	40.4%	54.2%	58.0%	55.2%	59.6%		55.9%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.8 Return cw3

In total, 6,368 people were invited to wave cw3. The majority of respondents (75.2%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (16.1%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by letter, who never participated in a survey after the recruitment wave – additionally to being invited by email. In wave cw3, this applied to 8.7% of participants.

**Table 18: Return cw3 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,791	1,024	553	6,368
<i>Undeliverable</i>	0	3	0	3
<i>Cleaned up sent invitations</i>	4,791	1,021	553	6,365
Welcome page opened [b]	3,524	76	77	3,677
Questionnaire completed [c]	3,449	67	68	3,584
AAPOR RR1 [b/a]	73.6%	7.4%	13.9%	57.7%
AAPOR RR2 [c/a]	72.0%	6.5%	12.3%	56.3%

**Table 19: Return cw3 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	443	621	534	419	911	3,421	19	6,368
<i>Undeliverable</i>	0	2	0	0	0	0	1	3
<i>Cleaned up sent invitations</i>	443	619	534	419	911	3,421	18	6,365
Welcome page opened [b]	239	273	300	251	532	2,076	6	3,677
Questionnaire completed [c]	229	257	295	244	510	2,044	5	3,584
AAPOR RR1 [b/a]	54.0%	44.0%	56.2%	59.9%	58.4%	60.7%		57.7%
AAPOR RR2 [c/a]	51.7%	41.4%	55.2%	58.2%	56.0%	59.7%		56.3%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).



### 5.2.9 Return cw4

In total, 6,293 people were invited to wave cw4. The majority of respondents (76.8%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (15.4%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by letter, who never participated in a survey wave after the recruitment wave – additionally to being invited by email. In wave cw4, this applied to 7.8% of participants.

**Table 20: Return cw4 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,831	971	491	6,293
<i>Undeliverable</i>	2	8	0	10
<i>Cleaned up sent invitations</i>	4,829	963	491	6,283
Welcome page opened [b]	3,490	64	64	3,618
Questionnaire completed [c]	3,422	52	56	3,530
AAPOR RR1 [b/a]	72.2%	6.6%	13.0%	57.5%
AAPOR RR2 [c/a]	70.8%	5.4%	11.4%	56.1%

**Table 21: Return cw4 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	440	605	523	417	901	3,389	18	6,293
Undeliverable	1	2	1	0	2	4	0	10
<i>Cleaned up sent invitations</i>	439	603	522	417	899	3,385	18	6,283
Welcome page opened [b]	226	266	299	234	518	2,066	9	3,618
Questionnaire completed [c]	213	248	289	230	509	2,034	7	3,530
AAPOR RR1 [b/a]	51.4%	44.0%	57.2%	56.1%	57.5%	61.0%		57.5%
AAPOR RR2 [c/a]	48.4%	41.0%	55.3%	55.2%	56.5%	60.0%		56.1%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.10 Return dw1

In total, 6,326 people were invited to wave dw1. The majority of respondents (65.0%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (13.5%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by mail and via letter, who did not participate in the last two survey waves. In wave dw1, this applied to 21.6% of participants.

**Table 22: Return dw1 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,111	851	1,364	6,326
<i>Undeliverable</i>	12	4	1	17
<i>Cleaned up sent invitations</i>	4,099	847	1,363	6,309
Welcome page opened [b]	3,481	49	273	3,803
Questionnaire completed [c]	3,396	40	239	3,675
AAPOR RR1 [b/a]	84.7%	5.8%	20.0%	60.1%
AAPOR RR2 [c/a]	82.6%	4.7%	17.5%	58.1%

**Table 23: Return dw1 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	442	619	523	423	911	3,390	18	6,326
<i>Undeliverable</i>	0	3	4	1	3	6	0	17
<i>Cleaned up sent invitations</i>	442	616	519	422	908	3,384	18	6,309
Welcome page opened [b]	242	296	315	252	530	2,160	8	3,803
Questionnaire completed [c]	230	273	301	246	512	2,106	7	3,675
AAPOR RR1 [b/a]	54.8%	47.8%	60.2%	59.6%	58.2%	63.7%		60.1%
AAPOR RR2 [c/a]	52.0%	44.1%	57.6%	58.2%	56.2%	62.1%		58.1%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.11 Return dw2

In total, 7,360 people were invited to wave dw2. The majority of respondents (65.4%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (18.4%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by mail and via letter, who did not participate in the last two survey waves. In wave dw2, this applied to 16.2% of participants.

