Technical Report on EUROGRADUATE 2022

Data and Methods of the 2nd Phase of the European Pilot Survey of Higher Education Graduates and Recommendations on the Way Forward

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Data and Methods of the 2nd Phase of the European Pilot Survey of Higher Education Graduates and Recommendations on the Way Forward

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1. Outline of the study[1]

EUROGRADUATE 2022 is the second phase of the European pilot survey of higher education graduates. Building on the first EUROGRADUATE Pilot Survey (Meng et al., 2020; Mühleck et al., 2020), EUROGRADUATE 2022 has considerably expanded the number of countries covered (from 8 to 18) as well as the number of usable cases (from about 16,500 cases to about 170,000 cases). EUROGRADUATE 2022 has offered more flexible ways for countries to participate in the study as the previous round. E.g. countries were free to choose from a set of three consecutive questionnaire modules or they could participate with data from their national graduate survey. This flexibility has allowed more countries to participate in the study. At the same time, it means that not all countries cover the full set of variables and that the comparability of information on a small number of variables can be limited (a detailed account on deviations is provided in the dataset documentation Excel file). It should be noted that while 18 countries have provided data for the EUROGRADUATE 2022 Comparative Report (Mühleck et al., forthcoming), just 17 countries have participated in the survey and provided individual level data. Ireland, not being an official pilot country, has contributed to the report with aggregated indicators based on register data.

The EUROGRADUATE surveys are part of the larger European Graduate Tracking Initiative (EGTI) of the European Commission. The EGTI has been initiated by the Council of the European Union which issued recommendations on the tracking of graduates in November 2017 (Council of the European Union, 2017). The ministers noticed that adequate data to guide policies for improving employability of graduates and the match of graduates' education with labour market requirements was missing, especially with respect to comparable data. Taking note of the results of the EUROGRADUATE Feasibility Study (Mühleck et al., 2016) they recommended several measures to improve graduate tracking in Europe, amongst others a European pilot survey among higher education graduates. This recommendation resulted in EUROGRADUATE.

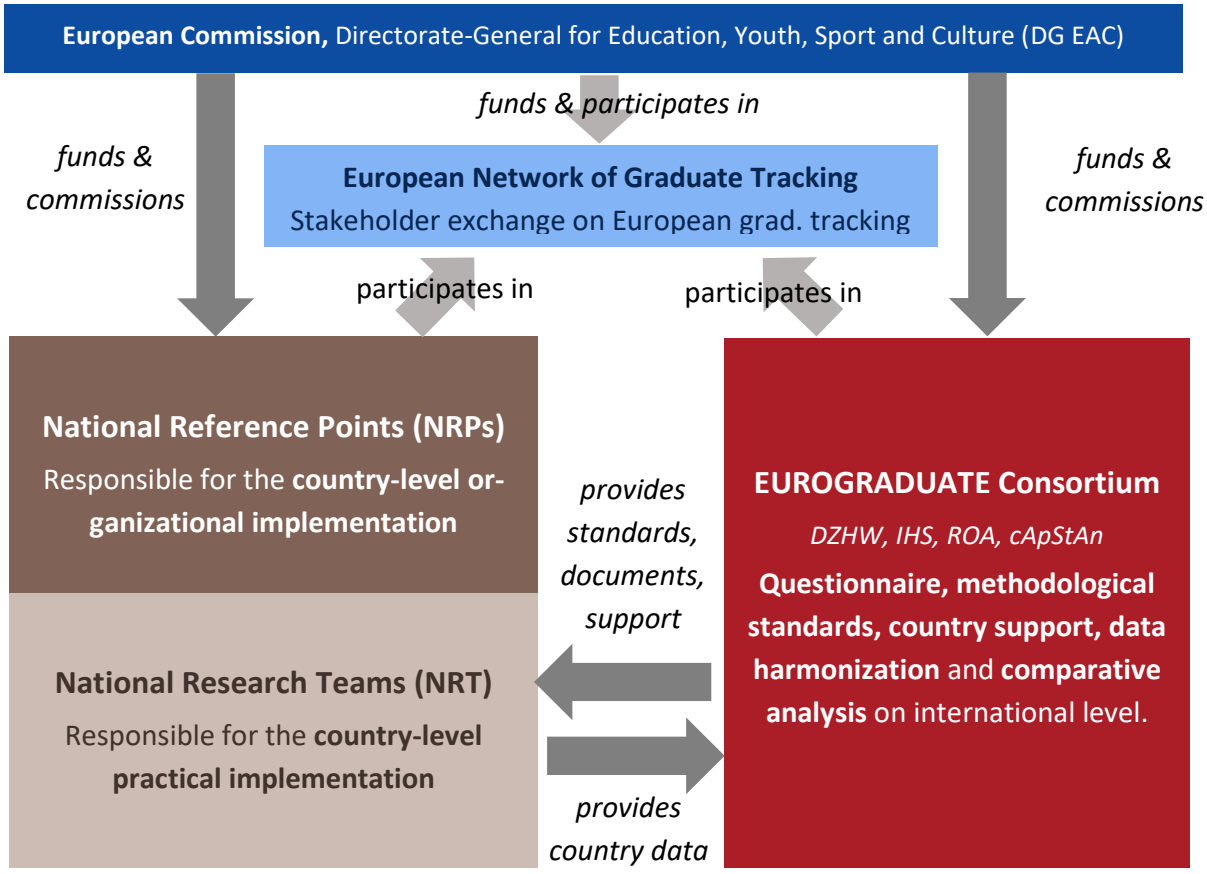
Since then, the interest in comparable data on higher education graduates within the EU has not waned. In contrast, importance of such data seems to increase as higher education is continuously gaining relevance for the welfare and prosperity of individuals and society as a whole. It is expected to accelerate economic growth and innovation, to foster employability, and to promote tolerance, civic engagement and social inclusion. Comparable regular data is needed to monitor and analyse to what extent the higher education systems of European countries meet these expectations and how the individual and social relevance of higher education can be improved. EUROGRADUATE seeks to address this need for comparable and high-quality data on higher education graduates in Europe. The project pursues to monitor the educational pathways of graduates, how they evaluate their study experiences, and how this translates into their professional careers and lives as European citizens. The long-term goal of EUROGRADUATE is to establish a source of comprehensive, comparable, and regular data on higher education graduates covering all countries of the European Economic Area (EEA).

[1] As it is important that this technical report can be read independently the information given draws on and partially overlaps with the introductory chapters of the EUROGRADUATE 2022 Comparative Synthesis Report (Mühleck et al., forthcoming).

2. Project organisation and participating countries

The project is conducted collaboratively by teams in each participating country and the EUROGRADUATE Consortium. Country teams consist of a National Reference Point (NRP) for graduate tracking and a National Research Team (NRT). In most countries, the former is the national ministry responsible for higher education. The NRP organizes the data collection, commissions the NRT, and is a member of the European Graduate Tracking Network (ENGT). The NRT is usually a research organisation or a statistics office. It is responsible for the practical implementation of the data collection and for providing expertise as graduates researchers. Note that the nature of the organisations and the exact division of responsibilities and tasks differs between countries to some extent. Country teams are indispensable for successfully conducting the project. The NRPs have the authority and expertise to organize the data collection. The NRTs have the country-specific expertise for adapting the questionnaire to the national context, translating it to the national language, or for giving valuable hints on how to interpret results of their country.

Figure 2.1: Organisational structure of EUROGRADUATE 2022



Source: EUROGRADUATE 2022 Consortium.

The EUROGRADUATE Consortium is responsible for the international coordination of the project. It prepares the documents and standards needed for the implementation of the survey in the countries, provides support to country teams, and is the central contact point for all questions regarding the project. The consortium cooperates closely with the NRPs, the NRTs, and the European Commission.

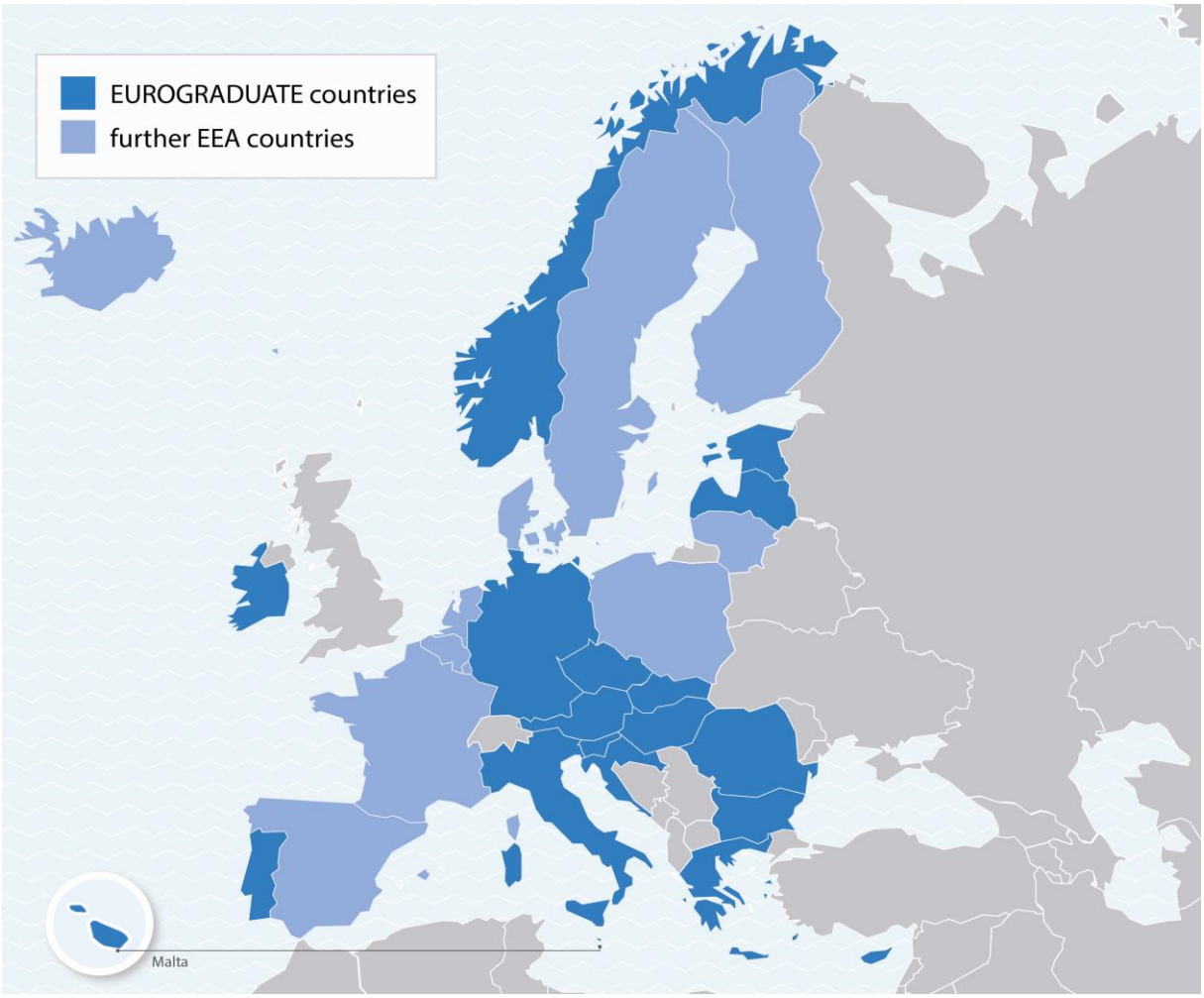
As shown in Figure 2.1, the European Commission, through the Directorate-General for Education, Youth, Sport and Culture (DG EAC), funds and commissions the project and

supports all organisations involved in conducting the project. The ENGT consults on and guides the further development of the EGTI and of EUROGRADUATE.

2.1. Participating countries

The survey was rolled out in 17 pilot countries, applying standards and methods defined by the consortium to create comparable and reliable data. In addition to the pilot countries, Ireland delivered aggregated indicators based on register data. These indicators are included in the EUROGRADUATE Comparative Report (Mühleck et al., forthcoming) but data on Ireland is not covered in the EUROGRADUATE 2022 scientific use file.

Figure 2.2: Participating countries EUROGRADUATE 2022



Source: EUROGRADUATE 2022 Consortium.

All in all, 18 countries of the European Economic Area (EEA) provided data to EUROGRADUATE 2022 (see Figure 2.2): Austria, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Norway, Portugal, Romania, Slovakia, and Slovenia. Seven of these countries also participated in the first EUROGRADUATE pilot survey.

