EDULAB

European Youth in Transition to
Education and Labour

Set of data and information gaps about educational pathways and transitions and intersectional determinants

**Funded by
the European Union**

Purpose and scope of the deliverable

This report is a first comprehensive deliverable produced by December 2025 as an integral part of WP1 *"Modelling Pathways and Transitions in GE and PVET and to the Labour Market"* within the EDU-LAB project.

The paper starts with an Executive Summary (Section 1) that presents briefly the project as a whole, its WP1 and key findings of this sub-study and the following Section 2 gives an overview of the general goals, research objectives and research questions of the EDU-LAB project and describes how WP1 fits into this endeavour.

Section 3 consists of a description of the scope of the analysis and methodological approach of WP1, including an outlook on the upcoming research phases of WP1. In Section 4, the list of 20 datasets investigated is given and each dataset is classified along its general features.

Section 5 presents the key findings of the study, while Section 6 summarizes the archived results, describes methodological and data-driven limitations and outlines the prospects of the further work in WP1.

Seven Appendices round up the report and contain an exhaustive collection of the core elements of pathways in E&T and labour used in the study (identified intersectional determinants and transitions) as well as analyses of the performance capacities of available datasets (primary performance characteristics of the datasets; dataset gaps in terms of the limited coverage of determinants and transitions).

Document history

Version	Date	Description
0.1	23 April 2025	Initial structural draft (Theodor Leiber) (preliminary discussion in PMB)
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1.0 (final)	19 Dec 2025	Approved by PMB and the Coordinator

List of project-specific terms and abbreviations

AccDet	Access Determinant
AES	Adult Education Survey
CEDEFOP	European Centre for the Development of Professional Training
CEDEFOP chart	Scheme of Legally allowed pathways and transitions ('possible progression routes') in national systems of general education (GE) and professional and vocational education and training (PVET) from ISCED levels 2 upward (CEDEFOP, 2025)
D1.1	Deliverable 1.1 of WP1
EC	European Commission
EDU-LAB	The EU-funded project "European Youth in Transition to Education and Labour"
EEA	European Education Area
EEI	Exploratory Expert Interview
ESJS	European Skills and Jobs Survey
ESS	European Student Survey
E&T	Education and training
EU	European Union
EU-LFS	EU Labour Force Survey
EUROGRADUATE	EUROGRADUATE Pilot Survey
EUROSTUDENT	Social and Economic Conditions of Student Life in Europe
Eurypedia	Eurypedia – 38 education systems in Europe
EU-SILC	EU Statistics on Income and Living Conditions
GDPR	General Data Protection Regulation
GenSelDet	General Selection Determinant
GE	General education
GEM	Global Education Monitoring Report Core Dataset
HLO	Harmonized Learning Outcomes
ISCED	International Standard Classification of Education
ISEI	International Socio-Economic Index of Occupational Status
LATET	Legally allowed transition in education and training
NEET	Not in education, employment, or training
NEPS	National Educational Panel Study
PartDet	Participation Determinant
PIAAC	Programme for the International Assessment of Adult Competencies
PIRLS	Progress in International Reading Literacy Study

PISA	Programme for International Student Assessment
PMB	Project Management Board
ProgCompDet	Progression and Completion Determinant
PVET	Professional and vocational education and training
RBL	Research-based learning
STEP	Skills Toward Employment and Productivity
TALIS	Teaching and Learning International Survey
TIMMS	Trends in International Mathematics and Science Study
UIS	UNESCO Institute for Statistics Global Education Database
VET	Vocational education and training
WBL	Work-based learning
WP	Work package
YAE	Youth and Adolescent Education Data

Contents

1. Executive summary

This report represents Deliverable D1.1 "Set of data and information gaps about educational pathways and transitions and intersectional determinants"[1] of WP1 "Modelling Pathways and Transitions in GE and PVET and to the Labour Market" within the EDU-LAB project.

This document (Deliverable D1.1) consists of the following parts:

EDU-LAB project: General goals, research objectives and research questions

Section 2 gives an overview of the general goals, research objectives and research questions of the EDU-LAB project and describes how WP1 fits into this endeavour.

WP1: Scope of the analysis and methodological approach

Section 3 consists of a description of the scope of the analysis and methodological approach of WP1, including an outlook on the upcoming research phases of WP1. In particular, the section lists the methodological key elements of WP1 (e.g., explorative narrative literature analysis; systematic literature review; online survey; analysis of structural models of E&T pathways). Further the identified 80 intersectional determinants are described and ordered in 4 groups (General Selection; Access; Participation; Progression and Completion) (see Section 3.2). In addition, 24 Legally Allowed Transitions in E&T (LATET) and 8 additional generic transitions to the world of labour, to other institutions or to other countries etc. are given (see Section 3.2). Finally, an overview of a qualitative structural model of E&T pathways as well as transitions to the labour market is presented (see Section 3.3). More in-depth modeling is planned for the further course of the EDU-LAB project.

Deliverable D1.1: Methodology

In Section 4, the list of 20 datasets investigated[2] is given and each dataset is classified along general features such as, for example, methodological reliability; usability for secondary analysis; accessibility; coverage of ISCED levels; coverage of EEA countries.

Further, the dimensions of the analysis of datasets are chosen to be these general features and, even more important, the datasets' coverages of the 80 identified intersectional determinants and 32 transitions that may occur in young peoples' pathways through E&T and to and from the world of labour.

The 20 datasets investigated were first identified by the team of WP3A. The team of WP1 proposed the above-mentioned general features, intersectional determinants and transitions while WP3A managed a basic characterization of the datasets along these features and the (qualitative) degree of the datasets' coverage of the determinants and transitions.

Key findings

Section 5 and Appendices 4-6 show that, in total, the findings of the analysis of "dataset gaps" are rather differentiated. For the time being, we talk about "dataset gaps" with respect to certain determinants and transitions of pathways in E&T and labour if datasets show limited or no coverage of these determinants and transitions. Overall, the analysis exhibits that dataset gaps appear in various distinct shades depending on the determinant or transition investigated.

In short, some of the main findings are the following:

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[1] For the present purposes, "intersectional" determinants stand for determining factors that interact in complex dynamic ways which cannot be approximated by linear models where the individual outcomes of different determining factors just add up to a total outcome. In this sense, intersectional determinants do not operate in isolation but form a complex network characterized by non-linear interactions. Directed graphs are appropriate model systems.

[2] A few examples of such datasets are: ESJS (European Skills and Jobs Survey); EU-LFS (EU Labour Force Survey); EUROSTUDENT; PISA (Programme for International Student Assessment); TALIS (Teaching and Learning International Survey); VET in Europe; YAE (Youth and Adolescent Education Data).

- The 20 **datasets** investigated are **methodologically reliable**.
- The datasets have **restricted usability profiles** with respect to the seven types of secondary analysis chosen (regression analysis, cross-sectional studies, cross-country comparison, trend analysis, panel/ progression studies, panel/ longitudinal progression studies, policy evaluation) (see Figure 4). **Longitudinal progression studies are a lacking methodological option** (among the 20 datasets investigated). Recommendations can be made to complement datasets if appropriate.
- As 65% of the 20 datasets investigated are not downloadable and 65% do not offer access to microdata for research, **accessibility of certain datasets is improvable**.
- **Datasets do well cover determinants from the group of General Selection** of E&T pathways. A few recommendations for supplementing the datasets are given.
- **Datasets do not so well cover various determinants from the group of Access** to E&T pathways. Corresponding recommendations for supplementing the datasets (i.e., healing dataset gaps) can be given.
- **Datasets do well cover determinants from the group of Participation** in E&T pathways. No recommendations for supplementing the datasets are given.
- **Datasets do well cover some types of determinants from the group of Progression and Completion** in E&T pathways. No recommendations for supplementing the datasets are given.
- **Datasets do not so well cover some other types of Progression and Completion determinants**. Recommendations for supplementing the datasets can be made.
- The **Legally Allowed Transitions in E&T** (LATETs) **are not well covered** by the datasets investigated with the one exception of VET-in-Europe which covers 12 such transitions.
- Eight **additional transitions** suggested (e.g., to employment, to unemployment, to another country, to another institution) **are well covered** by the datasets investigated.
- The analysis of Legally Allowed Transitions in E&T and these eight further transitions T1-T8 is used to select most relevant transitions for the purposes of EDU-LAB and suggest **a priority list of eight transitions for secondary data analysis**. For each of these transitions, **datasets usable for secondary analysis** together with the types of analysis and some thematic topics they offer are given. In addition, **ten preliminary research questions** for further EDU-LAB analyses are proposed.
- For all suggestions to **amend or extend datasets**, it is important to note that such endeavours should **only** be undertaken **after a comprehensive check** whether available datasets wouldn't already suffice concrete purposes of secondary data analysis.