**Table 24: Return dw2 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,814	1,353	1,193	7,360
<i>Undeliverable</i>	2	15	0	17
<i>Cleaned up sent invitations</i>	4,812	1,338	1,193	7,343
Welcome page opened [b]	3,761	120	197	4,078
Questionnaire completed [c]	3,646	103	164	3,913
AAPOR RR1 [b/a]	78.1%	8.9%	16.5%	55.4%
AAPOR RR2 [c/a]	75.7%	7.6%	13.7%	53.2%

**Table 25: Return dw2 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	528	674	665	447	1,044	3,972	30	7,360
<i>Undeliverable</i>	1	2	2	0	5	7	0	17
<i>Cleaned up sent invitations</i>	527	672	663	447	1,039	3,965	30	7,343
Welcome page opened [b]	257	297	356	261	570	2,325	12	4,078
Questionnaire completed [c]	241	265	333	251	542	2,271	10	3,913
AAPOR RR1 [b/a]	48.7%	44.1%	53.5%	58.4%	54.6%	58.5%		55.4%
AAPOR RR2 [c/a]	45.6%	39.3%	50.1%	56.2%	51.9%	57.2%		53.2%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.12 Return dw3

In total, 7,307 people were invited to wave dw3. The majority of respondents (66.2%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (18.0%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by mail and via letter, who did not participate in the last two survey waves. In wave dw3, this applied to 15.8% of participants.

**Table 26: Return dw3 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,838	1,315	1,154	7,307
<i>Undeliverable</i>	5	18	0	23
<i>Cleaned up sent invitations</i>	4,833	1,297	1,154	7,284
Welcome page opened [b]	3,713	71	116	3,900
Questionnaire completed [c]	3,650	58	100	3,808
AAPOR RR1 [b/a]	76.7%	5.4%	10.1%	53.4%
AAPOR RR2 [c/a]	75.4%	4.4%	8.7%	52.1%

**Table 27: Return dw3 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	524	670	659	445	1,033	3,946	30	7,307
<i>Undeliverable</i>	3	7	2	1	3	7	0	23
<i>Cleaned up sent invitations</i>	521	663	657	444	1,030	3,939	30	7,284
Welcome page opened [b]	237	273	340	249	553	2,236	12	3,900
Questionnaire completed [c]	228	257	329	243	543	2,196	12	3,808
AAPOR RR1 [b/a]	45.2%	40.7%	51.6%	56.0%	53.5%	56.7%		53.4%
AAPOR RR2 [c/a]	43.5%	38.4%	49.9%	54.6%	52.6%	55.7%		52.1%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.2.13 Return ds1

In total, 5,962 people were invited to the second short survey ds1. As for the first short survey, due to the limited field time, only people who had provided us with an email address could be invited to the short survey. Accordingly, all participants were invited by email.

**Table 28: Return ds1 after delivery**

	Total
Sent out Invitations [a]	5,962
<i>Undeliverable</i>	22
<i>Cleaned up sent invitations</i>	5,940
Welcome page opened [b]	2,811
Questionnaire completed [c]	2,740
AAPOR RR1 [b/a]	47.1%
AAPOR RR2 [c/a]	46.0%

**Table 29: Return ds1 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	397	543	502	375	874	3,258	13	5,962
<i>Undeliverable</i>	0	8	1	0	7	6	0	22
<i>Cleaned up sent invitations</i>	397	535	501	375	867	3,252	13	5,940
Welcome page opened [b]	149	180	224	182	389	1,681	6	2,811
Questionnaire completed [c]	139	174	215	178	380	1,648	6	2,740
AAPOR RR1 [b/a]	37.5%	33.1%	44.6%	48.5%	44.5%	51.6%		47.1%
AAPOR RR2 [c/a]	35.0%	32.0%	42.8%	47.5%	43.5%	50.6%		46.0%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

#### 5.2.14 Return dw4

In total, 7,236 people were invited to wave dw4. The majority of respondents (67.5%) were invited via email. People who did not provide an email address in the previous waves were invited by letter (17.2%). Participants, who were initially invited online, but their email address was no (longer) valid or bounced for other reasons (full mailbox), those participants were additionally invited by post at the moment of the postal reminder (4 to 6 weeks after field start), if a valid postal address was available. Additionally, all participants were invited by mail and via letter, who did not participate in the last two survey waves. In wave dw4, this applied to 15.3% of participants.

