



Assessment of socio-demographic sample composition  
in ESS Round 10

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## 1. Introduction

The European Social Survey (ESS) is an academically driven cross-national survey that has been conducted every two years across Europe since 2002. The ESS aims to produce high-quality data on social structure, attitudes, values, and behaviour patterns in Europe. Much emphasis is placed on the standardisation of survey methods and procedures across countries and over time. Each country implementing the ESS has to follow detailed requirements that are laid down in the ESS Survey Specifications. These standards cover the whole survey life cycle. They refer to sampling, questionnaire translation, data collection, and data preparation and delivery. As regards sampling, for instance, the ESS requires that only strict probability samples should be used; quota sampling and substitution are not allowed. Each country is required to achieve an effective sample size of 1,500 completed interviews, taking into account potential design effects due to the clustering of the sample and/or the variation in inclusion probabilities. Regarding data collection, the ESS specifies – among other things – that face-to-face interviewing is the only mode allowed. Targets are set for the response rate (70%)<sup>2</sup> and the noncontact rate (3% maximum). The fieldwork period is specified, the personal briefing of interviewers is required, and a detailed call schedule for the interviewers is laid down.

The purpose of setting these standards is to achieve accurate and comparable survey data. An important aspect of survey quality refers to the quality of the realised samples in terms of representation of the target population. The sample in each ESS country should reflect the target population of the ESS adequately, which means that sampling, coverage, and nonresponse errors should be minimised. Quality control activities in the ESS are mainly directed at compliance with the prescribed data collection procedures. In each survey round, for instance, it is checked whether a country achieved the target response rate, whether the interviewers were adequately briefed, whether the call schedule was adhered to, etc. The (implicit) assumption is that a country that follows the ESS survey procedures and achieves a high response rate will also achieve a sample of good quality.

In the present paper we assess empirically to what extent ESS samples represent the ESS target population. We use data from the European Union Labour Force Survey (LFS) to evaluate the sample composition in the countries participating in ESS Round 10. In the past, similar analyses have been conducted for ESS 5, ESS 6, ESS 7, ESS 8, and ESS 9 (Koch et al. 2014; Koch 2016; Koch 2018; Koch & Briceno-Rosas 2021). The present analysis carries on this exercise. Our analysis provides an indication of the degree of over-/underrepresentation of certain demographic subgroups in ESS samples. It follows closely the procedures established in the previous analyses. Due to the Covid pandemic, ESS 10 was fielded in the years 2020 to 2022, with most countries implementing fieldwork in 2021. The benchmark data stem from the European Union Labour Force Survey (LFS) 2020.

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<sup>2</sup> The ESS 10 Specifications for participating countries state: “In addition, the ESS has always aimed for a minimum target response rate ... of 70%. However, we acknowledge that, based on previous experiences in the ESS, reaching this 70% target response rate is unlikely in many countries. At a minimum, all countries are expected to plan and budget fieldwork in order to reach a response rate higher than in the previous round.” (European Social Survey 2020, p. 37)

## 2. Assessment with external benchmark data

The comparison of survey results with independent and more accurate information about the population parameters is a well-known method to analyse sample quality and the degree of nonresponse bias (Groves 2006). For this approach, no information at the individual level is required. There needs to be another survey or administrative record system containing estimates of variables similar to those being produced from the survey. Then, the survey estimates can be benchmarked with information from the other data source, the so-called gold standard. The difference between estimates from the survey and the other data source can be used as an indicator of bias.

The advantage of this method is that it is in theory relatively simple to implement. Usually, the method is not too expensive since it does not require collecting additional data. The drawback is that normally only a limited set of variables can be compared. In order to draw valid conclusions about nonresponse bias, the benchmark data have to be quite accurate, i.e. they should not be severely affected by, for instance, measurement or nonresponse errors. In addition, the measurements of the relevant variables should match closely between the two data sources (equivalent measurements). Both data sources have to refer to the same target population, and also the reference period should be as close as possible. If these conditions hold, differences between the survey data and the benchmark data might arise from three sources of error: sampling error, coverage error, and nonresponse error.

It goes without saying that no benchmark information is available for the ESS key survey variables – this is the reason why the ESS exists! Comparisons have to be restricted to several socio-demographic variables. The results, however, are important beyond these variables. Socio-demographic characteristics are intrinsically important since they are – potentially – related to many attitudes and behaviours. For this reason, some of these variables are used to construct post-stratification weights. Since 2014, post-stratification weights are also provided for the ESS (Kaminska 2020).

For a cross-national survey like the ESS, the most promising candidate to act as a valid standard for such a comparison is the European Union Labour Force Survey (LFS). Most of the countries that participate in the ESS also conduct the yearly Labour Force Survey for Eurostat.

## 3. The European Union Labour Force Survey

The European Union Labour Force Survey (LFS) is a large sample survey among residents in private households in Europe.<sup>3</sup> It is an important source for European statistics about the situation and trends in the EU labour market. The LFS is currently fielded in 35 European countries. These include all Member States of the European Union, three EFTA countries (Iceland, Norway, and Switzerland), the United Kingdom and four EU candidate countries (Montenegro, North Macedonia, Serbia, and Turkey). EU-LFS microdata for scientific purposes currently contain data for all Member States, as well as data for Iceland, Norway, and Switzerland.<sup>4</sup>

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<sup>3</sup> <http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey>

<sup>4</sup> In the 2020 EU-LFS user data base (2021 Release), data for the United Kingdom are only included in the quarterly datasets (until Quarter 3). Until agreement on statistical cooperation is established between Eurostat and UK, Eurostat is no longer disseminating new data for the UK, neither through its database nor in other dissemination products.

The sampling units of the LFS are dwellings, households or individuals, depending on the country-specific sampling frames. Each quarter, around 1.5 million interviews are conducted throughout the participating countries to obtain statistical information for some 100 variables. The quarterly sampling rates in the countries vary between 0.14% and 1.95%.

The EU LFS is conducted by the National Statistical Institutes across Europe and is centrally processed by Eurostat (for details of national implementation see Eurostat 2022a, 2022b). The National Statistical Institutes of the Member States are responsible for designing national questionnaires, drawing the sample, conducting interviews, and forwarding results to the Commission (Eurostat) in accordance with a common coding scheme. As a rule, the data are collected by interviewing the sampled individuals directly, but proxy interviews (through a responsible person in the household) are also possible. Moreover, part of the data can also be supplied by equivalent information from alternative sources, such as e.g., administrative registers (mainly social insurance records and population registers).

#### **4. Comparing ESS 10 and LFS 2020 data**

The present comparison with LFS data is conducted for the tenth survey round of ESS. Originally, fieldwork for ESS 10 should take place between September 2020 and January 2021. Due to the impact of the COVID pandemic on face-to-face fieldwork, ESS implemented two major changes in Round 10. First, the period for fielding ESS 10 as a face-to-face interview was revised to run from September 2020 to December 2021. Fieldwork could be completed at any time during this period. Second, for countries where no (successful) face-to-face interviewing at all was possible due to the pandemic, the possibility to run Round 10 as a self-completion survey (web/postal) was offered.

In total, 31 countries participated in ESS 10. 22 countries stuck to the standard ESS survey mode and fielded ESS 10 face-to-face. Nine countries changed mode and switched to self-completion. These were Austria, Cyprus, Germany, Israel, Latvia, Poland, Serbia, Spain, and Sweden.

The focus of the present analysis is on the countries sticking to the face-to-face mode. We analyse the data from ESS 10, data edition 2.2 (published at 21.12.2022). In this edition, 19 of the 22 face-to-face countries were included.<sup>5</sup> For 17 of the 19 countries, LFS data are available. Only for Montenegro and North Macedonia, LFS data are missing.