Summary, limitations and future analysis

The main body of this report closes with a summary, remarks on limitations and some outlook to future analysis during the 2nd and 3rd year of EDU-LAB.

Appendices

Several appendices present detailed accounts of the results of the analyses of datasets' characteristics and coverage of intersectional determinants and transitions in E&T and labour among them the following: Appendix 1 presents the identified set of intersectional determinants of E&T pathways and their transitions including those to and from the world of labour. Appendix 2 gives the identified set of transitions in E&T pathways and to and from the world of labour. Appendix 3 lists possible datasets for (secondary) analysis. Appendix 4 analyses the following basic characteristics of the datasets investigated: methodological reliability; usability for secondary analysis; accessibility; coverage of ISCED levels; coverage of EDU-LAB countries; coverage of EEA countries; timeframe and frequency of data acquisition. Appendix 5 presents a detailed analysis of the datasets' coverage of intersectional determinants of E&T pathways while Appendix 6 does the same for transitions in E&T and to the world of labour. The Appendices section closes with Appendix 7 that presents possible datasets for secondary analysis together with the types of analysis and some thematic topics they offer.

In summary, what we have up to this point of the EDU-LAB analysis in WP1 is as follows:

- A collected set of mostly generic and partially non-generic (currently 80) intersectional determinants categorized into (currently 4) groups; all derived from exploratory narrative literature analysis and practice experience
- A model set of Legally Allowed Transitions in E&T (LATET) informative of national E&T systems; adopted from CEDEFOP charts (CEDEFOP, 2025)
- A set of hypothesized generic transitions within E&T systems and to and from the world of labour (complementary to LATET); derived from exploratory narrative literature analysis and practice experience
- An analysis of basic characteristics of datasets investigated including assessments and recommendations for the rectification of deficiencies where appropriate
- An analysis of datasets' coverage of intersectional determinants including assessments and recommendations for the rectification of deficiencies where appropriate
- An analysis of datasets' coverage of transitions including assessments and recommendations for the rectification of deficiencies where appropriate
- An analysis of relevant transitions of E&T pathways including to the world of labour and related datasets covering these transitions so that these datasets may be recommended for secondary analysis of relevant transition regimes
- Some qualitative understanding how (certain) intersectional determinants influence (e.g., support or hinder) General Selection, Access, Participation, Progression and Completion in GE and PVET and respective transitions within GE and PVET and to and from the world of labour

2. EDU-LAB project: General goals, research questions and research objectives

2.1. General goals and research questions

Following the direct request of the Call Topic, EDU-LAB aims at the following outcomes:

- Provide quantitative and qualitative evidence of what determines participation and completion rates in upper secondary and tertiary education, including the long-term impact of the COVID-19 crisis and the role of policies and investments to promote equity and inclusion in education and training (E&T).
- Provide an enhanced knowledge base about which policies and practices can promote better-informed and more effective educational choices at all levels, including the role of vocational education and training (VET).

EDU-LAB intends to achieve these aims along the principal research theme "European youth (aged 15-30) in education (ISCED 3-8) and in transition to and from the labour market" which can be characterized by the following *general research questions*:

- What are typical – i.e., more frequent – and a-typical – i.e., less frequent – education/labour itineraries – navigations, pathways, transitions – of European youth? This may be looked investigated at EU-wide levels, national levels and specific case study regions/locations as treated in WP4.
- What are the main factors that determine these itineraries? Which intersectional determinants are more or less important (e.g., frequent), which are effective more or less?
- What are the general and specific trends in the dynamics of educational and labour-related landscapes? This may be investigated at EU-wide levels, national levels and specific case study regions/locations as treated in WP4.
- What policy programmes and practice measures are effective/efficient (to which degree) regarding the optimization of education- and labour-related navigations, pathways, transitions?

Following this line of thought and according to the EDU-LAB proposal,

- EDU-LAB 'systematically examines factors and determinants influencing choices, pathways, and transitions in E&T and from E&T to the labour market of young people aged 15-30 years. […] Project outcomes will help increase the resilience of the national or regional education systems and their articulation with the labour market.'
- 'EDU-LAB's primary research goal is to analyse the complex interplay of key political, economic, sociological, psychological and organizational determinants, and the contextual conditions of young people's pathways and transitions from the secondary education level upwards and/or to the labour market, in the EEA.'
- 'EDU-LAB's overarching objective is to expand the current knowledge base on the main factors and determinants influencing young people's choices [navigations], pathways and transitions in E&T and from E&T to the labour market in Europe.'

2.2. Research objectives

In line with these general project goals, EDU-LAB has formulated the following five specific research objectives in the proposal.

Research objective 1

The 1st specific research objective (RO1) amounts to developing a complex multi-perspective theoretical model of pathways and transitions of young people in GE and PVET and to employment. The responsibility for this is with WP1.

The multi-perspective theoretical model of pathways in E&T and to the world of labour will rely on (currently 80) intersectional determinants and (currently 32) transition types which structure the portfolio of possible pathways. To investigate certain pathways and transitions including their (intersectional) determinants, the

modelling approach will use existing and newly generated empirical data from literature analysis (WP1), (quantitative) expert surveys (WP1), secondary data analysis of available datasets (together with WP3A), comparative content analysis of impact and efficiency studies of policy programmes implemented for optimization of E&T pathways and transitions including those to and from the world of labour (together with WP2), and qualitative analysis of the voice of youth (e.g., focus group discussions; workshops; diaries) about their experience, challenges and expectations around navigating pathways and transitions (together with WP4). In addition, insights from the EDU-LAB Delphi survey (WP3B) about current challenges and future trends of E&T and labour systems will be used to further inform the modelling approach of WP1. Obviously, the modelling approach considers the varying social, economic, political and cultural contexts of determinants and transitions of pathways through E&T (including GE and PVET) and the world of labour.

Research objective 2

The 2nd specific research objective amounts to analysing and classifying the efficiency and efficacy of policies and investments effectively and reliably at various phases of young peoples' navigating pathways and transitions through E&T and the world of labour. This includes elaborating a comprehensive assessment matrix for the efficiency and efficacy of policies and investments. The responsibility for this is with WP2.

The examined policies and investments should be designed to promote access, participation, progression and completion in GE and PVET including issues of equity and inclusion, and to support young people in making well-informed and effective educational decisions. Similarly to research objective 1, the analysis will distinguish factors and determinants that are specific for the tracks of GE and PVET.

Research objective 3

The 3rd specific research objective to implementing a targeted secondary analysis of quantitative data in EEA countries (statistics and past surveys) and a highly formalized international online survey of experts at a relatively large-scale. The responsibility for these tasks is with WP3A and WP3B, respectively.

The outcomes will inform the research themes addressed by the modelling approach proposed in research objective 1 and the effectiveness approach proposed in research objective 2.

Research objective 4

The 4th specific research objective amounts to gaining in-depth knowledge related to young peoples' views, experiences, challenges and expectations toward education, training, and early labour market pathways and transitions by conducting 12 qualitative case studies in 7 European countries (Austria, Finland, Italy, Kosovo, Poland, Portugal, United Kingdom). The responsibility for this is with WP4.

