FRA EUROPEAN UNION AGENCY FOR FUNDAMENTAL RIGHTS

ROMA SURVEY 2021

TECHNICAL REPORT

ROMA SURVEY 2021

The report ***Roma in 10 European countries – Main results: Roma Survey 2021*** is available here: **https://fra.europa.eu/en/publication/2022/roma-survey-findings**

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COUNTRY CODES

CZ	Czechia
EL	Greece
ES	Spain
HR	Croatia
HU	Hungary
IT	Italy
MK	North Macedonia
PT	Portugal
RO	Romania
RS	Serbia

ABBREVIATIONS

ACS	adaptive cluster sampling
CAPI	computer-assisted personal interviewing
CCT	central coordination team
CEH	eligible households
CIH	ineligible households
COVID-19	coronavirus disease 2019
DEGURBA	degree of urbanisation
DQL	data quality log
ECS	electronic contact sheet
EU-MIDIS II	Second European Union Minorities and Discrimination Survey
EU-SILC	EU Statistics on Income and Living Conditions
FRA	European Union Agency for Fundamental Rights
GDPR	General Data Protection Regulation
GPS	Global Positioning System
HH	household
HHID	household identification
HMD	Human Mortality Database
ID	identification
INR	item non-response
IR	individual respondent
ISCED	International Standard Classification of Education
LE	life expectancy
MACS	modified adaptive cluster sampling

MOM	modified orphanhood method
NEET	not in employment, education or training
NGO	non-governmental organisation
NSE	national survey expert
NUTS	Nomenclature of Territorial Units for Statistics
OM	orphanhood method
PID	person identification number
PSU	primary sampling unit
QAP	quality assurance plan
QLIB	Questionnaire Library
RS2021	Roma Survey 2021
RTS	Roma and Travellers Survey
SP	sampling point
SSU	secondary sampling unit
TRAPD	translation, review, adjudication, pre-test and documentation
UE	households where eligibility is unknown
UNDP	United Nations Development Programme

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Introduction

The mandate of the European Union Agency for Fundamental Rights (FRA) is to provide the relevant institutions, bodies, offices and agencies of the EU and its Member States with independent, evidence-based assistance and expertise relating to fundamental rights.[1] Data collection, including comparative data collection in the form of survey research, on the situation of fundamental rights in the EU provides the basis for FRA's assistance and expertise.

FRA has consistently demonstrated through robust statistical data that Roma are among those most vulnerable to human rights violations in the EU. The results of its surveys in 2008,[2] 2011,[3] 2016[4] and 2019[5] show that efforts by the EU and Member States resulted in limited and uneven progress.

A communication of the European Commission from October 2020[6] set out the EU Roma strategic framework for equality, inclusion and participation up to 2030, which aims to achieve equality, inclusion and participation. The Commission requested that FRA provide data and background information on progress towards Roma inclusion in EU Member States, which should be collected on a regular basis. A year later, the 2021 Council Recommendation on Roma equality, inclusion and participation[7] called on Member States to make use of the portfolio of indicators[8] developed jointly by FRA, the Commission and the Member States.

Member States are also called on to continuously develop their own data collections to regularly collect equality data and monitor the fundamental rights situation of people with specific ethnic or racial origins. Bulgaria[9] and

1 See, for example, European Commission (n.d.), '**Role of the EU Agency for Fundamental Rights**'; FRA (n.d.), '**What we do**'.

2 FRA (European Union Agency for Fundamental Rights) (2009), ***Data in focus report 1: The Roma***, Luxembourg, Publications Office of the European Union (Publications Office).

3 FRA (2012), ***The situation of Roma in 11 EU Member States – Survey results at a glance***, Luxembourg, Publications Office.

4 FRA (2017), ***Second European Union Minorities and Discrimination Survey – Main results***, Luxembourg, Publications Office.

5 FRA (2020), ***Roma and Travellers in six countries***, Luxembourg, Publications Office.

6 European Commission (2020), ***A Union of equality: EU Roma strategic framework for equality, inclusion and participation***, COM(2020) 620 final, Brussels, 7 October 2020.

7 Council of the European Union (2021), **Council Recommendation of 12 March 2021 on Roma equality, inclusion and participation, OJ 2021 C 93**.

8 European Commission (2020), ***Annex to the Communication from the Commission to the European Parliament and the Council – A Union of equality: EU Roma strategic framework for equality, inclusion and participation***, COM(2020) 620 final, Brussels, 7 October 2020.

9 Bulgaria, National Statistical Institute (*Национален статистически институт*) and FRA (2021), '**Project: Novel approaches to generating data on hard-to-reach populations at risk of violation of their rights**'.

Slovakia[10] have implemented their own data collection through their statistical offices, using questions and methodology comparable to those used in the FRA Roma Survey. The data of Bulgaria and Slovakia could therefore be used to populate the headline indicators and for comparative analysis. This technical report does not cover the methodological aspects of these two data collections.

The Roma Survey 2021 (RS2021) provides comparable data on the actual impact on the ground of EU and national anti-discrimination, anti-racism and equality legislation and policies (including policies on the reduction of poverty and social inclusion). For some countries, the data allow the analysis of trends over time. The survey follows on from the reporting on FRA's Second European Union Minorities and Discrimination Survey (EU-MIDIS II) from 2016, and is fully comparable with the Roma and Travellers survey, conducted in six western European countries in 2019.

FRA commissioned Kantar Public (Kantar Belgium SA) to conduct the RS2021. It was conducted in eight Member States (Croatia, Czechia, Greece, Hungary, Italy, Portugal, Romania and Spain) and two accession countries (North Macedonia and Serbia).

The same methodology was applied in all countries. Interviews were conducted face to face using a multi-stage stratified random sampling approach. All interviews were conducted with an electronic tablet. The survey targeted individuals aged 16 or over who self-identified as having a Roma background (or any group subsumed under this umbrella term), who lived in private households and whose usual place of residence had been the survey country for at least six of the 12 months before the survey. Respondents were asked a wide range of questions about their everyday life, for example about their socio-economic situation and their experiences of discrimination, harassment and violence, including any racially motivated incidents.

In total, 8,461 interviews were conducted in the 10 countries covered by the survey. The fieldwork took place from the end of February 2021 until early August 2021. Kantar Public worked with a national agency within its network in every country covered to implement the survey.

The fieldwork took place during the coronavirus disease 2019 (COVID-19) pandemic, which affected the fieldwork in some countries. In Czechia, owing to lockdown measures the fieldwork only started in April 2021. In other countries, for example in Italy, the health situation prevented interviewers from accessing certain areas and therefore created additional delays or led potential respondents to refuse to participate.

Additional measures were taken to ensure that the fieldwork could take place during this period. During the interviewers' briefings, specific training measures were taken to ensure that interviewers respected social distancing rules during the interviews and adopted hygiene measures when conducting the interviews (e.g. systematically cleaning tablets after the interviews). During fieldwork, the contractor monitored the progress of fieldwork and the health situation daily, ensuring that adequate measures were taken to plan resources on the ground.

[10] Slovakia, Office of the Slovak Government Plenipotentiary for Romani Communities (*Úrad splnomocnenca vlády SR pre rómske komunity*) (2021), '**Aj posledné zisťovanie EU SILC_MRK potvrdilo značný rozdiel medzi životnými podmienkami obyvateľov rómskych komunít a majority**', 22 December 2021.

This report provides all the relevant technical information on the design, implementation and finalisation of the survey and follows a chronological structure based on the steps of survey design and implementation.

Section 1: Developing the survey presents how the survey was managed and the initial steps that were taken to design the survey. It includes a description of the quality assurance plan (QAP) and the background research and stakeholder consultations.

Section 2: Developing and translating the survey materials presents the questionnaire design stage and the development of all the survey tools used in the field (including the script and the fieldwork material). It discusses all the steps that were taken to ensure the quality of the tools. It also presents how the translation process for the different tools was managed.

Section 3: Selecting and training interviewers describes all the steps that were taken to select, brief and train interviewers.

Section 4: Sampling focuses on the sampling design and how sampling was implemented in the field.

Section 5: Piloting provides a summary of the pilot survey that was conducted in December 2020 in Italy, North Macedonia and Serbia.

Section 6: Fieldwork operations and fieldwork outcomes provides detailed information on the management and implementation of the fieldwork and its outcomes.

Section 7: Data processing and datafiles focuses on how data were processed and delivered to FRA. It also provides details on the implementation of the data protection rules.

Section 8: Weighting provides detailed information on the weighting strategy and its implementation.

Section 9: Survey quality assessment analyses the overall quality of the survey, providing feedback on each of the following quality dimensions: relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, and accessibility and clarity.

Section 10: Lessons learned provides key learnings from this survey and recommendations for future Roma surveys.

Annexed to this report are the questionnaire flowchart, the QAP, a methodological description of the EU indicators and a methodological note on estimating the life expectancy of the Roma population.

1. DEVELOPING THE SURVEY

1.1. BACKGROUND RESEARCH AND STAKEHOLDER CONSULTATIONS

In the light of the lack of information on the number and geographical spread of Roma across the fieldwork countries, the survey was preceded by comprehensive background research and stakeholder consultations to gather data on possible sampling frames and identify the best possible methodological approach.

The background research, conducted in close collaboration with a team of national survey experts (NSEs), aimed to achieve six objectives:

- identify sample frames available in each country for surveying the Roma population;
- collect information about the Roma population at national and subnational levels to inform the sampling design at stratum level (region by urbanity) and weighting targets;
- collect information about the Roma organisations that could help to provide population data to map the Roma population at hyper-local level in the sampled primary sampling units (PSUs) and to help in engaging with the Roma community, ensuring the successful implementation of the survey;
- collect information about the specificities and diversity of the Roma population in a country to inform the survey process at various stages, which involved mapping the diversity of the target population, creating a strategy to deal with the issue of multiple identities, mapping the languages spoken by Roma in the fieldwork countries and creating supporting documentation for the interviewers to ensure a smooth interviewing experience;
- define the profile of interviewers by considering the needs of Roma in each country, preferably recruiting interviewers with a Roma background, experienced in working with hard-to-reach target populations and from the local area, and ensuring that those chosen have an unbiased attitude towards the Roma population;
- explore the feasibility of various high-quality alternative methods of interviewing, considering the COVID-19 situation in the relevant countries.

To collect information on these objectives from the national agencies in a standardised and comprehensive manner, the following methodological documents were prepared by the central coordination team (CCT) for the country teams:

- background research template
- PSU sampling frame template
- national background research report template.

Based on these inputs, the CCT drafted an overall background research report (Deliverable 3) that delineated the approaches to the implementation of the RS2021 in each target country. Some of the key outputs of the background research stage were:

- the identification of national partnering institutions and organisations (mostly Roma not-for-profit organisations, governmental agencies or academic institutions);

— the development and validation of the overall sampling design and the country-specific sampling frames;
— the aggregation of relevant Roma population information in each country to inform a successful contact and communication strategy and the comprehensive recruitment and training of interviewers;
— reflections on conducting fieldwork considering the implications of the COVID-19 pandemic, including the feasibility of alternative data collection methods.

The information collected for the preparation of the survey was often sensitive. Building a trustful relationship with the Roma communities was crucial for the success of the survey. Therefore, it was of utmost importance to follow the human rights principles in data collection from the outset of the survey and during background research.

1.2. HUMAN RIGHTS PRINCIPLES IN DATA COLLECTION

Following the Office of the United Nations High Commissioner for Human Rights' values to preserve the respect of human rights-based principles in data collection,[11] namely participation, self-identification, transparency, privacy and accountability in the design of data collection processes, and use of data in accordance with the 2030 Agenda for Sustainable Development,[12] the survey included the Roma communities in the preparation, implementation and QAP of the survey. These elements are also central to the guidance note of the Subgroup on Equality Data of the EU High Level Group on Non-discrimination, Equality and Diversity on the collection and use of equality data based on racial or ethnic origin.[13]

Participation: The survey considered the principle of participation by including Roma organisations in the design and implementation of the survey. Terminology was assessed to determine if it was culturally appropriate, and cultural and ethical guidelines for interviewers were developed. Roma organisations helped to set up the cultural training of interviewers and participated in the training. In addition, the survey enlisted and trained interviewers with a Roma background and worked closely with mediators either with a Roma background or with strong ties to Roma communities (see **Sections 3** and **6** of this technical report). A participatory approach recognises that such a survey is only possible in partnership with Roma organisations. The draft results were discussed with representatives of the communities to understand the context and validate some of the results.

Self-identification: After experiences of historical persecution, discrimination and exclusion due to their origin, Roma people in the target countries can be hard to identify or may even be disinclined to self-identify. The principle of self-identification should therefore be applied to populations sharing sensitive personal identity characteristics. Even if Kantar Public intended to apply the principle of self-identification as far as possible, it was necessary to ask the participants in the screening questionnaire (screener) if there were Roma people in their household to proceed with the selection of Roma respondents. The interview could only be conducted after a potential respondent self-identified as Roma or a member of a related group. Screening data were anonymised and are not published.

[11] United Nations (2018), ***A human rights-based approach to data***, Geneva, Office of the United Nations High Commissioner for Human Rights.

[12] United Nations (n.d.), '**Transforming our world: The 2030 Agenda for Sustainable Development**'.

[13] European Commission (2021), ***Guidance note on the collection and use of equality data based on racial or ethnic origin***, Luxembourg, Publications Office.

Transparency, privacy and accountability: To overcome mistrust and reluctance to participate, the interviewers made sure that the survey participants understood that their participation was voluntary and that they were free not to answer any question they did not want to. Furthermore, the interviewers confirmed the anonymity and confidentiality of the respondents' answers. These principles inherent to opinion survey data collection rules were indeed applied with particular attention, to overcome potential reluctance to participate. All data were collected in line with the General Data Protection Regulation (GDPR) (see **Section 7.3**). Accountability is inherent to the work of FRA in publishing the data and results of the survey to inform the EU and Member States on the progress in reaching the targets for 2030 set in the strategic framework.[14]

1.3. WORKING WITH ROMA ASSOCIATIONS AND NON-GOVERNMENTAL ORGANISATIONS

In each country, the national teams worked with Roma associations to prepare the survey (in its design and training interviewers) and in some cases to perform fieldwork. In the early stages of the project's preparation, a senior expert on Roma firstly identified the Roma organisations and experts who could support the survey in the relevant countries. Then, the expert collected existing publications and online sources to provide additional details for the background research. Finally, networks of organisations that could provide complementary information were identified and described.

Local non-governmental organisations (NGOs) and mediators preferably had a Roma background themselves, but the involvement of non-Roma organisations or mediators was possible if the NGO was pro-Roma or if the mediators, who could be independent of the NGO, were familiar with and accepted in the local Roma community.

One contact person from the selected NGO and one Roma mediator were appointed to each selected sampling unit. They signed an agreement form that included the details of the tasks they were expected to perform, the time line for performing these and the monetary compensation agreed on.

The Roma NGOs played an important role in providing information for sampling design. They provided support in finding information about the statistics available at local and national levels and participated in the mapping of the Roma population to select the PSUs.

They also played an important role in the interviewers' two-day briefings. They both provided comments on the interviewers' manuals and helped to facilitate some of the training sessions.

They were also involved during fieldwork, in some cases helping national teams to gain access to sampling points (SPs) and to gather information related to where the Roma population was living.

1.4. PROJECT MANAGEMENT

— **Two project coordinators:** Their role was to lead the implementation of the project. They were the main contacts of FRA throughout the project and were responsible for overseeing all the steps of the research. They were also in charge of the quality assurance of all the deliverables of the project.

[14] European Commission (2020), ***A Union of equality: EU Roma strategic framework for equality, inclusion and participation***, COM(2020) 620 final, Brussels, 7 October 2020.

— **A team of Kantar Public research executives:** They supported the project coordinators in the implementation of the project. They were mainly responsible for the management of the work carried out at national level, as they were the main contact of the NSEs.
— **Senior sampling experts:** They were responsible for sampling design and the weighting of the RS2021.
— **Translation coordinators:** They managed the coordination of the process of translating the survey.
— **Kantar BBSS:** It is a subsidiary of Kantar Public located in Bulgaria, and provided a team responsible for scripting, fieldwork coordination and monitoring, data processing and reporting.

To complement the Kantar Public team's expertise, three external experts supported the project.

— Dr David Simon (Eötvös Loránd University) acted as the senior sampling and weighting expert on the project.
— Dr Anikó Bernát (TÁRKI Social Research Institute) acted as a senior expert on Roma, providing advice throughout the project, especially in the preparation for the survey; sampling design; questionnaire design; the recruitment, selection and training of interviewers; and the implementation of the large-scale survey.
— Dr László Fosztó (Romanian Institute for Research on National Minorities) acted as a senior expert on Roma, assisting in contacting and selecting the most suitable research entities and experts to act as NSEs regarding the Roma communities in each of the countries surveyed. He also ensured that the diversity of the Roma population at EU level was adequately represented in the sample for the survey, and helped in facilitating NSEs to adapt the common methodology to the national and regional specificities of the surveyed population.

FRA was also supported by the sampling and weighting expertise of Dr Francesca Gagliardi and Professor Gianni Betti from the University of Siena. They were involved in reviewing the sampling and weighting scheme, checking calculations, and documenting the sampling and weighting procedures. They also performed a final quality assessment of the chosen methodology and formulated recommendations for future research.

Kantar Public selected national agencies based on their continuous successful work with Kantar Public on other projects and their experience with surveying Roma or other hard-to-reach populations. Local agencies and national experts are listed in **Table 1.1**.

TABLE 1.1: NATIONAL AGENCIES AND NSES IN COUNTRIES

Country	National agency	NSE(s)
CZ	Institute of Sociology of the Czech Academy of Sciences	Paulina Tabery
EL	Metron Analysis	Andreas Ellinas and Angela Stathopoulou
ES	Kantar Public	Jorge Alarcon
HR	Hendal	Ana Ramic
HU	TÁRKI	Anikó Bernát and Judit Rácz
IT	Lexis	Emiliano Romano
MK	Brima	Kalina Medaroska-Mihajlorvska
PT	Marktest	Ana Paixao
RO	CPSO SRL	Andra Tomeci
RS	Kantar Public	Darko Joksimovic

In April 2020, FRA organised an initial meeting with the contractor to discuss the goals and objectives of the RS2021 and potential approaches to implementing it. The meeting was also attended by the senior experts on Roma, who provided feedback on the ethically correct implementation of the survey considering the history and vulnerability of many Roma in the target countries.

In addition to the discussions on the implementation of the survey, during the inception meeting the contractor and FRA agreed on project management tools for the RS2021:

- record weekly meeting notes;
- develop monthly reports recording the main developments and the main decisions taken in the preceding four weeks;
- provide weekly monitoring figures during fieldwork;
- record all the quality control activities performed during project implementation;
- monitor and report on a regular basis key quality criteria set out at the beginning of the project through a detailed QAP.

After the inception meeting, an inception meeting report was developed (Deliverable 1). It provided an overview of the discussions held during the inception meeting, the points and questions raised by FRA during the meeting and further details on aspects of project implementation to be delivered considering the circumstances at that time. Importantly, each section of the inception report, which focused on the main points of action for project implementation, concluded with a proposed time line for the project and expected deliverables.

NSEs were involved at the outset of the project and were part of the contractor's kick-off meeting in May 2020. The objective of this meeting was to present to the NSEs the overall features of the survey and provide them with the background information they needed to start planning and anticipating all the activities they would have to carry out as part of the RS2021.

FRA participated in debriefs and coordination meetings with the NSEs throughout the implementation of the survey as needed. The local teams worked closely with supporting organisations and other mediators to introduce the survey to communities and potential respondents. The community members and Roma organisations helped to set out the sampling frames, developed and provided training for interviewers, and helped to recruit interviewers and mediators from the communities or related organisations. Most importantly, their support helped to overcome the mistrust and pessimism of Roma about 'surveys from institutions' and encouraged them to participate. Without their contribution, this survey would not have been possible.

The project was commissioned in March 2020 with a view to delivering all outputs within 18 months of the contract signature date. In view of the additional time needed to finalise fieldwork, which started late in some countries owing to lockdown measures – particularly Czechia, where it started in mid-April 2021 – the contract was extended by 1 month, until October 2021, to allow all the survey activities to be completed.

1.5. QUALITY ASSURANCE

A QAP was designed by Kantar Public at the beginning of the project and approved by FRA (Deliverable 2). It covered the overall management of the project, including management roles and responsibilities; the control of documents and data records; the resources employed, such as financial and human resources; materials; and infrastructure. It also considered the communication structure within the project.

Furthermore, the QAP considered the COVID-19 context given that social distancing was still in place in most of the countries at the time the fieldwork was conducted, and potential changes in public health measures. FRA was therefore prepared to continue with the project in the event of more restrictive measures, prioritising the safety of the interviewers and interviewees while trying to stick as much as possible to the original methodology (face to face).

The QAP for the RS2021 ensured that the Office of the United Nations High Commissioner for Human Rights' human rights-based approach to data[15] was considered, especially during the interviewers' training. In addition, the QAP was designed in accordance with the quality criteria below, defined in the Quality Assurance Framework of the European Statistical System.[16]

- **Relevance:** Survey data meet users' needs; the content is relevant in its substance and its timing.
- **Accuracy and reliability:** Survey data accurately and reliably portray reality.
- **Accessibility:** Statistical outputs are accessible on an impartial basis; project management and data-processing measures are transparent and thoroughly documented.
- **Coherence and comparability:** Outputs and data are coherent and comparable within a country and across target countries and with other data collected by other parties as far as possible.
- **Timeliness and punctuality:** Adherence to the time line set at the beginning of the project is guaranteed.

As mentioned, quality assurance measures were taken at each stage of the project, involving implementation assurance, related to the smooth management of the research project, or statistical quality assurance, related to the quality of the data gathered, or both. Each quality assurance indicator is associated with the relevant dimensions of quality defined in the previous list. Then, a quality target was set for each dimension; these targets were the objectives for the implementation of each stage. The QAP identified the potential risks associated with each target, distinguishing between measures, potential counter-measures and contingencies, thus providing a clear warning system on the most important risks identified.

The QAP was structured around the following areas of activity: management and communication, sampling, weighting, reference statistics, the questionnaire, translation, training and selecting interviewers, scripting, fieldwork and data checking, and data delivery.

Risk assessment

For each of the quality indicators, the risk of not meeting the target was assessed using the likelihood and impact of the risk. Firstly, the likelihood and impact of the risk were assigned values of 1–5 (where 1 represents the lowest likelihood/impact and 5 represents the highest likelihood/impact). Then, the overall level of risk was calculated by multiplying the values for likelihood and impact. Therefore, the level of risk ranges from 1 to 25. To better categorise this risk level, Kantar Public colour-coded each risk category as follows.

	High (13–25)
	Medium (10–12)
	Low (1–9)

[15] United Nations (2018), ***A human rights-based approach to data***, Geneva, Office of the United Nations High Commissioner for Human Rights.

[16] European Statistical System (n.d.), ***Quality assurance framework of the European Statistical System***, Version 2.0.

Quality control assessment

Kantar Public regularly assessed the progress of the implementation of the quality control indicators, providing FRA with a report on the activities conducted at the end of each month. An assessment of whether or not the quality indicators were achieved, and the extent to which those that were not achieved deviated from the target, is provided in **Annex 2**. A survey quality assessment is provided in **Section 9**.

2. DEVELOPING AND TRANSLATING THE SURVEY MATERIALS

The RS2021 was implemented through face-to-face interviewing, using the computer-assisted personal interviewing (CAPI) technique in all countries. The questionnaire was first developed in Microsoft Word and then imported into Kantar Public's Questionnaire Library (QLIB), before being exported as a draft script coded for use with Nfield, Kantar Public's CAPI software.

In addition, other materials were used to ensure the successful implementation of the survey. These were:

- the electronic contact sheet (ECS), used to screen respondents and monitor fieldwork, and the PSU contact sheet, used to record fieldwork activity at PSU level;
- a detailed survey manual provided to all interviewers and integrated into the tablets used to conduct the survey;
- glossaries in the national languages of the fieldwork countries and Romani;
- paper and electronic showcards to be used by interviewers and respondents throughout the interview;
- a letter and an information leaflet (postcard) to help interviewers to introduce the survey to possible respondents;
- a privacy policy notice that was provided to respondents once the interviews were finalised in accordance with the requirements of the GDPR (see **Sections 2.4** and **7**).

The contractor worked with FRA on the development of all survey and fieldwork materials.

2.1. QUESTIONNAIRE DEVELOPMENT

2.1.1. Questionnaire design

The questionnaire from FRA's EU-MIDIS II and the questionnaire from its Roma and Travellers Survey (RTS) 2019 were used as a starting point for the RS2021 questionnaire. A selection of questions were removed and new questions were added, always ensuring that it remained a suitable length and that it was pertinent to the survey respondents and stakeholders. Only a few modifications were introduced to the wording of the questions that were taken from EU-MIDIS II. The structure of the RS2021 questionnaire[17] was created following a modular design, being divided into the sections presented in **Table 2.1**. An overview of the questionnaire flow is presented in **Annex 1**.

[17] The main source questionnaire is available in FRA (2022), ***Roma Survey 2021 - Questionnaire,*** Luxembourg, Publications Office.

TABLE 2.1: OVERVIEW OF THE QUESTIONNAIRE STRUCTURE

	Section	Topics covered
Household	Introduction	• Household information (household grid) • Child information (child grid) • Housing and living standards
Respondent	Employment	• Employment situation • Main reasons for not looking for work and type of contract in main job
	Health and life expectancy	• Subjective assessment of own health condition, long-standing illness or problem, and limitations in daily activities • Access to health insurance • Unmet medical care needs • Women's experiences of giving birth
	Awareness of, perceptions of and attitudes towards rights	• Degree of experienced exclusion from society • Awareness of support organisations, equality bodies and existing anti-discrimination legislation in the country • Worry about being harassed when out in public • Avoidance behaviour
	Experiences of discrimination	• Discrimination experiences: when looking for work; when at work; while using healthcare services; when trying to rent/buy an apartment/house; when in contact with school authorities (as a parent/guardian or as a student); when in contact with administrative offices or public services; when trying to enter a nightclub, a bar, a restaurant or a hotel; when using public transport; and when in a shop or trying to enter a shop • Reporting of the last incident of discrimination to any organisation • Reasons for not reporting an incident of discrimination • Specific experiences of discrimination when at work and in housing • Negative experiences of children in school
	Experiences of police stops	• Experiences of police stops in different situations • Reasons for being stopped • Police requests and perception of treatment by the police
	Victimisation: experiences of harassment and violence	• Prevalence and type of incidents of harassment or violence • Characteristics of the last incident (forms, perpetrators, nature, place, reporting, reasons for not reporting, satisfaction with handling of complaint by the police) • Impact of hate crime experience
	Migration plans	• Possibility of moving to another country in the future and reasons for wanting to move
	Societal participation	• Religion • Main language spoken and country language proficiency self-assessment • Inter-group relations and comfort with other groups • Trust in institutions and values • Political and civic participation
	Other background information	• Marital status • Information related to biological parents • Household income and financial situation • Belonging to other minority groups
	Experience of the COVID-19 pandemic	• Experience of various issues related to the COVID-19 pandemic (impact on income, work, tensions, violence) • Impact of COVID-19 pandemic on learning for children
	Interviewer questionnaire	• Interviewer's observations concerning the setting of the interview and incentives (e.g. the language of the interview and respondents' fluency, cooperation, interest in the topics of the interview and comprehension of the survey)

Kantar Public consistently worked with FRA throughout the different stages of the development of the final questionnaire, which was based on the draft version provided by FRA. In addition, the senior expert on Roma, Ms Anikó Bernát, was consulted throughout the development of the questionnaire. Background research carried out in prior phases, and country and target group specificities, were taken into account. A pilot run of the questionnaire was carried out in three countries not covered in EU-MIDIS II where the fieldwork would take place: Italy, North Macedonia and Serbia. This resulted in only minor changes to the questionnaire.

All questions had non-response categories such as 'do not know' or 'do not want to say', except for the questions at the beginning of the interview asking for the age or age category and sex of respondents and their household members. If respondents refused to answer these questions, the interview was discontinued.

The next subsections describe the main thematic areas of the questionnaire and explain decisions taken to adjust question structure and wording and certain translation matters.

2.1.2. Umbrella terms

In self-identifying as having a Roma background, respondents could choose from a comprehensive list of ethnic groups tailored to the country. In the questionnaire itself and in the different survey materials, it would have been impractical or not possible to refer to these more precise categories. Given this, an umbrella term was employed when making reference to the survey itself, and when respondents were asked if they had undergone certain experiences because of their Roma background. The umbrella terms used in each country were proposed by the NSEs based on the findings from the background research.

Table 2.2 presents the survey title and umbrella term or terms employed in all fieldwork countries, in the national languages and two languages in North Macedonia.

TABLE 2.2: SURVEY TITLE AND UMBRELLA TERM OR TERMS USED

Country	Survey title	Umbrella term
CZ	Výzkum o situaci Romů v letech 2020–2021	Romové
EL	Έρευνα Ρομά 2020–2021	Ρομά
ES	Encuesta sobre la población gitana 2020–2021	Persona gitana
HR	Istraživanje Roma 2020–2021	Romi
HU	Roma kutatás 2020–2021	Roma
IT	Indagine sui Rom 2020–2021	Rom
MK – Macedonian	Анкета за Роми 2020–2021 година	Ром/Ромка
MK – Albanian	Studimi për Romët 2020–2021	Rom/Rome
PT	Inquérito às Comunidades Ciganas 2020–2021	Cigano
RO	Sondaj privind populația romă 2020–2021	Rom
RS	Istraživanje o Romima 2020–2021	Rom/Romkinja

2.1.3. Ethnicity

Specific attention and consideration was necessary with regard to determining eligibility during the screening phase. Respondents were asked if they self-identified as Roma using the country-specific terms associated with the umbrella term.

The national fieldwork teams were consulted during background research in Roma civil society to provide an exhaustive list of the various ways in which Roma could identify themselves in the countries chosen for fieldwork. This step was crucial to guarantee that the human rights principle of self-identification was respected. The recognition of the diversity and heterogeneity of groups was crucial so that groups would not feel stereotyped and individuals would not be excluded from the survey as a result of not recognising themselves within the categories presented. The categories belonging to the survey target group were slightly amended after the pilot survey.

2.1.4. Education

Possible responses to questions referring to the highest level of education gained or current ongoing education or training were based on the International Standard Classification of Education (ISCED) 2011, an instrument used to compile, present and compare education statistics at national and international levels.[18] The levels of education in ISCED 2011 were translated by the NSEs into country-specific categories. Terminology and examples were tailored to the country context, confirmed by linguists and the NSEs, and approved by FRA.

All respondents aged 16 years or older were asked about the highest level of education they had completed.

All children in the household were asked if they attended any educational institution and their current level based on ISCED 2011. Questions were filtered according to the age of the children, considering that the compulsory school age varies between countries. Age was also taken into account when establishing a code frame to harmonise the results of fieldwork for every country.

2.1.5. Income

The questionnaire asked about the household's current net monthly income. Where no response was obtained, standardised income bands were applied in all countries. The income ranges originated from the EU-MIDIS II questionnaire, with the original scale in euros. Rounding systems, with minor adjustments, were used so that the final income bands were more understandable for respondents.

2.1.6. Equality bodies

FRA provided Kantar Public with a list of equality bodies for each country to tailor the questions on respondents' awareness of country-specific equality bodies. Respondents were also asked if they had ever reported any experience of discrimination against them.

2.1.7. Health

Respondents were asked questions about their general health, based on the Minimum European Health Module. The country translations were provided by Eurostat from the EU Statistics on Income and Living Conditions (EU-SILC). Furthermore, the question about health insurance was tailored to the names of national basic health insurance schemes.

[18] More information can be found in UNESCO (United Nations Educational, Scientific and Cultural Organization) Institute for Statistics (2012), ***International Standard Classification of Education – ISCED 2011***, Montreal, UNESCO Institute for Statistics.

2.1.8. Poverty threshold

For the question measuring if a household could afford an unexpected but necessary expense, the amount specified was set at one twelfth of the national at-risk-of-poverty threshold for a one-person household in 2019 (60 % of its yearly median income) according to Eurostat.

2.1.9. New questions compared with EU-MIDIS II

Some new questions were introduced in the RS2021. Most of them had been used already in the RTS: questions needed to estimate life expectancy and questions related to evictions and exclusion from society. The new questions provided more information for the estimation of life expectancy, related to material deprivation, about incidents of hate-motivated harassment and violence, about respondents' belonging to other minority groups and about respondents' experiences during the COVID-19 pandemic.

2.1.10. Changes in the questions asked in EU-MIDIS II

There were only limited changes in the questions already asked in EU-MIDIS II or the RTS. Some items were added to question modules (to align with Eurostat's questions) and some minor changes were applied to some of the items of the questionnaire. The contractor clearly indicated changes that were made to the questionnaire to ensure the appropriate revision of the translated versions.

The main change applied was related to the questions on respondents' experiences of discrimination. In the RS2021, respondents were asked about their experiences of discrimination in one module of questions with the aim of determining primarily their experience in the 12 months before the survey. Respondents were asked to report only their last experience of discrimination in the 12 months before the survey in any of the areas covered by the survey. This change had a minor impact on the comparability of the results of the RS2021 with the results of EU-MIDIS II.

2.1.11. Questionnaire workshop

Before finalising the questionnaire, a questionnaire workshop was organised by the contractor to review the questionnaire with FRA, with a particular focus on outstanding issues (including reviewing sensitive questions as indicated by the senior expert on Roma) and comments that were still under discussion. The interviewers' instructions were also discussed and reviewed during that meeting. After the workshop, the contractor prepared a revised version of the questionnaire, which included the agreed changes. After validation by FRA, this finalised version was used for the translatability assessment.

2.1.12. Translatability assessment

A critical step in cross-national surveys is recognising any potential ambiguities or difficulties in the source version of the questionnaire that could pose problems for linguists during translation. Before launching the translation of the questionnaire, the contractor carried out a translatability assessment, which involved translating selected items. These items were selected for translation because they were new and/or because they could not straightforwardly be translated into other languages. The selection of languages for the translatability assessment had to be representative of different language families that covered all the languages used in the survey:

- Romanian and Spanish – acting as a proxy for Italian and Portuguese – covering the Romance languages;
- Croatian – acting as a proxy for Macedonian and Serbian – belonging to the South Slavic group of languages;

— Czech, belonging to the West Slavic group of languages;
— Albanian, Greek and Hungarian, which do not belong to the language groups mentioned above.

Translations that resulted from the translatability assessment were not considered for use further along in the translation process but rather aided the questionnaire developers in identifying and describing the issues that translators may face during the actual translation of the questionnaire.

Where necessary, the translators suggested inserting a translation note to clarify the meaning of a given term or expression or indicated the type of adaptation that might be necessary. In other cases, the translators suggested rewording the question to remove any ambiguities. Whenever possible, the translators suggested an alternative wording with the intention of circumventing the documented issue.

All issues raised during the translatability assessment were merged into a single document. The results served as a basis for revising the source questionnaire and for drafting the item-by-item guidelines and translators' notes.

2.2. CONTACT SHEETS

2.2.1. Sampling unit contact sheet (primary sampling unit contact sheet)

Interviewers used the electronic PSU contact sheet, which provided them with information about the PSU – and, where applicable, the secondary sampling unit (SSU) – in which they would be carrying out interviews. **Table 2.3** summarises the final structure of the PSU contact sheet that was fully integrated into the CAPI application. A large amount of the information (section A) was inputted without the intervention of the interviewer, generated by the CAPI application, obtained from the sample information or captured by the application itself. However, some of the information regarding the SP (section B) and the dwelling characteristics (section C) was populated by the interviewer.

TABLE 2.3: STRUCTURE OF THE PSU CONTACT SHEET

Section	Random sampling PSU contact sheet
A	This section included quality metrics about the sampling unit: Q001 – Unique interview number (generated by the script) Q002 – Country (obtained from the sample file) Q003 – Global Positioning System (GPS) coordinates (obtained from the sample file) Q004 – SP name (obtained from the sample file) Q005 – SP number (obtained from the sample file) Q006 – PSU identification (ID) (obtained from the sample file) Q007 – SSU ID (obtained from the sample file) Q008 – Address ID (generated by the script) Q009 – Interviewer number or name (automatically registered with login details) Q010 – Location or description of SP (obtained from the sample file) Q011 – Expected number of Roma in SP (obtained from the sample file) Q012 – Number of addresses planned to be visited (automatically pre-filled in Nfield) Q013 – Region (obtained from the sample file) Q014 – Urbanity (obtained from the sample file) Q015 – Expected eligibility rate of SP (obtained from the sample file) Q016 – Use of random starting point or assigned starting point (filled in by the interviewer)
B	This section aimed to provide a full description of the SP: Q017 – First time SP visited (filled in by the interviewer) Q018 – Barriers to accessing SP (filled in by the interviewer) Q019 – Accompanied by site manager or mediator (filled in by the interviewer)
C	This section aimed to record the calls and contacts, and the dwelling characteristics: Q020 – Unique number (generated by the script) Q021 – Interviewer number or name (automatically registered with login details) Q022 – Address (information filled in by the interviewer) Q023 – Number of visits (captured by the CAPI application) Q024 – Date and time of visit (captured by the CAPI application) Q025 – GPS coordinates of visit (captured by the CAPI application) Q026 – Residential address (filled in by the interviewer) Q027 – Indication of dwelling unit type (core or non-core address) (filled in by the interviewer in SPs where adaptive cluster sampling was used) Q028 – Description of the household's dwelling place (filled in by the interviewer) Q029 – Contact established with selected dwelling (filled in by the interviewer)

2.2.2. Electronic contact sheet

The ECS was used to record the details of interviewers' contact with households, manage the sample, screen households, make appointments, select viable respondents for interviews and finally begin the interview itself. The Nfield application used for the main questionnaire was also used to manage the ECS.

The ECS included the introduction of the interviewer to the respondent, the identification of the respondent and the presentation of the survey. It recorded information on the address or place and the type of accommodation of the surveyed households, the number of visits to each household in the sampling unit and the outcome of the visits. If potential respondents refused to take

part in the survey, the ECS required the interviewer to state the reason for refusal. If the person in the household who first spoke to the interviewer agreed to provide the initial screening information on the number of household members eligible to be interviewed, and – if there were any – the name or initials and age of each of them, the application could then randomly select the main respondent for the interview.

2.3. SURVEY MANUAL

The survey manual was largely based on EU-MIDIS II from 2016, and the RTS 2019, but was adapted and tailored by the contractor for the RS2021. Sensitivities around interviewing Roma in the fieldwork countries already highlighted in previous surveys were complemented by input from the senior expert on Roma. The manual supported the training of interviewers and was intended for use as a comprehensive guide for interviewers once fieldwork began. Survey country-specific versions of the manual were also tailored as necessary, containing all target group contingencies and considerations. The following sections provide an overview of the main sections of the manual.

2.3.1. Implementation manual

This section of the manual was created to ensure that attention was paid to the project's background, purposes and objectives and the sensitive nature of the topics that the survey covers. It also included ethical principles and cultural sensitivities related to collecting data from respondents with an ethnic minority background. It was meant for the interviewers, and for their supervisors and national agencies involved in implementing the survey.

2.3.2. Sampling manual

This section introduced the process and procedures that interviewers, and those responsible for overseeing data collection (supervisors), had to follow to make sure that the survey results were representative of the Roma population. Some of the keys to the success of the survey were outlined.

One of these was the correct implementation of the procedures for selecting households. The selection procedures were based on a new and improved random walk, which used a direction matrix. The subsequent subsection had to do with identifying whether or not households that were selected were eligible, and the importance of being aware of the sensitivities of obtaining information on Roma in each household. The final section discussed the selection of an eligible member of the household as the main respondent.

Finally, the sampling manual also covered aspects that the interviewer had to be aware of and follow for the successful implementation of the survey: the number of addresses the interviewer had to visit on each assignment; the contact strategy, including the minimum number of repeated visits to households, and the length of and time between those visits; how to log outcome codes on the tablet for every household visited and for all visits to the same household; and the rules for stopping visits to sampling units and dropping sampling units, which were a particular feature of the survey.

2.3.3. Interviewers' manual

This section provided all the concrete instructions pertaining to the data collection performed by the field force. It included information about how to approach Roma respondents, and guidelines on the interviewing process and cooperating with local community leaders, mediators and NGOs. It also provided useful tips on how to maximise this cooperation, and information on the use of fieldwork materials, among other topics.

The interviewers' manual was primarily intended for the fieldwork managers and interviewers working directly in the field. Nonetheless, NSEs were expected to be familiar with the document to use it for training purposes, and for guidance during the fieldwork implementation period.

2.3.4. Questionnaire manual

The final section of the survey manual was the questionnaire manual, intended for interviewers. Its use was crucial to ensure the harmonised administration of the interviews in all countries and that interviewers had a good understanding of all of the aspects that the survey covered. Interviewers were guided through the different parts of the questionnaire and instructed on questions that were not straightforward and therefore required explanation.

2.4. FIELDWORK MATERIALS

2.4.1. Showcards

Paper and electronic sheets showing the possible answers to specific questions that were based on the final approved questionnaire translations were used. For certain questions, the codes were presented in the standard order (e.g. A–E), while for others they were shown in reverse order (e.g. E–A) to avoid response order effects. Response order effects are related to respondents choosing specific answers because of their positioning on the showcards.

Both the paper version and the electronic version were tested during the pilot survey and worked well. Therefore, it was decided to enable interviewers to use either based on the local preference (**Table 2.4**).

- Electronic showcards were embedded in the script and interviewers could access them by clicking on the showcard icon and show them directly to the respondents (appearing also in reverse order).
- Packs of paper showcards, containing all the answers either in their standard order or in reverse order, were handed out to interviewers.

TABLE 2.4: THE USE OF ELECTRONIC AND PAPER SHOWCARDS ACROSS COUNTRIES

Country	Interviews using showcards (%)	
	Electronic	Paper
CZ	100	0
EL	100	0
ES	100	0
HR	100	0
HU	100	0
IT	10	90
MK	25	75
PT	0	100
RO	100	0
RS	100	0

2.4.2. Introduction letter

An introduction letter was handed out to all respondents who were randomly selected to participate, translated into all survey languages used. Its aim was to inform potential respondents about the survey officially, by explaining what the survey was about, and tell them about FRA and its work in the area of fundamental rights across the EU. The letter also included information about the fieldwork countries, and the importance of their contribution to the betterment of policies aimed at improving the lives and protecting the rights of Roma. Information on the duration of the interview, confidentiality and the fact that their participation was entirely voluntary was also provided. Finally, the letter provided potential respondents with information on their privacy rights and how to get more information on the survey.

2.4.3. RS2021 postcard/leaflet

The leaflet was created to provide a visually appealing informative document that contained the most important information about the survey. One side of the leaflet provided information about the RS2021, including the number of fieldwork countries and respondents and its main aims. It also provided information on why the survey was being conducted and on FRA's work as a human rights institution. The back of the leaflet contained information on how to take part in the survey, including the random selection process and the potential visits from interviewers stemming from this. It also mentioned the importance of participating in the survey and whom to contact for more information. The leaflets were used by both interviewers and mediators to inform people about the survey.

2.4.4. Outreach and communication tools used

Besides the fieldwork materials presented in the previous sections, some national agencies employed other outreach and communication materials to inform the target population about the RS2021 (**Table 2.5**).

TABLE 2.5: OUTREACH AND COMMUNICATION TOOLS USED BEFORE AND DURING THE FIELDWORK IN COUNTRIES

Tool	Countries
Introduction letter	All
RS2021 postcard (leaflet)	All
Respondent (telephone) helpline set up at the national agency	Croatia, Czechia, Greece, Hungary, Portugal (gave the agency's general helpline), Romania, Serbia, Spain
Study-specific web page/post on the national agency's website	Croatia, Czechia, Hungary, Romania
Study-specific posts on social media pages/groups including the target population	Croatia, Hungary
Newspaper articles and adverts	Czechia
Other	Hungary (emails and letters to local NGOs), Serbia (email helpline set up at the national agency)

2.4.5. Glossary of key terms

The glossary of key terms was provided by FRA based on EU-MIDIS II and the RTS. This glossary was translated into several fieldwork languages, including Croatian, Czech, Greek, Hungarian, Italian, Portuguese, Romanian and Spanish. It was not translated into Albanian, Macedonian or Serbian because it was not considered useful for the interviews, as Roma people had a good command of the national languages in these countries.

The contractor also prepared a Romani glossary of terms. The glossary provided Romani translations of some of the more difficult terms in the

national questionnaire to ensure that respondents received an explanation in Romani if a term used in the questionnaire was not clear enough.

2.4.6. Privacy policy notice

A privacy policy notice was created in line with the national implementation of the GDPR, containing information about the survey, and, more importantly, how respondents' data were going to be used and their rights to amend information or have it deleted. Details of whom respondents should contact if they had any questions or complaints were also provided. All national agencies made it clear that the privacy policy notice was available to respondents in hard copy and also accessible online.

2.4.7. Incentives

In all fieldwork countries except Greece, Hungary and North Macedonia, incentives were given to respondents for completing the survey to thank them for their participation and time. However, it was important that respondents understood that the incentives did not compel them to take part or give specific answers. Incentives were in the form of low-value gifts, gift vouchers or cash (**Table 2.6**).

TABLE 2.6: USE OF INCENTIVES

Country	Type of incentive
CZ	Money (€ 7.50)
EL	Incentives were not used
ES	Money (€ 10)
HR	Coffee, cookies or similar products, or a gift voucher (i.e. a gift card from a retail chain)
HU	Incentives were not used
IT	Hot beverages or snacks
MK	Incentives were not used
PT	Pens
RO	Food, sweets or useful household items
RS	Vouchers

2.5. DEVELOPING THE ELECTRONIC SCRIPT AND THE NATIONAL VERSIONS OF THE SCRIPT

Interviewing took place face to face with the use of CAPI on tablets with touch-screens that were given to interviewers. The CAPI application was used to complete the questionnaire (Nfield data collection platform) in all countries. Once the final Word versions of the contact sheets (the PSU contact sheet and the ECS) and the questionnaire were approved, they were converted into a QLIB version.

QLIB is used in the scripting stage by the contractor to ensure that the scripting instructions are clear for the programmers. In this document, the instructions included the conditions under which certain questions would be skipped, whether questions allowed for single or multiple answers and the highlighting of any important text to interviewers, among other instructions, in a language that could be easily understood by the team in charge of scripting.

Both the ECS and the questionnaire were arranged so that all relevant information gathered through the completion of the ECS was directly

inputted into the questionnaire, including the names or initials and ages of household members eligible to participate in the interview. This ensured that the questions in the questionnaire were adapted to respondents' household compositions, and prevented respondents from being asked the same question twice (once during the screening phase in the ECS and again during the actual questionnaire).

The ECS and questionnaire scripts underwent thorough revisions, involving the following procedures.

- Kantar's CCT checked the questionnaire manually to ensure that it was accurate and complete.
- Kantar's CCT flooded the script with dummy, or testing, data and revised the data output files to make sure that all questions were being asked, and ensured that all filters were correctly routed. The expected base size for each question was used to determine if the routing was accurate.
- FRA checked and provided comprehensive feedback with improvements on the overall appearance of the scripts based on how they appeared on interviewers' tablets. All requested corrections and changes were kept in a log.

When the main source script was validated and approved, it was exported into a translation file, an Excel document created from the QLIB version. Within this Excel file, the full questionnaire, together with the necessary codes affecting the appearance of the script on the CAPI devices, was shown.

Once the ECS and the questionnaire were in their final translated and adapted versions, and had been approved, the main source script was overwritten with the language versions of the script for each country. As a final stage, the translated ECS and questionnaire scripts were presented to the NSEs so that they could check that the language versions had been correctly uploaded, after which they were provided to FRA for its own final checks and approval.

2.6. TRANSLATION PROCESS

All the material used by interviewers, and all supporting documents, were translated into the relevant fieldwork languages using the final and approved English source version (Deliverable 8). After the background research, it was deemed that the only country in which more than one language would be necessary was North Macedonia, owing to the significant proportion of Albanians living there. In other countries, translation into languages other than the national language was unnecessary. The use of the common language of Roma, Romani, varied considerably by country. Therefore, it was not feasible to produce survey materials in Romani.

The contractor used the translation, review, adjudication, pre-test and documentation (TRAPD) methodology for the translation stage. The translation process was managed internally by the contractor's translation coordinators with help from a network of external professional linguists. The translation team for each country, appointed by the contractor and the national survey agency, consisted of two linguists and an adjudicator. Each linguist produced an original translation of new questions in the source questionnaire and subsequently reviewed the translations performed by the other translator, and the adjudicator combined both translations.

Previous FRA surveys could be partially reused for the Croatian, Czech, Greek, Hungarian, Italian, Portuguese, Romanian and Spanish versions of the questionnaire, as only about 30 % of the questions were new and had therefore never been translated for previous FRA surveys. However, for the

Macedonian and Serbian versions over 90 % of the questions were new. The entire translation process was described by the contractor in a separate translation report (Deliverable 6).

2.6.1. Questionnaire translation and adaptation steps

Step 1: briefing
Both translators and adjudicators were asked to attend an introductory briefing session, which was held online. The session was led by Kantar Public. Participants in the briefing were told about the survey's background and main goals. Moreover, any terminology or concepts that were complex were explained and the translation environment was presented. Kantar Public prepared hands-on exercises. Time was also made for those taking part in the briefing to ask questions.

The briefing was supported by written notes that the translators could refer to. In addition, a glossary (the EU-MIDIS II glossary) and a set of item-by-item translation and adaptation notes were provided. The glossary's use was to explain key terminology used in the survey instruments.

Communication with translators and adjudicators was kept open throughout the translation process so that they could ask about any terms or phrases in the source text that they needed clarification on.

Step 2: translation
Questions in some fieldwork languages had been translated for previous surveys, particularly EU-MIDIS II. Although these translations were reused to a degree, easing the workload for those languages, they were nevertheless reviewed by translators. All new questions were translated. The main source questionnaire in English was also reviewed and adapted when necessary, to make sure that any local differences were accommodated for.

The TRAPD methodology was used in the translation of the new and adapted parts of the questionnaire. Translators had to read the general instructions and the item-by-item guidelines for translation carefully. They translated all new items and edited the existing translations for items that were modified, to replicate the changes from the source version in the target country version, and checked the existing trend items, confirming that the translations were acceptable. As a result, two independent professional translations were produced in parallel. These were then merged by an adjudicator.

For questionnaire responses referring to equality bodies and education levels, which were country-specific, FRA provided a list of the equality bodies and ISCED categories. Therefore, these were not part of the translation process. Hence, before the adjudication meetings an Excel file containing all country-specific elements for each language was prepared by NSEs and added to a shared online folder.

Other survey materials, including the ECS, PSU contact sheet, interviewer questionnaire, introduction letter, interviewers' manual, leaflet, letter for respondents, privacy policy notice, random walk instructions and interviewer feedback form, were translated using a simplified approach. The ECS and interviewer questionnaire underwent translation and two revisions to ensure that the quality of the translations was very high. Linguists and NSEs already involved in translating the questionnaire were asked to perform these tasks, as they were already familiar with the subject matter. The rest of the documents – the fieldwork materials, survey manual and interviewer instructions – underwent a simple translation process consisting of an initial translation and one or two revisions, depending on the document.

Step 3: cross-review and adjudication
Once the translators had translated the questionnaire, the translation by translator 1 was shared with translator 2, and the translation by translator 2 was shared with translator 1. Translators were then asked to review each other's versions, focusing only on modified and new questions. They made sure that the glossary and item-by-item guidelines had been followed, and identified potential errors using specific codes that allowed them to be easily found. No changes were implemented in the translations at this point.

After the cross-review, the versions and comments from both translators were integrated into a single QLIB file. The translation team at Kantar Public Brussels edited the questionnaire by adding columns for the adjudicator to fill in: the adjudicated version column and the adjudicator's comments column.

For each language, an adjudicator with verified experience in data collection instruments, a familiarity with state-of-the-art linguistic quality assurance documentation practices and a higher education qualification was appointed. Moreover, all adjudicators were native speakers of the target language and highly proficient in English. Therefore, they were all accustomed to explaining the rationale behind their choices in English, and to adjudicating using the 'ask the same question' approach. This approach checks that final versions are fit for purpose, linguistically correct and equivalent to the source.

In a web-based training session Kantar Public provided to adjudicators, they were given the following instructions.

- Check both translations (by translator 1 and translator 2) and compare them with the source version on an item-by-item basis. Identify in each line the translation that should be used as a basis, meaning the one that is closest to the English source.
- For each item, consult the item-by-item guidelines, making sure that translators have followed them.
- Then provide the adjudicated version in the 'adjudicated version' column. This requires using the closest translation as a basis, and editing it when necessary.
- For each line, write comments in the 'adjudicator's comments' column, mentioning for each question the translation that was chosen and a rationale for the choice.

For the adjudication meetings, both translators, the adjudicator and the NSEs' representative or representatives received guidelines for the meeting itself, along with the updated questionnaire translation in an Excel file. The meetings were held online using Microsoft Teams. A moderator from Kantar Public was present during all the meetings to clarify the instructions and the context of the meeting, make sure that all participants understood the instructions correctly and answer any questions from attendees.

Once the meeting was over, the adjudicator sent the updated questionnaire back to Kantar Public, with one column dedicated to notes from the meeting and another containing comments that arose from it.

Step 4: Preparation and validation of the final version
Final revisers then had to identify errors in the target country version, and document them by writing a short explanatory comment in a new column with the heading 'final reviser's comments'. They were also asked to implement any changes directly in the final translation column. Finally, they also filled out the 'reporting on trend issues' file whenever a trend had been modified, and implemented late changes made to the source version decided right before or after the adjudication meetings.

The revised files were then shared with the representatives of the NSEs who had participated in the adjudication meetings for final validation. This step was put in place to make sure that there were no outstanding issues with the translation, focusing on country-specific elements. This version was provided to FRA for final comment and approval before the main source script was overwritten.

Step 5: post-pilot translation changes
A pilot survey was conducted in three fieldwork countries (Italy, North Macedonia and Serbia) and four languages (Albanian, Italian, Macedonian and Serbian). As a result, a few changes were introduced in both the source questionnaire and the screener.

2.6.2. Tools and instruments used to translate the questionnaire

All translations were carried out using NeferTT, a translation programme that ensures the security and confidentiality of each translation. All linguists had personal access to the translation project, which was processed in NeferTT. Item-by-item translations and comments left by project managers on them were available on NeferTT for linguists to consult and apply.

All of the translations and documentation were kept in a centralised monitoring tool in Excel format. The tool contained the source version of the questionnaire as exported from the scripted main source version, allowing for the efficient overwriting of the main source script with the approved translated versions. Translation and adaptation notes were included in separate columns for each contributor. Details on where translations of the new or changed questions differed, and the outcome of all steps of the translation process, were also included. Lastly, the names of the adjudicator and the NSE or NSEs or project manager signing off each version were provided in the file.

3. SELECTING AND TRAINING INTERVIEWERS

This chapter provides an overview of the briefing of national coordinating teams, interviewer training, the engagement of Roma mediators and NGOs, and the recruitment and profile of the interviewer pool.

3.1. CENTRAL FIELDWORK BRIEFING: TRAIN-THE-TRAINERS MEETING

In the preparation of fieldwork, Kantar Public organised a centralised train-the-trainers workshop to brief the NSEs, local project managers and local fieldwork coordinators. The briefing was organised on 29 October 2020 and also involved representatives of FRA.