In addition, we have a look at the countries which fielded ESS 10 as a self-completion survey. For the analysis of these countries, we rely on ESS 10 SC, data edition 1.1 (published at 16.01.2023). This edition includes data from Austria, Germany, Poland, Serbia, Spain, and Sweden.<sup>6</sup> For five of the six countries, LFS data are available. The exception is Serbia, which is not included in the integrated LFS data set provided by Eurostat.

In total, our analysis includes 22 countries from ESS 10. Most of these countries (both countries sticking to the face-to-face mode, and countries using the self-completion mode) completed all or most of their interviews in the year 2021 (see Table 1). Only one country (Slovenia)

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<sup>5</sup> Belgium, Ireland, and UK will be added in the 3<sup>rd</sup> data edition for ESS 10.

<sup>6</sup> Data for Cyprus, Israel, and Latvia will be published in the next data edition.

conducted a sizeable portion (53%) of interviews in 2020, and another four countries (Greece and Italy among the face-to-face countries, and Poland and Spain among the self-completion countries) completed most interviews only in 2022. Against this backdrop, it would have seemed natural to use LFS 2021 data for the assessment of sample composition in ESS 10. Unfortunately, waiting for the provision of LFS 2021 data and documentation by Eurostat would have meant that any sample composition insight from Round 10 would not have been available in time to be considered by countries when planning data collection for the next ESS round (countries could start fieldwork for ESS 11 from February 2023 onwards).

Table 1: Timing of fieldwork in ESS 10 (22 countries included in analysis)

Country	% interviews conducted in the year		
	2020	2021	2022
<b>Face-to-face</b>			
BG		100.0	
CH		74.5	25.5
CZ		100.0	
EE		100.0	
FI		99.5	0.5
FR		100.0	
GR		25.7	74.3
HR		100.0	
HU		100.0	
IS		95.2	4.8
IT		17.3	82.7
LT		100.0	
NL		63.5	36.5
NO		80.7	19.3
PT		78.3	21.7
SI	53.3	46.7	
SK		100.0	
<b>Self-completion</b>			
AT		100.0	
DE		100.0	
ES			100.0
PL		5.8	94.2
SE		99.1	0.9

Source face-to-face countries: ESS 10, ed. 2.2, variable 'inwds' (start of interview)

Source self-completion countries: ESS 10 SC, ed. 1.1, variable 'questemp' (date questionnaire completed)

As a pragmatic solution, it was decided to rely on LFS 2020 data instead. This means, that in most of the ESS countries the benchmark data refer to the situation one year before fieldwork. An inspection of LFS estimates in previous LFS rounds for the variables and categories we used, showed that differences between rounds were usually rather modest (smaller than one percentage point over a two-year period). Thus, the difference in the timing of measurements seemed to be acceptable.

Table 2 documents the survey mode and response rates of the 22 analysed countries in LFS 2020 and ESS 10. For comparison only, the response rates from LFS 2018 and ESS 9 are also shown.

Table 2: Survey mode and response rates in LFS 2020 and 2018, and in ESS 10 and 9  
(22 countries included in analysis)

Country	Participation compulsory	LFS 2020	Response rate (%)**	LFS 2018	ESS 10	ESS 9
		Main survey mode*		Response rate (%)**	Response rate (%)**	Response rate (%)**
<b>ESS 10 face-to-face</b>						
BG	no	PAPI	72.6	80.1	72.5	69.4
CH	no	CATI	78.8	79.7	49.5	51.8
CZ	no	PAPI	73.8	77.6	72.8	67.4
EE	no	CATI	71.8	71.9	47.2	62.7
FI	no	CATI	59.3	65.6	41.1	51.8
FR	yes	CATI	72.8	79.7	39.6	48.1
GR	yes	PAPI	64.5	73.2	48.0	
HR	no	CATI	57.0	57.6	43.1	43.2
HU	no	CATI	64.7	75.5	40.4	40.7
IS	no	CATI	61.9	68.5	33.6	40.5
IT	yes	CATI	79.8	85.7	49.8	51.9
LT	no	n.a.	77.5	78.4	35.6	59.2
NL	no	CATI	47.5	50.6	35.7	49.6
NO	yes	CATI	85.3	84.3	37.9	43.3
PT	yes	CATI	61.7	83.6	41.7	34.9
SI	no	CATI	57.8	78.7	54.7	64.1
SK	yes	CATI	79.9	82.4	44.3	39.6
<i>Mean f-2-f countries</i>			<i>68.6</i>	<i>74.9</i>	<i>46.3</i>	<i>51.1</i>
<b>ESS 10 self-completion</b>						
AT	yes	CATI	94.6	93.0	33.7	50.8
DE	yes	CAWI	53.2	97.3	37.0	27.6
ES	yes	CATI	84.7	84.4	35.5	53.8
PL	no	CATI	66.1	57.8	39.2	60.4
SE	no	CATI	51.0	52.8	37.9	39.0
<i>Mean sc countries</i>			<i>69.9</i>	<i>77.1</i>	<i>36.7</i>	<i>46.3</i>
<i>Mean all countries</i>			<i>68.9</i>	<i>75.4</i>	<i>44.1</i>	<i>50.0</i>

\* Modal category of survey mode, including PAPI, CAPI, CATI, CAWI, other.

\*\* In the LFS most countries calculate response rates on the household level, only in a minority of countries response rates are calculated on the person level (which is the standard in ESS).

Source LFS 2020: Eurostat 2022a, 2022b

Source LFS 2018: Eurostat 2019a

Source ESS 10: ESS website 'Country documentation' (15.02.2023)

Source ESS 9: ESS website 'Notes on data and fieldwork' (09.09.2020)

Among the 22 countries, participation in the LFS was mandatory in 9 countries (see Table 2). The LFS follows a philosophy of ‘output harmonisation’. Therefore, the survey mode is allowed to vary, both between and within countries. Data collection is carried out through face-to-face interviews (CAPI or PAPI), telephone interviews, web interviews and self-administered questionnaires. Because of the COVID-19 outbreak, the LFS data collections in 2020 have been hampered in many countries. During the containment, face-to-face collection methods have been stopped and replaced as much as possible by remote collection methods, namely CATI or CAWI (Eurostat 2022b). CATI is the predominant data collection mode in most LFS 2020 countries (see Table 2).

In a number of countries, Covid also had an impact on the response rates achieved in LFS 2020. An increase in unit-nonresponse between 2018 and 2020 by more than 20 percentage points was observed in Germany, Portugal, and Slovenia.<sup>7</sup> The achieved response rates in LFS 2020 vary between 47.5% (Netherlands) and 94.6% (Austria). Accordingly, the LFS, too, has a severe nonresponse problem in some countries. The consequences for the nonresponse error of the LFS cannot be assessed here. However, two points can be made in favour of still using LFS as a benchmark for the ESS. First, in each country the LFS 2020 response rate is at least as high as the ESS 10 response rate. In fact, in most countries the response rate is higher in the LFS than in the ESS, often to a considerable degree. On average across all 22 countries, the LFS 2020 response rate is 68.9%. The respective rate in ESS 10 is 44.1%. Second, it has to be taken into account that the LFS data itself are weighted to adhere to the population distribution. (Nearly) all countries used population information on gender, age, and region in their weighting procedure (Eurostat 2022a). Several LFS countries included additional variables (like employment status or nationality). Thus, at least the distributions of these variables should validly reflect the countries’ population.