**Table 30: Return dw4 after delivery**

	Online	Postal	Online + Postal	Total
Sent out Invitations [a]	4,887	1,243	1,106	7,236
<i>Undeliverable</i>	6	9	3	18
<i>Cleaned up sent invitations</i>	4,881	1,234	1,103	7,218
Welcome page opened [b]	3,770	64	167	4,001
Questionnaire completed [c]	3,699	48	145	3,892
AAPOR RR1 [b/a]	77.1%	5.1%	15.1%	55.3%
AAPOR RR2 [c/a]	75.7%	3.9%	13.1%	53.8%

**Table 31: Return dw4 according to overrepresented groups**

	[1]	[2]	[3]	[4]	[5]	[6]	missings	Total
Sent out Invitations [a]	518	663	648	444	1,028	3,906	29	7,236
<i>Undeliverable</i>	0	6	1	2	3	6	0	18
<i>Cleaned up sent invitations</i>	518	657	647	442	1,025	3,900	29	7,218
Welcome page opened [b]	246	299	336	249	571	2,291	9	4,001
Questionnaire completed [c]	233	281	328	245	558	2,238	9	3,892
AAPOR RR1 [b/a]	47.5%	45.1%	51.9%	56.1%	55.5%	58.7%		55.3%
AAPOR RR2 [c/a]	45.0%	42.4%	50.6%	55.2%	54.3%	57.3%		53.8%

[1] from Turkey, [2] from other Muslim-majority countries, [3] from countries with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022).

### 5.3 Weighting

The basis of the recruitment waves formed population lists of the registration offices. The sample was used disproportionately according to the results of the onomastics (explicit stratification). With multi-stage PPS sampling (probability proportional to size), the calculation of a design weight can theoretically be omitted since this is constant for all units. Due to the explicit disproportionate stratification, i.e. the separate use of an onomastically qualified target persons and the fact that the importance weight is calculated in the first selection stage over the entire population and this community selection is used for all target groups, the gross sample is not a self-weighted sample. In addition, a proportion of municipalities were not able to provide sufficient addresses and not all municipalities took part, which means that there were dropouts among the municipalities. Therefore, despite PPS drawing, the selection probabilities were first determined, and design weights were calculated. The detailed calculation of the design weight and the drop-out adjusted design weight can be found in Ruland & Sandbrink (2022) and Link et al. (2024).

To assess possible biases in sample selection and field work, the distribution of central characteristics of the first recruitment wave was compared to the distribution of these characteristics in the German Microcensus (MZ) (see Table 22, see also Dollmann et al. 2022). The results show that from recruitment wave to panel consent to actual participation in wave bw1, the bias towards higher education and younger participants increases. No clear patterns can be identified with regard to gender. Carrying out a multivariate logistic regression on the probability of not participating in the panel or wave bw1 shows that, in addition to age, education and gender, migration status also had a significant positive association. In the first recruitment wave, the probability of not participating was 8 percentage points significantly higher for immigrants than for people without a migration history, but no significant difference was found between people with a migration history and the descendants of immigrants. In the first regular wave (bw1), participation was significantly higher for immigrants compared to people without a migration history by 14 percentage points and for children of immigrants by 5 percentage points (all  $p < 0.05$ ) (Dollmann et al. 2022).

These results show the necessity to take non-response characteristics into account in the weighting. Due to the different selection probabilities and the stratification of the groups, the data should be weighted for the analyses. We therefore offer a design weight that takes into account different selection probabilities [dweight], a weight that also takes into account unit non-response in the recruitment sample (based on age groups, gender, federal state and size of municipalities [BIK]) [dweight\_adj] and a combined weight [dweight\_int] that represents an integrated weight for the joint analysis of the two recruitment waves from 2021 and 2023. For its calculation, the sample sizes of both recruitment waves were compared to the distribution of age groups in the general population (age group 1: born between 1954 and 2004 (recruitment wave 2021, aw0); age group 2: born before 1954 (recruitment wave 2023, dw0)). In a first step, the drop-out adjusted design weight [dweight\_adj] for age group 1 was divided by a factor of 0.785, since age group 1 accounts for 78.5% of the realized interviews

in both sub-samples. In a second step, it was then multiplied by a factor of 0.813, as the proportion of this age group in the total population is 81.3%.