Owing to the epidemiological situation in the light of the COVID-19 pandemic, the briefing was held online and was recorded and subsequently shared with all parties. It covered the following topics: project background, the objectives of the survey and understanding the survey population; the implementation of the sampling approach; the implementation of fieldwork; the presentation of the topics of the survey and the questionnaire (including the use of showcards); and the coordination of fieldwork. After the briefing, the PowerPoint slides were revised to include details about matters raised that needed clarification during the training. They were shared with all participants and served as a basis for the preparation of the national training sessions.

3.2. INTERVIEWER SELECTION AND PROFILE

Interviewer selection criteria

The contractor was requested to recruit interviewers with a Roma background to the extent possible. It was a prerequisite that all, or the large majority, of the interviewers had at least three months' experience with conducting face-to-face survey data collection, including using dedicated CAPI software. In addition, the local project management teams focused on the following selection criteria to ensure that high-quality data were collected:

- very good performance on previous face-to-face survey projects (in this regard, agencies used internal records of performance, such as results of back-checks conducted for previous projects);
- experience with interviewing particular segments of the population, including Roma.

In Czechia, some particular requirements were set out for interviewers who did not have previous interviewing experience, such that they had to have experience working with the Roma community and working intensively with people, obtaining information from them, performing administrative tasks and filling out forms or questionnaires. The candidates' ability to use computers and digital devices such as tablets was also assessed.

Some of the local agencies engaged Roma interviewers in the project (in Croatia, Czechia, Hungary, Italy, North Macedonia, Romania and Serbia). A large part of the Roma field force were interviewers who worked with, or for, the Roma organisations that the agencies partnered with, and many had been involved in the Roma mapping exercise.

Interviewer profile

In total, 359 interviewers worked on the RS2021 across the 10 countries where the fieldwork was conducted. **Table 3.1** provides basic information about the number of interviewers deployed, their amount of experience and their experience in interviewing Roma people.

TABLE 3.1: GENERAL INFORMATION ABOUT INTERVIEWERS

Country	Number of interviewers	Months of experience in conducting surveys (average)	Interviewers with experience of interviewing Roma
CZ	28	24	20
EL	28	162	17
ES	39	174	39
HR	29	75	14
HU	50	210	50
IT	24	78	24
MK	35	112	34
PT	24	158	24
RO	49	37	14
RS	53	96	40
Total	359	113	276

During the preparatory stages, Kantar Public and FRA discussed the need to employ a diverse interviewer pool for the RS2021. Special attention was paid to ensuring that the gender split of the field force was as even as possible. Nevertheless, the final gender distribution of the interviewer pool is quite heavily skewed towards being female (with 69 % of the interviewers being women).

The age distribution among the interviewer pool was more diverse. However, often most interviewers were middle-aged. Six national agencies employed Roma interviewers. The profile of the interviewer field force is shown in **Table 3.2**.

TABLE 3.2: PROFILE OF THE INTERVIEWER FIELD FORCE (%)

Country	Sex Women/men	Age 18–24/25–39/40–54/55+	Roma background	Romani or Roma dialect spoken	Experienced Roma interviewers
CZ	61/39	18/36/36/11	100	n.a.	34
EL	75/24	7/14/39/39	0	0	0
ES	67/33	0/13/51/36	0	0	0
HR	79/21	24/28/34/14	20	20	0
HU	76/24	0/12/20/68	4	4	100
IT	29/71	0/8/42/50	100	95	80
MK	80/20	9/29/26/37	30	30	100
PT	58/42	0/0/58/42	0	0	0
RO	76/24	8/41/41/10	0	0	0
RS	68/32	4/42/36/19	27	10	70

Note: n.a., not available.

3.3. WORKING WITH ROMA NON-GOVERNMENTAL ORGANISATIONS AND MEDIATORS

During the survey preparation stages at the start of the project, particularly when background information was being collected, the need for Roma intermediaries to facilitate access to some areas and to increase the cooperation of Roma was acknowledged. FRA confirmed that the assistance of Roma intermediaries was helpful in previous data collection efforts of a similar nature. Therefore, the national agencies were encouraged to search for partners for the duration of the project among Roma organisations. The partnerships varied in form and scope across countries, with some (e.g. in Spain) cooperating with one Roma umbrella organisation and others (e.g. in Hungary) partnering with a range of Roma NGOs depending on the regions selected for fieldwork.

The local agency in Hungary received a list of Roma institutions from a central government institution, including a wide range of organisations working with Roma: county-level NGOs working exclusively with Roma; Tanoda, providing after-school learning spaces for disadvantaged children; and Gyerekházs (children's houses), which are daytime playing and social institutions for younger children and their parents. The agency informed all the Roma organisations concerned about the RS2021 before fieldwork about the upcoming data collection efforts and contacted them during fieldwork to arrange for specific mediator assistance.

Most of the Roma organisations involved were dedicated non-profit organisations, but national agencies also engaged with administrative institutions at local level to garner support from social workers and/or Roma mediators. **Table 3.3** illustrates the profile of Roma mediators who took part in the project.

TABLE 3.3: ROMA MEDIATORS PER COUNTRY

Country	Number	Sex (%)		Age (%)			
		Women	Men	18–24	25–39	40–54	55+
CZ	4	25	75	0	25	50	25
EL	10	50	50	0	40	40	20
ES	20	67	33	0	67	33	0
HR	20	5	95	0	30	40	30
HU	5	60	40	20	0	40	40
IT	24[a]	30	70	0	10	40	50
MK	10[a]	30	70	50	20	30	0
PT	6	0	100	0	0	50	50
RO	58	75	25	0	17	50	33
RS	6	30	70	0	15	85	0

Note: [a] Roma interviewers were also mediators.

Overall, 163 mediators were involved in the survey. In nine out of the 10 target countries, all the mediators involved in the RS2021 project were fluent in the most dominant national language of the country. The only exception was Italy, where only 30 % of the mediators were fluent in Italian. However, all the other mediators could speak Romani or another Roma dialect.

With regard to the mediators' ability to speak Romani or a Roma dialect, in eight of the countries at least some of them (ranging from 20 % in Romania to 100 % in Greece and North Macedonia) could speak it. As regards the socio-demographic profile of mediators, there was a large variation in the composition of this group across countries. In some countries (e.g. Croatia and Romania), mediators were selected because they had previous experience in supporting research activities targeting the Roma population. All the mediators were briefed about the RS2021 project, their expected role in the project, the data collection methodology and data privacy issues.

The tasks of the mediators varied depending on the stage of the project they were involved in. For example, at the preparatory stage a number of Roma mediators and/or representatives supported the project during the Roma mapping exercise. During fieldwork, mediators helped in promoting the survey in their community and obtaining access to gated areas of the community, and enhancing cooperation with potential respondents. Most of the mediators participated along with the interviewers in the interviewer briefing sessions. Those who joined the project at a later stage were briefed by the local fieldwork coordinating team and were provided with documents containing relevant information.

Partnerships between the national agencies and Roma organisations took various forms and the Roma organisations were remunerated for their work.

3.4. INTERVIEWERS' TRAINING

All interviewers had to attend two days of training before conducting any interviews. Owing to the COVID-19 situation, most of the training had to be conducted online. All sessions conducted online were recorded, and the recordings were shared with the participants for future reference. The sessions were mostly facilitated by the NSEs and local fieldwork coordinators, with contributions from Roma experts regarding cultural and ethical considerations in each country. The training closely followed the structure of the train-the-trainers briefing and was largely standardised across countries (**Table 3.4**).

The first day mainly addressed the objectives of the survey, the background of the target population, FRA's work, the implementation of the survey methodology and the roles of the personnel involved in the project. In addition, particular attention was paid to the ethical principles of the survey. In this regard, the national agencies were supported by the Roma NGOs or Roma experts they had partnered with. The Roma experts provided very good context and a historical overview of the target population of the survey, according to the feedback received.

On the second day, an overview of the information provided on day one was presented. Afterwards, mock interviews were conducted, which took up most of the day. The breakout sessions in which the interviews took place were supervised, and feedback on the mock interviews was collected and later discussed in a plenary session. Apart from the mock interviews conducted during the briefing, all the interviewers conducted two mock interviews by themselves. The interviewers had to complete these before beginning fieldwork. All the interviewers were given fieldwork materials and tablets for the duration of the briefing.

TABLE 3.4: INTERVIEWER BRIEFING DETAILS

Country	Number of interviewers involved in the field	Briefing type	Briefing location	Briefing dates/times
CZ	28	Full briefing	Online	22–23 April 2021 24–25 April 2021
		Group training	Online	22–23 April 2021 24–25 April 2021
		One-to-one training	Online	22–23 April 2021 24–25 April 2021
EL	28	Full briefing	Online	9–10 March 2021
		Group training	Online	30 March 2021
ES	39	Full briefing	Online	4–5 March 2021
HR	29	Full briefing	Online	4–5 March 2021
		Group training	Online	11–12 March 2021
			Online	10–11 May 2021
			Online	19–20 May 2021
			Online	24–25 May 2021
		One-to-one training	Zagreb	6–7 May 2021
			Zagreb	6–7 May 2021
HU	50	Full briefing	Online	1–2 March 2021
IT	24	Full briefing	Online	28–29 January 2021
		One-to-one training	Online/telephone	During the fieldwork
MK	35	Full briefing	Online	11–12 March 2021
		Group training	Online	6 May 2021
		One-to-one training	Various	During the fieldwork
		Other – support group	Online	During the fieldwork
PT	24	Full briefing	Online	1–2 March 2021
		Group training	Online	1–2 March 2021
RO	49	Full briefing	Online	17–18 February 2021
		Group training	Online and face-to-face briefing with local supervisors and their teams	21 February 2021 24 February 2021
RS	53	Full briefing	Online	20–21 February 2021
		One-to-one training	Online	3 January to 21 June 2021

Representatives of FRA joined almost all interviewer briefing sessions (except in Portugal) and provided feedback to Kantar Public and local agencies as needed. Members of the CCT also attended the sessions, when possible, considering relevant language skills. The training was also attended by the representatives of Roma NGOs and Roma experts (**Table 3.5**).

TABLE 3.5: ROMA NGOS/EXPERTS PRESENT DURING INTERVIEWERS' TRAINING

Country	Organisation
CZ	ARA ART, z.s.
EL	Ellan Passe, an organisation of Greek Roma mediators and collaborators
ES	Fundación Secretariado Gitano
HR	Kali Sara
HU	None (NSE also acted as a senior expert on Roma)
IT	Opera Nomadi
MK	Romski Resursen Centar, KHAM, Roma Democratic Development Association Sonce, Bairska Svetlina, Bela Kula, ZMOCP, Roma Perspective, Roma Community Center DROM
PT	Manuela Mendes, researcher at the University Institute of Lisbon
RO	Romanian Research Institute for Research on National Minorities
RS	Liga Roma

4. SAMPLING

This chapter provides an overview of the sampling design for each country. The survey built on the sampling approaches and experiences gained in previous surveys of the Roma population – in particular, FRA's EU-MIDIS II from 2016, FRA's Roma Survey from 2011 (Italy), the United Nations Development Programme (UNDP)/World Bank Regional Roma Survey 2017 (North Macedonia and Serbia)[19] and FRA's RTS 2019 – to further refine and improve their methodologies.

4.1. TARGET POPULATION

The target population for this survey was all individuals in the survey countries aged 16 or over, living in private households, whose usual place of residence is in the territory of the survey country and who identify themselves as Roma or as one of the other groups that are subsumed under the term 'Roma'. The survey population also includes those who are living in camps, unstructured settlements and remote or segregated areas if they otherwise fulfil the eligibility criteria.

The term 'Roma' is commonly used in political documents of the EU as an overarching term that encompasses diverse groups of people who are sometimes referred to as Roma, Sinti, Kale, Travellers, Gens du voyage, Manouches, Ashkali and Boyash. The term or terms used in each country are given in **Table 2.2**.

A household included either one person living alone or a group of people who were not necessarily related but who knew each other and were living at the same address with shared housekeeping, that is, sharing utility costs or at least one meal per day. The household had to be the individuals' main place of residence, excluding holiday homes. Households included children, newborns, older people and people who were temporarily absent (for a maximum of six months) for work, education or health reasons. Temporary household members (e.g. visiting family members, friends, boarders or lodgers) were included if they had lived in the household for at least six months or intended to stay for at least another six months.

Private households excluded business premises and collective and institutional accommodation such as student halls, residential homes, workers' hostels and shelters for homeless people.

4.2. OVERALL SAMPLING APPROACH

The general sampling approach was stratified two-stage area-based sampling. In the first stage, PSUs were randomly selected in each stratum, with a probability proportional to their size. Typically, the PSUs were municipalities or regions and were too large to efficiently screen for eligible households.

[19] UNDP (United Nations Development Programme) (2019), ***2017 Regional Roma Survey – Quantitative data collection of socio-economic position of marginalised Roma in Western Balkans: Technical report***.

In the second stage, the sampled PSUs were subdivided into smaller geographical units and mapped for Roma populations by Roma experts. The mapped locations were then clustered into SSUs to ensure a minimum SSU size and sampled with a probability proportional to their size.

Mapping was not used in Hungary and Spain. In Hungary, population data on Roma were available from the census at census area level, a very small geographical unit. In Spain, detailed information on SSUs was obtained from the cooperating NGO. A two-stage approach was, however, used in Hungary and Spain, primarily to increase the efficiency of fieldwork.

The number of SSUs to be selected was determined based on the required sample size and the expected number of interviews to be conducted per SSU. The expected number of interviews per SSU was set at 10 for all countries except Hungary, Romania and Spain, where the number was set at 12.

SSUs with larger Roma populations could be selected multiple times, meaning that a larger number of interviews was allocated to them at the household selection stage to achieve an equal probability sample. For example, if an SSU was selected twice, the expected number of interviews would be double, that is, either 20 or 24. In cases where the SSU was selected more than once, multiple start addresses were selected to minimise the effect of clustering within the SSU. Before selecting SSUs, at both PSU level and SSU level very small or empty units were excluded from the sample frames, which reduced the overall coverage of the sample but increased the efficiency and feasibility of the fieldwork (see **Table 4.4**).

In the sampled SSUs, households were selected using a random walk from a predefined random start address. In a small number of SSUs, before fieldwork started, the randomly selected start address was identified as not within the area where Roma live. In these circumstances, the start address could be replaced (controlled random start), as this was considered to result in less bias in the sample than replacing a non-successful SSU. Details on how the random start address was identified and the random walk approach used can be found in **Section 4.6.3**.

Finally, within an eligible household a respondent was selected at random from all eligible Roma in the household, whether or not they were living in the home at the time. Each eligible individual was listed in the interviewer's tablet, starting with the informant, and the script randomly selected one household member to participate in the survey. No replacement for the selected individual was permitted.

4.3. ALLOCATING SAMPLE SIZES BY COUNTRY

The minimum target for the number of valid interviews across all 10 countries was 8,400. In designing the final sample allocation for each country, an extensive mapping of available data sources was conducted as part of background research (**Section 1.1**). A number of alternative allocations based on a combination of three measures for the Roma population (**Table 4.1**) and three allocation designs were prepared: no minimum/maximum threshold (optimal allocation); a minimum of 500 and no maximum; and a minimum of 500 and maximum of 1,740.

The maximum of 1,740 interviews reflects the maximum sample size in Romania, the country with the largest Roma population, and the number of interviews that could be achieved within the fieldwork period. The minimum sample of 500 interviews was based on the minimum sample size in any country that FRA required for meaningful analysis and disaggregation of data.

TABLE 4.1: SOURCES AND ESTIMATES OF THE TOTAL ROMA POPULATION PER COUNTRY[a,b,c]

Country	Council of Europe (A)	Background report (B)	Final PSU frame before exclusions (C)
CZ	200,000	262,157 (2019; 240,300 if just 2017 used): **Government Council for Roma Minority Affairs**. 2019 estimates were used, where available; **2017 estimates** were used elsewhere but were calibrated to 2019 (H). 12,852 (2011): **census** (S).	270,703
EL	175,000	110,000 (2015–2017): **Hellenic Ministry of Labour and Social Affairs** (H). 200,000 (year unknown): Coordinator of the Roma Social Integration Monitoring Mechanism for Greece (Roma account for about 2 % of the total population) (H).	103,469
ES	750,000	516,862 (2015): **Fundación Secretariado Gitano** (Roma living in high-density areas only) (S). 800,000–1,500,000 (2014): Fundación Foessa (H).	517,397
HR	35,000	30,000 (2013): estimate derived from the **Centre for Peace Studies**, Council of Europe estimates and meeting with the national Roma contact point (S). 16,957 (2011): **census** (S).	24,624
HU	750,000	315,583 (2011): **national census** (S). 876,000 (2010–2013): **Roma population estimate** (H). 309,632 (2016): **micro-census** (S). 209,408 (2020): **Roma municipality register** (S).	561,216
IT	150,000	n.a.	122,709
MK	197,000	53,879 (2002): **census** (S). 100,733 (2018): estimate from the State Statistical Office (S).	76,593
PT	52,000	37,000 (2017): **High Commissioner for Migration study** (S). 39,233: **EU-MIDIS II** PSU frame (unknown if (S) or (H)).	37,999
RO	1,850,000	1,157,445 (2017): ***Raport de Cercetare SocioRoMap. O Cartografiere a Comunitatilor de Romi Din Romania*** (H). 621,371 (2011): **census** (S).	1,157,447
RS	600,000	147,604 (2011): **census** (S).	147,729
Total	4,759,000		3,019,886

Notes:

[a] *When the allocations were calculated, the values for the Roma population in the PSU frame in Czechia and Italy were only estimates, as the sample frames were not finalised. In Czechia, there was a small increase in the estimated Roma population, from 260,784 to 270,703, after local Roma experts checked the municipality estimates derived from the higher estimates for the administrative districts of municipalities with extended powers. In Italy, after checking, the Roma population estimate increased from 98,980 to 122,709.*

[b] *H, hetero-identification (self-identification and external identification); S, self-identification.*

[c] *n.a., not available*

The method for final sample allocation used the Roma population from the final PSU frame (value in column C in **Table 4.1**) and the allocation design with a minimum of 500 and a maximum of 1,740 respondents per country. Within this range, the optimal sample size proportional to Roma population size was calculated. Further constraints on maximum sample sizes were required in Czechia (880) and Spain (1,100). The final allocation of the sample by country is shown in **Table 4.2**.

Based on the PSU frame Roma population, the allocation has a sample efficiency of 76 %, where sample efficiency is calculated as 1 divided by the design effect (1.32). The design effect is calculated based on the Kish design effect calculation for unequal weights.[20]

[20] Kish, L. (1965), *Survey sampling*, New York, Wiley.

TABLE 4.2: TARGETED SAMPLE SIZE ALLOCATION BY COUNTRY

Country	Target sample allocation
CZ	880
EL	590
ES	1,100
HR	500
HU	1,370
IT	500
MK	510
PT	500
RO	1,740
RS	710
Total	8,400

The formula used to calculate the target allocation of the total sample to each country is:

$$n_i = \min\left(n_{max}, \max\left(n_{min}, k\sqrt{S_i}\right)\right)$$

k determined by the requirement that the country allocations n_i sum up to the total sample size
n_{min} minimum sample size for a country (500)
n_{max} maximum sample size for a country (1,740)
S_i estimated size of Roma population in country i

4.4. SAMPLING FRAMES AND MAPPING THE ROMA POPULATION

4.4.1. Primary sampling units

A population register for the Roma population was not available in any of the 10 countries covered, so an area sampling frame had to be established at PSU level. PSUs are defined in each country as the lowest level of geographical units for which information on the countrywide Roma population is available and recent. In six countries (Croatia, Czechia, Hungary, North Macedonia, Romania and Serbia), the latest available census (2011) was used as the primary source for population data at PSU level. In the other four countries (Greece, Italy, Portugal and Spain), census data were not available for the Roma population and therefore alternative sources were used.

Where the population sources were relatively old and/or where they were expected to under-represent the true Roma population (e.g. census data), steps were taken to adjust the population estimates before starting to select PSUs, using other more recent and/or more reliable sources on the Roma population. These adjustments were made at the lowest geographical level at which robust data to calculate the adjustment were available. This level was always higher than the PSU; therefore, all PSUs that fell into the same geographical unit for the adjustment calculation had the same relative adjustment factor applied to them.

For example, in Romania the 2011 census Roma population estimates for each municipality in the same Nomenclature of Territorial Units for Statistics (NUTS) 3 region were adjusted by the same factor, determined using the following calculation:

$$\text{Adjustment factor} = NUTS\,3_j / \sum_{i=1}^{n} m_{ij}$$

$NUTS\,3_j$ 2017 Roma population estimate in NUTS 3 region j in Romania

m_{ij} 2011 census Roma population estimate in municipality i within NUTS 3 region j

Table 4.3 lists the original sources used at PSU level to estimate the Roma population along with the sources used to adjust the estimate.

TABLE 4.3: PSU ADMINISTRATIVE LEVEL AND POPULATION SOURCES USED TO ESTIMATE AND ADJUST ESTIMATES OF THE ROMA POPULATION[a]

Country	PSU level	PSU Roma population – primary source(s)[b]	Source(s) for adjustment[c]
CZ	Municipalities	2011 census, 0+ population, estimates at municipality level	2019 municipalities with extended competences qualified estimates from the Government Council for Roma Minority Affairs. Where 2019 qualified municipalities with extended competences estimates were missing, 2017 estimates were used but were adjusted to 2019 at NUTS 3 level. Adjusted estimates were then checked and corrected where necessary by the Roma experts/regional coordinators on behalf of the Government Council for Roma Minority Affairs.
EL	Municipalities/ parts of municipalities	Hellenic Ministry of Labour and Social Affairs' 2015–2017 research on the Roma population in Greece	N/A
ES	Municipalities	Fundación Secretariado Gitano (2015), mapping Roma living in high-density areas only.	N/A
HR	Municipalities and city quarter in Zagreb	2011 census, 0+ population	Centre for Peace Studies' 2018 study 'Roma inclusion in the Croatian society: A baseline data study'. Adjustment was made at NUTS 3 level.
HU	Municipalities	2011 census	Expert estimates of Roma at settlement level. Adjusted estimates were calculated by the Demographic Research Institute of the Hungarian Central Statistical Office. Adjustment was made at municipality level.
IT	Provinces	Population data were sourced from Associazione 21 Luglio and Opera Nomadi. The Italian National Institute of Statistics was also contacted but it has no record of the Roma population in Italy, despite newspaper reports suggesting that the government at the time proposed to do this. Population data were also based on expert estimates in each province.	N/A

Country	PSU level	PSU Roma population – primary source(s)[b]	Source(s) for adjustment[c]
MK	Administrative settlements	2002 census and estimates from the 2019 AECOM International Development Europe SL report *Thematic evaluation of EU support to Roma communities and Roma social mapping*	2019 AECOM International Development Europe SL report *Thematic evaluation of EU support to Roma communities and Roma social mapping*, detailing an evaluation conducted in the 14 municipalities with the largest Roma populations. Adjustments were made at NUTS 2 region level.
PT	Municipalities	EU-MIDIS II frame estimates or a combination of the following sources and EU-MIDIS II frame estimates. • Observatório das Comunidades Ciganas requested data in 2014 from the 278 councils in mainland Portugal to map and estimate the Roma population. However, only 54 % of the councils replied. The Observatório das Comunidades Ciganas filled in missing data for up to 204 (74 %) municipalities. • Two other studies were performed where the associations responsible mapped the Roma population. One study (conducted by the International Association for the Measurement and Evaluation of Communication in 2018) mapped the Roma population in Beja; the other mapped the Roma population in another five municipalities, for two of which we could obtain population data: the Figueira da Foz municipality (source: Plano Local para Integração das Comunidades Ciganas 2019, p. 19) and the Torres Vedras municipality (source: Diagnóstico da População Cigana Residente no Concelho de Torres Vedras 2015, p. 85).	N/A
RO	Municipalities	National Institute of Statistics' 2011 census data on the Roma population.	2017 Institutul pentru Studierea Problemelor Minorităților Naționale expert estimates at NUTS 3 level (source: *Raport de Cercetare SocioRoMap. O Cartografiere a Comunitatilor de Romi Din Romania*).
RS	Settlements	National Institute of Statistics' 2011 census data on the Roma population.	N/A

Notes:

[a] *N/A, not applicable.*

[b] *These sources correspond to the sources in column B of* ***Table 4.1****.*

[c] *Estimates resulting from the adjustments mentioned in this column correspond to the values in column C of* ***Table 4.1****.*

4.4.2. Secondary sampling units

In all but one country (Italy), the Roma population data were available at a relatively low administrative level, such as municipality or settlement level. However, this level of granularity was insufficient for the implementation of fieldwork owing to the relatively low prevalence of Roma even in the PSUs with the highest prevalence. A further step was necessary to subdivide the Roma population into smaller geographical locations within each sampled PSU.

In all countries but Hungary and Spain, a mapping exercise was conducted to identify where Roma lived. In Hungary, like the PSU-level data, Roma population data were available at census area level from the 2011 census. Adjusted estimates based on this source were made at SSU level. The adjustments made at SSU level mimicked those described in **Table 4.3** at PSU level. In Spain, the list of locations where Roma lived was provided by the cooperating NGO.

Mapping the Roma population

PSUs were partitioned into SSUs based on a mapping of the Roma population conducted by local Roma experts using a bespoke online tool developed by the contractor. To partition the PSUs, local experts were provided with a digital map that split the sampled PSUs into 250 m × 250 m, 500 m × 500 m or 1 km × 1 km grids. The grid size in each PSU was chosen by the Roma experts and NSEs responsible for the mapping.

Kantar Public advised that the smallest grids should be used in the urban PSUs owing to the relatively large grid populations in these units. However, the experts and NSEs did not always take this advice, selecting the grid size that best met their needs.

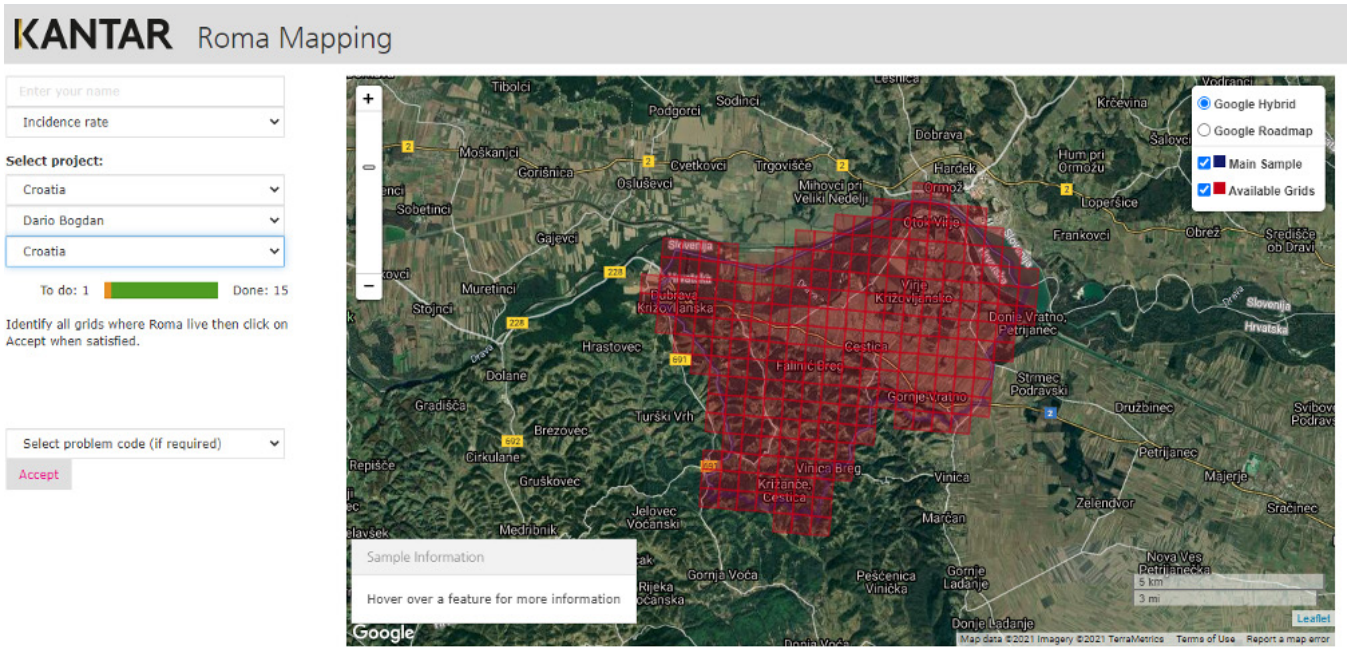
In each country, Roma experts were recruited from the Roma organisations that helped to provide the population data at PSU level. The Roma experts were instructed to select all the grids where they thought Roma resided within the PSUs. For each selected grid, Roma experts could provide information about the Roma population through the number of Roma individuals (of any age), the number of Roma families or the prevalence of the Roma population.

To help calibrate the qualitative assessment of the Roma population, the Roma experts also had access to the total population estimate in each grid within the mapping tool. All grids within the PSU boundaries were included for mapping, whether or not they were known to have a Roma population.

Grids and the total population estimate for each grid were sourced from **Geostat**. Identifying the grids where Roma lived within the PSU using the Geostat data allows the replication of the exercise in future. It also allows Roma who live outside high-density areas to be surveyed, assuming that the requirement for a random starting point for random walks is strongly enforced.

Figure 4.1 illustrates a mapping of grids for a sampled PSU provided to the Roma expert. The tool allowed the expert to toggle between satellite and street map views and zoom in to a very high level and out to a very low level. Road and place names were included in the map to aid their interpretation.

FIGURE 4.1: ROMA MAPPING



On the left of the map, drop-down boxes allowed the Roma expert to switch between PSUs within each country, and between the levels of the population estimates: Roma individuals, Roma families and Roma prevalence. Training and instructions were provided to experts in each country on how to use the tool before the mapping phase started, and a helpdesk was set up to support them during the mapping phase.

Clustering the mapped grids

The mapped grids were clustered with neighbouring grids or nearly neighbouring grids to ensure that they contained enough Roma individuals to support the fieldwork. Clustering the grids also ensured the maximum coverage of the mapped Roma population in the sampled PSUs, as it minimised the number of grids excluded at the SSU selection stage owing to either small Roma populations or a low prevalence of Roma. SSUs consisted of either single grids or clusters of grids. SSUs with Roma populations below the population threshold or prevalence defined in **Table 4.4** were excluded from the selection process.

Once clustered into SSUs, the population counts were standardised so that there was an estimate of the 0+ Roma population in each SSU. Where family counts had been used in the mapping, the number of Roma families was multiplied by the average Roma household size – 5.20 in Croatia (FRA's EU-MIDIS II), 3.97 in Czechia (EU-MIDIS II), 5.35 in Greece (EU-MIDIS II), 4.22 in Hungary (EU-MIDIS II), 4.39 in Italy (FRA's Roma pilot survey), 4.69 in North Macedonia (UNDP's Regional Roma Survey 2017), 3.60 in Portugal (EU-MIDIS II), 4.09 in Romania (EU-MIDIS II), 4.64 in Serbia (Regional Roma Survey 2017) and 5.00 in Spain (Fundación Secretariado Gitano) – to obtain an estimate of the 0+ Roma population. Where the Roma prevalence had been used, the total 0+ population estimate was multiplied by the prevalence to get an estimate for the 0+ Roma population.

In a few cases, the mapped 0+ Roma population was greater than the total 0+ population. In these situations, to calculate the Roma prevalence the total 0+ population was assumed to be incorrect and a prevalence of 100 % was assigned to the SSU. This only happened in a few SSUs, and only where the Roma expert had used the Roma individual or family estimates when mapping the grids in a PSU.

In three countries – Croatia (the Trnje district of Zagreb and Vinkovci), Czechia (Všehrdy) and Portugal (Valpaços) – at least one sampled PSU had no Roma present when mapped. In these situations, a mapped spare PSU from the same stratum with a similar Roma prevalence was used as a replacement. These spare PSUs were selected at the same time as the main PSU using a similar random approach (see the next section).

4.5. SELECTING PRIMARY AND SECONDARY SAMPLING UNITS

4.5.1. Primary and secondary sampling unit coverage

One of the main objectives of the sampling design was to maximise the coverage of the Roma population, to ensure that the sample represented the wide diversity of the Roma population. However, this had to be offset against the time and cost implications of screening households to identify the Roma population. Therefore, prior to the selection of the PSUs and SSUs, very small units were excluded. The minimum level of coverage across both PSU and SSU frames was set at 70 %, but ideally it should have been higher.

The threshold used for exclusion varied slightly by country and frame due to the size and level of dispersion of the Roma population (**Table 4.4**).

TABLE 4.4: THRESHOLD FOR EXCLUSION FROM THE PSU AND SSU FRAMES[a,b,c,d]

Country	Threshold for PSU exclusion	Threshold for SSU exclusion
CZ	Roma population < 100	Roma population < 100 or Roma prevalence < 5 %
EL	Roma population ≤ 115	Roma population < 100 or Roma prevalence < 5 %
ES	Variety of thresholds but predominantly Roma households < 100 and Roma prevalence < 10 %, which made up 96 % of total excluded population	Roma households < 12 or in dispersed locations or listed areas not clearly identified in terms of location
HR	Roma population < 100	Roma population < 100 or Roma prevalence < 5 %
HU	Roma population < 100	Roma population < 18 (threshold set to ensure a minimum coverage of 70 %)
IT	Roma population < 610 (PSUs larger than in other countries). The threshold of 610 was used, as this ensured a minimum coverage of 95 % of the Roma population	None
MK	Roma population < 100	Roma population < 100 or Roma prevalence < 5 %
PT	Roma population < 100	Roma population < 100 or Roma prevalence < 2.5 %
RO	Roma population < 100 or Roma prevalence < 5 %	Roma population < 100 or Roma prevalence < 5 %
RS	Roma population < 100	Roma population < 100 or Roma prevalence < 5 %

Notes:

[a] The figures were computed from the PSU and SSU sample frames of each country.

*[b] When citing the overall coverage, one should be aware that the coverage calculation is based on the total Roma population in the PSU frame, which is not necessarily the same value provided by other sources, as shown in **Table 4.1**.*

[c] In Spain, reasons for exclusion include (1) a highly dispersed Roma population, making fieldwork too expensive (2 %); (2) the exclusion of Ceuta and Melilla (1 %); and (3) fewer than 100 Roma households and Roma population more than 10 % of the total population, but Roma population highly dispersed (1 %).

[d] In Croatia, Czechia, Greece, North Macedonia, Portugal, Romania and Serbia – where there was only one mapped SSU per PSU – no exclusion criteria were used.

The total coverage across both the PSU selection and the SSU selection selections met or exceeded the 70 % target in all countries except Portugal (**Table 4.5**). In Portugal, the mapped Roma population was much more dispersed and was far smaller than expected, which meant that, even with a lower Roma prevalence threshold for exclusion (2.5 %), the total coverage was under the 70 % target.

TABLE 4.5: TOTAL AND COVERED ROMA POPULATION COUNTS BY FRAME

Country	PSU frame			SSU frame			Total	
	Total PSU population	Covered PSU population	%	Total SSU population	Covered SSU population	%	Covered population	%
CZ	270,703	240,572	89	133,458	114,486	86	206,373	76
EL	103,469	101,354	98	70,374	67,753	96	97,580	94
ES	517,397	422,839	82	281,775	255,273	91	383,070	74
HR	24,624	20,602	84	16,287	16,122	99	20,394	83
HU	561,216	506,842	90	175,210	136,477	78	394,796	70
IT	122,709	115,969	95	85,039	85,039	100	115,969	95
MK	76,593	73,817	96	109,622	106,182	97	71,501	93
PT	37,999	33,438	88	25,193	19,021	76	25,247	66
RO	1,157,447	1,077,473	93	208,983	199,526	95	1,028,715	89
RS	147,729	123,043	83	86,152	79,733	93	113,876	77
Total	3,019,886	2,715,949	90	1,192,093	1,079,612	91	2,457,521	81

Note: The figures were computed from the PSU and SSU sample frames of each country.

4.5.2. Stratification strategy and procedure for selecting primary and secondary sampling units

Prior to selecting a sample of PSUs, the PSU frame in each country was explicitly stratified by region, based on the **NUTS classification**, and within region by urbanity, based on the **degree of urbanisation (DEGURBA) classification**, before being implicitly stratified (sorted) by the prevalence of Roma. The only exception to this was Italy.

In Italy, provinces were used as PSUs and they do not have a DEGURBA classification, so explicit stratification was limited to region. Owing to the very large population sizes of the provinces in Italy and the relatively low variation in the Roma prevalence, the Roma population, rather than the Roma prevalence, was used to implicitly stratify the frame. In addition, owing to the availability of information on the Roma population living in or outside camps in each sampled PSU, the PSU Roma population was stratified by the population in or outside camps before selecting SSUs in each PSU proportional to the respective populations.

The number of PSUs sampled in each 'explicitly defined' stratum was proportional to the Roma population covered in each stratum, where coverage was based on the PSU frame (see **Section 4.5.1**). Within each stratum, PSUs were selected with a probability proportional to their Roma population size, using a systematic sample with replacement. In other words, larger PSUs had a greater probability of being sampled and very large PSUs could be sampled more than once. This sampling design ensures that the sample of PSUs in each country is representative of the underlying population by region, urbanity and Roma prevalence.

When selecting the main sample of PSUs, spare PSUs were selected in each explicit stratum. The main and spare PSUs were selected at the same time, and then randomly allocated to main or spare. A minimum of two, or 40 % of the total number of PSUs in the stratum, additional PSUs (whichever was higher) were allocated as spares in each stratum. The contractor prepared and delivered the selection syntaxes and respective frame and sample datafiles to FRA for both the PSU selection and the SSU selection. **Table 4.6** provides a summary of the stratification variables used in each country.

TABLE 4.6: STRATIFICATION OF THE PSU FRAME

Country	Explicit strata variables	Implicit strata variables	Stratum count
CZ	NUTS 2 and DEGURBA	Roma prevalence	27
EL	NUTS 2 and DEGURBA	Roma prevalence	34
ES	NUTS 2 and DEGURBA	Roma prevalence	12
HR	NUTS 2 and DEGURBA	Roma prevalence	21
HU	NUTS 2 and DEGURBA	Roma prevalence	5
IT	NUTS 1	Roma prevalence	21
MK	NUTS 3 and DEGURBA	Roma prevalence	5
PT	NUTS 2 and DEGURBA	Roma prevalence	13
RO	NUTS 2 and DEGURBA	Roma prevalence	13
RS	NUTS 2 and DEGURBA	Roma prevalence	24

Prior to selecting the SSUs in each PSU, the SSUs were first sorted by the Roma prevalence (implicit strata variable) and then by the Roma population count, except for Spain. In Spain, the SSUs where first sorted by the vulnerability index and then by the Roma population count. The vulnerability index is a

value from 1 to 5, where 1 is very good and 5 is very bad. It was developed by Fundación Secretariado Gitano and is a measure of specific aspects of vulnerability: social vulnerability, high level of unemployment and problems with coexistence. The number of SSUs selected in each PSU depended on how many times the PSU had been sampled in the previous stage.

> For example, where a PSU was only selected once, only one SSU was selected within the PSU, and where it was selected twice, two SSUs were selected, and so on.

SSUs were sampled with a probability proportional to their estimated Roma population. A few SSUs in most countries were selected more than once owing to their large Roma populations. Where an SSU was selected more than once, multiple start addresses were selected and a separate random walk was used for surveying in each. To minimise the chance of overlapping routes, the start addresses selected were in different parts of the same SSU.

> For example, if the SSU was made up of a 1 km × 1 km grid and two start locations needed to be selected, the grid was split in half and one start address was randomly selected in each.

Table 4.7 shows the total number of PSUs and SSUs in each frame and the total number sampled for fieldwork along with the final number of SPs in each country. Where the count of SPs is higher than the count of sampled SSUs, this is because some SSUs were selected more than once. The number of SPs in each country selected at the start of fieldwork is dictated by its total sample size and the target number of interviews per SP. The sample size per SP was set at 12 in Hungary, Romania and Spain, while in all other countries it was 10.

TABLE 4.7: PSU AND SSU COUNTS IN FRAME AND IN SAMPLE[a,b]

Country	PSUs		SSUs		SPs selected at the start of fieldwork
	Frame	Sample	Frame	Sample	
CZ	1,074	59	488	80	88
EL	178	39	244	57	59
ES	1,062	68	677	81	92
HR	193	25	64	36	50
HU	2,683	109	7,363	115	115
IT	54	19	74	29	50
MK	167	24	170	42	51
PT	223	43	218	48	50
RO	2,162	127	740	144	145
RS	1,212	58	467	69	71

Notes:

[a] *The figures were computed from the PSU and SSU sample frames of each country.*

[b] *In Italy, the SSU frame was split into the Roma population living outside registered camps and that living in registered camps. There were 46 SSUs for the population living outside registered camps and 28 SSUs for the population living inside registered camps, one for each registered camp.*

When selecting the main sample of SSUs, spare SSUs were also selected in each PSU. The main and spare SSUs were selected at the same time, and then randomly allocated to the main or spare group.

4.5.3. Replacing primary sampling units or secondary sampling units

The replacement of PSUs and SSUs was permitted either when during fieldwork it was found out that there were no Roma living in the sampled PSU/SSU or because of concerns around the safety of interviewers (**Table 4.8**). During fieldwork, the former issue was much more prevalent than the latter. In Hungary, the high number of replacements was in part due to the decision to not map the Roma population and instead use the census area population, based on old census data (from 2011). In Serbia, replacements were used alongside the original units selected to boost the overall number of interviews, as there were concerns during fieldwork that productivity was lower than expected.

TABLE 4.8: TOTAL NUMBER OF REPLACEMENTS IN EACH COUNTRY

Country	Replacements		
	Total	PSU	SSU
CZ	2	1	1
EL	7	5	2
ES	0	0	0
HR	9	2	7
HU	14	2	12
IT	1	0	1
MK	7	0	7
PT	6	2	4
RO	8	2	6
RS	13	2	11

Note: The figures were computed on the Roma survey PSU dataset.

4.5.4. Comparison of secondary sampling unit prevalences in the secondary sampling unit frame and during fieldwork

As with previous Roma surveys, significant differences were found between the estimated prevalence of Roma in the SSU frame and the actual Roma prevalence observed during fieldwork. In seven of the 10 countries, the prevalence observed during fieldwork was higher than the estimated prevalence in the SSU frame. In some countries, it was significantly higher (**Table 4.9**).

It is difficult to draw any firm conclusions about the cause of these differences. However, as shown in **Figure 4.2**, the spread in the observed prevalence during fieldwork (vertical axis) against the expected prevalence from the frame (horizontal axis) does suggest that the mapped population estimates are unreliable. Even the unmapped estimates used in Hungary and Spain are very different from what was observed during fieldwork.

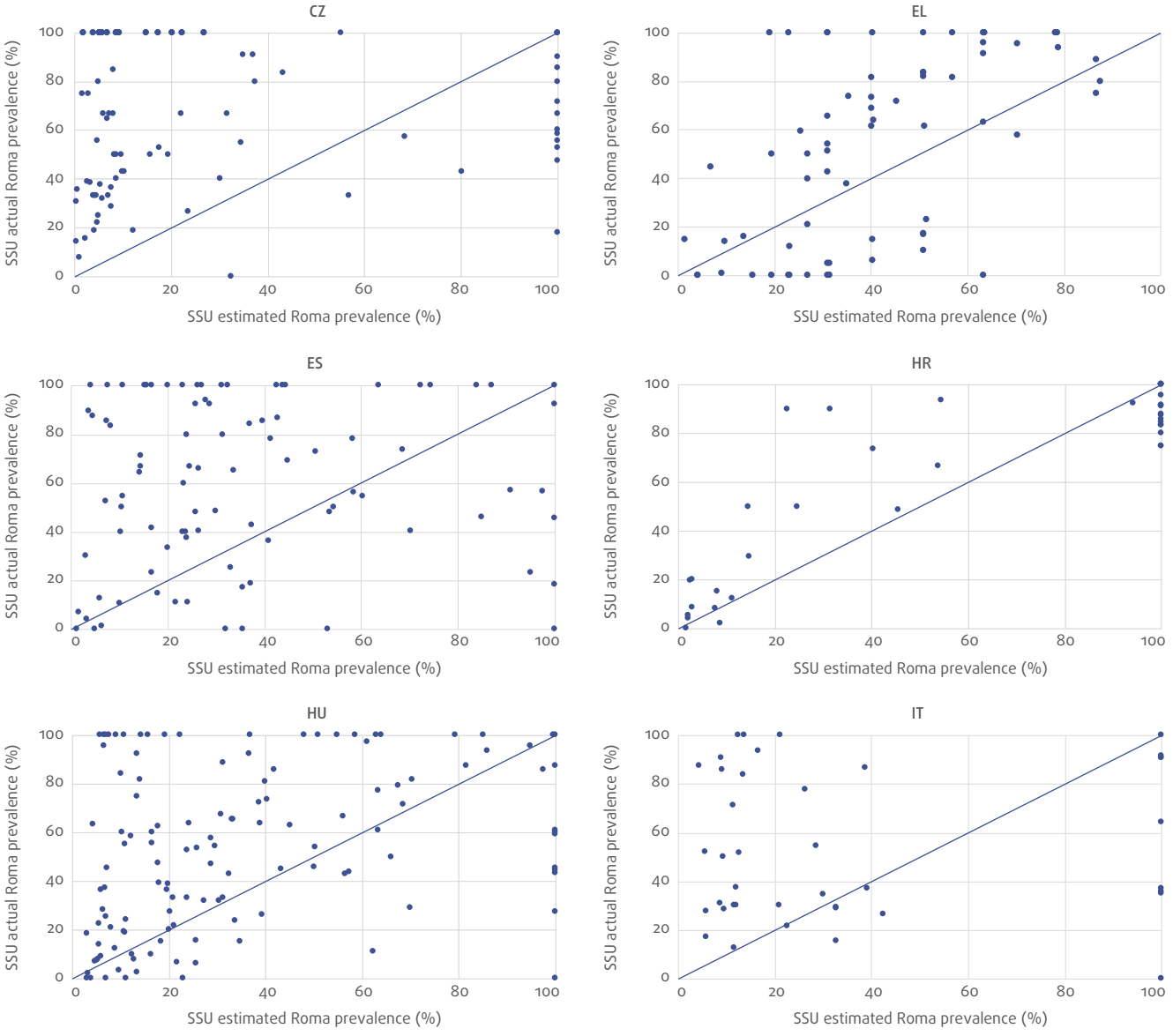
Several factors could influence the observed difference in prevalence. The level of Roma self-identification can be higher owing to trust in the fieldwork or lower if this trust is not established. Population data on Roma based on census or administrative data are expected to underestimate the true population. In addition, the approach of mapping Roma, based on subjective estimates of organisations and experts in the selected PSUs, did not always yield the expected results. Measures were introduced during fieldwork to account for some of these differences (see **Section 4.6.2**).

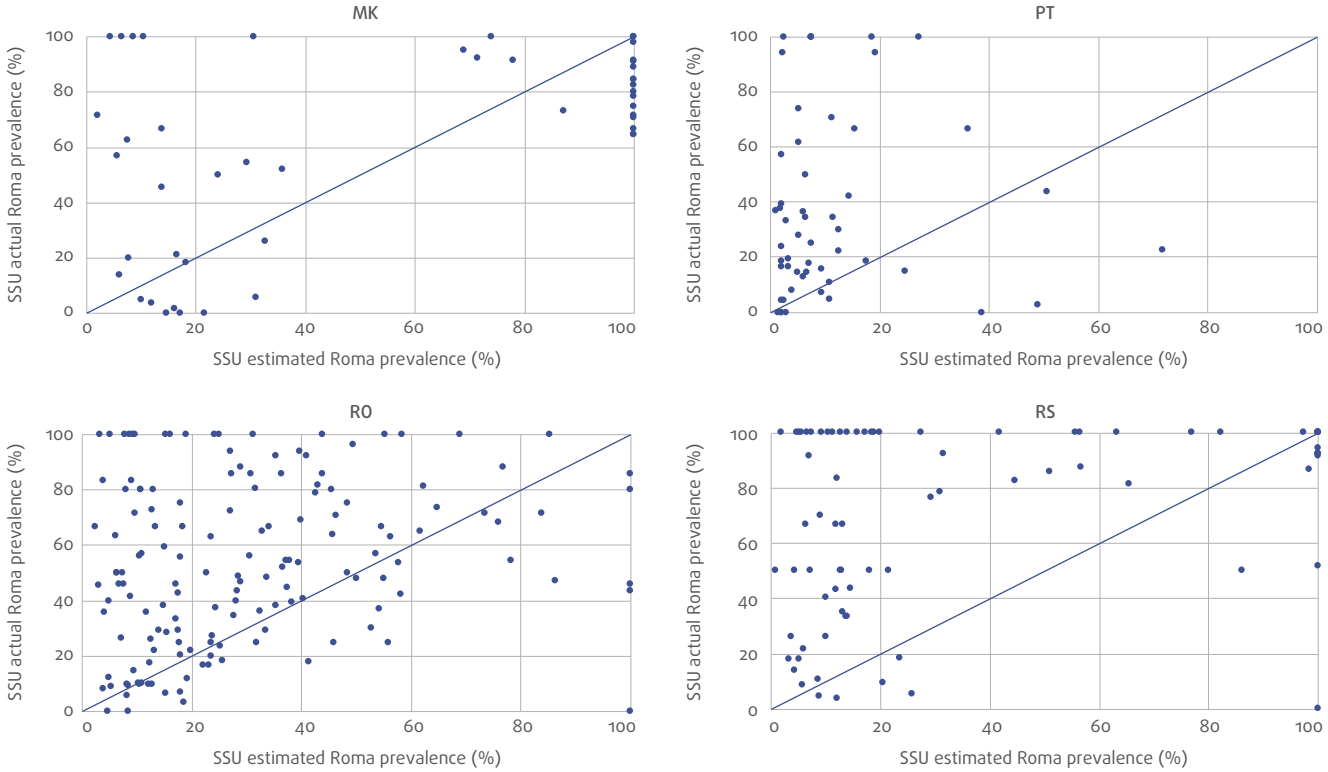
TABLE 4.9: MEAN AND MEDIAN PREVALENCE OF THE ROMA POPULATION IN THE FRAME AND DURING FIELDWORK (%)

Country	Estimated prevalence in the SSU sample based on the frame (%)		Observed prevalence in the SSU sample during fieldwork (%)	
	Mean	Median	Mean	Median
CZ	36	16	60	56
EL	55	58	52	59
ES	59	57	59	62
HR	65	98	65	83
HU	45	38	53	54
IT	47	37	54	44
MK	55	38	62	71
PT	15	9	37	25
RO	38	34	53	50
RS	43	26	71	87

Note: The frame figures were computed on the Roma survey PSU dataset; the fieldwork figures were calculated from the ECS dataset.

FIGURE 4.2: SIMPLE SCATTER PLOTS OF THE ROMA PREVALENCE OF SSUS OBSERVED DURING FIELDWORK, BY ESTIMATED ROMA PREVALENCE IN THE SAMPLING FRAME





Note: Vertical axis – SSU observed Roma prevalence during fieldwork; horizontal axis – SSU estimated Roma prevalence in the frame.

4.6. HOUSEHOLD SELECTION

Households were selected within a selected SSU through a random walk. Owing to the sensitivity of asking people if they have a Roma background, the step that involved enumerating and screening for eligible households was combined with the interview and conducted by the interviewers. To increase the efficiency of sampling in areas with a Roma prevalence below 25 %, modified adaptive cluster sampling (MACS) was used. Adaptive cluster sampling (ACS) had already been used in EU-MIDIS II. For the current survey, a modified version was developed.

4.6.1. Gross core sample calculation

The core sample refers to the total number of core addresses issued into the field (i.e. number of addresses to visit) at the start of fieldwork. In SSUs where MACS was used, additional non-core addresses were issued conditional on identifying an eligible core address.

The gross core sample (N_g) size was calculated for each selected SSU in each country.

$$N_g = \frac{N_n}{\widehat{ELR}_{HH} \times \widehat{RR}}$$

N_n net sample size
$\widehat{ELR}_{HH}$ estimated household eligibility rate
$\widehat{RR}$ estimated response rate

The expected response rate was a flat rate across all SSUs in each country (**Table 4.10**). The estimate was guided by the response rate achieved in previous Roma surveys – EU-MIDIS II, the 2011 Roma survey (Italy) and the UNDP regional Roma survey in 2017 (North Macedonia and Serbia) – but calibrated based on the opinions of the NSEs.

TABLE 4.10: ESTIMATED RESPONSE RATE FOR EACH COUNTRY (%)

Country	Estimated response rate
CZ	30
EL	55
ES	50
HR	80
HU	50
IT	55
MK	50
PT	65
RO	65
RS	60

The estimated household eligibility rate is calculated as follows.

$$\widehat{ELR}_{HH} = \frac{\frac{P^R \times N}{S^R_{HH}}}{\frac{N}{S_{HH}}}$$

P^R proportion of eligible Roma population in the SSU

N total population of the SSU

S^R_{HH} average size of Roma households, sourced from the previous survey of Roma

S_{HH} average size of all households, sourced from EU-SILC;[21] latest estimates were from 2019

The eligibility rate uses a number of metrics that are only estimates and should be treated as such. For example, the mapped Roma population estimate and the model-based prediction for the total population in each grid will have some error in them. The average Roma household size from previous Roma surveys and the average household size for the total population are likely to be accurate at country level, but less so at local level.

Owing to concerns with the accuracy of the data for the calculation of the estimated household eligibility rates and the estimated response rates, less than 100 % of the gross core sample was issued into fieldwork at the beginning of the project. The sample size was tailored based on the estimated eligibility rates. Some 70 % of the gross sample was issued in SSUs with a prevalence of under 50 %, 80 % was issued in SSUs with a prevalence of 50 % to 70 % and 90 % was issued in all other SSUs.

The total number of core addresses that could be issued in an SSU was capped at 100. If additional addresses were required during the fieldwork, these were issued, even if it meant that more than 100 addresses were issued in total.

4.6.2. Adjusting the gross sample estimate

When screening for eligibility, the actual eligibility and response rates were expected to differ from those calculated or assumed prior to fieldwork. There are a number of reasons why this can occur, as already observed in FRA's previous Roma surveys. Firstly, there was a great deal of uncertainty

[21] Eurostat (n.d.), '**EU statistics on income and living conditions (EU-SILC) methodology – Private households**'.

in the estimates. To account for this, the sample was issued in stages, and eligibility and response rates were recalculated during fieldwork. The aim of this was to reduce the number of SPs under- or over-achieving on the number of interviews conducted.

During fieldwork, the actual eligibility and response rates for each SP were calculated after a minimum of 50 % of the target number of interviews had been conducted. A weighted average based on the actual estimate and the original estimate in each SP was used to recalculate the gross sample to issue. The result was only communicated to interviewers where there was a significant difference in the original gross sample estimate and the adjusted gross sample estimate. Interviewers were instructed to administer the adjusted gross sample number of core addresses. This calculation was only done once for each SP.

Where the adjusted prevalence estimate fell above the MACS threshold of 25 % and the prevalence in the frame was below 25 %, the interviewers were instructed to continue using MACS. If the estimate fell below the threshold and the prevalence in the frame was above 25 %, the interviewers were instructed to continue without using MACS.

This process was labour intensive, requiring the central sampling and fieldwork management teams, on a daily basis, to process the latest contact data, calculate the adjusted gross sample estimates and communicate with the national agencies. It also added to the workload for the national agencies, as they were required to communicate these updates to the interviewers. The adjustment of the gross sample to issue during fieldwork also had implications for the calculation of weights, which are discussed in more detail in **Section 8.1.3**.