In ESS 10, all face-to-face countries fielded the survey as a CAPI survey. In the self-completion countries, the ESS survey was conducted using either a sequential or a concurrent web/paper design. On average, the response rates of ESS 10 are around 10 percentage points lower in the self-completion than in the face-to-face countries (36.7% vs. 46.3%). Among the self-completion countries, the response rates do not vary much (the range in response is between 33.7% and 39.2%). In contrast, the variation in response is large among the face-to-face countries. The reported rates vary between a low of 33.6% (Iceland) and a high of 72.8% (Czechia).

In the countries fielding ESS 10 as a self-completion survey, response rates dropped by 9.6 percentage points on average between ESS 9 and ESS 10. In the countries which stucked to the face-to-face mode, the decline in response was 4.8 percentage points on average. Still, a few countries could increase their response rate between ESS 9 and 10. The largest increase occurred in Germany (self-completion country) and Portugal (face-to-face country). In both countries, response rates were considerably below average in ESS 9. The increase in response in ESS 10 was 9.4 percentage points (DE) and 6.8 percentage points (PT), respectively.

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<sup>7</sup> In Germany, also technical issues related to the introduction of a new system of integrated household surveys played a role for the increase in nonresponse.



## 5. Data and variables

For our analyses we used ESS round 10 (edition 2.2) data, ESS 10 SC (edition 1.1) data<sup>8</sup>, and anonymised EU LFS 2020 (edition 2021) data<sup>9</sup>. We used the yearly dataset of LFS, including the so-called ‘structural’ variables (Eurostat 2021). Comparisons between ESS and LFS were possible for variables which were either measured in an identical way or, if this was not the case, where the measurements could be recoded to a common standard. This was true for six variables: gender, age, marital status, work status, nationality, and household size. We deliberately did not include a variable like education, which is difficult to measure in a comparable way in a cross-national context (Ortmanns & Schneider 2016). Table 3 shows the variables and the respective categories which we distinguished, plus their source variables in ESS and LFS.

For the ESS 10 face-to-face data, these are exactly the same variables as used in previous analyses. For the ESS 10 self-completion data, however, an adaptation was necessary. Due to the drop of a variable, the marital status could not be derived for all respondents. For the self-completion countries, we can only compare the proportion of married respondents (including persons in a registered partnership) who live with a partner in the same household.

The ESS interviews persons aged 15 years and over resident within private households, regardless of their nationality, citizenship, or language. To achieve comparable target populations, we excluded persons under 15 years in the LFS. In addition, persons living in an institutional household (which were surveyed in a few LFS countries) were excluded. In Iceland, Norway, and Sweden, LFS data are only available for persons aged 74 years or younger. The LFS sample in Estonia does not include persons 75 years and older living alone in a household. For these four countries, we restricted the ESS (and LFS) analyses to persons aged 15 to 74 years.

ESS data were weighted with the design weight (DWEIGHT). This weight corrects for differences in selection probabilities between sampling units in a country. The design weights are computed as normed inverse of the inclusion probabilities. LFS data were weighted with the standard weight variable COEFF, as recommended by Eurostat. COEFF corrects for differences in selection probabilities. In addition, it includes a post-stratification adjustment to adapt the LFS data to known population characteristics. In (nearly) all LFS countries, data on gender, age, and region were used for the adjustment. A number of countries included additional data in weighting, like information on unemployment or nationality (see Eurostat 2022a). Using weighted data for the LFS thus should reduce both sampling errors and errors due to nonresponse or noncoverage – at least for the variables included in the weighting procedure.

When determining the categorisation of the variables, we tried to make sure that the proportions of persons in the different categories were of a reasonable size in all countries. Apart from one

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<sup>8</sup> European Social Survey European Research Infrastructure (ESS ERIC). (2022). ESS10 - integrated file, edition 2.2 [Data set]. Sikt - Norwegian Agency for Shared Services in Education and Research.

European Social Survey European Research Infrastructure (ESS ERIC). (2022). ESS10 Self-completion - integrated file, edition 1.1 [Data set]. Sikt - Norwegian Agency for Shared Services in Education and Research. The ESS ERIC, Core Scientific Team (CST) and the producers bear no responsibility for the uses of the ESS data, or for interpretations or inferences based on these uses.

<sup>9</sup> All results and conclusions are those of the authors and not those of Eurostat, the European Commission or any of the national authorities whose data have been used.

variable (nationality), this could be achieved. In six out of the 22 countries, the percentage of non-nationals is less than 2.0% in LFS 2020. These are Bulgaria, Croatia, Hungary, Lithuania, Poland, and Slovakia.

Table 3: Variables of the ESS – LFS comparison

Variable	Categories	ESS source variable	LFS source variable
Gender	<ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>	gndr	sex
Age	<ul style="list-style-type: none"> <li>• 15-24 years</li> <li>• 25-34 years</li> <li>• 35-44 years</li> <li>• 45-54 years</li> <li>• 55-64 years</li> <li>• 65-74 years</li> <li>• 75 years and older</li> </ul>	agea (recoded)	age (recoded)
Marital status face-to-face countries	<ul style="list-style-type: none"> <li>• Not married</li> <li>• Married (incl. registered partnership)</li> </ul>	maritalb (3-6 = 0) (1-2 = 1)	marstat (0-1 = 0) (2 = 1)
Marital status self-completion countries (only for respondents living with the partner in the same hh)	<ul style="list-style-type: none"> <li>• Married (incl. registered partnership) + living with partner in the same household</li> <li>• All others</li> </ul>	rshpsts (1-2 = 1) (3-6, 66 = 0)	marstat + hhpartnr  (if marstat eq 2 + hhpartnr eq 1, then var = 1; all others: var = 0)
Work status	<ul style="list-style-type: none"> <li>• Not in paid work in the last 7 days</li> <li>• In paid work (for at least one hour) in the last 7 days</li> </ul>	pdwrk + crpdwk	wstator (3-5 = 0) (1-2 = 1)
Nationality	<ul style="list-style-type: none"> <li>• National of country</li> <li>• No national of country</li> </ul>	ctzcntr (1 = 0) (2 = 1)	national (non-nationals recoded in one category) (0 = 0) (1-23 = 1)
Household size	Respondent lives in household comprising <ul style="list-style-type: none"> <li>• 1 person</li> <li>• 2 persons</li> <li>• 3 persons</li> <li>• 4 persons</li> <li>• 5 or more persons</li> </ul>	hhmmb (recoded)	hhnbpers (recoded)

In addition, it should be noted that in the standard LFS data files no information on household size has been made available for five countries (Finland, Iceland, Norway, Sweden, and Switzerland).<sup>10</sup> Thus, the analyses with the variable household size had to be restricted to the remaining 17 countries. For Sweden, the variable hhpartnr is not available in the LFS. Consequently, the adapted marital status variable (see Table 3) could not be derived for Sweden. As regards the variable work status, all persons 75 years and older in Finland and Hungary were classified as ‘not in work’ in the LFS. We did the same for the respective age group in ESS.

<sup>10</sup> For Iceland, Norway, and Switzerland, no household information at all is available in the LFS. For Finland and Sweden, data is available only in separate country-specific files for a special household subsample. See Eurostat 2021, p. 41.

## 6. Countries fielding ESS 10 in face-to-face mode

### 6.1 Patterns of misrepresentation

Which socio-demographic groups are over- or underrepresented in the ESS samples of the 17 countries conducting ESS 10 in the ‘traditional’ face-to-face mode? Table 4 displays the direction and size of differences between ESS and LFS estimates for the six variables included in our analyses. For dichotomous variables (gender, marital status, work status, nationality), the differences for only one category are shown. For age and household size, differences for all categories are provided. Green cells indicate an overrepresentation of the respective category in a country in the ESS, while red cells indicate an underrepresentation. Thus, it can easily be checked whether the patterns of misrepresentation are similar across countries.