For age group 2, the attrition-adjusted design weight was divided by a factor of 0.215, since age group 2 accounts for 21.5% of the realized interviews in both sub-samples. It was then multiplied by a factor of 0.187, as the proportion of this age group in the total population is 18.7%.

If analyses are conducted across both subsamples (recruitment sample 2021 and 2023), the weighting variable **dweight\_int** should be used. If analyses are conducted within one of the two subsamples, either the weighting variable **dweight\_adj** or **dweight\_int** can be used. In addition to the integrated design weight, it is recommended to estimate a retention factor for the analysis sample and multiply this by the adjusted design weight.

**Table 32: Comparison of unweighted cell percentages by gender, education, and age group**

	Gender: male				Education: high school diploma				Age group: 18-30 years old			
Perso nen ...	MZ	W0	W0P	W1	MZ	W0	W0P	W1	MZ	W0	W0P	W1
[1]	51,8	47,2	44,5	42,3	27,7	35,4	38,8	43,5	34,6	31,0	35,8	39,3
[2]	60,0	57,9	59,1	58,8	47,2	45,1	47,5	51,1	44,1	33,3	35,1	35,7
[3]	47,6	38,9	41,8	39,0	37,8	43,1	48,5	53,8	28,7	18,5	22,1	24,8
[4]	54,1	47,8	50,1	46,2	35,0	46,8	51,6	61,3	26,4	23,1	26,6	30,7
[5]	50,6	41,8	43,2	41,3	48,5	54,9	58,4	66,2	22,5	19,8	23,0	24,7
[6]	50,1	45,8	46,7	47,7	40,8	45,8	49,5	54,3	27,2	20,1	22,0	23,9

[1] from Turkey, [2] from other Muslim-majority countries, [3] from states with which West Germany concluded recruitment agreements between 1955 and 1973, so-called “guest workers,” [4] from the former USSR as well as Romania and their descendants, [5] with a different migration history, [6] without a migration history. For group composition, see Dollmann et al. (2022). MZ: Microcensus 2017, W0P: People who took part in the recruitment wave and gave their panel consent. Abitur: excluding people with other/ongoing training. Gender: excluding people who identify as diverse.



## 6 Data curation and anonymization

The following sections provide an overview of the available data editions and data access, the data structure as well as the wave and variable naming scheme including information about the procedure for aggregation, versioning, harmonization, and the missing convention used.

### 6.1 Editions of scientific use files (SUF) and data access

DeZIM.panel data is made available exclusively for scientific research purposes, i.e. it is only made available to data users in the scientific community with a specific research purpose. Researchers are granted access to the DeZIM.panel data if they have signed a data usage contract with DeZIM. The various data packages, the so-called editions, differ according to the amount of information they contain, the level of data protection and the type of data access. The DeZIM.panel offers three editions (see Figure 1).

**Figure 1: Editions of DeZIM.panel release 5.0.0**



Data users can apply for all three editions. The editions have a different information level, which is represented by the "restriction level". A lower data restriction level makes it possible to provide more information. The **Onsite Edition** is the least restrictive data version and allows access to sensitive personal variables (e.g. "wrk0026x02 Postal code of current employer"). On request, it is also possible to use open-coded variables, which are first checked from a data protection perspective. To use the Onsite Edition, researchers can submit a request to the Research Data Center. In a secure working environment, researchers can use the complete data of the Onsite Edition at DeZIM's institute and take their results with them after they have been checked by the Research Data Center. The **Remote Edition** of the DeZIM.panel data also provides access to information classified as sensitive, with researchers working in an online environment hosted by DeZIM. When applying for the Remote Edition, data users receive access to the data. As a third edition, DeZIM offers the data in the **Download Edition**. Access is provided via an encrypted download and the data is strictly anonymized. However, the download version is still sufficient for the majority of analyses. Variables that have been anonymized can be used by requesting remote or onsite data via the above-mentioned access methods. In addition, syntax created with the Download Edition can also be transferred to the Remote Edition as far as possible.