4.6.3. Random walk

Households were sampled in each SSU using a random walk and predefined selection interval (in the project documentation sometimes referred to as 'skip logic') from a randomly assigned start address. The random walk used in all countries was developed by Bauer.[22] This random walk approach was preferred to other approaches because it leads to approximately equal household selection probabilities.

The selection interval was calculated based on an estimate of the total number of households in the SSU and the gross sample, prior to any adjustments (**Table 4.11**). The calculation was simply NT/N_g, where NT is the total number of households in the SSU and N_g is the gross sample. The figure was rounded down and where it was larger than 10 it was capped at 10. Where it was less than or equal to 1, a census approach was used for the selection of households in the sampled SSU.

[22] Bauer, J. J. (2014), 'Selection errors of random route samples', *Sociological Methods & Research*, Vol. 43, No. 3; Bauer, J. J. (2016), 'Biases in random route surveys', *Journal of Survey Statistics and Methodology*, Vol. 4, No. 2, pp. 263–287; Bauer, J. J. (2017), 'New sample designs: Improvement and alternatives for random route samples' (unpublished).

TABLE 4.11: FREQUENCY OF SELECTION INTERVALS USED IN EACH WORKED SAMPLING UNIT BY COUNTRY[a,b]

Country	Selection interval										Total
	1	2	3	4	5	6	7	8	9	10	
CZ	9	8	3	4	1	0	4	4	4	50	87
EL	11	6	4	9	6	3	3	3	5	19	69
ES	1	3	4	3	7	5	2	5	7	61	98
HR	3	6	5	6	9	3	7	1	0	14	54
HU	57	40	15	6	4	4	0	0	0	0	126
IT	2	4	2	1	0	1	2	1	0	37	50
MK	0	2	0	5	4	3	1	8	2	32	57
PT	5	8	3	3	2	1	2	6	1	23	54
RO	9	5	19	16	11	17	13	7	3	53	153
RS	7	11	8	10	6	10	4	3	1	22	82

Notes:

[a] The figures were computed on the PSU dataset and worked SPs (N = 830), using the variable SP_Selection_Interval.

*[b] The count in the total column in this table is based on the worked sampling units, while the count in **Table 4.5** is based on the selected sample. Differences reflect additional spare sampling units worked to ensure that the target number of interviews was achieved.*

The **start address** for the random walk was identified using a three-step process. In the first step, a random coordinate within the selected SSU was generated. In the second step, Google Maps reverse geocoding software was used to identify the closest address to the coordinate; and in the third step the address was validated as a residential address as opposed to a non-residential address, for example a train/bus station, business premises or sports arena. Where it was a non-residential address, the validators were instructed to choose the nearest residential address in any direction. Where the address was residential, or where it was unclear if the address was residential, the validators were instructed to keep the original start address.

To minimise the risk of dropping an SSU where, based on the expert mapping, Roma live, the start address could be replaced with another randomly selected start address, located closer to where Roma are known to live within the sampled SSU (**Table 4.12**). When replacing the start address, the national agencies were instructed to supply the coordinate for the central point of the area where Roma live, and the Kantar Public central sampling team randomly selected a replacement start address within 250 m of this point. SSUs for which the start address needed to be moved were identified on the first day of working with the SSU.

Information on who informed the interviewers that Roma do not live close to the start address was not collected systematically. However, feedback from countries frequently cited Roma mediators or local police stations as the main sources of information. Police stations were only cited because some interviewers would visit the local police station before starting fieldwork to inform them that they were conducting survey fieldwork among the Roma population.

TABLE 4.12: NUMBER OF WORKED SSUS WHERE ORIGINAL START ADDRESS WAS REPLACED AND THE AVERAGE ACTUAL ROMA PREVALENCE OBSERVED DURING FIELDWORK[a,b]

Country	SPs where start address was not replaced		SPs where start address was replaced	
	Count	Actual prevalence (%)	Count	Actual prevalence (%)
CZ	77	61	10	48
EL	64	52	5	61
ES	94	60	4	42
HR	54	65	0	N/A
HU	126	53	0	N/A
IT	50	54	0	N/A
MK	52	60	5	57
PT	49	38	5	22
RO	148	53	5	59
RS	81	70	1	100

Note:

[a] *The figures were computed on the Roma survey PSU dataset (N = 830) and ECS dataset.*

[b] *N/A, not applicable*

Box 1: Example of random walk instructions

Start address

A start address is provided for each SP. Please ensure that you start your random walk from this address.

Start direction

Beginning at your start address, facing the street, with your back to the start address, turn right. Start the random walk in this direction, staying on the same side of the street as the start address. You should always work on the same side of the street from which you started your random walk.

Side of street

You should always work on the same side of the street from which you started your random walk. For example, if you arrive at a junction on the right-hand side of the street, you should move in the direction given in the direction matrix and continue to work on the right-hand side of the street.

Direction to take at each junction

You will be issued with a **direction matrix**. This one is just an example.

You **must follow the directions** provided in the direction matrix at each junction you come to. Each row represents a junction on your random walk and the three columns (Options A–C) represent the three possible directions to take at each junction: right, left or straight ahead.

At the first junction you come to you should follow the direction in Option A. In this example, this is 'turn right'. At the second junction you come to, you should also follow the direction in Option A. In this example, this is 'walk straight'. At all subsequent junctions, you should follow the direction in Option A for the relevant junction number.

At each junction, if there is no street in the direction given in Option A, follow the direction given in Option B. If there is no street in the direction of Option A or B, take the direction in Option C. If there is more than one right or left turn at a junction, you should take the nearest one, that is the first right/first left.

Junction	Option A	Option B	Option C
1	Turn right	Walk straight	Turn left
2	Walk straight	Turn left	Turn right
3	Turn right	Walk straight	Turn left
4	Turn left	Walk straight	Turn right
...	...	...	...
n	Walk straight	Turn right	Turn left

Dead ends: You should cross over the street at a dead end and carry on the random walk, walking back the way you came.

Boundaries of the SP: You should cross over the street at the boundary and carry on the random walk, walking back the way you came.

Roundabouts: A roundabout should be treated as a junction and you should follow the route based on the direction matrix.

Sampling interval (skip logic)

The number of households to skip between each core address is calculated based on the estimated number of addresses in the SP and the estimated number of addresses to be visited.

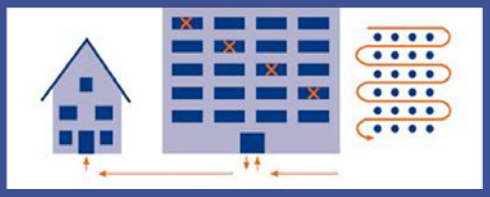
Blocks of flats

In the case of multiple housing units (e.g. flats), consider every flat a separate housing unit and start at the top left of the building. Once you have finished a floor, proceed to the next floor down, working your way down each floor as illustrated in **Figure 4.3** using the same selection interval you are using for the rest of the assignment.

If there is no easy access to the building, then you should systematically sample every *n*th address from the 'entrance bell', starting at the top floor, as illustrated in **Figure 4.3**. *n* is the sampling interval for the assignment. If the top floor is not obvious from the door bell, please start at the top left corner.

When leaving the apartment building, you should continue your random walk in the same direction that you entered the building and use the same selection interval as for the rest of the assignment.

FIGURE 4.3: RANDOM ROUTE TAKEN FOR BLOCKS OF FLATS



Note: For a full description of the random walk used, please refer to the sampling and weighting strategy document and the sampling manual.

Where the interviewer found two or more households in which eligible respondents resided at the same address, they first proceeded by randomly selecting a household. Households were selected using the approach developed by Kish, requiring the interviewer to list all the eligible households so that a random algorithm generator within the script could select one at random.

In Spain, the interviewers identified that some of the mapped Roma population fell just outside the selected grids. Interviewers were allowed to continue on their random walk outside the boundary of the SP where it was clear that Roma lived outside the boundary. The interviewer could only continue on their random walk outside the boundary to a distance of 250 m (or three streets, whichever was closer) from the mapped boundary of the SP in a straight line. Where the random walk direction took them further from the boundary than this, they had to stop their random walk, cross the street and return in the direction they came from, towards the boundary of the SP, and continue to follow the random walk. This rule was applied in four out of the 98 worked SPs in the country.

4.6.4. Modified adaptive cluster sampling

ACS was introduced by Thompson[23] and was adapted in EU-MIDIS II by Professor Verma at the University of Siena.[24] ACS is a technique used in

[23] Thompson, S. K. (1990), 'Adaptive cluster sampling', *Journal of the American Statistical Association*, Vol. 85, No. 412, pp. 1050–1059.

[24] FRA (2017), ***Second European Union Minorities and Discrimination Survey – Technical report***, Luxembourg, Publications Office, pp. 56–57.

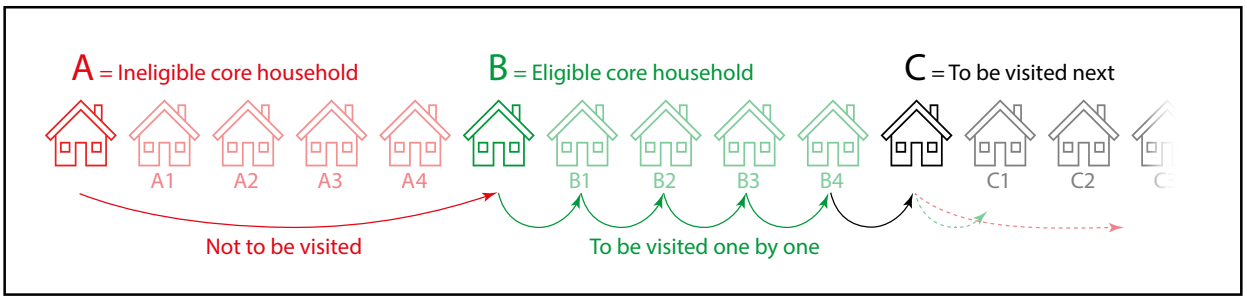
surveys of minority populations to increase the efficiency of fieldwork. In the RS2021, modified adaptive cluster sampling (MACS) was used in SSUs where the estimated Roma prevalence was fewer than 25 %. The modification was designed to minimise the household selection error rate in the original approach by reducing the difficulty of the task.

MACS was developed by Dr David Simon at Eötvös Loránd University. The approach simplifies the selection of non-core addresses by reducing the conditionality associated with it by allocating all addresses between the eligible core address and the next core address on the random walk as non-core addresses. All of these need to be contacted by the interviewer and screened if feasible.

For example, in **Figure 4.4** the selection interval is 5, so the interviewer must select every fifth address on the random walk. They have identified that no Roma live at core address A. Therefore, addresses A1 to A4 **must not** be visited. Instead, they move onto the next core address (B) in the direction of their random walk.

At core address B, they identify that the first household visited is eligible, with at least one 16+ Roma living there. As core address B is therefore eligible, all addresses between core address B and core address C must be visited and screened if possible. These non-core addresses (B1 to B4) all now belong to core address B and must be linked to it for weighting.

FIGURE 4.4: MODIFIED ADAPTIVE CLUSTER SAMPLING – IMPLEMENTATION SCHEME



4.6.5. Stopping and dropping rules

To mitigate inaccuracies in the Roma prevalence in the sampled SSUs found during data collection, two strategies similar to those applied in EU-MIDIS II and the RTS 2019 were implemented. The first strategy allowed SSUs to be dropped where the eligibility rate of Roma households during fieldwork turned out to be significantly lower than initially estimated in the SSU frame. Like in EU-MIDIS II, an SSU was dropped if the probability that the estimated Roma eligibility in the frame was correct fell below 10 %, given the outcomes observed in the early stages of fieldwork. The probability was assessed based on the binomial distribution.

In probability theory and statistics, the binomial distribution with parameters n and p is the discrete probability distribution of the number of successes in a sequence of n independent yes/no experiments, each of which yields success with probability p. Given this, the dropping rule was calculated as n, given an estimated PSU prevalence of p and a 10 % chance or greater of an outcome of n screened addresses with no member of the target group present. The SSU was kept if p was indeed the correct prevalence of the SSU and dropped if the 10 % chance that no member of the target group was present was met. The dropping rule was set at a level based on the expected Roma prevalence in each SSU.

For example, with a dropping rule of 16, which equates to a prevalence of 25 %, the rule stated that if after 16 successfully screened addresses all 16 addresses were confirmed as ineligible the PSU could be dropped and replaced.

To protect against the risk of dropping a PSU with a high Roma prevalence too easily, a minimum level of 15 was set for the dropping rule. A maximum threshold of 45 was set to minimise the number of addresses that needed to be screened in very-low-prevalence SSUs before they could be dropped. The purpose of the dropping rule was to avoid screening a very high number of addresses where no Roma lived.

The second strategy allowed interviewers to stop visiting any new addresses in SSUs where they had achieved three times the target number of interviews, to avoid too much clustering of the sample. This stopping rule was set according to the target net sample size of the SSU: if three times the expected number of interviews were achieved in an SSU, no new addresses were visited. In the RS2021, 35 SSUs were dropped and two were stopped. Because of adjustments to the gross sample during fieldwork, fewer SSUs than expected had to be dropped (see **Section 4.6.2**).

Table 4.13 shows the number of SSUs stopped and dropped in each country.

TABLE 4.13: NUMBER OF SSUS STOPPED AND DROPPED

Country	Stopped	Dropped
CZ	0	2
EL	0	9
ES	0	6
HR	0	2
HU	2	6
IT	0	0
MK	0	4
PT	0	5
RO	0	1
RS	0	0
Total	2	35

Note: The figures were computed on the Roma survey PSU dataset.

4.7. RESPONDENT SELECTION WITHIN HOUSEHOLDS

Within households where two or more eligible 16+ Roma residents were successfully identified, one Roma resident was selected at random. The interviewer was instructed by the script in the ECS to list all eligible 16+ members of the household, starting with the informant, and a random algorithm within the script then selected one at random to take part in the main interview. When listing the eligible 16+ members of the household, the interviewer was instructed to use either their first names or their initials, ensuring that no two names or initials were the same in each household. The script would then inform the interviewer who had been selected by showing the unique name/initials. Replacing the selected individual was not permitted.

5. PILOTING

The aim of the pilot fieldwork was to test the survey approach (sampling method, approaching and interviewing Roma respondents, and dealing with local community leaders, mediators, NGOs and other intermediaries) and the questionnaire and survey tools (introduction letter, postcard, showcards and interviewer training materials) to identify the amendments needed prior to launching the main-stage survey. Pilot fieldwork took place between 28 November and 7 December 2020. Considering the budget for the survey, the pilot survey took place only in three countries that were not included in EU-MIDIS II 2016: Italy, North Macedonia and Serbia. In total, 62 interviews were conducted (**Table 5.1**).

TABLE 5.1: OVERVIEW OF PILOT FIELDWORK

Country	Fieldwork dates	Number of interviews	Number of interviewers	Location
Italy	30 November–7 December 2020	22	3	Rome, Naples
North Macedonia	28 November–2 December 2020	20	2	Selo Dračevo, Resen
Serbia	29 November–4 December 2020	20	2	Smederevska Palanka, Gornja Grabovica

All pilot interviewers were briefed by the NSEs in advance of the pilot fieldwork. Interviewers were required to provide detailed feedback on the pilot interviews using a standardised template. The NSEs summarised the feedback in individual country reports (again using an agreed template to ensure that each country considered all relevant aspects of the pilot in its feedback). The individual country reports contributed to the overall pilot report prepared by the CCT.

The key recommendations from the pilot are presented in the corresponding chapters of this report. Overall, the pilot fieldwork was successful in the three countries. Major issues were encountered in Italy, due to the worsening of the COVID-19 pandemic, bad weather conditions and major challenges in implementing survey administration methodology, explained later in the report. In Italy, interviews were conducted in camps (one PSU) or in unstructured settlements (another PSU), where the random walk procedure was harder to implement than in more traditional neighbourhoods. Following the pilot, a list of actions was agreed with FRA to overcome some of the challenges faced.

6. FIELDWORK OPERATIONS AND FIELDWORK OUTCOMES

This chapter provides information about fieldwork management, fieldwork dates and progress, quality checks during fieldwork, the implementation of the contact strategy, interview administration and the languages used, the use of incentives and the fieldwork outcomes. The figures presented in this chapter represent data collected during the interviewing process (metadata, paradata, data reported by interviewers through the interviewer questionnaire completed at the end of each interview and data reported by local agencies).

6.1. FIELDWORK MANAGEMENT AND FIELD FORCE IN EACH COUNTRY

6.1.1. Central management and coordination of fieldwork

Overall management structure

The coordination and management of the project was achieved through a cascading management structure, consisting of overhead coordination by the CCT within the Kantar Public Brussels team, central fieldwork management and data processing activities performed by the Kantar BBSS team, and country-level management by the local agencies.

Management-related project communication

The most common regular management meetings throughout the project were those organised weekly among the following parties.

- Video-conference between Kantar Public Brussels, the Kantar BBSS team in Bulgaria and the sampling expert. These calls, held each Monday, helped the team to examine progress, identify challenges and discuss the handling of upcoming deadlines.
- Meetings between the Kantar Public Brussels team, the Kantar BBSS team in Bulgaria, the Kantar sampling expert and the representatives of FRA. During these meetings, Kantar and FRA reviewed progress and priorities, and discussed issues and challenges encountered during the preparatory and main fieldwork stages, identifying and agreeing on potential solutions. On an alternating basis, a member of the Kantar Public Brussels team and a representative of FRA drafted a meeting report to document the matters discussed and decisions agreed on. Meeting reports were subsequently shared with all attendees.

Daily monitoring of fieldwork

Fieldwork coordination by the Kantar lead teams also relied on the dedicated Power BI online monitoring tool. This online data collection monitoring solution relies on Kantar's centralised CAPI technical infrastructure, whereby the monitoring of the contact process is centralised and homogeneous across each of the countries covered. Fieldwork was monitored in close to real time, with data uploaded daily to the central server. Kantar's CCT and BBSS team were, hence, able to closely monitor fieldwork progress and immediately highlight any potential issues with the quality of fieldwork.

The following objectives were set for checking fieldwork progress:

- the central monitoring of fieldwork progress on a daily basis;
- a 100 % follow-up rate and checks on the procedure for recording contact with respondents;
- a 100 % follow-up rate and checks on refusals;
- a 100 % follow-up rate and checks on partial interviews;
- the flagging of interviewers or interviews that did not meet the quality criteria.

FRA was able to summarise daily fieldwork metrics through an online dashboard facility.

Table 6.1 shows reporting metrics and the level at which they were visible in the reporting tool adapted to the RS2021.

TABLE 6.1: THE METRICS INCLUDED IN THE REPORTING TOOL

Type	Metric	Viewable level				
		Contact	Address/ interview	Interviewer	Country	Overall
Quality	Interview length below agreed minimum		✓[a]	✓	✓	✓
	Interview conducted in the correct location		✓[a]	✓	✓	✓
	Global Positioning System enabled on the tablet	✓	✓	✓	✓	✓
	Interviewers respect time gaps between visits			✓	✓	✓
	Start time of interview before 9.00 or after 22.00	✓	✓[a]	✓	✓	✓
Progress	Number of interviews completed to date			✓	✓	✓
	Number of SPs started			✓	✓	✓
	Number of appointments/addresses to revisit			✓	✓	✓
	Regions covered			✓	✓	✓
	Number of rejected interviews			✓	✓	✓
Performance	Average substantial questionnaire interview length		✓[a]	✓	✓	✓
	Average main questionnaire interview length		✓[a]	✓	✓	✓
Fieldwork outcomes	Contact rate			✓	✓	✓
	Refusal rate			✓	✓	✓
	Cooperation rate			✓	✓	✓
	Addresses with final non-contact outcome after fewer than three eligible visits	✓	✓	✓	✓	✓
	Time between contact with same address less than two hours (excluding appointments)	✓	✓	✓	✓	✓
	Percentage of interviews done by time of day and day of week (weekday before 00.00, weekday between 12.00 and 17.00, weekday after 17.00, weekend)			✓	✓	✓
	Percentage of contacts visited by time of day and day of week (weekday before 00.00, weekday between 12.00 and 17.00, weekday after 17.00, weekend)	✓		✓	✓	✓
	Profile of respondents by gender, age, education, region and urbanity			✓	✓	✓

Note: [a] Interviews only.

Weekly fieldwork progress reporting

On a weekly basis, the contractor provided FRA with a fieldwork progress report that was discussed during their weekly meetings. Key fieldwork metrics included in this report are provided in **Table 6.2**. They can be grouped into several overarching categories: fieldwork progress (at interview level and at PSU and SP levels), fieldwork outcomes, quality monitoring progress and interviewer metrics. These were populated in the report at both overall level and country level. This weekly fieldwork progress report also included an aggregate overview of the profile of respondents (gender and age bands) and figures on the share of regions covered and types of local administrative units (DEGURBA) per country.

TABLE 6.2: METRICS PRESENTED IN THE WEEKLY FIELDWORK PROGRESS REPORT

Type	Metric
General	Fieldwork start date
	Target sample size
Progress – interview level	Number of completed interviews
	Number of partial interviews
	Unknown eligibility rate
Progress – PSU/SP level	Number of PSUs started
	Total number of PSUs issued
	Share of SPs started
	Number of PSUs completed
	Number of replacement PSUs used
Fieldwork outcomes	Deadwood rate
	Screening rate
	Eligibility rate
	Ineligibility rate
	Number of open addresses (non-contacts and appointments (to be revisited))
	Refusal rate
	Contact rate
	Cooperation rate
	Response rate
Quality	Share of interviews completed out of target
	Number of back-checks completed to date
	Number of interviews deleted
Interviewer	Total number of interviewers to work on the project
	Number of interviewers working on the project
	Number of interviewers who reached their interview limit
	Maximum number of interviews per interviewer

6.1.2. National agencies and field force in each country

Local management of fieldwork by national agencies

The RS2021 was managed locally by Kantar-affiliated local agencies or long-established partners (see **Table 1.1**). Local agencies were commissioned on an individual basis, and their overall tasks and expected deliverables were provided through a formal statement of work. The document clearly described the assignment, and provided the planned timetable, the service-level agreement and the communications protocol (**Table 6.3**).

TABLE 6.3: THE TASKS EXPECTED OF THE NATIONAL AGENCIES DURING THE IMPLEMENTATION OF THE SURVEY

Workstream	National agency task
Preparation for the fieldwork	• Support the Kantar **sampling** expert in designing the national sampling plan. • Participate during the adjudication of the translations of the questionnaire, and help with any translation-related ambiguity. • Facilitate a two-day training course with all interviewers and supervisors. • Ensure that there is a sufficient number of qualified **interviewers**.
Implementation of the fieldwork	• Conduct **pilot fieldwork** (only relevant to a selection of countries). • Ensure the checking of the national script. • Conduct and supervise fieldwork nationally, ensuring that the agreed targets are achieved. • Enumerate the addresses if needed. • Ensure that the contact strategy is properly implemented. • Monitor fieldwork progress and follow up on any issues on a daily basis, through Kantar Public's dedicated online reporting tool. Make sure that interviewers send back their data electronically at the end of each working day. • Ensure that **appropriate technical equipment is used for data collection**, that is, tablets with Global Positioning System tracking capabilities.
Validation	• **Perform quality control** by monitoring and checking cases flagged as failing to meet the quality standards through the reporting tool, or through other checks set up by the CCT. • Ensure random **back-checking** across the entire sample and interviewer pool; at least 10 % of interviews were back-checked. Back-checked interviews were randomly selected and the verification was conducted on an ongoing basis during the fieldwork period.

During the implementation of the survey, national agencies were constantly in contact with Kantar's CCT. The communication conducted on an almost daily basis during active data collection focused on fieldwork progress, the implementation of quality checks, and the solutions to potential issues and challenges local agencies came across. In addition, any quality check-related issues were relayed by project managers regularly to project coordinators.

Furthermore, two debriefing calls with each national agency were set up during the project. The first one was organised approximately two weeks after the beginning of fieldwork, while the second one was conducted after fieldwork and once all quality checks were finalised. The main topics tackled during the debriefing calls are presented in **Table 6.4**.

TABLE 6.4: TOPICS DISCUSSED DURING THE FIELDWORK DEBRIEFING CALLS WITH THE NATIONAL AGENCIES

Topic	First debriefing call	Second debriefing call
General evaluation	Assessment of progress/prospects, challenges faced and solutions found, positive/negative experiences; number of SPs opened, closed and replaced; among other things	Overall assessment of fieldwork; challenges faced and solutions found; expectations about fieldwork and the actual experience, including positive/negative experiences
Implementation of the sampling methodology	Feedback on the implementation of the random walk and ACS; discussions about starting points for the random walk, the dropping of PSUs and stopping rules	Sampling information from desk research; the definition of a sampling unit; starting points for random walks; boundaries of SPs; number of visits; screening of respondents; random selection of respondents; household size and definition; response patterns among old people, young people, women and men
Feedback on fieldwork	Cooperation with local NGOs/leaders	Cooperation with local NGOs/leaders
	Experience with screening respondents (contact, screening, respondent selection)	N/A
	On-the-spot determination of 'real' density of target population	N/A
	Feedback on the fieldwork materials and incentives	Feedback on the fieldwork materials and incentives
	Linguistic, ethnic and cultural aspects of the interviewing process	Linguistic, ethnic and cultural aspects of the interviewing process
	Any potential technical issues; use of CAPI	N/A
Feedback on the questionnaire	General feedback on reaction towards the questionnaire and the relevance of questions	Feedback on what is missing from the questionnaire, or potentially invalid questions; general feedback on the relevance of questions
Feedback on the field force	Questions about the number of interviewers trained in comparison with the number in the field, their average age, approximate gender distribution and experience with CAPI and interviewing target populations; share of Roma interviewers; any difficulties with ensuring the engagement of interviewers	Interviewers' experience in the field, including the opinion of interviewers about work on this specific project (what they found tough, what they found pleasant and other feedback); feedback about any differences between male and female interviewers (e.g. in gaining the trust of Roma); interviewers' experience working with mediators; reaction of the respondents to the survey
Other matters	Open discussion on any matter not raised by the points above	Open discussion on any matter not raised by the points above; possible recommendations about potential cooperating organisations/individuals who could engage in the presentation of RS2021 results in the country
Lessons learned	N/A	Any potential recommendations for the next survey; opinion about the possibility of using different modes (online, telephone)

Note: N/A, not applicable.

Field force

A total of 356 interviewers productively collected data for the RS2021, meaning that they had at least one completed and accepted interview (**Table 6.5**). For each country, the maximum number of interviews conducted by each interviewer was set at 5 % of the total national target sample. This quality indicator was monitored on a weekly basis, and it was respected to a great extent.

There were some exceptions, and a few interviewers were allowed – if justified – to exceed the limit. In most of the cases, the national agencies coordinated these aspects with the CCT in advance. The maximum number of interviews allowed for any given interviewer could be surpassed because of:

- limitations to regional coverage due to the interviewer pool, as there were SPs that could have been worked in only by certain interviewers;
- interviewers having to close an SP, for example to ensure that they had closed the contact strategy.

TABLE 6.5: NUMBER OF INTERVIEWERS AND AVERAGE NUMBER OF INTERVIEWS CONDUCTED

Country	Number of accepted interviews	Number of interviewers	Maximum number of interviews per interviewer	Interviews conducted by a single interviewer			
				Average	Median	Minimum	Maximum
CZ	769	28	44	27	30	3	53
EL	649	28	30	23	24	3	39
ES	1,132	39	55	29	29	1	60
HR	519	29	25	18	20	4	26
HU	1,409	50	69	28	23	1	128
IT	541	24	25	23	20	4	62
MK	519	32	26	16	13	6	38
PT	568	24	25	24	26	1	37
RO	1,695	49	87	35	29	1	118
RS	660	53	36	12	10	1	35

Notes: The figures were computed on the individual respondent (IR) dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation of interviewer numbers was Int_num.

6.2. FIELDWORK DATES AND PROGRESS

6.2.1. Fieldwork progress in each country and the impact of the COVID-19 pandemic

This section includes information about initial plans for the launch and completion of the main-stage fieldwork, and the subsequent changes to data collection and the reasons for them. Following the description of the planned and the actual fieldwork time lines, country-level documentation of data collection progress is provided, explaining the delays encountered.

Fieldwork dates

Initial project plans expected main-stage fieldwork to begin in the second week of January 2021. Fieldwork was expected to last 137 days between 11 January and 28 May 2021. After the winter end-of-year holidays, a high number of countries were expected to experience an increase in cases of COVID-19 and tougher lockdown rules were likely to be implemented.

Because of sustained lockdowns in several countries and their continuous prolongation, the dates for the start of the fieldwork were changed for a number of countries, particularly for Czechia, Hungary and Portugal. In Croatia, the planned fieldwork dates were also shifted because of an earthquake and weather conditions. In Greece and North Macedonia, delays in fieldwork were mostly due to COVID-19 measures and weather conditions.

In Italy, the fieldwork started at the end of February 2021. Most (seven) of the other countries launched their data collection efforts in March 2021. The last country to start conducting fieldwork was Czechia, where it started in May 2021. The end date for fieldwork had to be adjusted accordingly for each country, with the last two countries, Czechia and Hungary, stopping fieldwork in August 2021 (**Table 6.6**). The total duration of fieldwork was 163 calendar days, with the shortest duration in North Macedonia (101 days) and the longest in Hungary (152 days).

TABLE 6.6: START DATES AND END DATES OF FIELDWORK AND THE DURATION OF FIELDWORK IN DAYS

Country	Fieldwork dates		Duration of fieldwork (days)
	Start	End	
CZ	8 May 2021	1 August 2021	85
EL	3 April 2021	9 July 2021	97
ES	15 March 2021	28 June 2021	105
HR	26 March 2021	11 July 2021	107
HU	9 March 2021	8 August 2021	152
IT	27 February 2021	6 July 2021	129
MK	27 March 2021	6 July 2021	101
PT	12 March 2021	25 July 2021	135
RO	10 March 2021	5 July 2021	117
RS	19 March 2021	28 July 2021	131
Overall	27 February 2021	8 August 2021	163

Note: The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was INmod_start_time_DateOnly.

Fieldwork progress

Fieldwork progress varied from month to month (**Table 6.7**). The contractor continuously monitored fieldwork progress and followed up with the national agencies on the productivity of data collection. After repeated issues with fieldwork productivity, in a number of countries weekly targets were set in June 2021. Despite the weekly targets, for a variety of reasons, delays still happened on a number of occasions for several agencies. These reasons are briefly presented below for each country.

Czechia: Fieldwork progress was slower owing to a number of issues, such as difficulties in conducting face-to-face fieldwork during the pandemic; and interviewers not being able to work because of waiting periods for vaccination, which was made mandatory, or being heavily involved in unplanned Roma activism (following the killing of a Roma person in this period). In some SPs, the agencies reported that some of the Roma organisations were discouraging the population from participating in the RS2021, resulting in either high refusal rates or interviews with a very low amount of contact information.

Hungary: There were consistent struggles in achieving the target number of interviews, making the further extension of fieldwork necessary. Difficulties in conducting interviews were mainly experienced in the eastern part of the country (in the Hajdú-Bihar, Heves and Nógrád counties) owing to challenges such as lockdown measures, the unavailability of fieldwork managers for periods, the reluctance of respondents to interact with people who were not vaccinated and interviewers refusing to work on the project. The national agency tried different payment schemes to incentivise interviewers. In addition it visited the concerned areas to try to increase the productivity of data collection.

Serbia: Slow progress was seen in fieldwork in May 2021 because a Roma holiday affected data collection. In the same period, the national agency also reported issues related to some Roma interviewers not duly fulfilling their responsibilities and some interviewers dropping out of the project for personal reasons. A delay in data collection in July 2021 was due to a lag in synchronising the CAPI devices.

Italy: Issues in fieldwork progress mainly occurred in April 2021, when most (80 %) of the mediators helping on the project were affected by COVID-19, and in the first few weeks of June, when the local agency had trouble reaching the mediators because they were busy.

TABLE 6.7: NUMBER OF INTERVIEWS (ACCEPTED AFTER A QUALITY REVIEW) CONDUCTED IN EACH MONTH OF FIELDWORK

Country	February 2021	March 2021	April 2021	May 2021	June 2021	July 2021	August 2021	Total accepted interviews
CZ	0	0	0	122	198	439	10	769
EL	0	0	167	247	226	9	0	649
ES	0	136	418	538	40	0	0	1,132
HR	0	21	101	144	238	12	0	519
HU	0	189	314	365	254	247	40	1,409
IT	7	90	80	163	194	4	0	541
MK	0	6	136	188	185	4	0	519
PT	0	169	102	166	107	24	0	568
RO	0	467	523	305	392	1	0	1,695
RS	0	33	37	175	282	133	0	660
Total	7	1,111	1,878	2,413	2,116	873	50	8,461

Note: The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was INmod_start_time_DateOnly.

6.2.2. Meeting target sample sizes

The target sample was reached or surpassed in all countries except Czechia. As explained earlier (**Section 6.2.1**), several unforeseen circumstances slowed down and undermined data collection in Czechia.

Kantar CCT, the Czech local agency and FRA had an online meeting at the beginning of July 2021 to investigate the reasons behind the slow progress and identify possible solutions. They agreed to open all SPs where fieldwork had not started by that point and lower their target, as the reduction of the target was only possible in SPs that had not been opened by that point. The proposed strategy was discussed and the final sample for Czechia comprised 780 accepted interviews, 100 interviews below the planned minimum target size of 880. The underachievement of fieldwork goals in Czechia was compensated for by the surpassing of the target sample in other countries (**Table 6.8**).

TABLE 6.8: PLANNED, ACHIEVED AND ACCEPTED SAMPLE SIZES BY COUNTRY[a]

Country	Planned respondents' sample	Total achieved respondents' sample[b]	Total sample after quality check deletions[c]	
			Respondents (% of planned)	Household members
CZ	880	780	769 (87)	1,846
EL	590	657	649 (110)	2,712
ES	1,100	1,169	1,132 (103)	3,691
HR	500	521	519 (104)	2,354
HU	1,370	1,455	1,409 (103)	4,821
IT	500	546	541 (108)	1,586
MK	510	553	519 (102)	1,958
PT	500	575	568 (114)	2,007
RO	1,740	1,791	1,695 (97)	5,494
RS	710	726	660 (93)	2,204
Total	8,400	8,773	8,461 (103)	28,673

Notes:

[a] *Variables used for the computation: for number of respondents, Resp = 1; for number of household members, Resp = 3.*

[b] *The figures were computed on the full IR dataset, which included all the achieved interviews (N = 8,773).*

[c] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461).*

6.3. QUALITY CHECKS DURING FIELDWORK

To maximise the collection of high-quality data and the production of high-quality outcomes, each national agency was required to monitor and implement a quality control plan. To achieve this, each local provider ensured that the following measures were implemented: the supervision and observation of interviewers; data collection checks and data sanity checks during the fieldwork; and the validation of at least 10 % of randomly selected interviews for each active interviewer.

6.3.1. Supervision and observation of interviewers

The 2nd and 10th complete interviews logged by each interviewer were monitored by the supervisors. However, some interviewers were not sufficiently productive to allow a supervisor to monitor a second interview. The supervisors evaluated the interviewers' performance by audio-recording interviews, observing the interviews by joining the interviewer in the field, or a combination of both.

6.3.2. Weekly quality checks during fieldwork

Key sampling and data quality checks were monitored on a weekly basis by the contractor at both sampling level and interviewer level (**Table 6.9**). The quality checks were focused on ensuring that the following objectives were met: (1) data collection outcome codes were rigorously used; (2) an appropriate household selection procedure was followed; (3) the correct respondents were selected; (4) the contact strategy was respected and completed for each interview; and (5) collected socio-demographic data were comparable to the figures expected. The results of these quality checks, with instructions for implementing necessary changes, were regularly delivered to national agencies by the CCT.

This quality-checking process was used as a standalone monitoring tool or in conjunction with the fieldwork monitoring platform described previously

(Section 6.1.1.). Kantar CCT ensured that all flagged cases were addressed and treated accordingly, and provided further instructions when needed, or performed additional checks internally. National agencies had to document their corrective actions where relevant along with their outcomes.

TABLE 6.9: LIST AND DESCRIPTION OF THE KEY SAMPLING AND DATA QUALITY CHECKS MONITORED ON A WEEKLY BASIS BY THE CONTRACTOR

Check identification	Description of check	Purpose	Typical recommendation to the national agency
1A	The age of the selected individual from the screener does not match the age of the respondent in the household grid	To ensure correct respondent selection	Back-check and identify why the disparity occurred.
1B	The age of the selected individual from the screener does not match the age of the respondent but matches someone else in the household grid	To ensure correct respondent selection	Delete interview; data suggest that interviewers selected the wrong individual.
2A	Observe that a 16+ individual is included in the household grid but not in screening	To ensure correct respondent selection	Back-check and identify why these individuals were not included in screening. Delete interview if they should have been included.
2B	Fewer people listed on the household grid than the number of household members expected based on HH01	To ensure that all people in the household are listed in the household grid	Use the questionnaire developed by the CCT to capture the missing members of the household through either a follow-up telephone call or a face-to-face follow-up. If this information cannot be obtained, flag this up, as the information will probably need to be deleted and refilled.
3	Gender profile of those listed at the screening stage versus gender profile of all respondents in the country	To compare the gender distribution of respondents in the country with the gender distribution of the screened households and therefore identify if there is an issue with the selection of respondents	Where there are large skews in the gender profile versus the expected gender profile in an SP, back-check all interviews, ask the interviewers for an explanation and re-brief the interviewers on the selection process. If the back-check or explanation from the interviewer suggest that there were issues with selection, delete the interview.
4	Informant is selected more often than any other household member	To analyse if the informant is selected more often than any other eligible household member and understand whether or not interviewers are following the selection process correctly	Where the response to question D5 is 'Informant' and the selected individual on the screening list is listed as 2nd or above, the interviewer may not be coding D5 correctly or not selecting the correct individual but speaking to the informant. This issue is probably associated with interviewers misunderstanding how to respond to D5, so please re-brief them.
5	Not documenting all addresses visited on random walk	To identify where interviewers are probably not documenting unproductive addresses on their random walk. Unproductive addresses include non-contacts and refusals. Observing higher conversion rates in Roma than in previous Roma surveys is an indicator of issues with fieldwork	Where the conversion rate is greater than 80 % and interviewers have visited five or more addresses, two actions must be taken: (1) re-brief interviewers to remind them to document all addresses they visit, even unproductive ones; and (2) check the Global Positioning System (GPS) and timestamps for each outcome on the fieldwork reporting tool (interviewer location check) for large gaps in time and location. Please confirm that you have performed these checks.
7	The location of the first address visited in the SP is where the start location is	To identify wrong start locations, which may explain higher likelihood of households being eligible. Some interviewers may not respect the rule that the random walk must be started from the start location the GPS provides, which may result in an issue	If the interviewer has started more than 150 m from the agreed start location, please identify and record why they did so. Acceptable reasons include (1) an agreed change with central team – please provide email evidence; and (2) the start address used by the interviewer is not the one the GPS provided – please re-brief the interviewer to start from the location given by the GPS. If the interviewer moved the start address because it was more convenient for them then please let us know.

Check identification	Description of check	Purpose	Typical recommendation to the national agency
11	Not completing the minimum three-visit contact strategy at an address where it was required	To identify interviewers using final outcome codes 313 and 319 on their first or second visit to an address	These addresses will need to be revisited to achieve the minimum three-visit contact strategy. Interviewers must be re-briefed to avoid this issue going forward.
14	Interview was conducted in wrong location (> 3 km from the start location)	To detect interviews conducted in the wrong location	Delete interview unless you can identify a GPS error and that they did work in the correct location. Please provide evidence of this.
16	Average household size looks lower than expected based on EU-MIDIS II	To identify interviewers who may not be documenting all people in the household; to identify the interviewers who have carried out six or more interviews and the percentage of responding households with two or fewer people in the household at HH01 ≥ 50 %	We know the expected household size for Roma based on previous studies. In countries where household size is systematically lower based on HH01 (see country summary in **Section 4.4.2**), we need to check why. We have flagged SPs where there is a high number of small households. Interviewers working on these SPs should be targeted for re-briefing. National agencies should also reiterate to all interviewers that the Kantar Public team is monitoring household size and it is important that all people in the household, including children, and including non-Roma individuals, are included in the response to HH01 and then listed in the household grid.
18	Share of missingness for telephone numbers	To check if an interviewer did not fill in the telephone number on purpose. This is an important part of the quality check, as numbers are needed for back-checks	We have flagged all interviews where the telephone number for back-checking is missing and flagged SPs where there is a high number/percentage of missing telephone numbers. Interviewers must be re-briefed to collect the telephone numbers for back-checking and ensure that they are valid. For the SPs, we have flagged face-to-face back-checks that will need to be performed to check the quality of the data. We also need an explanation from the interviewer of why telephone numbers are missing. In most cases, these numbers were missing because of privacy-related issues, that is, respondents were not willing to provide this information for lack of trust.

Note: The results of these checks are included in the final IR dataset provided by the contractor to FRA.

In addition to the sampling and data quality checks run weekly, MACS checks were run once a week, every second week or every second month (depending on the intensity of fieldwork) to ensure that this method had been applied correctly. This was only relevant if MACS was used in the SPs. The checks were conducted to find out if the right number of non-core addresses had been visited for each eligible core address, and the addresses were checked and corrected where necessary to differentiate core from non-core addresses and identify the non-core addresses belonging to each eligible core address.

6.3.3. Back-checks

The validation of collected data was based on the following minimum criteria: 10 % of the interviews conducted by each interviewer had to be validated, which meant that a minimum of 15 % of each interviewer's work had to be selected for validation; interviews to be validated had to be randomly selected; and validation had to be conducted on an ongoing basis during the fieldwork.

The interviews were validated through a short computer-assisted telephone interview using telephone numbers provided by the respondents. If telephone numbers were not provided, the back-checks were done in person. Back-checks were conducted during the main-stage fieldwork. The target of 10 % of interviews to be back-checked was achieved in every country. In total, 5 % of interviews were flagged as invalid as a result of back-checks (**Table 6.10**).

TABLE 6.10: TYPE OF DATA VALIDATION AND ITS OUTCOMES BY COUNTRY

Country	Method (%)		Number of completed back-checks	Share of completed back-checks (% of sample)	Invalidated interviews after back-checks (% of total back-checked)
	Telephone	In person			
CZ	100	0	214	27	0
EL	100	0	117	18	0
ES	100	0	290	25	9
HR	100	0	105	20	0
HU	89	11	256	18	5
IT	31	69	59	11	0
MK	100	100	144	26	2
PT	98	2	104	18	7
RO	85	15	536	30	7
RS	59	41	501	69	6
Total	83	17	2,326	27	5

Note: The figures were computed on the full IR dataset, which included all the achieved interviews (N = 8,773); the variable used for the computation of the share of interviews back-checked was BACKCHECK.

Through back-checks, national agencies investigated the accuracy and correctness of data. They also assessed the general quality of interviewing by collecting feedback on the interviewer. Therefore, back-checks included information on the contact protocol and the procedures carried out by the interviewer, and some questions from the questionnaire (**Table 6.11**).

TABLE 6.11: VARIABLES MEASURED BY THE INTERVIEW VALIDATION (BACK-CHECK) QUESTIONNAIRE

Category	Variables in the back-check questionnaire
General information about the interview	• Type of control (telephone/address) • SP identification (ID) • Address ID • Address information • Interviewer ID • Interview date • Respondent's first name from the interview • Respondent's telephone number from the interview
Socio-demographic data to verify	• Address • Gender • Age • Country of birth • Number of household members • Working status • Educational background
Respondent selection	• Respondent selection was verified by asking the following question: "Before starting the interview, did the interviewer ask how many people aged 16 or over were living in your household and were Roma [or identified as part of Roma subgroups] and make a random selection of a member to interview, by indicating which member was selected by the script to participate in the survey?"
Other questions	• Verification of if the interview had indeed occurred • Place where the interview was conducted • Estimated duration of the interview • Evaluation of the interviewer's politeness and courtesy • Confirmation that the interviewer identified themselves and showed their interviewer ID card • Confirmation of the interviewer's use of fieldwork materials, that is, the postcard and leaflet • Confirmation of the interviewer's use of showcards • Confirmation of the interviewer's use of incentives

Overall, six national agencies reported invalid interviews. The most common causes of invalid interviews in each of the six countries are as follows.

In **Spain**, some interviews failed back-check verification because of discrepancies in the ages of household members. The SPs where such issues occurred were therefore put under stronger supervision and interviewers were briefed again.

In **Romania**, interviews were mainly invalidated because they were conducted in the wrong locations. These interviews were identified while running quality checks based on the Global Positioning System (GPS) information. The team in Romania checked back the SPs identified as problematic, that is, where the start address was different from that initially provided by the GPS. They subsequently identified interviews for two SPs where interviewers did not start at the correct address. PSUs of these two SPs were mapped again and the two SPs were replaced.

In **Hungary**, some back-checked interviews were invalidated because of data mismatch and others were invalidated because the interviewer contacted the wrong address. In **Portugal**, interviews were mainly invalidated because they were too short, according to the respondent's perception. In **Serbia**, data mismatch and wrong address contacted were the main reasons for invalidation. In **North Macedonia**, the main reason for invalidation was the incorrect selection of respondents.

6.4. MAKING CONTACT AND CONTACT SHEETS

This section describes interviewers' access to SPs, the average number of visits to an SP required to complete data collection and the contact strategy, interviewers' experience of using the ECS and their feedback on contacting respondents.

6.4.1. Visiting sampling points

The total number of SPs analysed was proportional to the overall country sample, with the largest figures observed in Romania and Hungary. According to the proposed sampling strategy, if a selected SP (either a PSU or an SSU) was not accessible owing to government measures in response to the COVID-19 pandemic or for any other serious reason, a replacement SP would be chosen accordingly from the same stratum. All requests for replacements were reviewed by the central sampling team and signed off by FRA and are presented in this technical report. **Table 6.12** shows the number of SPs where at least one interview was achieved, the number of SPs where no interviews were achieved or where all interviews were deleted because of quality control issues and the number of dropped SPs.

TABLE 6.12: DESCRIPTIVE STATISTICS REGARDING SPS

Country	Selected SPs at the start of fieldwork	Number of SPs with one or more interviews achieved	Number of SPs with no interviews achieved or where all interviews were deleted for quality control reasons	Dropped SPs
CZ	88	83	0	2
EL	59	58	0	9
ES	92	90	0	4
HR	50	52	0	2
HU	115	115	0	6
IT	50	49	0	0
MK	51	52	0	6
PT	50	49	0	5
RO	145	149	2	1
RS	71	78	0	0
Total	771	775	2	35

Note: The figures were computed on the full PSU dataset, which included all the achieved interviews (N = 1,539); the variable used for the computation was SP_status.

6.4.2. Contact sheets

Two types of contact sheet were used during the fieldwork before the actual interviewing could start:

- the PSU contact sheet, for collecting information at PSU level;
- the ECS, for gathering data at household/respondent level, to screen for household members eligible to participate in the survey and randomly select respondents.

Data about each PSU that was visited by interviewers were logged into the PSU contact sheet. The number of variables to be filled in by the interviewer was kept to a minimum (see **Table 2.3**). Data from the PSU contact sheets were tracked and evaluated during fieldwork, including to evaluate a larger set of metrics to assess each interviewer against.

The ECS was more detailed and collected metrics regarding the types of address if ACS was used, a subjective evaluation of the living premises, the outcome of the contact, and household and within-household selection.

Because both of the contact sheets were electronic, there were fewer complaints from the national agencies about their use, and fewer issues with missing or inconsistent data, than there would have been if paper-based contact sheets were used. Nonetheless, the national agencies provided feedback about the content of the contact sheets and the way screening had to be documented. Some national agencies pointed out several times that interviewers found it frustrating to go through the screening process in non-Roma households, as they spent time in non-eligible households. They would have preferred to briefly document the households' ineligibility through the straightforward use of a final code to avoid having to complete the ECS.

6.4.3. Contacting respondents

In all countries, interviewers employed a face-to-face contact and data collection strategy. The importance of obtaining contact with as many of the selected households as possible was emphasised greatly during the train-the-trainers and interviewer briefings. The minimum requirements of the contact strategy employed in the RS2021, which interviewers were reminded to exceed if possible to maximise contact, were as follows.

— Interviewers must conduct a minimum of three visits to one address. The first call-back can take place on the same day but must be at a different time of day, with the day divided into morning (9.00–12.00), daytime (12.00–17.00) and evening (17.00–21.00). There must also be at least three hours between contact attempts when no appointment is made.
— The second call-back must be done at a different time of day and on a different day.
— Some 40 % of all visits conducted in an SP should be carried out after 17.00 on a weekday or any time at the weekend (**Table 6.13**).
— Before a household's final outcome can be classified as a non-contact, they must be contacted at least three times at different times of the day/week. This must include at least one evening visit (after 17.00) or one weekend visit.

Considering the delays in fieldwork completion, FRA and Kantar CCT agreed to allow a maximum of 5 % of addresses in any target country to not complete the contact strategy if the fieldwork completion deadlines did not allow for the possibility of the contact strategy being closed for all visited addresses.

TABLE 6.13: EVENING AND WEEKEND FACE-TO-FACE VISITS AS A SHARE OF THE TOTAL NUMBER OF FACE-TO-FACE VISITS (%)

Country	Evening face-to-face visits	Weekend face-to-face visits
CZ	40	30
EL	36	31
ES	33	4
HR	36	42
HU	29	34
IT	33	13
MK	31	39
PT	29	16
RO	35	36
RS	35	40
Total	36	29

Notes: The figures were computed on the ECS dataset, which included all the achieved interviews (N = 8,773); the variables used for the computation were No_F2Fvisits_resp, No_eveningF2Fvisits and No_weekendF2Fvisits.

6.5. INTERVIEW ADMINISTRATION AND LANGUAGES

This section evaluates the survey from the respondents' and the interviewers' perspectives, based on the paradata collected at the end of the questionnaire and the qualitative impressions of interviewers.

6.5.1. Languages in which interviews were conducted

In Greece, Hungary, North Macedonia, Portugal, Romania and Spain, all interviews were reportedly conducted in one language only, the main national language (**Table 6.14**). Owing to the linguistic diversity of some Roma populations in several of the target countries, there was selective use of other languages to increase the cooperation of potential respondents or to clarify some questions: Hungarian in Romania, Baja (a local language) in Croatia, and Romani in Croatia, Czechia, Italy and Serbia.

TABLE 6.14: LANGUAGE USED DURING INTERVIEWING (%)[a]

Country	In which language was the interview conducted?	
	National language	Romani
CZ	99.7	0.3
EL	100.0	0.0
ES	100.0	0.0
HR	96.0	3.9
HU	100.0	0.0
IT	93.0	7.2
MK[b]	100.0	0.0
PT	100.0	0.0
RO	100.0	0.0
RS	99.1	0.9
Total	99.2	0.8

Notes:

[a] The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E03.

[b] In North Macedonia, all interviews were conducted in Macedonian, despite the availability of a script in Albanian.

The potential supportive role of Romani was acknowledged during the project's preparatory phase, and a Romani glossary was prepared. The glossary was used in every target country (**Table 6.15**).

TABLE 6.15: USE OF ROMANI GLOSSARY DURING INTERVIEWING (%)

Country	Did you use the Romani glossary to help the respondents to understand the questions?				
	Yes, for most questions	Yes, for some questions	Yes, but only for one or two questions	Yes (total)	No
CZ	16	2	2	20	80
EL	4	0	0	4	96
ES	10	2	1	13	87
HR	10	7	3	20	80
HU	4	3	1	8	92
IT	7	1	1	9	91
MK	3	3	2	8	92
PT	12	7	3	22	78
RO	13	2	1	16	84
RS	4	3	1	8	92
Total	9	3	1	13	87

Note: The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E15.

6.5.2. Location of interviews

Overall, across the target countries there was a considerable tendency for the interviews to be conducted in the respondents' homes, with 80 % of interviewers reporting having conducted the interviews there. The possibility of conducting interviews outside was discussed and encouraged considering the COVID-19 situation, although, especially at the beginning of the fieldwork in February 2021, the weather conditions discouraged interviewers from conducting the interviews outside (**Table 6.16**).

TABLE 6.16: PLACE WHERE THE INTERVIEW TOOK PLACE (%)

Country	In the respondent's home	Partly in the respondent's home, partly elsewhere	Elsewhere
CZ	54	46	0
EL	98	2	0
ES	80	20	0
HR	93	7	0
HU	92	8	0
IT	83	17	0
MK	80	20	0
PT	85	15	0
RO	63	37	0
RS	92	8	0
Total	80	20	0

Note: The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E09.

6.5.3. Privacy during interviews

This section details the extent to which respondents were one on one with the interviewer during the interview, the people present during the interview (**Table 6.17**), the perceived influence of third persons on the respondent and the parts of the questionnaire for which other people were present or in which other people participated.

TABLE 6.17: NUMBER OF PEOPLE PRESENT DURING THE INTERVIEW (%)[a]

Country	Number of people present during the core part of interview[b]			
	Two (interviewer and respondent)	Three	Four	Five or more
CZ	50	22	17	12
EL	90	7	1	2
ES	79	16	4	1
HR	82	15	2	1
HU	83	11	5	1
IT	50	28	15	7
MK	73	17	8	2
PT	71	16	6	7
RO	55	29	11	5
RS	75	19	5	1
Total	73	17	6	4

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E10.*

[b] *The core part was the part of the interview after the screener.*

In the overwhelming majority of cases, the third persons present were family members (**Table 6.18**).

TABLE 6.18: PEOPLE PRESENT DURING THE INTERVIEW (MULTIPLE RESPONSE QUESTION) (%)[a,b]

Country	Husband/wife/partner	Children	Other family members	Other (neighbours, guests, etc.)	Friends
CZ	44	35	16	8	8
EL	52	46	21	3	4
ES	49	26	42	1	13
HR	52	58	40	18	25
HU	56	24	31	2	6
IT	39	29	25	11	6
MK	53	52	40	13	10
PT	57	39	44	22	19
RO	45	51	37	28	23
RS	61	41	31	8	8
Total	51	42	35	15	14

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E11.*

[b] *This variable is related to the figures presented in **Table 6.17**.*

On average, in 30 % of the interviews where there were third parties present the interviewers reported that the respondents appeared to be influenced by them (**Table 6.19**).

TABLE 6.19: INFLUENCE OF THE OTHER PEOPLE PRESENT DURING THE INTERVIEW (%)[a,b]

Country	Yes				No
	For most of the questions	For some questions	For only one or two questions	Total	
CZ	6	11	13	30	70
EL	10	11	10	31	69
ES	10	16	6	32	68
HR	10	3	6	19	81
HU	13	8	3	24	76
IT	4	14	11	29	71
MK	10	19	9	38	62
PT	7	23	23	53	47
RO	8	11	9	28	72
RS	8	13	9	30	70
Total	9	12	9	30	70

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E12.*

[b] *This variable is related to the figures presented in **Table 6.17**.*

In the RS2021, other people were allowed to help the respondent to respond to questions in some sections, such as on other background information, housing and living standards, and the household and child grids. However, interviewers were explicitly instructed to discourage any support from third parties for answers given in the personal questionnaire. **Table 6.20** shows the sections in which the respondents were alone during interviewing and in which someone else intervened or was asked for help. The contractor analysed any potential impact of the other person intervening during the interview on the data and concluded that there was no significant impact of these reported circumstances on the survey metric.