To provide an indication of whether the observed differences between ESS and LFS are within the limits of sampling error, we calculated 95% confidence intervals for the ESS estimates. We incorporated sample design indicators (PSU, STRATUM, and DWEIGHT) into the analyses in order to obtain design-unbiased estimates of standard errors (Kaminska 2020). The confidence intervals were estimated using the complex sample procedure of SPSS. When the confidence intervals do not overlap with the percentage from the LFS, we interpret this as an indication of a significant over- or underrepresentation with respect to that specific estimate.<sup>11</sup>

According to Table 4, significant differences between ESS and LFS estimates show up at each of the six variables in around half or more of the 17 countries. Broadly speaking, we can state that the following patterns of under-/overrepresentation prevail:

Underrepresented are:

- Younger age groups (15-34 years)
- Oldest age group (75+ years)
- Non-nationals
- Persons living in large households (4+ persons)

Overrepresented are:

- Females
- Middle/older aged persons (45-74 years)
- Married persons
- Persons in paid work
- Persons living in 2-person households

Mixed pattern:

- Persons living in 1-person households

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<sup>11</sup> We could not estimate the sampling errors of the LFS estimates. Due to the rather large sample size, they tend to be small (see the examples in Eurostat 2022b, p. 16ff). In addition, the post-stratification weighting applied in the LFS should eliminate sampling error, at least for the characteristics used as control (see section 5 above).

Table 4: Differences between ESS 10 and LFS 2020 estimates, face-to-face countries (in percentage points)\*

		Age								In paid	Non-	HH-size				
	Female	15-24 y.	25-34 y.	35-44 y.	45-54 y.	55-64 y.	65-74 y.	75+ y.	Married	work	national	1p-hh	2p-hh	3p-hh	4p-hh	5+p-hh
BG	0.8	0.7	-2.9	0.8	0.9	0.5	0.3	-0.3	-0.9	3.1	1.8	0.6	0.4	2.7	0.6	-4.4
CH	-2.1	-0.3	-2.4	-0.8	-0.7	2.2	1.9	0.0	2.3	0.7	-4.8					
CZ	5.2	6.5	-1.7	-2.2	2.4	1.9	-2.4	-4.5	-5.1	2.3	0.1	-0.2	-3.2	4.5	-1.1	0.1
EE	2.2	-3.8	-3.1	-0.6	1.4	2.4	3.7		2.5	4.6	-3.3	-5.6	1.8	-1.1	2.3	2.7
FI	-0.6	-2.9	-3.0	-1.2	-1.0	2.2	3.4	2.5	1.3	-0.5	-2.1					
FR	-1.6	-1.9	-2.5	0.9	2.6	1.6	0.6	-1.2	9.0	6.5	-0.8	-2.1	0.6	1.1	0.9	-0.5
GR	1.0	-3.2	0.4	0.9	4.3	4.4	-0.6	-6.3	2.3	12.5	-1.5	3.7	2.9	1.7	-5.3	-2.9
HR	2.9	-1.6	0.0	-1.8	0.9	1.2	2.8	-1.6	0.9	2.0	0.1	5.4	4.0	3.1	-6.8	-5.7
HU	10.3	-1.4	-2.8	-2.5	1.4	0.6	3.3	1.4	6.8	1.5	1.8	5.7	4.2	2.6	-5.8	-6.7
IS	4.0	-2.3	-7.4	-1.4	2.2	2.4	6.5		4.7	0.9	-1.8					
IT	0.8	-0.9	-0.5	-1.7	-0.5	2.5	2.2	-1.1	-1.6	6.3	-2.9	4.6	5.0	-2.7	-3.9	-3.0
LT	5.2	-0.8	-2.8	2.9	2.1	0.1	2.7	-4.2	1.8	-0.9	0.1	-5.1	2.3	1.8	1.8	-0.7
NL	-1.8	-1.5	0.1	0.6	0.1	0.3	0.9	-0.6	0.9	6.3	-1.9	-2.9	1.4	1.1	1.6	-1.4
NO	0.0	-1.3	-3.1	-0.1	1.0	2.5	1.0		4.4	7.7	-5.9					
PT	3.6	-2.2	-2.3	-1.4	2.7	2.6	1.4	-0.8	2.7	-2.4	3.6	1.1	4.0	-2.8	-3.8	1.3
SI	2.7	2.3	-1.2	-1.7	-1.4	0.4	1.6	0.1	0.8	1.7	0.0	-5.4	1.4	-1.4	-0.4	5.8
SK	0.9	-2.1	-8.5	-1.4	3.1	3.8	6.1	-0.9	8.4	1.0	2.7	5.5	7.5	-3.5	-3.6	-5.9
# sign. diff.	8+ / 1-	2+ / 6-	0+ / 12-	1+ / 3-	5+ / 0-	11+ / 0-	9+ / 1-	2+ / 5-	6+ / 1-	8+ / 0-	4+ / 8-	6+ / 5-	6+ / 1-	4+ / 3-	1+ / 6-	2+ / 6-

\* green cells = overrepresentation; red cells = underrepresentation; dark green / dark red = LFS estimate outside 95% CI of ESS estimate  
 EE, IS, NO: persons 75 years or older not included; CH, FI, IS, and NO: no LFS data on HH-size available

## 6.2 A summary measure of ESS-LFS differences

In order to arrive at a summary measure for the consistency of ESS and LFS variable distributions, we calculate the index of dissimilarity (Duncan & Duncan 1955) for each socio-demographic variable of our analysis:

$$D = \frac{1}{2} \sum_i^n |ESS_i - LFS_i|$$

with n = number of categories,

ESS<sub>i</sub> = percentage in category i of ESS,

LFS<sub>i</sub> = percentage in category i of LFS.

The index of dissimilarity (D) is a measure widely used in research on segregation. The range of the index is between 0 and 100. In the present context, a value of 0 indicates that there is no dissimilarity between the LFS and the ESS in the relative shares of respondents across the categories of a variable. A value of 100 indicates that the two distributions are completely dissimilar (consider, e.g., a dichotomous variable, where the first category comprises 100% in LFS and 0% in ESS, and the second category comprises 0% in LFS and 100% in ESS). The index of dissimilarity measures the percentage of respondents that would need to move between the categories of a variable to produce the same distribution for the two surveys. In contrast to the percentage point differences reported in the previous section, the index of dissimilarity is a non-directional measure. It does not provide an indication of which demographic subgroups are *over-* or *under*represented.