Which variables are anonymized or fully available in which data editions is documented in the codebook. The "Aggregation level" column in the sheet "Variables" documents the anonymization level according to the access path of the data: "Download" means that the variable is accessible in the Download Edition. "Remote" means that the variable is available in the Remote Edition but is anonymized in the Download Edition. "Onsite" means that the variable is accessible in the Onsite Edition but is anonymized in the Download and Remote Edition. The category "Onsite on demand" refers to (semi-)open information that can be accessed Onsite on demand at the DeZIM Institute after a specific variable request.

## 6.2 Data structure

Since the release of SUF version 4.0.0, the data of the DeZIM.panel is provided in longitudinal data structure. The provided release 5.0.0 contains the data from the recruitment waves (aw0, dw0), the first twelve regular waves (bw1-bw4, cw1-cw4, dw1-dw4) and the short surveys on reactions to the war in Ukraine (bs1) and on reactions to the state elections in Saxony and Thuringia (ds1). Data sets in long format offer a compressed and user-friendly data set structure for longitudinal analyses. Here, each participant (lfd) has one row for each survey wave (wave). This means that the DeZIM.panel does not release several data sets of cross-sectional data for the different waves, but one data set in which all survey waves are included, and all identical variables have the same variable name across waves. A respondent can appear several times in such a dataset, but only once for each survey wave.

The following four variables are key variables for using the longitudinal dataset:

- **lfd**: The variable lfd is an individual permanent identifier for all participants ever registered in DeZIM.panel.
- **wave**: The variable wave is the wave identifier. For each wave, information for all participants invited in the corresponding survey wave is included in the dataset.
- **sample**: The variable sample is the identifier for the recruited sample. All cases recruited in the same recruitment wave are assigned the same value.
- **par0011**: The variable par0011 (Final outcome of contact) documents whether the survey is completed and if this is not the case, it documents the reasons (e.g., interruption, undeliverable invitation, non-participation, etc.).

## 6.3 Survey wave naming scheme

The DeZIM.panel is surveyed four times a year. The following name scheme is used to distinguish between the waves:

- Distinction between survey years: a = 2021, b = 2022, c = 2023, etc.
- Distinction between regular waves [w] and short surveys [s]

According to this wave name scheme, the recruitment wave of 2021 represents wave aw0, the four regular waves in 2022 are named wave bw1, bw2, bw3, bw4, the four regular waves in 2023 are named cw1, cw2, cw3, cw4 and the regular waves from 2024 are named dw1, dw2, dw3 and dw4. The short survey on reactions to the war in Ukraine conducted in 2022 is named bs1 and the short survey on reactions to the state elections in Saxony and Thuringia conducted in 2024 is named ds1.

**Please note:** Each year, the first wave starts in the middle of December of the year before and continues until March. Since most of the field time is between January and March, the new year is used as prefix for the wave abbreviations. The year of the field start is documented in the variable year.

#### 6.4 Variable naming scheme

The following variable naming concept is used in the DeZIM.panel since release version 4.0.0. Except for special variables such as identifiers or weighting variables, all variable names in the survey data are defined according to the naming convention presented in Figure 2:

Figure 2: Variable naming scheme

topic	topic number	{x}	{item number}	{_o/o*/o*}	{_v*}	{_h} / {_g}
soc						
edu						
wrk						
pol				_o		
val	0001		01		_v1	_h
dcr	...	x	...	_o1	...	
hlt	9999		99	...	v99	_g
lif				_o99		
var						
par						
svy						

A variable name always consists of at least one topic and a number from 0001-9999 (topic number), which is usually assigned chronologically. In total, the variable names are divided into eleven topics:

- "pol" (Political topics such as elections, organizations, political engagement, reactions/opinions on political events)
- "val" (Attitudes/values and personality)
- "hlt" (Health topics such as the healthcare system, mental and physical health or care)
- "wrk" (Work and income)
- "edu" (Education and vocational training)
- "dcr" (Experiences with discrimination)

- "lif" (Life, family/friends/social networks, leisure activities)
- "soc" (Demography, home, wealth)
- "svy" (Survey variables such as interview language and survey evaluation)
- "var" (Random/recoding triggers, filter variables for vignettes, preloads)
- "par" (Paradata such as interview duration, time of survey start)

The "topic number" refers to a question in the questionnaire. If a question consists of several items (e.g., matrix question with a standardized scale or question with multiple answers), these items are integrated into the variable names using an "x" as the item separator and a two-digit "item number".