TABLE 6.20: PARTS OF THE QUESTIONNAIRE FOR WHICH OTHER PEOPLE WERE PRESENT OR IN WHICH OTHER PEOPLE INTERVENED (%)[a,b,c]

Country	Household and child grid		Housing and living standards		Personal questionnaire		Other background information	
	No one else was present	Someone else intervened	No one else was present	Someone else intervened	No one else was present	Someone else intervened	No one else was present	Someone else intervened
CZ	41	10	36	11	41	8	35	14
EL	17	0	32	0	54	0	47	0
ES	18	9	12	10	16	5	12	11
HR	30	1	31	3	39	1	33	2
HU	13	1	22	0	42	0	28	0
IT	32	5	33	3	39	1	33	5
MK	33	5	32	8	48	2	38	4
PT	14	3	15	6	22	4	21	6
RO	45	6	43	6	47	6	42	6
RS	28	7	28	7	51	1	35	7
Total	29	5	29	6	40	3	33	5

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E13.*

[b] *This variable is related to the figures presented in **Table 6.17**.*

[c] *The remainder of the 100 % represents the cases in which someone else was present during the interview.*

6.5.4. Respondents' literacy and comprehension of the questionnaire

This section describes the main results of interviewers' assessment of respondents' command of the national language (**Table 6.21**), respondent's understanding of the questions (**Table 6.22**), reasons for respondents' misunderstanding of questions (**Table 6.23**) and respondents' feedback on the questionnaire, collected during the interviewers' debriefing (**Table 6.24**).

TABLE 6.21: RESPONDENTS' COMMAND OF THE NATIONAL LANGUAGE (%)[a,b]

Country	How would you rate the respondent's command of [national language]?				
	Excellent (mother tongue)	Very good	Good	Fair	Poor
CZ	9	25	51	12	3
EL	2	28	53	15	1
ES	12	21	45	15	8
HR	10	40	44	6	1
HU	40	18	34	7	0
IT	10	13	51	16	11
MK	18	40	27	14	1
PT	29	6	38	24	3
RO	7	20	45	23	5
RS	24	31	31	13	1
Total	17	23	42	15	3

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E02.*

[b] *The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.*

TABLE 6.22: COMPREHENSION OF THE QUESTIONS (%)[a,b]

Country	In your opinion, to what extent was the respondent able to understand the questions? The respondent was able to understand ...			
	All of the questions	Most of the questions	Only some of the questions	None of the questions
CZ	63	25	12	0
EL	55	35	10	0
ES	66	28	6	0
HR	70	29	1	0
HU	70	28	2	0
IT	63	27	10	0
MK	60	34	6	0
PT	57	37	6	0
RO	54	33	12	1
RS	62	34	3	0
Total	61	31	7	0

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E05.*

[b] *The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.*

TABLE 6.23: MAIN REASONS WHY RESPONDENTS DID NOT UNDERSTAND THE QUESTIONS (%)[a,b]

Country	Thinking about the questions that were not understood by the respondent, would you say that this was mainly due to ...?			
	The way the questions/items were phrased	Lack of required knowledge	Language difficulties	Other reasons
CZ	67	9	20	1
EL	28	17	55	0
ES	58	28	5	3
HR	26	30	44	1
HU	52	39	2	0
IT	22	31	42	0
MK	58	35	2	2
PT	56	31	9	2
RO	49	28	14	2
RS	54	23	9	2
Total	49	27	17	1

Notes:

[a] The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E06, based on responses 2–4 in E05.

[b] The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.

TABLE 6.24: SUMMARY OF RESPONDENTS' FEEDBACK ON THE QUESTIONNAIRE

Question/section/topic	Issues raised	Country to which relevant
Entire questionnaire	Respondents were getting confused with the reference period for some questions that were similar (only changed the reference period) to, for example, the questions in the discrimination module.	Hungary, Italy, Serbia, Spain
Reporting on all household members	Sometimes the respondents did not answer truthfully because they were afraid that they could lose their social aid, no matter if the interviewers introduced the aim of this survey and the data protection policy well.	Czechia, North Macedonia, Serbia
Household grid and child grid questions	Some respondents did not know all the relevant details about some household members, especially in larger households (with five or more members). This was more common when answers had to be provided for siblings or grandchildren.	North Macedonia, Serbia
Education questions	Questions regarding the educational background of children and reasons why their education was stopped (mostly for children) were considered sensitive.	Greece
Income levels and sources of income	These were considered sensitive questions. The main fear in this regard was losing governmental support in the form of subsidies.	Czechia, Greece, Hungary, Italy, North Macedonia, Portugal
Food and material deprivation	Food deprivation questions were considered offensive in some countries, resulting in the under-reporting of living standards difficulties (Serbia). In Czechia, interviewers found it uncomfortable asking about household furnishings or the possibility of getting shoes or food for the children. Some respondents were uncomfortable talking about payments of water, electricity and rent (Portugal).	Czechia, Portugal, Serbia
Questions that use human rights language	The problems encountered in these questions were associated with respondents' knowledge of particular information regarding the questions on institutions. Respondents with low educational levels had difficulty comprehending specific terminology, for example references to national equality bodies, human rights foundations and labour union bodies.	Greece, North Macedonia, Serbia, Spain

Question/section/topic	Issues raised	Country to which relevant
Discrimination	The flow of the questionnaire for the discrimination module seemed repetitive and caused a certain degree of 'disconnection' and lack of interest.	Spain
	The questions were considered sensitive. Interviewers got the sense that respondents under-reported discrimination on the ground of ethnicity, as in conversations following the interview the respondents would report having been subject to discriminatory treatment.	Czechia, Hungary, Italy, Portugal
	The translation used a widely known Hungarian term *hátrányos megkülönböztetés* and not the word 'discrimination' (*diszkrimináció*) for convenience, even though the latter is also widely used in Hungarian. As it stems from a foreign word, it might have been a strange term or unclear to less educated people. The term/concept of discrimination was often perceived as too abstract – even with examples – and if understood it often triggered discomfort, embarrassment or unpleasant feelings among the respondents.	Hungary
Comfort scales on having neighbours	The most sensitive group was the gay/transgender community.	Croatia
Childbirth; number of children	For female respondents these questions were considered sensitive.	Czechia, Hungary, Italy
Encounters with the police and public institutions	Questions were perceived as sensitive, as respondents feared that this information would be shared with the institutions in question.	Greece, Serbia

6.5.5. Respondents' cooperation

The interviewers assessed the cooperation of the majority (82 %) of respondents as good, very good or excellent (**Table 6.25**).

TABLE 6.25: RESPONDENT'S COOPERATION (%)[a,b,c]

Country	Average (responses 1–5)	How would you rate respondents' cooperation?				
		Excellent (5)	Very good (4)	Good (3)	Fair (2)	Poor (1)
CZ	3.31	11	29	46	13	1
EL	3.16	10	38	50	3	0
ES	3.56	15	29	43	11	3
HR	3.55	27	37	32	4	0
HU	3.04	22	24	40	12	1
IT	2.48	2	14	55	23	6
MK	3.16	29	28	21	22	1
PT	2.78	4	4	57	31	3
RO	3.06	9	20	42	25	4
RS	3.29	33	23	30	12	2
Total	3.15	16	24	42	16	2

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E04.*

[b] *Table uses reverse-coded values for ease of interpretation of the average values.*

[c] *The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.*

The interviewers assessed the majority (85 %) of respondents as very or somewhat interested in the topics covered by the survey (**Table 6.26**).

TABLE 6.26: RESPONDENTS' INTEREST IN THE SURVEY (%)[a,b,c]

Country	Average (responses 1–4)	Would you say that the respondent was very interested, somewhat interested, not very interested or not at all interested?			
		Very interested (4)	Somewhat interested (3)	Not very interested (2)	Not at all interested (1)
CZ	3.31	42	47	11	1
EL	3.16	28	61	11	0
ES	3.56	60	37	3	0
HR	3.55	63	31	4	2
HU	3.19	33	56	10	2
IT	2.67	16	42	36	6
MK	3.36	47	41	11	0
PT	2.78	8	65	24	3
RO	3.12	33	49	16	2
RS	3.29	40	50	10	0
Total	3.21	37	48	13	2

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E07.*

[b] *Table uses reverse-coded values for ease of interpretation of the average values.*

[c] *The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.*

On average, the interviewers assessed 90 % of respondents as being honest all the time or most of the time (**Table 6.27**).

TABLE 6.27: INTERVIEWERS' ASSESSMENT OF THE RESPONDENTS' HONESTY DURING INTERVIEWS (%)[a,b]

Country	Do you feel the respondent was giving their honest views during the interview?			
	All the time	Most of the time	Some of the time	Never
CZ	62	31	7	0.0
EL	66	30	4	0.2
ES	68	26	6	0.1
HR	84	13	4	0.0
HU	62	35	3	0.1
IT	46	40	12	0.2
MK	52	40	8	0.0
PT	21	53	24	0.2
RO	45	37	16	1.5
RS	49	44	4	0.0
Total	56	35	9	0.3

Notes:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variable used for the computation was E08.*

[b] *The category 'don't know' was included in the calculation but is not reported in the table. Because of this and rounding errors, the total for each row does not always add up to exactly 100 %.*

6.6. INCENTIVES

In seven of the 10 countries covered by the RS2021, the local agencies used incentives (overall 58 % of interviews). Five of them used incentives for all completed interviews (Croatia, Czechia, Romania, Serbia and Spain). Italy and Portugal used incentives sparingly.

In **Croatia**, the agency used incentives for all interviews. The type of remuneration was mostly agreed with the leaders of the settlement. So the incentive depended on the availability of retail chains and the practicality of the incentive (what was easiest to transport while conducting fieldwork).

In **Serbia**, the agency ensured that all respondents were remunerated at the end of the interview. In **Romania**, the team provided incentives for every respondent in the form of food, for example sweets. The interviewers gave sweets to all the children, regardless of whether they were part of the selected household or not. In **Spain**, incentives were provided for all respondents.

In **Czechia**, all respondents were renumerated on completion of the interview. In **Italy**, some interviewers (17 %) used non-financial goods to create a more friendly atmosphere when interacting with respondents. In **Portugal**, the interviewers used non-financial goods in one SP with a low cooperation rate (2 % of interviews). The goods were provided to 'break the ice' and were also provided on some occasions to children in the household or who were around.

6.7. FIELDWORK OUTCOMES

This section details the fieldwork outcomes in terms of calculations of sample outcomes and response rates (computed using final codes and, therefore, after the completion of the contact strategy), the socio-demographic profile of respondents and other household members, and the final productivity of SPs.

6.7.1. Response rates and relevant aggregate outcomes

The QAP for the RS2021 set a target of achieving a response rate of at least 50 % in each target country. This target was achieved in all the countries covered (**Table 6.28**).

TABLE 6.28: ACHIEVED FIELDWORK OUTCOMES AT HOUSEHOLD LEVEL CONCERNING RESPONSE RATE

Country	Ineligible households (*CIH*)	Households where eligibility is unknown (*UE*)	Eligible households (*CEH*)	Interviewed households[a] (*I*)	Eligibility rate (%) (*e*)	Response rate (%)
CZ	933	282	861	769	48	77
EL	988	198	816	649	45	72
ES	2,121	1,444	1,435	1,132	40	56
HR	999	224	605	519	38	75
HU	2,792	978	1,782	1,409	39	65
IT	837	147	591	541	41	83
MK	597	62	665	519	53	74
PT	1,910	140	660	568	26	82
RO	2,637	695	1,964	1,695	43	75
RS	677	194	830	660	55	70

Note:

[a] *The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variables used for the computation were various E variables.*

The **eligibility rate** (e) is calculated as follows:

$$e = \frac{(CEH)}{(CEH) + (CIH)}$$

where *CIH* is the number of ineligible households and *CEH* is the number of eligible households.

The **response rate** is calculated at household level in accordance with the definition of response rate 3 by the American Association for Public Opinion Research:[25]

$$Response\ rate = \frac{(I)}{(CEH) + (e)(UE)}$$

where *UE* is the number of households where eligibility is unknown and *I* is the number of households interviewed.

The final outcome '**ineligible households**' describes a household that is not eligible for the survey (e.g. because nobody living in the household self-identified as Roma). **Table 6.29** lists the outcome codes from the variable *ECS_A4_final*, considered in determining ineligible households.

TABLE 6.29: INELIGIBLE HOUSEHOLD OUTCOME CODE COMPOSITION

Outcome	Category
19: Screened out	Ineligible
310: Ineligible household – no eligible respondents at address (final outcome)	
295: Eligible household – selected individual does not self-identify as Roma (final outcome)	
303: Under construction (final outcome)	Deadwood
304: Derelict (final outcome)	
305: Vacant/empty housing unit (final outcome)	
306: Non-residential address (business) (final outcome)	
307: Communal establishment/institution (no private dwellings) (final outcome)	

The final outcome '**unknown eligibility**' was used if all information was refused, or if screening was not possible because of language barriers or because the whole household was away or in hospital during the fieldwork phase. **Table 6.30** lists the outcome codes from variable *ECS_A4_final*, considered in determining the unknown eligibility.

[25] AAPOR (American Association for Public Opinion Research) (2011), *Standard definitions: Final dispositions of case codes and outcome rates for surveys*, 7th edition, Alexandria, VA, AAPOR, p. 46.

TABLE 6.30: UNKNOWN ELIGIBILITY OUTCOME CODE COMPOSITION

Outcome	Category
20: System error	Unknown eligibility
21: Stratification reached	
105: Stopped, not saved	
301: No one at home (non-final, must revisit) (only to be used as an upfront code on second and subsequent visits)	
311: Inaccessible (final outcome)	
312: Concerns about safety (final outcome)	
313: Unable to establish eligibility – no contact made at address after required (three or more) number of visits (final outcome)	
314: Unable to establish eligibility – all information about address/dwelling unit refused (final outcome)	
316: Unable to confirm eligibility – as the informant does not speak any of the official languages (final outcome)	
323: Unable to establish eligibility – household appointment at household level (non-final outcome)	
340: Unable to establish eligibility – upfront refusal due to concerns related to the COVID-19 situation	

The outcome '**eligible households**' includes completed interviews, with calculations including only accepted interviews; partial interviews; interviews refused by the target respondents before they began; and interviews refused by proxy (by another household member) after the respondent was selected. It also includes refusals during interviews; broken interview appointments; interviews with no recontact; and interviews that were screened out, where the respondent was identified as eligible but refused to participate or provide essential information during the interview or the respondent was away or in hospital during fieldwork. Furthermore, the outcome includes selected individuals who refused to take part in interviews owing to COVID-19-related concerns. **Table 6.31** lists the outcome codes from the variable *ECS_A4_final*, considered in determining the eligible households.

TABLE 6.31: ELIGIBLE HOUSEHOLDS OUTCOME CODE COMPOSITION

Outcome	Category
29: Save and suspend (interrupted interview, revisit is possible)	Eligible, but non-contact (must revisit)
330: Eligible household – appointment with selected individual (non-final code)	
331: Eligible address – household appointment, individual selection not complete (non-final code)	
342: Eligible household – appointment: mediator assistance required (non-final code)	
318: Eligible household – selected individual away for fieldwork period (final outcome)	Eligible, but non-contact (definite)
319: Eligible household – no contact with selected individual after a minimum of three visits (final outcome)	
104: Dropped out	Eligible, but refusal or break-off
317: Eligible household – further information refused by individual (final outcome)	
320: Eligible household – upfront refusal before individual selection (final outcome)	
321: Eligible household – refusal by selected individual before interview (final outcome)	
322: Eligible household – proxy refusal by someone else at the address (final outcome)	
341: Eligible household – refusal by selected individual owing to COVID-19-related concerns	
343: Eligible household – refusal by selected individual for other reasons (final code)	
324: Eligible household – selected individual at home ill during survey period (final outcome)	Eligible, but non-response for other reasons
325: Eligible household – selected individual physically or mentally unstable/incompetent (final outcome)	
326: Eligible household – selected individual does not speak any of the official languages (final outcome)	
329: Eligible household – not possible to secure privacy for interview with selected individual (final outcome)	
26: Duplicated interview	

Additional fieldwork production metrics monitored by the contractor were deadwood rate, contact rate, cooperation rate and refusal rate (**Table 6.32**). Regarding the **cooperation and refusal rates**, the two countries most closely monitored were Hungary and Spain. The main reasons for lower cooperation from the target population were related to unwillingness to interact with strangers owing to COVID-19-related fears but also doubts regarding the impact of the survey.

Deadwood rates were very closely followed in Italy, Portugal and Romania. The issue of higher-than-expected deadwood rates was flagged to national agencies when relevant. In **Portugal**, the national agency confirmed that in most cases this outcome code was correctly used and indeed the areas in question had a large amount of non-residential business addresses. In **Italy**, the areas were very degraded and some of them were industrialised, and therefore were not populated. Finally, the **Romanian** agency explained that the situation in their country was due to uninhabitable areas, with a high prevalence of vacation houses or regions where vast numbers of households have moved abroad.

TABLE 6.32: MONITORED FIELDWORK PRODUCTION METRICS (%)

Country	Deadwood rate	Contact rate	Cooperation rate	Refusal rate
CZ	4	98	87	22
EL	8	99	80	30
ES	6	83	77	41
HR	11	93	85	23
HU	7	97	80	42
IT	19	97	92	17
MK	11	98	83	20
PT	20	99	86	23
RO	19	88	90	13
RS	6	97	85	21

Notes: The figures were computed on the ECS dataset, which included all the achieved interviews (N = 8,773); the variable used for the computation was ECS_A4_final.

6.7.2. Age and sex profile of respondents and household members

Table 6.33 shows that in all countries the sex profile is relatively balanced for respondents compared with that of household members in the same country. Women were over-represented in Croatia, Hungary and Romania. The high number of women interviewed in Romania is due to very high rates of labour emigration among Roma men. The tendency of Roma men to emigrate for work significantly increased in 2020–2021.

With regard to the age profile of respondents and household members, in general respondents tended to be older than the average age of household members. This was especially the case in Greece and Romania.

TABLE 6.33: SEX AND AGE DISTRIBUTIONS OF RESPONDENTS AND HOUSEHOLD MEMBERS (%)[a,b]

Country	Sample	Sex[c]		Age (years)		
		Women	Men	16–29	30–44	45+
CZ	Respondents	53	47	34	30	35
	Household members	51	49	37	31	33
EL	Respondents	51	49	29	35	37
	Household members	50	50	39	30	30
ES	Respondents	55	45	35	30	35
	Household members	50	50	37	28	35
HR	Respondents	55	45	43	29	28
	Household members	50	50	46	28	26
HU	Respondents	57	43	28	26	46
	Household members	51	49	33	26	41
IT	Respondents	50	49	34	34	33
	Household members	48	52	38	33	29
MK	Respondents	53	47	27	27	45
	Household members	50	50	30	27	43
PT	Respondents	52	48	24	32	44
	Household members	50	50	30	32	39
RO	Respondents	65	35	24	29	47
	Household members	51	49	31	29	41
RS	Respondents	52	48	27	25	47
	Household members	50	50	32	27	41
Total	Respondents	56	44	30	29	41
	Household members	50	50	34	29	37

Notes:

[a] The figures were computed on the IR dataset, which included all the accepted interviews (N = 8,461); the variables used for the computation were Resp, Age and Sex (unweighted data).

[b] Household members also includes respondents in the interviewed household (Resp = 1–3).

[c] In addition to women or men, a respondent could respond 'other' when asked about their or their household members' sex. Overall, this response was used only six times. Hence, it is not presented here, but is included in the overall percentage.

6.7.3. Productivity of sampling points

In most countries, SPs were fully completed with only a few marginal issues (**Table 6.34**). In Hungary, there were a higher number of unproductive SPs than in other countries, where the number was marginal, because of a lack of Roma population. The main reason for this was that the sampling was done based on 2011 census data.

Spatial shifts in the Roma population vis-à-vis 2011 were larger in reality than expected, especially in cities, due to gentrification. The random walk routes resulted in no (self-identified) Roma respondents in quite a few cases. There were also issues with the number of addresses recorded in SPs where MACS was used. In most cases, not all addresses were recorded because of safety issues or because interviewers misunderstood the requirement to record all non-core addresses linked to the core address when conducting the survey. The number of non-core addresses was established based on the sampling interval.

TABLE 6.34: PRODUCTIVITY OF SPS PER COUNTRY[a,b]

	Productivity codes	CZ	EL	ES	HR	HU	IT	MK	PT	RO	RS	Total
Productive – fully completed	Fully completed SP	55	46	45	46	95	47	65	35	126	44	604
	Stopped owing to stopping rule	0	0	0	0	2	0	0	0	0	0	2
Partially productive – partially completed	Stopped owing to safety concerns	7	4	0	0	3	0	15	1	2	7	39
	Not all issued core addresses visited	23	10	8	6	20	3	12	13	24	31	150
Unproductive	Stopped owing to dropping rule	2	6	4	2	6	0	5	5	1	0	31
	Stopped owing to dropping rule (but used incorrect threshold)	0	3	0	0	0	0	1	0	0	0	4
	No Roma living there – identified before fieldwork began	2	2	1	3	39	1	2	5	2	1	58
Total (worked SPs only)		89	71	58	57	165	51	100	59	155	83	888

Notes:

[a] *The figures were computed on the final PSU dataset, which included all the achieved interviews (N = 1,539); the variable used for the computation was SP_status.*

[b] *Only the data for SPs that were worked (SP_status = 1–7) are presented, despite the complete final PSU datafile also including the spare SPs (SP_status = 8). The total number of SPs worked is higher than the number of SPs planned to be worked, which was presented in* ***Section 4*** *(771 SPs were selected at the preparatory stage).*

7. DATA PROCESSING AND DATAFILES

7.1. DATAFILES: TYPOLOGY AND STRUCTURE

7.1.1. Datasets

All datafiles were delivered to FRA without personal details such as names or addresses. The RS2021-related data are in three separate datasets: the PSU, the ECS and the individual respondent (IR) datafiles. The three final datasets were delivered in SPSS along with the syntax files and final codebooks, both described below, detailing all the information included in each dataset, and the data checks and manipulations performed.

The **PSU** datafile contains variables pertaining to sampling, such as different data on the PSUs, SPs, number of addresses visited and interviewer-assessed characteristics of the PSUs (e.g. barriers to entering the SP). The data for this file came from several sources, primarily sampling files with information describing the fieldwork regions and the electronic PSU contact sheet inserted at the beginning of the script. The PSU dataset is based at SP level.

The **ECS** datafile includes all variables from the ECS, such as types of address; data on households; household members eligible to take part in the RS2021, as listed during the screening exercise; the selected respondent; and variables pertaining to important aspects of contact attempts (e.g. specific outcome code, interviewer number, and date and time of visit). It also contains a variety of interim outcome codes (for each visit) and a final outcome code, and the variables from the interviewer questionnaire section at the end of each interview. This dataset is in wide format to allow the dataset to host data on all visits to a specific address. The ECS dataset is based at household level.

The **IR** datafile primarily contains the data for the main interview. Where relevant, the data are filled in for other household members too (household and child grids, housing and living standards, etc.). The IR file is based at individual level. It is in long format and includes information for the respondent and each household member named by the respondent in a separate row of the dataset. Each individual in the IR dataset was assigned a unique person identification number (PID) and category (respondent or household member) by means of a dedicated value named *Resp*.

Unique identifying variables included in the datafiles allow relevant variables to be linked between them (**Tables 7.1** and **7.2**).

TABLE 7.1: UNIQUE IDENTIFIERS AND THEIR DEFINITIONS AND COMPUTATION RULES

Identifier	Definition	Computation rule
HHID	Household ID (HHID) is a unique identifier for each household. Members of the same household have the same HHID.	The first and second digits for the country plus a random unique household ID are combined to create a 13-digit number.
PID	Person ID (PID) is a unique identifier for each household member, including the respondent, in the IR datafile.	This is formed by adding HHN01 (two digits) to the HHID to create a 15-digit number. The PID was only populated if an interview was completed.
Address	Address ID is a unique identifier for each address that has been visited. It is provided for each case in the ECS datafile.	This is formed from the SSU_ID plus a number from 001 to 999 as the final three digits.
ACS_CoreHHID	Core address identifier	This is formed from the HHID (or the core address) plus one digit (from 1 to 9) as the last digit.
PSU_ID	PSU identification number	A five-digit alpha numeric code XXYYY, where XX is the ISO country code, except for Greece, for which EL is used, and YYY is a number from 001 to 999 and represents a PSU. Where a PSU has been selected more than once the same PSU_ID is used.
SSU_ID	SSU identification number	Defined based on the sample frame ID, typically PSUID_XX, where XX is a number from 01 to 99 and represents the selected SSU in each PSU.
SP_ID	SP identification number	A seven-digit alpha numeric code XXYYYWW, where XX is the ISO country code, except for Greece, for which EL is used, YYY is a number from 001 to 999 and represents a PSU (note that where a PSU is selected more than once the same code is used), and WW is a number from 01 to 99 and represents the selected SP in each PSU.

TABLE 7.2: THE LOCALISATION OF UNIQUE IDENTIFIERS ACROSS DATAFILES

Identifier	File where it is the unique identifier	Level	In IR file	In ECS file	In PSU file
HHID	ECS	Household	✓	✓	×
PID	IR	Individual (both respondents and household members)	✓	✓	×
Address	ECS	Address	✓	✓	×
ACS_CoreHHID	ECS	Address	✓	✓	×
PSU_ID	PSU	PSU	✓	✓	✓
SSU_ID	PSU	PSU	✓	✓	✓
SP_ID	PSU	PSU	✓	✓	✓

Agreed codes for missing values or item non-response (INR) according to the definitions and rules are included in all files, including additional codes to depict particular instances of missing data in the datasets due to specific situations in the field and in data quality checks (**Table 7.3**).

TABLE 7.3: MISSINGNESS OR INR CODES

Code	Label	Definition *Datafiles, where used*
-sysmis	System missing	Code for missing data not elsewhere explained, for example coding for situations when a certain part of the questionnaire was not intended by design for a particular individual, or where there were respondent/interviewer errors or production/system errors. *PSU/ECS/IR*
-2	Not on route	Occurs where the respondent was routed away from the question in the light of the relevant filtering conditions included by design in the questionnaire. *PSU/ECS/IR*
-96	Refusal	Code used where the respondent explicitly refused to provide an answer to the question. For some questions (sensitive questions), an explicit refusal code was available. By default, this code was not given to respondents, but was coded by the interviewer. *ECS/IR*
-97	Doesn't understand the question	Code used where the respondent expressed that they did not understand the question. The interviewer could also use this code if they got the impression that the respondent did not understand the question. By default, this option was not given to respondents, but was coded by the interviewer. *ECS/IR*
-98	Not applicable	Code used where the respondent indicated that the question was not applicable to them. For some questions, an explicit 'not applicable' code was available. If not, the code was not included in the dataset, as it was not presented to the interviewer as a valid answer option. *ECS/IR*
-99	Don't know	Code used where the respondent expressed that they did not know the answer to the question. By default, this code is not read out/shown to the respondent, apart from when it has been deemed a crucial variable for analysis purposes, for example where the household is or the number of household members. It is coded by the interviewer. *ECS/IR*
-80	Non-core addresses not visited because of safety concerns	Code used to depict situations where a non-core address should have been visited but was not owing to safety concerns. *ECS*
-92	Value deleted because of data inconsistency	Code used where, on agreement with FRA, data were deleted in the light of inconsistencies detected during the performed quality check. *IR*
-94	No contact details for call-back	Code used in situations where data are missing where they should have been present but could not be collected owing to the agency's inability to successfully perform a call-back because the respondent did not provide contact details (see Section 7.2.2). *IR*
-95	Missing because of unsuccessful information retrieval from call-backs	Code used in situations where data are missing where they should have been present but could not be collected owing to the agency's inability to successfully perform a call-back. *IR*

Intermediary datasets containing data at two predefined data collection milestones were prepared:

- interim dataset 1, after completing at least 1,000 interviews across at least five countries;
- interim dataset 2, after completing at least 200 interviews in each country.

Comments on those datasets (from FRA and the contractor) were incorporated in a data quality log (DQL) together with responses and the status of data completion. The process was iterative, with multiple revisions having been exchanged between FRA and the contractor.

7.1.2. Codebooks

Codebooks for each dataset – PSU, ECS and IR – were prepared. These codebooks outline the contents, structure and layout of the datasets. They include the variable name, variable label, variable values, variable routing (in Stata format), information on where the data came from (provided by the interviewer or from another source) and the variable's presence in the other datafiles.

Common data coding conventions were followed, such as allocating missing values the same code in every variable (if recurring) and treating them as negatives so that they are easily filtered and easily identifiable in the datafiles. Other conventions included giving values labels that correspond to the answer options in the questionnaire, and if new values had to be included always coding an answer denoting a larger amount for a variable with a higher value (e.g. in the case of coding of open answers). Variable names followed the same convention, consisting of a combination of letters and numbers, and followed the conventions proposed by FRA in the questionnaire and used for other FRA surveys on the Roma population.

7.1.3. Tabulations of indicators

Headline and secondary indicators for monitoring the EU Roma strategic framework for equality, inclusion and participation, provided in the portfolio of indicators, were calculated using the RS2021 data. The definitions and computation rules for each indicator are provided in **Annex 3**. On final approval of the syntax for their computation, the contractor produced tables with the outcome values for each indicator. The tables included for each indicator the weighted percentage, and the weighted and unweighted counts, and were broken down by sex, age band (0–15, 16–24, 25–44, 45–64 and 65+) and disability (variable *DHE03*).

7.1.4. Syntax files

All data quality checks, data cleaning, imputations and weighting were documented in SPSS syntax files, ensuring the complete transparency of the processes (**Table 7.4**).

TABLE 7.4: NAME AND PURPOSE OF THE DELIVERED SYNTAX FILES

Name	Purpose
A	Flag interviews for deletion according to the predefined exclusion criteria
B	Flag interviews with missingness criteria (INR)
C	Flag interviews with INR values in variables *Age* and *Age_group* or *Sex*
D	Flag interviews that breached the determined criteria for the logical plausibility of the occurrence of such observations
E	Flag interviews that breached the determined criteria for plausibility regarding interview length and time of day of the interview
F	Syntax for the imputation of income and determining the status of imputation for each respondent
G	Syntax for the design weight calculations at each sampling stage, including PSU, SSU, address, household and individual selection
H	Syntax for the non-response weights calculated at PSU level
I	Syntax for the calibration (rim) weighting, calibrating the data to benchmark targets based on the 0+ and 16+ Roma populations
J	Syntax for trimming the weights, used to trim design weights and final calibration weights

7.2. DATA PROCESSING AND QUALITY CONTROL

7.2.1. Data processing

During the scripting stage, hard and soft consistency checks were included in the script. The coding rules rejected wrong codes and inconsistent answers consistently and comparably across all the countries surveyed.

All national agencies used the same data collection platform – Nfield. All data were collected on the same central server when the data collection devices were synchronised. Data could be easily downloaded and then overlaid into databases in the necessary formats. Normally, the data-processing and data control work was performed using SPSS, but for certain checks and operations (some of the imputation operations) the contractor also used R.

Responses to open-ended questions were exported and translated to English and then every entry was assigned a common code that was recoded into an already existing answer option, assigned a new standardised code for a more commonly observed answer (answers provided more than 20 times) or coded as part of the code 'other'. In total, there were 6,228 instances when an open answer was recoded into an already existing value (the variable for which this happened most often was *RA02*, on identification within 'other minority groups')

In some cases, previous filter questions were affected when a verbatim implied the incorrect use of routing. The filtering was not changed and stayed intact for the original variable. The recoding of verbatims took place after the data checks were finalised.

7.2.2. Data checking

In parallel with the checks and procedures in place during the fieldwork (**Section 6.3.2**) and then more intensively on completion of fieldwork (**Section 6.3.3**), further data quality checks were performed. The issues identified and their solutions were documented in the dedicated DQL.

Initial data quality checks on the first interim dataset

Three key data issues were identified in the initial data quality checks on the first interim dataset requiring call-backs. If the agencies were not able to recover the data, special INR values (**Table 7.3**) were assigned to the record in question.

- **The household member-related variable block (*HH01* and *HH11b_1*):** Some large discrepancies were detected between the number of people listed in the household grid (*HH11b_1* – respondent asked to list any additional household members not listed at the screening stage) and the number of members of the household (*HH01* – respondent asked how many 0+ people live in the household). The former was in many cases lower than the latter. This issue was identified in most countries, but in some more than in others. Corrective measures were implemented: all interviewers were given an additional briefing; the script was updated to prevent the interview from continuing if there was a discrepancy, and to display an error message if the two figures differed; and call-backs were conducted to collect the missing information for household members who were not listed in the previously conducted interviews.
- **The equality body questions (*RA05_2* and *RA05_4*):** In Hungary and Portugal, one question regarding the equality bodies in each of these countries was missing in the initial national language scripts. This issue was detected during initial data quality checks and the scripts were fixed. Call-backs were conducted to retrieve information from the previously questioned respondents. New variables were added in the dataset to include the data from these specific call-backs.

— **The at risk of discrimination question (*DX1.2*):** The script was initially running an earlier version of the routing logic for this block (ASK *DX1.2* IF *DX1.1* = 1). During interim data checks, the problem was detected and an update to the *DX1.2* question in the script was implemented to reflect the exact filtering from the questionnaire (ASK *DX1.2* IF *DX1.1* = 1 or -96 or -97 or -99). Call-backs were conducted to ask the respondents question *DX1.2* and consequent questions if relevant. In a majority of countries, few questionnaires were affected by this issue (**Table 7.5**).

TABLE 7.5: RESULTS OF CALL-BACKS

Variable	Country	Number of missed cases	Number of successful call-backs	Number of unsuccessful call-backs
Household grid variables (total)	CZ	0	0	0
	EL	100	100	0
	ES	181	181	0
	HR	7	7	0
	HU	59	53	6
	IT	94	94	0
	MK	35	33	2
	PT	85	73	12
	RO	369	362	7
	RS	38	38	0
	Total	968	941	27
RA05_2 – Awareness of equality body 2	HU	793	297	496
RA05_4 – Awareness of equality body 4	PT	191	96	95
At risk of discrimination – *DX1.2* and related variables (total)	CZ	2	0	2
	EL	1	0	1
	ES	6	1	5
	HR	3	0	3
	HU	13	3	10
	IT	73	13	60
	MK	7	1	6
	PT	9	2	7
	RO	81	23	58
	RS	8	1	7
	Total	203	44	159

Modified adaptive cluster sampling implementation checks

During the fieldwork stage, checks on the correct implementation of the MACS methodology (see **Section 4.6.4**) were consistently performed (**Tables 7.6** and **7.7**). A total of 107 interviews in non-core addresses were removed in the RS2021 (58 in Romania, 39 in Serbia, 6 in Spain and 4 in North Macedonia), while in EU-MIDIS II more than double this figure were removed owing to the incorrect application of ACS.

TABLE 7.6: USE OF MACS DURING FIELDWORK IN WORKED SPS

Country	SPs before fieldwork		SPs after fieldwork		SPs with issues related to MACS
	Without MACS	Using MACS	Without MACS	Using MACS	
CZ	37	50	37	50	23
EL	54	15	60	9	2
ES	59	39	60	38	21
HR	37	17	38	16	1
HU	110	16	110	16	2
IT	23	27	50	0	0
MK	35	22	38	19	5
PT	10	44	14	40	12
RO	77	76	82	71	26
RS	35	47	35	47	18
Total	477	353	524	306	110

Note: The figures were computed on the PSU dataset, which included all worked SPs (N = 830); the variables used for the computation were SP_Original_ACS_Flag, SP_Updated_ACS_Flag and SP_ACSIssue.

TABLE 7.7: ISSUES RELATED TO MACS IDENTIFIED DURING FIELDWORK (NUMBER OF SPS)

Flagged issue	Number of SPs
MACS not used, as the SP only had a small number of addresses to work	12
MACS not used fully owing to concerns with safety (some non-core addresses were not visited as too dangerous)	35
The sample interval used was different from that requested owing to smaller number of addresses in SP	38
MACS not used because of the observed prevalence of the Roma population > 25 %	8
MACS not used owing to concerns with quality of MACS in other SPs	17
Total	110

Note: The figures were computed on the PSU dataset, which included all worked SPs (N = 830); the variable used for the computation was SP_ACSIssue.

Final data quality checks

After fieldwork was completed and data were processed, final data quality checks were defined and performed, which resulted in a set of accepted interviews to be included in the final datasets. Six main groups of criteria were specified at this stage for excluding interviews:

- **fieldwork quality checks** (performed during fieldwork; described in Section 6.3.2)
- **fieldwork checks on the implementation of MACS** (performed during and after fieldwork)
- **logical quality checks** (performed after fieldwork; Table 7.8)
- **length of interview and timing of interview** (performed after fieldwork; Table 7.9)
- **INR rate checks** (performed after fieldwork; Table 7.9)
- **completeness of age and sex information** (performed after fieldwork; Table 7.9).

TABLE 7.8: LOGICAL QUALITY CHECKS

Variable name in IR dataset	Description of variable	Count of flagged cases
FLAG_HH01	If there are more than 25 people per household	0
*FLAG_HH14agegroup**	If partners/children in law are younger than 15, grandchildren older than 64 or parents/parents in law are younger than 20	0
*FLAG_HH12HH02**	If own children, stepchildren or children in law, or grandchildren are older than respondents or if respondents are older than their parents	155
FLAG_marrAlone	If married but living alone in the household	35
*FLAG_AgeMarriage**	If age at first marriage is older than current age	11
FLAG_menbirth	If men have given birth	0
*FLAG_AgeBirth**	If age at first birth is younger than 10, older than current age or older than 50	242
FLAG_NoChildTotal	If number of children is greater than 15	8
FLAG_NoChildAlive	If the difference between the number of children and the number of children still alive is larger than two or if more children are alive than were born	42
*FLAG_eduyearsage**	If more years have been spent in education than current age	1
*FLAG_eduyearsattain**	If respondent has spent more than 0 years in education but has never been in formal education, if they have spent more than 13 years in education but completed lower than lower secondary level or if they have spent fewer than 4 years in education but have achieved higher than primary education level	320
*FLAG_ageimm**	If age at immigration is older than current age	8
FLAG_noRooms	If 0 rooms or if the number of rooms is much larger (> 8) than the household size (< 4) or if the household size is much larger (> 10) than the number of rooms (< 3)	62
*FLAG_ageparents**	If the age difference between the respondent and mother alive is less than 15 or greater than 50 years	173
FLAG_incomelowbound	If net household income is lower than a certain number, to detect missing zeros: CZ, < 1,000; EL, < 100; ES, < 100; HR, < 100; HU, < 10,000; IT, < 100; MK, < 1,000, PT, < 100; RO, < 100; RS, < 1,000	143
Flag_Cum_Logical_QC_age	A cumulative flag based on all logical checks related to age (marked *)	6
Flag_Cum_Logical_QC	A cumulative flag based on all logical checks	2

TABLE 7.9: CHECKS ON THE LENGTH AND TIMING OF INTERVIEWS, INR RATE AND COMPLETENESS OF AGE AND SEX INFORMATION

Variable name in IR dataset	Description of variable	Count of flagged cases
	Length and timing of interview	
Flag_Overall_IntLenght	Overall interview length (substantive part is at least 40 % shorter than median interview length)	196
Flag_Average_Question_Lenght	Average question length is under 40 % of average length (the total interview length divided by the screen count)	2,671
Flag_ImpausibleStarTime	The interview starts before 8.00 or after 22.00 (local time)	39
	INR rate	
Flag_Missigness_1	INR rate is 50 % or above	7
Flag_Missigness_2	INR rate is between 25 % and 50 % (inclusive)	40
	Completeness of age and sex information	
Flag_Missing_Age_Sex	INR in variables *Age* and *Age_group* or *Sex*	28

Each of the flag variables was coded as a dummy variable where a value of 1 denoted that a case qualified for being investigated as deviating from the normally expected observations.

Outlier analysis

The aggregated variable for income, with standardised values that were converted to euros, was used for the outlier analysis. The analysis was fixed at values of below € 20 and above € 3,000 owing to the distribution of the data. For observations under € 20, values were only removed when respondents answered 'Yes' to question *SI01_01* or to question *SI01_10* (that is, they said that they earned any of the income bands mentioned in each of these variables) and did not answer 'fairly easy' or 'very easy' to question *SI06*, on the ability of the household to make ends meet. For observations of over € 3,000, the syntax also considered the answers to question *SI06* with values lower than 4, which implied difficulties in making ends meet.

The share of outliers below the lower bound was 0.0005 % (*N* = 5) and the share above the upper bound was 0.0004 % (*N* = 3).

Duplicate analysis

The IR dataset was examined for duplicates or near-duplicates. The analysis did not detect any observations that would qualify as such.

Final acceptance of interviews

An interview was removed from the final accepted dataset if after the contractor investigated the issue the interview still conformed with any of the criteria for the exclusion of interviews (minimum quality expectations).

TABLE 7.10: DELETED INTERVIEWS BY EXCLUSION CRITERION

Exclusion criterion	Number of interviews
Initially flagged issues from fieldwork quality check failed the back-checks by the contractor	200
Flagged owing to incorrect use of MACS	107
INR rate of more than 50 %	7
Flagged for implausible start and fieldwork issues	6
Flags in more than two age-related logical checks	6
Interview has no information on variables *Age*, *Age_group* or *Sex* for any household member	4
INR rate is between 25 % and 50 % (inclusive) and flagged for implausible survey start time recorded	3
Flagged for overall interview length and INR rate is between 25 % and 50 %	2
Flags in more than three logical quality checks	2

Note: The figures were computed on the full dataset, which included all the achieved interviews (N = 8,773); some interviews could be flagged by more than one criterion.

After removing all 312 interviews flagged for deletion (**Table 7.10**), all the remaining implausible values were recoded as '-92' (in the IR datafile), meaning that the values were deleted owing to inconsistencies in the data.

7.2.3. Imputing income

The at-risk-of-poverty rate is one of the headline indicators for monitoring the EU Roma strategic framework. Income variables in the RS2021 (*SI03* and *SI03_1*) included a range of missing cases (probably because these are sensitive questions in survey research). In addition, eight cases were removed from the *SI03* variable after they were identified as outliers (**Section 7.2.2**). Therefore, the contractor imputed income (*SI03_Imputed*) fully for 1,455 interviews and from the income bands for 1,164 interviews.

The household income was collected through variables *SI03* (detailed income) and *SI03_1* (income bands). The values of income in variable *SI03* were in the national currencies. The new variable *SI03_EUR* was created, which contains standardised income values converted to euros (the exchange rates established by the **European Central Bank** on 14 May 2021 were used to convert the incomes into the national currencies).

The imputation procedure consisted of two stages. Firstly, if the income bands were available, a random figure from other respondents within this income band and within the same country was drawn (to keep the same distribution as present in the data). This was implemented using the 'hotdeck' function of the VIM package[26] for the statistical software R.[27] For a few cases, no 'donors' were available within the same income bands and country, and therefore a random number (with equal probability) from within the same income band was used.

Secondly, the detailed income was imputed with the value from the five nearest neighbours based on the distance to other selected variables (*SO2*, *Age_group*, *HH01*, *HH03*, *HH05*, *HH04* and *HH09*), when no value was registered in either *SI03* or *SI03_1*. The data were imputed with the five nearest neighbours using the median income. The figures showing the mean differences in the value of imputed and non-imputed income are available in **Table 7.11**.

TABLE 7.11: SUMMARY STATISTICS OF INCOME VARIABLE BY IMPUTATION STATUS

Country	Household net monthly income imputed (SI03_Imputed)				
	Status	Mean (EUR)	Standard deviation (EUR)	Number of respondents	Percentage of country total
CZ	Full imputation	702	300	165	21
	Imputed from band	336	210	47	6
	No imputation	789	483	557	72
	Total	743	450	769	100
EL	Full imputation	500	183	52	8
	Imputed from band	250	247	121	19
	No imputation	501	279	476	73
	Total	454	284	649	100
ES	Full imputation	614	253	168	15
	Imputed from band	109	78	121	11
	No imputation	677	528	843	74
	Total	607	498	1,132	100
HR	Full imputation	467	246	46	9
	Imputed from band	215	180	30	6
	No imputation	632	459	443	85
	Total	593	445	519	100
HU	Full imputation	545	221	205	15
	Imputed from band	238	189	303	22
	No imputation	583	465	901	64
	Total	503	415	1,409	100

[26] Templ, M., Alfons, A., Kowarik, A. and Prantner, B. (2016), '**VIM: Visualization and imputation of missing values**'.

[27] R Core Team (2016), ***R: A language and environment for statistical computing***, Vienna, Austria, R Foundation for Statistical Computing.

Country	Household net monthly income imputed (SI03_Imputed)				
	Status	Mean (EUR)	Standard deviation (EUR)	Number of respondents	Percentage of country total
IT	Full imputation	500	294	217	40
	Imputed from band	426	527	83	15
	No imputation	642	968	241	45
	Total	552	707	541	100
MK	Full imputation	297	146	38	7
	Imputed from band	328	260	25	5
	No imputation	262	173	456	88
	Total	268	177	519	100
PT	Full imputation	451	251	132	23
	Imputed from band	241	118	159	28
	No imputation	715	356	277	49
	Total	521	349	568	100
RO	Full imputation	273	191	337	20
	Imputed from band	201	299	152	9
	No imputation	328	287	1,206	71
	Total	305	275	1,695	100
RS	Full imputation	229	134	95	14
	Imputed from band	103	95	123	19
	No imputation	296	192	442	67
	Total	250	186	660	100
Total	Full imputation	461	281	1,455	17
	Imputed from band	226	247	1,164	14
	No imputation	522	464	5,842	69
	Total	471	425	8,461	100

Note: The figures were computed on the dataset with all accepted interviews (N = 8,461), unweighted; the variables used for the computation were SI03_Imputed and SI03_impstatus.

7.3. DATA PROTECTION

7.3.1. Data protection strategy and code of ethics

The Kantar Group is enacting a GDPR readiness programme to ensure that all Kantar companies are compliant with the data protection legislation. As part of its implementation, Kantar Public in Brussels reviewed and updated its data flows and data usage, and its content mechanism. Kantar Public's Brussels unit and all the members of its network abide by professional codes of conduct established by the Market Research Society and the Social Research Association, to ensure that all data are kept strictly confidential.

The Kantar Group maintains robust physical, electronic and procedural safeguards to store and protect client information from unauthorised access and use, alteration and destruction. Its own policies and procedures have been developed to ensure that all data are stored and managed in a secure and controlled way. All the RS2021 data suppliers have committed themselves to abiding by these rules for the survey, as part of the GDPR programme, through specific contracts or statements of work. All Kantar employees

are contractually obliged to follow its policies and procedures regarding confidentiality, security and privacy.

Kantar adheres to the following standards and industry requirements:

- the Market Research Society and International Code on Market and Social Research professional codes of conduct, meaning that Kantar Public commits itself to industry standards that are designed to comply with data protection legislation and promote high-quality research;
- the ISO 20252:2006 market research quality standard, which outlines specific requirements for the handling of personal information;
- the ISO 9001:2008 standard for quality management systems, which requires Kantar Public to follow agreed regulatory principles concerning the processing of records.

Since the RS2021 targets a vulnerable population (Roma) who may have faced discrimination, ethical considerations also needed to be taken into account and addressed when implementing the survey. Roma people are among the most vulnerable populations living in Europe. Therefore, consent forms or other legally required information must be either signed by the respondents or provided to them.

7.3.2. Data security

The key elements of Kantar's information security policies and procedures that were in place for the RS2021 are provided below.

Physical security arrangements

All buildings have a number of physical controls in place, including 24/7 on-site security, CCTV, swipe card access and alarms.

Use of security tools and protocols

These include a strict password policy; using full disk encryption technologies on all laptops; using the latest antivirus and anti-spyware software; employing multi-layer firewall architecture; deploying regular threat-monitoring and intrusion-testing tools; and regularly testing the vulnerability of critical network access points and of internal systems that store sensitive data.

Transfer of interview data

Interview data were returned through the centralised CAPI system. Data transfer occurred using an encrypted tunnel, access to which was authenticated by two layers of security.

Secure data storage and back-up

All the data were stored on a secure server on network-based data storage devices, rather than on local drives. Access to data was restricted to the appropriate personnel. All data back-ups were securely stored off-site either at another secure Kantar location or by an authorised third-party specialist partner. Regular tests were performed to ensure the integrity of the back-up processes. Data were stored on file servers that utilise access control lists to ensure that only authorised users had access to client data on a 'need to know' basis.

Disposal of electronic data and hard-copy data

All electronic data and media were disposed of by an authorised third-party partner. They followed best practice and ensured that all electronic data were demagnetised or wiped, and that all non-electronic data were physically destroyed (by breaking, shredding or punching holes in the media).

Use of a secure file transfer system

Any additional files and any confidential survey documents were securely transferred using **Kiteworks** by Accellion (a technology company specialising in secure file sharing and collaboration).

Standard procedures for reporting security incidents
Security events (suspected or actual) were identified as any loss, theft or unauthorised access to personal and/or protectively marked data. Security breaches were to be reported immediately to both the relevant stakeholders and the quality and information security team, who agreed on a set of actions.

On 1 June 2021, a data security incident occurred when Kantar Public transferred a dataset containing personal data (GPS addresses for the 1,018 interviews included in the shared dataset) by email and without encryption. The Kantar Public team informed Kantar's data protection team and FRA. A data incident report was prepared at both ends (by Kantar and FRA), and all the parties deleted the file from their mailboxes and from the respective servers. Confirmation from all parties that this had been done was then sent. The incident was considered closed, and no breach was recorded.

Training and awareness
All members of staff received security training tailored to their roles and responsibilities. Company inductions include a data protection and information security briefing.

Data retention
Data were stored and deleted according to the requirements of the 2018 GDPR. Data centre back-up and archive tapes were couriered to an industry-standard archive storage provider. During periodic reviews, these archive tapes are tested for recovery and data integrity. At end of life, archive tapes, hard drives and other media are taken to Kantar Public's certified destruction provider. For the RS2021, primary record data were retained for a maximum of 12 months after the completion of the project.

7.3.3. Data collection and consent
Data were collected by interviewers from the partnering national agencies, who were extensively trained to ensure that data protection measures were respected when the interviews were carried out. The script of the questionnaire included a screener explaining the purpose of the survey and asking for consent from the respondents to take part in the survey, to have their personal information used as described in the privacy policy notice and to share sensitive data. The interviewer proceeded with the interview only once this consent was recorded and information on data privacy was provided to the respondent.

When conducting the interviews, the interviewers were also instructed to explain to respondents that they might be contacted for quality control checks. They were told to explain the purpose of these checks (evaluating the performance of the interviewers), the data collected (the contact details required to contact them after the interview) and the legal basis of the request. The legal basis was in this case legitimate interest: Kantar Public had a legitimate interest in evaluating the performance of its interviewers.

In addition, respondents were able to access the full data protection policy that was included in the script, provided as a link in the introduction letter or postcard and available in printed format from the interviewer. The respondents were also informed about who to contact if they had questions or complaints, and that they could find the relevant contact details (normally of the NSE) in the introductory materials provided to them.

To ensure the anonymity of the respondents, the datafiles delivered by the contractor to FRA did not contain the original identifiers. Another set of identifiers was created by Kantar (in line with the definitions described in **Table 7.1**), which were delivered to FRA.

8. WEIGHTING

The RS2021 weights were calculated in three stages.

(1) Taking account of design-based differences in the selection probabilities (design weights).

(2) Taking account of differences in response rates by observable characteristics that differed significantly between the respondents and the non-respondents (non-response weights).

(3) Calibrating the sample of respondents to match population benchmarks on one or more of the following characteristics: region, rurality, age and gender. A number of these characteristics depended on what population data were available in each country (calibration weights).

The weights were trimmed at three stages (**Section 8.4**).

The weights were calculated at individual level, for the 16+ and 0+ populations. Four final weights were calculated (**Table 8.1**). Two of them are projection (or grossing) weights, which sum to either the covered 0+ Roma population or the covered 16+ Roma population in each country. The covered population is the Roma population covered by the sampling design in each country. The other two weights simply standardise the projection weights to the sample size in each country. These weights are comparable to the two weights supplied in EU-MIDIS II 2016 and the RTS 2019.

TABLE 8.1: FINAL RS2021 WEIGHTS

Weight name	Description	Available for
IW_Trimmed	Standardised individual (16+) weight (trimmed) – to be used for metrics measured at respondent level (used within country only)	Respondents only
IWP	Projective individual (16+) weight to cover 16+ population (respondents only) – to be used for metrics measured at respondent level (used within and across countries)	Respondents only
IW_ALL_Trimmed	Standardised individual (0+) weight (trimmed) – to be used for metrics measured for each member of the household (used within country only)	All members of household
IWP_ALL	Projective individual (0+) weight to cover 0+ population (all members of household) – to be used for metrics measured at individual level (used within and across countries)	All members of household

Table 8.2 summarises the steps taken to calculate the weights. The 0+ weight was calculated first because in the PSU and SSU sample frames only the information for the 0+ Roma population was available. Then the 0+ projection weight was used to estimate the covered 16+ Roma population for the projected 16+ Roma population weight.

TABLE 8.2: STEPS INVOLVED IN CALCULATING INDIVIDUAL WEIGHTS

0+ individual weight	16+ individual weight
1. Calculate the design weight – this accounts for the probability of selection at the PSU, SSU and address selection stages.	1. Replicate steps 1 to 7 for the 0+ individual weight, with one exception. Do not trim at step 6 to avoid double trimming (trimming only once, after the 16+ weights are calculated in step 3).
2. Calculate the non-response weight – this accounts for differences in response rates by location and by location and address-level characteristics.	
3. Calculate the pre-weight, which is the product of the design, non-response and within-address household weights.	2. Using the projected 0+ weight estimated in step 1, filter out all household members under 16. Sum the 0+ weights for all 16+ members of the household to get a respondent-level 16+ weight. This weight is allocated to each primary respondent in the household.
4. Apply trimming to the pre-weight at the agreed percentile.	
5. Calculate a weight that calibrates the pre-weighted responding sample to the 0+ Roma population estimates on region and urbanity, and, if available, gender and age.	3. Standardise the 16+ projected weight in step 2 and apply trimming to the weight at the agreed percentile. **IW_Trimmed**
6. Apply trimming to the weight at the agreed percentile. **IW_ALL_Trimmed**	
7. Project the weight to an estimate of the covered Roma 0+ population. The covered 0+ population is the population covered by the sampling design, after exclusions at the PSU and SSU selection stages. **IWP_ALL**	4. Project the trimmed standardised weight back to the covered 16+ Roma population, estimated in step 2. **IWP**

8.1. DESIGN WEIGHTS

The design weights accounted for each stage of selection. In all countries there were five stages: (1) PSU selection; (2) SSU selection; (3) address selection; (4) household selection, only if more than one household was present at the selected address; and (5) individual selection.

The overall probability of selection for **the household** is simply the product of each stage's selection probability, and the design weight (DW) is the inverse of this overall probability:

$$DW = [(Prob1A) * (Prob1b) * (Prob2i) * (Prob3A)]^{-1}$$

8.1.1. Stage 1: primary sampling unit selection

PSU selection: probability PSU A is sampled within stratum H

$$Prob1A = [(number\ of\ PSUs\ sampled\ in\ stratum\ H) * (population\ of\ PSU\ A\ in\ stratum\ H)]/(population\ of\ stratum\ H)$$

where the **population of stratum H** refers to the covered population, that is, the population across all PSUs in scope when a sample was selected from the PSU frame.