The case studies will adopt principles of the Research-Practice Partnerships (RPP); this specific research objective also implies close cooperation with immediate stakeholders of GE and PVET (e.g., students' families, teachers, employers, policy makers).

Research objective 5

The 5th specific research objective amounts to synthesizing the knowledge and insights produced by EDU-LAB's research programme and use these to elaborate practical recommendations and policy briefs targeted at specific groups of stakeholders at the local, national and international levels. The responsibility for this is with WP5.

3. WP1: Scope of the analysis and methodological approach

3.1. Methodological key elements

In line with its title **"*Modelling Pathways and Transitions in GE and PVET and to the Labour Market"*,** WP1 will establish a complex multi-perspective modelling approach to pathways and transitions of young people in GE and PVET and to the world of labour.

For an overview, the methodological key elements of WP1 can be roughly characterized as follows:

(1) **Explorative narrative literature analysis** on navigations, pathways, transitions and intersectional determinants in GE, PVET (ISCED 3-8) and to and from the labour market

This approach was already used, for example, when identifying intersectional determinants and transitions relevant for pathways through E&T and labour (see Section 3.2) and proposing a preliminary structural model of such pathways and transitions (see Section 3.3).

(2) **Characterization and classification of available datasets**

This approach was already applied with respect to certain general characteristics of datasets (see Section 5.1) and the datasets' coverage of identified intersectional determinants (see Section 5.2) and transitions of pathways through E&T and the world of labour (see Section 5.3).

(3) **Comparative systematic document analysis** (e.g., comparative analysis and synthesis of CEDEFOP charts (CEDEFOP, 2025) of legally allowed transitions in E&T and to the world of labour) (optional)

This approach was already used when identifying transitions relevant for pathways through E&T and labour (see Section 3.2) and proposing a preliminary structural model of such pathways and transitions (see Section 3.3).

(4) **Semi-structured Explorative Expert Interviews** (EEIs) focusing on strengths, weaknesses, challenges and mid-term and long-term trends in E&T and the labour market as well as the possible mismatch of E&T outputs and the request of labour force.

This approach was co-constructed together with other WPs, particularly WP3B. Several EEIs were carried out by WP1 their main purpose being to prepare the Delphi survey approach applied in WP3B.

(5) **Systematic literature reviews** (SLRs) based on the development of an appropriate methodology, research questions and search items, including also meta-analysis in case of sufficient quantitative literature

This approach has already been prepared with respect to its methodology and will be applied in the next project phase. It will mainly serve to test and improve or corroborate the here proposed intersectional determinants and transitions (see Section 3.2 as well as Appendices 1 and 2) and the structural model of such pathways and transitions (see Section 3.3).

(6) **Qualitative content analysis** of reviewed literature (as appropriate)

(7) **Online survey** (quantitative) with experts on determinants of E&T pathways and transitions to and from the world of labour (optional as appropriate)

This approach will be applied in the coming phase of the EDU-LAB project to test and improve or corroborate the set of here proposed determinants, transitions (see Section 3.2 as well as Appendices 1 and 2) and structural model of such pathways and transitions (see Section 3.3).

(8) **Analysis and enhancement of applicable structural models**

This approach will be applied in the coming phase of the EDU-LAB project. It attempts to suggest structural models of navigation, pathways and their transitions through E&T systems including the world of labour. Among possible models to be considered and empirically supported (e.g., by

secondary data analysis) are decisional/psychological models; models of goal orientation and persistence; learning and teaching models; models of E&T supply and success; socio-economic models; models of policy interventions; models. of labour market-related transitional decisions; models of external threats; etc. (see Section 3.3).

(9) **Effectiveness/efficiency analysis of policies for optimization of pathways and transitions in E&T and to labour**

This approach will probably be applied in cooperation with WP2 in the coming phase of the EDU-LAB project. Methodologically, it will be based on, for example, literature review; before-after comparison methods based on secondary data if feasible; semi-structured expert interviews on effectiveness assessments. (optional)

(10) **Contribution to integration of findings and insights**

This approach will contribute to integrating findings and insights from WP1 but also WP2, WP3A, WP3B and WP4 into the development process of the structural modelling of E&T pathways and transitions, Discussion Notes and Policy Briefs, and infographics that combine to the main results of WP1.

3.2. Intersectional determinants and transitions of pathways in E&T and to the world of labour

From explorative narrative literature analysis and document analysis, intersectional determinants and transitions of pathways in GE and PVET were identified by direct content analysis.[3] The motivation behind is that a (rather comprehensive) set of determinants and transitions is required to answer – as a core activity and goal of WP1 in the first year – which available datasets (e.g., EUROSTUDENT; PIAAC; PIRLS) cover which determinants and transitions, or, if otherwise, show gaps of information and data.[4] This information, in turn is needed to select appropriate datasets for secondary analysis of the role these determinants play in E&T and labour pathways and transitions.

General Selection determinants – GenSelDet	GenSelDet type 1: **Financial issues** (GENERIC) with four sub-areas[5]
	GenSelDet type 2: **Applicants' self-determination** (GENERIC) with nine sub-areas
Access determinants – AccDet	AccDet type 1: **Availability of the desired GE or PVET programme** (COUNTRY- and REGION-SPECIFIC) with two sub-areas
	AccDet type 2: **Formal entrance qualification** (GENERIC) with six sub-areas
	AccDet type 3: **Content-related entrance qualifications** (GENERIC) with four sub-areas
	AccDet type 4: **Practice measures and policy programmes for access support** (GENERIC) with ten sub-areas

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[3] Among the sources used were the following: Agasisti & Maragkou, 2022; Burger, 2023; Dickinson, 2019; Galos & Kulic, 2022: Haas & Hadjar, 2020; Haasler, 2020; Haj *et al.*, 2018; Katsantonis, 2025; Milmeister *et al.*, 2022; OECD, 2023; OECD, 2025b; Urhahne & Wijnia 2023; Varsik, 2025; Vergori, 2025.

[4] A follow-up question is, which implemented policy programmes [e.g., Erasmus+ Programme; European Alliance for Apprenticeships (EAfA); Youth Guarantee (including Reinforced Youth Guarantee and National Implementation Plans); Action Plan for Increasing Youth Employment (APIYE) 2018–2020] address these determinants and transitions in their attempts to support and improve pathways in E&T and to the labour market. This includes the identification of determinants and transitions that are not or not well addressed or covered by certain datasets. Optionally, these issues will be further followed in the coming phase of the EDU-LAB project in collaboration with WP2.

[5] The sub-areas are depicted in Appendix 1.

Participation determinants – PartDet	PartDet type 1: **Financial issues** (GENERIC) with four sub-areas
	PartDet type 2: **Practice measures for participation support** (GENERIC) with 11 sub-areas
Progression and Completion determinants – ProgCompDet	ProgCompDet type 1: **Progression and completion delay, or discontinuation because of deficiencies of learning and teaching processes** (GENERIC) with seven sub-areas
	ProgCompDet type 2: **Progression and completion delay, or discontinuation because of deficiencies of learning and teaching resources** (GENERIC) with six sub-areas
	ProgCompDet type 3: **Progression and completion delay, or discontinuation because of socio-political and economic deficiencies** (COUNTRY- and REGION-SPECIFIC) with four sub-areas
	ProgCompDet type 4: **Progression and completion delay, or discontinuation because of dissatisfaction** (GENERIC) with two sub-areas
	ProgCompDet type 5: **Progression and completion delay, or discontinuation because of pandemics** (COUNTRY- and REGION-SPECIFIC) with one sub-area
	ProgCompDet type 6: **Practice measures for progression and completion support** (GENERIC) with ten sub-areas

Table 1: List of intersectional determinants ordered in four groups (it should be noted that these four clusters are not completely selective but have fuzzy semantic boundaries)

Based on direct content analysis of pertinent literature (see, e.g., Dickinson, 2019; Haj *et al.*, 2018; Milmeister *et al.*, 2022; Vergori, 2025) and including own experience, the determinants are pragmatically clustered into the following four groups (see Table 1)[6] which mark basic stages or phases of E&T pathways:

- *General Selection*: This cluster comprises those determinants which are closely related to issues and procedures of the selection of and decisions for educational pathways in GE and PVET as well as transitions from E&T to the world of labour (and back).
- *Access*: This cluster comprises those determinants which are closely related to issues and procedures of access to GE, PVET and the world of labour.
- *Participation*: This cluster comprises those determinants which are closely related to issues and procedures of participation in GE, PVET and the world of labour.
- *Progression and Completion*: This cluster comprises those determinants which are closely related to issues and procedures of progression and completion of E&T pathways in GE, PVET including the world of labour.