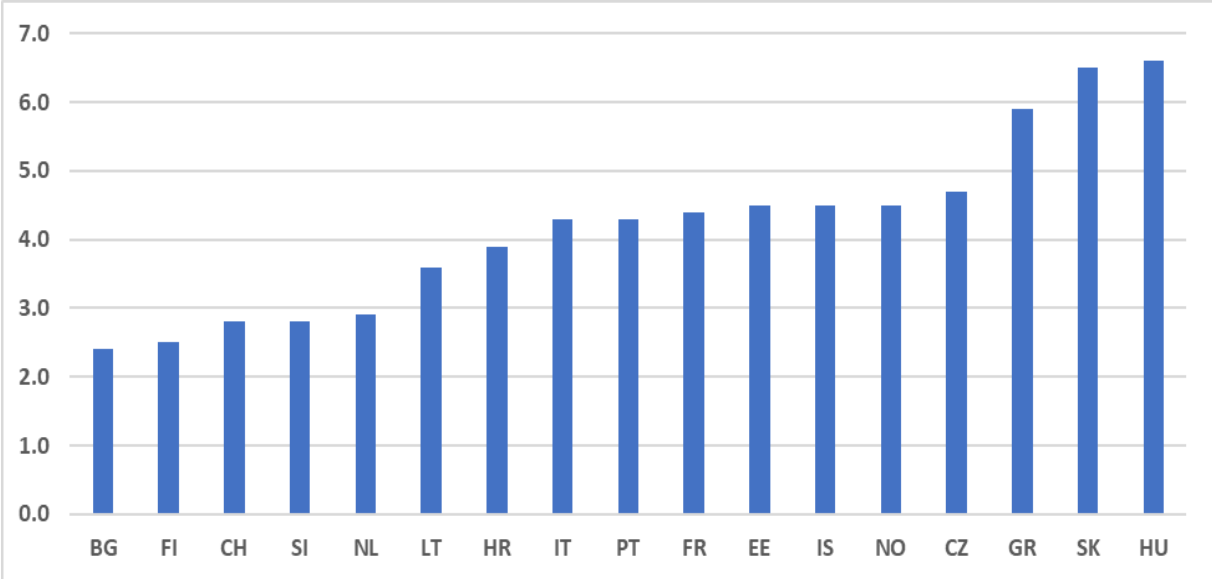
Table 5: Index of dissimilarity between ESS 10 and LFS 2020 variable distributions (face-to-face countries)

Country	Gender	Age	Marital status	Work status	Nationality	Household size	Mean (6 var.)
BG	0.8	3.2	0.9	3.1	1.8	4.4	2.4
CH	2.1	4.2	2.3	0.7	4.8		2.8
CZ	5.2	10.8	5.1	2.3	0.1	4.6	4.7
EE	2.2	7.5	2.5	4.6	3.3	6.8	4.5
FI	0.6	8.1	1.3	0.5	2.1		2.5
FR	1.6	5.7	9.0	6.5	0.8	2.6	4.4
GR	1.0	10.1	2.3	12.5	1.5	8.3	5.9
HR	2.9	5.0	0.9	2.0	0.1	12.5	3.9
HU	10.3	6.7	6.8	1.5	1.8	12.5	6.6
IS	4.0	11.1	4.7	0.9	1.8		4.5
IT	0.8	4.7	1.6	6.3	2.9	9.6	4.3
LT	5.2	7.8	1.8	0.9	0.1	5.9	3.6
NL	1.8	2.1	0.9	6.3	1.9	4.2	2.9
NO	0.0	4.5	4.4	7.7	5.9		4.5
PT	3.6	6.7	2.7	2.4	3.6	6.5	4.3
SI	2.7	4.4	0.8	1.7	0.0	7.2	2.8
SK	0.9	13.0	8.4	1.0	2.7	13.0	6.5
mean	2.7	6.8	3.3	3.6	2.1	7.5	4.2
min	0.0	2.1	0.8	0.5	0.0	2.6	2.4
max	10.3	13.0	9.0	12.5	5.9	13.0	6.6

The size of D varies both between countries and between variables (see Table 5). The largest dissimilarity pertains to the variables age and household size (for both variables, D is 13.0 in Slovakia). The mean value of D across all variables and countries is 4.2.<sup>12</sup> This means that – on average – around 4% of respondents in ESS would have to change categories in order to achieve the same distribution as in the LFS. Accordingly, the average level of misrepresentation in the ESS does not seem to be very high. D is highest for the variables age and household size (the mean D across countries is 6.8 and 7.5, respectively). To some extent, this is the consequence of these two variables having a larger number of categories than the remaining variables.

The mean value of D across the six variables varies between a low of 2.4 in Bulgaria, and a high of 6.6 in Hungary (see Figure 1). Countries with a rather high average D typically show values well above average in several variables (see Table 5).

Figure 1: Average level of dissimilarity (mean D across six variables) in ESS 10 (face-to-face countries)



6.3 Effect of post-stratification weights

Using post-stratification adjustments is, in principle, a cost-efficient approach to improve survey representativeness. Well-designed post-stratification weights can correct for sampling, coverage, and nonresponse errors. Applying post-stratification weights, however, will not reduce any bias that arises within weighting classes. Weighting is therefore unlikely to compensate completely for survey misrepresentation. In addition, if misrepresentation is large, some weights will also be large. In this case, the use of post-stratification weights will increase the variance of estimates and lead to a loss in precision.

The ESS has been providing post-stratification weights for its users for some time. These weights have been constructed using information on gender, age group, education, and region (Lynn & Anghelescu 2018). The post-stratification weights (pspwght) are obtained by adjusting

<sup>12</sup> The index of dissimilarity for household size is not available in four countries (Finland, Iceland, Norway, and Switzerland). For these countries, the average value of D is based on the remaining five variables.

the ESS design weights (dweight) in such a way that they will replicate the distribution of the cross-classification of gender, age group, and education in the population, and the marginal distribution for region in the population.<sup>13</sup> In most countries, the population distributions for the adjusting variables were obtained from the European Union Labour Force Survey.<sup>14</sup> For gender, a simple dichotomy (male vs. female) has been used. Age has been grouped into three categories (15–34 years, 35–54 years, and 55 years or older). Both ESS and LFS use the ISCED classification for measuring education. For weighting, the education measure has been recoded into a three-level variable. The recoding of the variable region generally follows the standard NUTS division of countries. Since regions are country-specific, they require separate specification of recoding procedures for each country.

Table 6 shows the average indices of dissimilarity across countries for the six variables, both without and with applying the ESS post-stratification weights. For comparison, the respective results for ESS 9 are also shown. The level of reduction in dissimilarity by using post-stratification weights varies between variables. The largest relative reduction pertains to the variable gender, followed by the variables marital status and age. The smallest reduction pertains to the variables work status, household size, and nationality. That the level of reduction is highest for the variable gender does not come by surprise. Gender is among the control variables included in the post-stratification weight. One usually would expect that the variables included as control in the post-stratification weight will show a more or less perfect fit with the benchmark data. The variable age also has been used as a control for the post-stratification weight. Here, however, the reduction in dissimilarity is much smaller than the one regarding the variable gender. The different categorisation of the age variable has contributed to this result (see the empirical example in Koch & Briceno-Rosas 2021). For the calculation of the post-stratification weight, only three different age groups have been distinguished. In our comparison, however, we use a more detailed categorisation with seven age groups.

Table 6: Effect of using post-stratification weights: average level of dissimilarity (mean D across all countries\*); ESS 9 and ESS 10 (f2f countries)\*\*

Variable	ESS 9 (dweight)	ESS 9 (pspwght)	Rel. red.***	ESS 10 (dweight)	ESS 10 (pspwght)	Rel. red.***
Gender	2.9	0.2	93%	2.7	0.2	93%
Age	7.4	4.2	43%	6.8	4.7	31%
Marital status	3.6	1.8	50%	3.3	2.0	39%
Work status	2.3	2.0	13%	3.6	2.7	25%
Nationality	2.8	2.5	11%	2.1	2.1	0%
Household size	6.7	5.8	13%	7.5	6.7	11%
Mean D across 6 variables	4.2	2.7	36%	4.2	2.9	31%

\* Number of countries: ESS 9: 25 countries; ESS 10: 17 f2f countries

Household size: no information available in LFS for CH, FI, IS, NO, and SE. 21 and 13 countries remaining in ESS 9 and 10, respectively. Marital status: no information available for LV in ESS 9.