8.1.2. Stage 2: secondary sampling unit selection

When mapping the Roma population in the sampled PSUs, the Roma experts were provided with the total Roma population in the PSU from the PSU frame for guidance. Nonetheless, in many PSUs the Roma population in the PSU from the frame did not match the mapped Roma population across all SSUs. In Italy they matched, and in Hungary and Spain the Roma population was not mapped, as SSU information was taken from the existing sources (see **Table 4.3**).

The reasons for the differences between PSU frame information and SSU frame information are unclear, but the SSUs based on the grid-based mapping do

appear to have systematically lower populations than the respective PSUs based on the frame. However, there are several possible reasons, for this of which the first two could lead to the observed systematic differences.

- **Under-coverage:** The experts do not know where all the Roma live in the mapped PSU.
- **Overestimates of the Roma population in the PSU frame:** In most countries, the Roma population in the PSU frame was adjusted to a larger number. This adjustment could have been an over-adjustment.
- **The difficulty of the task:** In some PSUs, multiple grids were selected and for each grid the Roma expert supplied an estimate of the Roma population as a 0+ population count, a count of families or a percentage prevalence. It would be very difficult for the expert to keep a running total of the Roma population across all mapped grids without some technical solution.
- **The potential misallocation of the Roma population across adjacent grids.**

In the light of these differences, to calculate the probability of selecting an SSU, the SSU population was adjusted. The adjustment ensured that the total Roma population across all mapped SSUs equated to the Roma population in the PSU frame. This adjustment was made in all countries except Hungary, Italy and Spain.

SSU selection: probability SSU b is sampled in PSU A

*Prob1b = [(number of SSUs sampled in PSU A) * (adjusted size measure of SSU b in PSU A)]/(population of PSU A)*

where the **adjusted size measure of SSU b in PSU A** is calculated as follows:

*Adjusted size measure of SSU b = [(mapped Roma population of SSU b)/(sum of mapped Roma population across all SSUs in PSU A)] * (population of PSU A)*

8.1.3. Stage 3: address selection

The aim of the sampling design was to achieve a similar number of interviews in each SSU, which meant that the number of addresses selected in each SSU inversely reflected the estimated prevalence of Roma in the SSU. The number of households selected at the start of fieldwork was subsequently adjusted during fieldwork (see **Section 4.6.2**) in many SPs (**Table 8.3**) to account for differences in the expected Roma prevalence in the frame and the actual eligibility rate during fieldwork (see **Section 4.5.4**). The number of households selected used in the denominator of the formula for calculating *Prob2i* was therefore based on the number of households visited at least once during fieldwork rather than on the initial issued count.

Working fewer addresses than originally issued should not lead to any systematic errors, as the random approach used to select the start address and the random walk used to select households imply that addresses visited are simply a random subset of all issued addresses.

TABLE 8.3: SSUS WHERE GROSS SAMPLE WAS ADJUSTED DURING FIELDWORK

Country	Percentage of SSUs where gross sample adjusted (A)	Percentage of (A) with reduced addresses (B)	Average percentage adjustment of (B)
CZ	86	100	63
EL	34	81	11
ES	68	98	41
HR	50	95	10
HU	52	88	20
IT	68	100	38
MK	74	100	41
PT	66	97	41
RO	66	95	34
RS	72	98	40

Note: The figures were computed on the PSU datafile, which contained all worked SPs.

Address selection: probability address i *is sampled within SSU b in PSU A within stratum H*

Prob2i = (number of core addresses worked in SSU b)/(total number of households in SSU b)

In the SSUs where MACS was used, the design weights took account of the selection of core and non-core addresses:

*Prob2i = [(number of core addresses worked in SSU b)/(total number of households in SSU b)] * (number of eligible non-core households in chain)*

where the **number of eligible non-core households in chain** is the number of non-core households screened and identified as Roma at each eligible core address.

In all countries, the number of households in the SSUs had to be estimated as follows:

Total number of households in SSU b = (population of SSU b) /(average household size)

where the **average household size** was sourced from EU-SILC 2019 survey data at country level.[28]

Adjustments to the address selection weight

In the majority of SSUs, the address selection weight was calculated based on the formulas shown above. However, for some SSUs up to two modifications to the calculation were made.

[28] Eurostat (n.d.), '**EU statistics on income and living conditions (EU-SILC) methodology – Private households**'.

Modification 1: where the total number of core addresses worked was 10 or fewer

In some SSUs, the total number of core addresses visited was very low. This was due to a combination of factors: firstly, a systematically higher Roma prevalence was found during fieldwork than expected based on the frame (see **Section 4.5.4**), and secondly, in SSUs where MACS was used, more productive core and non-core addresses for those addresses were initially worked.

Small core address counts can increase the size of the design weights at the address selection stage. To compensate for this, the SSUs were clustered where their core address count was 10 or fewer with other SSUs in the same PSU. If no other SSUs had been worked in the same PSU, then the SSU was clustered with an SSU in the same NUTS 3 region within the same stratum. If no other SSUs had been worked in the same NUTS 3 region in the same stratum, it was clustered with another SSU in the same stratum.

Table 8.4 shows the percentage of SSUs that were clustered in each country, and with how many other SSUs they were clustered.

TABLE 8.4: SSUS CLUSTERED FOR ADDRESS SELECTION (%)[a]

Country	Number of SSUs in a cluster			
	1[b]	2	3	4+
CZ	62	19	9	10
EL	88	10	1	0
ES	79	18	2	1
HR	80	20	0	0
HU	90	9	1	0
IT	95	5	0	0
MK	79	15	6	0
PT	91	9	0	0
RO	100	0	0	0
RS	62	25	10	4

Notes:

[a] *The figures were computed on the PSU datafile, which contained all worked SPs.*

[b] *A value of 1 means that the SSU was not clustered.*

Modification 2: correction to the calculation of the total number of households in a secondary sampling unit

For some SSUs, the total **number of core addresses worked**, when combined with the selection interval used, was higher than the estimated **total number of households in the SSU**. This can happen where a relatively high number of core households have been worked and a high selection interval has been used. Where this was the case, the **total number of households in the SSU**, used in the denominator to calculate the probability of the address being selected, was adjusted:

*Total number of households in SSU b = (number of core addresses worked in SSU b) * (selection interval in SSU b)*

8.1.4. Stage 4: household selection

Where multiple households lived at the same address, one was selected at random. This situation was infrequent, only occurring when the interviewer identified more than one family living at the same address (**Table 8.5**). The number of households at the sampled address for the calculation of this weight was capped at two for all countries except Italy, where the number

was capped at five. The probability of selecting a household at an address is calculated as follows.

Household selection: probability that household A is sampled within address i

Prob3A = 1/(total number of households in address i)

TABLE 8.5: NUMBER OF HOUSEHOLDS AT SAMPLED ADDRESS (RESPONDING HOUSEHOLDS ONLY)

Country	1	2	3	4	5	6	7	8	9
CZ	714	44	6	5	0	0	0	0	0
EL	640	7	2	0	0	0	0	0	0
ES	1,073	30	8	10	6	4	1	0	0
HR	474	30	5	5	2	2	1	0	0
HU	1,284	92	22	8	2	1	0	0	0
IT	388	51	36	20	12	14	2	10	8
MK	470	38	8	3	0	0	0	0	0
PT	562	5	1	0	0	0	0	0	0
RO	1,438	181	61	8	5	1	1	0	0
RS	621	24	7	4	3	1	0	0	0

Note: The figures were computed on the ECS datafile, including all accepted households (N = 8,461).

8.1.5. Stage 5: individual selection

Typically, where more than one eligible person is residing in the selected household the individual probability of selection will be calculated as 1 divided by the number of eligible people in the household. The approach to calculating weights in the RS2021 meant that such a design weight calculation would not need to be applied. The design weight for the 0+ population (all members of the household) was calculated first. Then this weight was calibrated to the population targets. Adding this weight up for all 16+ members of the household resulted in a 16+ respondent weight (see **Section 8.3**).

Table 8.6 shows the total number of eligible 16+ adults in the interviewed households. Since a within-household design weight was not applied, no capping was required.

TABLE 8.6: NUMBER OF ELIGIBLE 16+ PEOPLE IN THE INTERVIEWED HOUSEHOLDS

Country	1	2	3	4	5	6	7	8	9	10	11	Mean
CZ	371	310	61	21	4	1	1	0	0	0	0	1.68
EL	76	309	107	99	32	20	3	2	0	1	0	2.68
ES	181	526	217	138	46	19	5	0	0	0	0	2.49
HR	56	261	96	63	27	11	3	0	2	0	0	2.62
HU	334	678	204	121	51	17	3	1	0	0	0	2.25
IT	122	208	115	66	23	5	2	0	0	0	0	2.41
MK	88	227	79	75	34	12	1	3	0	0	0	2.61
PT	69	301	110	59	22	6	1	0	0	0	0	2.45
RO	236	874	308	185	63	20	3	4	1	0	1	2.45
RS	100	280	124	85	37	23	8	3	0	0	0	2.69

Note: The figures were computed on the ECS datafile, including all accepted households (N = 8,461).

8.2. NON-RESPONSE WEIGHTS

Non-response weights adjust the responding units to match the characteristics of all eligible units. Therefore, to be able to identify any bias in the responding sample, non-response weighting requires information to be available for both the respondents and the non-respondents. In the RS2021, the information on the non-responding households was collected by interviewers during fieldwork. Estimating and correcting for non-response is an important step in reducing error, especially where there is a lack of demographic population data covering the Roma population to use for post-stratification weighting.

Table 8.7 lists the address-level and neighbourhood (SSU)-level characteristics available to use as potential predictors of non-response by country.

TABLE 8.7: HOUSEHOLD- AND NEIGHBOURHOOD-LEVEL CHARACTERISTICS USED TO PREDICT NON-RESPONSE

Variable name	Variable label	Source	Level	Categories	Countries
Neighbourhood_Typology	Neighbourhood/ settlement typology	Frame	SSU	1: Historic centre 2: Neighbourhood of first or second expansion 3: Peripheral neighbourhood 4:Neighbourhood/settlement located in another urban nucleus of the municipality 5: Settlement segregated from the urban core 6: Dispersed and integrated homes in the municipality 7: Other	Spain
Vulnerability	Special vulnerability situation	Frame	SSU	Rating on a scale of 1 to 5 (1 being very good and 5 very bad)	Spain
PSU_BAR	Barriers to accessing SP	Survey	SSU	1: No 2: Yes, dangerous area 3: Yes, someone has denied access 4: Yes, gated neighbourhood or physical barrier to entry	All
PSU_MED	Accompanied by site manager or mediator	Survey	Address	1: Yes 2: No	All
C2	Description of place of household	Survey	Address	1: Apartment in block of flats in good condition 2: Apartment in block of flats in bad condition 3: New house in good condition 4: Older house in relatively good condition 5: Older house in bad condition 6: Ruined house or slum 7: Mobile home/caravan 8: Other 9: Cannot be answered – dwelling inaccessible -93: Data not collected	All

Note: Response categories to C2 were combined in each country owing to small sample counts: Croatia (-93, 8, 9), Czechia (5, 6 and -93, 8, 9), Greece (1, 2 and -93, 7, 8, 9), Hungary (-93, 6, 7, 8, 9), Italy (3, 4, 5 and 8, 9 and -93, 6), North Macedonia (1, 3 and 2, 4 and -93, 8, 9), Portugal (6, 7 and -93, 8, 9), Romania (6, 7 and -93, 8, 9), Serbia (-93, 8, 9) and Spain (5, 6 and -93, 7, 8, 9).

The non-response model was fitted using a multi-level logistic regression, with response to the survey question (yes or no) as the binary dependent variable and household description (*C2*) and whether or not the interviewer was accompanied by a site manager or mediator (*PSU_MED*) as address-level predictors. The other variables (*PSU_BAR*, *Vulnerability* and *Neighbourhood_Typology*) were all added as SSU-level predictors. Only predictors that had a significant effect were kept in the model. Information on non-respondents at individual or household level could not be collected. Hence, the non-response was modelled at address level.

Owing to the nested structure of the data – with households within SSUs and SSUs within PSUs – a multi-level model is preferable. Ignoring this structure could potentially lead to the underestimation of the standard errors of regression coefficients, leading to the overstatement of statistical significance. Standard errors for the coefficients of higher-level predictor variables (those measured at SSU level) would be the most affected by ignoring this grouping. The model was fitted after applying the design weights up to the PSU selection stage The non-response weight is calculated as the reciprocal of the probability of response generated by the model ($Prob1A^{-1}$).

This approach to modelling response is a slight change from the approach taken in EU-MIDIS II. Firstly, a nested model is applied here rather than a simple one-level model for non-response. Secondly, design weights are applied at PSU level rather than at household level.

Using weights only up to PSU level is recommended by Mang *et al* (2021),[29] where alternative approaches to weighting survey data prior to implementing a multi-level non-response model are tested. The paper concludes that the level 2 (school) weight is the most suitable for retrieving the true population parameters with the least bias and highest precision. The level 2 weight is the final school weight in their study, which is equivalent to the PSU weight in the RS2021. **Table 8.8** lists the variables that were significant in the non-response model by country. To summarise, the steps to non-response weighting are as follows.

Step 1: Apply the PSU-level design weight.

Step 2: Fit a multi-level regression model with addresses at level 1 and PSU at level 2, including all explanatory variables listed in **Table 8.7**.

Step 3: Re-run the model, excluding the explanatory variables identified at step 2 as not significant.

Step 4: Repeat step 3 until the model only includes significant explanatory variables.

Step 5: Calculate the non-response weight ($NR_{address}$), which is equal to the reciprocal of the predicted probability of response based on the model.

$$NR_{address} = (probability\ of\ response)^{-1}$$

[29] Mang, J., Küchenhoff, H., Meinck, S. and Prenzel, M. (2021), '**Sampling weights in multilevel modelling: An investigation using PISA sampling structures**', *Large-scale Assessments in Education*, Vol. 9, No. 6.

TABLE 8.8: SIGNIFICANT PREDICTORS IN THE NON-RESPONSE MODEL[a]

Country	Neighbourhood/ settlement typology	Special vulnerability situation	Barriers to accessing SP	Accompanied by site manager or mediator	Description of place of household
CZ	N/A	N/A	Yes	No	Yes
EL	N/A	N/A	Yes	No	Yes
ES	No	Yes	No	No	Yes
HR	N/A	N/A	No	No	Yes
HU	N/A	N/A	Yes	Yes	Yes
IT[b]	N/A	N/A	No	No	Yes
MK	N/A	N/A	No	No	Yes
PT[b]	N/A	N/A	No	No	Yes
RO	N/A	N/A	No	No	Yes
RS[b]	N/A	N/A	Yes	No	Yes

Notes:

[a] *N/A, not applicable.*

[b] *In Italy, almost all interviewers were accompanied by a mediator or site manager. In Portugal and Serbia, very few were accompanied. This could explain why this variable was not significant in these countries.*

8.3. CALIBRATION WEIGHTS

The last stage of in-country weighting was to weight the individual-level data against the population profile of the Roma population. Prior to calibration, a pre-weight was calculated as the design weight up to household level and was applied to the data before running the calibration. The pre-weight was calculated as follows.

Step 1: Multiply the design weight to address level by the non-response weight.

$$\textit{Step 1 weight} = DW_{address} * NR_{address} = [(Prob1A) * (Prob1b) * (Prob2i)]^{-1} * (\textit{probability of response})^{-1}$$

Step 2: Standardise the weight to have a mean of 1 for all responding households.

Step 3: Trim the weight calculated in step 1.

Step 4: The pre-weight (design weight up to household level) is the product of the trimmed weight calculated in step 2 and the capped within-address household weight (*Prob3A*).

Calibration weighting adjustments depend on reliable population data covering the survey population. The challenge for the RS2021 was that data on the profile of the population were difficult to obtain. This was primarily because publishing data on the Roma population based on census data is prohibited in some countries or the data were simply not captured in the census questionnaire.

Background research identified sources of population data on age and sex in each country, and these were used to establish population targets for calibration weights in seven of the 10 countries. Data from the PSU frame were used to define the targets for weighting by region and rurality. However, rather than using the whole frame, only the covered population based on the PSU frame was used.

For age and sex, population data were only available for the total population (0+) and not the covered population. Nonetheless, age and sex targets were included for two main reasons: (1) the age and sex profiles of the covered population was not expected to differ much from the entire population and (2) age and especially sex are known to affect the likelihood of individuals responding, so including these variables could help to further reduce bias in the survey estimates.

Individual-level weights were calculated based on the 0+ Roma population (IWP_ALL) and the 16+ Roma population (IWP). The 0+ Roma population weight was calculated first, and the 16+ respondent weight was derived from the 0+ weight. This approach was preferred, as for region and rurality only 0+ population data were available.

Table 8.9 summarises the approach to calibrating the 0+ and 16+ individual weights. The full list of targets used by country for calibration weighting are listed in **Table 8.10**, along with the source for each. **Table 8.11** shows the 0+ population targets in each country and any deviations from this for the unweighted sample profile.

The raking calibration weighting procedure was applied using the statistical software package SPSS.[30] For all countries, the full design and non-response weighted samples were calibrated. The individual 16+ weights (IW_trimmed and IWP) are available for respondents only, while the individual 0+ weights (IW_All_trimmed and IWP_ALL) are available for all 0+ members of the household.

TABLE 8.9: STEPS IN CALIBRATION WEIGHTING FOR INDIVIDUAL WEIGHTS

0+ individual weight	16+ individual weight
1. Weight the respondent data for all 0+ household members by the pre-weight.	1. Replicate steps 1 and 2 for the 0+ weight.
2. Calibrate the pre-weighted data to the population targets listed in **Table 8.11**.	2. Multiply the weight calculated in step 1 by the total (0+) covered population across both the PSU frame and the SSU frame to get the projected 0+ weight.
3. Percentile trim the calibrated weight to obtain the final standardised 0+ weight **(IW_ALL_Trimmed)**.	3. Sum the 0+ weights in step 2 for all 16+ members in the household to get a respondent-level 16+ weight, and assign this weight to each respondent.
4. Multiply IW_ALL_Trimmed by the total (0+) covered population across both the PSU frame and the SSU frame to get the projected 0+ weight **(IWP_ALL)**. See **Table 4.7** in **Section 4.5.2** for the total (0+) covered population by country.	4. Standardise the 16+ respondent weight in step 3 so that the mean of the weights is 1 across all respondents.
	5. Percentile trim the standardised weight from step 4 to obtain the final standardised 16+ respondent weight **(IW_Trimmed)**.
	6. Project the trimmed standardised 16+ respondent weight back to the covered 16+ Roma population estimated in step 3 to obtain the final projected 16+ respondent weight **(IWP)**.

[30] Peck, J. (2011), '**Extension commands and rim weighting with IBM® SPSS® statistics: Theory and practice**'.

TABLE 8.10: POPULATION BENCHMARKS USED FOR CALIBRATION WEIGHTING

Country	Variables	Source
CZ	Region	Frame
	DEGURBA	Frame
	Age	2011 census
	Gender	2011 census
EL	Region	Frame
	DEGURBA	Frame
ES	Region	Frame
	DEGURBA	Frame
	Age	Fundación Secretariado Gitano 2011
	Gender	Fundación Secretariado Gitano 2011
HR	Region	Frame
	DEGURBA	Frame
HU	Region	Frame
	DEGURBA	Frame
	Age	Micro-census 2016
	Gender	Micro-census 2016
IT	Region	Frame
MK	Region	Frame
	DEGURBA	Frame
	Gender	Micro-census 2016
PT	Region	Frame
	DEGURBA	Frame
	Age	Estudo nacional sobre as comunidades ciganas 2014
	Gender	Estudo nacional sobre as comunidades ciganas 2014
RO	Region	Frame
	DEGURBA	Frame
	Age	2011 census
	Gender	2011 census
RS	Region	Frame
	DEGURBA	Frame
	Age	2011 census
	Gender	2011 census

TABLE 8.11: POPULATION TARGETS FOR THE 0+ POPULATION AND THE DIFFERENCE FROM THE 0+ UNWEIGHTED SAMPLE

		CZ		EL		ES		HR		HU		IT		MK		PT		RO		RS	
		Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)	Population target (%)	Difference (% points)
Region	1	3	0	27	-4	4	0	6	-1	8	1	25	-1	2	0	23	-2	13	0	21	6
	2	2	0	2	-2	7	-2	4	-3	8	7	34	3	14	2	8	3	21	3	29	-3
	3	6	-1	30	-15	9	3	15	-4	6	1	18	-4	5	-1	25	6	10	-3	12	3
	4	40	2	41	20	10	0	5	2	4	-2	24	2	2	1	28	-5	10	1	39	-7
	5	14	0			26	1	7	-1	12	-3			14	1	16	-2	19	-1	0	0
	6	11	1			45	-3	31	14	27	6			10	2			12	1	0	0
	7	5	3			0	0	6	-5	27	-7			10	-2			8	0	0	0
	8	20	-5			0	0	9	1	9	-3			45	-3			7	0	0	0
	9					0	0	8	-3					0	0					0	0
	10					0	0	10	-1					0	0					0	0
DEGURBA	1	49	-5	40	0	72	2	34	-7	17	-2			71	-1	44	-1	21	-2	35	3
	2	39	3	34	-8	23	-1	37	-1	34	4			28	0	36	6	28	3	50	-1
	3	12	1	26	8	5	-1	30	8	48	-2			1	1	20	-4	52	0	15	-2
Gender	1	52	-3			51	-1			51	-2			51	-1	51	-1	51	-2	51	0
	2	49	3			49	1			49	2			49	1	49	2	49	2	49	0
Age bands	1	24	5			16	-2			31	-3					37	-9	34	-12	32	-14
	2	16	1			19	-1			41	-4					21	-5	18	-1	25	2
	3	17	-2			18	-9			22	1					8	-1	16	-1	26	3
	4	16	-1			8	2			3	2					19	3	14	0	13	6
	5	14	-3			20	2			3	3					8	3	8	5	4	3
	6	9	-2			11	3									4	4	6	4		
	7	3	2			5	2									3	5	4	4		
	8					3	2														
	9					1	1														

8.4. TRIMMING

The two-stage sampling method and the differences between the prevalence in the frame and in the field resulted in large variations between weights. Large weights can result in substantial losses in sample efficiency, so it is common practice to trim weights. Trimming was introduced at three stages during the weighting procedure:

(1) threshold trimming at the household selection stage of the design weight calculation;
(2) percentile trimming for the combined design and non-response weight (pre-weight for calibration weighting);
(3) percentile trimming for the calibrated weight.

Trimming iteratively rather than after the calibrated weights are calculated avoids disproportionally affecting certain cases, for example those that were initially sampled at a lower rate. The level at which the weights were trimmed was based on a sensitivity analysis conducted to find the right balance between minimising bias and reducing variance.

8.4.1. Trimming the combined design and non-response weight

The distribution of weights was skewed towards lower values, so the trimming was applied only to larger values. Twenty trimmed weights were calculated based on trimming at the 80th to 99th percentiles. For each trimming step, the biasing effect on four key indicators (**Table 8.12**) was calculated.

TABLE 8.12: KEY INDICATORS USED FOR SENSITIVITY ANALYSIS

Key indicators	Variable name
Share of Roma who felt discriminated against in the 12 months before the survey because they were Roma, respondents only	*dis12overall*
Early leavers from education and training, household members, 18–24 years old	*early_ leaver*
Share of people who self-declared their main activity status as 'paid work', household members, 20–64 years old	*work*
Share of people living in housing deprivation, household members	*housedepr*

An estimate of *Bias* was calculated for each indicator (*i*) for each trimmed weight (*p*) as the difference in the indicator between the 99th percentile and each other trimmed weight (80th to 98th percentile). The estimate, trimmed at the 99th percentile, was used as the benchmark of an 'unbiased' estimate to avoid some very large outlying weights having an undue influence on the survey estimates. Similarly, the standard error of estimation (SEE_{ip}) was calculated for each indicator. An estimate of the mean squared error (MSE_i) for each trimmed weight was calculated as follows:

$$MSE_p = \frac{\sum_{i=1}^{4} Bias_{ip}^2 + SEE_{ip}^2}{4}$$

where SEE is the **standard error of estimation** for each indicator *i* for each percentile weight *p*, and is calculated as follows:

$$SEE = \sqrt{\frac{\sum (x_i - \bar{x})}{n-2}}$$

where *n* is the number of respondents answering indicator *x*, *xi* is the value for indicator *x* for individual *i*, and $\bar{x}$ is the mean value for indicator *x*.

Alongside the MSE estimate, an estimate of the efficiency of the sample based on the design effect due to weighting for each trimmed weight was also calculated. The **efficiency** is simply **1 divided by the design effect (D_{eff})**. D_{eff} was calculated as follows:

$$D_{eff} = \frac{n\sum_{i=1}^{n} w_i^2}{\left(\sum_{i=1}^{n} w_i^2\right)^2}$$

where n is the **sample size** and w_i is the **weight** for individual i.

A combination of the MSE and the efficiency were used to identify a percentile threshold for trimming in each country. **Figure 8.1** shows the efficiency and **Figure 8.2** shows the MSE by country based on the trimmed weights for different percentile thresholds.

FIGURE 8.1: EFFICIENCY OF THE TRIMMED WEIGHTS BASED ON DIFFERENT PERCENTILE THRESHOLDS

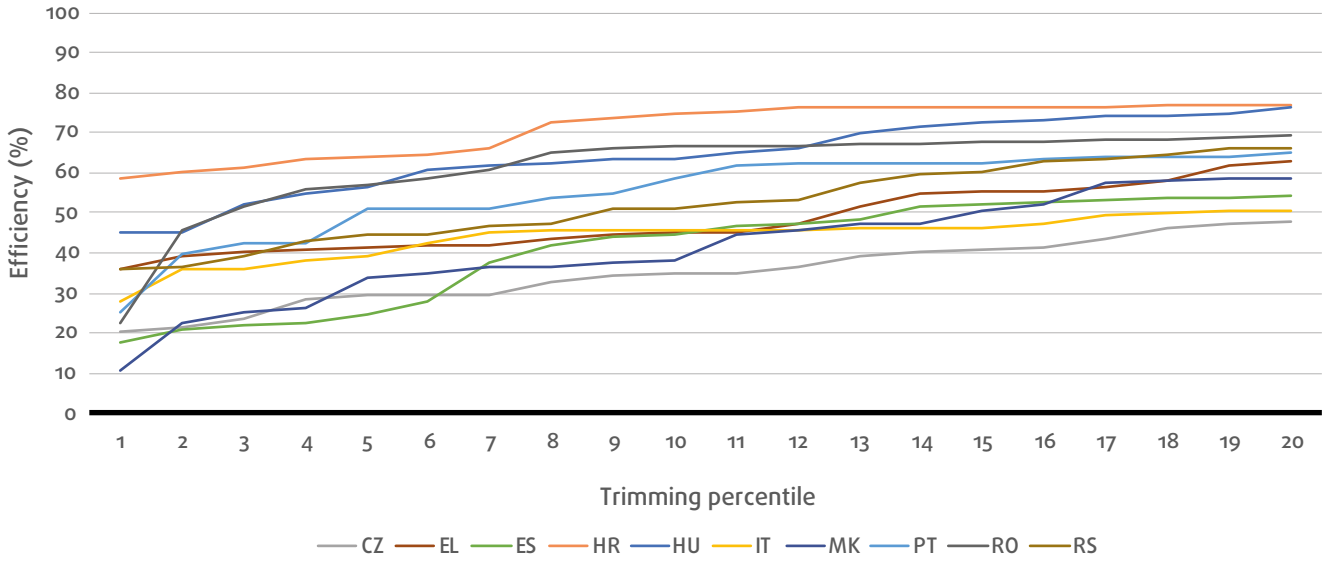
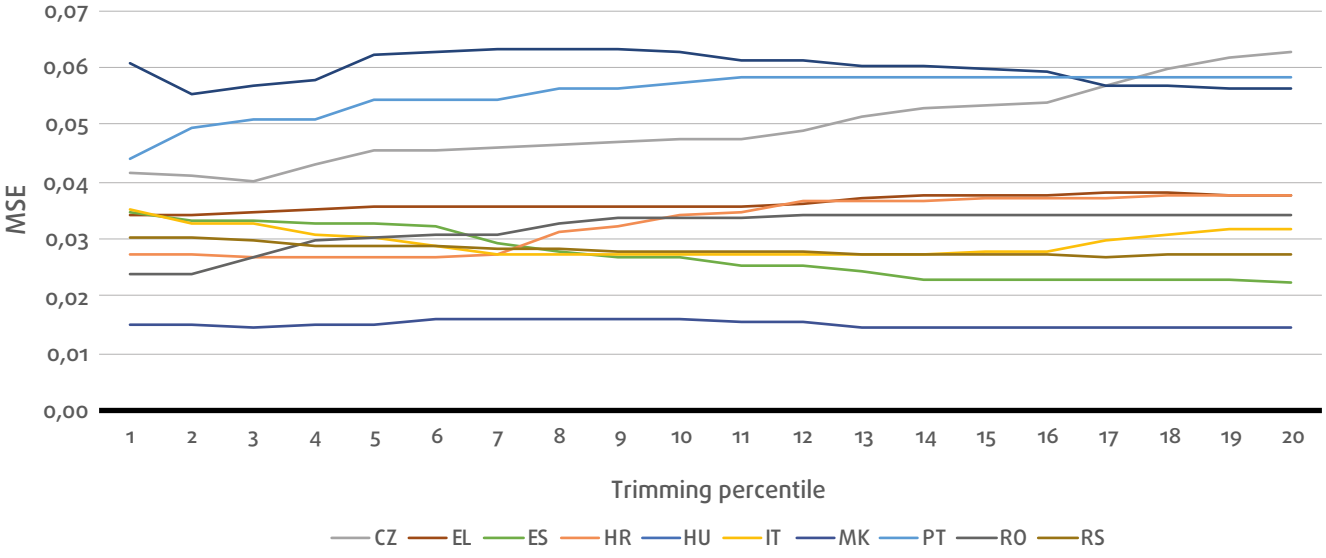


FIGURE 8.2: MSE OF THE TRIMMED WEIGHTS BASED ON DIFFERENT PERCENTILE THRESHOLDS



The final percentile used for trimming does not always align with the one that minimises the MSE because the acceptable efficiency and the level of trimming were also considered (**Table 8.13**).

TABLE 8.13: TRIMMING THRESHOLDS, RANGE, RATIO AND EFFICIENCY OF THE COMBINED DESIGN AND NON-RESPONSE TRIMMED WEIGHT

Country	Percentile that minimises MSE	Percentile used for trimming	Combined design and non-response trimmed weight				
			Range	Mean	Standard deviation	Ratio	Efficiency (%)
CZ	97	92	0.02–7.56	1	1.407	479	33
EL	99	98	0.06–7.46	1	1.261	132	39
ES	80	92	0.04–6.52	1	1.159	147	42
HR	96	96	0.08–5.69	1	0.767	70	64
HU	80	93	0.11–5.70	1	0.787	52	62
IT	92	93	0.07–8.74	1	1.141	123	45
MK	98	87	0.10–5.33	1	1.075	52	47
PT	99	95	0.04–6.76	1	0.966	182	51
RO	99	96	0.07–6.31	1	0.879	94	56
RS	83	91	0.07–6.08	1	0.997	89	51

8.4.2. Trimming the calibrated weight

The two calibrated weights, IW and IW_ALL, were also trimmed. Since the distribution of weights in this survey was skewed towards lower values, the trimming was applied only to larger values. Ten trimmed weights were calculated based on trimming at the 90th to 99th percentiles. When identifying a threshold for trimming, only the impact on efficiency at this stage was considered (**Table 8.14** and **Table 8.15**).

TABLE 8.14: TRIMMING THRESHOLD, RANGE, RATIO AND EFFICIENCY OF THE FINAL CALIBRATED 16+ WEIGHT

Country	Percentile used for trimming	Final calibrated 16+ trimmed weight (*IW_Trimmed*)				
		Range	Mean	Standard deviation	Ratio	Efficiency (%)
CZ	96	0.02–5.42	1	1.351	330	35
EL	97	0.02–5.30	1	1.280	302	38
ES	97	0.02–4.30	1	1.053	272	47
HR	98	0.03–4.54	1	0.893	156	56
HU	98	0.02–3.99	1	0.929	171	54
IT	97	0.04–4.82	1	1.139	120	44
MK	96	0.05–3.77	1	0.952	78	52
PT	95	0.01–3.83	1	1.077	310	46
RO	97	0.03–4.20	1	0.975	166	51
RS	99	0.03–4.82	1	1.108	182	45

TABLE 8.15: TRIMMING THRESHOLD, RANGE, RATIO AND EFFICIENCY OF THE FINAL CALIBRATED 0+ WEIGHT

Country	Percentile used for trimming	Final calibrated 0+ trimmed weight (*IW_ALL_Trimmed*)				
		Range	Mean	Standard deviation	Ratio	Efficiency (%)
CZ	99	0.02–7.80	1	1.438	381	33
EL	99	0.04–5.42	1	1.299	127	37
ES	99	0.03–5.06	1	1.007	151	50
HR	98	0.06–3.44	1	0.646	56	71
HU	99	0.05–3.75	1	0.813	77	60
IT	None	0.08–5.13	1	1.029	67	49
MK	None	0.11–6.01	1	1.038	53	48
PT	None	0.01–5.65	1	1.008	549	50
RO	99	0.04–4.80	1	0.950	128	53
RS	99	0.06–4.94	1	1.059	84	47

9. SURVEY QUALITY ASSESSMENT

The QAP for the RS2021 was designed in accordance with the quality assurance framework of the European Social Survey. It provided detailed targets for monitoring quality across all stages of the project (**Annex 2**). Providing monthly reports with the revised risk status helped in identifying where remedial measures would be required.

This section provides a cross-sectional analysis of how the key criteria of quality were ensured for the RS2021 along five dimensions: relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, and accessibility and clarity. For the most part, the details of the survey and the outcomes that are discussed in this section have also been described in earlier sections of this report.

9.1. RELEVANCE

The need for the enforcement of Roma empowerment strategies stems from the fact that Roma are Europe's largest minority group, and, as statistical data show, are over-represented in population segments affected by poverty and discrimination.

The RS2021 was commissioned by FRA to generate updated and comparable data to serve as baseline indicators for assessing the impact of existing policy measures and actions at state level, and for monitoring the recent EU Roma strategic framework for equality, inclusion and participation up to 2030.

The main identified users of the produced statistical data are:

- institutional users, such as FRA and the European Commission, and the governments of the EU Member States;
- statistical users, such as national statistical offices;
- academic and other research users;
- other users (Roma associations, Roma NGOs, the media, etc.).

The identified need for the above-mentioned users at the project design stage was to collect recent, robust data on the living conditions and social inclusion of Roma, to inform stakeholders and to use in designing future political strategies to improve the social inclusion of Roma and to tackle antigypsyism.

The RS2021 has responded to the regulatory needs of basing further policy design work on a minimum set of indicators (portfolio of indicators[31]) to be used to monitor the EU Roma strategic framework up to 2030.[32] The RS2021

[31] European Commission (2020), ***Annex to the Communication from the Commission to the European Parliament and the Council – A Union of equality: EU Roma strategic framework for equality, inclusion and participation***, COM(2020) 620 final, Brussels, 7 October 2020.

[32] European Commission (2020), ***A Union of equality: EU Roma strategic framework for equality, inclusion and participation***, COM(2020) 620 final, Brussels, 7 October 2020.

questionnaire and consequently the computed indicators have been developed to be comparable with EU-MIDIS II (2016) and the RTS (2019). Hence, they are in line with the expected outcomes to be delivered to the relevant stakeholders and cover all the proposed indicators.

A critical step in the process of enacting the principle of relevance for the RS2021 outputs was developing and enforcing procedures to consult the end users at all the relevant stages of project preparation, implementation and output delivery. These measures were developed both to ensure the relevance of the data to the actual needs of the Roma population, as mentioned previously in this section, and to enact the participatory aspect of the human rights-based approach to data put forth by the United Nations High Commissioner for Human Rights.[33]

The active involvement of the relevant groups of interest – Roma experts, Roma associations and NGOs, and Roma community representatives – enabled the RS2021 to be tailored to allow the development of high-quality, multilateral and comprehensive background research outputs, an updated survey tool, and accurate and accessible translations. This enabled the participation of the target population during fieldwork (e.g. through the employment of Roma interviewers or the facilitation of mediators) and the inclusion of Roma community stakeholders and experts in the interpretation of the survey results.

9.2. ACCURACY AND RELIABILITY

The assessment of the accuracy and reliability of the data covers the following types of error that occur in probability-based sampling surveys:

- sampling errors;
- non-sampling errors:
  - coverage and sample frame errors
  - measurement errors
  - processing errors.

Given the lack of statistical data on the Roma population in the survey countries, decisions had to be taken and revised in an iterative process during survey design. All decisions were discussed and agreed with Dr David Simon, the sampling expert lead on the side of the contractor, and with FRA experts.

The survey aimed to obtain a random probability sample of the Roma population in Croatia, Czechia, Greece, Hungary, Italy, North Macedonia, Portugal, Romania, Serbia and Spain to provide representative survey results in each country and to allow comparison across countries. To ensure that the survey was fit for purpose, Kantar Public, in collaboration with FRA, national fieldwork providers and Roma experts, conducted extensive research on the Roma population. The survey was built on the sampling approaches and experiences gained from previous surveys of the Roma population to refine and improve their methodologies, mainly EU-MIDIS II in 2016,[34] the Roma pilot survey in 2011,[35] the regional Roma survey in 2017[36] and the RTS in 2019.[37]

33 United Nations (2018), ***A human rights-based approach to data***, Geneva, Office of the United Nations High Commissioner for Human Rights.

34 FRA (2017), ***Second European Union Minorities and Discrimination Survey – Technical report***, Luxembourg, Publications Office.

35 FRA (2014), ***Roma Pilot Survey – Technical report: Methodology, sampling and fieldwork***, Luxembourg, Publications Office.

36 UNDP (2019), ***2017 Regional Roma Survey: Quantitative data collection of socio-economic position of marginalised Roma in Western Balkans – Technical report***.

37 FRA (2021), ***Roma and Travellers in six countries – Technical report***, Luxembourg, Publications Office.

The general approach was stratified multi-stage area-based sampling. A two-stage approach was used to select areal sampling units in all countries. In the first stage, PSUs were randomly selected in each stratum, with a probability proportional to their size. In the second stage, the sampled PSUs were mapped by Roma experts, and the mapped locations were clustered into SSUs and sampled with a probability proportional to their size. This two-stage approach was used because the PSUs in each country did not provide a sufficiently high proportion of the Roma population to make fieldwork viable (see details in **Section 4**).

9.2.1. Sampling error

All sample surveys are affected by sampling error, given that the surveys interview only a fraction of the total population. Therefore, all results presented are point estimates with underlying statistical variation. Small differences of a few percentage points between groups of respondents must be interpreted with caution because there may not be a statistically meaningful difference between the groups compared.

Only more substantial differences between population groups should be considered actual differences in the total population. Results based on small sample sizes are statistically less reliable and are flagged in figures and tables and not interpreted substantially. These include statistics that are based on samples of between 20 and 49 respondents in total. This could be the case, for example, when analysing the results for a specific category of respondents based on their socio-demographic characteristics, or when analysing a question that only a small set of respondents was asked to answer. Results based on fewer than 20 respondents are not shown.

Table 9.1 provides an overview of the commonly used 95 % confidence intervals for selected indicators. The confidence intervals reflect the uncertainty in the estimates due to sampling and are mainly influenced by the sampling design and the sample size. The standard errors presented account for both the sampling design and clustering.

TABLE 9.1: STANDARD ERRORS AND 95 % CONFIDENCE INTERVALS FOR FIVE KEY SURVEY ESTIMATES[a,b,c]

Country	*dis12lkwork*			*redisOverall1*			*EDU_achieved* (ISCED 0–2)			*EDU_achieved* (ISCED 3+)			*work*			*housdepr*		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
CZ	56	7	42–68	10	3	6–19	79	4	71–86	20	4	14–28	45	3	39–52	7	2	5–11
EL	52	8	36–68	6	4	2–19	94	1	92–96	5	1	3–8	33	3	26–40	68	4	58–76
ES	36	4	28–44	4	1	2–8	85	2	82–88	–	–	–	14	2	11–18	25	2	21–30
HR	29	5	19–41	5	2	2–12	76	3	70–81	24	3	19–30	41	3	35–47	55	5	44–65
HU	26	4	20–34	3	1	1–8	65	2	61–69	34	2	30–39	62	1	59–65	37	3	30–44
IT	17	4	11–26	0	0	0–1	85	2	80–89	11	2	8–15	61	3	55–66	54	5	44–64
MK	25	5	16–37	2	1	0–8	81	3	74–86	19	3	14–26	46	3	40–53	50	7	37–64
PT	81	7	62–92	2	1	1–8	95	1	92–96	4	1	2–6	31	4	23–40	66	6	52–77
RO	23	4	16–31	2	1	1–4	80	2	75–84	20	2	16–24	41	2	37–46	70	3	62–76
RS	37	10	20–58	3	1	1–7	74	3	68–80	26	3	20–32	51	3	46–56	54	5	43–64

Notes:

[a] *The figures were computed on the IR datafile (N = 8,461).*

[b] *dis12lkwork is the share of people who felt discriminated against in the 12 months before the survey because they were Roma when looking for work; redisOverall1 is the share of people who felt discriminated against (in any area) in 12 months before the survey because they were Roma and reported the last incident of discrimination; EDU_achieved is the highest achieved education level; work is the share of people 20–64 years old who self-declared their main activity status as 'paid work'; and housdepr is the share of people living in housing deprivation (i.e. living in an apartment that is too dark, or with a leaking roof, no bathroom/shower or no indoor toilet).*

[c] *A is the indicator value (%); B is the standard error (%); and C is the 95 % confidence interval (lower bound–upper bound (%)).*

9.2.2. Non-sampling errors

Non-sampling errors are present in all types of survey, including censuses and administrative data collection. They arise for a number of reasons, for example the frame may be incomplete, some respondents may not accurately report data or data may be missing for some respondents.

Non-sampling errors can be classified into two groups.

- Random errors are errors whose effects approximately cancel out if a large enough sample is used, leading to increased variability.
- Systematic errors are errors that tend to go in the same direction, and thus accumulate over the entire sample, leading to a bias in the final results. Unlike random errors, this bias is not reduced by increasing the sample size. Systematic errors are the principal cause of concern in terms of a survey's data quality, and are therefore described further in this section.

Coverage error

One of the main objectives of the sampling design in the RS2021 was to maximise the coverage of the Roma population, to ensure that the sample represents the wide and diverse Roma population. Given the time and cost implications of screening households to survey Roma, the areas with very few or dispersed populations were excluded. The minimum level of coverage across both the PSU frame and the SSU frame was set at 70 %, but ideally it would be higher.

The thresholds used for exclusion varied slightly by country and frame due to the size and level of dispersion of the Roma population (**Table 4.4**). The coverage exceeded 80 % at the PSU selection stage in all countries.

The total coverage, across both the PSU and the SSUs, exceeded the 70 % target in all countries except Portugal, where the mapped Roma population was much more dispersed and was far smaller than expected (**Table 4.5**). This represents a marked improvement on previous surveys of the Roma population, where coverage typically did not reach over 70 % for an equivalent measure at PSU level. The coverage achieved in EU-MIDIS II was 68 % in Croatia, 79 % in Czechia, 64 % in Greece, 61 % in Hungary, 70 % in Portugal, 64 % in Romania and 65 % in Spain (see EU-MIDIS II technical report).[38]

It should be noted that there were discrepancies between the Roma population in the PSU frame and the mapped Roma population in the sampled PSU, across all mapped locations (SSUs). **Table 9.2** shows the Roma population in the PSU frame versus the mapped Roma population in all sampled and worked PSUs in each country. When calculating the coverage of the SSU frame in each PSU, we used the mapped population as the denominator for the calculation rather than the frame-based population estimate. There were two reasons for making this decision: firstly, the mappers were asked to map all Roma living in the sampled PSUs, and secondly, the PSU estimates were calculated from older and potentially less reliable data (for more details, see **Section 10**).

[38] See FRA (2017), ***Second European Union Minorities and Discrimination Survey – Technical report***, Luxembourg, Publications Office, Table 4.12.

TABLE 9.2: ROMA POPULATION – MAPPED VERSUS FRAME (WORKED PSUS ONLY)

Country	Roma population on frame	Mapped Roma population	Difference between mapped and frame
CZ	166,271	105,037	0.63
EL	81,015	61,057	0.75
ES	46,440	51,155	1.10
HR	17,777	16,031	0.90
HU	121,729	100,322	0.82
IT	97,100	97,100	1.00
MK	20,547	16,721	0.81
PT	380,992	141,756	0.37
RO	290,277	263,642	0.91
RS	67,002	67,756	1.01

Note: The figures were computed on the PSU dataset.

Measurement errors

This section reports the recorded and possible types of measurement error and analyses the impact that these might have had on the survey estimates. Where available, factual, registered information and data in support of measurement bias are provided. Where this is not possible, the analysis provides the contractor's expert knowledge of the causality of this type of error. A range of typically occurring types of sources of measurement error, especially considering the multinational scope of the survey efforts, were identified in the RS2021.

Survey instruments

The survey instruments used for the RS2021 were the screener (the PSU contact sheet and ECS) and the questionnaire itself. The screener was developed jointly by the contractor and FRA and was a newly created document.

The questionnaire, on the other hand, was based on parts of and contained relevant questions from earlier surveys, the RTS 2019 and EU-MIDIS II from 2016. Although owing to comparability concerns the questionnaire variables were mostly similar to the earlier surveys, thorough revisions were made to ensure the flow, logic and correctness of the whole questionnaire and individual questions. The contractor also worked with its Roma survey expert to ensure that new questions were well adapted to the Roma population.

The survey instruments were translated using the TRAPD methodology, which ensures a high degree of coherence between translations, but also the appropriate localisation of individual terminology and grammar structures. All the personnel involved in translation were part of the extensive network of certified translators that Kantar Public Brussels maintains for multinational survey efforts. Despite the comprehensive translation method and additional checks on the national scripts, some translation issues or translation overlay issues were detected during fieldwork (see **Section 7**) and call-backs or revisits were set up to collect as much of the missing information as possible.

To facilitate respondents' comprehension of the questionnaire, a Romani glossary was also developed and given to all interviewers to use if necessary owing to language barriers during interviewing.

In addition, the instruments were tested during the piloting survey (**Section 5**). Some revisions to the screener were added at the beginning of main-stage fieldwork as a result of data quality checks (**Section 7**).

Nevertheless, it is possible that, because of the complexity of the questionnaire, the high number of sensitive questions and, sometimes, language barriers, there was space for measurement error to skew the estimates.

It is noteworthy that according to interviewers' assessments 60 % of respondents had 'good', 'fair' or 'poor' command of the language of interview, while the other 40 % had 'very good' or 'excellent' command of the language. The share of respondents with an average or low comprehension of the language of the survey might have induced a certain degree of bias in the results.

The Romani glossary provided some support in cases where misunderstanding arose, but overall was used for only 9 % of the accepted interviews. Furthermore, 38 % respondents had not fully understood at least one question or several questions. The reason most often stated for this was that the questions or items were difficult to comprehend owing to their phrasing or formulation (see **Section 7**). This indicates an elevated degree of complexity of the questionnaire, especially in the context of the national language proficiency of the respondent base.

Data collection method

All the national agencies involved in data collection used the CAPI method by using tablets to collect the survey data. In addition, all the CAPI devices were running the same questionnaire software (Nfield), which laid out the national questionnaire versions on the same master script. These factors contributed, overall, to reducing measurement error due to potential discrepancies. Furthermore, where possible the list of items for a question was randomised to prevent unwarranted effects on the answer provided. Moreover, some of the lists were printed out, which facilitated the experience for some respondents.

Interviewer error

Several actions were taken to mitigate interviewer error. Interviewers were carefully selected (see **Section 3**). The interviewers were provided with detailed briefings and training and material in the preparatory stage, including mock interviews and group exercises. Quality checks were in place during fieldwork that were meant to minimise interviewer error, such as the supervision and initial observation of interviewers; and weekly quality checks on key data indicators, which resulted in follow-ups with interviewers and, if necessary, their re-briefing. In addition, some of the questions were validated by a separate team of interviewers, either by telephone or in person (see **Section 6**).

For each country, the maximum number of interviews conducted by each interviewer was set at 5 % of the total national target sample. This quality indicator was monitored on a weekly basis, and was largely respected. There were some exceptions, and a few interviewers were allowed – with justification – to exceed the limit.

To determine the degree of potential interviewer error in the collected data, it is possible to examine some of the available in-project figures, for instance the data indicating the number of completed interviews that failed quality checks and were excluded from the dataset due to methodological inconsistencies. In this regard, 3.5 % of otherwise completed interviews were removed because the correctness of the methodological approaches used during fieldwork (including the use of MACS) could not be proven.

Respondent bias or error

Respondent bias or error can be expected in any survey conducted face to face, owing to the possibilities of social desirability, or a lack of knowledge or honesty for various reasons, survey-answering experience or receptivity to sensitive questions.

In the RS2021, an important source of variability might have been the cultural background and subethnic implications of answering surveys in general and interacting with third parties, especially when they are perceived to be acting on behalf of an official authority. These factors might have also had implications in responding to sensitive questions, such as those about level of income, the receipt of social benefits, children's education and experiences of victimisation. Respondents' difficulties in answering such sensitive questions, or at least some of them, were firmly stated in the interviewer feedback (see **Section 6.5.4**).

Efforts to prevent respondent bias implemented in the RS2021 interviewers' briefings included:

- a detailed project overview section at the beginning of the training that informed the interviewers about the nature of the project, the role of FRA overall and in the RS2021 in particular, and the reason for collecting the data and their main uses after project completion;
- dedicated sections on the cultural background and diversity of Roma, providing the interviewers with detailed information about Roma, responding to any questions the interviewers might have had about Roma and addressing their possible prejudices;
- extensive reviews of the survey instruments and tips on how to approach sensitive questions, and how to handle potentially emotionally charged situations;
- advice on how to avoid social desirability and maximise the chances of being able to carry out a one-on-one face-to-face interview to avoid the impact of the presence of other parties.

To reduce bias and enhance trust in the surveying exercise, many of the interviewers were accompanied by Roma mediators in the field.

An assessment of the potential extent of respondent bias can be indirectly subsumed by analysing the extent of logical mismatches of logically related estimates. **Table 7.8** provides the frequencies of illogical answers captured in the full collected sample. Of most relevance to this section are the elevated counts of discrepancies for questions pertaining to education, age at first birth and ages of relatives. In addition, more than 100 data points (N = 143) were removed in the income variable owing to unrealistic values registered in the full dataset.

A high level of missingness was registered in the dataset for the continuous income variable. As the question on income is sensitive overall, data showcased that the Roma population was even more reluctant to answer this question. Consequently, the missing values in this case were imputed (see **Section 7.2.3**).

Interview setting

Despite fieldwork being carried out when COVID-19-related restrictions were in place, the national agencies and locally cooperating NGOs ensured that all interviews were conducted face to face. Some 80 % of the interviews were conducted inside or just outside the respondents' homes, which are believed to be the optimal conditions for face-to-face interviewing of the general population.

The issue of concern regarding measurement error and bias in this regard is the potential influence of third parties on the respondents' answers. This was indeed reported in over a quarter of situations, with the most impact on several questions. **Section 6.5.3** provides a detailed analysis of the potential impact and concludes that at country and SP levels the impact of third-party interference was marginal.

Productivity of sampling points

Some 10 % of all SPs were unproductive (**Table 6.34**). The majority of these were identified as empty prior to fieldwork starting. Hungary had the highest number of unproductive SPs at 27 %, of which 87 % were identified as empty prior to

fieldwork starting and replaced with a spare. Of all productive SPs – where at least one interview was achieved – 19 % were only partially completed, that is, not all issued core addresses were visited. This is mainly due to the higher eligibility of Roma found during fieldwork than expected based on the SSU frame. Czechia, Portugal and Serbia had the highest levels of partially complete SPs.

Unit non-response

This section analyses the possibility of unit-level bias, stemming from under- or over-coverage. It focuses on the major socio-demographic characteristics region, sex and age (**Table 9.3**). The data are compared with the population sources available and deemed most trustworthy during the background research stage. Therefore, there are instances where the relevant population data are lacking. While the distribution across regions and by sex was mostly as expected, the contractor recorded frequent discrepancies between the number of younger children mentioned by respondents who took part in the survey and the population data available.

TABLE 9.3: POTENTIAL UNIT-LEVEL BIAS IN RESPECT OF REGIONAL, SEX AND AGE DISTRIBUTION

Country	Region (NUTS 3)	Sex	Age
CZ	Under-representation (by 5 percentage points) in the region **Moravian Silesia**.	Overall, the target distribution by sex was met.	No major discrepancies observed in the distribution by age.
EL	Over-representation in the **Aegean Islands** and **Crete** (by 20 percentage points) compared with the general population and under-representation in other regions, especially **Attica** (by 15 percentage points).	No reliable Roma population data were found. The juxtaposition with the general population data shows a similar pattern.	No reliable population data were found. Therefore, the comparison is not possible.
ES	Overall, the target distribution by region was met.	Overall, the target distribution by sex was met.	Under-representation in the 20–24 age group compared with the available population data (by 9 percentage points).
HR	There was a significantly larger population sampled in the region **Međimurska županija** than in the general population (by 14 percentage points).	No reliable Roma population data were found. A comparison with the general population data indicates the over-representation of women (by 4 percentage points).	No reliable Roma population data were found. Therefore, the comparison is not possible.
HU	Over-representation in the regions **North Hungary** (by 6 percentage points) and **Central Transdanubia** (by 7 percentage points); under-representation in the region **North Great Plain** (by 7 percentage points). There were difficulties in completing the target number of interviews in the eastern part of the country due to the low density of the Roma population.	Overall, the target distribution by sex was met.	Slight under-representation of individuals in the 15–39 age group compared with the general population.
IT	Overall, the target distribution by region was met.	No reliable Roma population data were found. The juxtaposition with the general population data shows a similar pattern.	No reliable population data were found. Therefore, the comparison is not possible.
MK	Overall, the target distribution by region was met.	Overall, the target distribution by sex was met.	No reliable population data were found. Therefore, the comparison is not possible.
PT	Over-representation in the region **Centre** (by 6 percentage points).	Overall, the target distribution by sex was met.	Under-representation of the 0–14 and 15–24 age groups (by 9 percentage points and 5 percentage points, respectively).
RO	Overall, the target distribution by region was met.	Overall, the target distribution by sex was met.	Age group skews, with children up to 14 years old in particular under-represented (by 12 percentage points).
RS	Under-representation of the regions **City of Belgrade** (by 6 percentage points) and **Jablanica District** (by 5 percentage points).	Overall, the target distribution by sex was met.	Children 0–14 years are under-represented (by 14 percentage points).

Note: The basis for these variables is the full sample of accepted interviews (N = 8,461).

Non-response error

There were seven cases with an INR rate of 50 % or more, which were deleted. In addition, there were 40 cases with an INR rate of between 25 % and 50 %. These were investigated on a case-by-case basis and 35 of them passed further quality control checks, while the rest were removed from the final dataset in the light of the relevant exclusion criteria (see **Section 7.2.2**).

Processing errors

Processing errors could arise from data entry, data editing, imputation of missing values or weighting.