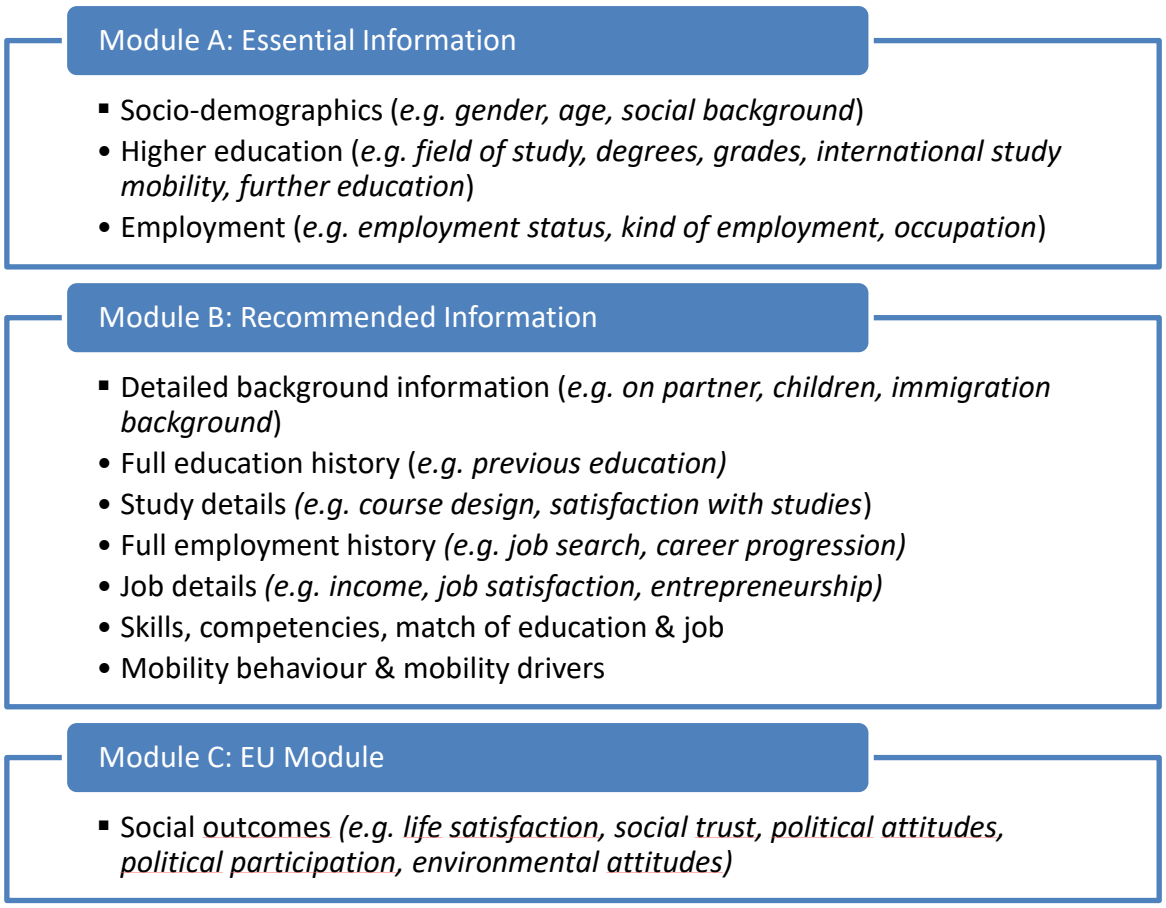
Countries applied for participation on their own initiative. The choice of countries covers all regions of the continent, however south-eastern Europe is particularly well covered, while less countries from western and northern Europe are participating.

3. Contents and survey instrument

3.1. Questionnaire modules

Countries participating in EUROGRADUATE 2022 were invited to choose from three modules (Figure 3.1). This option and the contents of the modules are based on recommendations of the European Commission expert group on graduate tracking (European Commission, 2021).

Figure 3.1: Modules of the EUROGRADUATE 2022 survey



Source: EUROGRADUATE 2022 Consortium.

Module A: Essential Information was the minimum countries needed to cover. It is a relatively small set of variables providing basic information regarding socio-demographics, the study programme, and employment. In principle it should be possible to cover the information of this module with administrative data as well.

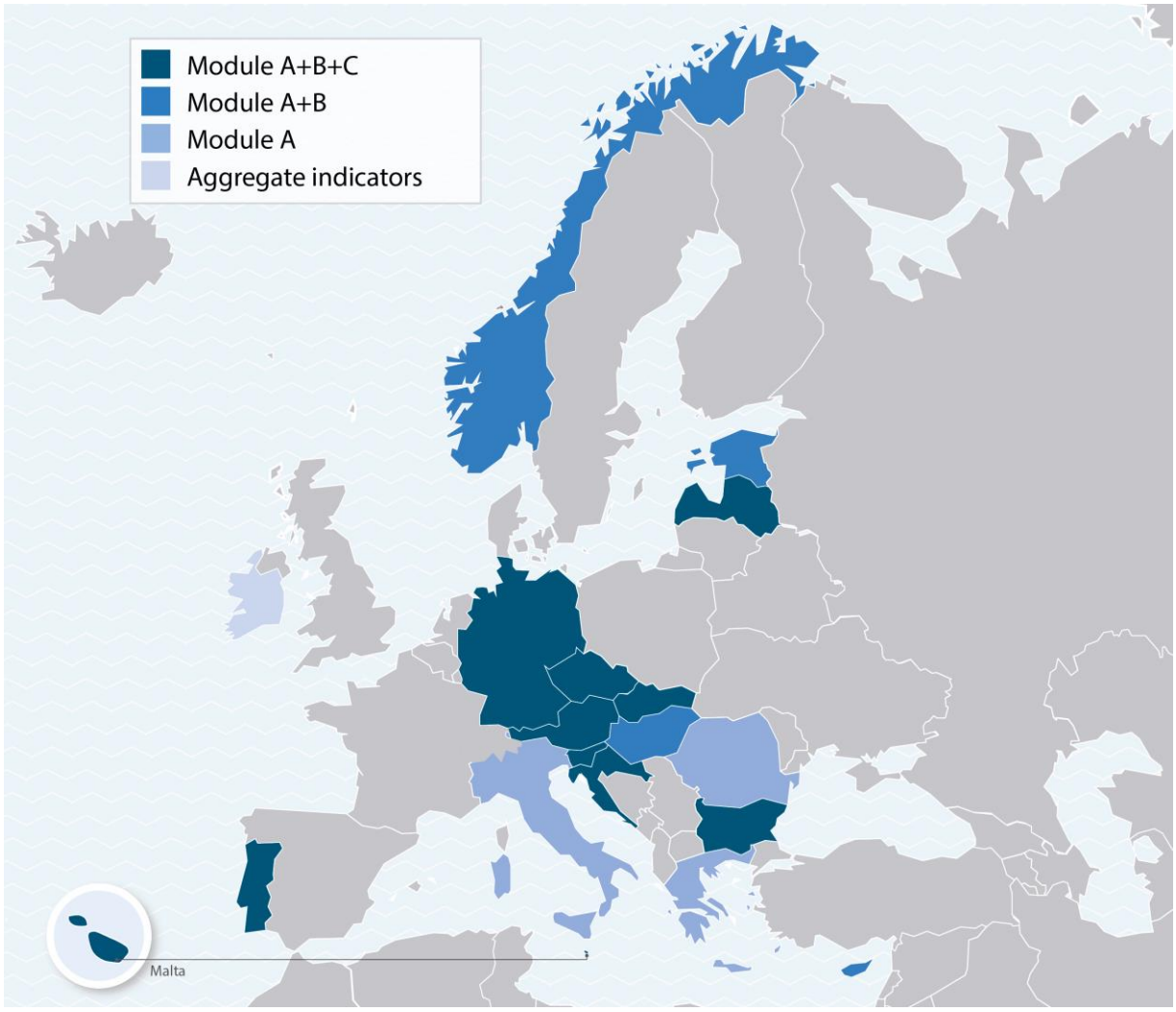
Module B: Recommended Information is the largest module. In addition to Module A, it offers more details on the background of respondents, a full education and employment history, more details on the study programme including teaching and learning or subjective assessments, more details on the job such as income or satisfaction, self-assessments of competencies, and information on mobility after graduation including drivers for mobility. Many of these pieces of information can only be captured by surveys.

Module C: is a smaller module which addresses outcomes of higher education going beyond the labour market such as life satisfaction, social trust, health, political values and political participation, and attitudes towards environmental sustainability.

Countries could choose to cover only Module A, Module A+B, or Module A+B+C. Of the 18 countries contributing to EUROGRADUATE 2022,

- 10 countries surveyed the complete set of questions: Austria, Bulgaria, Croatia, the Czech Republic, Germany, Latvia, Malta, Portugal, Slovenia, and Slovakia;
- 4 countries surveyed the two-module package: Cyprus, Estonia, Hungary, and Norway;
- 3 countries surveyed essential information only: Greece, Italy, and Romania;
- 1 country (Ireland) did not provide microdata, but aggregated indicators on some variables of Module A based on register data (Figure 3.2).

Figure 3.2: Survey modules covered by EUROGRADUATE 2022 countries



Source: EUROGRADUATE 2022 Consortium.

In EUROGRADUATE 2022, countries with a pre-existing national graduate survey had the option to provide the data from their national survey rather than implementing the master questionnaire. This option was used by Germany and Italy. Both countries were able to cover most variables of the modules they chose with their national surveys. Still certain variables are lacking, or the comparability of some variables is limited, as the national surveys could not always be fully adapted to the questionnaire design of EUROGRADUATE (see chapter 4.3 for more details). If the comparability of a variable is clearly limited for a certain country, but the information could still be useful, country-specific variables have been defined. Names of country-specific variations of a variable consist of the name of the variable in question and the

country-code, i.e. *variablename_xy*, where “xy” is the code of the respective country, e.g. “de” in the case of Germany.

3.2. Survey instrument

The EUROGRADUATE 2022 master questionnaire builds on (a) the questionnaire of the first EUROGRADUATE pilot survey 2018, (b) the recommendations of the European Commission expert group on graduate tracking (European Commission, 2021), and (c) input of decision makers on policy-relevant topics. The first EUROGRADUATE pilot survey used the questionnaire of the REFLEX project as starting point (Allen & van der Velden, 2007). An important example of a vastly identical consistency measurement in the REFLEX questionnaire and the EUROGRADUATE 2022 questionnaire are the acquired competencies and the required competencies. Thus, the questionnaire of EUROGRADUATE 2022 overlaps to a certain extent with both the questionnaire of the first pilot survey and the REFLEX questionnaire. However, it was enhanced and modified to address the requirements of the expert group, policy makers, as well as feedback provided by the participating countries and the European Commission. Where questions needed to be replaced or where no questions where available in these sources, the consortium looked for adequate questions in other established graduate surveys or survey instruments from other large-scale international surveys. The latter have been an important source for the questions in Module C on social outcomes of higher education, most notably the European Social Survey, the European Values Study, and the International Social Survey Programme. Questions were designed in a way to ensure compatibility with international standard classifications (e.g. ISCO and ISCED) and ISO norms. Last not least, the questionnaire had to be shortened as compared to the first pilot, because it has been perceived as too extensive by participating countries.

Specific attention was paid to the adequacy of the questionnaire to each country’s specific context as well as to the quality of the translation. The questionnaire was checked by linguistic experts of EUROGRADUATE’s consortium partner cApStAn for possible translatability problems. The English master questionnaire was checked by the NRT for necessary adaptations to reflect the country-specific context. The country-adapted version of the English master questionnaire was translated and implemented into an online survey by each national research team for the respective country. The linguistic experts facilitated a linguistic quality control process for the translation (translation verification) and feedback to the NRTs. In case of problems, the DZHW team was involved to ensure solutions in line with the survey purpose. This procedure is used by cApStAn in many renowned international survey projects such as PISA, TIMSS, or PIAAC to maximise cross-language comparability of questionnaires.

4. Sampling, contacting, and return to the survey

4.1. Definition of the target group

The EUROGRADUATE core target group entails all graduates who achieved a degree at ISCED level 6 (bachelor's degree or equivalent) or level 7 (master's degree or equivalent) in the academic years 2016/17 or 2020/21. The target group explicitly includes international students (graduates born, raised, and/or having attended secondary school outside the survey country) and mobile graduates who left the survey country after graduation. Graduates are considered irrespective of their enrolment status (full-time or part-time). The only persons excluded from the target group are graduates of exclusively employer-run higher education institution, such as military academies or study programmes provided by public administration institutions exclusively to their civil servants.