\*\* Source ESS 9: Koch & Briceno-Rosas 2021

\*\*\* Relative reduction in average D, after applying post-stratification weight.

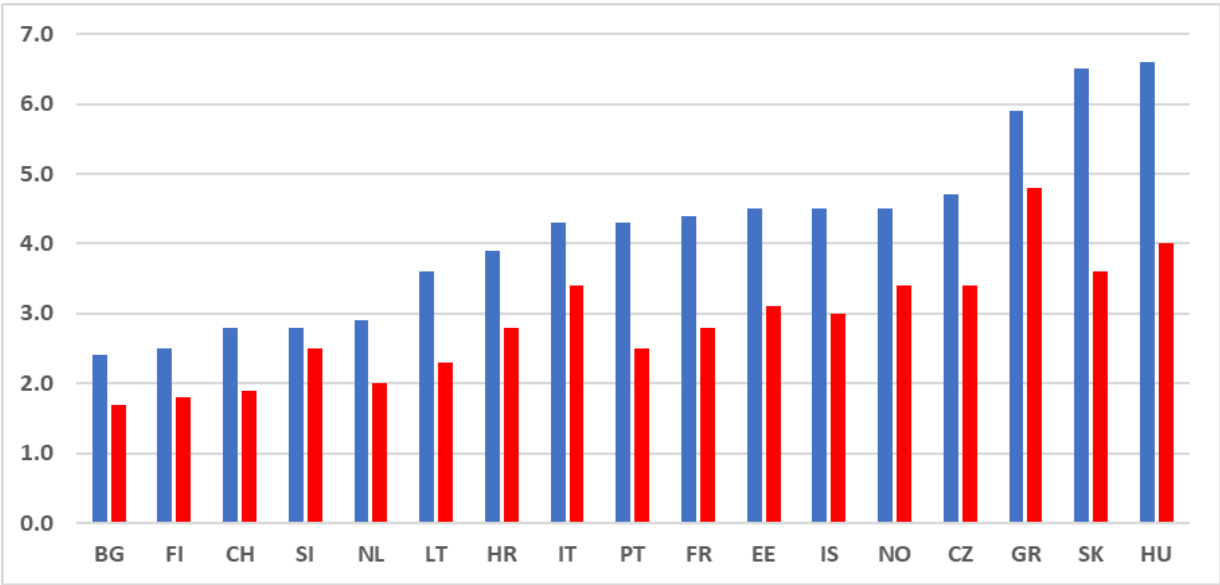
<sup>13</sup> Accordingly, the ESS post-stratification weights are post-stratified design weights. For the sake of brevity, we use the term post-stratification weight in the present paper.

<sup>14</sup> When LFS data was incomplete or absent, these estimates have been taken from other sources: either data provided by the ESS National Coordinators or data obtained from the Office for National Statistics of that country. When data has been taken from the LFS, annual estimates have been derived from the respective quarterly data sets. In some countries, information on education or region was not included in the weighting procedure (see Lynn & Anghelescu 2018).

On average across all countries and variables, the level of dissimilarity between ESS and LFS is reduced by about one-third when the post-stratification weights are used (see last row of Table 6). This applies both to round 9 (mean D of 2.7 vs. mean D of 4.2) and round 10 (mean D of 2.9 vs. mean D of 4.2).

The level of improvement when applying post-stratification weights varies between countries (see Figure 2). In all countries, the introduction of post-stratification weights reduces the average size of differences between ESS 10 and LFS 2020. The absolute (and relative) reduction in the mean index of dissimilarity across the six variables is highest in Slovakia (minus 2.9 percentage points, corresponds to -45%) and smallest in Slovenia (minus .3 percentage points, corresponds to -11%).

Figure 2: Average level of dissimilarity (mean D across 6 variables) in ESS 10 (f2f countries), design weighted (blue bars) and post-stratification weighted (red bars) data



At the level of individual variables, the effects of the post-stratification weight vary to a greater degree across countries (results not shown). Except for age, we find for each variable one or several countries where applying the post-stratification weight in fact increases the discrepancy between the ESS and LFS variable distribution.

Finding out about the reasons for the different effects of post-stratification weighting, both between countries and between variables, is beyond the scope of the present paper. Such an endeavour requires country-specific insights into the relationship between the interesting variables, adjustment variables, and response propensities. To reduce nonresponse bias effectively, the adjustment variables need to be correlated with both the response propensity and the interesting variables (in the terminology of Groves 2006, the ‘common cause model’ has to apply).



## 7. Countries fielding ESS 10 in self-completion mode

### 7.1 Patterns of misrepresentation

In ESS 10, nine countries changed mode and switched to self-completion. A dataset for a subset of these countries was published at 16.01.2023 (ESS 10 SC, data edition 1.1, including data for six countries). For five of the six countries, LFS data are available: Austria, Germany, Poland, Spain, and Sweden.<sup>15</sup> Table 7 provides an overview on the patterns of misrepresentation for these countries. Note that in contrast to the analyses for the face-to-face countries, the percent of married persons only refers to married persons (incl. registered partnership) living with the partner in the same household.

The structure of misrepresentation for these five countries is – by and large – quite similar to the patterns observed among the 17 face-to-face countries (see Table 4 above). We see, for instance, a significant overrepresentation of middle- to older aged persons (55-75 years), of persons in paid work, and persons living in two-person households. At the same time, a few differences can be observed. Among the self-completion countries, the underrepresentation of younger age groups refers mainly to persons 35-44 years old, whereas among the face-to-face countries 25-34 years old persons were mainly affected. Two of the self-completion countries (Spain and Poland) show a significant underrepresentation of married persons, whereas among the face-to-face countries significant differences with respect to the marital status usually concern an overrepresentation of married persons. The underrepresentation of non-nationals, which occurs among many face-to-face countries, is a characteristic of all self-completion countries.

Whether these differences represent a mode-effect, cannot be judged. The present data are of an observational nature only. Differences between self-completion and face-to-face countries may indicate a mode-effect or may simply represent specific characteristics of the countries concerned. We can check whether the peculiarities observed for the self-completion countries can also be found in the previous round of ESS, when data collection in these countries was done by face-to-face interviewing. Such a check reveals, for instance, that the underrepresentation of married persons in Spain and Poland can also be observed in ESS 9 (Koch & Briceno-Rosas 2021, p.11). The underrepresentation of non-nationals, which occurred in each of the five self-completion countries in ESS 10, also happened in ESS 9 in each of these countries.

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<sup>15</sup> Serbia is not included in the integrated LFS data set provided by Eurostat.