Data entry

Data entry and coding were routinely monitored and revised (see **Section 7**, which describes the data quality control measures applied to the interim and final datasets). The scripting was performed centrally by the contractor and was thoroughly checked.

- Kantar CCT checked the questionnaire manually to ensure that it was accurate and complete.
- Kantar CCT flooded the script with dummy, or testing, data and revised the data output files to make sure that all questions were being asked, and ensured that all filters were correctly routed. The expected sample size for each question was used to see if the routing was accurate.
- FRA revised and provided comprehensive feedback with suggestions for improvements on the overall appearance of the scripts based on how they appeared on interviewers' tablets. All requested corrections and changes were maintained in a log.

All national agencies were provided with the same script for questionnaire, already translated into each of the languages to be covered by the survey, ensuring that the coding rules rejected all inconsistent answers reliably and comparably across all countries surveyed.

The data were collected using CAPI, which minimises some data entry errors caused by the interviewers. All agencies used the same data collection platform (Nfield). All data were collected in the same central server, which provided the processing team with secure and easy access to the data.

Some 27 % of the completed interviews were randomly back-checked (**Section 6.3.3**), which revealed some inconsistencies in scripts and unclear routing rules. Inconsistencies in the national scripts in Hungary and Portugal were corrected and reminders were sent to interviewers or respondents were revisited to collect the missing data. For a small number of interviews in these countries (N = 27), the agencies were not able to recover the data. After review, the interviews were kept.

Data editing and imputation of missing values

Data were edited mainly in SPSS and partly in R. All syntaxes were subsequently verified and approved by FRA.

During data collection, some data points were missing for various reasons. For the income variable (SI03), all these values were statistically imputed using the software R. If the income band was available, the respondent's income was imputed with a random figure from other respondents within this income band and within the same country. This was done for 3,976 cases where income was not stated but the income band was available.

For the 5,278 respondents who did not report their income in any way, a full imputation was performed using the K-nearest neighbours methodology (see **Section 7.2.3**). This imputation was performed using the same methodology as in EU-MIDIS II and the RTS. **Table 7.11** shows that the full imputation has

a moderate effect on the distribution of the data. Given the high number of missing cases, this change needed to be accepted.

Weighting accuracy

Initially, the sampling design in all countries was designed to be self-weighting to address level. However, to maximise coverage some SSUs with extremely low Roma prevalence estimates were included in the sample frame. When these SSUs were selected the number of addresses issued was capped at 100 to avoid over-burdening the interviewer. Capping the issued sample in these SPs resulted in variation in the probability of selection. However, this change in design had little impact on the variation in the design weights relative to two other factors, which became apparent during the mapping and fieldwork.

Firstly, the population identified in the mapped locations (SSUs) often did not correspond to the numbers expected based on the PSU information (see **Section 8.1.2**). In other words, the total mapped Roma population in a PSU did not correspond closely to the Roma population in the PSU frame. Secondly, once the SSUs were visited, the numbers of Roma households identified were often different from those expected based on the mapping information (see **Section 4.5.4**). It is difficult to determine the exact reason for these differences, as there could be several reasons that help to explain them: (1) inaccuracies in the expert mapping estimates, (2) small sample sizes in the SPs, (3) under- or over-reporting by sampled households during fieldwork or (4) the non-documentation or undocumented substitution of unproductive addresses by interviewers.

Each of these issues could help to explain the differences and, while every effort was made to minimise systematic errors associated with (3) and (4), it is possible that these issues are still present in the final data. These discrepancies between the PSU frame and SSU mapping and between SSU mapping and fieldwork outcomes eventually led to large variations in the design weights, and trimming was used to decrease these variations.

In three of the 10 countries the post-stratification weighting step relied on the sample frame information only (Croatia, Greece and Italy). In seven countries, reliable information on either sex or sex by age was also available for weighting (**Table 8.10**). The PSU sample frame information was considered reliable in all 10 countries, and it was possible to derive an estimate for the 0+ Roma population covered by the PSU frame in all countries, broken down by region and DEGURBA.

The external population data on sex and age were also considered sufficiently robust to use as population benchmarks for post-stratification weighting. Post-stratification weighting had minimal impact on the total variation in the final weights. This was because the net sample of respondents broken down by region and DEGURBA was similar to the covered population on the frame and because the 0+ Roma population in the responding households broken down by sex and age was similar to the external population benchmarks.

The main contributor to the large variations in the final weight was the variation in the design weights, which although controlled by trimming still led to the final weights being less efficient than had been expected at the sampling design stage. Some ideas on what could be done to mitigate these issues in future surveys of the Roma population are provided in **Section 10**.

Reliability

To achieve cross-country comparability in the RS2021 data, a number of measures were planned and subsequently implemented as part of the project to ensure a very high degree of similarity between countries in survey design, questionnaire translations (**Section 2.6**), centralised CAPI scripting (**Section 2.5**)

and data processing (**Section 7**), and centralised fieldwork monitoring and quality control (**Section 6.3**).

Design sample comparability

In all countries, a very similar sampling design was employed to survey the Roma population. The allocation of a sample to a stratum was proportional to its estimated Roma population, and Roma individuals were sampled using a stratified multi-stage cluster sampling design. The main difference in the design between countries was in the choice of PSUs, which was driven by the availability of population data on Roma at subnational level (see **Section 4**).

Comparability with general population

The questionnaire design and data processing of selected concepts and indicators calculated within the scope of the project allow partial and full comparability with the indicators available for the general population (**Table 9.4**). For all information on how the indicators were calculated and the difference compared with the Eurostat general population indicator, see **Annex 3**.

TABLE 9.4: COMPARABILITY OF INDICATORS FROM THE RS2021 AND EUROSTAT[a,b]

Indicator and variable name	Degree of comparability with Eurostat
Share of people who felt discriminated against in the 12 months before the survey because they were Roma in core areas of life – *dis12overall*	N/A
Share of people 16 and over experiencing hate-motivated harassment (five overall acts) because they were Roma in the 12 months before the survey – *vh_eth_12m*	N/A
Share of people 16 and over who were physically attacked because they were Roma (out of all respondents) in the 12 months before the survey – *vv_eth_12m*	N/A
At-risk-of-poverty rate (below 60 % of median equivalised income after social transfers) – *arop*	Partial
Children aged < 18 years who are at risk of poverty (below 60 % of the median equivalised income after social transfers) – *aropch*	Partial
Share of people aged 0+ living in a household in severe material deprivation (cannot afford four out of nine selected items, for example food and inviting friends over) (%) – *matdepr4*	Full
Children aged < 18 years living in severe material deprivation – *matdepr4ch*	Full
Share of people living in a household that cannot afford a meal with meat, chicken or fish (or vegetarian equivalent) every second day – *SIo8_02*	Full
Share of people living in a household where one person in the household went to bed hungry in the month before the survey because there was not enough money for food – *hunger*	N/A
Share of children aged 0–17 living in a household where at least one person went to bed hungry in the month before the survey because there was not enough money for food – *hungerch*	N/A
Share of people living in a household that is able to make ends meet with (great) difficulty – *endsmeet*	Full
Share of people who do not have a bank account – *SIo7r*	N/A
Share of people who felt discriminated against (in any area) in the 12 months before the survey because they were Roma and reported the last incident of discrimination – *redisOverall1*	N/A
Share of people aged 16+ who did not report the most recent incident of harassment due to their being Roma (of all the people who experienced harassment) – *VH_rep*	N/A
Share of people aged 16+ who did not report the most recent incident of physical attack due to their being Roma – *VV_rep*	N/A
Share of people aged 16+ who had heard of at least one equality body, national human rights institution or ombudsperson's office – *EBno*	N/A
Share of people who tended to trust the police – *PB15r_3*	Partial
Share of people who tended to trust the judicial system – *PB15r_2*	Partial

Indicator and variable name	Degree of comparability with Eurostat
Share of children aged between 3 years and compulsory school age who were attending early childhood education – *ECE_partic*	Partial
Share of people aged 20–24 who had completed at least upper secondary education – *EDUMAX*	Full
Share of children aged 6–15 years attending schools where all or most of their schoolmates were Roma, as reported by the respondents (selected countries only) – *hch05b2*	N/A
Share of children of compulsory school age (5–18) who were attending education, household members (depending on the country) – *EDU_attending_compulsoryage*	N/A
Share of household members aged 18–24 who were early leavers from education and training – *early_leaver*	Partial
Share of people aged 16+ who felt discriminated against because of being Roma in the 12 months before the survey when in contact with school authorities (as a parent/guardian or as a student) – *dis12eduinst*	N/A
Share of people aged 30–34 who had completed tertiary education – *edutert*	Full
Prevalence of hate-motivated bullying/harassment of children (due to their being Roma) while in school in the 12 months before the survey, out of all respondents who are parents/guardians of school-age children – *vh_school*	N/A
Share of people aged 20–64 years who self-declared their main activity status as 'paid work' – *work*	Partial
Share of young people with their current main activity in neither employment, education nor training (NEET) – *neet*	Partial
Difference in the paid work rate between women and men aged 20–64 years – gender employment gap	Partial
Share of people aged 16+ who felt discriminated against because of being Roma in the 12 months before the survey when at work – *dis12atwork*	N/A
Share of people aged 16+ who felt discriminated against because of being Roma in the 12 months before the survey when looking for a job – *dis12lkwork*	N/A
Difference in life expectancy at birth (general population versus Roma) – calculated externally	Partial
Share of people aged 16+ assessing their health in general as 'very good' or 'good' – *DHE01_r*	Full
Share of people aged 16+ with medical insurance coverage – *HEA_insurance*	N/A
Share of people aged 16+ who felt discriminated against because of being Roma in the 12 months before the survey when accessing health services – *dis12health*	N/A
Share of people living in housing deprivation (living in an apartment that is too dark, or with a leaking roof, no bathroom/shower or no indoor toilet) – *housdepr*	Full
Share of people living in a household that does not have the minimum number of rooms according to the Eurostat definition of overcrowding – *overcrowd*	Full
Share of people living in households without tap water inside the dwelling – *HLS04_1r*	Partial
Share of people living in households without a toilet, shower or bathroom inside the dwelling – *sanitation1*	Full
Share of people living in a dwelling with a leaking roof; damp walls, floors or foundations; or rot in the window frames or floors – *HLS06_3*	Full
Share of people living in a household that in the five years before the survey was forced to leave its accommodation or halting site – *eviction*	N/A
Share of people aged 16+ who had felt discriminated against because of being Roma in the five years before the survey when looking for housing – *dis5house*	N/A
Share of people living in a household with the following listed as problems in their accommodation: pollution, grime or other environmental problems in the local area, such as smoke, dust, unpleasant smells or polluted water – *HLS06_4r*	Full

Notes:

[a] *Degrees of comparability: 'full' indicates that the RS2021 indicator is fully comparable with the existing Eurostat general population indicator; 'partial' indicates that the RS2021 indicator differs from the corresponding Eurostat general population indicator, mainly in the data collection approach.*

[b] *N/A, not applicable, as there is no adequate Eurostat general population indicator that can be compared with this RS2021 indicator.*

9.3. TIMELINESS AND PUNCTUALITY

The survey was commissioned in April 2020 and was planned to deliver all outputs within 18 months of the contract signature date. Nevertheless, as detailed in other sections of this technical report (**Sections 1** and **6**), the project time line had to be reviewed eight times in total. The main reasons for the delays were related to the need to ensure that sufficient time was allocated to the finalisation of the preparatory stages, of which some turned out to require more time to ensure good-quality outputs. The preparatory activities in question were the development of the script, the piloting of the survey, and the finalisation of the revised post-pilot script and survey (fieldwork) manuals.

In addition, significant delays in fieldwork were observed. These delays were in part due to the delayed start and end of fieldwork in Czechia, Hungary and Portugal because of the COVID-19-related lockdowns in those countries. They were also caused by major slow-downs in fieldwork progression in the other target countries due to COVID-19 restrictions, which meant that fieldwork was extended by over two months compared with the plan.

Overall, the contract was extended by a month, to 19 months.

9.4. COHERENCE AND COMPARABILITY

The objectives of the RS2021 clearly delineated the need for solid comparability, as the resulting data would be used to populate a minimum set of indicators that would allow comparison with selected results of FRA's EU-MIDIS II from 2016 and RTS from 2019. The RS2021 and the RTS 2019 provide the baselines for the headline and secondary indicators used to monitor the targets of the EU Roma strategic framework up to 2030.

The key conceptual and methodological aspects of the RS2021 were aligned with the other FRA Roma surveys (**EU-MIDIS II** and the **RTS** 2019) with regard to the following aspects.

- **Definition of the eligible survey population:** Individuals aged 16 or over who self-identified as Roma (or, in the case of the RTS, Roma or Travellers) were eligible to take part in the survey. The terms 'Roma' and 'Travellers' were defined as umbrella terms that encompass a range of related groups based on self-identification. The people identified on the grounds of age and background must also have lived in the contacted household, and their usual place of residence must have been the survey country for at least six of the 12 months before the time of contact.
- **Wide use of the same question wording:** The RS2021 questionnaire closely resembles the main questionnaire developed for EU-MIDIS II. A few changes were implemented in the questionnaire based on the experience in the RTS and as a result of the EU Roma strategic framework up to 2030. The changes were mainly made to the discrimination, harassment and violence modules of the questionnaire and included new questions that were developed in the light of the COVID-19 pandemic.

Full comparability was achieved between the three surveys in terms of calculated indicators, although some modifications were implemented in the formulation of questions related to discrimination.

Some aspects are not fully comparable across the surveys, such as the use of different sampling methodologies, mainly between the RTS on the one side and EU-MIDIS II and the RS2021 on the other side; and the above-mentioned changes to the question wording, mainly between the RS2021 on the one side and EU-MIDIS II and the RTS on the other side.

In addition, the three surveys did not cover the same countries, with the widest geographical overlap between the RS2021 and EU-MIDIS II (Croatia, Czechia, Greece, Hungary, Portugal, Romania and Spain).

Full comparability was achieved between the RS2021 and Eurostat indicators on material deprivation, housing deprivation, overcrowding, health-related activity limitations (Global Activity Limitation Indicator) and the subjective health assessment. Comparability between headline and secondary indicators calculated from the RS2021 and Eurostat's general population indicators is presented in **Table 9.4**.

The RS2021 is comparable to the national Roma surveys implemented in Slovakia (in terms of survey methodology, survey instruments and calculated indicators) and in Bulgaria (in terms of calculated indicators). Partial comparability with Bulgaria is due to the difference in survey methodology (the Bulgarian survey targeted the general population in its ethnicity question) and the survey instrument (the questionnaire needed to be adjusted to the general population sample). The comparability of the RS2021 with Roma indicators available in other countries, such as Croatia and Hungary, is difficult to assess because detailed information is unavailable.

9.5. ACCESSIBILITY, CLARITY AND DISSEMINATION FORMAT

All project stages, decisions and outcomes were thoroughly documented. The clarity of the data was assured by ensuring a high standard of questionnaire design and revision and translation processes, by developing detailed and clear codebooks for each dataset, and by documenting all the scripting and data processing changes and quality checks in a dedicated DQL. All the final datasets follow the definitions presented in the relevant final codebooks.

FRA has conducted a series of consultations with country stakeholders on preliminary results to collect feedback on their interpretation prior to finalising the main results report. FRA prepared and published the RS2021 main results report[39] (hard copy and online) and country-level information sheets. The technical details on the implementation of the RS2021 will be available in a published technical report (online publication) and the RS2021 questionnaire[40] (online publication). FRA will release aggregated data on its website through its interactive **data explorer tool**, and will provide access to anonymised micro-data – including the codebooks – for research purposes.

[39] FRA (2022), ***Roma in 10 European countries – Main results: Roma Survey 2021***, Luxembourg, Publications Office.

[40] FRA (2022), ***Roma Survey 2021 – Questionnaire***, Luxembourg, Publications Office.

10. LESSONS LEARNED

This chapter provides for each stage of the survey some key learnings and recommendations for the future. It also highlights difficulties faced as a result of the COVID-19 situation and potential learnings from these.

10.1. BACKGROUND RESEARCH

The background research and stakeholder consultation phase was a necessary stage to undertake to inform the final survey and sampling design. This phase was conducted early enough in the process to identify the key information needed to find the relevant statistical information about the Roma population and the sampling frames available. It was also key to obtaining better information about the Roma population in each country to inform the questionnaire design, the training manual and the implementation of the survey. It was therefore useful in designing the whole implementation process of the survey.

This phase was done in complete collaboration with the NSEs. Involving the Roma NGOs in the project was also a crucial element of the success of the survey. Background research and stakeholder consultations were planned early in the survey process, which ensured that the necessary information was gathered at an early stage for the sampling design. The time allocated to the background research was sufficient to obtain the necessary information to build the areal sample frames and identify sources for post-stratification weights.

Recommendation
Allocate the same amount of time to this phase in any further studies.

10.2. SAMPLING

10.2.1. Sharing of prior data and experiences

The technical reports from previous surveys were shared with the contractor on commissioning the survey. These reports were helpful to understand the sampling designs used previously and to identify issues that previous contractors had. However, they often fell short in providing the level of detail necessary to know exactly what had been done.

Recommendation
More information should be shared with the contractor on commissioning, for example the sample frames, the mapping process, the PSU and SSU selection processes, and the weighting syntax and outputs.

10.2.2. Sampling design

The whole sampling design process was conducted centrally by the contractor's sampling team. This central coordination of sampling was essential to the quality of the end product and to the harmonisation of approaches and outputs. However, close cooperation with countries and transparency towards them were also of high importance.

The selection of spare PSUs and SSUs was also essential, as a reasonable number of PSUs and SSUs were replaced during fieldwork, mainly owing to the absence of Roma population in these areas but also because of safety concerns.

Over-sampling strata based on Roma prevalence or rurality was not required, as Roma prevalence in the PSU frame was not a good indicator of fieldwork costs. For example, many low-prevalence PSUs had a high prevalence of Roma in the sampled SSUs because mapping identified hyper-localised areas where most Roma in PSUs live.

Recommendation

- *Use a proportionate sampling design when sampling PSUs by stratum to maximise efficiency.*
- *Document the sampling approach and the sampling stages before and during the process – including all the modifications, requests for SP replacements and requests to increase the number of interviews per interviewer, among other things – to assure the quality of the process and ensure the fully accurate reporting of what was done in the field.*
- *Sample frames and samples including information on the PSU and SSU provided by the contractor to FRA should be clearly linkable to the final datasets (IR, ECS and PSU) and in a standardised format across the countries.*
- *PSU and/or SSU selection files need to be replicable (i.e. selection syntax needs to be provided with a seed) and individual steps need to be annotated in these files. The resulting datasets need to have clear labelling linkable directly to PSU/SSU sample frame files. They also need to have main and spare units marked. If more datasets are used (e.g. one per country), ensure that all datasets have an identical structure to allow the easy combination of the datasets.*

10.2.3. Mitigation strategies for differences in the Roma prevalence in the secondary sampling unit frame and during fieldwork

In both the RS2021 and EU-MIDIS II, the prevalence of Roma captured during fieldwork was often very different from that in the frame. Even a detailed expert mapping of PSUs (not used in this form in EU-MIDIS II) that provided localised information on Roma in selected PSUs resulted in differences vis-à-vis the fieldwork outcomes (see **Section 4.5.4**)

The two 'in field' strategies to compensate for these differences are the dropping rule and the stopping rule (see **Section 4.6.5**). These rules offer a solution for situations where we see disparities between the frame and fieldwork prevalence. However, both have their own problems.

Stopping rule

The stopping rule can be an issue if the Roma prevalence on the ground is systematically higher than it is on the frame, which was the case in Czechia, Portugal, Romania and Serbia. If the interviewers had visited all originally issued addresses in these countries, a far higher number of interviews in each country relative to the target number would have been achieved, as the stopping rule only kicks in once they have achieved three times their target number of interviews. Countries that over-achieve on the number of interviews they complete will request more funding to cover the extra fieldwork costs, which can have implications for the fieldwork in other countries, assuming a fixed budget.

Recommendation

Alternative options to the stopping rule could be introduced to adjust the issued address count during fieldwork, or a stopping rule threshold could be introduced that is much closer to the original expected number of interviews

in the SP. The prevalence during fieldwork could be used to adjust the issued sample count, but this will have implications for the design weights, as will lowering the threshold for the stopping rule to a target number of interviews closer to that expected in each SP, for example a threshold target of 12 for an expected 10 interviews.

In the RS2021, the issued sample count was adjusted during fieldwork in each SP to reflect the achieved prevalences in the field. This helped to avoid the achievement of too many interviews in SPs where the prevalence in the field was significantly higher than it was in the frame and helped to ensure that the target number of interviews per country was more or less met. However, this strategy did have implications for the efficiency of the design weights (see ***Section 10.5****).*

Dropping rule

The dropping rule drops an SP after *n* successive unproductive (non-Roma) addresses have been visited, where *n* is calculated using the prevalence in the frame. There were two main concerns with this approach. Firstly, if the prevalence in the frame is very low, for example below 5 % (as was the case in Portugal), the number of addresses that require visiting before the SP can be dropped can increase markedly.

The other obvious issue with this approach is that the dropping rule is calculated based on the Roma prevalence in the frame, and if this has little relationship with the prevalence observed in the field this may have implications for coverage. For example, an SP with a low prevalence in the field but a high prevalence in the frame will have a higher chance of being dropped than another SP with the same low prevalence in the field but with a low prevalence in the frame.

The dropping rule in general modifies the inclusion probability, as it decreases the probability of the inclusion of Roma individuals from low-prevalence SSUs. If the prevalence is overestimated systematically, this effect will increase. If the overestimation is not systematic but random, then it will not increase the distortion of the inclusion probability but will increase sampling error.

Recommendation
Cap the dropping rule to a maximum number of addresses and accept a higher chance of dropping an SP where Roma do live in these very-low-prevalence SPs. In the RS2021, the cap was at 45 addresses. The alternative would be to exclude SPs with a prevalence below, for example, 5 %. However, this is likely to reduce coverage in some countries below the threshold of 70 %. Moreover, it may introduce bias if Roma living in less dense areas face different problems and discrimination.

10.2.4. Modified adaptive cluster sampling

The MACS approach was developed to help minimise errors in the selection of non-core households. To this extent, MACS appears to have performed better than the original ACS, with fewer than half as many interviews being removed from the RS2021 as from EU-MIDIS II for issues related to the non-core and core selection processes. However, there were still issues with the implementation that led to either selection errors or reporting errors. Reporting errors are errors in the assignment of core and non-core addresses and the allocation of each non-core address to the correct core address.

The software used for fieldwork in the RS2021 was not adapted to support the MACS design. Therefore, to ensure that each core address could be identified from the associated non-core addresses and that each sampled non-core address could be allocated to its correct core address, within the script we

asked interviewers to assign each address as core or non-core. They were only required to do this once, on the first visit to each address.

For each non-core address, they were also required to enter the core address ID (a three-digit numeric value between 001 and 999) that the non-core address belonged to. This was also done within the script. Most issues arose with this second requirement, as the interviewers had difficulty memorising the core address ID.

Recommendation

- *Use MACS instead of ACS in the SPs with low Roma prevalence.*
- *The CAPI software or script should be updated to avoid the need for interviewers to recall information on core address ID. Rather, it should be pre-populated so that they only need to confirm it. For example, for each new address the interviewer visits the software/script can automatically assign it as core or non-core and ask the interviewer to confirm that the assignment is correct. The software/script should do this based on the following logic.*

(1) The first address visited is always core.
(2) If the first address is productive (Roma household), then the next n *new addresses visited are assigned as non-core, where* n *is equal to the selection interval.*
(3) If the first address is unproductive (non-Roma or unknown eligibility) then the second address is assigned as core. Then steps 1 and 2 are repeated, substituting the first address for the second address visited.
(4) Once the number of non-core addresses visited is equal to n*, the next new address visited is assigned as core and steps 1 to 3 are repeated.*

The allocation of the core address ID to the non-core addresses should be fairly easy to implement based on the logic described above. For each address assigned as non-core, the address ID allocated to the latest core address should be used. The latest core address should be the one that preceded the allocation of the non-core addresses.

This logic assumes that the interviewers work in a systematic way when selecting addresses, but this should be expected given the selection interval and the random walk approach to selecting households. Ideally, the software/script would automatically populate response cells with this information and simply ask the interviewer to verify it the first time they visit a new address.

10.2.5. Mapping the Roma population

Roma experts were responsible for mapping the Roma population in the sampled PSUs. A grid-based approach was used in the RS2021 to map the Roma population (see **Section 4.4.2**). The grid-based approach utilised a digital approach to mapping the Roma population to minimise processing errors. Extensive training and user documentation was supplied to the experts before they used the online mapping tool. The feedback received about this process raised some usability issues that would be fairly easy to fix.

Recommendation

- *Use the process of mapping the Roma population to identify SSUs and increase the efficiency of the fieldwork. Identifying the grids where Roma live within the PSU using the Geostat data allows the replication of the exercise in the future. It also allows Roma who live outside concentrated areas to be surveyed (assuming that the random starting point for the random walk is strongly enforced) and hence a broader Roma population to be captured.*

— *In the tool for mapping, the user should be able to first select as many neighbouring grids as they like, allowing them to supply a Roma population estimate for the selection of grids. This would make the process more intuitive for the user (mapper), for example because they are more likely to know how many Roma live in a village that covers five grids than the Roma population breakdown within that village across each grid. In the RS2021, a user was allowed to select one grid at a time and supply an estimate for the Roma population for each selected grid.*

In the RS2021, the country suppliers/experts were allowed to decide on the size of the grids, which varied between 1 km × 1 km and 250 m × 250 m. The assumption was that they would use smaller grids in more urban areas and larger grids in more rural locations.

The contractor was also concerned that the cognitive effort involved in mapping Roma in densely populated areas would be greatly increased if the user had to select multiple small grids and supply a population estimate for each. The previous recommendation mitigates this issue. However, with regard to the former issue there were some situations where the largest size of maps were used (1 km^2) to map Roma populations that were concentrated in only a small part of the grid. In these situations, the prevalence was likely to be fairly low and the likelihood that the start address would include Roma or be close to where Roma live was lower than if smaller grids were used.

Recommendation
Always use small grids (250 m × 250 m) when mapping. This should help to ensure that the start address is located close to where the Roma live and improve the efficiency of fieldwork.

In the RS2021, the 0+ Roma population in each PSU and the total 0+ population in each grid was supplied in the tool in a pop-up box when the user hovered over a grid.

Recommendation
In the tool for mapping, when the user inserts a Roma population estimate for a selected grid, the tool should check if the Roma population is equal to or lower than the total 0+ population for the grid. If it is not, the tool should prompt the user to check that their population estimate is correct. The prompt should include the total 0+ population for the selected grid next to the mapped Roma population for comparison. The prompt should then ask the user to confirm that their estimate is correct or allow them to correct it if necessary.

Where the Roma population is equal to or lower than the total 0+ population for the grid, a prompt is still recommended. This prompt should include the following information: the total 0+ population for the selected grid next to the mapped Roma population for comparison and the estimated prevalence of Roma in the selected grid. The prompt should then ask if the Roma population and prevalence are correct. If not, it should have the functionality to allow the user to adjust the estimate.

Once the PSU has been mapped, a further prompt should appear that shows the total Roma population mapped in the PSU and the PSU Roma population in the frame. If the mapped population is lower than the population in the frame, the prompt should ask if the user has mapped all Roma in the PSU. If the mapped population is higher, the prompt should check that the user has estimated the Roma population in the mapped locations correctly. If they have not, the tool should have the functionality to allow them to remap some or all of the PSU.

These recommendations may help to reduce the disparity between the mapped Roma population in a PSU and the population in the PSU frame. They may also reduce the differences in the frame-based Roma prevalence in the SSUs and the Roma prevalence observed in the field.

Recommendation
The mapping of spare PSUs should be conducted before fieldwork alongside the main PSUs rather than during fieldwork. This minimises delays in the progress of fieldwork and avoids processing errors, which can creep in if less time is dedicated to checking the mapped data.

An issue with this approach only arises if the Roma population are very transient and fieldwork is being conducted over a relatively long period. This was the case in Italy in the RS2021. In such cases, it is better to map the population as close to the time of fieldwork as possible.

10.2.6. Selecting a random start address

The start address in the RS2021 was selected at random from within the selected grid or grids. A random coordinate was selected that fell within the grid or cluster of grids and the closest residential address to this coordinate was selected. While this was an improvement on the approach used in EU-MIDIS II, for the approach to be truly random it assumes that the density of the housing population is fairly similar across the sampled grids. This is unlikely to be the case.

Recommendation
The random selection of a start address can be further improved by making use of freely available high-resolution population density maps.[41] These supply population data at the 30 m² grid size, which can be used to identify a random start address within the selected grid or grids. However, before using these high-resolution population maps it is important to check they are good at covering the unregulated housing areas where part of the Roma population are likely to live, as these can often be quite different from the general population.

10.2.7. Changing the start address

In some cases, changing the randomly assigned start address location during fieldwork was necessary to avoid dropping SPs where Roma were known to live (see **Section 4.6.3**). This was a logistical issue that delayed the start of fieldwork, as the contractor needed to identify where Roma people lived in the SSU. To do this, they then needed to obtain a GPS coordinate from the national agency and then randomly select a new start address within 250 m of this coordinate before finally developing the SP information and a map for loading into the field management system. This often meant that the interviewers lost a day of fieldwork while waiting for the updated start address.

Ideally, a change of start address during fieldwork should be avoided. The use of smaller grids, as outlined earlier in this section, is the preferred approach.

Recommendation
If the start address does require moving, the options include (1) selecting multiple start addresses in the same SSU and using proportionally shorter random walks from each, which could potentially introduce bias and therefore needs to be tested first, and (2) allowing the interviewers to start from a new start address that they supply. Neither is ideal, but, if the risk of the non-random selection of a start address is the bias that might be introduced from the unequal probabilities of selecting a non-random start location, this bias might not be so large in tightly clustered or very small localities.

[41] E.g. Meta (n.d.), '**High resolution population density maps**'.

10.2.8. Coverage

The final coverage estimate is based on the product of the coverage in the PSU frame and the coverage in the SSU frame (see **Section 4.5.2**).

Recommendation

Maximise coverage in the PSU frame to allow more flexibility for exclusions in the SSU frame. Excluding PSUs with low Roma prevalence makes little sense, as the PSU frame includes relatively large areas so the prevalences are typically low.

In addition, within the sampled PSUs Roma do not appear to be fully integrated into society and are therefore more likely to live in more concentrated localised areas, which might make fieldwork sufficiently productive. Excluding PSUs based on the estimated Roma population should be done with care, given the difference in the Roma population between the mapping and the frame observed in the RS2021. Exclude only the PSUs with very small Roma populations, perhaps below 50 or 100 individuals.

10.3. SURVEY IMPLEMENTATION

10.3.1. Questionnaire and contact sheets

Overall, questionnaire development went as planned. There were several iterations. Some questions newly introduced to the EU-MIDIS II questionnaire were considered quite sensitive (e.g. respondents' parents mortality and child mortality questions). Some respondents found them sensitive, but no major issues were reported.

Contact sheet development took more time than expected, starting with a more complicated version. However, it was key to reduce its length, as the long versions proved to be difficult for interviewers to use on fieldwork. Some national teams reported that it took too long to find an eligible individual.

Recommendation

Reduce time for screening to increase the efficiency of fieldwork. Reduce to a minimum the information that needs to be recorded by the interviewer prior to selection to avoid wasting a lot of time in the field filling in information for households where no Roma are living.

The script was modified several times until it was finalised. This was also a long iterative process that continued after the pilot. Some issues to mention that led to call-backs that could have been avoided are an issue with the household grid where the number of Roma household members reported differed from the number of Roma household members listed; an issue with the filtering of the discrimination question, with 'don't know' responses or refusals not considered in the questionnaire; and some issues with the two missing national bodies (awareness questions).

Recommendation

Include a script logic where appropriate (e.g. between the number of Roma people living in the household and the number of Roma people listed).

During the data analysis stage, a mismatch between responses on main activity status (HH04) and risk of discrimination (DX1_1_B and DX1_2_B) were identified. Not all those indicating that they were employed in HH04 responded 'yes' to DX1 questions. The mismatch is plausible given that the two questions follow different concepts, even though they should describe the same situation, namely being at work. HH04 was excluded from the DX2_B/DX3_B eligibility intentionally so that the discrimination experience module could stand alone, independent of the rest of the questionnaire.

Recommendation
The script should include a warning if 'no' is selected in DX1_1_B or DX1_2_B, while the response HH04 = 1 (paid work) should result in a pop-up message warning the interviewer about this discrepancy. Thus, more people would be asked about their experience of discrimination at work.

10.3.2. Translation

The translation process went well. TRAPD was implemented for new questions in all countries, and the translations were revised after the pilot.

Recommendation
Plan sufficient time to ensure that changes in the questionnaire are well integrated into the translation process. Allow more time between the pilot survey and the main-stage survey to allow time for translations and the national scripts to be updated. Keep the changes in the questionnaire to a minimum after the pilot to avoid losing the benefits of the TRAPD process while updating the changes.

10.3.3. Training materials and fieldwork materials

The implementation manual was very useful for the national project leaders but probably not completely suitable for interviewers. It was very detailed but too long for interviewers.

Recommendation
Create one implementation manual dedicated to the national project leader used to brief interviewers. In addition, draw up one fieldwork manual specifically dedicated to interviewers, focusing only on key points such as the practical implementation of the methodology, including the random walk and MACS.

Fieldwork materials were useful but did not make a significant difference to the implementation of the survey. People were convinced of the importance of the survey.

Recommendation

- *Do not overload interviewers with material and perhaps consider storing most of the material for the survey on the tablet (including by using digital showcards only).*
- *If GPS information on the SPs needs to be saved for future use, the data privacy notice needs to reflect this requirement.*

10.3.4. Central briefing and national briefing of interviewers

The central briefing was completed fully online in one day. It provided mostly the same information that would have been provided in person, but lacked the opportunities for interaction that face-to-face training provides. The online environment makes it more difficult for national teams to express their concerns and have a real dialogue around these issues.

Recommendation
Continue ensuring that face-to-face briefings happen.

The session on the Roma population, its cultural specificities and how to interview the population was very useful. It provided interviewers with perspective and an incentive to carry out the survey (owing to its high social value). The methodology, including the random walk and MACS implementation, was explained in a separate session.

Recommendation

- *Have an initial central briefing with all national teams prior to the pilot and then several online sessions to train teams on specific key elements:*

(1) implementing the random walk; (2) implementing the screener and selecting respondents, including the importance of listing all members of the household; and (3) using fieldwork material and the fieldwork monitoring tool.

- *Involve the contractor's central team in each national training session to cover the three elements listed above (the practical implementation of the methodology).*
- *Engage the appropriate trainer in the session on the Roma population (the cultural awareness session), ideally a Roma representative.*
- *The individuals or organisations acting as mediators in the field should also participate in the national briefings to understand the whole exercise, its objectives and its dynamics. They could also contribute to the better understanding of the specifics of the Roma population needed for the successful implementation of the survey.*
- *Conducting mock interviews before starting the fieldwork is crucial, as it is the only way for the interviewers to really take control over the questionnaire and the script.*
- *Ensure that the interviewers pay attention during the training, for example through checking the knowledge gained during the training using short tests at the end of the training day/sessions.*

10.3.5. Pilot

The pilot survey took place in Italy, North Macedonia and Serbia (see **Section 5**). It went well in all countries and helped to test the whole survey infrastructure and the questionnaire. It was more difficult in Italy, given the COVID-19 situation and the difficulty in accessing camps.

It was key to conduct the pilot in Italy, as the SPs selected included camps. This had its own challenges, including how to conduct the random walk, how to select respondents in these areas and how to work with the heads of camps. This helped in the anticipation of difficulties in fieldwork implementation in Italy, where implementing the random methodology was the most challenging.

The pilot also confirmed the key role played by the Roma mediators/NGOs (especially in Italy) in building respondents' trust around the survey. There were not so many comments on the questionnaire after the pilot. However, changes to the questionnaire were introduced after the pilot that could have been anticipated earlier in the process to avoid having to add an additional translation step and additional scripting process.

Recommendation

- *Run the pilot in all countries to ensure that all national teams benefit from the practical learnings of implementing the survey.*
- *Change the sequence of the preparation steps and conduct the central briefing right after the pilot to take stock of the learnings of the pilot.*

10.3.6. Implementing the random walk

In some countries, there was confusion among interviewers around what SPs to work, as the contractor issued main and spare SPs in Nfield (the CAPI application). Interviewers in Serbia ended up working more SPs than they should have, as they worked some spare SPs in addition to the main SPs. Interviewers in Italy also worked additional SPs.

Recommendation

Issue only main SPs in Nfield at the start of fieldwork. Then countries can request spares from the central sampling team, which provides better oversight.

For some countries, the contractor had to remap the mapped SSUs, as the interviewer identified that the Roma population were not in any of the mapped grids. In Spain, the interviewers identified that some of the mapped Roma population fell just outside the selected grids (see **Section 4.6.3**).

Recommendation
Allow some flexibility in the boundary of the SP, but only where Roma reside just outside the boundary, and where they have not been mapped into another main or spare SSU within the same PSU.

Eligibility in the field was systematically higher than the Roma prevalence in the frame. Therefore, the contractor had to update issued (gross) core address counts daily.

Recommendation
Reduce the number of addresses issued upfront to X % of the estimated eligibility in the frame based on results of the RS2021, and then calculate the eligibility and response rates during fieldwork so that the issued core address counts can be adapted and the over-achievement of interviews in SPs can be minimised where eligibility on the ground is systematically much higher than on the frame.

In the RS2021, this was done outside the script but might be feasible to do within the script, for example by stopping the interviewers from opening new core addresses on the tablet (dummy addresses) when they have reached their target. This would allow them to work only new non-core addresses and already visited addresses.

The maps, with addresses and GPS location information, seemed to work well, as very few interviewers worked in the wrong location. The selection of core households based on the improved true random walk – developed by Bauer – appears to have worked well. There were no complaints or misunderstandings from interviewers or national agencies.

10.3.7. Implementing modified adaptive cluster sampling

In PSUs with a low prevalence of Roma, a MACS procedure was used to select the Roma households. The MACS approach seemed easier to understand and less prone to errors than the original approach. MACS was relatively successful, and feedback from the countries was generally positive.

Some interviewers got confused with how to assign core and non-core addresses on their tablets (adding dummy addresses or adding new addresses and marking a respective response to question C1). Some interviewers did not allocate a non-core address to a core address using the recommended approach, which involved adding the core address ID to the start of the address details for non-core addresses. The software package used in the RS2021 was not well designed to make it easy for interviewers to implement these requirements.

Some interviewers did not visit all non-core addresses, mainly an issue where an interviewer had completed their target number of interviews and therefore did not think it was necessary to continue. Some interviewers misunderstood selection interval (n) and systematically selected every n+1th (e.g. 11th) rather than every nth (e.g. 10th) core address. This was more obvious in the SPs with MACS, where it could be more easily identified.

A total of 107 interviews in non-core addresses were removed in the RS2021, while in EU-MIDIS II more than double this figure were removed owing to the incorrect application of ACS.

Recommendation

- *The script should be set up to minimise errors in the assignment of core/non-core addresses and in the allocation of non-core addresses to their eligible core address (MACS chain). One option is to create a running tally of 'fresh' addresses: the first fresh address in the SP is always core, and the second fresh address will depend on the outcome of the visit to the first address. If eligible, the second fresh address should be non-core; otherwise, it should be core. Identifying each 'fresh' address and linking it to the outcome of the preceding fresh address and calculating a running count of fresh addresses visited could help to automate the assignment of core/non-core addresses and the allocation of a core address ID to each non-core address. It might require checks to be conducted by the interviewer, but the interviewers are expected to follow a systematic order for the selection of non-core addresses after identifying an eligible core address.*
- *Provide an explanation of core and non-core addresses when the interviewer assigns them, for example through a reminder that pops up to explain what core and non-core addresses are and asks them to confirm that they have assigned the addresses correctly.*
- *Reduce the maximum selection interval to five to minimise the cognitive burden of counting more than four non-core addresses at an eligible core address. It may seem trivial, but if an interviewer achieves several interviews at the first few non-core addresses they visit then remembering how many non-core addresses they have visited may become less trivial given the lapse in time.*

10.3.8. Measures to increase response rates

The response rate was fairly high across countries, at above 70 % in nine out of the 10 surveyed. Spain had a lower response rate of 56 %. In seven out of the 10 countries surveyed (including Spain), an incentive was used. The incentive was chosen by the national teams. In Greece, Hungary and North Macedonia, no incentive was used. The use of incentives was considered counter-productive in Hungary.

Recommendation

Keep the use of incentives at the discretion of national teams, ideally in discussion with Roma representatives, who will have the best knowledge on the ground. Background research in this area is key.

Roma mediators and NGOs were considered in most countries very useful in improving the credibility of the survey and helping interviewers to access some areas. This was especially the case in Italy, where the survey would not have been possible without the support of a Roma organisation.

As assessed by the contractor, having Roma interviewers (in seven out of the 10 countries surveyed) was a clear asset and would increase cooperation. In Czechia, there were only Roma interviewers.

Recommendation

Use Roma interviewers where available, as this increases the cooperation of the target population. Roma interviewers without prior experience of interviewing need to receive the appropriate training to implement the methodology and use the fieldwork materials. If Roma interviewers are not available, mediators from the local communities (often Roma) should be engaged to cooperate with the interviewers to gain local Roma cooperation and to increase the response rate.

Roma speak the national language of each country covered by the RS2021 well enough. The Romani glossary was useful for some respondents with lower levels of education. Gender matching was not identified as a key requirement.

10.3.9. Quality checks

A weekly fieldwork monitoring report provided by the contractor to FRA was useful in assessing progress and identifying overall issues, but was not enough to really assess the quality of the data.

Recommendation

- *A weekly fieldwork progress monitoring file should contain clear definitions of individual fields (e.g. issued PSUs, started PSUs and completed PSUs). Clear information on the geographical unit to which the file is related should be provided.*
- *National teams should be trained upfront in the use of the online fieldwork monitoring tool and the tool should be tested before use to avoid technical issues during fieldwork.*

Detailed quality checks during fieldwork allowed the identification of key issues, rectified through call-backs and resulting in changes in the script.

Recommendation

Detailed quality checks need to start early during fieldwork, when an SP is around 60–70 % complete, to make the process more reactive and prepare for the final stage of fieldwork.

Overall, 200 interviews were deleted because initially flagged issues from the fieldwork quality check (see **Section 6.3.2**) failed the back-checks by the contractor.

Recommendation

Ensure that the sampling approach is duly implemented by the interviewers, including through their remuneration (e.g. a special bonus provided if there are no quality issues in their interviews).

10.3.10. COVID-19-related challenges

The COVID-19 pandemic was indeed a strong component in the background of the implementation of the survey. Its first effect was on meetings and briefings, which all had to take place online. This did not much affect the quality of the training and the engagement of coordination team and national teams, but did reduce their opportunities to interact.

The pandemic also affected fieldwork. Additional measures had to be taken to plan the fieldwork, such as ensuring that hygienic preventive measures were correctly applied. In some cases, these led to difficulties in carrying out the fieldwork (in Czechia, Hungary, Italy and some parts of Greece). However, in other countries, during the pandemic was considered the right time to conduct the survey, as many respondents had to stay home.

The contractor managed to complete the survey using a fully face-to-face design in all countries. Some interviews were conducted outside the home but interviewers always maintained a close distance from the home of the respondents. However, the delay in the start of the fieldwork as a result of the pandemic had an impact on the overall time line of the project.

10.4. DATA PROCESSING

10.4.1. Central scripting and data processing

The survey was scripted in English using Nfield, the contractor's scripting solution, and the quality of the script was assured through an interactive process of internal testing before it was delivered to FRA for further testing and final approval. The English script was overlaid in local languages and the local language scripts were tested by national agencies as another layer of quality assurance. Open responses were translated into English and coded

at national level in accordance with the precise instructions given by the contractor's coordination team. The benefits of this centralised approach of scripting were as follows.

- No manual editing of the survey was required. The centralised platform guaranteed that data fell within a predetermined range.
- Filters were applied automatically.
- Consistency across items was ensured by pre-programmed logic checks.
- A closed-loop system was used: the contractor only used one master script, and the overlay of languages was automatic.
- There was no difference between the approved translations and the content of the final questionnaire administered to respondents.

Recommendation
Work from one centralised electronic system to ensure high-quality survey implementation.

However, some call-backs had to be conducted during fieldwork. When they were conducted, national teams recorded the information in a separate Excel file.

Recommendation
Call-backs should be allowed using a mini online script compatible with the contractor's scripting solution (Nfield in the RS2021) that the national teams can easily access and use to fill in the data they gather. Once the data are in digital format, data manipulation and merging data, where needed, become easier.

10.4.2. Preparing datasets

The data were collected in three different datasets: the PSU datafile (sampling information), the ECS datafile (ECS information) and the IR datafile (containing the data of the main questionnaire). All datafiles have a set of unique identifiers and use the same pre-agreed values for INR. Each datafile is accompanied by a comprehensive codebook. A DQL was used to document all iterations and exchanges to finalise the files.

Recommendation

- *Make sure the codebook is fully reflected in the corresponding dataset. Pay attention to the capitalisation of variable names (important for Stata, but not important for SPSS). The RS2021 codebooks include the routing information in Stata format, which in most cases allows automated checks.*
- *At an early stage of the project, define the structure of the datasets, how they relate to each other and the linking variables.*
- *At an early stage of the project, agree with the contractor the minimum quality criteria against which the datasets will be checked (the completeness of the dataset, in terms of variables and the population of observations; routing; coding; the uniqueness of linking variables; the logical plausibility of the values; etc.). The contractor should perform checks on the datasets against these criteria before the data are delivered to FRA.*
- *Agree at an early stage of the project on the concrete quality controls that determine the inclusion or deletion of interviews and add them to the codebook and dataset.*
- *Use the DQL to document issues with datasets. Agree upfront on how to define INR/sysmis/-2 for each variable; the list of variables to be populated for all household members; the aggregate/summary variables, which can be programmed into the script when drafting the questionnaire; any logical checks that can be scripted during the first interim file delivery; and clear descriptions of all aggregate variables to be included in the files.*

10.4.3. Tabulations of indicators

All comments on the calculation of the requested indicators, and questions and comments on the provided syntax, were logged in one file, which helped to document and systematise the exchanges.

Recommendation

Agree on the list of indicators for the tabulations, including the definitions, base information, disaggregation variables, how to deal with INR/sysmis and the syntax early in the process. All modifications vis-à-vis the RS2021 should be documented. The contractor should provide the annotated syntax for the calculation of all indicators, including for table production.

10.5. DATA WEIGHTING

Post-data-collection weighting was very limited in some countries owing to the absence of data on the Roma population. Available data tended to be out of date or available only for the 0+ Roma population.

The design weights are complex, and weighting requires the advice of experts in the field. It was important to have a dedicated weighting expert involved in the RS2021. The support of the experts from the University of Siena was also helpful in checking the weighting strategy. In the RS2021, the contractor identified that the weighting information in the technical report for EU-MIDIS II did not fully align with the information provided – at a later date – in the corresponding weighting syntax files, leading to confusion about how to calculate comparable weights.

Recommendation

- *Fully clarify at the onset of the weighting process the exact role of individual weighting and sampling experts involved in the project to ensure that the process is better and faster.*
- *Ensure that the weighting experts have full sight of the approaches to weighting used in previous waves of the survey beyond those provided in the technical reports. This is key, as many decisions are based on the assumption of comparability. At the start of the process, all the information on weighting for prior waves should be supplied to all individuals involved in the development and checking of the weights.*

The disparity between the prevalence of Roma based on the sampling frame and the prevalence of Roma in the field (**Section 4.5.4**) meant the issued sample count had to be adjusted in each SP (**Section 4.6.2**). As the disparity was not systematic and constant across SPs, the adjustments were made at SP level. These adjustments, while making fieldwork easier to implement, increased the variance in the design weights and reduced their efficiency. The RS2021 accounted for this by trimming the weights. However, even after trimming, the efficiency of the weights were relatively low compared with those in EU-MIDIS II.

In EU-MIDIS II, in addition to trimming the weights, an alternative approach to calculating the design weights at the address selection stage was used. The RS2021 used the approach outlined in **Section 8.1.3**.

In EU-MIDIS II, the denominator in the calculation was changed from an estimate of the total number of households based on the frame to an estimate based on fieldwork, as each random walk covered an entire SP. In EU-MIDIS II, the total number of households in the sampled location (SSU b) resulted from dividing the Roma population in SSU b, from the frame, by the prevalence of Roma in SSU b, based on the fieldwork. This change in the calculation helped to reduce the variance in the design weights in EU-MIDIS II, making it impossible to compare the weighting efficiency of EU-MIDIS II with that of the RS2021.

An alternative method to the one used in the RS2021 involves calculating base weights. Base weights use the total number of achieved interviews as the numerator at the address selection stage. Base weights are implemented in several other surveys, including the Pew Research Center's Global Attitudes Survey[42] and Eurofound's European Working Conditions Survey.[43]

10.6. QUALITY ASSURANCE

A detailed QAP was prepared by the contractor at the beginning of the project. This deliverable took more time to prepare than expected. The QAP covered all the stages of the survey and included some contingency measures in case of issues occurring in respect of quality indicators. The QAP was used to monitor the progress of the survey and the contractor reported the progress of the indicators in each monthly report (see **Annex 2**).

10.7. TIMETABLE

The time line for the survey was difficult to respect owing to the number of tasks involved and because of the COVID-19 situation, which was hard to assess given its uncertainty in individual countries. Owing to the COVID-19 situation, the start of the fieldwork was delayed until the end of February 2021. The fieldwork start was staggered, and the Czech team could only start fieldwork in April 2021 because of a lockdown. This affected the overall time line, and final interviews could only take place in early August 2021, which affected the delivery of datasets, indicators and the technical report.

A one-month contract extension allowed the activities to finish by the end of October 2021. However, several tasks performed at the delivery stage required further additional time. Working on the final datasets and weighting while preparing the technical report also proved difficult.

Recommendation

- *Start the scripting process as early as possible, as it proved to take more time than expected.*
- *Keep sufficient time and determine the right sequence in which to complete the deliverables after the fieldwork.*

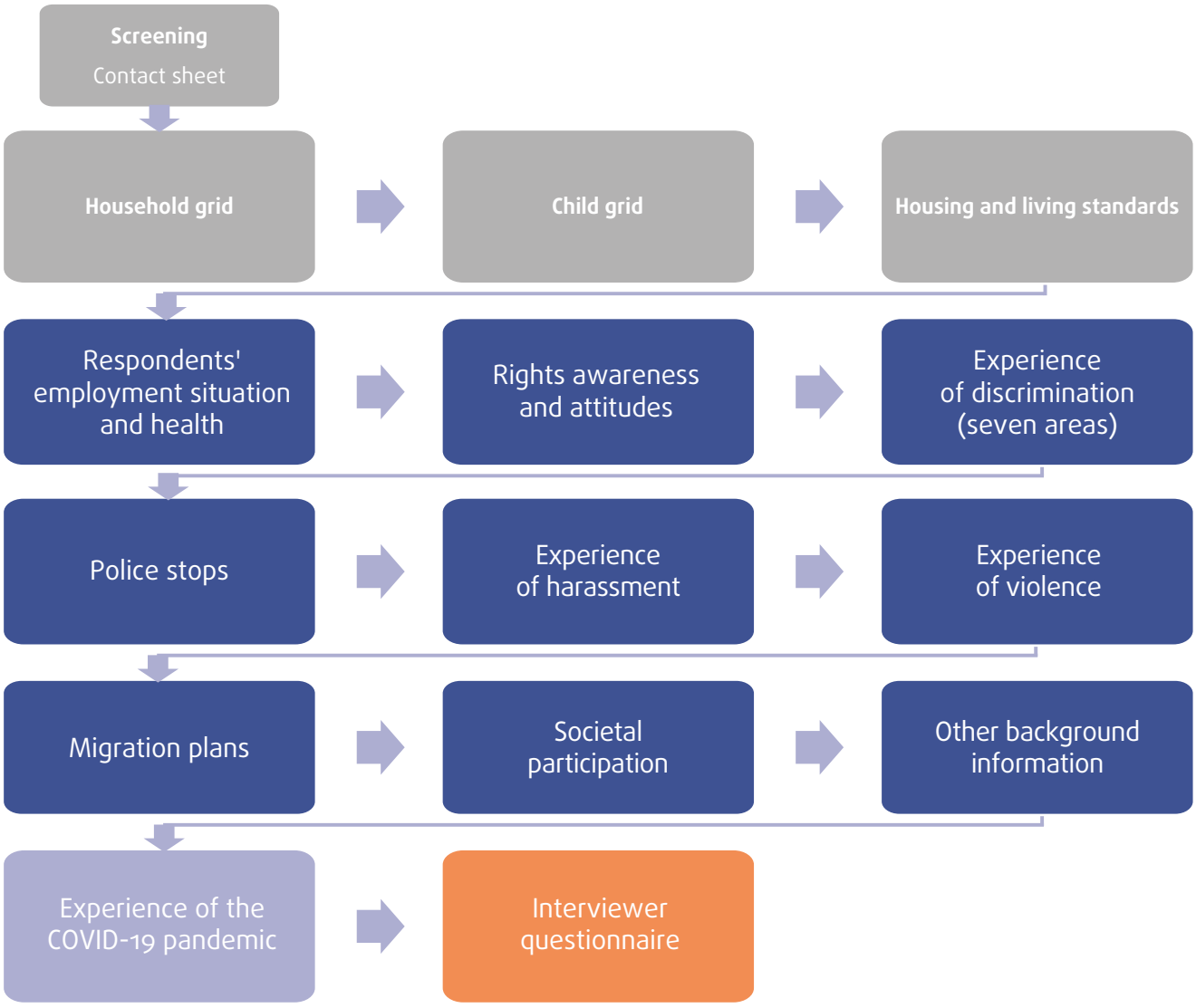
[42] Pew Research Center (2005), '**About the Pew Global Attitudes Project**'.

[43] Eurofound (2021), '**European working conditions surveys (EWCS)**'.

ANNEXES

ANNEX 1: QUESTIONNAIRE FLOWCHART

FIGURE A1.1: QUESTIONNAIRE FLOWCHART



ANNEX 2: QUALITY ASSURANCE PLAN

This section presents the assessment of the quality targets related to individual stages of the implementation of the RS2021.