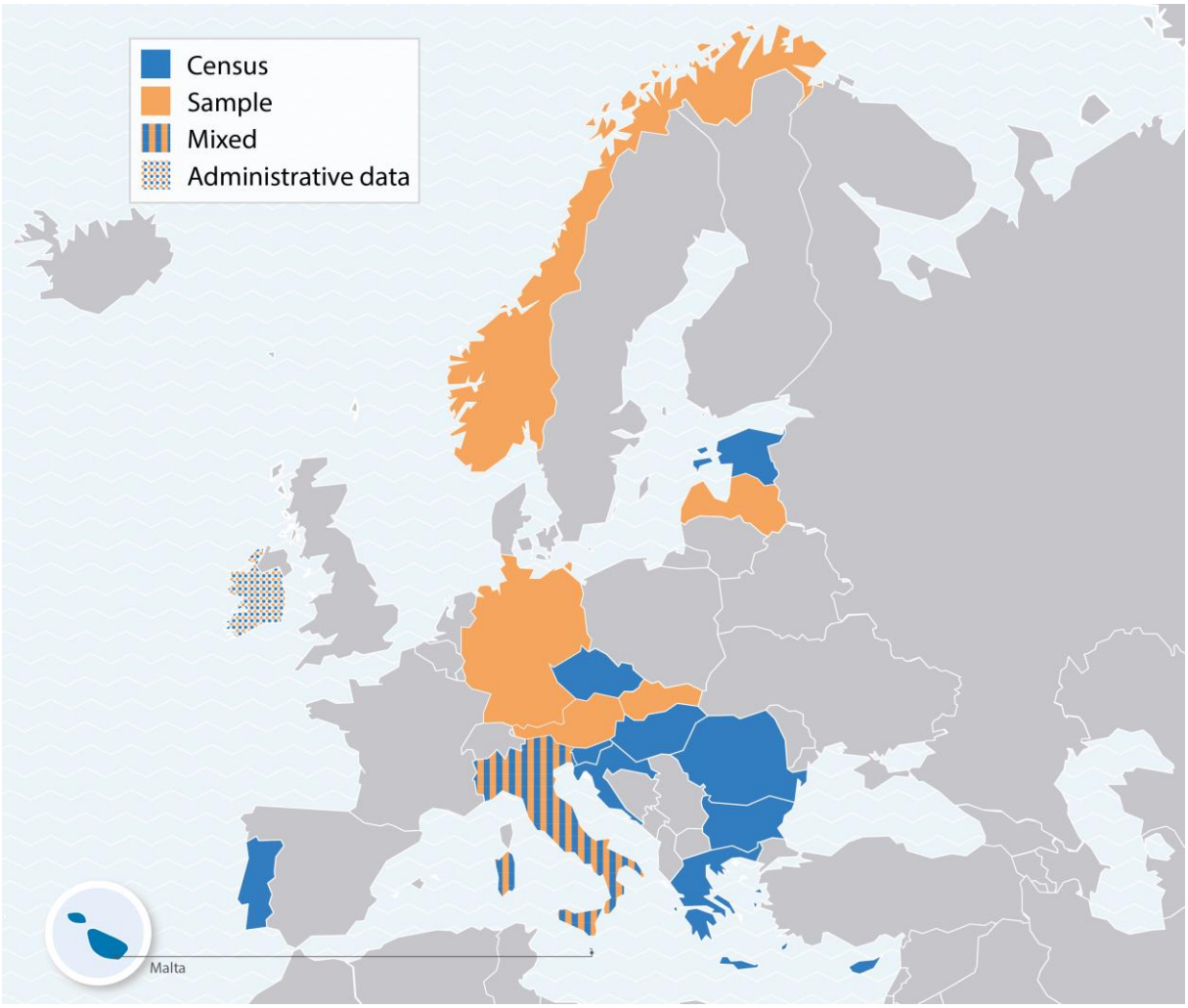
ISCED 8 (doctoral level) graduates are not included in the target group. Countries were free to survey ISCED 8 graduates for statistics and analyses at country level, but these respondents were not considered for the international EUROGRADUATE data. Graduates from ISCED 5 programmes (short-cycle higher education) are eligible for inclusion into a country's target group if the programme they had graduated from was offered by a higher education institution. To establish a standard for all countries, ISCED 5 programmes were considered higher education if their degree was offered by an institution that also offered programmes at ISCED level 6 or higher. This criterion is necessary because some countries offer vocational or secondary ISCED 5 degrees.

A defining criterion for the two cohorts targeted by EUROGRADUATE are the academic years 2016/17 and 2020/21. The start and end of the academic year varies to some extent between countries. Depending on the country, the winter term starts in August, September, or October (European Commission et al., 2022). The summer term usually ends the day before the winter term starts. As information on graduates in countries is often structured in terms of the country-specific runtime of the academic year, countries were free to apply their respective definition of the academic year.

4.2. Sampling, field phase, and response rates

Countries could either survey the whole target group (census) or a random sample. The option of a census was particularly recommended for countries with small cohorts. In fact, most countries chose to invite the entire target population to the survey (see Figure 4.1).

Figure 4.1: Full-population survey (census) or sample survey in EUROGRADUATE 2022 countries



Source: EUROGRADUATE 2022 Consortium.

In countries where a sample was drawn, the standard procedure was a disproportionally stratified random sample which was stratified at least by study fields, cohort, and degree level (additional stratification characteristics were applied by some countries). Two countries, Germany and Italy, participated in EUROGRADUATE with data from their national graduate surveys, and applied their national survey design. The data for Germany is based on a clustered and stratified random sample. The data for Italy is based on a census from more than 90% of the Italian universities. For the cohort 2020/21 a random sample of the survey participants has been resurveyed for EUROGRADUATE (see below for more details on the survey design in Germany and Italy).

Valid cases in the survey underwent a statistical weighting procedure to account for nonresponse and over- and underrepresentation of certain sub-groups of graduates. This weighting adjusted for graduation year, degree level, field of study, age (if available in the country's weighting statistics), and gender. In some countries, additional weighting characteristics, such as type and region of the higher education institution, were used.

Some countries' research teams were able to select and contact graduates based on a central register, while other countries needed to contact graduates via higher education institutions (see Table 4.1 below). Countries without a central register generally opted for the census method (except for Germany). Thus, in these countries it was possible to simply ask institutions to invite all graduates of the target group instead of requiring them to draw a random sample.

This was suggested by the consortium to reduce the efforts for institutions and to simplify the coordination with the numerous institutions for the NRT.

Table 4.1 below provides an overview of key information on the field phase and the number of valid cases achieved (see chapter 5 for more details on the data collection within countries). In seven countries, graduates were contacted via the higher education institutions. Teams of 10 countries could either use one or more existing central registers or were able to compile such a register. As already mentioned above, most countries conducted a census survey, i.e. they contacted all graduates of the target population. The field phase period varied across countries to a certain extent with a core field phase between October 2022 and March 2023 but as well with larger deviations from the field phase in some countries. For countries with a clearly later surveying period such as Cyprus, Latvia, Malta, and Slovenia, labour market outcomes should be compared with care against the results of the other countries.

Table 4.1 shows the numbers of respondents by country, cohort, and degree as well as the total number of invitations sent and the net response rate. The data set of EUROGRADUATE (scientific use file version 1.0.0 and consortium version 3.3.0) contains 171,796 valid cases, 63,438 cases for the cohort 2020/21 and 108,358 cases for the cohort 2016/17. Note that about 69.000 cases of the cohort 2016/17 have been collected by AlmaLaurea before EUROGRADUATE 2022. Taking this into account, more than 100,000 valid cases have been collected in course of the project. Compared to the around 16,500 cases of EUROGRADUATE 2018 this is a major leap forward. Numbers of cases vary across countries and span from 424 respondents in Malta to 18,217 cases in Portugal (not considering IT 2016/17). Except for Malta, all countries were able to collect 1,400 respondents and more which facilitated reporting differentiated statistics.

The overall net response rate is 16.7%.[2] The response rate varies strongly across the 17 participating countries from 56,5% in Austria to only 1% in Romania. For most countries response rates range between 11,5% (Czech Republic) and 21,2% (Portugal). Two countries, Malta and Romania, are facing very low response rates clearly below 5%. For Romania, the NRT was able to compare the results obtained by the EUROGRADUATE survey with results obtained by the national graduate survey. The latter achieves clearly higher response rates. This cross-validation showed that results obtained by the EUROGRADUATE data are very much in line with the results obtained by the national graduate survey data. Therefore, despite the very low response rate, the data for Romania seems of acceptable quality. For Malta such a cross-validation was not possible. Rather we face the additional challenge of very low numbers of respondents for Malta. In differentiated statistics numbers of respondents for Malta often fall below 30 cases. We recommend not to report descriptive statistics with less than 30 cases. This threshold has as well been applied in the EUROGRADUATE Comparative Report (Mühleck et al., forthcoming).

Overall and for most countries the response rates are moderately low and at a level not unusual for online surveys today. Compared to EUROGRADUATE 2018, the response rate has slightly improved against a general trend of decreasing response rates. Measures taken by some countries have yielded some success. Looking at countries with relatively high response rates hints to possible success factors which could have had an effect: an operator of the survey with a high reputation in the target group (e.g. a national statistics office), multiple contacting channels (including post or telephone), and incentives (especially pre-paid incentives).

[2] The net response rate is defined by the number of valid cases in the dataset divided by the total number of invitations sent. Valid cases are cases with complete weighting variables, a valid value in at least 50% of a set of crucial variables, and no strong indication of insufficient answer accuracy. In calculating the response rates, we have not considered undeliverable e-mails (bounced e-mails) or letters. Considering this, the response rates would increase to a certain extent.

Table 4.1: Survey methods and response details for EUROGRADUATE countries

	Valid responses 2016/17 cohort				Valid responses 2020/21 cohort				Total valid responses	Invited to survey	Net response rate	Sample or census	Contact data source	Field phase start	Field phase end
	ISCED level				ISCED level										
	5	6	7	Total	5	6	7	Total							
AT	-	2.455	3.008	5.463	-	3.450	3.520	6.970	**12.433**	22.000	56,5%	sample	central	10/2022	01/2023
BG	-	577	751	1.328	-	947	1.331	2.278	**3.606**	67.734	5,3%	census	decentral	02/2023	02/2023
CY	24	228	272	524	56	340	496	892	**1.416**	22.159	6,4%	census	decentral	02/2023	04/2023
CZ	-	1.624	1.868	3.492	-	1.980	1.846	3.826	**7.318**	63.798	11,5%	census	decentral	11/2022	03/2023
DE[1]	-	453	446	899	-	2.942	2.824	5.766	**6.665**	50.527	13,1%	sample	decentral	11/2022	06/2023
EE	-	907	607	1.514	-	1.133	876	2.009	**3.523**	18.936	18,6%	census	central	11/2022	02/2023
GR	-	2.871	1.942	4.813	-	7.605	2.982	10.587	**15.400**	78.298	19,7%	census	decentral	11/2022	02/2023
HR	-	578	1.453	2.031	-	2.120	2.847	4.967	**6.998**	60.420	11,6%	census	central	12/2022	03/2023
HU	-	1.749	1.062	2.811	-	2.352	1.633	3.985	**6.796**	94.891	7,2%	census	central	11/2022	01/2023
IT[2]	-	5.177	64.225	69.402	-	1.562	1.778	3.340	**72.742**	186.371	39,0%	mixed[2]	central	11/2022	02/2023
LV	-	366	268	634	-	523	319	842	**1.476**	19.347	7,6%	sample	central	01/2023	05/2023
MT	23	55	47	125	91	109	99	299	**424**	15.580	2,7%	census	decentral	03/2023	05/2023
NO	-	1.457	1.745	3.202	-	1.662	0	1.662	**4.864**	24.343	20,0%	sample	central	12/2022	02/2023
PT	217	4.427	2.776	7.420	467	6.610	3.720	10.797	**18.217**	85.966	21,2%	census	decentral	11/2022	05/2023
RO	-	332	209	541	-	610	394	1.004	**1.545**	149.065	1,0%	census	central	11/2022	04/2023
SI	-	1.368	1.190	2.558	-	1.554	902	2.456	**5.014**	24.314	20,6%	census	central	05/2023	08/2023
SK	-	543	1.058	1.601	-	555	1.203	1.758	**3.359**	42.443	7,9%	sample	central	11/2022	02/2023
Σ	*217264*	*25.167*	*82.927*	*108.358*	*614*	*36.054*	*26.770*	*63.438*	***171.796***	*1.026.192*	*16,7%*[3]				

[1] Germany: based on national survey sampling design (stratified by region, degree level, type of HEI; clustered by field of study and kind of degree within HEIs).
[2] Italy: cohort 2016/17 based on national census survey, surveyed twice starting 03/2022 and 12/2022 respectively; cohort 2020/21 random sample from census, re-surveyed 11/2022 – 02/2023.
[3] Net response rate of total survey (total valid responses/total number of invitations sent).

At the same time, some countries have not achieved high response rates despite considerable efforts taken. Some countries report that they achieve higher response rates in their national graduate surveys. A reason might be that a European survey is perceived as less relevant by graduates in these countries. It seems plausible to assume that institutions closer to the graduates can raise more motivation to participate (e.g. the institution the graduate has visited). At the same time, countries may well differ in which organisations are best placed for inviting to a survey, e.g. due to having a good reputation or being trusted by graduates.

While high response rates do not guarantee unbiased statistics, they are likely to reduce the extent of statistical bias. They increase the sample size, which leads to more precise estimates of population parameters. Clearly, it is important to take further measures to increase response rates for future rounds. To mention three examples:

It is important to (further) improve the availability of high-quality and up-to-date *contact information* which is a necessary condition for high response rates.

The EUROGRADUATE questionnaire was seen as very long by many respondents. Announcing a long survey in the survey invitation may well discourage potential respondents. A considerable share of respondents has dropped out during completing the questionnaire which most likely is connected to the length of the questionnaire. Thus, it is important to arrive at a substantially *shorter questionnaire*. Revision of the questionnaire should enhance its user-friendliness.

Awareness of EUROGRADUATE among prospective respondents needs to be increased, before and during the survey.

Regarding the latter two points, EUROGRADUATE 2022 already undertakes certain activities with a view towards the next round. Countries are strongly encouraged to improve contact data and in fact some countries, e.g. Austria, have already initiated improvements in this regard.

For reliable results, it is crucial to avoid biases in survey participation. It is important to set up complete lists of the overall target population (the sampling frame) and to avoid systematic non-response and, as far as possible, non-participation of specific institutions. For sample surveys it is key to draw a random sample. To account for nonresponse and over- and underrepresentation of certain groups of graduates, statistical weights have been estimated and are provided in the EUROGRADUATE data. Data users are strongly encouraged to use these weights for calculating descriptive statistics.

Another measure to ensure the quality of the reported results is the use thresholds for the number of cases in a statistic. We recommend applying the following thresholds which have as well been used in the EUROGRADUATE Comparative Report: If the number of cases is below 100 and above 30 this statistic should be flagged (e.g. by an asterisk) and interpreted with care only. If numbers of cases are below 30, such statistics should not be reported.