Table 7: Differences between ESS 10 and LFS 2020 estimates, self-completion countries (in percentage points)\*

		Age								In paid	Non-	HH-size				
	Female	15-24 y.	25-34 y.	35-44 y.	45-54 y.	55-64 y.	65-74 y.	75+ y.	Married	work	national	1p-hh	2p-hh	3p-hh	4p-hh	5+p-hh
AT	-0.3	1.1	-1.0	-1.5	0.5	3.8	0.6	-3.5	2.1	7.9	-8.3	-9.2	4.7	1.6	2.7	0.2
DE	0.4	0.1	-1.1	-1.2	-1.1	2.1	2.9	-1.8	-1.2	3.3	-7.1	-4.3	2.9	0.8	0.4	0.2
ES	0.9	0.0	-1.3	-2.9	2.0	2.2	1.7	-1.7	-2.7	7.5	-4.3	-2.2	3.2	-0.6	1.1	-1.6
PL	-0.7	1.2	-1.6	-2.5	-0.3	-0.1	3.2	0.1	-5.0	-0.6	-0.4	0.1	-0.1	-0.2	0.2	0.0
SE	3.6	-2.1	-4.1	-2.6	-1.3	1.9	8.2			-2.4	-5.5					
# sign. diff.	1 + / 0 -	0 + / 1 -	0 + / 1 -	0 + / 4 -	1 + / 1 -	4 + / 0 -	4 + / 0 -	0 + / 3 -	0 + / 2 -	3 + / 1 -	0 + / 5 -	0 + / 3 -	3 + / 0 -	0 + / 0 -	1 + / 0 -	0 + / 1 -

\* green cells = overrepresentation; red cells = underrepresentation; dark green / dark red = LFS estimate outside 95% CI of ESS estimate

“Married”: refers only to persons living with partner in the same household

SE: persons 75 years or older not included; SE: no LFS data on marital status (variable ‘hhpartnr’ missing) and household size available

## 7.2 A summary measure of ESS-LFS differences

Table 8 displays the indices of dissimilarity for the five self-completion countries. The largest dissimilarities pertain to the variable age in Sweden (D=10.1) and household size in Austria (D=9.2). The mean value of D across all variables and countries is 4.2. This is the same value as for the face-to-face countries. Mean D is highest for the variable age (D=6.3), followed by the variable nationality (D=5.1) and household size (D=4.6). The mean value of D across the six variables varies between a low of 1.9 in Poland, and a high of 5.6 in Austria.

Table 8: Index of dissimilarity between ESS 10 and LFS 2020 variable distributions (self-completion countries)

Country	Gender	Age	Marital status	Work status	Natio-nality	Household size	Mean (6 var.)
AT	0.3	6.0	2.1	7.9	8.3	9.2	5.6
DE	0.4	5.2	1.2	3.3	7.1	4.3	3.6
ES	0.9	5.9	2.7	7.5	4.3	4.4	4.3
PL	0.7	4.5	5.0	0.6	0.4	0.3	1.9
SE	3.6	10.1		2.4	5.5		5.4
mean	1.2	6.3	2.8	4.3	5.1	4.6	4.2
min	0.3	4.5	1.2	0.6	0.4	0.3	1.9
max	3.6	10.1	5.0	7.9	8.3	9.2	5.6

## 8. Average level of misrepresentation across ESS rounds

The difficulties in fielding ESS 10 as a face-to-face survey during the pandemic, and the switch to a self-completion survey in some ESS countries might give cause for concern whether sample composition in ESS 10 is worse than in previous rounds. To put the results of ESS 10 into context, we compare them with the respective information for ESS 5 to ESS 9. Table 9 shows the average index of dissimilarity for the ESS rounds 5 to 10.

Table 9: Average level of dissimilarity (mean D across countries), ESS 5 to ESS 10

	ESS 5	ESS 6	ESS 7	ESS 8	ESS 9	ESS 10
Mean D (6 variables)	3.8	3.8	3.9	3.9	4.2	4.2
Gender	2.9	2.2	2.2	2.1	2.9	2.3
Age	6.2	5.9	6.3	6.1	7.4	6.7
Marital status	2.8	3.6	3.8	4.3	3.6	3.2
Work status	3.7	3.7	3.1	2.5	2.3	3.8
Nationality	2.3	2.5	2.2	2.5	2.8	2.8
Household size	5.6	5.3	7.1	6.5	6.7	6.8
# of countries	23	24	20	21	25	22

In ESS 10, the average dissimilarity across the six variables is 4.2. This is the same value as in ESS 9, and slightly higher than in the previous rounds 5 to 8. When turning to the individual variables, we see that the average level of misrepresentation in ESS 10 is not very different

from previous rounds. Only for the variable work status, the average dissimilarity in ESS 10 is (slightly) higher than in each of the previous rounds. As we saw earlier (Table 4 and Table 5 above), all significant differences in ESS 10 with respect to work status were caused by an overrepresentation of persons in paid work (except for one country). A similar tendency to overrepresent persons in paid work could already be observed for ESS 8 and ESS 9 (see Koch & Briceno-Rosas 2021). One might speculate, whether the Covid pandemic reinforced this tendency in ESS 10, as people were at home more of the time.<sup>16</sup> As regards the other variables, ESS 10 scores either among the rounds with a low (gender, marital status), middle (age) or high (nationality, household size) average level of dissimilarity.

Taken together, these results indicate a similar average level of sample quality in ESS 10 as in previous rounds. However, we should note that the present results do not include all countries from ESS 10. The data from six late countries are still outstanding (Belgium, Ireland, and United Kingdom using face-to-face mode, and Cyprus, Israel, and Latvia using self-completion mode).<sup>17</sup> We cannot preclude, that sample composition in these countries is worse than in the other ESS 10 countries, given the large difficulties they faced during fieldwork (which led to the delay in data availability).

In the comparison made in Table 9, the different survey rounds do include all countries which participated in the respective round.<sup>18</sup> When we want to make a judgement on sample quality for each round of ESS, this procedure is appropriate. In this approach, changes between survey rounds can result from changes occurring in individual countries from round to round, and/or may be because different countries participated in different ESS rounds.

For a more stringent view on changes between rounds, we restrict our final analysis to countries participating in each round from ESS 5 to ESS 10.<sup>19</sup> We present results separately for countries fielding ESS 10 in face-to-face and in self-completion mode. Relying on the same countries across rounds reduces the number of countries we can analyse. Among the 17 face-to-face countries from ESS 10, there are 11 countries for which we have comparable information from ESS 5 thru ESS 9. Among the five self-completion countries, this is the case for four countries.

Table 10: Average level of dissimilarity (mean D across countries and variables), ESS 5 to ESS 10, 15 “permanent” countries

	ESS 5	ESS 6	ESS 7	ESS 8	ESS 9	ESS 10
11 face-to-face countries	3.7	3.8	4.3	3.8	3.7	4.0
4 self-completion countries	2.7	2.4	2.8	3.6	3.4	3.8
15 countries in total	3.5	3.4	3.9	3.8	3.6	3.9

Following this approach, we find a slight increase in the average level of misrepresentation between ESS 9 and ESS 10 (average D 3.6 vs. 3.9, see last row in Table 10). The increase applies both to countries sticking to face-to-face data collection in ESS 10, and to countries