Remark: With respect to these basic stages or phases of E&T pathways, intersectionality in the sense of intersectional determinants implies that real-life E&T pathways, as a rule, may be composed of combinations of repeatedly going through individual parts of these phases. In this sense, these phases are usually not simply linearly consecutive within an individual pathway.

Further, transitions through E&T pathways and to and from the world of labour are subdivided into transitions that are legally regulated within (national) education systems and further generic transitions, especially to and from the labour market, that are not legally regulated in principle. The former group of transitions is taken from reliable descriptions of E&T systems, CEDEFOP charts, which are available for most EEA countries (CEDEFOP, 2025), while the latter transitions emerge from our own analysis of possible transitions that are not included in the CEDEFOP charts.

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[6] The full set of determinants is given in Appendix 1.

As to the first group of transitions, a pattern of Legally Allowed Transitions in E&T (LATETs), which connect the E&T programmes in an E&T system, is taken from an exemplary rich system of such transitions, the CEDEFOP chart of Germany (see Figure 3).[7] Three basic and generic[8] examples of LATETs are the following:

- LATET 1: From upper secondary GE (abbreviation: USGE) to GE Bachelor (abbreviation: GEBA)
- LATET 19: From GEBA to GE Master (GEMA)
- LATET 23: From GEMA to Doctoral Programme/Doctorate (DOCP)

In total the provisionally chosen transition model comprises 24 LATETs which are depicted in Appendix 2, Table 11.

The CEDEFOP charts and therefore the 24 LATETs of the chosen transition model do not comprise any transitions from E&T pathways to and from the world of labour as well as transitions to other institutions or countries etc. Therefore, based on own considerations further generic types of transitions have been identified to complement the list of LATETs. While the more detailed full list of these interlinked transitions is set out in Appendix 2, a few selected examples are as follows:

- Transition to/from another educational institution and transition to/from another country (e.g., emigration) and keep degree and transition to/from another field
- Transition to the world of labour and keep country and transition to permanent full-time employment
- Transition to the world of labour and transition to another country (e.g., emigration) and transition to temporary part-time employment
- Transition to the world of labour and transition to another country (e.g., emigration) and transition to unemployment
- Transition to the world of labour and keep country and transition to inactivity with respect to employment, education and training (e.g., definitive drop-out, NEET)
- Transition from the world of labour and keep country and transition to an E&T programme

Against this background, the coverage by datasets was determined for each individual determinant and transition on a qualitative conceptual basis by the EDU-LAB teams of WP3A and WP1. This way, it was identified which determinants and transitions are not covered or only partially or in a limited way or indirectly covered by which dataset.[9] Further refinement and analysis including graphics for illustration and their interpretation was carried out by WP1. While this further analysis was also carried out for every individual intersectional determinant and transition (see Appendices 5 and 6), the presentation of key finding focuses only on the most pertinent examples of "dataset gaps" (see Chapter 5).

3.3. Qualitative structural models of E&T pathways and transitions

A narrative content analysis and synthesis of E&T pathways from the literature and on the basis of intersectional determinants and pathway transitions (see, e.g., Milmeister *et al.*, 2022; The Smith Family, 2025; Varsik, 2025; Section 3.2) built the foundation for a preliminary, qualitative structural modelling perspective which is depicted in Figures 1 and 2. This modeling approach forms a basis for further analyses and differentiations towards more detailed modeling of E&T pathways as structural social networks (cf., e.g., Hunter, 2019; Saqr *et al.*, 2024; Zinilli 2025), which could also be partially supported by quantitative data.

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[7] It should be noted that taking LATETs from the CEDEFOP chart of the German education system (CEDEFOP & BIBB, 2023) is the pragmatic choice of the "most complex option" to be comprehensive; is not representative for E&T systems in the EEA; may introduce biases. For more on this, see Appendix 2 and Section 6.

[8] Present in all E&T systems of the EEA (and most probably also beyond)

[9] The qualitative semantic difference between partial coverage, limited coverage and indirect coverage may best be explained by examples: partial coverage of PartDet 1.2 (High tuition fees) by NEPS – NEPS collects institutional data on education costs (university fees) and self-reported financial barriers (e.g., "costs prevented enrolment"); limited coverage of PartDet 1.1 (Low-income family/ conditions) by PIRLS – PIRLS collects some socioeconomic background data (e.g., books at home, parental education) but not direct income measures; indirect coverage of PartDet 1.1 by PIAAC – PIAAC collects data on household income, employment status, and education levels, which can proxy low-income conditions.

Following the differentiation of the intersectional determinants according to the areas of general selection, access, participation, progress and completion in GE and PVET (see Table 1), such models will be based accordingly on the relevant mechanisms of access, participation, progress and completion (at ISCED levels 3-8 in the EEA), including mechanisms of transition via E&T pathways as well as into and out of the world of labour, which may also include transitions to other E&T programmes, other institutions or other countries. Such models, as far as feasible, will be (further) developed in later stages of the EDU-LAB project.

The determining factors of E&T pathways and transitions depicted in Figures 1 and 2 relate to the 80 intersectional determinants identified (see Section 3.2 and Appendix 5) but, in favour of graphical representation, are not in one-to-one correspondence rather somewhat more abstract and general. This is also true for the transitions indicated in Figures 1 and 2.