The field phase of the survey lasted from 17/10/22 to 06/08/23. This is relatively long period and was clearly longer than originally planned. Besides the general challenge of a very tight schedule for the project, the main reasons were delays in certain countries due to legal issues, technical problems, problems in finding adequate staff, problems in coordinating with other surveys, or reorganisation of responsibilities within the country. 10 countries conducted their surveys in the period October 2022 to March 2023 which can be regarded as the core field phase (see Table 4.1). Three countries extended the survey period to collect more cases or to allow institutions a more flexible timing of the survey (Germany, Portugal, and Romania), however also in these countries most cases were collected during the core field phase. Four countries faced stronger delays of their surveys due to the mentioned problems (Cyprus, Latvia, Malta, and Slovenia). One of the learnings of EUROGRADUATE 2022 for the next round of the survey therefore is to grant substantially more time to the project in total and especially for preparing the survey within countries. This should allow for a more streamlined timing of countries and a shorter survey period overall.

4.3. Data collection via a national graduate survey: the cases of Italy and Germany

Italy and Germany participated in EUROGRADUATE by collecting the data in course of their established national graduate survey while checking and ensuring comparability of the data with the standards of EUROGRADUATE. This option was offered for the first time in EUROGRADUATE 2022 to allow countries to participate which could not facilitate it otherwise. Therefore, it is interesting to have a look at how this option worked and to what extent it was possible to arrive at comparable data in the end for the modules these countries had chosen (Italy: module A; Germany: modules A, B, and C).

Early on, NRT of both countries checked on the data requirements of EUROGRADUATE based on the information already available and successively provided by the EUROGRADUATE Consortium as the project progressed (e.g. information on the target group, sampling design, data collection modes, timing of the survey, and the survey modules as defined by the European Commission expert group on graduate tracking). To the extent possible, country teams harmonised the data collection design and questionnaire design of their surveys with EUROGRADUATE. Note that leeway for such harmonisation is often limited by the need to keep up time-series of data at national level, informational requirements of the NRT or national stakeholders, or the possible length of the questionnaire.

Once the EUROGRADUATE master questionnaire was available, both countries conducted a systematic *comparability assessment* of the survey questions used in the national graduate survey and those of EUROGRADUATE. If possible, NRT sought to further increase comparability by adapting the national graduate survey. Questions were categorized as (1) “same question”, (2) “different question, fully comparable”, (3) “different question, limited comparability”, or (4) “uncovered or incomparable”.

After the data collection, the comparability assessment was the starting point for the *data harmonisation*. For categories (1)-(3), variables as defined by the EUROGRADUATE standards (as set out in the master questionnaire, the data collection handbook, and the data cleaning guidelines of the project) were derived from the data of the respective national graduate survey. For variables with limited comparability (category (3)), country-specific variables were generated. For the most part, it was possible to cover the variables of the respective modules by the data of the national survey. However, there are certain country-specific lacks of information or variables with limited comparability.

Country-specific variables offer information which is valuable but is not entirely comparable. Country-specific versions of variables can be easily identified by the variable name, which is the name of the original variable and the two digit country code in lower letters, i.e. *varname_de* for a country-specific version for Germany[3]. The consortium has compiled a table documenting all country-specific deviations which is offered as accompanying material to the scientific use file (egr22_dataset_documentation.xlsx).

For comparability of the data, the same target groups need to be surveyed at about the same time. By and large it was possible to arrive at identical target groups and timing of the survey for Italy and Germany, but some specifics should be noted.

The data for Italy was collected by the Interuniversity Consortium AlmaLaurea (for more information see Interuniversity Consortium AlmaLaurea, 2024). The graduate survey of AlmaLaurea defines the target group with respect to the solar year, not the academic year. Graduates are surveyed several times over the year to ensure that the time between graduation and survey is equivalent and at about one year (first survey). The survey is repeated

[3] As an example, for Germany a country-specific variable offers information on the kind of study-related stays abroad (e.g. study abroad, internship, …) for all stays combined, whereas the EUROGRADUATE variable offers information on the kind of stay for each stay separately.

four years later. Thus, the timing of the survey is relatively similar to EUROGRADUATE. However, the target group differs and the EUROGRADUATE survey is rather 1,5 years after graduation than one year after graduation. Considering the cohort 2016/17 these deviations seem relatively minor about five years after graduation. Results should be comparable by and large, however with a grain of salt. Specifically, results for bachelor level graduates of the cohort 2016/17 should be compared with care only, as first-level graduates are re-surveyed only if they had not continued university studies (in contrast, EUROGRADUATE contacts all first-level graduates of both cohorts independently of their current enrolment status).

The cohort 2020/21 has had much less time after graduation than the older cohort. Therefore, the deviations in timing and target group would have had a much stronger relative impact and especially the comparability of labour market results would have been questionable. Therefore, AlmaLaurea and the EUROGRADUATE Consortium developed an alternative design for this cohort. Firstly, the target group was defined in equivalence with EUROGRADUATE as graduates of the academic year 2020/21 (in this case graduation between September 2020 and July 2021). Secondly, a random sample of respondents of the AlmaLaurea survey of the academic year 2020/21 has been surveyed again in the core field phase of EUROGRADUATE (November 2022 to December 2022). In telephone interviews, information collected in the previous survey has been updated. About 75% of all cases for the cohort 2020/21 stem from these interviews. Another 25% are graduates of July 2021 which have been surveyed in July 2022, i.e. close to the EUROGRADUATE field phase. This way, the definition of the cohort 2020/21 and the timing of the survey have been well aligned with EUROGRADUATE.

For Germany, the definition of the target group is identical to EUROGRADUATE. The timing of the survey is in line with the EUROGRADUATE framework, even though the field phase was timed somewhat later (cohort 2016/17) or was prolonged to allow institutions a flexible timing of the survey (cohort 2020/21). To ensure international comparability, parts of the collected information are reported differently in the context of EUROGRADUATE compared to the standards applied in national reporting in Germany. In EUROGRADUATE, we distinguish between ISCED level 6 and equivalent degrees and ISCED level 7 and equivalent degrees. This means that traditional German degrees (such as state examinations or diplomas) and master level degrees jointly form the category ISCED level 7 and equivalent in EUROGRADUATE publications. In national reporting on Germany, these degrees are usually not grouped, i.e., state examinations or diplomas are reported separately from master's degrees. In addition, German national reporting defines the academic year less strictly than EUROGRADUATE, meaning that a larger group is considered to be an eligible part of the population than in the EUROGRADUATE statistics. Therefore, results for Germany published in EUROGRADUATE reports may deviate from results published in national reports using the German national graduate survey.

To summarise: the option of participating in EUROGRADUATE with data collected by a national graduate survey is important to facilitate the participation of countries which could not coordinate their national survey with EUROGRADUATE otherwise. For both, Italy and Germany, procedures were established to ensure that comparable data was provided and to make transparent where comparability is limited. Thus, this approach seems a viable option for future rounds and for further countries with long-standing national surveys and very restricted flexibility to participate otherwise. At the same time, it should be noted that the scope of comparable data was lower than for countries fully applying the standard EUROGRADUATE research design and master questionnaire. Limitations of comparability regarding specific groups or variables are not always easy to assess and increase the complexity of publications for both the authors and the readers. Last but not least, bespoke country-specific solutions had to be found to ensure comparability, especially in the case of Italy, which required additional resources for the NRTs and the consortium.

4.4. Measures to ensure comparability of the data

The most crucial challenge for a large-scale international survey project is to ensure the comparability of results across countries. Therefore, in each phase of the project a number of activities of the consortium were taken to achieve comparable data in the end.

- A master questionnaire was provided to NRT to ensure identical (or, more precisely, linguistically equivalent) survey instruments are used across countries.
- A strong focus has been placed on arriving at linguistically equivalent survey instruments: The master questionnaire has been checked by the NRT and where necessary adapted to the context of the country, to picture the country's education system, labour market, or other country-specifics. Adaptations have been cross-checked by the consortium. The adapted version of the master questionnaire has been translated by the country experts of the NRT. Translations have been validated by the linguistic experts of cApStAn. Occurring issues have been resolved cooperatively among the NRT, cApStAn, and the project coordination.
- For the questionnaire, survey instruments from other large-scale international surveys have been used (e.g. REFLEX, the European Social Survey, the European Values Study, the International Social Survey Programme, and the previous round of EUROGRADUATE) and international classifications such as ISCO, ISCED, NACE, or NUTS and norms (ISO norms) have been applied. NRT have been provided with lists of these classifications and norms and detailed instructions on how to use them.
- A comprehensive data collection handbook with definitions to be applied and instructions on all aspects of the data collection has been provided to NRT to ensure a joint methodology and common standards.
- NRT have been provided with templates for their data collection plans. Data collection plans have been reviewed by the consortium and discussed with the NRT.
- Guidance on programming the online questionnaire has been provided in written and through webinars. This was particularly important as the data for EUROGRADUATE 2022 was collected decentral and countries had to set up their own online survey platforms. Before the data collection started in a country, at least one bilateral check-up meeting with the consortium took place. All online surveys have been systematically pre-tested at least once by the consortium and countries were given feedback on necessary corrections or adaptations. This way it was ensured that online surveys were working as intended and in line with central standards despite the decentral programming.
- To standardize the data processing across countries, detailed data cleaning guidelines were issued and complemented by syntax for the statistical software most teams were using.
- Cleaned data has been quality checked by the consortium, and NRT have been feedbacked to solve remaining issues or correct errors if needed.
- Results of the EUROGRADUATE project have been presented to country teams on various occasions and a draft of the EUROGRADUATE 2022 Comparative Report has been sent to country teams for feedback. Several teams provided feedback in written or at events on results in general or regarding their country. This helped the consortium strongly in interpreting country differences and in taking into account the specific situation or specific characteristics of individual countries.
- Throughout the project, guidance on the current tasks has been provided to country teams by frequent webinars and through bilateral contacts. This helped setting the standards for the project and streamlining the data collection, data processing, and

data analysis to finally arrive at comparable data. The consortium has benefited greatly from this close collaboration and the exchange of expertise and experience.

Despite all efforts, cross-country comparison of higher education statistics and analytic results remains a challenging task. Country differences often have a multitude of reasons and should be interpreted with care only. Even though standardised target groups have been used across countries, the definition of “higher education” may differ between countries and is as well subjected to change in time. As an example: in English-speaking countries, nursing education is traditionally part of higher education. In contrast, in Germany-speaking countries it is mostly part of vocational education. Moreover, this is changing, as more and more higher education institutions in Germany offer study programmes for nurses.

4.5. Data Protection: Anonymisation and secure data access

The Research Data Centre for Higher Education Research and Science Studies (FDZ-DZHW), based at the DZHW, ensures data protection through three key measures:

First, the data is anonymized to such an extent that the identification of individuals is virtually impossible and would, if at all possible, require a disproportionate effort.

Second, access to the data is provided via a remote desktop solution, ensuring that the data files always remain on the FDZ-DZHW servers. Besides a higher data protection, this comes with the advantage that users are provided with a familiar Windows desktop and software packages for data analysis (free of charge). The data analysis can be performed as usual and the results (e.g. tables) can be exported. To ensure data protection all imported and exported files—such as tables or other output files—are subject to review by the personnel of the FDZ-DZHW. The direct import and export of the data itself, even in part, is prohibited. In case of issues with the remote desktop environment the user service of the FDZ-DZHW is available for support.

Third, all prospective users must apply for access through the FDZ-DZHW via its website. Each application is reviewed to ensure that the intended use serves a legitimate scientific purpose. Based on this assessment, a data usage agreement is concluded, in which users are explicitly obligated to refrain from any attempts to re-identify individuals. Any violation of this agreement is subject to sanctions, including exclusion from future data access and potential legal consequences.

The anonymization measures deal with direct and indirect identifiers in the data.

In a first step, all **direct identifiers** are identified. Direct identifiers enable a direct reference to a person, without using additional knowledge. In the case of EUROGRADUATE, the e-mail address is the only direct identifier and National Research Teams were asked to remove them before sending the data to the coordinating consortium. This was checked by the consortium. In addition, a new random case ID was assigned, which does not allow any conclusions to be drawn about individuals, and the original EUROGRADUATE case ID was removed.

Open responses pose a particular risk to anonymization as they potentially contain direct or indirect identifiers. At the same time, anonymization of open answers would require a great deal of effort. For this reason, all open responses were removed from the data set in a second step.

In a third step, potential **indirect identifiers** are identified. Indirect identifiers are attributes in a data set which, in combination with external (person-related) additional knowledge and possibly other attributes in the data set, can lead to an identification of a specific person. Typical indirect identifiers are attributes with a direct regional reference (e.g. place of residence or place of university), attributes with an indirect regional reference (e.g. rarely occurring fields of study) or life-course related attributes (e.g. age, dates of professional career, dates of personal life). To anonymize the indirect identifiers, they were either deleted or coarsened so that their content of information is reduced. As general rule, indirect identifiers were aggregated

in such a way that the minimum number of respondents per country and per category of a given variable is above or equal to 20. Usually, the number of respondents per country and per category is strongly above this threshold.

The table below describes the anonymization measures in more detail. Please note that for countries with low numbers of cases additional anonymization measures were implemented to keep the minimum of 20 cases per category.