### 6.5 Open coded variables

If the variable type of an entire question or an individual item is an open string (string/character), the variable name is given an additional "\_o" to indicate string variables in the variable name. If more than two open strings are connected to a question, they are differentiated with numbers, e.g. "\_o1" and "\_o2".

### 6.6 Aggregated and ex-post coded variables ("\_g")

The data set contains variables whose variable names end with a "\_g". These variables are defined as aggregated or ex-post-coded variables. Aggregated variables are relevant if the Download Edition is used, as not all information is included there for data protection reasons (see section 6.1). These aggregated variables are provided for variables that contain particularly sensitive information. These aggregated variables aggregate particularly sensitive information into larger response categories than in the original variable. The aggregated variables have the same variable name (with "\_g") as the original variable (without "\_g") so that aggregated and original variables can be easily associated. In the Download Edition, the sensitive variable is anonymized, and the aggregated variable is provided with less information. In the Remote and Onsite Editions of the dataset, the complete information is available to data users; the aggregated variables should be understood as an offer for users of the Download Edition. In a few cases, "\_g" in the variable name also describes an ex-post-coding. In these ex-post-codings, open or semi-open information is categorized.

**Example:** The variable edu0001\_v1 (highest general school-leaving degree) contains the response option "Other school leaving certificate, namely:" Where possible, the respondents' open answers were integrated into the response scale in the variable edu0001\_g ("Highest general school degree - recoded").

If more than two aggregated or ex-post-coded variables are connected to one variable, they are differentiated with numbers, e.g. "\_g1" and "\_g2".

### 6.7 Versionized ("\_v") and harmonized ("\_h") variables

Across the survey waves of the DeZIM.panel, questions may change in content or be measured in different ways. To enable data users to use the DeZIM.panel easily and as consistently as possible, some variables are

versionized and harmonized. Versionized variables inform users that very similar constructs have been measured differently over time. These versionized variables are intended to document changes in data collection over time. The harmonized variables aim to make it easier for data users to conduct analyses over time. For this purpose, versionized variables are harmonized ex-post in order to harmonize the question constructs and measurement differences between the survey waves so that the content is consistent and comparable across the survey waves.

A question construct can differ in terms of the following dimensions: Question text, instruction text, answer categories (wording, quantity) or variable type (metric vs. ordinal, single vs. multiple responses, survey with or without decimals). To decide whether a variable should be versionized, these dimensions were compared between the survey waves. If differences<sup>6</sup> were found in the described dimensions for questions that were surveyed in several waves, the variable was versionized and the variable name was extended with "\_v\*". Due to the changed measurement of a question construct, a change in response behavior can be assumed and the comparability of the question construct between waves might be limited. Data users can use the codebook to understand the wave-specific wording of a question and its answer options in order to decide to what extent comparability is given for the respective analysis.

For selected central variables, the DeZIM.panel offers harmonized variables that harmonize the version variables into a common variable "\_h" in order to enable the most panel-consistent usability. These variables are intended solely as a harmonization proposal and cannot be used universally for every research demand. Therefore, we encourage data users to check the version of variables also contained in the dataset and, if necessary, to harmonize them according to the research interest.


**Please note:** The variable gender is often a central variable for data analyses. A harmonized variable is provided as soc0001\_h. The values are based on the gender provided by the respondents themselves and values provided by the residents' registration office. As with other harmonized variables, the original variables on which the harmonization is based are included in the dataset (soc0001\_v1-v9). As the information and the concepts differ between variables, we strongly recommend to reflect the specific research goal when deciding on the gender variable(s) included in data analysis and to perform plausibility and robustness checks.

## 6.8 Example: Versionizing, harmonization, aggregation

An example of a versionized, harmonized and aggregate variable is marital status (see Figure 3).