The above structural models indicated in Figures 1 and 2, as soon as further improved, should be integratively complemented by the above defined LATETs (legally allowed transitions within GE and PVET) and further generic transitions as also defined in Section 3.2. For an example of LATETs, probably one of the most complex ones, see the CEDEFOP chart for Germany, Figure 3.
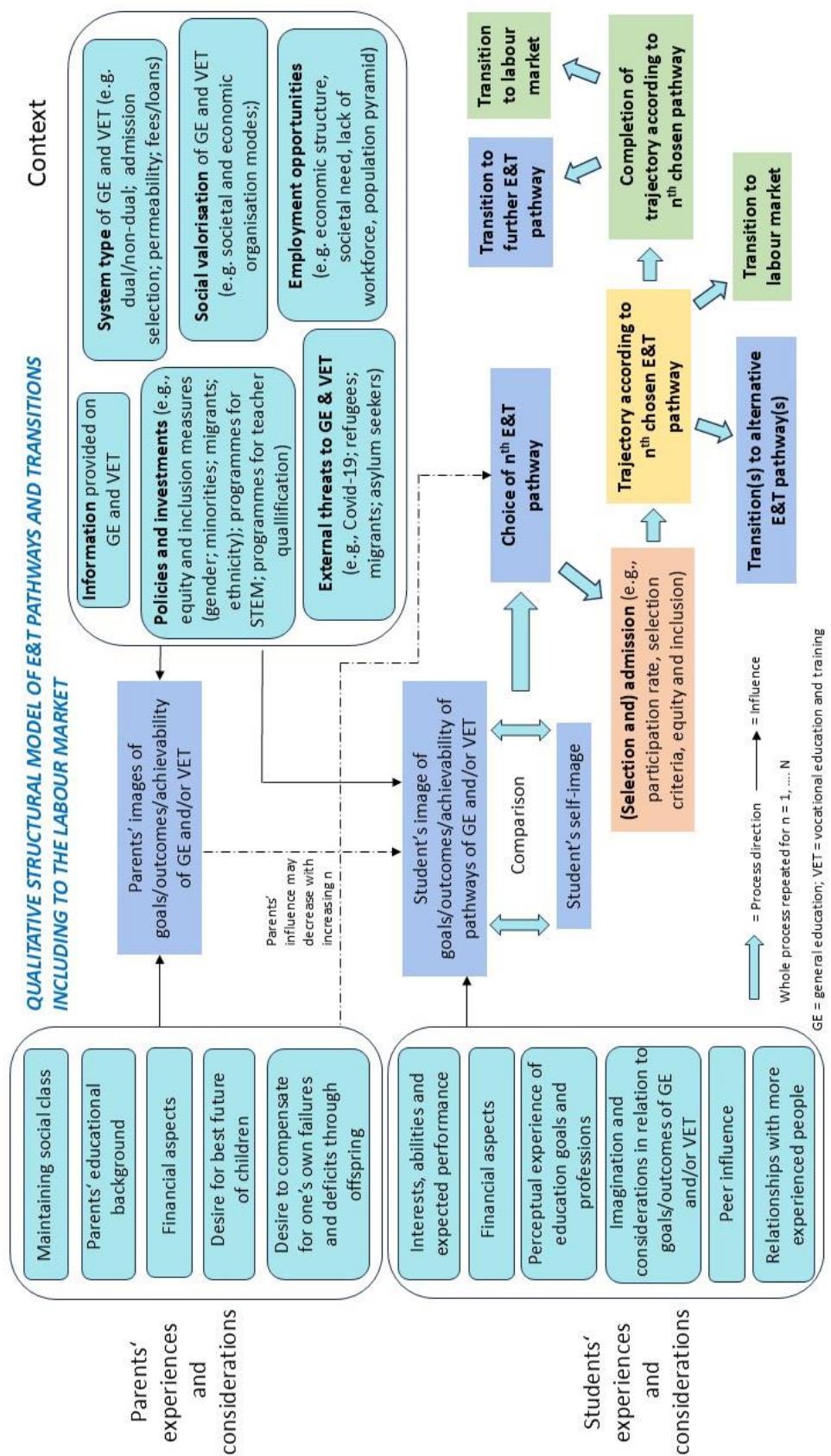
Figure 1: Qualitative structural model of E&T pathways and transitions including to the labour market (generic approach; schematic; preliminary) (inspired by Milmeister *et al.*, 2022, Figure 6)
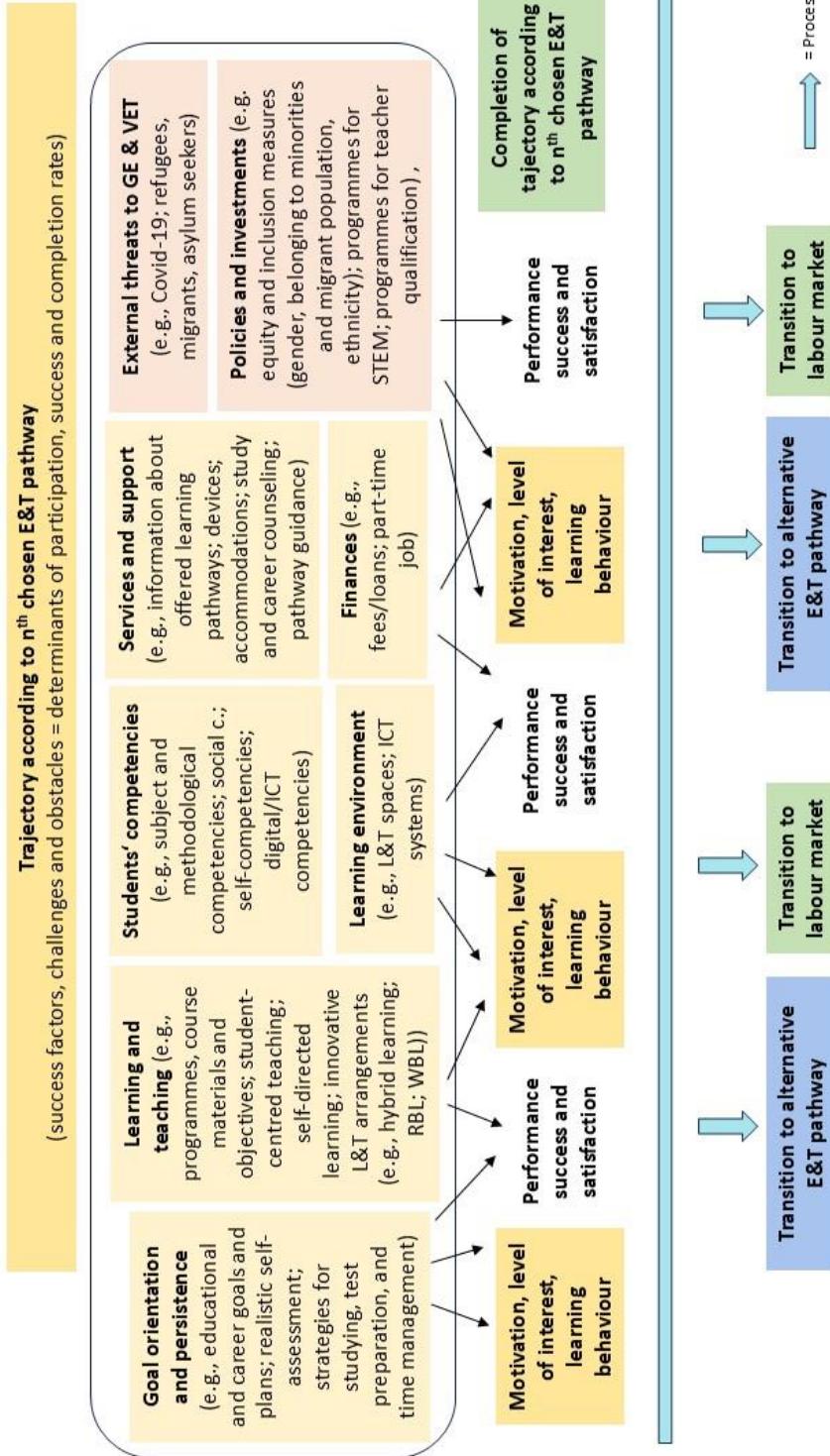
Figure 2: Structural elements of possible E&T pathways including various types of intersectional determinants (generic approach; schematic; preliminary)
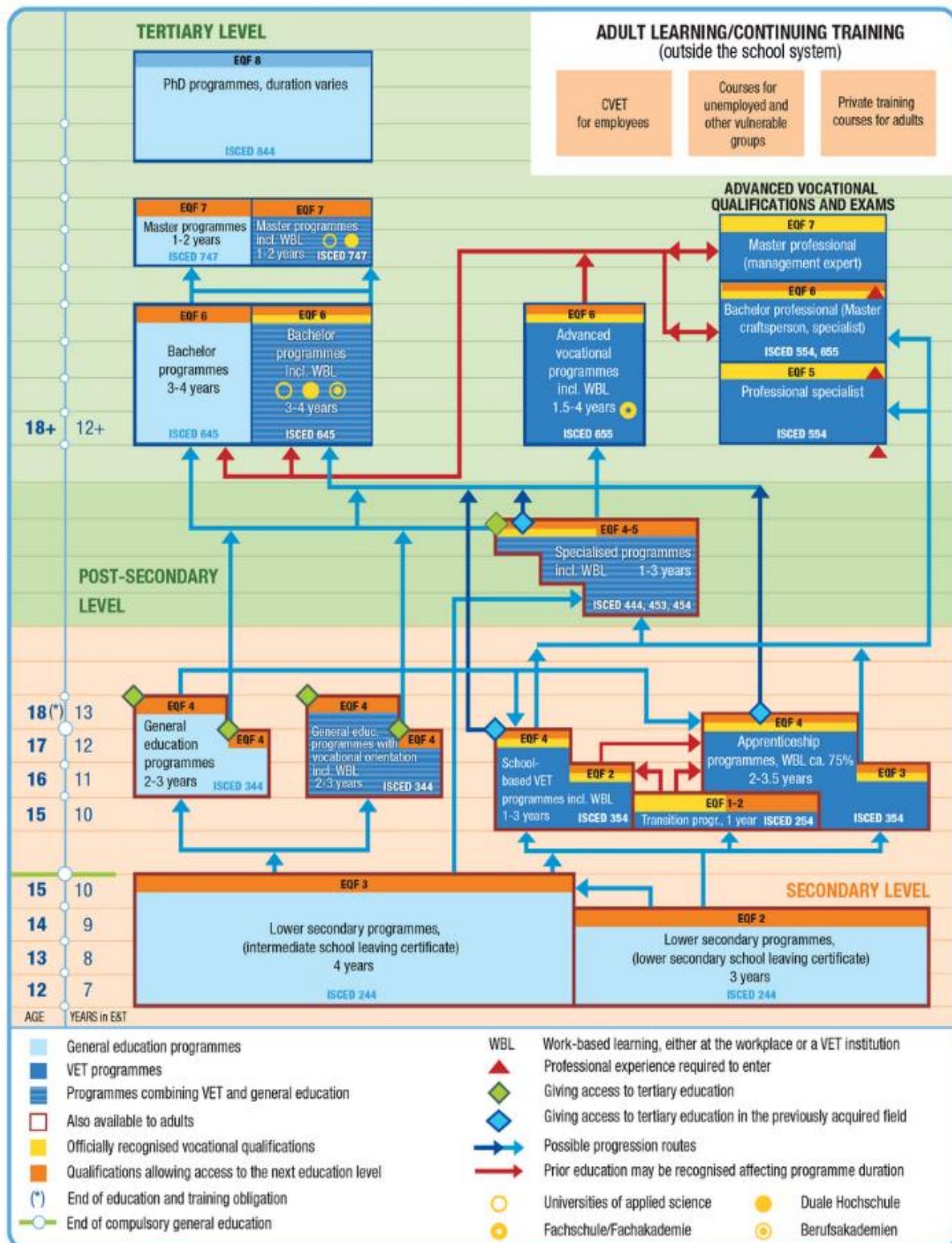
Figure 3: Legally allowed pathways and transitions (structures) ('possible progression routes') in the German system of general education (GE) and professional and vocational education and training (PVET) from ISCED levels 2 upward (transitions to the labour market not documented yet) (CEDEFOP & BIBB, 2023)