Table 4.2: Anonymization measures

Item group	Anonymization measure
Time-related variables	
Date of begin or end of studies and jobs	Create new variables covering duration until start or duration of episode
Year of school leaving qualification	Left- & right-censored
Year of further HE degrees	Deleted
Age of child	Aggregated and left- & right-censored
Duration of stays abroad, contracts, parental leave	Aggregated
Age/ year of birth	Left- & right-censored Additional z-standardized variable for modelling
Place-related variables	
Postal codes	Deleted
Languages, e.g. native language or language of instruction	Aggregated
Countries of stays abroad, secondary degrees, places of living, places of job, citizenship, place of birth	Aggregated
Education-related variables	
Higher education institution	Type of institution
Higher education reference degree	Aggregated
Further higher education degrees	Aggregated to highest degree
Secondary education degree	Aggregated
Vocational education degree	Aggregated
Field of study reference degree	Aggregated
Field of study further higher education degrees	Deleted
Job-related variables	
Occupations	Aggregated
Business activity	Aggregated
Number of staff supervised	Aggregated
Gross monthly earnings, incl. supplementary payments	Highest & lowest 1% deleted; rest kept as deanonymization potential low and as metric variable needed for modelling
Gender	Random assignment of male and female participants (1% of each group) to non-binary/3rd gender category

4.6. How to cite the data

In case you are using the scientific use file of EUROGRADUATE 2022, please cite the data as follows:

Mühleck, K., Jühlke, R., Köppen, L., Weßling, K., Fage, I., Valentin, C., Dau, J., Dept, S., Peter, F., Lizzi, R., Schubert, N., Unger, M., & Valuyskaya, K. (2025). EUROGRADUATE 2022. 2nd phase of the European pilot survey of higher education graduates. Data Collection: 2022-2023. Version: 1.0.0. Data Package Access Way: SUF: Remote-Desktop. Hanover: FDZ-DZHW. Data Curation: Daniel, A. & Buck, D. https://doi.org/10.21249/DZHW:egr2022:1.0.0

5. Data collection in the EUROGRADUATE 2022 countries

5.1. Data collection in Austria

Questionnaire	EUROGRADUATE questionnaire, modules A+B+C
Variables filled with administrative data	None
Sample design	Disproportional stratified sample; stratification by cohort, ISCED-level, ISCED-field and sex
Coverage limitations (subgroups of the target population not (fully) included)	None; Note: Address updates for graduates living in AT may have caused different probabilities of receiving invitations between mobile and non-mobile graduates
Invitation channel	Postal letters (all) + e-mail (if available)
Contact information source	Central register
Survey mode	Online survey
Incentives for respondents provided	Pre-incentives
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	17.10.2022
Field phase end (last response recorded)	09.01.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	105.812
Total number of invitations sent	22.000
Valid cases t+1 (2020/21) in dataset	6.970
Valid cases t+5 (2016/17) in dataset	5.463
Total valid cases in dataset	12.433
Effective response rate (valid cases/invitations)	56,5%
Weighting method	Raking
Weighting dimensions	Cohort x ISCED field, cohort x ISCED level, cohort x sex, ISCED field x sex, ISCED field x ISCED level, age, HEI type

5.2. Data collection in the Bulgaria

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	a3.1c
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	No contact information for certain HEIs (8 neither cohort[1], 4 only t+1[2]) , amounting to about 7.000 target group graduates; approximately 23.000 graduate without valid contact information.
Invitation channel	Email
Contact information source	Higher Education Institutions
Survey mode	Online survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	03.02.2023
Field phase end (last response recorded)	28.02.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	98.227
Total number of invitations sent	67.734
Valid cases t+1 (2020/21) in dataset	2.278
Valid cases t+5 (2016/17) in dataset	1.328
Total valid cases in dataset	3.606
Effective response rate (valid cases/invitations)	5,3%
Weighting method	Raking
Weighting dimensions	ISCED Level, field of study, cohort, gender, Type of HEI

[1] *"Vasil Levski" National Military University - Veliko Tarnovo, University of Library Studies and Information Technologies – Sofia, "Prof. Asen Diamandiev" Academy of Music, Dance and Fine Arts – Plovdiv, "Georgi Benkovski" Air Force Academy - Dolna Mitropolia, "G. S. Rakovski" National Defense College – Sofia, Higher School of Security and Economics – Plovdiv, College of Management, Trade and Marketing – Sofia, College of Tourism – Blagoevgrad.*

[2] *University of Food Technologies – Plovdiv, Academy of Ministry of Interior – Sofia, Higher School of Telecommunications and Post – Sofia, "Dimitar A. Tsenov" Academy of Economics – Svishtov.*

5.3. Data collection in Croatia

Questionnaire	EG Questionnaire, Module A+B+C* **Module C as opt-in, filtered by a question on whether respondents where willing to answer questions on political participation and opinions.*
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	E-Mail, invitations sent by Ministry of science and education.
Contact information source	Central registry assembled from HEI institutions t+5: Contacts from EG 1st pilot
Survey mode	Online survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	12.12.2022
Field phase end (last response recorded)	08.03.2023
Noteworthy field phase events	none
Size of target population (t+1&t+5)	60.938
Total number of invitations sent	60.420 (t+5 22.945; t+1: 39.555)
Valid cases t+1 (2020/21) in dataset	4.967
Valid cases t+5 (2016/17) in dataset	2.031
Total valid cases in dataset	6.998
Effective response rate (valid cases/invitations)	11,6%
Weighting method	Raking
Weighting dimensions	ISCED level, cohort, study field (10 categories), gender, HEI, Uni/Non-Uni HEI, legal base of HEI

5.4. Data collection in Cyprus

Questionnaire	EG Questionnaire, Module A+B
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	E-mail; for some HEIs: additional SMS reminders
Contact information source	Higher Education Institutions
Survey mode	Online survey
Incentives for respondents provided	Lottery
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	01.02.2023
Field phase end (last response recorded)	03.04.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	23.883
Total number of invitations sent	22.159
Valid cases t+1 (2020/21) in dataset	892
Valid cases t+5 (2016/17) in dataset	524
Total valid cases in dataset	1.416
Effective response rate (valid cases/invitations)	6,40%
Weighting method	Raking
Weighting dimensions	ISCED level, study field, cohort, gender, Type of HEI

5.5. Data collection in Czech Republic

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	none
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	Not all HEIs participated -> 17.136 not covered; Non-usable contact info -> 39.226 not covered
Invitation channel	E-mail
Contact information source	Higher Education institutions
Survey mode	Online survey
Incentives for respondents provided	Lottery
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	22.11.2022
Field phase end (last response recorded)	06.03.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	123.160
Total number of invitations sent	63.798
Valid cases t+1 (2020/21) in dataset	3.826
Valid cases t+5 (2016/17) in dataset	3.492
Total valid cases in dataset	7.318
Effective response rate (valid cases/invitations)	11,5%
Weighting method	Raking
Weighting dimensions	ISCED level, study field, cohort, gender, age

5.6. Data collection in Estonia

Questionnaire	EG Questionnaire, Module A+B
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	E-Mail
Contact information source	Central register
Survey mode	Online Survey
Incentives for respondents provided	Lottery
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	14.11.2022
Field phase end (last response recorded)	12.02.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	18.725
Total number of invitations sent	18.936
Valid cases t+1 (2020/21) in dataset	1.514
Valid cases t+5 (2016/17) in dataset	2.009
Total valid cases in dataset	3.523
Effective response rate (valid cases/invitations)	18,6%
Weighting method	Raking
Weighting dimensions	ISCED level, study field, cohort, gender, age, HEI type

5.7. Data collection in Germany

Questionnaire	National survey
Variables filled with administrative data	None
Sample design	t+1: disproportional stratified cluster sample (strata: region, type of institution, kind of degree; cluster: combinations of study programme & degree at HEIs) t+5: panel survey based on disproportional stratified cluster sample
Coverage limitations (subgroups of the target population not (fully) included)	t+1: relatively low participation of institutions in North Rhine-Westphalia (NRW) & Baden-Württemberg (BW), where some strata are not covered: other degrees at polytechnics in BW, other degrees at polytechnics and universities in NRW.
Invitation channel	E-Mail + postal letters
Contact information source	Higher Education institutions
Survey mode	Online survey
Incentives for respondents provided	Lottery
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	t+1: 29.11.2022 t+5: 07.03.2023
Field phase end (last response recorded)	t+1: 16.06.2023 t+5: 01.05.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	940.476
Total number of invitations sent	50.729
Valid cases t+1 (2020/21) in dataset	5.766
Valid cases t+5 (2016/17) in dataset	899
Total valid cases in dataset	6.665
Effective response rate (valid cases/invitations)	13,1%
Weighting method	Raking
Weighting dimensions	t+1: region, kind of degree, study field, type of HEI, funding body (only for NRW) t+5: Kind of degree, study field, type of HEI

5.8. Data collection in Greece

Questionnaire	EG Questionnaire, Module A
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	Some institutions did not invite all graduates; the structure of (un)invited graduates is unknown
Invitation channel	E-mail; when E-mail delivery was uncertain, some institutions also used phone reminders
Contact information source	Higher Education Institutions
Survey mode	Online survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	01.11.2022
Field phase end (last response recorded)	10.02.2023
Noteworthy field phase events	Issues with AutoComplete fields, Occupation drop downs
Size of target population (t+1&t+5)	144.421
Total number of invitations sent	78.298
Valid cases t+1 (2020/21) in dataset	10.587
Valid cases t+5 (2016/17) in dataset	4.813
Total valid cases in dataset	15.400
Effective response rate (valid cases/invitations)	19,7%
Weighting method	Raking
Weighting dimensions	ISCED level, study field, cohort

5.9. Data collection in Hungary

Questionnaire	EG Questionnaire, Module A+B
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	Missing or outdated e-mail contacts (across all institutions)
Invitation channel	E-mail
Contact information source	Central database with contact information
Survey mode	Online Survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	September 2016/2020 – June 2017/2021
Field phase start (first invitations sent)	23.11.2022
Field phase end (last response recorded)	11.01.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	108.394
Total number of invitations sent	94.891
Valid cases t+1 (2020/21) in dataset	3.985
Valid cases t+5 (2016/17) in dataset	2.811
Total valid cases in dataset	6.796
Effective response rate (valid cases/invitations)	7,2%
Weighting method	Raking
Weighting dimensions	Cohort, degree level, field of study, gender, age

5.10. Data collection in Italy

Questionnaire	T+5: National survey; T+1: EG Questionnaire Module A
Variables filled with administrative data	a1.1a1mo, a1.1a1yr, a1.1a2mo, a1.1a2yr, a1.1a3, a1.1a4, a1.1a5, a1.1a6, a1.1a7
Sample design	T+5: Census of graduates of AlmaLaurea institutions (~90% of Italian universities); T+1: Random sample of ~3.500 from pool of AlmaLaurea institutions
Coverage limitations (subgroups of the target population not (fully) included)	Some universities (accounting for ~10% of all university graduates) not participating; No non-university institutions (Afam/ITS)
Invitation channel	Depending on sub-groups, telephone or e-mail
Contact information source	Central contact database
Survey mode	T+5: CAWI + CATI; T+1: CATI
Incentives for respondents provided	None
Scope of target cohorts (grad. date)	01/2017 – 12/2017; 09/2020 – 07/2021
Field phase start (first invitations sent)	T+5:01.03.2022; T+1: 09.11.2022
Field phase end (last response recorded)	T+5: 31.12.2022; T+1: 01.02.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	T+5: 316.751; T+1: 324.537
Total number of invitations sent	T+5: 178.350; T+1: 8.021
Valid cases t+1 (2020/21) in dataset	3.340
Valid cases t+5 (2016/17) in dataset	69.402
Total valid cases in dataset	72.742
Effective response rate (valid cases/invitations)	T+5: 38,9%; T+1: 41,6%
Weighting method	Raking; 2-step procedure calibrating for undercoverage + nonresponse and sample stratification
Weighting dimensions	ISCED level, Field of study, Gender, Age, HEI type, Region

5.11. Data collection in Latvia

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	None
Sample design	Disproportional stratified sample; stratification by cohort, ISCED level, ISCED field; additional stratification by type of HE institution for study fields 6, 8, 9, 11
Coverage limitations (subgroups of the target population not (fully) included)	Graduates only contactable when they had a Latvian registration code at the time of survey, resulting undercoverage of non-Latvian graduates
Invitation channel	Postal + email, phone reminders
Contact information source	Central contact database
Survey mode	Online survey; CATI interviews (only for reminders)
Incentives for respondents provided	Lottery (started mid-field phase to improve response number)
Scope of target cohorts (grad. date)	T+5: September 2016 – August 2017; T+1: September 2020 – August 2021
Field phase start (first invitations sent)	25.01.2023
Field phase end (last response recorded)	03.05.2023
Noteworthy field phase events	National Reference Point and Research Team launched a campaign including an incentive lottery and social media promotion of the survey to improve response numbers during the field phase.
Size of target population (t+1&t+5)	22.454 higher education graduates
Total number of invitations sent	19.347 invitees
Valid cases t+1 (2020/21) in dataset	842
Valid cases t+5 (2016/17) in dataset	634
Total valid cases in dataset	1.476 respondents
Effective response rate (valid cases/invitations)	7,6%
Weighting method	Raking
Weighting dimensions	ISCED level, Field of study, Cohort, Age

5.12. Data collection in Malta

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	Postal + E-mail
Contact information source	Higher Education Institutions
Survey mode	Online Survey
Incentives for respondents provided	Lottery
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	13.03.2023
Field phase end (last response recorded)	17.05.2023
Noteworthy field phase events	High dropout rate, possibly due to survey software
Size of target population (t+1&t+5)	15.580
Total number of invitations sent	15.580
Valid cases t+1 (2020/21) in dataset	299
Valid cases t+5 (2016/17) in dataset	125
Total valid cases in dataset	424
Effective response rate (valid cases/invitations)	2,7%
Weighting method	Raking
Weighting dimensions	ISCED 6/7: Cohort, degree level, field of study, HEI Type, gender, age, nationality (Maltese/non-malt.); ISCED 5: Cohort, degree level, HEI Type, gender, age, nationality (Maltese/non-malt.)