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<sup>6</sup> Grammatical or orthographic adjustments in questions, instructions or answers are not considered to require versionizing in the DeZIM.panel. A modified filter structure is also not currently considered to require versionizing, although distribution disparities are very likely.

**Figure 3: Versionizing, harmonization, aggregation of the variable marital status**


Version 1 Survey wave aw0 soc0058_v1	Version 2 Survey wave cw4 soc0058_v2
1 Married and living with spouse 2 Married and living separately from spouse 3 Registered, same-sex civil partnership, living together 4 Registered, same-sex civil partnership, living separately 5 Single 6 Divorced 7 Widowed	1 Married 2 Registered same-sex partnership 3 Single, never married 4 Divorced 5 Registered same-sex partnership annulled 6 Widowed 7 Partner from registered same-sex partnership deceased
Harmonization soc0058_h	Aggregation soc0058_g
1 Married 2 Registered same-sex partnership 3 Single 4 Divorced/same-sex partnership revoked 5 Widowed/same-sex partner deceased	1 Married 2 Single 3 Divorced/same-sex partnership revoked/widowed/same-sex partner deceased

The construct of marital status was asked in the aw0 recruitment wave and in the cw4 wave. Both questions were asked identically, but different response options were possible. As the response options cannot be integrated in the longitudinal data format (different coding of the valid values), the variables were stored in two variable versions (soc0058\_v1 and soc0058\_v2) using the same variable name soc0058. Researchers can use both versions independently for their analyses. However, data users who wish to use the variable in a longitudinal perspective may be able to avoid data preparation effort and use the harmonized variable provided by the Research Data Centre, which recodes and integrates the variable versions into the harmonized variable (soc0058\_h) shown above. The response options are highlighted to make the recoding and integration steps visually visible. As the question on marital status also provides information on sensitive information such as same-sex partnerships, an aggregated variable (soc0058\_g) is provided that can be used for the Download Edition. In the Download Edition, the variables soc0058\_v1, soc0058\_v2 and soc0058\_h were anonymized and only the variable soc0058\_g is released for researchers. Full access to all marital status variables is available if the Remote or Onsite Edition is used.

### 6.9 Missing conventions

Each variable in the DeZIM.panel has ten missing codes. All missing codes have negative values and are defined from -999 to -900 (see Table 33).

**Table 33: Missing codes**

Value	Value label	Definition
-999	No answer	Answer category in questionnaire
-998	Don't know	Answer category in questionnaire
-997	Does not apply	Answer category in questionnaire / xxx
-996	Anonymized	Anonymization carried out
-971	Filter Missing	Missing due to filter guidance, split questions
-969	Not determinable or implausible value	Information that cannot be determined (e.g. for open information) or implausible values
-950	Technical error	Technical error during survey
-902	Interrupted	Participants who did not complete all the survey
-901	No participation in this wave	Participants who did not participate in this wave
-900	Question not part of the survey program this wave	Question was not part of the survey program in this wave

The values "-999 No answer" and "-998 Don't know" are defined as response options for almost every question in the DeZIM.panel and are direct responses from the respondents. Sometimes "-997 Does not apply" is also defined as an answer in the questionnaire. However, the code "-997 Does not apply" is also assigned during data preparation if a question is not skipped due to a filter condition, but because a question was not defined as a required response and the respondent deliberately skipped the question. Whether the answer option "Does not apply" was a predefined response in the question program or was assigned in the data preparation process can be checked in the questionnaires. A variable is coded with the code "-996 Anonymized" if the information is classified as sensitive. For example, in the Download Edition of the dataset, some personal and region-specific variables that are available in the less restrictive Remote and Onsite Editions have been anonymized. Likewise, open coded variables in the Download and Remote Editions are only provided with the value "-996 Anonymized". However, these can be used Onsite on request (see section 6.1). If questions with filter routing are asked in order to exclude certain respondents from answering the question, these respondents receive the value "-971 Filter Missing" for the filtered variable in the dataset. The missing code "-950 Technical error" refers to the following events:

- a) A technical error occurred due to the user's browser navigation behavior: Participants can return to previous questions in the survey context using a browser back button. If participants used the back button in the browser instead of the back button in the survey context, it could lead to new requests sent to the database. This could result in one page arriving with a delay while another is processed first (so-called race condition). As a result, information provided by participants was overwritten, resulting in invalid values.
- b) There were errors in the questionnaire programming: For example, the filter routing was incorrectly programmed or a question was not programmed as a required question, so that people could move on

to the next question without providing valid information. All variables with this missing code are documented in the codebook ("Variables" sheet, "Description" column).