4. Deliverable D1.1: Methodology

4.1. Description of Deliverable D1.1 and previous studies

In the EDU-LAB proposal, Deliverable 1.1 (D1.1) "*Set of data and information gaps about educational pathways and transitions and intersectional determinants*" is described in the following way:

'In the initial phase, WP1 concentrates on the systematic identification of data and information gaps from current literature and accessible projects and other sources about educational pathways and transitions and their intersectional determinants. The identification of such gaps shall, first and foremost, serve as a basis for reflection and action for the empirical analyses in WP3 and WP4 as well as the efficiency analyses in WP2. Permanent exchange with these WPs will help to identify as many gaps as possible and identify the most important ones. In this way, comprehensive conceptual analysis will lead to a set of data and information gaps about educational pathways and transitions and their intersectional determinants, comprising generic (all-country) gaps and country-specific gaps. These gaps will be closed by empirical investigation in WP3 and WP4 as much as possible.'

Currently, no previous studies are available to our knowledge that led to a "set of data and information gaps about educational pathways and transitions and intersectional determinants" in GE and PVET and to the world of labour – if this means that certain pathway transitions and intersectional determinants are not or not well covered by some of the available datasets such as Eurostat, EUROSTUDENT, PIAAC (Programme for the International Assessment of Adult Competencies), PIRLS (Progress in International Reading Literacy Study), PISA (Programme for International Student Assessment), TIMSS (Trends in International Mathematics and Science Study) to name but a few.

What does exist, however, are studies on success gaps or social gaps or gender gaps in relation to training and study courses or entry into the job market (e.g., Galos *et al.*, 2022; OECD, 2025a). Such data and information gaps are not ignored here or in EDU-LAB in general, quite to the contrary. However, they are not in the promised focus of D1.1 of WP1. Rather, as just mentioned, D1.1 focuses on data and information gaps in the context of secondary data analysis, i.e., D1.1 mainly asks whether certain pathway transitions and intersectional determinants are not or not well covered by individual available datasets.

4.2. Justified selected list of datasets for analysis of data and information gaps

The team of WP3A ("Targeted analysis of quantitative data in EEA") identified a list of 48 available datasets which, in principle, could be used for secondary data analysis. This list is presented in Appendix 3. It was collected through suggestions from EDU-LAB project colleagues in the various work packages, individual searches and experience, and recommendations from external experts.[10]

The basic list of 48 identified datasets includes both pan-European (e.g., ESS – European Social Survey; EUROSTUDENT; PISA; PIRLS; TIMMS) and country-focused datasets (e.g., NEPS – National Education Panel Study Germany; AlmaLaurea dataset Italy). For further analysis and classification along certain core features and classification criteria developed and suggested by WP1 team, datasets were randomly selected and the first 19 with a pan-European or multi-country focus were chosen to ensure alignment with the project's broad geographical scope. One national dataset, NEPS, was added by intention because NEPS focuses on Germany where the WP3A team is based and is particularly interested in applying NEPS for secondary analyses separately.[11] The selected 20 datasets (see Table 2) were then analysed by WP3A team due to their internal project deadline for this task and limited resources[12] along classification criteria (see Section 4.3) and the intersectional determinants and transitions developed and suggested by WP1 team.

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[10] Information from WP3A team
[11] Information from WP3A team
[12] Information from WP3A team

INTERNATIONAL LARGE-SCALE EDUCATIONAL ASSESSMENTS	EUROPEAN SURVEYS & DATA PORTALS
PISA (Programme for International Student Assessment) **PIAAC** (Programme for the International Assessment of Adult Competencies) **PIRLS** (Progress in International Reading Literacy Study) **TIMSS** (Trends in International Mathematics and Science Study)	**EUROSTUDENT** (Student conditions) **EUROGRADUATE** (Graduate outcomes) **ESS** (European Social Survey)
EU & INTERNATIONAL STATISTICAL DATABASES	**NATIONAL EDUCATIONAL & SOCIOECONOMIC SURVEYS**
Eurostat (EU statistics, e.g., LFS, SILC, youth unemployment) **EU-LFS** (EU Labour Force Survey) **EU-SILC** (Income & Living Conditions) **AES** (Adult Education Survey) **UNESCO/UIS** (Global education data) **ESJS** (European Skills and Jobs (ESJ) Survey) **VET-in-Europe** country reports **TALIS** (Teaching and Learning International Survey) **Eurypedia** – 38 education systems in Europe	**Germany** **NEPS** (National Educational Panel Study)
	FOUR ADDITIONAL DATASETS
	STEP (Skills Toward Employment and Productivity) **HLO** (Harmonized Learning Outcomes) **YAE** (Youth and Adolescent Education Data – UNESCO Dataset) **GEM** (Global Education Monitoring Report Core Dataset – UNESCO Dataset)

Table 2: 20 selected datasets for analysis of data and information gaps

Undoubtedly, it would be epistemically more convincing to classify all 48 identified datasets in detail to gain a more comprehensive, virtually complete picture. However, this was precluded by limited project resources while, given the resources, the classification of the group of 28 datasets may be carried out later. Anyway, a methodologically verifiable representativeness of the 20 selected datasets cannot be convincingly asserted. On the other hand, it can be shown that the 20 selected datasets cover a broad spectrum of properties relevant for further investigation in the EDU-LAB project:

- The methodology of data acquisition of all datasets is good (see Section 5.1).
- Basic usability options are covered by the set of 20 datasets with the only exception of longitudinal progression studies (which are a general desideratum) (see Section 5.1).
- All ISCED levels 0-8 are well covered by the datasets (see Section 5.1).
- All EDU-LAB countries are well covered, e.g., by ESS, GEM, HLO, PIRLS, TIMSS, UIS and others (see Section 5.1).
- EEA countries are well covered, e.g., by GEM, HLO, PIAAC, PISA, TIMMS, UIS and others (see Section 5.1).
- GE is covered, e.g., by EUROGRADUATE, EUROSTUDENT, Eurypedia, HLO, PIRLS, PISA, TALIS, TIMSS.
- PVET is covered, e.g., by EU-LFS, ESJS, STEP, VET-in-Europe.
- Transitions to the world of labour are covered, e.g., by EU-LFS, STEP.
- Economic and social dimensions are covered, e.g., by EU-SILC, ESS.
- Teaching and learning issues are covered, e.g., by EUROGRADUATE, HLO, TALIS.
- Student competences and literacies are covered, e.g., by PISA, PIRLS, TIMSS.
- STEM competences are covered, e.g., by PISA, TIMSS.
- Adult competences are covered, e.g., by PIAAC, AES, YAE.
- International/ global perspective is covered by UNESCO/UIS and GEM.

All these considerations do not imply that further data analyses in the EDU-LAB project are limited to the 20 datasets; further datasets from the more extensive list of 48 (see Appendix 3) can be used for analysis at any time if required.

4.3. Classification of datasets based on some general characteristics

A classification of the identified datasets along general features was carried out by WP3A and WP1 in the following way: for each dataset general data like the full name and acronym, the time frame and regularity, the accessibility, the (assessed) methodological reliability and the focused ISCED level(s) were collected.

Available dataset	Geographical spread of dataset	Usability of dataset for secondary analysis
1. Full Name (Acronym) Programme for International Student Assessment (PISA) **2. Time Frame and Regularity** Frequency: every 3 years (since 2000) Testing Years: 2000, 2003, 2006, 2009, 2012, 2015, 2018, 2022, 2025 (next) **3. Accessibility** Data Access: publicly available reports on the OECD PISA website (https://www.oecd.org/pisa/) Datasets downloadable **4. Methodological Reliability:** HIGH **5. ISCED Level(s) focused** Primary Target: ISCED Level 3 (15-year-olds in upper secondary education) Coverage includes students in GE and VET tracks (ISCED 3A, 3B, 3C)	**1. EEA Countries participating in PISA** All EEA countries except Kosovo (Note: Some EHEA countries may skip occasional cycles, but most participate regularly. **2. Non-European OECD Countries** • North America: USA, Canada, Mexico • Asia-Pacific: Australia, New Zealand, Japan, South Korea • Other OECD: Chile, Türkiye, Israel, Colombia, Costa Rica **3. Non-OECD Partner Countries/Economies** • Asia: o China (represented by specific regions: Beijing-Shanghai-Jiangsu-Zhejiang in 2018/2022; earlier included Hong Kong, Macau, Taiwan as separate entities) o India (participated only in 2009 with two states: Himachal Pradesh & Tamil Nadu) o Singapore (consistently top-ranked) o Malaysia, Thailand, Vietnam, Indonesia • Middle East: o United Arab Emirates (UAE), Qatar, Saudi Arabia • Latin America: o Brazil (largest participant in Latin America) o Argentina, Peru, Uruguay, Panama, Dominican Republic • Eurasia & Africa: o Russia (until 2018, suspended in 2022 due to OECD sanctions) o Kazakhstan, Georgia, Morocco (limited participation) (Note: Some countries join intermittently due to costs or political factors.)	Cross-country comparison; Regression analysis; Trend analysis

Table 3: General classificational data for the exemplary case of the PISA dataset (Programme for International Student Assessment)

This information was complemented by data about the geographical spread and the possible uses (usability) of the dataset. Table 3 gives an example of such classification for the case of the PISA dataset (Programme for International Student Assessment).

Classifications like the one shown in Table 3 were carried out for each of the 20 selected datasets listed in Section 4.2.

4.4. Research questions for datasets' analysis of data and information gaps

As already mentioned, the overarching goal of Deliverable 1.1 (D1.1) is to analyse the 20 selected datasets according to the *degree of their coverage of intersectional determinants and transitions*. In addition, the datasets shall be analysed along the general characteristics shown in Table 3. Hence, the datasets' analysis of data and information gaps is guided by the following research questions:

- *What is the level of methodological reliability* (high, medium, low) *of the dataset* in question?
- *What is the principal usability for secondary analysis* (e.g., regression; panel; cross-country; …) *of the dataset* in question?
- *What is the accessibility* (e.g., open, restricted or no access; website or printed matter) *of the dataset* in question?
- *Which ISCED levels* (ISCED 0-8) *are covered by the dataset* in question?
- *Which EDU-LAB partner countries are covered by the dataset* in question?
- *Which EEA countries are covered by the dataset* in question?
- *What is the timeframe and frequency of data acquisition* (e.g., annual; bi-annual; …; testing years; …) *of the dataset* in question?
- *What is the coverage by datasets* (e.g., direct, indirect, limited, partial or not covered; covered by one or several datasets) *of intersectional determinants of General Selection?*
- *What is the coverage by datasets* (e.g., direct, indirect, limited, partial or not covered; covered by one or several datasets) *of intersectional determinants of Access?*
- *What is the coverage by datasets* (e.g., direct, indirect, limited, partial or not covered; covered by one or several datasets) *of intersectional determinants of Participation?*
- *What is the coverage by datasets* (e.g., direct, indirect, limited, partial or not covered; covered by one or several datasets) *of intersectional determinants of Progression and Completion?*
- *What is the coverage by datasets* (e.g., direct, indirect, limited, partial or not covered; covered by one or several datasets) *of possible transitions within E&T programmes and to the world of labour?*

5. Key findings

All findings reported in this section are based on the analysis of the 20 available datasets listed and described in Section 4.2 and the results of multiple analyses presented in the Appendices 4-7 in more detail.

5.1. Datasets' coverage of basic characteristics

Methodological reliability

The analysis of the 20 datasets investigated[13] shows that their methodological reliability (assessed along the criteria of rigorous sampling, high-quality psychometric scaling, inclusion of background questionnaires for contextual data, quality monitoring) is high. Therefore, they can generally be used for secondary data analysis though different datasets fulfill different individual quality criteria or groups of them. In this sense, it is generally possible to improve the data collection methods for selected datasets by considering additional quality criteria that are not yet fulfilled by that dataset (for details see Appendix 4, Section 8.4.1).