5.13. Data collection in Norway

Questionnaire	EG Questionnaire, Modules A+B
Variables filled with administrative data	None
Sample design	Stratified sample, stratification by cohort, ISCED-Level, EG study fields; Additional stratification by gender for EG study fields 1, 2, 5, 7, 11, 12, 15, 16, 17, 18
Coverage limitations (subgroups of the target population not (fully) included)	Not covered: T+1 Master graduates (entirely) Two institutions not participating: BI Norwegian Business School; VID Specialized University.
Invitation channel	E-Mail, SMS for some sub-groups
Contact information source	Central database
Survey mode	Online Survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	August 2016/2020 – June 2017/2021
Field phase start (first invitations sent)	20.12.2022
Field phase end (last response recorded)	12.02.2023
Noteworthy field phase events	none
Size of target population (t+1&t+5)	80.018
Total number of invitations sent	24.343
Valid cases t+1 (2020/21) in dataset	1.662
Valid cases t+5 (2016/17) in dataset	3.202
Total valid cases in dataset	4.864
Effective response rate (valid cases/invitations)	20,0%
Weighting method	Raking
Weighting dimensions	Cohort, degree level, field of study, gender, type of HEI

5.14. Data collection in Portugal

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	2016/17 graduates of small private institutions that have been closed since.
Invitation channel	E-mail (mostly), some HEIs with other approaches (telephone, filling from their registers)
Contact information source	Higher Education Institutions
Survey mode	Online-Survey for most; if CATI, base questions by phone and remaining questions online
Incentives for respondents provided	None
Scope of target cohorts (grad. date)	September 2016/2020 – July 2017/2021
Field phase start (first invitations sent)	14.11.2022
Field phase end (last response recorded)	02.05.2023
Noteworthy field phase events	Brief survey inaccessibility (few hours) due to flooded server
Size of target population (t+1&t+5)	139.796
Total number of invitations sent	85.966
Valid cases t+1 (2020/21) in dataset	10.797
Valid cases t+5 (2016/17) in dataset	7.420
Total valid cases in dataset	18.217
Effective response rate (valid cases/invitations)	21,2%
Weighting method	Raking
Weighting dimensions	Cohort, degree level, field of study, gender, Type of HEI

5.15. Data collection in Romania

Questionnaire	EG Questionnaire, Module A
Variables filled with administrative data	a1.1a1mo, a1.1a1yr, a1.1a2mo, a1.1a2yr, a1.1a3, a1.1a4, a1.1a5, a1.1a6, a1.1a7
Sample design	Census (initial sample extended to census during field phase due to low return rates)
Coverage limitations (subgroups of the target population not (fully) included)	Incomplete contact database (central database to be filled by the higher education institutions).
Invitation channel	E-mail
Contact information source	Central database
Survey mode	Online Survey
Incentives for respondents provided	None
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	14.11.2022
Field phase end (last response recorded)	15.04.2023
Noteworthy field phase events	Extension to full census through multiple invitation waves (see “sample design”)
Size of target population (t+1&t+5)	230.059
Total number of invitations sent	149.065
Valid cases t+1 (2020/21) in dataset	1.004
Valid cases t+5 (2016/17) in dataset	541
Total valid cases in dataset	1.545
Effective response rate (valid cases/invitations)	1,0%
Weighting method	Raking (centrally applied by consortium)
Weighting dimensions	Degree level, field of study, cohort, gender, HEI type

5.16. Data collection in Slovakia

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	None
Sample design	Stratified sample stratification by cohort, degree level, field of study
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	Postal + E-mail
Contact information source	Central database, reminders by Higher Education Institutions
Survey mode	Online Survey
Incentives for respondents provided	No
Scope of target cohorts (grad. date)	September 2016/2020 – August 2017/2021
Field phase start (first invitations sent)	22.11.2022
Field phase end (last response recorded)	28.02.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	82.281
Total number of invitations sent	42.443
Valid cases t+1 (2020/21) in dataset	1.758
Valid cases t+5 (2016/17) in dataset	1.601
Total valid cases in dataset	3.359
Effective response rate (valid cases/invitations)	7,9%
Weighting method	Raking
Weighting dimensions	Cohort, degree level, field of study, gender, age, Type of HEI

5.17. Data collection in Slovenia

Questionnaire	EG Questionnaire, Module A+B+C
Variables filled with administrative data	None
Sample design	Census
Coverage limitations (subgroups of the target population not (fully) included)	None
Invitation channel	Postal
Contact information source	Central database
Survey mode	Online Survey
Incentives for respondents provided	None
Scope of target cohorts (grad. date)	October 2016/2020 – September 2017/2021
Field phase start (first invitations sent)	06.08.2023
Field phase end (last response recorded)	08.05.2023
Noteworthy field phase events	None
Size of target population (t+1&t+5)	24.314
Total number of invitations sent	24.314
Valid cases t+1 (2020/21) in dataset	2.456
Valid cases t+5 (2016/17) in dataset	2.558
Total valid cases in dataset	5.014
Effective response rate (valid cases/invitations)	20,6%
Weighting method	Raking
Weighting dimensions	ISCED level, study field, cohort

6. Lessons learned and recommendations on way forward

In the following we describe which lessons have been learned during EUROGRADUATE 2022 and we formulate recommendations on how these could be taken into account in future rounds of EUROGRADUATE.

The first four recommendations (chapters 6.1-6.4) address questions of the timing and organisational set-up of the project. The following three recommendations (chapters 6.5-6.7) concern recommendations on the work during project. The last two recommendations (chapters 6.8-6.9), finally, are about the output(s) of the project. Some of these recommendations have already been taken up in activities and measures preparing the next round of EUROGRADUATE. They will still be mentioned as it seems important to see how lessons learned have been addressed by concluded, ongoing, or planned measures in the meantime.

6.1. Start project earlier & grant more time in total

6.1.1. Observations

The timing of EUROGRADUATE 2022 was a constant challenge for the EUROGRADUATE Consortium as well as for the National Research Teams (NRT) involved. The project fully kicked off in January 2022, leaving only about 9-10 months to prepare launching the survey in 17 countries, some of them with very little or no experience in running a graduate survey. The runtime of the project was 30 months, originally, but was extended by 9 months to facilitate additional activities for preparing the next round of EUROGRADUATE but as well to compensate for delays to some extent.

The tight schedule and the short time in advance of the data collection resulted in ubiquitous time pressure. Many NRT have remarked that more time would be needed to e.g.

- Inform higher education institutions (HEI) early on, allow them to prepare for the survey, and win them for participation. For some HEI, having opportunity to carefully assess the questionnaire early on is required for participation. E.g. in Germany several HEI voiced that they could not agree to participate at such short notice.
- Clarify issues related to data protection legislation and get agreement of data protection officers. Still, there is considerable uncertainty in some countries on legal conditions set by the GDPR and how, e.g. contact information may be used. In some countries, approval of data protection officers of all individual HEI involved is needed before data collection can be started. This has caused delay in the launch of the survey in Norway. Moreover, time is needed to solve legal questions or set-up processes for contacting that are in line with the GDPR and the national data protection legislation. In Slovenia, this has resulted in a delay of the start of the survey of several months.
- Especially countries with little experience in preparing online surveys would have needed much more time to programme the survey and solve problems in programming. This has caused a delay of several months in Malta and resulted in disproportionate need for support of the Maltese NRT by the consortium.
- All in all, the tight schedule is the primary reason for the heterogeneous timing of the field phase which limits comparability of the data to some extent in extreme cases such as Malta or Slovenia.
- All countries needed more time as foreseen to process the data before sending it to the consortium.

- The data analyses and drafting of the comparative report did take longer than expected. Amongst others, more feedback loops with the EC have been needed as foreseen and those feedback loops have been taking longer than planned. While the analytical part of drafting the comparative report as such was ready, processes of finalising and confirming the report for publication within the EC have still taken considerable time.

On the side of the EUROGRADUATE Consortium the time pressures had consequences as well. To provide NRT with supporting material, definitions, templates and other things as early as possible, the consortium often applied versioning of materials. I.e. materials were adapted subsequently to further insights and knowledge and errors corrected. This seems to be the best solution under the conditions given as it allows to keep up the workstream. At the same time, it requires NRT to take changes into account which causes additional work.

6.1.2. Recommended measures

Based on the experience in EUROGRADUATE 2022 and further experience in national graduate surveys, the **project should start at least 18 months before kicking-off the field phase**. This would be a key measure for avoiding major differences in the timing of the launch of the survey in future rounds.

While clearly more time is needed for preparing the launch of the survey, **no less time should be spent on data processing, data analysis, reporting, and dissemination**. In contrast, for making full use of the data collected and provide the different user groups (decisions makers, HEIs, (prospective) students, researchers) with suitable results and products somewhat more time would be advantageous. In addition, it seems wise to plan for some buffer to be able to deal with unexpected problems.

Therefore, we would recommend **a runtime of four years for the project**. This would as well reflect the cycle recommended for repetitions of EUROGRADUATE and thus ensure a seamless connection between subsequent rounds of the project. The graph below gives illustrate the main phases of the four-years project cycle. Please note that phases may overlap to some extent (e.g. first steps in data processing can start during data collection, analyses can start with preliminary data, data analyses will lead to improved editions of the dataset i.e. data processing will continue to some extent during the analyses phase) and that a certain degree of heterogeneity in the timing of countries needs to be taken into account.

The European Commission has already taken note of the issues described above and taken steps to provide better framework conditions. The time between EUROGRADUATE 2022 and a possible start of EUROGRADUATE 2026 was used for preparatory activities towards EUROGRADUATE 2026 during an extension of EUROGRADUATE 2022 by nine months. Thus, preparatory steps for the indicators concept, the questionnaire design, or improved data protection information were done even before the start of EUROGRADUATE 2026.

Further, it was planned to start the next round of EUROGRADUATE in Spring 2025 to allow for a seamless continuation between both rounds. This would have been in line with the recommendation above. It is recommended to start as soon as possible and foresee early starts for future rounds.

6.2. Improve organisational set-up for more country participation

6.2.1. Observations

The National Reference Points (NRP) of the countries involved in EUROGRADUATE have occasionally asked for more involvement in the project and more regular updates on the project's progress. The EUROGRADUATE Consortium organised a lot of webinars, however often these webinars were primarily addressing the National Research Teams (NRT) as they focussed on methodological aspects of how to conduct the project in the countries.

At the same time, the European Network of Graduate Tracking (ENGT) had a Working Group on the Next European Higher Education Graduate Survey (WG 1) in which many EUROGRADUATE NRP participated. However, the group of participating countries went beyond EUROGRADUATE, and discussions were more devoted towards future outlooks than to the current round (even though experiences of EUROGRADUATE 2022 were a crucial source of information of WG 1).

Thus, a forum for a regular exchange among the EUROGRADUATE NRPs, the EC, and the EUROGRADUATE Consortium was missing to some extent. Likewise, a forum allowing participating countries to steer the further development of EUROGRADUATE was missing. Discussions in WG 1 were of more conceptual nature and did not take decisions on EUROGRADUATE 2022 and future rounds. In addition, the parallel structures of webinars and project meetings in EUROGRADUATE and of WG 1 (and other formats in the ENGT) sometimes led to repetitive information and were felt to not be very efficient by some participants.

6.2.2. Recommended measures

The most straightforward measure to improve organizational structure of EUROGRADUATE is to implement a EUROGRADUATE Steering Board with representatives of the participating countries, the EC, and the consortium. This would provide the forum felt to be missing to some extent in EUROGRADUATE 2022. It would complement the many meetings with NRT with NRP meetings with the NRP.

Important decisions on the project, e.g. concerning the organisation of the project, project products, or the publication strategy, should be discussed and taken in the Steering Board. This would ensure that countries' views are reflected in decisions and improve feeling of ownership of the project.

The forum should be organised independently from the ENGT. For more efficiency and to avoid the overlaps between work done within the framework of EUROGRADUATE and within the framework of the ENGT, the latter should focus its work on topics beyond the actual survey and primarily tackle possible future developments. Still, of course, a regular exchange of the ENGT with EUROGRADUATE is needed to coordinate activities, align possible developments, and benefit from mutual exchange of information.

Indeed, a EUROGRADUATE Steering Board is foreseen for EUROGRADUATE 2026, presumably with all participating countries as members.

6.3. Offer flexibility in participation modes with "safety fence"

6.3.1. Observations

Following the recommendations of the European Commission expert group on graduate tracking, EUROGRADUATE 2022 has allowed for more flexibility in participating in the survey. Firstly, countries were allowed to pick from three questionnaire modules. Secondly, countries

were allowed to participate in EUROGRADUATE 2022 by making use of data collected in their national graduate survey while ensuring comparability of the data. Thirdly, Ireland participated in EUROGRADUATE with providing aggregated indicators based on administrative data. This option was not officially foreseen but very much appreciated as it added to the data and provided interesting experiences in this way of participating.