In addition, the missing category "-969 Not determinable or implausible value" is used when the collected data could not be assigned to any value in the coding lists. The coding of this missing category is also documented in the codebook at variable level. Respondents who only partially completed the survey, are coded "-902 Interrupted" for these variables without valid information. People who (a) did not accept the invitation to participate in the survey in the respective wave, (b) only visited the welcome page or (c) only completed the first required question on life satisfaction are coded as "-901 Did not participate in current wave". The missing code "-900 question not part of the question program in this wave" describes for the data in longitudinal format whether a question was asked within the survey wave. If a question was not asked in a survey wave, no information can be available for the respondent and the value "-900 question not part of the question program in this wave" is assigned.



### 6.10 Using notes command in Stata

The notes command in Stata allows to attach short text notes to datasets or specific variables. These notes help users remember important details, such as question texts, variable modifications, or dataset citation. With the release of data version 5.0.0 of the DeZIM.panel, users can view dataset and variable notes directly in Stata. The DeZIM FDZ strongly encourages Stata users to use these notes as a documentation tool, as you can retrieve a lot of additional information about a variable without having to leave Stata. Since data release 5.0.0, the FDZ includes the following information in the notes of its datasets and variables:

#### a) Dataset Notes

- **Study:** Study name
- **Name:** Dataset name
- **Data Provider:** Provider of the used dataset
- **Description:** Short description of the used dataset
- **Citation:** Citation that must be quoted when using the data

#### b) Variable Notes

- **Label Ger:** Complete German variable label
- **Label Eng:** Complete English variable label
- **Topic:** Linked variable topic
- **Availability Waves:** List of all survey waves in which Variable was part of the survey program
- **Description:** Describes harmonization, aggregation process and all possible errors in data processing
- **Question Text Ger:** German question text
- **Question Text Eng:** English question text
- **Question Text Tür:** Turkish question text
- **Question Text Ru:** Russian question text
- **Question Text Ar:** Arabic question text
- **Question Type:** Question type in the survey software
- **Availability Edition:** Describes in which data editions variable is fully available

In order to use the notes in Stata, load your dataset edition into Stata. The following command can be used to display the notes of the dataset edition used in Stata:

```
note _dta
```

If you want to display notes for specific variable names, you can enter all variable names with the notes command. This will display the stored documentation for all selected variables in Stata. For example, a data user might be interested in a variable that determines whether a respondent has children or not. The data user is interested in the variable *soc0067\_h*. The following command is used to obtain more information about this variable:

```
note soc0067_h
```

The data user receives the information that the variable was collected in three waves (availability waves) and is a harmonized variable (\_h variable). How exactly the variable was generated is described in the description:

Step 1: The variable soc0067\_h is replaced by the variable soc0067\_v1 for the waves bw1.

Step 2: The variable soc0067\_h is replaced by the variable soc0067\_v2 for the waves cw4, dw4.

As the variable was generated from two version variables, the data user can check the content of the two version variables by using the notes command for these version variables:

```
note soc0067_v1 soc0067_v2
```

The question texts can be seen and compared in the notes for both variables. It becomes obvious that in variable version two, foster children were explicitly included in the question, whereas they were not included in variable version one:

```
[Question Text Eng]: Do you have any children (including adopted or stepchildren)?
```

```
[Question Text Eng]: Do you have children (including adopted children,  
stepchildren or foster children)?
```

Since the data user can view the information from the notes, the user can decide whether the harmonized variable, in which both variable versions are integrated together, is useful based on their research interest. In addition to searching for variable names, the notes can also be used to search in variable labels and question texts. For example, the search function could also be used to search for the term adopted:

```
note search adopted
```

As most variable notes also contain multilingual translations, users can also search for terms in other languages. For example, users can also search for adoption in Turkish:

```
note search evlatlık
```

The notes feature provides an ideal way for data users to retrieve additional information during their Stata data analysis and discover new interesting content through the multilingual search function.

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