TABLE A2.1: MANAGEMENT AND COMMUNICATION

Quality objective	Quality indicator	Quality target	Achievement
Ensure effective management of the project by maintaining a high level of expertise in the team	2.1. Sufficient resources (staff) are available to complete required tasks to a high standard and in keeping with the time line	Yes	Yes
	2.2. Share of experts working on the project with relevant expertise and experience	100 %	100 %
	2.3. Share of replacement experts approved by FRA	100 %	100 %
	2.4. Communication structure is agreed on with FRA and documented in the inception report	Yes	Yes
	2.5. Share of months during which the monthly report includes information on the follow-up on communication between Kantar and FRA	100 %	100 %
	2.6. Share of months during which a monthly activity report is developed	100 %	100 %
	2.7. There is always a point of contact within the coordination team that FRA can contact	Yes	Yes
	2.8. Project coordinators serve as escalation points available to FRA	Yes	Yes
	2.9. Share of deliverables reviewed by and agreed on by FRA	100 %	100 %
	2.10. Share of documents submitted to FRA reviewed by senior personnel	100 %	100 %
	2.11. Share of personnel who attended GDPR training	100 %	100 %
	2.12. If data breach happened, the data protection officer is informed within six hours	Yes	Yes
	2.13. Project completed within 18 months	Yes	No
	2.14. Request for extension of activity time line sent on time, at least one week in advance of the initially planned delivery	Yes	Yes
	2.15. The request for contract extension is sent immediately after the need for it is identified	Yes	Yes
	2.16. Share of shifts in time line that have been documented and agreed with FRA	100 %	100 %
	2.17. QAP is agreed with FRA at the beginning of the project	Yes	Yes
	2.18. Agreed QAP is communicated to the NSEs	Yes	Yes
	2.19. Agreed QAP is strictly followed by the NSEs	Yes	Yes
	2.20. Share of NSEs who are in direct and regular contact with the coordination team, at least once a week	100 %	90 %
	2.21. Share of weeks during which the CCT is in touch with the national agencies	100 %	100 %
	2.22. Share of months during which the NSEs submit a quality assurance compliance report regarding the activities in the past month	100 %	100 %
	2.23. The technical report respects the agreed structure and includes information on all agreed points	Yes	Yes
	2.24. Technical report submitted on agreed date	Yes	No

TABLE A2.2: SAMPLING

Quality objective	Quality indicator	Quality target	Achievement
Identify all relevant sampling frames and collect the latest population data broken down by socio-demographic data for the Roma population	3.1. Share of countries where background research is conducted and where information collected is complete	100 %	100 %
	3.2. Share of countries where a high-quality register is used (up to date and approximating full coverage)	100 %	0 %
	3.3. Share of countries where information on auxiliary data sources that can supplement census data are identified	100 %	100 %
	3.4. Share of countries where at least one Roma organisation partners with Kantar	100 %	100 %
	3.5. Share of countries where the sampling frame covers at least 70 % of the Roma population	100 %	90 %
	3.6. Share of countries where the share of Roma in each country is mapped by region, geographical prevalence at PSU level	100 %	100 %
	3.7. Share of countries where data on Roma at PSU and national levels are documented in the background research report	100 %	100 %
	3.8. Optimal sample allocation per country	100 %	100 %
	3.9. Share of countries for which the characteristics of the sampling frame and procedure are documented	100 %	100 %
	3.10. Share of countries where the sample is stratified by region and urbanisation using the most up-to-date population figures	100 %	100 %
	3.11. Share of countries where information related to remuneration schemes and the necessity of incentives for respondents are included	100 %	100 %
	3.12. Share of countries where response rate objective is set to ≥ 50 %	100 %	100 %
	3.13. Share of countries where a suitable screening procedure for Roma households has been defined	100 %	100 %
	3.14. Share of countries where a probabilistic sampling design is used at all stages of selection	100 %	100 %
	3.15. Share of countries where enumeration is conducted in two steps in countries where there is no individual or address frame	100 %	0 %
	3.16 Procedure to define replacements of unsuccessful PSUs defined before the start of fieldwork	Yes	Yes
	3.17 Procedure to define and replace unsuccessful PSUs followed	Yes	Yes

TABLE A2.3: WEIGHTING

Quality objective	Quality indicator	Quality target	Achievement
Correct any unequal selection probability at every stage of sampling	4.1. Share of weighting schemes signed off by lead or senior sampling and weighting expert	100 %	100 %
	4.2. Share of countries where the weighting strategy integrates all available information	100 %	100 %
	4.3. Weighting strategy includes references to academic literature demonstrating that the selection of weighting variables and procedures takes common practice of weighting in international surveys into account	Yes	Yes
	4.4. Share of countries for which non-response adjustment weights have been calculated	100 %	100 %
	4.5. Share of countries where a common set of variables with common categories are used for weighting	100 %	100 %
	4.6. Share of countries where the design weight is specified in accordance with the sampling design	100 %	90 %
	4.7. Procedure for constructing design weights included in the technical report	Yes	Yes
	4.8. Design weight included in dataset	Yes	Yes
Correct for non-response	4.9. Non-response weight included in dataset	Yes	Yes
	4.10. Procedure for constructing post-stratification weights mentioned in the weighting report	Yes	Yes
	4.11. Post-stratification weight included in dataset	Yes	Yes
Reduce variance in the weights while minimising bias	4.12. Weight trimming follows the weighting strategy and is fully documented and replicable	Yes	Yes
	4.13. Checks on the effect of weighting on key indicators have been performed	Yes	Yes
	4.14. Trimmed and untrimmed weights are included in the dataset	Yes	Yes
	4.15. Trimming cut-off points and number of trimmed cases for each country are included in the weighting report	Yes	Yes

TABLE A2.4: REFERENCE STATISTICS

Quality objective	Quality indicator	Quality target	Achievement
Compile statistics based on common standards with regard to scope, definitions, units and classifications used in social research and sources	5.1. Background research report refers to the standards to be applied to core variables of the European Social Survey	100 %	100 %
	5.2. Share of countries where the reference statistics used for stratification were updated within the year preceding fieldwork	100 %	0 %
	5.3. Share of the population covered by the reference statistics	100 %	100 %

TABLE A2.5: QUESTIONNAIRE

Quality objective	Quality indicator	Quality target	Achievement
Develop the new questions according to the highest standards; exhaustively test the survey instrument prior to data collection	6.1. New questions have been developed in partnership with FRA	Yes	Yes
	6.2. Share of new questionnaire items in the final source questionnaire that meet international methodological standards of question design	100 %	100 %
	6.3. Pilot fieldwork is carried out in at least three countries and reaches the minimum number of interviews required in the technical specifications	Yes	Yes
	6.4. Questionnaire is piloted in three countries	Yes	Yes
	6.5. Pilot report includes debriefing on issues related to the questionnaire	Yes	Yes

TABLE A2.6: TRANSLATION

Quality objective	Quality indicator	Quality target	Achievement
Ensure the adequate training of translators; ensure that translated questions are comparable and consistent over time, across countries and across language groups; ensure that translated questions are comparable and consistent over time, across countries and across language groups; duly document the adjudication process; ensure that the translation process is documented, and that questionnaires are understood by all respondents and can be answered correctly, minimising the amount of INR	7.1. Share of translators and adjudicators who take part in training	100 %	100 %
	7.2. Translation materials are constructed using input from the pilot translation and are provided to the translators	Yes	Yes
	7.3. Share of comparable questions across translations	100 %	100 %
	7.4. Share of language translations using the TRAPD methodology	100 %	100 %
	7.5. Share of translations of trend questions that are revised	100 %	100 %
	7.6. Share of countries for which systematic documentation in English is provided about the adjudication process and results (in accordance with a template)	100 %	100 %
	7.7. A translation report is submitted and includes information on each step of translation process	Yes	Yes
	7.8. Information letter and interviewers' manual were translated into the 11 languages of the survey	Yes	Yes
	7.9. Paper versions were developed for each language for which it was agreed to have a paper version	Yes	n.a.
	7.10. A glossary of the key terms of the survey is created and translated in Romani	Yes	Yes

Note: n.a., not available.

TABLE A2.7: INTERVIEWER SELECTION AND TRAINING

Quality objective	Quality indicator	Quality target	Achievement
Carry out comprehensive and timely briefing for fieldwork managers; design and use uniform and detailed information for all stages of fieldwork; ensure that high-quality, comprehensive interviewer materials are available; successfully conduct the training of trainers; mobilise experienced interviewers to increase the likelihood of implementing successful interviews; minimise interviewers' effect on the data; ensure that interviewer training is comprehensive and timely	8.1. Share of national fieldwork managers attending the fieldwork manager instruction meeting	100 %	100 %
	8.2. Share of national agencies that received briefing documents	100 %	100 %
	8.3. Standardised training materials developed by the central management team and signed off by senior staff	Yes	Yes
	8.4. Training materials cover the selection of respondents within households	Yes	Yes
	8.5. Training materials cover strategies for persuading reluctant respondents	Yes	Yes
	8.6. Training materials cover guidelines on the contact process	Yes	Yes
	8.7. Training materials cover instructions on the CAPI programme/questionnaire	Yes	Yes
	8.8. Training materials cover instructions on consistency checks	Yes	Yes
	8.9. Share of countries for which all training materials are provided	100 %	100 %
	8.10. Share of national trainers-of-trainers attending the instruction meeting	100 %	100 %
	8.11. Share of interviewers with more than three months' experience in interviewing, including in the use of CAPI survey methods	100 %	98 %
	8.12. Share of interviewers who have experience conducting surveys on sensitive issues and/or have received the necessary training	100 %	100 %
	8.13. Share of interviewers who are fluent in the national language of the country where they work	100 %	100 %
	8.14. Share of interviewers who have experience interviewing Roma	100 %	77 %
	8.15. Share of interviewers who match with the target in terms of socio-demographic characteristics	100 %	n.a.
	8.16. Share of interviewers who have a Roma partner assigned during interviewing unless the interviewer is of Roma origin	100 %	40 % (54 % of non-Roma interviewers)
	8.17. Share of interviewers who conducted 5 % or fewer of the interviews per country	100 %	88.3 %
	8.18. Share of interviewers in the dataset who are described in terms of key socio-demographic variables	100 %	0 %
	8.19. Training of interviewers covers all relevant materials	Yes	Yes
	8.20. Training covers the importance of ensuring that through enumeration/interviewing there is no harm done	Yes	Yes
	8.21. Share of interviewers who attended the whole briefing	100 %	100 %
	8.22. Share of interviewers who attended briefing at most seven days before the start of fieldwork	100 %	10 %

Note: n.a., not available.

TABLE A2.8: SCRIPTING

Quality objective	Quality indicator	Quality target	Achievement
Ensure the consistency, accuracy and comparability of data collection between countries, accurate fieldwork documents and an accurate CAPI script	9.1. Share of countries where CAPI is used	100 %	100 %
	9.2. CAPI script is programmed centrally	Yes	Yes
	9.3. Scripting time line is developed and sent to FRA	Yes	Yes
	9.4. Paradata and metadata are integrated into the script	Yes	Yes
	9.5. Script is signed off by senior staff	Yes	Yes
	9.6. Hard consistency rules are identified and programmed into the script	Yes	Yes
	9.7. Soft consistency rules are identified and integrated into the script	Yes	Yes
	9.8. Share of countries using a common integrated CAPI and sampling management system	100 %	100 %
	9.9. Number of programming errors encountered in the pilot test	0	0

TABLE A2.9: FIELDWORK AND INTERIM DATA QUALITY CHECKING DURING FIELDWORK

Quality objective	Quality indicator	Quality target	Achievement
Ensure the consistency, accuracy and comparability of data collection between countries; rigorously document and monitor fieldwork progress, inputs and outputs with respect to quality criteria; ensure that fieldwork is carried out within the agreed time line	10.1. Share of interviews conducted face to face	100 %	100 %
	10.2. Share of interviewers who apply the principle of 'respondent's self-identification' during fieldwork	100 %	100 %
	10.3. Share of interviewers who used the invitation/information letter	100 %	100 %
	10.4. Share of interviewers who upload data daily	100 %	88 %
	10.5. Share of interviews recorded in the dataset linked to the interviewer who conducted the interview	100 %	100 %
	10.6. Share of respondents who were asked for explicit consent to collect data	100 %	100 %
	10.7. Minimum achieved net sample of 8,400	Yes	Yes
	10.8. Share of sample entries to which a final status of 'non-contact' was assigned that were not visited at least three times at different times and on weekdays and weekends	0 %	0.25 %
	10.9. Share of national institutes submitting weekly updates to the coordination team on progress	100 %	100 %
	10.10. Each interviewer conducts no more than seven interviews a day	Yes	No
	10.11. Share of interviews back-checked	10 %	27 %
	10.12. Share of issues identified based on information in weekly monitoring data for which a solution is provided	100 %	100 %
	10.13. Number of days that fieldwork continues after the agreed date	0	40

TABLE A2.10: DATA CHECKING AND EVALUATION

Quality objective	Quality indicator	Quality target	Achievement
Rigorously document and monitor fieldwork progress, inputs and outputs with respect to quality criteria	10.15. The number of interviews included in the first dataset is a minimum of 1,000 interviews across five countries, while the second interim dataset has at least 200 interviews per country	Yes	Yes
Ensure the consistency, accuracy and comparability of data collection between countries	10.14. Achieved response rate ≥ 50 %	100 %	100 %
	10.16. Admissible INR per question	25 %	25 %
	10.17. INR per case	25 %	25 %
	10.18. Number of variables with impossible and/or implausible values per question	0	10
	10.19. An explorative analysis is carried out of the distributions of all variables for each country	Yes	Yes
Ensure the successful completion of fieldwork in the event of lockdowns	10.20. Background report includes information on alternative fieldwork methods in the event of lockdowns	Yes	Yes
	10.21. Share of countries where robust alternative data collection approaches have been used if face-to-face fieldwork was not possible	100 %	N/A

Note: N/A, not applicable.

TABLE A2.11: DATA DELIVERY

Quality objective	Quality indicator	Quality target	Achievement
Produce and deliver consistent and accurate national datafiles and a single merged datafile	11.1. Share of national institutes that uploaded full datafiles electronically to the centralised system	100 %	100 %
	11.2. Coding guidelines are shared with countries, including matching tables for reference statistics provided for all countries	Yes	n.a.
	11.3. Share of countries where back-checks are run on coding to ensure that guidelines are respected	100 %	n.a.
	11.4. Centralised data checks conducted	Yes	Yes
	11.5. Share of national agencies informed about potential issues in the data, if any are suspected	100 %	100 %
	11.6. Share of interviews with INR rates of between 25 % and 50 % investigated	100 %	100 %
	11.7. Share of interviews with INR rates of more than 50 % dismissed	100 %	100 %
	11.8. Share of interviews with missing basic core data allowed in the dataset	0 %	0 %
	11.9. Share of incomplete and/or erroneous interviews that are completed with call-backs, or are replaced	100 %	100 %
	11.10. Datasets include unique identifier(s) that allow the merging of the dataset(s), verbatims and others	Yes	Yes
	11.11. Data delivered in SPSS and Stata formats	Yes	Yes
	11.12. Paradata and metadata submitted in separate SPSS and Stata files	Yes	Yes
Deliver a completely anonymised datafile, removing all personally identifiable information	11.13. Share of data that were anonymised	100 %	100 %
	11.14. Share of personal information datafiles separated from core datafiles	100 %	100 %
	11.15. Share of datafiles that are clearly marked with the data they contain	100 %	100 %
	11.16. Share of datafiles that are transferred through secure file-sharing systems	100 %	95 %
Produce and deliver consistent and accurate national datafiles and a single merged datafile	11.17. Share of variables that are named and labelled in accordance with the agreed template	100 %	100 %
	11.18. Share of variables for which the missing values are defined as per agreement with FRA	100 %	100 %
	11.19. Share of substantive variables (from the main questionnaire) included in the dataset	100 %	100 %
	11.20. Share of variables for which the level of measurement is properly defined	100 %	100 %
	11.21. Share of relevant contact sheet variables included in the dataset	100 %	100 %
	11.22. Share of stratification variables included in the dataset	100 %	100 %
Thoroughly document data editing and cleaning to respect quality criteria	11.23. Data-cleaning and data-editing report provided as part of the technical report	Yes	Yes
	11.24. Syntax to reproduce results, quality checks and derived variables submitted	Yes	Yes
Data are not retained for longer than the approved periods of time and respect GDPR legislation	11.25. Primary records data are deleted within 12 months after data collection	Yes	TBD
Produce tables with relevant indicators calculated	11.26. Share of the results indicators included in the output tables that have been rigorously defined	100 %	100 %
	11.27. Share of indicators included in the tables that have been agreed on time	Yes	Yes
	11.28. Share of indicators that have been correctly computed from the first iteration	100 %	53 %

Note: n.a., not available; TBD, to be determined.

ANNEX 3: CALCULATING INDICATORS

Headline and secondary indicators for monitoring the EU Roma strategic framework were calculated from the RS2021 data in accordance with defined objectives.

Objective 1: fight and prevent antigypsyism and discrimination

Share of Roma who felt discriminated against in core areas of life in the 12 months before the survey because they were Roma: ***dis12overall***

This indicator shows the proportion of Roma respondents (age 16 or above) who reported that they experienced discrimination because they were Roma in at least one of the areas covered by the survey in the 12 months before the survey.

Calculation of indicator

This is a composite indicator combining the experiences of discrimination among Roma in the 12 months before the survey in a multitude of situations. Firstly, the discrimination in the 12 months before the survey had to be calculated for each area of life:

- discrimination in the 12 months before the survey because of being Roma when looking for work (*dis12lkwork*)
- discrimination in the 12 months before the survey because of being Roma when at work (*dis12atwork*)
- discrimination in the 12 months before the survey because of being Roma when using healthcare services (*dis12health*)
- discrimination in the 12 months before the survey because of being Roma when trying to rent or buy an apartment or a house (*dis12house*)
- discrimination in the 12 months before the survey because of being Roma when in contact with anyone from a school/college/university either as a parent/guardian or as a student (*dis12eduinst*)
- discrimination in the 12 months before the survey because of being Roma when in contact with administrative offices or public services (*dis12admin*)
- discrimination in the 12 months before the survey because of being Roma when trying to enter a nightclub, a bar, a restaurant or a hotel; when using public transport; or when in a shop or trying to enter a shop (*dis12other*).

As an example, the calculation of discrimination rate when looking for work (*dis12lkwork*) is described. All other discrimination rates should be calculated analogically. Discrimination because of being Roma when looking for work in the 12 months before the survey had occurred if a respondent indicated that they had been looking for work in the 12 months before the survey and they were discriminated against in the 12 months before the survey because of their skin colour or racial origin, their Roma background or their religion/religious beliefs (N_{dR}). Discrimination because of being Roma when looking for work in the 12 months before the survey had not occurred if the respondent had been looking for work in the 12 months before the survey but they were discriminated against in the 12 months before the survey on other grounds (other than being Roma) or if they were not discriminated against at all (N_{ndR}).

Respondents who had been looking for work in the 12 months before the survey but who did not provide a valid answer for any of the grounds for discrimination were considered for the calculation of the indicator N_{INR}. Roma who were not at risk of discrimination because they were not looking for work in the 12 months before the survey were not be considered for the indicator. The indicator is calculated as follows:

$$p = \frac{N_{dR}}{N_{dR} + N_{ndR} + N_{INR}} \times 100$$

For the overall discrimination rate, the number of Roma respondents (age 16 or above) who experienced discrimination in any of the areas covered in the survey because of being Roma in the 12 months before the survey is set against the number of those who were at risk of being discriminated against in any of the areas mentioned in the survey in the 12 months before the survey. They might have been discriminated against because they were Roma, discriminated against on any other ground or discriminated against before the reference period of 12 months prior to the survey, or they might have not given an answer (INR), but they had been in a situation of potential discrimination in the areas of daily life asked about during the reference period. Roma who were not at risk of discrimination in the 12 months before the survey were not considered for the indicator.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people aged 16+ who experienced hate-motivated harassment (five overall acts) because they were Roma in the 12 months before the survey: ***vh_eth_12m***

This indicator shows the percentage of all Roma respondents who had experienced hate-motivated harassment because they were Roma in the 12 months before the survey. A person was considered to have experienced hate motivated harassment if they had experienced at least one out of the following five acts because of their Roma background in the 12 months before the survey: offensive or threatening comments, threatened with violence in person, offensive gestures, emails or text messages that are offensive or threatening, or offensive comments posted about them on the internet.

Calculation of indicator
The indicator is calculated as the number of respondents who have experienced one or more incidents of harassment in the 12 months before the survey divided by all respondents, including those who did not respond to the questions on experience of harassment because of being Roma in the 12 months before the survey.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people who were physically attacked because they were Roma (out of all respondents) in the 12 months before the survey: ***vv_eth_12m***

This indicator shows the share of Roma respondents aged 16+ who were physically attacked (e.g. hit, pushed, kicked or grabbed) one or more times in the 12 months before the survey because they were Roma.

Calculation of indicator
The indicator is calculated as the number of respondents who indicate that they were physically assaulted because they were Roma one or more times in the 12 months before the survey divided by all respondents, including those who did not answer the question on experience of violence because of being Roma in the 12 months before the survey.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Objective 2: Reduce poverty and social exclusion

At-risk-of-poverty rate (below 60 % of median equivalised income after social transfers): ***arop***

At-risk-of-poverty rate is the share of people living in an household with an **equivalised disposable income** (at household level) below the national at-risk-of-poverty threshold, which is set at 60 % of the national **median** equivalised disposable household income after **social transfers**.

Calculation of indicator
Given that information on the exact household income per months is gathered through two questions – with one not including the exact amount – and the expected relatively large number of missing values for these questions, missing values had to be imputed prior to the calculation of the at-risk-of-poverty rate. This was done in two stages:

- income imputation from income bands, which was done for all cases where income was not stated but the income band was available;
- the K-nearest neighbours methodology imputation, for the survey groups where the share of missing data was less than 40 %.

The imputation of missing income data should, however, only be done for countries/groups for which more than 60 % of answers are valid (an INR rate of fewer than 40 %) on household income (either exact amount or income band).

Furthermore, the indicator is calculated according to Eurostat rules, using the modified Organisation for Economic Co-operation and Development equivalence scale: the household income is divided by the equivalent size of the household (1.0 to the first adult, 0.5 to the second and each subsequent person aged 14 and over, and 0.3 to each child aged under 14).

The equivalised monthly household income is then compared with the national poverty threshold (divided by 12 to monthly level) published by Eurostat the year prior to the survey (i.e. if a survey collects data in 2021, the threshold published for 2020 should be used). The households with an equivalised monthly income lower than the national poverty threshold are classified as at risk of poverty, and all households (including those without a valid equivalised household income) are included in the denominator.

As the answers are collected in national currency, a conversion to euros needs to be done if the at-risk-of-poverty national thresholds are displayed in euros. Data were collected in the national currency and then converted into euros – where applicable – using the Central European Bank's exchange rate as of the agreed date within the fieldwork (mid-point). In the RS2021, the exchange rate as of 14 May 2021 was used.

Comparability to Eurostat indicators
The share of people living in households at risk of poverty, calculated based on FRA surveys, is of limited comparability to the EU indicator 'at-risk-of-poverty rate (after social transfer)' (*ilc_li02*). FRA asked respondents about their current monthly household income. In EU-SILC, the household income is captured with several detailed questions and refers to a different reference period (yearly). Data collected for the Eurostat indicator provide information about annual household incomes and different income components as a composite of the information collected from each individual older than 15.

FRA's approach most likely results in an underestimation of the annual household income and some relevant income components, meaning that FRA surveys may overestimate the share of people living at risk of poverty. The use of the national poverty threshold of the year prior to the survey counter-balances this to some extent.

Children aged < 18 years who are at risk of poverty (below 60 % of median equivalised income after social transfers): ***aropch***

This indicator is calculated using *arop* (the at-risk-of-poverty rate) filtered for all household members younger than 18 years old.

Share of people living in a household in severe material deprivation (cannot afford four out of nine selected items, for example food and inviting friends over): ***matdepr4***

Severe material deprivation rate is defined as the enforced inability to pay for at least four out of nine items from:

— unexpected expenses
— a one-week annual holiday away from home
— a meal involving meat, chicken or fish every second day
— the adequate heating of a dwelling
— durable goods such as a washing machine
— colour television
— telephone
— car
— being confronted with payment arrears (mortgage or rent, utility bills, hire purchase instalments or other loan payments).

Calculation of indicator
Original variables in the questionnaire are recoded into the nine items described in the definition above. The material deprivation variable counts the inability to afford a given item across all nine items for all household members. All those with four or more items that they cannot afford are then set in relation to the total number of household members covered in the survey, including those who did not respond to the relevant questions.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's severe material deprivation indicator for the general population (*ilc_mddd11*).

Children aged < 18 years living in severe material deprivation: ***matdepr4ch***

This indicator is calculated using *matdepr4* filtered for all household members younger than 18 years old.

Share of people living in a household that cannot afford a meal with meat, chicken or fish (or a vegetarian equivalent) every second day: ***SI08_02***

This indicator measures the ability of a household to afford regular nutritious meals, giving an idea of the food (in)security of the country.

Calculation of indicator
In each interviewed household, the respondent was asked if their household could afford a meal with meat, chicken, fish (or a vegetarian equivalent) every second day. The number of people living in households that cannot afford a meal with meat, chicken or fish (or a vegetarian equivalent) every second day is set in relation to the total number of people in the interviewed households, including those with INR for this question).

Comparability to Eurostat indicators
The indicator is fully comparable to Eurostat's general population indicator (*ilc_mdes03*).

Share of Roma living in a household where one person in the household went to bed hungry in the month before the survey because there was not enough money for food: ***hunger***

This indicator can be seen as proxy for food insecurity.

Calculation of indicator
The number of people living in households where someone went to bed hungry at least once in the month before the survey because there was not enough money for food is set in relation to the total number of people in interviewed households, including those with INR for this question.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of children aged 0–17 living in a household where at least one person went to bed hungry in the month before the survey because there was not enough money for food: ***hungerch***

This indicator is calculated by limiting the previous indicator (*hunger*) to the people aged 0–17 years.

Share of people living in a household that is able to make ends meet with (great) difficulty: ***endsmeet***

This indicator is a subjective measurement of financial poverty and can be used as a proxy for the at-risk-of-poverty rate.

Calculation of indicator
The number of people living in households where the respondent indicated that given the household total income the household is able to make ends meet with great difficulty or with difficulty is set in relation to the total number of people living in the interviewed households, including those with INR for this question.

Comparability to Eurostat indicators
The indicator is fully comparable to Eurostat's general population indicator (*ilc_mdes09*).

Share of people who do not have a bank account: ***SI07r***

This indicator shows the share of Roma respondents (aged 16+) who do not have a bank account.

Calculation of indicator
The number of respondents who declared that they do not have a bank account is set in relation to the total number of respondents, including those who did not answer this question.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Objective 3: Promote participation through empowerment and build cooperation and trust in public institutions

Share of people who felt discriminated against (in any area of life) in the 12 months before the survey because they were Roma and reported the last incident of discrimination: ***redisOverall1***

This indicator captures the share of Roma who experienced discrimination because they were Roma in at least one of the areas of daily life asked about in the survey in the 12 months before the survey (*dis12overall*) and who reported the last incident of discrimination.

Calculation of indicator
All those who were discriminated against in any area of daily life because of their Roma background received one follow-up question regarding the reporting of any of these incidents. The indicator is calculated by dividing the number of all respondents (16+) who reported or filed a complaint about the last incident of discrimination in the 12 months before the survey by the number of respondents (16+) who experienced discrimination in at least one area of daily life in the 12 months before the survey, including those who did not respond to the question on reporting discrimination incidents.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people who did not report the most recent incident of harassment as due to their being Roma (of all people who experienced harassment): ***VH_rep***

This indicator shows the share of Roma respondents who declared that they had not reported the last incident of harassment that they experienced in the five years before the survey as because they were Roma. A person is considered to have experienced hate-motivated harassment if they have experienced at least one out of five acts because of their Roma background: offensive or threatening comments, being threatened with violence in person, offensive gestures, emails or text messages that were offensive or threatening, or offensive comments posted about them on the internet.

Calculation of indicator
Respondents who indicated that they experienced one of these five situations in the five years before the survey because of their Roma background were asked if they reported or filed a complaint about it. Those who did not report it were set in relation to all respondents who experienced harassment because they were Roma in the five years before the survey, that is, all those who were asked about reporting it, including those who did not answer this question.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people aged 16+ who did not report the most recent incident of physical attack as due to their being Roma: ***VV_rep***

This indicator shows the share of Roma respondents who declared that they had not reported the last incident of physical attack that they experienced in the five years before the survey as because they were Roma.

Calculation of indicator
Respondents who indicated somebody had physically attacked them (e.g. hit, pushed, kicked or grabbed them) in the five years before the survey because of their Roma background were asked if they reported or filed a complaint about it. Those who did not report it were set in relation to all respondents who had experienced violence in the five years before the survey, that is, all those who were asked about reporting it, including those who did not answer this question.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people aged 16+ who had heard of at least one equality body, national human rights institution or ombudsperson's office: ***EBno***

This indicator shows the percentage of all Roma respondents who had heard about at least one equality body in the survey country. The equality bodies in the questionnaire were adapted to the national circumstances.

Calculation of indicator
Each respondent was asked from one to four questions on their knowledge of equality bodies in the survey country (depending on how many equality bodies were on the list of equality bodies for the country). Those with knowledge of at least one equality body in the country were set in relation to all respondents, including those who did not respond when asked about their knowledge of equality bodies.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people who tend to trust the police: ***PB15r_3***

The indicator shows the share of Roma respondents who declared that they more or less trust the police in their country.

Calculation of indicator
Respondents were asked about their trust in the police in the survey country, on a scale from 0 (no trust at all) to 10 (complete trust). The indicator is calculated as the ratio of the number of respondents who declared that they tend to trust the country's police (values 6–10) to all respondents, including those who did not answer this question.

Comparability to Eurostat indicators
The indicator is in principle comparable to Eurostat's general population indicator, which is, however, only published as the average score of trust by domain (*Ilc_pw03*) and excludes INR.

Share of people who tend to trust the judicial system: ***PB15r_2***

This indicator shows the share of Roma respondents who declared that they more or less trust the legal system in their country.

Calculation of indicator
Respondents were asked about their trust in the legal system in the survey country, on a scale from 0 (no trust at all) to 10 (complete trust). The indicator is calculated as the ratio of the number of respondents who declared that they tend to trust the country's legal system (values 6–10) to all respondents, including those who did not answer this question.

Comparability to Eurostat indicators
The indicator is in principle comparable to Eurostat's general population indicator, which is, however, only published as the average score of trust by domain (*Ilc_pw03*) and excludes INR.

Objective 4: Increase equal access to good-quality, inclusive mainstream education

Share of children aged between three years and compulsory schooling age attending early childhood education: ***ECE_partic***

This indicator measures the extent of early childhood education among Roma. It captures the share of children aged between three years and the starting age of compulsory primary education who attend childhood education (kindergarten, pre-school, childcare, etc.) according to the information provided by the respondents (16+) for all children in the household. As the starting age of compulsory schooling is different for each country, the calculation needs to be adapted to the specific country situation. The compulsory schooling age for a given country is taken from the Eurydice Network's information on the **national education systems** in place in the school year for which the survey provides data (i.e. 2020/2021 for the RS2021).

Age is calculated on an annual basis. Hence, the figures do not consider an earlier or delayed start to primary education of an individual child.

Calculation of indicator
Respondents with children aged 0–15 living in the household receive the question on their attendance of childcare or school. To calculate this indicator, the number of children between three years and the specific starting age of compulsory primary education in early childhood education is set in relation to the total number of children aged between three years and the specific starting age of compulsory primary education, including INR and excluding those who are already in primary education.

Comparability to Eurostat indicators
This indicator is partially comparable to Eurostat's indicator for participation in early childhood education (*educ_uoe_enra21*). Eurostat uses data from

educational registers, while FRA uses the respondent's reporting on behalf of children in the household. FRA also calculates age on annual basis. Hence, the figures do not consider an earlier or delayed start to primary education of an individual child.

Share of people aged 20–24 who have completed at least upper secondary education: ***EDUMAX***

This indicator shows the share of people (respondents or household members) aged 20–24 who have completed upper secondary or higher education, according to the ISCED 2011 classification, out of all people aged 20–24.

Calculation of indicator
For all household members aged 16+, a question on the highest level of education completed is asked. To calculate this indicator, the number of household members aged 20–24 years with a minimum educational attainment of upper secondary level (ISCED 3 to ISCED 8) is set in relation to the total number of household members aged 20–24, including those with INR for the educational attainment question.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's indicator population by educational attainment level, sex and age (*edat_lfse_03*), which can be filtered for the relevant age group used in the indicator.

Share of children aged 6–15 attending schools where all or most of their schoolmates are Roma, as reported by the respondents: ***hcho5b2***

This indicator on ethnic segregation in education denotes the share of children in Roma households aged 6–15 years who attend schools where all or most of their schoolmates are Roma.

Calculation of indicator
Respondents with children living in the household between the ages of 6 and 15 who were attending school received the question on the ethnic composition of their child's schoolmates. The indicator is calculated by setting the number of children aged 6–15 years in schools where all or most children are Roma in relation to all children in Roma households aged 6–15 years who are in education, including those with INR for the question on ethnic composition of schoolmates.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of children of compulsory schooling age (5–18, depending on the country) in education: ***EDU_attending_compulsoryage***

This indicator shows the percentage of all Roma children of compulsory schooling age (country specific) who attend education. The compulsory schooling age for a given country is taken from the Eurydice Network's information on the **national education systems** in place in the school year for which the survey provides data (i.e. for the RS2021, school year 2020/2021).

Calculation of indicator

Respondents are asked about their and other household members' attendance of education through several questions. The number of children who are of the country's compulsory schooling age and who currently attend education are set in relation to all household members of the country's compulsory schooling age, including those with INR for the education attendance questions.

Comparability to Eurostat indicators

There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people aged 18–24 who are early leavers from education and training: ***early_leaver***

This indicator denotes the percentage of the Roma population aged 18–24 years who have attained at most lower secondary education and are not involved in further education or training.

Calculation of indicator

The respondent provides information about their main activity, attendance of education and highest achieved educational level and the main activities, attendance of education and highest achieved educational level for other household members aged 16 to 29. People aged 18–24 years are considered early leavers from education if their highest achieved educational level is lower secondary education (ISCED 2) or lower and they are not currently in education. This number is set in relation to the number of household members aged between 18 and 24 years with valid responses for all underlying variables (INR is excluded).

Comparability to Eurostat indicators

This indicator has limited comparability to Eurostat's indicator 'Early leavers from education and training' (*edat_lfse_14*) owing to some deviations from the Eurostat definition. Eurostat includes people who are not in education or training (neither formal nor informal) in the four weeks preceding the Labour Force Survey. FRA asks if household members are 'currently attending school or vocational training' and not explicitly if they are completing informal education. Apart from this difference, the indicators are comparable.

Share of people who felt discriminated against due to their being Roma in the 12 months before the survey when in contact with school authorities, as a parent/guardian or as a student: ***dis12eduinst***

This indicator shows the percentage of all Roma respondents who declared that they have been discriminated against in the 12 months before the survey because of their Roma background – skin colour/Roma background/religion – when in contact with school authorities either as a parent/guardian or as a student.

Calculation of indicator
The indicator should be calculated analogically to the description of discrimination when looking for work provided under the indicator *dis12overall*.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people aged 30–34 who have completed tertiary education: ***edutert***

This indicator shows the share of Roma aged between 30 and 34 years who have completed tertiary education according to the ISCED 2011 classification out of all Roma aged between 30 and 34 years.

Calculation of indicator
The indicator is calculated by dividing the number of people 30–34 years old who have completed tertiary education – that is, short-cycle tertiary education (ISCED 5), a bachelor's degree or equivalent (ISCED 6), a master's degree or equivalent (ISCED 7) or a doctorate or equivalent (ISCED 8) – by the total number of people aged between 30 and 34 years, including those with INR for this question.

Comparability to Eurostat indicators
The indicator is comparable to Eurostat's general population indicator for tertiary educational attainment, age group 30–34 (*t2020_41*).

Prevalence of hate-motivated bullying/harassment of children – due to their being Roma – while in school in the 12 months before the survey, out of all respondents who are parents/guardians of school-age children: ***vh_school***

This indicator shows the share of respondents (out of all respondents who are parents/guardians of school-age children) who declared that their children experienced harassment while in school because of their Roma background in the 12 months before the survey.

Calculation of indicator
All respondents who declared that they were a parent or a guardian to a child who was of compulsory schooling age were asked if in the 12 months before the survey someone made offensive or threatening comments to their child or children in person, for example insulting them or calling them

names, because of their Roma background. The number of respondents reporting such incidents is set in relation to all respondents who are parents/guardians of children of compulsory schooling age, including those with INR for the question on hate-motivated bullying.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Objective 5: Increase equal access to good-quality and sustainable employment

Share of people aged 20–64 who self-declared their main activity status as 'paid work': ***work***

This indicator denotes the share of all household members aged between 20 and 64 years who declared their main activity as paid work (full-time or part-time employment, ad hoc jobs and occasional work), or declared that they were self-employed or did any work in the four weeks prior to the survey to earn money.

Calculation of indicator
Information on respondents' or other household members' employment or 'paid work' status was collected through several questions. The indicator is calculated as a ratio of the total number of people aged 20–64 years indicating that they were in paid work or self-employed, or that they worked in the four weeks before the survey for money or that they were working to the total number of people in Roma households aged between 20 and 64 years, including those with INR for the relevant questions.

Comparability to Eurostat indicators
This indicator has limited comparability to the general population employment rate published by Eurostat (*lfsa_ergan*). This Eurostat indicator is based on the International Labour Organization's concept of paid work: the employed population, aged 20–64 years, consisting of people who during the reference week did any work for pay or profit for at least one hour, or were not working but had jobs from which they were temporarily absent.

Share of young people with the current main activity 'in neither employment, education nor training': ***neet***

This indicator denotes the percentage of all people in Roma households aged between 16 and 24 years who were neither in employment nor in education nor engaged in any formal training.

Calculation of indicator
For all household members aged 16–29, the question on current attendance of school/vocational training was asked in addition to questions needed for the calculation of paid work rate. If people are in paid work, self-employed, helping in their family business or in education/training they are considered not NEET, along with those in paid work as per the indicator *work* and those

indicating that they are attending school or vocational training. The indicator is calculated by setting the number of all people in Roma households aged between 16 and 24 who fall into the NEET category in relation to the number of household members in the same age category (including INR).

Comparability to Eurostat indicators

The comparability of this indicator to the Eurostat NEET rate (*edat_lfse_20*) for the general population is limited owing to the different method used to measure the paid work rate and different age bands. The Eurostat NEET rate is based on the International Labour Organization concept of paid employment, which refers to having worked at least one hour in the week before the survey, whereas FRA based the rate on respondents' and household members' self-declared main activity. In addition, FRA did not ask about participation in non-formal education or training.

Regarding the age band, the Eurostat NEET rate is calculated for people aged between 15 and 24 years, while FRA considers the 16–24 years age band. Taking 15-year-olds into account would result in slightly lower values for those who are not in employment, training or education.

Gender employment gap: the difference in the paid work rate between women and men aged 20–64

This indicator shows the difference (in percentage points) between the share of men aged 20–64 years who self-declared their main activity status as 'paid work' and the share of women aged 20–64 years who self-declared their main activity status as 'paid work'.

Calculation of indicator

Disaggregate the indicator 'Share of people aged 20–64 years who self-declared their main activity status as "paid work"' by sex and calculate the difference between the shares for men and women (men minus women; in percentage points).

Comparability to Eurostat indicators

This indicator has limited comparability to the employment rate for the general population published by Eurostat (*lfsa_ergan*). The Eurostat indicator is based on the International Labour Organization concept of paid work: the employed population, aged 20–64 years, consisting of people who during the reference week did any work for pay or profit for at least one hour or were not working but had jobs from which they were temporarily absent.

Share of Roma who felt discriminated against due to their being Roma in the 12 months before the survey when at work: ***dis12atwork***

This indicator shows the share of people aged 16+ who felt discriminated against due to their being Roma in the 12 months before the survey when at work (self-employed, part time, full time, etc.) out of all Roma respondents who worked in the 12 months before the survey.

Calculation of indicator
The indicator should be calculated analogically to the description of discrimination when looking for work provided under indicator *dis12overall*.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of Roma who felt discriminated against due to their being Roma in the 12 months before the survey when looking for a job: ***dis12lkwork***

Share of people aged 16+ who felt discriminated against due to their being Roma in the 12 months before the survey when looking for a job out of all Roma respondents who were looking for a job/ work in the 12 months before the survey.

Calculation of indicator
See the description provided under indicator *dis12overall*.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Objective 6: Improve Roma health and increase equal access to good-quality healthcare services

Difference in life expectancy at birth between the general population and Roma: calculated externally

See **Annex 4**.

Share of people aged 16+ assessing their health in general as 'very good' or 'good': ***DHE01_r***

This indicator shows the percentage of Roma respondents (16+) who subjectively assess their health in general as 'very good' or 'good'.

Calculation of indicator
Respondents were asked about their health in general, with response categories 'very good', 'good', 'fair', 'bad' and 'very bad'. The number of respondents who declared that their health in general is very good or good are set in relation to all respondents, including those with INR for this question.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's general population indicator (*hlth_silc_01*).

Share of Roma with medical insurance coverage: ***HEA_insurance***

This indicator shows the percentage of Roma respondents (16+) who are covered by the national health insurance scheme or have private health insurance.

Calculation of indicator
The indicator is calculated as the ratio of the number of people who declared that they were covered by a national health insurance scheme or by private health insurance to the total number of respondents, including those with INR for this question.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people who felt discriminated against due to their being Roma in the 12 months before the survey when accessing healthcare services: ***dis12health***

The indicator shows the percentage of all Roma respondents who felt discriminated against because of their skin colour/Roma background/religion when using healthcare services in the 12 months before the survey out of all Roma respondents who used any healthcare services in the 12 months before the survey.

Calculation of indicator
The indicator should be calculated analogically to the description of discrimination when looking for work provided under indicator *dis12overall*.

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Objective 7: Increase equal access to adequate desegregated housing and essential services

Share of people living in housing deprivation (living in an apartment that is too dark or with a leaking roof, no bathroom/shower or no indoor toilet): ***housdepr***

The indicator denotes the proportion of people who live in a household that has at least one of the following problems:

- leaking roof, damp walls/floors/foundations or rot in window frames or floor
- too dark (meaning there is not enough daylight coming through the windows)
- no shower/bathroom inside the dwelling
- no (flushing) toilet inside the dwelling.

Calculation of indicator
The four problems are asked about in two questions to be answered by the respondent on behalf of the entire household. The indicator is calculated as a ratio of the number of people living in households who reported any of the problems to the total number of people living in the interviewed households, including those with INR for the relevant questions.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's indicator denoting the housing deprivation rate by number of items (*tessi291*).

Share of people living in a household that does not have the minimum number of rooms according to Eurostat's definition of overcrowding: ***overcrowd***

This indicator denotes the percentage of all people (household members) that live in an overcrowded household. The Eurostat definition[44] considers a household overcrowded if it does not have a minimum number of rooms. This minimum number of rooms must be equal to:

- one room in the household;
- one room per couple in the household;
- one room for each single person aged 18 or over in the household;
- one room per pair of single people of the same gender between 12 and 17 years of age in the household;
- one room for each single person between 12 and 17 years of age in the household and not included in the previous category;
- one room per pair of children under 12 years of age in the household.

Calculation of indicator
The information needed to calculate this indicator is gathered through several questions: the relationship of each household member with the respondent, their age and their sex (to identify the couples and the number of children); and the number of rooms in the accommodation. The overcrowding indicator is calculated as the share of people who live in a household that does not have the minimum number of rooms required, according to Eurostat's definition of overcrowding, out of all members of the interviewed household who provided valid answers (INR excluded).

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's general population indicator (*ilc_lvho05a*).

Share of people living in a household without tap water inside the dwelling: ***HLS04_1r***

This indicator shows the percentage of household members who live in a household that does not have tap water inside the accommodation.

44 Eurostat (n.d.), '**Glossary: Overcrowding rate**'.

Calculation of indicator
A question on whether or not there is tap water (inside) the accommodation is answered for each interviewed household. The indicator is calculated as the share of people living in households that do not have tap water (inside) out of all people living in the interviewed households (including INR for the question on tap water (inside)).

Comparability to Eurostat indicators
The closest Eurostat indicator that can be compared to this indicator is the share of the total population with no bathroom, shower indoor flushing toilet in their household (*ilc_mdho05*). This general population indicator, owing to obvious differences in its concept, can be used only as a proxy.

Share of Roma living in a household with no toilet, shower or bathroom inside the dwelling: ***sanitation1***

This indicator shows the share of people living in households with no toilet, shower bathroom inside the dwelling out of all household members.

Calculation of indicator
The indicator is calculated as the ratio of the number of people living in households with no inside (flushing) toilet, inside shower or inside bathroom to the total number of people living in the interviewed households, including those with INR for the relevant questions.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's general population indicator (*ilc_mdho05*).

Share of Roma living in a dwelling with a leaking roof; damp walls, floors or foundations; or rot in window frames or floors: ***HLS06_3***

This indicator is one of the subindicators of the housing deprivation indicator. It shows the share of people (out of all household members) living in a dwelling with a leaking roof; damp walls, floors or foundations; or rot in window frames or floors.

Calculation of indicator
The indicator is calculated as a ratio of the number of people who live in accommodation that has a leaking roof, damp walls/floors/foundations, or rot in window frames or floors (as reported by the respondent) to all people living in the interviewed households, including those with INR for the relevant question.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's general population indicator (*sdg_01_60*).

Share of Roma living in a household that in the five years before the survey had been forced to leave the accommodation or halting site: ***eviction***

This indicator shows the percentage of all Roma household members who live in households that in the five years before the survey had been forced to leave the accommodation or halting site, because they were evicted or forced to leave by a private landlord or by authorities, among all members of the interviewed Roma households.

Calculation of indicator

The indicator is calculated as a ratio of the number of people who live in households that either have been forced to leave their dwelling in the five years before the survey by legal order (eviction or distraint) or moved to where they live because they were forced by authorities, they were evicted or their dwelling was demolished in the five years before the survey to the total number of people living in the interviewed households, including those with INR for the relevant questions.

Comparability to Eurostat indicators

There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of people who felt discriminated against because they were Roma in the five years before the survey when looking for housing: ***dis5house***

This indicator shows the percentage of all Roma respondents who felt discriminated against because of their skin colour/Roma background/religion when trying to rent or buy an apartment or house in the five years before the survey out of all Roma respondents who tried to do this in the five years before the survey.

Calculation of indicator

Discrimination because of being Roma when trying to rent or buy an apartment or a house in the five years before the survey occurred if a respondent indicated that they had been trying to rent or buy an apartment or a house in the five years before the survey and that they were discriminated against in the five years before the survey when doing so because of their skin colour or racial origin, their Roma background or their religion/religious beliefs (N_{dR}).

Discrimination had not occurred if the respondent had been trying to rent or buy an apartment or a house in the five years before the survey but was discriminated against in the five years before the survey when doing so on other grounds (other than being Roma) or was not discriminated against when doing so at all (N_{ndR}). Respondents who had been trying to rent or buy an apartment or a house in the five years before the survey but who did not provide a valid answer for any of the grounds for discrimination were considered for the calculation of the indicator (N_{INR}). Roma who were

not at risk of discrimination because they were not trying to rent or buy an apartment or a house in the five years before the survey were not considered for the indicator. The indicator *p* is then calculated as:

$$p = \frac{N_{dR}}{N_{dR} + N_{ndR} + N_{INR}} \times 100$$

Comparability to Eurostat indicators
There is no Eurostat indicator for the general population that can be compared to this indicator.

Share of Roma living in a household with the following listed as problems in their accommodation: pollution, grime or other environmental problems in the local area, such as smoke, dust, unpleasant smells or polluted water: ***HLS06_4r***

The indicator shows the share of people (out of all household members) living in accommodation with the following problems: pollution, grime or other environmental problems in the local area, such as smoke, dust, unpleasant smells or polluted water.

Calculation of indicator
The number of people who live in households that have problems with pollution, grime or other environmental problems in the local area, such as smoke, dust, unpleasant smells or polluted water, is divided by the number of people living in the interviewed households, including those with INR for the relevant question.

Comparability to Eurostat indicators
This indicator is fully comparable to Eurostat's general population indicator (*ilc_mddw02*).

ANNEX 4: ESTIMATING THE LIFE EXPECTANCY OF THE ROMA POPULATION

This work was commissioned under a contract with Dr Marc Luy from the Austrian Academy of Sciences to estimate the life expectancy (LE) of Roma populations. If errors are brought to our attention, we will try to correct them. However, FRA accepts no responsibility or liability for the information in this annex.

Introduction
Several studies suggest that the population of Roma and Travellers is severely disadvantaged with regard to health compared with the non-Roma population and faces a range of barriers in accessing healthcare.[45] With regard to the mortality of the Roma population, a large proportion of the reported numbers is based on very crude indicators, such as the longevity rate (the proportion aged 75 and older), the overall death rate (the total number of deaths divided by the total living population) and the

[45] E.g. Bogdanović, D., Nikić, D., Petrović, B., Kocić, B., Jovanović, J., Nikolić, M. and Milošević, Z. (2007), 'Mortality of Roma population in Serbia, 2002–2005', *Croatian Medical Journal*, Vol. 48, No. 5, pp. 720–726; de Graaf, P., Rotar Pavlič, D., Zelko, E., Vintges, M., Willems, S. and Hanssens, L. (2016), 'Primary care for the Roma in Europe: Position paper of the European forum for primary care', *Zdravstveno varstvo*, Vol. 55, No. 3, pp. 218–224; Parekh, N. and Rose, T. (2011), 'Health inequalities of the Roma in Europe: A literature review', *Central European Journal of Public Health*, Vol. 19, No. 3, pp. 139–142.

average age at death. All these indicators are strongly affected by the age structure of the population.

An indicator that eliminates the effect of the age structure in comparisons is LE. Unfortunately, estimates of LE for the Roma population are rare. To reduce the existing knowledge gaps, FRA has sought to obtain additional estimates derived from a different approach. For this purpose, FRA included particular questions in the RTS 2019 and the RS2021 that allow the application of 'indirect estimation techniques'.

Among the approaches to the estimation of adult mortality, the orphanhood method (OM) is seen to be the most reliable and is therefore the most frequently used.[46] It is based on the information collected in surveys on whether or not respondents' mothers and fathers are still alive, which has been proven to be reported very adequately. In the previous study with data from the RTS 2019, the OM was used to estimate LE for Roma and Travellers in the western and northern European countries Belgium, France, Ireland, the Netherlands, Sweden and the United Kingdom.[47] A limitation of this study was that only information about adult mortality was available.

Therefore, to estimate LE at birth it is necessary to assume that the relative difference in LE at age 30 between Roma and Travellers and the corresponding national population can be applied to the complete life span from birth.

This report presents the results of a follow-up study to estimate the LE of the Roma population for 11 countries from southern and eastern Europe with data from the RS2021. The inclusion of additional questions in the RS2021 allowed the indirect estimation of LE based on information on proportions of still-living children and still-living mothers and fathers. The former information was used to estimate child mortality between ages 0 and 5 (boys and girls together), and the latter was used to estimate LE at age 30 separately for women and men. These parameters for child and adult mortality were combined to derive age-specific mortality schedules from ages 0 to 110, from which Roma's LE at birth was estimated.

Data and methods

Roma Survey 2021

The RS2021 was conducted in Croatia, Czechia, Greece, Hungary, Italy, North Macedonia, Portugal, Romania, Serbia and Spain. The database was supplemented by a survey from Slovakia, which also includes the questions needed to estimate adult mortality with the OM. The questions required for the indirect estimation of child mortality are not included in the Slovakian survey. The total survey sample from Slovakia comprises the marginalised Roma communities (MRK) and Roma living in the same municipalities but dispersed among the non-Roma population.

[46] Bradshaw, D. and Timæus, I. M. (2006), 'Levels and trends of adult mortality' in: Jamison, D. T., Feachem, R. G., Makgoba, M. W., Bos, E. R., Baingana, F. K., Hofman, K. J. and Rogo, K. O. (eds.), *Disease and mortality in sub-Saharan Africa*, Washington, DC, World Bank, pp. 31–42; United Nations (2006), *World population prospects: The 2004 revision – Vol. III: Analytical report*, New York, United Nations.

[47] FRA (2021), ***Roma and Travellers in six countries – Technical report***, Luxembourg, Publications Office, Annex 3.

TABLE A4.1: DESCRIPTIVE OVERVIEW OF FRA'S RS2021

Country	Survey period		Sample characteristics		
	Beginning	End	Cases	Percentage	Mean age
CZ	16 April 2021	1 August 2021	769	7.9	39.3
EL	26 March 2021	9 July 2021	649	6.7	40.6
ES	15 March 2021	28 June 2021	1,132	11.6	38.6
HR	24 March 2021	11 July 2021	519	5.3	36.1
HU	9 March 2021	8 August 2021	1,409	14.5	42.9
IT	26 February 2021	6 July 2021	541	5.6	38.5
MK	25 March 2021	6 July 2021	519	5.3	43.2
PT	12 March 2021	25 July 2021	568	5.8	44.1
RO	9 March 2021	5 July 2021	1,695	17.4	43.8
RS	18 March 2021	28 July 2021	660	6.8	43.2
SK	1 September 2020	31 December 2020	1,279	13.1	40.2
SK MRK	1 September 2020	31 December 2020	1,007	n.a.	39.3
Overall	1 September 2020	8 August 2021	9,740	100.0	41.3

Sources: FRA's RS2021, and, for Slovakia, EU-SILC MRK 2020.

Estimating life expectancy at birth

Human mortality has a typical age pattern that is characterised by high mortality at young childhood ages, much lower mortality at ages 5–15 and regularly increasing mortality with age in adulthood. Therefore, LE can be estimated quite accurately based on information about mortality levels in broad age segments even if no detailed data on age-specific mortality are available. Indirect estimation techniques also allow the estimation of LE based on only one mortality indicator, that is, child or adult mortality.

The present study uses the flexible two-dimensional mortality model.[48] This model was designed to fit all period life tables included in the Human Mortality Database (HMD). It can be used to estimate a complete set of age-specific death rates m_x for ages 0, 1–4 and 5–9, up to 110+, separately for women and men. From this, a complete life table and LE at birth can be derived, given one or two pieces of information: child mortality only or child and adult mortality. The required parameter for child mortality is the probability of dying between ages 0 and 5.

The parameter for adult mortality can be used flexibly for any indicator available. The present study uses LE at age 30 estimated with the OM as an input parameter for adult mortality. The model and its application are explained in detail in the section 'Regression parameters and adjustment factors for the estimation of child mortality between ages 0 and 5 and life expectancy at age 30 for the Roma population'.

For most of the studied populations, information for both child and adult mortality could be derived from the survey data. In cases where no (meaningful) information about adult mortality could be derived, LE at birth was estimated based on only the information about child mortality. In populations for which information about child mortality was missing, the

[48] Wilmoth, J., Zureick, S., Canudas-Romo, V., Inoue, M. and Sawyer, C. (2012), 'A flexible two-dimensional mortality model for use in indirect estimation', *Population Studies*, Vol. 66, No. 1, pp. 1–28.

estimated average child mortality for the total RS2021 sample was used and combined with the available information about adult mortality (LE at age 30) for this particular population.

Estimating child mortality

The first input parameter for the flexible two-dimensional mortality model is the probability of a child dying between birth and their fifth birthday ($_5q_0$). The $_5q_0$ parameter was estimated with the still commonly used Brass method, which is based on the information on aggregate numbers of children ever born and children still alive reported by women classified by five-year age group.[49] The whole estimation procedure includes the following six steps:

(1) the calculation of proportions of deceased children by five-year age group of women
(2) the calculation of average numbers of children by five-year age group of women
(3) the selection of a model life table family
(4) the estimation of probability of dying between ages 0 and n ($_nq_0$) from each five-year age group of women
(5) the estimation of the reference year of each estimated $_nq_0$
(6) the conversion of each estimate of $_nq_0$ into an estimate of $_5q_0$.

Model life tables, mentioned in step 3, were developed to provide a wide set of plausible life tables for human populations. They can be used for comparison in the assessment of empirical estimates of mortality, to smooth or otherwise adjust defective mortality estimates and to complete the life table when estimates of mortality are available for only a limited range of ages. Model life tables differentiate certain general patterns of age-specific mortality schedules that are referred to as 'families'.[50]

The online version of *Tools for demographic estimation* includes an Excel template for the empirical application of the Brass method.[51] This template was used to estimate child mortality of the Roma population in terms of $_5q_0$.