Among the **three questionnaire modules**, the required minimum was covering the "essential information", i.e. module A. In addition, countries could pick the "recommended information" of module B, or cover the full set by additionally surveying social outcomes by module C (see chapter 3 for more details). In EUROGRADUATE 2022, 10 countries decided for the full set of all three modules, 4 countries surveyed modules A + B, and just 3 countries had module A only. Thus, the opportunity to pick from modules allowed countries to follow their priorities to a certain extent or react to country-specific conditions and limitations. E.g. some countries did not see module C as highly important and rather prioritized a shorter questionnaire, while other countries were very interested in the information of this module (i.e. social outcomes of higher education such as e.g. social trust, democratic values, or political participation). Also, for Italy, which participated with data of the AlmaLaurea Survey, covering more than module A would have hardly been feasible. At the same time this flexibility did not result in many countries going for the minimum. Therefore the "costs" (the loss of information) seem reasonable for the additional flexibility which was gained.

In EUROGRADUATE 2022, Italy and Germany used the option of **participating in the survey with a national graduate survey** while ensuring comparability of the data.

Using this approach has generally yielded comparable data for Italy and Germany. While comparability can be achieved in general terms, it should be noted that certain limitations could not be avoided despite all efforts (for more details see below and chapter 4). In addition, this option is not as easily facilitated as the "standard participation" and causes extra work for the NRT and for the central coordination.

Italy opted for covering variables of module A only. Germany opted for covering all modules. For both countries variables have been classified into categories indicating the comparability, i.e. "same question", "different question, fully comparable", "different question, limited comparability", "incomparable or uncovered". Thus, even though certain modules have been picked, not all variables within these models were covered with comparable data. Therefore, for Germany and Italy, there are country-specific lacks of information.

Variables with limited comparability contain useful information but they are not easy to be worked with as they require special treatment and still the degree of comparability might not be entirely clear posing limits to the analyses.

Moreover, for Italy the target groups of the national survey, which is conducted by AlmaLaurea, are defined differently than for EUROGRADUATE. To solve this, an extra survey for the cohort 2020/21 has been suggested by the EUROGRADUATE Consortium and conducted by the AlmaLaurea team. For the cohort 2016/17 limitations in comparability with the other countries persist, especially for graduates with a degree at Bachelor level.

For Germany, a specific challenge is the comparability of variables derived from the so-called episode module of the national graduate survey. This module is set-up differently than a 'classical' questionnaire and is driven by a calendar in which respondents enter episodes of education or work and are asked additional questions on these episodes subsequently. As this module has been used for the first time, there is yet little knowledge on possible method effects of this set-up as compared to a usual design. Evidence of EUROGRADUATE suggests that method effects affect single variables, e.g. it seems that respondents report less work during studying in the episode module design than in the classical questionnaire design.

To sum up, using national graduate surveys for EUROGRADUATE works but it is more resource-intense and results in country-specific limitations to the comparability of the data. Developing and conducting tailor-made solutions to improve comparability costs resources on

the side of the NRT and on the side of the consortium. Country-specific deviations are not easy to be dealt with in data processing as well as in the analysis, producing follow-up costs. Moreover, limitations in comparability reduce the number of countries for which variables and indicators can be compared.

All this is manageable for a small number of countries using the option of a national graduate survey. If many countries participated with a national survey, critical problems would need to be expected. Resources of the coordinating consortium might be overstretched if a large number of countries required designing custom-made solutions. The more countries use a national graduate survey, the smaller becomes the overlap of comparable data between countries. Last not least, the number of deviations and exceptions to be taken into account in the analysis would result in an overly complex presentation of results not easily digested by readers.

The Central Statistical Office of Ireland (CSO) provided a couple of **aggregated indicators based on administrative data** directly to the consortium. This mode of participating has not been foreseen from the start but the offer of Ireland to contribute to the project was very appreciated. It was no problem to picture the EUROGRADUATE target groups in the statistics of the CSO. But the number of indicators which could be mapped with the statistics was relatively low. Most indicators for describing the composition of the target group (e.g. regarding type of institution, kind of degree, field of study, or background characteristics) were available, but relatively few indicators could be calculated beyond that (e.g. further higher education, employment status, income). The main reason is that the information needed for further indicators simply was not available in the official statistics or that definitions of the EUROGRADUATE indicators and the official statistics did not match.

6.3.2. Recommended measures

The **possibility to choose from different survey modules should be kept**. It allows countries to adapt the survey contents to some extent to their priorities but as well to take into account given limitations in terms of resources or the data source used. Additionally, some countries strongly priorities a shorter survey. Experience of EUROGRADUATE 2022 suggests that the vast majority of countries decides for the modules A+B or even the full package. Thus, for most indicators the scope of countries is not strongly limited by this flexibility. Planning for EUROGRADUATE 2026 reflects this already and keeps the modular structure.

The **option of participating via a national graduate survey should be kept**, as it is indispensable for countries like Italy or Germany and is also needed for the participation of further countries with a particularly strong tradition in graduate surveys and without any other feasible option to coordinate the European data collection with the national data collection. Planning for EUROGRADUATE 2026 reflects this already and offers this participation option.

The **option of participating with administrative data and aggregate indicators should be offered** as another way of participating in EUROGRADUATE. This option likely allows further countries to participate, especially those countries strongly focussing on administrative data. At the same time, the indicators for EUROGRADUATE and their very definition should be discussed and decided upon at an early stage. Thus, definitions of indicators could possibly still take into account what is available in administrative data. Moreover, definitions of indicators should ideally be kept stable for future rounds of EUROGRADUATE, giving countries with administrative data an opportunity to adapt their data collections to the requirements of EUROGRADUATE. A workflow should be designed to more easily integrate aggregated indicators in the reporting of the project.

While **flexibility is important**, in some cases even indispensable, to allow as many countries as possible to participate in the project, it also comes with certain downturns. Multiple ways of participating require adaptations on the side of the NRT and as well on the side of the consortium. For countries participating via aggregate indicators, availability and comparability

of indicators needs to be checked individually. For countries participating via a national graduate survey, solutions need to be bespoke and reflect the specific characteristics of the national survey. In addition, this flexibility results in specific limitations of the comparability of the data and specific lacks of data. The scope of comparable information, which is available for all countries or at least most countries, gets smaller. A large number of exceptions and limitations make results unclear and harder to interpret.

Therefore, it is recommended to offer **incentives for participating in EUROGRADUATE in the "standard" way**, i.e. by making use of the EUROGRADUATE master questionnaire. It is also good to incentivize countries for covering all questionnaire modules. This is also reflected in the call for EUROGRADUATE 2026.

Currently, there is no problem yet with an overly large number of countries wanting to participate with a national graduate survey or with administrative data. If so, this could pose more serious problems. Therefore, it could be considered to allow these options only for countries which can give good reason why this is the only way for them to participate in EUROGRADUATE. But obviously, such a restriction might conflict with the goal of integrating a growing number of countries.

6.4. Maintain strong central support and extend by optional central online survey

6.4.1. Observations

Unlike EUROGRADUATE 2018 which used one central online survey, the data collection of EUROGRADUATE 2022 was conducted fully decentralised. This decentral data collection did work well for some countries and might have come with certain advantages. E.g. it gives countries more leeway for applying country specific strengths, it might have increased feelings of responsibility and commitment to the data collection, it provides opportunities for learning, and last but not least, respondents might trust more in a survey which runs on servers within their home country.

At the same time, decentral data collection comes with a number of downsides. It is not very efficient to programme and set-up many online surveys in parallel by different NRT instead of programming and setting-up many language versions in one central infrastructure. Testing and correcting all local online surveys instead of one is more resource intense as well. The different feel and look of local online surveys might add some measurement error to the data.

While programming the online survey was time-consuming for all teams involved, it was especially challenging for some of the less experienced teams. E.g. for the Maltese NRT problems in programming the online survey and use of a software programme not fully suited for a complex scientific survey resulted in a delay of the start of the survey by several months. The EUROGRADUATE Consortium supported the team over this period very intensely which exemplifies again the possible inefficiency of the set-up. Even though a lot of work was invested, the online survey did not to run as smoothly as intended due to workarounds and remaining problems. The number of incomplete cases in the data from Malta is unusually high and it seems likely that many respondents dropped out due to problems in the online survey.

Further, sending out individualised e-mails to the graduates to participate in the online survey was unclear to some countries.

Generally, many NRT voiced strong appreciation of the central support provided by the EUROGRADUATE Consortium. Information material, templates, handbooks, syntax or other tools were seen as particularly helpful. Quick responses to questions and comprehensive monthly webinars were mentioned as well as a useful support. NRT expressed that these central services should be maintained or even intensified for future rounds.

6.4.2. Recommended measures

For future rounds of EUROGRADUATE, countries should be allowed to use the infrastructure most adequate to their needs, experience, and intentions. I.e. **countries wishing to set-up their online survey locally should be allowed to do so**. At the same time, it seems strongly recommendable to **provide a central online survey infrastructure for those countries preferring to use such central services**. This would be an important option especially for countries with little resources and/or experience. It would add to the efficiency of the project and ease coordinating field starts and monitoring the field phase. These insights have already been taken up for EUROGRADUATE 2026 which foresees facilitating a central survey infrastructure, which countries can use if they wish so. This set-up balances flexibility with more support and efficiency.

More generally, the **central support services** for NRT by the consortium should **be maintained at least at the level of the current round**. The comprehensive support material could be extended by guidelines on how to send individualised e-mails to the target group. By granting more time to the project, support materials, definitions, and the questionnaire could be provided timelier, and versioning of materials could be reduced (even though probably not fully avoided). A specific topic for which more guidance was wished for is data protection (see next chapter).

6.5. More guiding & earlier info on data protection needed

6.5.1. Observations

At the EUROGRADUATE project meeting in October 2023 several NRT voiced that they had problems with data protection legislation. Sometimes, simply having more time to address data protection requirements could have solved the problem, e.g. for Norway and possibly as well for Slovenia. However, many countries reported that there is a certain degree of unclarity regarding the data collection and use of contact information in line with the GDPR. Moreover, the interpretation of the GDPR varies from country to country and sometimes as well within countries between data protection officers. Thus, more central guidance and information has been asked for.

6.5.2. Recommended measures

This requirement was addressed by an additional activity of EUROGRADUATE 2022. Led by the Institute of Advanced Studies (IHS), the EUROGRADUATE Consortium put together extensive “Guidelines for Data Protection and GDPR Compliance in Survey Implementation”. This document provides an introduction to the terms and concepts of the GDPR as well as practical guidelines on how to ensure compliance with the GPDR at each step of the EUROGRADUATE survey: (1) Assess and assemble data sources, (2) Prepare informed consent document, (3) Coordinate decentral invitation processes, (4) Data collection and processing, and (5) Store and administer data for analysis in the longer term.

This document can be used from the start of EUROGRADUATE 2026 and thus also facilitates the wish for earlier information on data protection topics. Of course, providing the guidelines should be accompanied with treating this challenging issue in webinars and explaining how to ensure data protection throughout the specific steps of the survey.

6.6. Questionnaire design: more intense involvement of countries and shorter questionnaire

6.6.1. Observations

Due to the tight schedule of EUROGRADUATE 2022, there was little time to prepare the questionnaire in consultation with the NRTs and National Reference Points (NRPs). While there has been a feedback round, countries wished for a more intense involvement and opportunities to provide feedback on the contents and design of the questionnaire.

Further, several countries mentioned the length of the questionnaire as major weakness. It seems plausible to assume that the length added to survey drop-out or non-participation among the target group. Some question may be particularly challenging for respondents. E.g. the Austrian NRT reported that the competence-battery was the point in the survey where particularly many respondents broke off.

Further, an overly long questionnaire might discourage countries or individual HEIs from participating in EUROGRADUATE 2026.

A comprehensive analysis of the response time showed that most participants (75%) completed the survey within 38 minutes or less, with the central half finishing between 21 and 38 minutes (median: 29 minutes). However, the completion time extends up to 79 minutes, which suggests a high variation among the slowest 25%. The analysis further showed country differences, indicating that the implementation of the questionnaire plays a role regarding the completion time (e.g., due to user-friendliness). Besides, not all question types account for the same amount of time. More recent experiences (e.g., additional jobs, follow-up study programmes) take less time to report on than experiences long past (e.g., job in 2018, previous programmes). In general, skipping large scale blocks saved more time (per item) than skipping single questions. Further, having multiple additional experiences to report (e.g., past jobs, past programmes, stays abroad) extends the response time, but does not concern many graduates. Depending on their relevance, corresponding questions could be cut, shortened, or improved.

Countries addressed further aspects such as inconsistency of some scale constructions (often due to keeping the scale of an instrument originating from another survey), limited quality of measurements for more comprehensive constructs (e.g., industries, occupations), or the absence of a barrier-free access to the questionnaire.

6.6.2. Recommended measures

The need for shortening the questionnaire and the wish for stronger involvement of countries were already addressed to some extent by an additional activity of EUROGRADUATE 2022. In this activity, important steps have been taken to re-assess the design, contents and measurements of the EUROGRADUATE master questionnaire, with the involvement of the NRP, the EC, and the consortium. The overall goal was to arrive at an improved and shortened version of the questionnaire, meeting a response time of around 20 minutes.

An in-person meeting to discuss the questionnaire was held on 6-7 November in Brussels. At this meeting prospective EUROGRADUATE countries, the European Commission, and the consortium discussed and prioritized the indicators for EUROGRADUATE 2026 and – connected to that – discussed the questionnaire for EUROGRADUATE 2026 with a focus on how to reduce the questionnaire length and how to improve the questionnaire. The starting point for discussing and prioritizing indicators was the EUROGRADUATE 2022 Comparative Report. Similarly, the starting point for revising the questionnaire was the EUROGRADUATE 2022 master questionnaire. The consortium prepared an Excel file with these indicators and with the questions of the questionnaire which allowed countries to prioritize indicators (high, medium, or low priority) and to categorize questions (should be kept, cut could be considered,

should be cut, should be changed). Nearly all countries filled in this file in preparation for the meeting and gave their input on the questionnaire regarding potential cuts and changes.