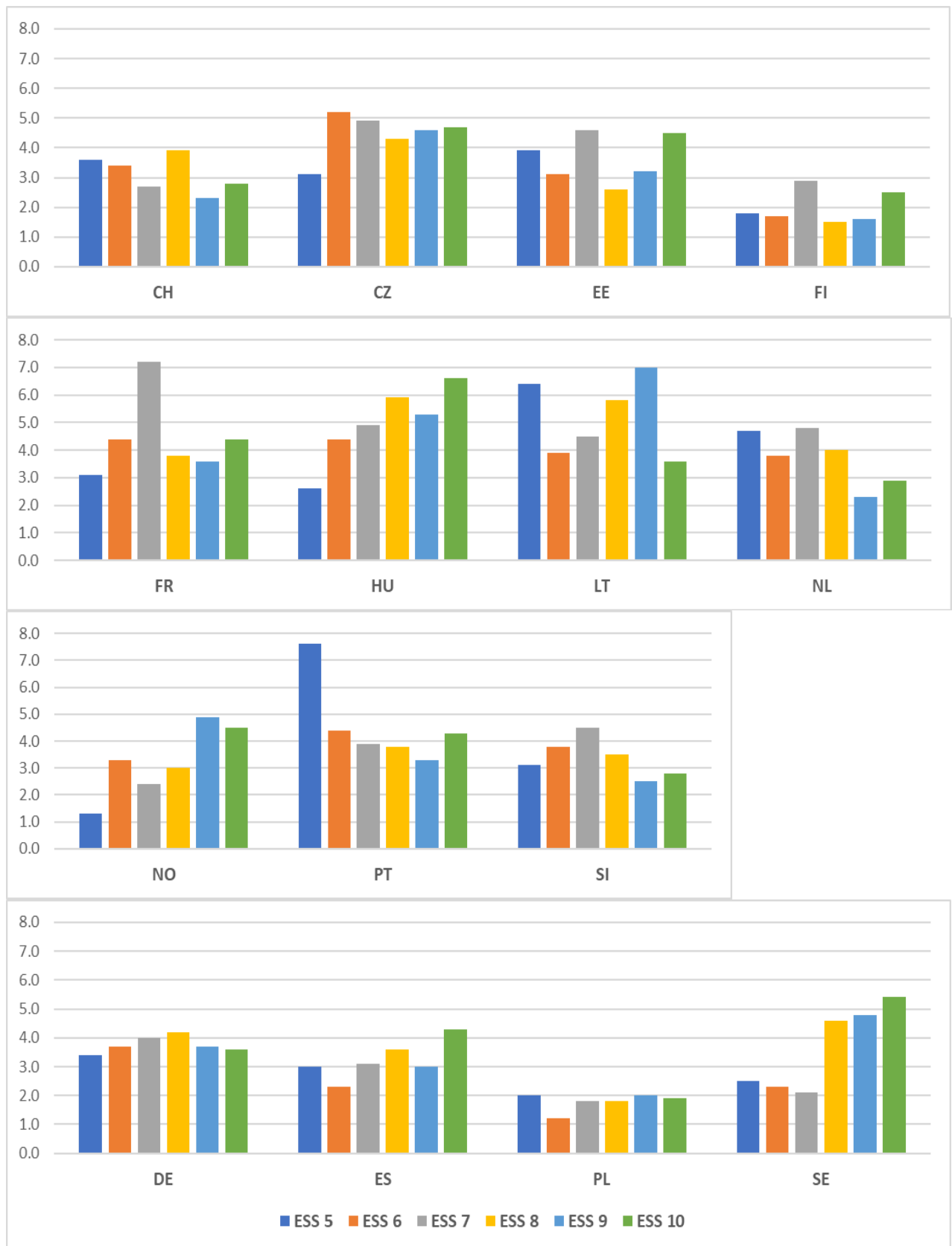
<sup>16</sup> In addition, it seems reasonable to assume that in the countries fielding round 10 as a self-completion survey, problems of contactability will have been generally smaller.  
<sup>17</sup> For four of these countries (BE, IE, CY, LV), LFS 2020 data is available.  
<sup>18</sup> Of course, the countries also had to participate in the LFS.  
<sup>19</sup> Again, the additional prerequisite is that the countries participated in the LFS.

switching to a self-completion survey. The increase, however, should not be overinterpreted. Changes of a similar size could be observed already between previous rounds of ESS.

This also holds on the level of individual countries. Figure 3 reveals that among the 11 face-to-face countries in ESS 10, 9 countries exhibit a (very) slight increase in dissimilarity compared to ESS 9. Among the self-completion countries, this applies to two of the four countries. The maximum increase in dissimilarity is 1.3 percentage points, both among the face-to-face and the self-completion countries. On the other hand, one country (Lithuania, which exhibited a rather low sample quality in ESS 9) improved considerably in that respect in ESS 10 (D minus 3.4 percentage points).

In sum, the present results do not indicate that sample composition in ESS 10 countries is substantially worse than in previous rounds – at least as far as the analysed variables are concerned.

Figure 3: Average level of dissimilarity (mean D across 6 variables), ESS 5 to ESS 10, 15 “permanent” countries\*



\* Panel 1, 2, and 3: countries fielding ESS 10 as a face-to-face survey  
 Panel 4: countries fielding ESS 10 as a self-completion survey

## 8. Summary and discussion

(1) This paper used external benchmark data from the LFS to assess the socio-demographic sample composition in ESS 10 with respect to gender, age, marital status, work status, nationality, and household size. Against the backdrop of the Covid pandemic, data collection for ESS 10 was particularly challenging. Face-to-face fieldwork was delayed in most ESS countries, and some countries had to switch to self-completion data collection in web/paper mode.

Despite these challenges, sample quality in the analysed countries of ESS 10 does not seem to be worse than in previous rounds of ESS – at least, as far as the analysed variables are concerned. The level and patterns of misrepresentation we observed for ESS 10 were rather similar to the results from previous rounds of ESS. We find, for instance, that younger age groups and non-nationals were underrepresented, and females and persons in paid work were overrepresented in the realised samples of many ESS countries.

(2) Applying post-stratification weights is a way to correct for demographic misrepresentation in sample surveys. The ESS post-stratification weights have been constructed using information on gender, age group, education, and region (mainly from the LFS). Re-running the analyses with the ESS post-stratification weights revealed that the level of discrepancies between ESS and LFS usually decreases when the weights were applied. The size of the reduction, however, differs between countries and variables. In a few countries, differences to the LFS data even increased for some variables when the post-stratification weights were applied. Thus, the ESS post-stratification weight is no panacea to deal with demographic misrepresentation.

(3) The variations in the patterns and size of demographic misrepresentation across countries point to the role of country-specific characteristics and procedures in explaining under-/overrepresentations. Consequently, efforts to improve sample composition need to address the specific challenges faced by each country. This suggests considerations on (further) development of ESS post-stratification and/or nonresponse weights, as well as tailored fieldwork strategies aimed at achieving better balanced response rates in the first place.

(4) The ESS plans to change the standard data collection mode from face-to-face interviewing to a self-completion survey (web/paper) in the near future. Switching to a self-completion survey can affect ESS time series, as selection and/or measurement effects might differ between face-to-face and self-completion interviewing.<sup>20</sup> A special concern is that self-completion interviewing might increase sample bias caused by noncoverage and/or nonresponse. Against this backdrop, analyses of sample composition will continue to be an important quality control instrument in accompanying this process of change.

The present analyses did not indicate that sample composition became worse among the countries fielding ESS 10 as a self-completion survey due to the Covid situation. However, the observational nature of the present study did not allow to draw firm conclusions in that respect.

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<sup>20</sup> Analyses from Radka Hanzlova, for instance, indicate a drop in time-series of self-reported happiness and life satisfaction in countries fielding ESS 10 as a self-completion survey, compared to countries fielding ESS 10 in the standard face-to-face mode. See her presentation “Measuring happiness and life satisfaction”, held at April 4, 2023 in the ESS webinar on “20 years of the European Social Survey: Time-series analysis”.  
[https://www.youtube.com/watch?v=ii\\_wzZpH4I4](https://www.youtube.com/watch?v=ii_wzZpH4I4), minute 32

(5) Finally, it is worth to note that from 2021 onwards the source of our benchmark data – the LFS – has undergone a revision. The revision concerns both the sampling and the questionnaire of the LFS.<sup>21</sup> The change will require adaptations in the way the sample composition analysis has been conducted so far. The variable marital status, for instance, is no longer collected in the LFS. On the other hand, new/improved variables are included. Self-perceived health and limitation in activities because of health problems, for instance, are part of the revised LFS every other year.

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<sup>21</sup> See [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU\\_Labour\\_Force\\_Survey\\_-\\_new\\_methodology\\_from\\_2021\\_onwards](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_Labour_Force_Survey_-_new_methodology_from_2021_onwards)



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