The input data for steps 1 and 2 were calculated from the RS2021 for five-year age groups of women from 20–24 to 45–49. Information from women aged 15–19 was excluded because case numbers were too low and because of the well-documented overestimation of child mortality with the Brass method derived from women below age 20. With regard to step 3, the estimations were based on the West family of the Princeton model life tables.[52] The estimations and conversion in steps 4 to 6 were performed automatically in the Excel template. Finally, the results for $_5q_0$ and corresponding reference periods were used to estimate a time trend in $_5q_0$ using linear regression modelling.

Estimating adult mortality

The second input parameter used for the flexible two-dimensional mortality model is LE at age 30 (e_{30}), estimated with the OM. The OM is based on survey information on maternal and paternal survival, that is whether or not respondents' mothers and fathers were still alive at the time of the survey.[53] e_{30} was estimated using the same variant of the OM, the modified

[49] Brass, W. (1975), *Methods for estimating fertility and mortality from limited and defective data*, Chapel Hill, NC, University of North Carolina.

[50] For more details, see Moultrie, T., Dorrington, R., Hill, A., Hill, K., Timæus, I. and Zaba, B. (2013), ***Tools for demographic estimation***, Paris, International Union for the Scientific Study of Population (IUSSP).

[51] *Ibid*.

[52] Coale, A. J., Demeny, P. and Vaughan, B. (1983), *Regional model life tables and stable populations*, 2nd edition, New York, Academic Press.

[53] E.g. Hill, K., Zlotnik, H. and Trussell, J. (1983), *Manual X – Indirect techniques for demographic estimation*, New York, United Nations.

orphanhood method (MOM),[54] as in the RTS 2019. A detailed description of the procedure can be found in the corresponding FRA report.[55] The survival functions for the national populations were constructed from the age-specific probabilities of dying using data from the HMD, Eurostat and the United Nations.

Priority was given to data from the HMD that provide age-specific probabilities of dying for single ages from 0 to 110 and single calendar years. For years where HMD data were not available, data from the Eurostat database were used that provide age-specific probabilities of dying for single ages from 0 to 85 and single calendar years. Age-specific probabilities of dying were extended to age 110 with the Kannisto method.[56]

For years for which neither HMD nor Eurostat data were available, data from the United Nations World Population Prospects that provide probabilities of dying for all countries by five-year calendar period and five-year age group until age 100 were used. These were interpolated using the mid-periods as a reference to obtain data for single calendar years and ages. Finally, the age-specific probabilities of dying were extended to age 110 using the Kannisto method.

The four kinds of information needed to apply the MOM were available for all countries included in the RS2021: the proportion of still-living mothers, proportion of still-living fathers, average age of still-living mothers and average age of still-living fathers (**Table A4.2**).

TABLE A4.2: KEY PARAMETERS OF TOTAL SAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average	Still alive	Unknown	Average	Unknown	Still alive	Unknown	Average	Unknown
15–19	697	17.6	651	6	42.1	15	610	14	44.4	16
20–24	1,011	22.1	936	10	46.1	30	869	27	48.4	34
25–29	1,146	27.0	999	28	50.1	34	879	37	52.3	37
30–34	1,094	31.9	897	17	55.1	31	744	23	57.3	32
35–39	957	36.9	742	25	59.4	26	570	25	61.4	19
40–44	882	41.8	557	14	64.2	19	402	29	66.3	21
45–49	871	47.0	426	18	68.6	20	256	33	69.9	11
50–54	760	51.9	235	19	73.2	5	124	22	74.7	6
55–59	680	57.0	100	13	77.3	1	38	18	79.1	0
60–64	620	61.8	34	12	82.5	5	18	14	78.5	3
65–69	522	66.7	20	9	85.5	4	4	12	88.0	1
70+	500	74.3	7	9	83.4	2	2	11	90.0	1
Total	9,740	41.3	5,604	180	55.1	192	4,516	265	55.7	181

Sources: FRA's RS2021, and, for Slovakia, EU-SILC MRK 2020.

[54] Luy, M. (2009), *Estimating mortality differentials in developed populations from survey information on maternal and paternal orphanhood*, Vienna, Vienna Institute of Demography; Luy, M. (2010), ***Supplement to estimating mortality differentials in developed populations from survey information on maternal and paternal orphanhood***, Vienna, Vienna Institute of Demography.

[55] FRA (2021), ***Roma and Travellers in six countries – Technical report***, Luxembourg, Publications Office, Annex 3.

[56] Thatcher, A. R., Kannisto, V. and Vaupel, J. W. (1998), *The force of mortality at ages 80 to 120*, Odense, Odense University Press.

The completeness of information on parents' actual survival status is high, at 98.2 % for mothers and 97.3 % for fathers. The proportions of respondents stating the actual age of their still-living parents is also relatively high for both parents (96.6 % for mothers and 96.0 % for fathers). All analyses were based on cases with valid information only. Because proportions of respondents below age 20 with deceased parents and proportions of respondents aged 65 and older with still-living parents are too low to apply the MOM, the age groups 15–19, 65–69 and 70+ were excluded from the analyses.

The estimates for e_{30} and corresponding reference periods from the individual five-year age groups of respondents were used to estimate a time trend in e_{30} using linear regression modelling. To decide which estimates to include in the trend estimation, the following criteria were applied (as in the RTS 2019).

- The number of still-living and deceased parents must be five or more.
- Because mortality increases with age, the proportion of still-living parents should decrease with the age of respondents.
- Because the mortality of men is generally higher than female mortality and because fathers are usually some years older than mothers, the proportion of still-living mothers should exceed that of fathers in all respondents' age groups.
- The age at childbirth of respondents' parents should either stay approximately constant or decrease with the age of respondents' parents, that is, with the age of the respondents themselves.
- Fathers should have a higher average age at childbirth than mothers in all age groups of respondents.

In cases where the plausibility criteria are not fulfilled, visual inspections of estimated LE values were carried out and age groups that biased the LE trend depicted by the estimates derived from the age groups fulfilling the inclusion criteria were excluded. More details about the plausibility criteria and the particular estimation procedure can be found in FRA's 2021 technical report on Roma and Travellers in six countries.[57]

It is important to note that the estimates for adult mortality obtained with the OM approach refer by definition to parents only. Because parents generally have lower mortality than individuals without children, this feature of the OM leads most likely to an underestimation of mortality for the entire population. Therefore, the values for e_{30} were adjusted to obtain estimates for the total Roma population. The adjustment was based on the extent of underestimation of MOM estimates found in a study on the national population of Italy.[58]

The MOM estimates were adjusted by multiplying the values for e_{30} for the Roma population by the factor 0.9709 for women and by the factor 0.9837 for men. The resulting estimates of LE at age 30 for the total Roma population are referred to as e_{30}*. The use of relative instead of absolute adjustment factors is the only difference from the previous study with the RTS 2019 data. However, the use of two different factors (in the RS2021 and the RTS 2019) led to only small differences in the final estimates.

Results

Child mortality of the Roma population

Table A4.3 summarises the results for the estimation of child mortality (boys and girls combined) for the total sample of the RS2021 (excluding Slovakia,

[57] FRA (2021), ***Roma and Travellers in six countries – Technical report***, Luxembourg, Publications Office, Annex 3.

[58] Luy, M. (2012), 'Estimating mortality differences in developed countries from survey information on maternal and paternal orphanhood', *Demography*, Vol. 49, No. 2, pp. 607–627.

for which no information on the number of children ever born and children surviving was available).

The most recent estimate comes from the information reported by female respondents aged 20–24, which results in an estimated child mortality of 32.4 deaths per 1,000 children, referring to the period June 2017. The oldest estimate refers to the period June 2006 and is derived from female respondents aged 45–49. The child mortality estimated from this age group is 31.3. The estimates from the other age groups fall between these periods. The younger the age group of respondents, the more recent the time points they refer to.

TABLE A4.3: PARAMETERS FOR THE ESTIMATION OF CHILD MORTALITY ($_5q_0$) OF THE ROMA POPULATION WITH THE BRASS METHOD BY AGE OF RESPONDENTS FOR THE TOTAL RS2021 SAMPLE

Age group	Number of female respondents	Mean children ever born	Mean children surviving	Proportion of children surviving	Child mortality ($_5q_0$)	Reference period
20–24	512	1.420	1.375	0.968	32.4	2017.6
25–29	569	2.186	2.158	0.987	13.2	2015.6
30–34	550	2.867	2.805	0.978	21.3	2013.6
35–39	438	3.041	3.002	0.987	11.8	2011.5
40–44	402	3.104	2.930	0.944	48.4	2009.3
45–49	416	3.096	2.971	0.960	31.3	2006.6
Total	2,887	2.569	2.495	0.971	–	–

Notes: Each row refers to a five-year age group of respondents; female respondents only.

Source: Author's own calculations based on FRA's RS2021.

Because child mortality is a rare event, the numbers of reported child deaths are relatively low. Consequently, the estimated levels of child mortality vary considerably. Therefore, we estimated a trend using linear regression modelling, which allows the estimation of child mortality for any year:

$$_5q_0 = -1.2186 * year + 2{,}478.7151 \qquad (1)$$

The estimated child mortality of the Roma population is considerably higher than in the national populations (data not shown). However, according to these estimates, child mortality decreased more in the Roma population than in the national populations, resulting in a decrease in the gap between Roma and national populations. The trend in child mortality in the national populations disaggregated by the sex of the children shows that child mortality is slightly higher among boys than among girls. However, the sex differences in child mortality are relatively small, suggesting that the availability of child mortality estimations for both sexes combined for the Roma populations does not by itself lead to a significant bias in the estimated LE at birth for Roma woman and men.

The high fluctuations in the estimated child mortality for the total sample of the RS2021 make clear that the case numbers are insufficient for estimating child mortality for the single-country samples. Country-specific estimates for child mortality were therefore derived by adjusting the $_5q_0$ estimate for the total sample with the total-sample/country-sample ratio of proportions of still-living children reported by women aged 20–49 (see **Table A4.4**; country-specific estimates can be found in the section 'Regression parameters and adjustment factors for the estimation of child mortality between ages 0 and

5 and life expectancy at age 30 for the Roma population'). In this way, it was possible to at least approximately take different levels of child mortality into account, as they were reported by women in the country samples.

An alternative and less conservative adjustment could have been made based on the proportions of deceased children. However, the variation in child deaths across the national Roma subsamples is much higher than the variation in the proportions of surviving children. We tested this alternative adjustment and found that it resulted in implausible survival functions once the probability of dying between the ages of 0 and 5 adjusted by the proportion of child deaths was used as an entry parameter for the flexible two-dimensional mortality model because the values of *k* lie well below the suggested range of between –4 and 4.[59]

TABLE A4.4: FACTORS FOR THE ESTIMATION OF CHILD MORTALITY ($_5q_0$) FOR EACH COUNTRY-SPECIFIC SUBSAMPLE OF FRA'S RS2021

Country	Number of female respondents	Mean children ever born	Mean children surviving	Proportion of children surviving	Adjustment factor
CZ	273	2.300	2.286	0.994	0.978
EL	217	3.161	3.106	0.983	0.989
ES	404	2.050	2.020	0.986	0.986
HR	189	3.291	3.164	0.961	1.010
HU	462	2.429	2.387	0.983	0.988
IT	187	1.294	1.166	0.901	1.078
MK	152	2.658	2.401	0.903	1.075
PT	170	2.935	2.894	0.986	0.985
RO	644	2.992	2.894	0.967	1.004
RS	189	2.423	2.381	0.983	0.989

Source: Author's own calculations based on FRA's RS2021.

Adult mortality of the Roma population

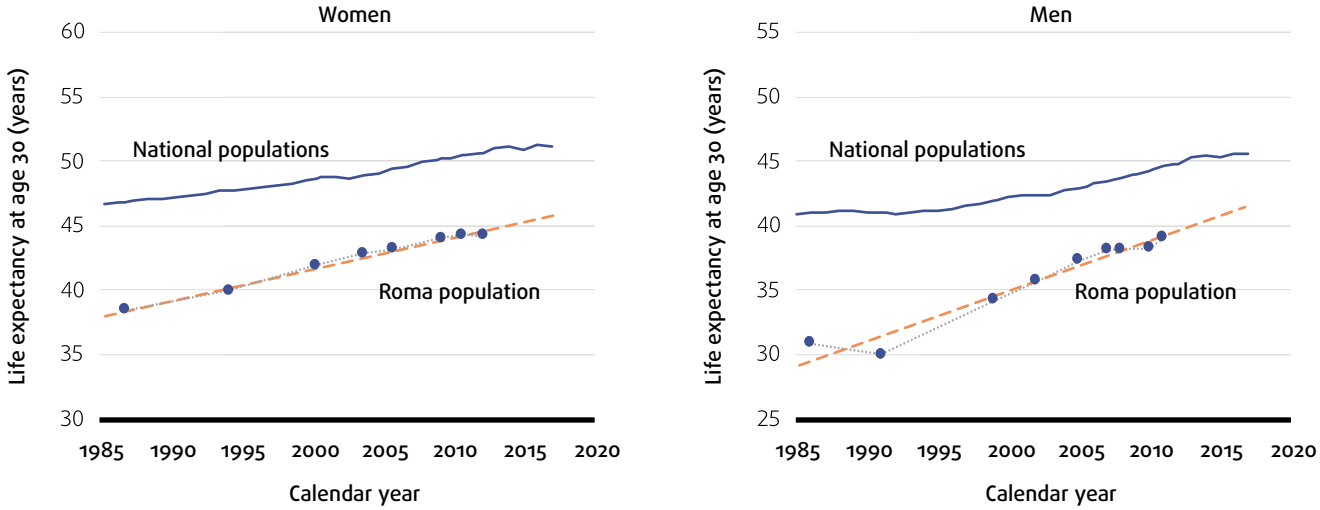
The estimations for LE at 30 (e_{30}) for the total sample of the RS2021 are illustrated in **Figure A4.1** for women and men separately. The solid lines in the graphs show the annual values for average LE at age 30 of the national populations contained in the RS2021 from 1986 to 2017, the most recent year with available data for all countries. Estimates for LE at age 30 for all Roma populations included in the RS2021 are shown in dots for the estimated reference periods, representing the estimates derived from data for respondents aged 20–24 to 60–64 from right to left.

The MOM estimates for e_{30} are more robust and show much smaller fluctuations than the indirect estimations of child mortality. The e_{30} values for the Roma population lie distinctly below the values for the national populations among both sexes. The differences range from 6.2 to 8.6 years among women, and from 5.5 to 11.0 years among men.

The linear trends derived from the point estimates also indicate that the Roma population experienced an increase in LE in the most recent decades. In fact, the trends suggest that the increase in LE was even slightly sharper than in the average for national populations. Consequently, the extent of the Roma's disadvantage in LE at age 30 decreased for both sexes, with a sharper decrease among men than women.

[59] Wilmoth, J., Zureick, S., Canudas-Romo, V., Inoue, M. and Sawyer, C. (2012), 'A flexible two-dimensional mortality model for use in indirect estimation', *Population Studies*, Vol. 66, No. 1, p. 14.

FIGURE A4.1: ESTIMATES FOR LE AT AGE 30 OF THE ROMA POPULATION WITH THE MOM (POINT ESTIMATES AND LINEARLY SMOOTHED TREND) COMPARED WITH THE TOTAL NATIONAL POPULATIONS, 1985–2020



Notes: Data from the age group 35–39 for women were excluded from the trend estimation because too high a proportion were still alive; estimates for the LE of the Roma population refer to parents only (e_{30}).

Sources: Author's own calculations based on data from FRA's RS2021, the Human Mortality Database, the United Nations and Eurostat, and, for Slovakia, EU-SILC MRK 2020.

The regression parameters for the estimated linear trends in e_{30} allow the estimation of LE at age 30 for Roma women for any year as follows:

$$e_{30} = 0.2555 * year - 469.4085 \qquad (2)$$

The parameters also allow the estimation of LE at age 30 for Roma men as follows:

$$e_{30} = 0.3792 * year - 723.4765 \qquad (3)$$

Equivalent estimations of LE at age 30 were carried out for all national subpopulations of the RS2021 (see the section 'Regression parameters and adjustment factors for the estimation of child mortality between ages 0 and 5 and life expectancy at age 30 for the Roma population').

Life expectancy at birth of the Roma population

Equations 1, 2 and 3 were used to estimate child mortality ($_5q_0$ for both sexes combined) and adult mortality (e_{30} for women and men separately) of the Roma population for 2010 and 2017. The resulting estimates for e_{30} (which refer to parents only) were converted to estimates for e_{30}* (i.e. adjusted to reflect the LE of the total Roma population, including non-parents) as described in the section 'Estimation of adult mortality'. These were the input parameters for estimating LE at birth (e_0) for the Roma population with the flexible two-dimensional mortality model (see the section 'Estimation of life expectancy at birth').

The results are presented for 2010 and 2017. The first year was chosen because it is the most recent year for which the estimated trends for child and adult mortality fall into the years of the empirical estimates from the survey data.

The year 2017 is the most recent for which data for all national populations of the countries included in the survey are available. Note, however, that 2017 lies outside the period with empirical estimates for the Roma populations' adult mortality (see **Figure A4.1**).

Consequently, the estimates for 2017 are derived exclusively from the extrapolated time trend, and they may therefore over- or underestimate the actual mortality of the Roma population. This may be only a minor problem for the estimation of the mortality of the total sample of the RS2021 because the difference in e_{30} from the average of national populations changes only slightly between 2010 and 2017. However, this does not apply to all the national subsamples of the RS2021, where some of the estimated trends in e_{30} deviate significantly from the trend for the corresponding national populations. Therefore, the estimates for 2010 are more reliable and more likely to better reflect the LE of Roma and the difference from the total national populations.

The estimates show that LE at birth varies between countries (**Tables A4.5** and **A4.6**). This holds true for both the Roma population and the total national populations. The extent of variation is similar in both, with somewhat larger variation in the Roma population among women than among men. Note that the estimates for the national Roma subsamples with the highest LE at birth (Portugal and Spain for both sexes and Greece for men) are based only on child mortality.

Estimates for adult mortality were excluded because mortality levels were too low, which meant that the *k* parameters of the flexible two-dimensional mortality model were negative. Negative *k* values imply a lower adult mortality in the Roma population than the national population, which was considered implausible. Therefore, *k* was set to 0 for these populations. Estimating LE at birth solely based on child mortality would most likely result in the overestimation of LE for two reasons.

Firstly, the incorporation of adult mortality leads in all other populations to lower values for LE at birth than estimates based on child mortality only. Secondly, and particularly relevantly to the estimates for men, the estimates for the child mortality of the Roma population include both sexes combined. Usually, male children have a higher mortality rate than female children and, consequently, the child mortality would most likely be somewhat higher if information on child mortality were available for male children only. Therefore, the high estimates of LE at birth for the Roma populations in Portugal and Spain for both sexes and in Greece for men must be interpreted with caution.

TABLE A4.5: ESTIMATES FOR CHILD MORTALITY BETWEEN AGES 0 AND 5 PER 1,000 ($_5q_0$), LE AT AGE 30 (e_{30}*) AND LE AT BIRTH (e_0) FOR THE ROMA AND TOTAL NATIONAL POPULATIONS, 2010

Country	Women					Men				
	Roma population			National population		Roma population			National population	
	$_5q_0$	e_{30}*	e_0	e_0	Difference	$_5q_0$	e_{30}*	e_0	e_0	Difference
CZ	28.6	41.7	67.1	80.6	−13.5	28.6	36.0	61.5	74.4	−12.9
EL[a]	29.0	44.2	70.6	83.2	−12.6	29.0	42.0	67.9	77.9	−10.0
ES[a]	28.9	47.2	72.2	85.0	−12.8	28.9	40.0	66.3	79.0	−12.7
HR	29.6	39.5	63.8	79.8	−16.0	29.6	35.4	60.7	73.4	−12.7
HU	28.9	41.9	67.4	78.3	−10.9	28.9	37.2	63.0	70.6	−7.6
IT	31.6	41.6	66.8	84.5	−17.7	31.6	39.9	65.9	79.5	−13.6
MK	31.5	40.8	65.6	77.0	−11.4	31.5	36.8	62.3	72.9	−10.6
PT[a]	28.9	45.8	72.2	83.1	−10.9	28.9	43.4	67.9	76.8	−8.9
RO	29.4	42.5	68.2	77.4	−9.2	29.4	37.2	62.9	69.9	−7.0
RS	29.0	41.7	67.2	76.7	−9.5	29.0	36.6	62.3	71.6	−9.3
SK[b]	n.a.	44.1	70.4	79.2	−8.8	n.a.	37.9	63.7	71.7	−8.0
SK MRK[b]	n.a.	43.6	69.8	79.2	−9.4	n.a.	37.2	63.0	71.7	−8.7
Total	29.3	42.9	68.9	79.8	−10.9	29.3	38.1	64.0	73.3	−9.3

Notes:

[a] *Estimate for e_0 is based only on child mortality for both sexes (estimates for women in Portugal and Spain, estimates for men in Greece and Portugal).*

[b] *$_5q_0$ estimate for the total sample used for the estimation of e_0; estimates for $_5q_0$ refer to both sexes; n.a., not available.*

Sources: Author's own calculations based on FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.

TABLE A4.6: ESTIMATES FOR CHILD MORTALITY BETWEEN AGES 0 AND 5 PER 1,000 ($_5q_0$), LE AT AGE 30 (e_{30}*) AND LE AT BIRTH (e_0) FOR THE ROMA AND TOTAL NATIONAL POPULATIONS, 2017

Country	Women					Men				
	Roma population			National population		Roma population			National population	
	$_5q_0$	e_{30}*	e_0	e_0	Difference	$_5q_0$	e_{30}*	e_0	e_0	Difference
CZ	20.3	43.6	70.2	81.9	−11.7	20.3	36.3	62.6	76.0	−13.4
EL[a]	20.5	46.4	74.0	83.7	−9.7	20.5	48.2	69.8	78.6	−8.8
ES[a]	20.5	49.9	74.4	85.7	−11.3	20.5	43.5	69.9	80.3	−10.4
HR	21.0	40.2	65.2	80.9	−15.7	21.0	38.0	64.5	74.9	−10.4
HU	20.5	43.7	70.3	79.3	−9.0	20.5	39.4	66.2	72.6	−6.4
IT	22.4	43.4	69.9	84.9	−15.0	22.4	41.1	68.1	80.5	−12.3
MK	22.3	40.8	66.1	77.7	−11.6	22.3	37.0	63.2	74.2	−11.0
PT[a]	20.5	47.6	74.4	84.4	−10.0	20.5	47.8	69.9	78.4	−8.5
RO	20.8	43.5	70.2	78.8	−8.6	20.8	39.5	66.3	71.6	−5.3
RS	20.5	42.4	68.6	78.0	−9.4	20.5	36.8	63.1	73.1	−10.0
SK[b]	n.a.	45.7	73.0	80.6	−7.6	n.a.	40.7	67.7	73.8	−6.1
SK MRK[b]	n.a.	45.3	72.5	80.6	−8.1	n.a.	39.4	66.2	73.8	−7.6
Total	20.8	44.7	71.7	80.9	−9.2	20.8	40.7	67.7	74.9	−7.2

Notes:

[a] *Estimate for e_0 is based only on child mortality for both sexes (estimates for women in Portugal and Spain; estimates for men in Greece, Portugal and Spain).*

[b] *$_5q_0$ estimate for total sample used for the estimation of e_0; estimates for $_5q_0$ include both sexes; n.a., not available.*

Sources: Author's own calculations based on FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.

The disadvantages of the Roma populations in LE at birth compared with the national populations are somewhat larger among women than among men. Note, however, that these variations are strongly determined by the LEs of the national populations. The male national populations of central and eastern European are characterised by considerably higher mortality levels than their western European counterparts.

By contrast, the LEs of female national populations from central and eastern Europe are much closer to those of western European populations. Therefore, the smaller differences in LE at birth between Roma and national populations among men are a result of the higher mortality of the male national populations, and not of the comparatively lower mortality of the male Roma populations. Likewise, the huge disadvantage of the Roma population in Italy among both sexes is to a large extent due to the very high LE of the national Italian population, which belongs to the top countries worldwide in the ranking of LE.

Summary and conclusions

This report presents the results of a study on the LE of the Roma populations in 11 countries from southern and eastern Europe. Because no data on the age-specific numbers of deaths and living population are available for these populations, LE could not be derived from the classic life table methodology based on directly calculated age-specific death rates. Therefore, indirect estimation techniques were used, allowing the estimation of the LE of the Roma population with the flexible two-dimensional mortality model.

The model requires two input parameters: an indicator for child mortality and an indicator for adult mortality. These indicators were estimated with the Brass method, which is based on the proportions of still-living children, and the MOM, which is based on the proportions of still-living parents. The analyses were carried out with data from FRA's RS2021, which included the questions required to obtain the information needed to apply the two indirect methods, complemented with data from a national survey in Slovakia.

The study represents a follow-up project of a previous study on the LE of Roma and Travellers in six northern and western European countries with data from FRA's RTS 2019. It increased the quality of the estimations by including information on child mortality in the Roma population. This improved the reliability of the estimations because the availability of indicators for both child and adult mortality enabled the estimation of particular age-specific mortality schedules for the Roma population. These mortality schedules differ from those of the national populations not only in terms of the mortality level but also in terms of the age pattern.

In general, the results confirm previous estimates of the extent of differences in LE between the Roma population and the total national populations, and of the similarity between Roma and national populations in decreasing trends in child mortality and adult mortality, and increasing LE at birth. The results, however, must be interpreted with caution. Indirect methods such as those used in this study always entail several drawbacks.

Most importantly, they can provide only broad measures of the overall level and trends in mortality and are inherently unable to detect short-term trends or abnormal age patterns of mortality, such as temporary changes in overall mortality or in particular age ranges. A further limitation of indirect methods is that they yield estimates of mortality that refer to dates well before the survey was conducted. Deaths of family members such as children and parents occur over a period extending back to when respondents' children were born, in the case of the estimation of child

mortality, and when respondents themselves were born, in the case of the estimation of adult mortality.

For both approaches, the younger the respondents, the more recent the derived mortality estimates are. In the case of the estimation of adult mortality with the OM, even the estimates based on respondents aged 20–24 refer to a period about 9–10 years prior to the survey.[60]

Although the series of estimates provided by the information from different age groups of respondents allows the estimation of a time trend, it not advisable to use results for years beyond the most recent reference periods for estimates based on empirical data from the survey.

The previously mentioned inability of indirect estimation to derive particular trends or sudden changes in LE makes estimates outside the range of the empirically estimated reference period insecure. This uncertainty increases with each year from the empirical estimated reference period. Therefore, for the present study the estimates for 2017 must be interpreted with caution. The estimates for 2010 are more reliable because they reflect the actual information derived from the survey.

Besides the disadvantages of indirect mortality estimation, which could be partly eliminated in future surveys, these methods have some advantages over direct methods for the analysis of survey data.

Firstly, they permit the deriving of life tables and thus the estimation of LE. Years of life represent the most easily understandable unit of measurement of mortality levels and differentials. Variations in more frequently used standardised death rates or relative risks are more difficult to assess because large differences in these measures do not necessarily reflect large differences in actual lifetimes. In addition, a life table provides the possibility of estimating the number of healthy life years if information about health is available.

Secondly, indirect methods typically provide trends in demographic characteristics that are derived from a single cross-sectional survey, whereas direct methods usually provide but one estimate from cross-sectional data for a specific year. A third advantage is that the information used is based on respondents' lifetime experience. Thus, fairly precise estimates of the proportions of respondents with still-living children or parents can be obtained even from surveys of moderate size. Knowing the general functionality of these methods, information on interesting aspects of mortality can be collected quite easily and at a moderate cost by including a few simple questions in existing or planned survey programmes.

Finally, it should be kept in mind that indirect estimation is primarily an alternative to having no information. Indirect estimates cannot be – and are not supposed to be – an alternative to estimates based on vital registration data or census data linked to subsequent deaths with high matching rates. The most apt description of indirect techniques' characteristics and their potential was formulated by Kenneth Hill: "Indirect estimation procedures

[60] Detailed compilations in Hill, K. (1984), 'An evaluation of indirect methods for estimating mortality' in: Vallin, J., Pollard, J. H. and Heligman, L. (eds.), *Methodologies for the collection and analysis of mortality data*, Liège, Ordina Editions, pp. 145–177; Hill, K. (2006), 'Indirect estimation methods' in: Caselli, G., Vallin, J. and Wunsch, G. (eds.), *Demography: Analysis and synthesis – Volume IV*, London, Academic Press, pp. 619–631; Hill, K., Zlotnik, H. and Trussell, J. (1983), *Manual X – Indirect techniques for demographic estimation*, New York, United Nations; Moultrie, T., Dorrington, R., Hill, A., Hill, K., Timæus, I. and Zaba, B. (2013), *Tools for demographic estimation*, Paris, IUSSP.

[...] remain important as ways of producing estimates for small population subgroups and for tracking trends. [...] Purists sometimes find this indirectness distressing, whereas pragmatists accept what they can get."[61]

With regard to the estimation of the LE of the Roma population, it can be concluded that indirect estimation can be applied successfully and provides meaningful results. Therefore, the use of indirect methods helps to fill an important knowledge gap regarding the health of Roma and Travellers in Europe.

The data reported in the RS2021 turned out to be a reliable basis for the estimation of LE for most of the subsamples and most age groups. Moreover, the completeness of the data was very high (i.e. there were almost no cases of missing information). The problems that led to the exclusion of some age groups and further subgroups of the national subsamples are most likely due to the low case numbers and different response rates for information on the survival status of respondents' children and parents and their parents' actual age. Thus, the most effective way to overcome these issues would be to repeat the survey in the same countries and, if possible, increase the sample sizes.

Tables A4.7–A4.18 provide descriptive statistics of the data on respondents' parents' survival status and actual ages for the single national subsamples.

TABLE A4.7: KEY PARAMETERS OF CROATIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	76	17.7	70	0	41.6	0	67	0	43.8	0
20–24	81	21.9	72	0	45.2	2	71	0	47.0	1
25–29	67	26.7	56	0	50.6	0	47	2	51.1	1
30–34	63	31.7	49	0	53.9	1	35	0	55.5	0
35–39	42	37.0	30	0	58.0	0	18	0	59.8	0
40–44	45	41.3	23	0	63.8	1	11	0	68.4	0
45–49	34	47.3	12	0	69.4	0	9	1	68.1	0
50–54	25	51.8	5	0	70.8	0	2	0	75.5	0
55–59	23	56.6	3	0	75.0	0	1	0	85.0	0
60–64	22	61.8	0	0	n.a.	0	0	0	n.a.	0
65–69	21	66.5	0	0	n.a.	0	0	0	n.a.	0
70+	20	73.8	0	0	n.a.	0	0	0	n.a.	0
Total	519	36.1	320	0	50.8	4	261	3	50.9	2

Note: n.a., not available owing to absence of valid cases.
Source: FRA's RS2021.

[61] Hill, K. (2006), 'Indirect estimation methods' in: Caselli, G., Vallin, J. and Wunsch, G. (eds.), *Demography: Analysis and synthesis – Volume IV*, London, Academic Press, pp. 631.

TABLE A4.8: KEY PARAMETERS OF CZECHIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	60	17.9	54	3	42.2	3	49	3	45.2	3
20–24	98	22.0	96	0	46.4	1	82	1	48.6	0
25–29	107	27.1	92	3	50.8	6	75	5	52.8	4
30–34	80	31.8	71	0	55.6	4	52	1	57.3	2
35–39	80	37.0	55	1	60.1	5	42	1	62.8	3
40–44	72	42.1	41	0	65.1	3	30	0	66.2	3
45–49	72	47.1	30	0	67.6	3	20	1	68.2	2
50–54	48	51.7	7	0	70.4	0	8	0	71.6	1
55–59	49	56.9	5	0	78.6	0	5	0	79.0	0
60–64	37	62.1	1	0	n.a.	1	1	1	n.a.	1
65–69	35	67.2	0	0	n.a.	0	0	0	n.a.	0
70+	31	73.3	0	0	n.a.	0	0	0	n.a.	0
Total	769	39.3	452	7	53.6	26	364	13	55.2	19

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.9: KEY PARAMETERS OF GREECE SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	29	17.8	28	0	39.1	0	25	0	40.3	0
20–24	56	22.3	54	1	44.9	2	52	0	47.1	2
25–29	100	27.0	92	1	49.2	3	84	0	51.5	4
30–34	88	31.6	84	0	53.3	3	72	1	54.9	3
35–39	72	37.2	66	0	58.1	2	56	0	60.2	2
40–44	67	41.8	42	0	62.6	1	33	0	63.2	0
45–49	51	47.0	24	0	68.4	1	11	0	70.5	1
50–54	57	51.6	16	0	73.2	1	8	0	73.6	1
55–59	33	56.9	7	0	74.9	0	2	0	72.5	0
60–64	37	61.9	1	0	82.0	0	0	0	n.a.	0
65–69	34	66.6	0	0	n.a.	0	0	0	n.a.	0
70+	25	73.7	0	0	n.a.	0	0	0	n.a.	0
Total	649	40.6	414	2	54.1	13	343	1	54.5	13

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.10: KEY PARAMETERS OF HUNGARY SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	90	17.3	82	2	43.2	1	76	5	45.6	0
20–24	142	21.9	118	3	46.2	2	114	11	48.6	4
25–29	164	27.0	135	3	49.0	4	127	5	52.4	4
30–34	142	32.0	103	1	54.8	1	87	2	57.4	3
35–39	112	37.0	85	2	59.2	4	67	3	60.9	4
40–44	109	41.6	71	2	62.7	1	56	6	64.3	3
45–49	120	46.9	58	4	68.3	3	35	6	69.1	3
50–54	117	52.1	31	2	73.1	2	12	3	78.0	1
55–59	103	57.0	15	1	75.9	0	4	2	81.3	0
60–64	137	61.8	8	1	82.1	0	3	1	86.7	0
65–69	90	66.6	1	0	83.0	0	1	0	89.0	0
70+	83	73.4	0	0	n.a.	0	0	0	n.a.	0
Total	1,409	42.9	707	21	54.9	18	582	44	55.5	22

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.11: KEY PARAMETERS OF ITALY SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	44	17.5	40	0	43.2	1	36	1	44.3	3
20–24	67	21.8	58	3	46.0	4	50	5	49.8	2
25–29	72	26.6	52	10	49.4	7	42	10	51.2	6
30–34	74	31.5	42	7	56.1	5	40	5	58.7	5
35–39	69	36.4	44	11	60.2	2	41	9	62.9	2
40–44	39	41.5	19	4	65.0	4	17	5	69.9	5
45–49	43	46.7	18	0	67.6	3	12	2	71.5	1
50–54	28	51.1	10	1	73.6	0	6	1	77.8	0
55–59	34	56.5	4	2	79.0	0	3	5	84.3	0
60–64	23	61.7	4	1	84.7	1	3	1	86.0	0
65–69	22	66.7	1	0	79.0	0	1	2	87.0	0
70+	26	75.8	1	0	n.a.	1	0	3	n.a.	0
Total	541	38.5	293	39	54.2	28	251	49	56.8	24

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.12: KEY PARAMETERS OF NORTH MACEDONIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	29	17.8	26	0	41.8	0	25	0	43.6	0
20–24	50	22.1	48	0	47.3	2	43	0	49.3	3
25–29	62	27.3	56	0	50.5	0	44	1	51.9	0
30–34	54	31.8	42	0	54.5	0	38	0	57.3	1
35–39	48	36.6	37	0	58.6	0	31	0	61.4	0
40–44	40	41.9	21	0	64.1	2	17	0	67.4	1
45–49	40	47.2	17	0	67.6	0	15	0	70.5	0
50–54	44	51.8	17	0	73.2	0	10	0	74.4	0
55–59	43	56.9	6	0	77.3	0	1	0	82.0	0
60–64	47	61.8	0	0	n.a.	0	2	0	81.0	0
65–69	25	66.3	1	0	89.0	0	0	0	n.a.	0
70+	37	75.2	1	0	n.a.	1	0	0	n.a.	0
Total	519	43.2	272	0	55.1	5	226	1	56.5	5

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.13: KEY PARAMETERS OF PORTUGAL SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	32	17.6	31	0	40.4	2	29	0	42.3	2
20–24	42	22.3	41	0	47.0	0	41	0	49.5	0
25–29	61	26.7	55	1	50.1	1	57	1	52.9	1
30–34	72	31.6	70	1	55.3	2	61	2	57.8	1
35–39	54	36.8	51	0	59.8	1	39	0	61.2	0
40–44	56	42.0	42	0	65.9	0	37	0	67.3	0
45–49	42	46.6	29	0	67.3	2	26	1	70.1	1
50–54	48	52.0	17	1	75.9	0	14	1	74.1	0
55–59	33	57.0	11	0	76.0	0	7	0	77.6	0
60–64	29	61.6	2	0	81.0	0	1	0	82.0	0
65–69	35	67.1	4	0	83.0	2	2	1	88.0	1
70+	64	75.6	3	0	83.3	0	0	0	n.a.	0
Total	568	44.1	356	3	57.4	10	314	6	58.4	6

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.14: KEY PARAMETERS OF ROMANIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	102	17.7	95	1	41.7	4	94	2	45.6	3
20–24	142	22.2	132	0	45.6	7	125	2	48.9	10
25–29	158	27.1	138	4	49.7	5	127	4	52.1	7
30–34	174	32.0	146	2	55.4	3	122	2	58.4	4
35–39	151	37.1	120	4	59.0	5	82	4	61.5	4
40–44	163	41.7	97	5	63.7	3	69	7	65.7	6
45–59	178	47.0	84	1	69.1	5	41	3	70.3	1
50–54	132	52.1	43	1	73.2	2	18	1	76.2	1
55–59	142	57.0	16	1	75.0	0	4	1	70.8	0
60–64	125	61.9	7	0	83.7	0	5	0	81.4	0
65–69	130	66.7	8	0	87.3	0	0	0	n.a.	0
70+	98	74.6	0	3	n.a.	0	2	2	90.0	1
Total	1,695	43.8	886	22	56.0	34	689	28	56.4	37

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.15: KEY PARAMETERS OF SERBIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	36	17.5	34	0	39.3	0	34	0	42.0	1
20–24	65	21.9	60	0	45.8	0	57	0	48.3	0
25–29	80	27.1	73	0	48.6	3	57	1	51.4	2
30–34	67	32.1	50	0	53.5	2	51	0	55.4	2
35–39	47	37.3	35	0	57.6	1	23	0	61.0	0
40–44	52	41.9	32	0	64.4	0	25	0	66.4	0
45–49	55	47.1	30	0	67.2	0	16	1	67.9	0
50–54	63	51.4	17	0	71.5	0	13	1	74.9	0
55–59	63	57.2	2	0	79.5	0	1	0	73.0	0
60–64	58	61.9	1	0	78.0	0	0	0	n.a.	0
65–69	41	66.9	0	0	n.a.	0	0	0	n.a.	0
70+	33	73.4	0	0	n.a.	0	0	0	n.a.	0
Total	660	43.2	334	0	53.5	6	277	3	54.7	5

Note: n.a., not available owing to absence of valid cases.

Source: FRA's RS2021.

TABLE A4.16: KEY PARAMETERS OF SPAIN SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	107	17.7	103	0	43.0	3	93	0	44.6	3
20–24	136	22.3	132	1	47.1	2	123	1	49.6	3
25–29	152	26.9	141	3	51.7	2	125	3	53.6	4
30–34	124	31.9	110	1	56.5	0	87	1	59.6	2
35–39	109	36.7	90	1	61.6	2	72	2	61.9	1
40–44	104	41.7	79	0	64.8	1	59	3	69.1	2
45–49	117	46.8	73	1	69.9	2	38	1	71.1	2
50–54	101	51.9	48	2	73.4	0	22	3	74.0	0
55–59	62	56.8	17	0	80.2	1	6	0	82.0	0
60–64	40	62.2	4	0	85.3	1	2	0	77.0	1
65–69	34	66.8	3	0	84.0	2	0	0	n.a.	0
70+	46	74.2	2	0	83.5	0	0	0	n.a.	0
Total	1,132	38.6	802	9	56.7	16	627	14	56.8	18

Note: n.a., not available owing to absence of valid cases.

Sources: FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.

TABLE A4.17: KEY PARAMETERS OF SLOVAKIA SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	92	17.6	88	0	43.3	1	82	3	45.1	1
20–24	132	22.1	125	2	45.8	8	111	7	46.7	9
25–29	123	26.9	109	3	51.4	3	94	5	52.3	4
30–34	156	32.1	130	5	55.7	10	99	9	56.5	9
35–39	173	36.9	129	6	59.5	4	99	6	61.1	3
40–44	135	42.1	90	3	64.7	3	48	8	65.4	1
45–49	119	47.0	51	12	69.1	1	33	17	70.1	0
50–54	97	52.2	24	12	72.8	0	11	12	71.8	2
55–59	95	57.3	14	9	79.5	0	4	10	82.5	0
60–64	65	61.6	6	10	80.3	2	1	11	n.a.	1
65–69	55	66.6	2	9	84.5	0	0	9	n.a.	0
70+	37	72.9	0	6	n.a.	0	0	6	n.a.	0
Total	1,279	40.2	768	77	55.9	32	582	103	55.1	30

Note: n.a., not available owing to absence of valid cases.

Source: EU-SILC MRK 2020.

TABLE A4.18: KEY PARAMETERS OF SLOVAKIA MRK SUBSAMPLE FOR ESTIMATING LE AT AGE 30 BY FIVE-YEAR AGE GROUP

	Respondents		Respondents' mothers				Respondents' fathers			
			Survival status		Actual age		Survival status		Actual age	
Age group	Total no.	Average age	Still alive	Unknown	Average age	Unknown	Still alive	Unknown	Average age	Unknown
15–19	81	17.6	78	0	43.6	1	71	3	44.9	1
20–24	114	22.0	108	2	46.0	8	96	5	46.8	9
25–29	107	26.9	94	3	51.1	3	80	4	51.8	4
30–34	122	32.1	103	3	55.8	10	78	7	56.5	9
35–39	143	36.9	109	5	59.6	4	81	5	61.2	2
40–44	96	42.1	63	2	64.1	2	32	7	65.3	1
45–49	86	46.9	33	8	69.3	1	22	12	69.9	0
50–54	72	52.3	15	7	72.5	0	9	7	71.4	2
55–59	66	57.2	9	7	79.4	0	4	7	82.5	0
60–64	49	61.8	4	7	80.0	2	1	8	n.a.	1
65–69	43	66.8	2	7	84.5	0	0	7	n.a.	0
70+	28	73.0	0	5	n.a.	0	0	5	n.a.	0
Total	1,007	39.3	618	56	55.0	31	474	77	54.5	29

Note: n.a., not available owing to absence of valid cases.

Source: EU-SILC MRK 2020.

Coefficients for the log-quadratic model of the age patterns of mortality for women and men

The present study used an updated version of the log-quadratic model parameters based on the 968 life tables that were available in the HMD in December 2019.

TABLE A4.19: COEFFICIENTS FOR THE LOG-QUADRATIC MODEL OF THE AGE PATTERN OF MORTALITY FOR WOMEN AND MEN

Age	Women				Men			
	a_x	b_x	c_x	v_x	a_x	b_x	c_x	v_x
0	−0.6530	0.7803	−0.0250	0.0000	−0.4937	0.8314	−0.0214	0.0000
1–4	−0.9509	1.9455	0.1007	0.1678	−1.0629	1.9885	0.1142	0.0991
5–9	−2.6373	1.7205	0.0935	0.2520	−3.1540	1.4240	0.0600	0.1650
10–14	−3.3141	1.5909	0.0946	0.3138	−4.0547	1.1525	0.0469	0.1657
15–19	−3.2155	1.4629	0.0928	0.3790	−4.1472	0.8362	0.0356	0.2313
20–24	−3.0000	1.4602	0.0914	0.3822	−3.5822	0.9956	0.0612	0.3071
25–29	−2.9928	1.3778	0.0807	0.3642	−3.5005	1.0643	0.0730	0.3552
30–34	−3.0310	1.2643	0.0721	0.3287	−3.4823	1.0224	0.0695	0.3748
35–39	−3.1815	1.0680	0.0554	0.2899	−3.4854	0.8883	0.0544	0.3662
40–44	−3.3333	0.8674	0.0402	0.2447	−3.4944	0.7191	0.0375	0.3412
45–49	−3.5728	0.6010	0.0163	0.2089	−3.5810	0.4707	0.0105	0.2998
50–54	−3.4662	0.4898	0.0082	0.1768	−3.5623	0.2653	−0.0115	0.2544
55–59	−3.3058	0.3900	−0.0008	0.1593	−3.5450	0.0492	−0.0365	0.2084

Age	Women				Men			
	a_x	b_x	c_x	v_x	a_x	b_x	c_x	v_x
60–64	−2.9425	0.3414	−0.0067	0.1232	−3.2884	−0.0488	−0.0475	0.1745
65–69	−2.7119	0.2049	−0.0237	0.0955	−3.0121	−0.1265	−0.0555	0.1384
70–74	−2.3799	0.0945	−0.0376	0.0667	−2.5686	−0.1127	−0.0514	0.1044
75–79	−2.1191	−0.0224	−0.0480	0.0444	−2.1733	−0.1168	−0.0486	0.0738
80–84	−1.7712	−0.0486	−0.0431	0.0304	−1.7178	−0.0659	−0.0364	0.0494
85–89	−1.4712	−0.0773	−0.0379	0.0164	−1.3802	−0.0756	−0.0324	0.0205
90–94	−1.1745	−0.0715	−0.0281	0.0087	−1.0744	−0.0627	−0.0240	0.0064
95–99	−0.8684	−0.0563	−0.0194	0.0000	−0.7342	−0.0214	−0.0142	0.0000
100–104	−0.6218	−0.0386	−0.0113	0.0000	−0.4823	0.0057	−0.0064	0.0000
105–109	−0.4098	−0.0156	−0.0044	0.0000	−0.3080	0.0178	−0.0016	0.0000
110+	−0.2784	−0.0052	−0.0011	0.0000	−0.2023	0.0214	0.0008	0.0000

*Notes: Log-quadratic model by sex fitted using MortalityEstimate::wilmoth for all period life tables present in the HMD (**https://mortality.org**) in December 2019 (968 life tables); DemoTools/data at master · timriffe/DemoTools · GitHub (**https://github.com/timriffe/DemoTools/tree/master/data**).*

Regression parameters and adjustment factors for the estimation of child mortality between ages 0 and 5 and life expectancy at age 30 for the Roma population

The parameters presented in **Tables A4.20**, **A4.21** and **A4.22** allow the estimation of LE at birth for Roma populations for any calendar year with the flexible two-dimensional mortality model[62] (see the section 'Estimating life expectancy at birth'). This model provides the age-specific death rate m_x, which is estimated for each age x as follows:

$$m_x = \exp(a_x + b_x * h + c_x * h^2 + v_x * k)$$

The parameters a_x, b_x, c_x and v_x are given in tabulated form in the section 'Coefficients for the log-quadratic model of the age patterns of mortality for women and men'. The parameter h is the input parameter for child mortality and is calculated from $h = \ln({}_5q_0)$, with ${}_5q_0$ being the probability of dying between ages 0 and 5. The value for ${}_5q_0$ can be derived for any national Roma subpopulation (and the total of all Roma subpopulations) and any year with the parameters given in **Table A4.20** as follows:

$${}_5q_0 = (a * year + b) * c$$

where a and b are the linear regression parameters for the ${}_5q_0$ trend of the total Roma population, and c is the adjustment factor for the national Roma subpopulations.

The parameter k is the input parameter for adult mortality and is calculated in an iterative procedure to match this indicator. We used LE at age 30 (e_{30}) as the parameter for adult mortality, which can be derived for any national Roma subpopulation (and the total of all Roma subpopulations) and any year with the parameters given in **Table A4.21** for women and **Table A4.22** for men as follows:

[62] Wilmoth, J., Zureick, S., Canudas-Romo, V., Inoue, M. and Sawyer, C. (2012), 'A flexible two-dimensional mortality model for use in indirect estimation', *Population Studies*, Vol. 66, No. 1, pp. 1–28.

$$e_{30}^{*} = (a * year + b) * c$$

where a and b are the linear regression parameters for the trend in e_{30} for national Roma subpopulations of parents, and c is the adjustment factor to estimate e_{30}^{*} for the Roma subpopulations (and the total of all Roma subpopulations), including non-parents. Thus, k was determined to let LE at age 30 derived from the flexible two-dimensional mortality model match exactly the value for e_{30}^{*} estimated with the OM. If no information about adult mortality is available, k can be set equal to 0, which provides estimates for m_x solely based on information on child mortality.

TABLE A4.20: REGRESSION PARAMETERS AND ADJUSTMENT FACTORS FOR NATIONAL SUBPOPULATIONS FOR THE ESTIMATION OF CHILD MORTALITY BETWEEN AGES 0 AND 5 ($_5q_0$) FOR THE NATIONAL ROMA POPULATIONS, WOMEN

Country	Regression parameters		Adjustment factor $_5q_0$
	a (slope)	*b* (intercept)	
CZ	–1.2186	2478.7151	0.9776
EL	–1.2186	2478.7151	0.9887
ES	–1.2186	2478.7151	0.9857
HR	–1.2186	2478.7151	1.0104
HU	–1.2186	2478.7151	0.9881
IT	–1.2186	2478.7151	1.0784
MK	–1.2186	2478.7151	1.0752
PT	–1.2186	2478.7151	0.9852
RO	–1.2186	2478.7151	1.0042
RS	–1.2186	2478.7151	0.9887
SK	–1.2186	2478.7151	1.0000
SK MRK	–1.2186	2478.7151	1.0000
Total	–1.2186	2478.7151	1.0000

Notes: Values for the total Roma population are based on unweighted data; regression parameters and the adjustment factor for $_5q_0$ are estimated with data from FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.

TABLE A4.21: REGRESSION PARAMETERS AND ADJUSTMENT FACTOR TO INCLUDE NON-PARENTS FOR THE ESTIMATION OF LE AT AGE 30 (e_{30}*) FOR THE NATIONAL ROMA POPULATIONS, WOMEN[a,b]

Country	Regression parameters		Adjustment factor e_{30}*
	a (slope)	*b* (intercept)	
CZ	0.2719	−503.5031	0.9709
EL	0.3289	−615.6234	0.9709
ES	0.4049	−765.3199	0.9709
HR	0.1026	−165.6098	0.9709
HU	0.2564	−472.2615	0.9709
IT	0.2661	−491.9761	0.9709
MK	0.0054	31.0659	0.9709
PT	0.2575	−470.3125	0.9709
RO	0.1547	−267.1499	0.9709
RS	0.1058	−169.6686	0.9709
SK	0.2365	−430.0056	0.9709
SK MRK	0.2506	−458.7901	0.9709
Total	0.2555	−469.4085	0.9709

Notes:

[a] *Values for the Roma population are based on unweighted data; regression parameters are estimated with data from FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.*

[b] *Data from the following age groups were excluded from the estimation of regression parameters: Czechia: 20–24 (fewer than five deaths), 30–34 (proportion alive too high), 50–54 (proportion alive too low/age at childbearing (ACB) too low), 60–64 (fewer than five survivors/no information on ACB); Greece: 20–24 (fewer than five deaths), 30–34 (proportion alive too high/fewer than five deaths), 35–39 (proportion alive too high/ACB too low), 60–64 (fewer than five survivors/proportion alive too high/ACB too low); Spain: 20–24 (fewer than five deaths/proportion alive too high); Croatia: 60–64 (no survivors); Hungary: 20–24 (ACB too high/proportion alive too low); Italy: 30–34 (proportion alive too low), 60–64 (proportion alive too high/fewer than five survivors); North Macedonia: 20–24 (fewer than five deaths), 50–54 (proportion alive too high), 60–64 (no survivors); Portugal: 20–24 (fewer than five deaths), 30–34 (fewer than five deaths), 35–39 (fewer than five deaths), 60–64 (fewer than five survivors); Romania: 35–39 (proportion alive too high); Serbia: 30–34 (ACB too low), 45–49 (ACB too low/proportion alive too high), 55–59 (fewer than five survivors), 60–64 (fewer than five survivors); Slovakia: none; Slovakia MRK: 20–24 (fewer than five deaths).*

TABLE A4.22: REGRESSION PARAMETERS AND ADJUSTMENT FACTOR TO INCLUDE NON-PARENTS FOR THE ESTIMATION OF LE AT AGE 30 (e_{30}*) FOR THE NATIONAL ROMA POPULATIONS, MEN[a,b]

Country	Regression parameters		Adjustment factor e_{30}*
	a (slope)	*b* (intercept)	
CZ	0.0465	−56.9317	0.9837
EL	0.8976	−1,761.4222	0.9837
ES	0.5088	−982.0143	0.9837
HR	0.3769	−721.5553	0.9837
HU	0.3201	−605.5547	0.9837
IT	0.1742	−309.6189	0.9837
MK	0.0195	−1.7144	0.9837
PT	0.6421	−1,246.5422	0.9837
RO	0.3291	−623.7068	0.9837
RS	0.0256	−14.3476	0.9837
SK	0.4149	−795.4678	0.9837
SK MRK	0.3129	−591.1172	0.9837
Total	0.3792	−723.4765	0.9837

Notes:

[a] *Values for the Roma population are based on unweighted data; regression parameters are estimated with data from FRA's RS2021 and, for Slovakia, EU-SILC MRK 2020.*

[b] *Data from the following age groups were excluded from the estimation of regression parameters: Croatia: 40–44 (ACB too high), 55–59 (proportion alive too high/fewer than five survivors/ACB too high), 60–64 (no survivors); Czechia: 25–29 (proportion alive too low), 60–64 (fewer than five survivors/no information on ACB); Greece: 20–24 (fewer than five deaths), 25–29 (proportion alive too low), 35–39 (ACB too low/proportion alive too high), 45–49 (proportion alive too low), 55–59 (ACB too low/fewer than five survivors/ACB too low), 60–64 (ACB too low/no survivors/no information on ACB); Hungary: 40–44 (proportion alive too high); Italy: 20–24 (proportion alive too low), 25–29 (proportion alive too low), 30–34 (proportion alive too low), 60–64 (proportion alive too high/fewer than five survivors); North Macedonia: 55–59 (fewer than five deaths); Portugal: 20–24 (fewer than five deaths), 25–29 (fewer than five deaths), 45–49 (proportion alive too high), 60–64 (fewer than five deaths); Romania: 20–24 (ACB too high), 30–34 (ACB too high), 55–59 (ACB too low/fewer than five survivors); Serbia: 55–59 (fewer than five survivors), 60–64 (fewer than five survivors); Spain: 40–44 (ACB too high/proportion alive too high), 60–64 (fewer than five survivors/information about actual age for fewer than five cases); Slovakia: 60–64 (fewer than five survivors/no data for ACB); Slovakia MRK: 60–64 (fewer than five survivors/no data for ACB.*

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PROMOTING AND PROTECTING YOUR FUNDAMENTAL RIGHTS ACROSS THE EU —

FRA's 2021 survey on Roma was conducted in Croatia, Czechia, Greece, Hungary, Italy, Portugal, Romania, and Spain, as well as in North Macedonia and Serbia. It includes interviews with more than 8,400 Roma, collecting information on more than 20,000 individuals living in their households. This technical report provides a detailed overview of the survey methodology used by FRA when collecting the survey data.

Equality

Roma

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