At the meeting, the questionnaire was worked through question-by-question. For many questions, participants broadly agreed on the categorization. In case of a less clear voting, questions were discussed to find an agreement. If needed, decisions were taken by majority vote. This resulted in a detailed question-by-question list describing which questions (and items) should be kept as they are, which questions (and items) should be cut, and for which questions (and items) a change should be considered.

For the indicators, the consortium constructed lists of *essential*, *recommended* and *optional core indicators* based on priorities given in written and the extensive discussion with (prospective) participating countries and the EC. This approach allowed a high involvement of all relevant stakeholders and provides a clear set of content to be covered in EUROGRADUATE 2026.

The lists of indicators can be used for conceptualizing publications and other dissemination tools. Further, they provide useful information for continued work on the questionnaire.

The documentation of the questionnaire discussion provides an excellent basis for the design of the master questionnaire. NRPs and NRTs should ongoingly be included in further upcoming feedback loops to ensure their support and agreement with adapted and improved versions of the questionnaire.

Next to the focus on shortening the questionnaire, specific items/questions should be improved. It could be considered whether scale constructions could be harmonized further across the questionnaire regarding scale directions and scale points. It could be worthwhile to consult with the countries about their (national) experiences with scale directions as the traditional use of scale directions might differ across countries.

Furthermore, the measurement of more comprehensive constructs – such as industries, occupations, competencies – should be reviewed. Where possible, improved measurement approaches should be incorporated into the questionnaire. This concerns, for example, the lists of industries and occupations in different languages which were not available in a satisfactory quality. The competence battery stems from the REFLEX project and has advantageous features. At the same time, it has several disadvantages. E.g. it is unclear to what extent results are comparable across countries. The current instrument does not grasp IT skills very well and completely misses out on green skills. Evidence from Austria suggest that respondents were discouraged to continue by the instrument. Thus, a re-work of the competencies battery or possibly complementary instruments should be considered.

While for quite a number of questions/items considering a change has been recommended, this does not necessarily mean that these questions/items must be changed under all circumstances. Changes to the questionnaire hamper comparison between survey rounds and thus across time. Therefore, changes to the questionnaire should be taken with care and possible improvements of questions need to be balanced with the possibility of time-series data. If changes do not yield clear improvements, they should be avoided. In addition, when changing a question, it should be checked whether intertemporal comparability can be maintained.

Last not least, the questionnaire should ideally be designed and implemented in a barrier-free way, ensuring that all members of the target group can participate, irrespective of any disabilities or limitations. This is a challenging goal, but it should be considered if accessibility of the questionnaire for persons with special needs can be improved.

6.7. Strive for improving response rates

6.7.1. Observations

On average, response rates for EUROGRADUATE 2022 were at about 17%. This is moderately low but around a level not unusual for online surveys today. Participation was slightly higher than for EUROGRADUATE 2018. However, response rates vary enormously between countries. While many countries range between 12-21%, there are also countries with very high response rates such as Austria or Italy but also two countries with very low rates below 5% (Malta and Romania). Such low response rates question the quality of the data. For Romania, cross-checks with a national graduate survey indicated that the data quality is acceptable. For Malta, the number of cases is very low, often restricting analyses anyhow.

Clearly, improving response rates in future rounds is desirable. Experiences in EUROGRADUATE 2022 provide a lot of opportunities for (peer) learning. Whether measures deemed to be successful in one country are successful in another country is not always clear. Generally, a design striving for good response rates needs to be customized and reflect the context conditions of the country in question. Keeping this in mind, some general recommendations can be formulated (s. below).

6.7.2. Recommended measures

A first one, is to **improve the quality and ensure the availability of contact information** . A good practice would be if ideally all HEI in the country collect private e-mail addresses and possibly further kinds of contact information (postal address, postal address of parents, mobile number) and as well the consent to use this information for a graduate survey as part of the standard procedures after graduation, e.g. in course of de-registering. The EUROGRADUATE Consortium has repeatedly recommended this practise, and e.g. Austria has changed its laws to ensure collection of contact information at the time of graduation. The quality of contact information is absolutely crucial, as respondents which cannot be reached are per se excluded from participating. Systematic lack of contact information is especially severe for the data quality.

There are several other measures to **improve response rates during data collection**: incentives, running the graduate survey by renowned and respected national organization (e.g. a statistical office), connecting the survey to the very institute the person has graduated from (if feasible), or using several invitation channels including postal letters (if feasible). Some measures are specifically efficient but also quite costly, such as pre-paid incentives or telephone reminders. SMS are a less expensive way of using phones for reminders. Raising awareness of the survey via (social) media or alumni associations can help. There are further measures and good practices and the EUROGRADUATE project facilitates exchange on this.

Moreover, specifically low response rates were suspected to result from survey fatigue and thus, if possible, inviting the target group of EUROGRADUATE to a national graduate survey at some point before EUROGRADUATE should be avoided.

Last not least, several countries observed that response rates for EUROGRADUATE are lower than for the national graduate survey. It is not yet fully clear, why this is the case. It has been suspected that the notion of “Europe” suggests that the aims of the survey are pretty far away and not relevant to the graduate. Thus, connecting the aims of the survey to improving higher education at the ‘alma mater’ of the respondent seems recommendable.

Moreover, EUROGRADUATE is not yet very known among possible respondents. To improve this situation, a **leaflet for dissemination** among students and higher education institutions has been prepared in an additional activity of EUROGRADUATE 2022. It covers several interesting results from EUROGRADUATE and is designed in an attractive and eye-catching way. This leaflet it meant to be provided to the NRTs, NRPs for further dissemination among HEI, student unions, or career centres which should be encouraged to disseminate among students.

6.8. More timely reporting and additional dissemination formats

6.8.1. Observations

The Comparative Report of EUROGRADUATE 2022 (Mühleck et al., forthcoming) is the key publication of the project. Many countries analysed the data themselves and published country reports, however the Comparative Report is of particular importance as it gives a comprehensive overview of project results, provides additional in-depth analyses on specific topics, and summarizes key outcomes in an accessible way. Unfortunately, in EUROGRADUATE 2022 the publication of the report was delayed considerably. Several country teams expressed that they wished for earlier availability of results. The results get less relevant with a longer delay between data collection and publication. Moreover, the publication has been postponed several times, rendering it quite unpredictable for countries for when to expect the publication. Last but not least, the comparative report was not available when countries had to decide on their participation in the next round of the project. A tangible output showing the usefulness of the study could possibly have incentivised further countries to participate.

There are two main reasons why the publication was delayed. Firstly, data collection was delayed especially in less experienced countries due to a very tight project schedule without buffer in case of unforeseen problems. It was possible to trouble-shoot and compensate delays by stepping-up central support of the consortium, even though tight project resources set certain limits this option as well. Delays could not be fully avoided, and the joint dataset was finalised about 6 months later than planned. Due to this delay, a full draft of the comparative report could only be made available by September 2024. Secondly, at the request of the EC, the publication of the report has been further postponed in order to make best use of the report under the Union of Skills initiative of the new College. The unexpectedly long final feedback loops with the EC have prolonged the publication by several months.

6.8.2. Recommended measures

A first straightforward measure is to equip the project with more time. This has been discussed in chapter 6.1. above. The planning for EUROGRADUATE 2026 foresees an earlier start of the project. At the background of the experience of EUROGRADUATE 2022 it is highly recommended to work with a more realistic schedule from the start to avoid having to considerably postpone publication of project products. The primary project outcome of this round could thus be the international micro-level data set.

An improved project budget would as well help to publish on time. The budget foreseen for EUROGRADUATE 2026 is a clear improvement in this regard.

Another helpful measure for avoiding delays in the data collection is offering a central survey infrastructure to those countries preferring this over setting-up their own data collection platform. This is already foreseen for EUROGRADUATE 2026.

The timing of publication should be discussed and decided on in collaboration with countries. The EUROGRADUATE Steering Board would be the ideal forum for this. This would grant a certain influence on the timing of the publication to countries, resulting in more transparency and avoiding disappointment.

It should be considered how to provide countries and the EC with tangible results of EUROGRADUATE in the upcoming project round already. One option would be a non-public preliminary report to be shared with the EUROGRADUATE group but not beyond. It could be based on the international data set in the version available some few months before the official end of this round. The report could primarily focus on providing graphically presented statistics and less text to keep this task doable within the given schedule.

Another option would be to provide additional results of EUROGRADUATE 2022 in the European Higher Education Sector Scoreboard (EHESS). EHESS provides comparable information on countries in an accessible way. EUROGRADUATE 2022 already provides some indicators for the scoreboard. It could be considered to add more indicators if this is seen as useful.

Generally, it is recommended to discuss the publication strategy in the Steering Board. A comprehensive comparative report clearly has its assets. However, it could be discussed whether more flexible reporting formats would be preferable. For example, shorter, topic-specific publication formats would be conceivable. Such formats could either replace or complement a comprehensive report.

6.9. Data hosting to facilitate extensive, professional, and safe usage of data

6.9.1. Observation

For hosting research data, data protection is absolutely essential. The Research Data Centre for Higher Education Research and Science Studies (FDZ-DZHW) hosts the scientific use files of EUROGRADUATE 2018 and EUROGRADUATE 2022. For using the scientific use file (SUF) of EUROGRADUATE 2018 data usage contracts have been concluded for nearly 30 research projects. It seems likely that the EUROGRADUATE 2022 data will raise an even higher level of interest, as it encompasses a much larger number of countries and holds a considerably higher number of respondents. For widespread and safe usage of the data, a professional infrastructure specialized on data hosting services is essential as it ensures a secure, high-quality, user-friendly, and sustainable access to sensitive data.

6.9.2. Recommended measures

Given that the data of EUROGRADUATE 2018 and EUROGRADUATE 2022 are stored at the FDZ it seems a straightforward choice for the data of future rounds, but of course other certified research data centres could be suitable alternatives. To ensure wide-spread, professional, and safe usage of the data a couple of features seem either necessary or at least advantageous for any centre hosting a scientific use file of the EUROGRADUATE data:

- Experience in hosting of quantitative survey data
- A good reputation in the research community for acceptance of data hosting by the NRPs and NRTs
- Experience in hosting data in the field of higher education research to ensure that support staff at the centre understand the specific qualities of the data and can answer questions of data users
- A larger portfolio of data, generally or with a focus on higher education to ensure researchers are looking for the data at the centre
- Expertise in anonymisation of survey data which should ideally be conducted in close collaboration with the consortium conducting EUROGRADUATE
- Infrastructure and expertise for facilitating different data usage arrangements (e.g. download, remote, or on-site)
- A professional data management platform allowing researchers to look for data, access information on data packages, and apply for data in a user-friendly way
- Professional support staff as contact persons for data providers as well as for data users
- Sustainability of the infrastructure, e.g. through public funding

7. References

Allen, J., & van der Velden, R. (2007). *The Flexible Professional in the Knowledge Society: General Results of the REFLEX Project*. Research Centre for Education and the Labour Market Maastricht University.

Council of the European Union (2017). Council recommendation of 20 November 2017 on tracking graduates. *Official Journal of the European Union 60*, 1-4. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:2017:423:FULL

European Commission (2021). *Towards a European graduate tracking mechanism – Recommendations of the expert group*. Publications Office of the European Union. https://doi.org/10.2766/970793

European Commission, EACEA, & Eurydice (2022). *The Organisation of the Academic Year in Europe – 2022/2023. Eurydice Facts and Figures.* Publications Office of the European Union. https://eurydice.indire.it/wp-content/uploads/2022/09/Academic_calendars_22_23.pdf

Interuniversity Consortium AlmaLaurea (2024). *EUROGRADUATE 2022. 2nd Phase of the European Pilot Survey of Higher Education Graduates. Country Report on Italy.* AlmaLaurea.https://www.almalaurea.it/en/services-for-institutions/international-projects/traced

Meng, C., Wessling, K., Mühleck, K., & Unger, M. (2020). *EUROGRADUATE Pilot Survey – Design and implementation of a pilot European graduate survey.* European Commission Publications Office. https://data.europa.eu/doi/10.2766/629271

Mühleck, K., Grabher, A., Hauschildt, K., Litofcenko, J., Mishra, S., Ryska, R., Unger, M., & Zelenka, M. (2016). *Testing the feasibility of a European graduate study: Final report of the EUROGRADUATE feasibility study.* Hanover, Germany: German Centre for Higher Education Research and Science Studies (DZHW). ISBN 978-3-86426-049-0

Mühleck, K., Meng, C., Oelker, S., Unger, M., Lizzi, R., Maurer, S., Rimac, I., Rutjes, H., & Wessling, K. (2020). *EUROGRADUATE pilot study – Technical assessment of the pilot survey and feasibility of a full rollout.* Publications Office of the European Union. https://data.europa.eu/doi/10.2766/632548

Mühleck, K., Jühlke, R., Köppen, L., Peter, F., Weßling, K., & Dau, J. (forthcoming). *Careers, Competences and Values of European Higher Education Graduates in 2022. EUROGRADUATE 2022 Comparative Synthesis Report*. Luxembourg: Publications Office of the European Union. doi: 10.2766/5393637

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