Usability

The datasets have restricted profiles with respect to seven types of secondary analysis, i.e., regression analysis; cross-sectional studies; cross-country comparison; trend analysis; panel/ progression studies; panel/ longitudinal progression studies; policy evaluation (see Figure 4). More specifically, this means that none of the datasets investigated offers all seven types of secondary analysis as usability options. For example, all 20 datasets offer regression analysis and cross-country comparison, 11 datasets offer progression studies, seven datasets offer cross-sectional studies, four datasets offer trend analysis, four datasets offer policy evaluation, and no dataset offers longitudinal progression studies as methodological options. From this follows that for each dataset it can be recommended to extend it by three or four types of secondary analysis – if, and this is an important condition which must be checked, the full range of seven types of secondary analysis is required and appropriate against the background of a certain data analysis task.
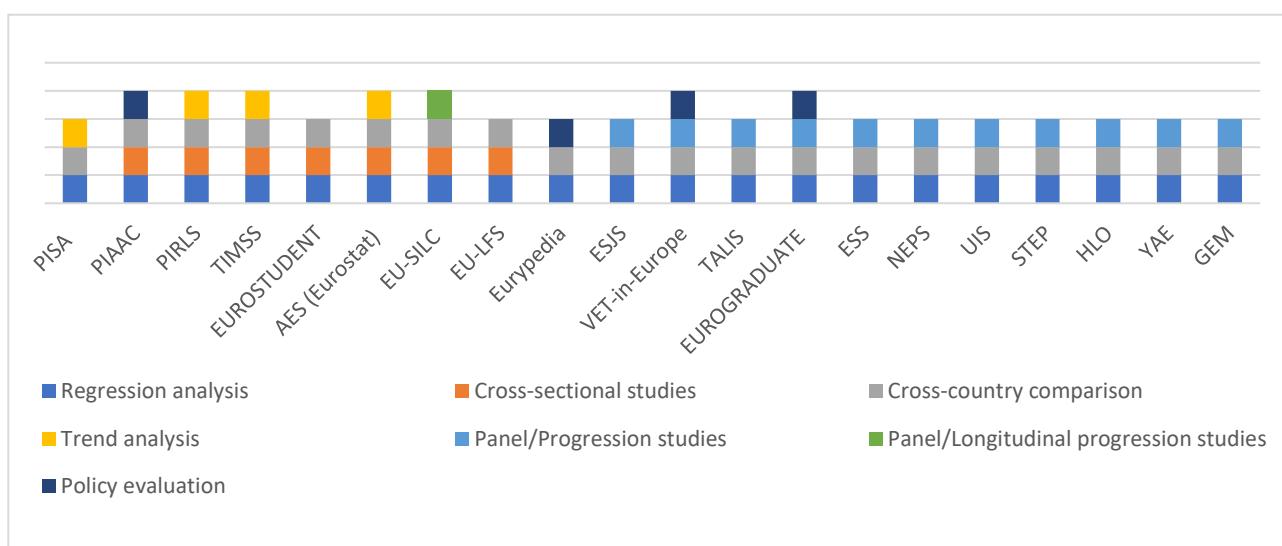

Figure 4: Profiles of 20 datasets with respect to types of secondary analysis they offer: each bar for a certain dataset shows which types of secondary analysis are possible with the dataset

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[13] PISA; PIAAC, PIRLS, TIMMS, EUROSTUDENT, AES, EU-SILC, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS, NEPS, UIS, STEP, HLO, YAE, GEM

While "no dataset gap" can only be diagnosed for regression analysis and cross-country comparison (see Figure 4), cross-sectional studies are not covered by 13 datasets[14] (65%), trend analysis is not covered by 16 datasets[15] (80%), panel/ progression studies are not covered by 9 datasets[16] (45%), panel/ longitudinal progression studies are not covered by 19 datasets[17] (95%) and policy evaluation is not covered by 16 datasets (80%) (see Figure 4).

Accordingly, several general recommendations can be made (see Appendix 4, Section 8.4.2) to eventually complement datasets that have restricted profiles with respect to the seven types of secondary analysis. *It is perhaps remarkable that longitudinal progression studies are a lacking methodological option (among the 20 datasets investigated).*

Accessibility

Some "dataset gaps" were also identified against the background of 6 different ways of accessibility. The most noticeable deficiencies found are that 65% of datasets are not downloadable and 65% do also not offer access to microdata for research. *These and other restrictions* (see Appendix 4, Section 8.4.3) *are not consistent with the ideas of open science.* Some recommendations for addressing these restrictions are listed in Section 8.4.3.

Coverage of ISCED levels

The analysis of which datasets cover which ISCED levels (see Appendix 4, Section 8.4.4) shows that each ISCED level is addressed by at least seven datasets. Therefore, it can be generally assumed that every ISCED level is well covered by datasets. This is corroborated by the fact that six datasets cover all ISCED levels 0-8: EU-LFS, Eurypedia, GEM, NEPS; PIAAC, UIS. In this sense, there is no evidence of a lack of datasets covering all ISCED levels 0-8 – no "dataset gap" in this respect.

Coverage of EDU-LAB countries

The datasets' coverage of EDU-LAB countries shows that sufficiently many datasets out of the group of 20 cover sufficiently many EDU-LAB countries. For example, PIRLS, TIMSS, ESS, UIS, HLO, GEM cover all EDU-LAB countries, while PISA, PIAAC, AES, ESJS, VET-in-Europe cover all but one EDU-LAB country (see Appendix 4, Section 8.4.5). In this sense, there is no evidence of a lack of datasets covering sufficiently many EDU-LAB countries.

However, this does not rule out the possibility that no suitable dataset or datasets are available for satisfying specific knowledge requests about certain EDU-LAB countries. Whether such cases occur or not can only be assessed once such specific areas of interest and the corresponding research questions have been explicitly formulated.[18]

Coverage of EEA countries

The analysis of datasets with respect to their coverage of EEA countries shows that sufficiently many datasets out of the group of 20 cover sufficiently many EEA countries. From a theoretical point of view, *this does not support the thesis that, in general, a remarkable lack of pan-European datasets exists*: PISA, PIAAC, TIMMS,

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[14] PISA; Eurypedia; ESJS; VET-in-Europe; TALIS; EUROGRADUATE; ESS; NEPS; UIS; STEP; HLO; YAE; GEM

[15] PIAAC, EUROSTUDENT, EU-SILC, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE ESS, NEPS UIS, STEP, HLO, YAE, GEM

[16] PISA, PIAAC, PIRLS, TIMMS, EUROSTUDENT, AES, EU-SILC, EU-LFS, Eurypedia

[17] Only exception: EU-SILC

[18] Similar remarks may also apply to other assessments and recommendations about the actual potential usage range of datasets.

UIS, HLO and GEM can be called pan-European while each of these datasets covers all or nearly all EEA countries (see Appendix 4, Section 8.4.6).

Again, this does not rule out the possibility that suitable datasets are not available for satisfying specific research questions about certain EDU-LAB countries. Whether such cases occur or not can only be assessed once such specific areas of interest and the corresponding research questions have been explicitly formulated.

Timeframe and frequency of data acquisition

As there are no noteworthy peculiarities in connection with the analysis of the datasets' timeframe and frequency of data acquisition, reference is made here only to the results described in Appendix 4, Section 8.4.7.

5.2. Datasets' coverage of intersectional determinants of E&T pathways

Datasets' coverage of determinants of General Selection

From the total of 13 General Selection determinants, the majority is well covered by the 20 datasets investigated (see Appendix 5, Section 8.5.1). Only two determinants from the General Selection type 2 (Applicants' self-determination), namely GenSelDet 2.6 (Integrating their family planning) and GenSelDet 2.8 (Integrating arguments of other stakeholders) are not so well covered (see Section 8.5.1). *If these two determinants are considered relevant for understanding pathways and transitions in E&T and labour, it could therefore be proposed that certain datasets be amended or expanded to cover these determinants (better). This should be particularly relevant for GenSelDet 2.6, as it captures an important aspect of work-life balance, encompassing personal and social development as well as self-determination.*

Datasets' coverage of determinants of Access

Several "dataset gaps" are identified for determinants of access to E&T programmes, i.e., some datasets investigated do not well cover various Access determinants (see Figure 5). Therefore, recommendations can be given for supplementing certain datasets to fill these "dataset gaps". Here are a few selected examples:

- Formally, 12 out of 20 datasets[19] could be supplemented to also cover the Access determinant AccDet 3.1: "Language literacy tests"; a deeper analysis reveals, however, that it does probably not make much sense to supplement TIMSS with AccDet 3.1 because TIMSS is focused on the area of mathematics and science studies and not language literacy.
- Formally, 13 out of 20 datasets[20] could be supplemented to also cover the Access determinant AccDet 3.2: "MINT literacy tests"; a deeper analysis reveals, however, that it does probably not make much sense to supplement PIRLS with AccDet 3.2 because PIRLS is focused on the area of reading literacy and not MINT literacy.
- Formally, 19 out of 20 datasets[21] could be supplemented to also cover Access determinant AccDet 3.3: "Digitalisation and AI literacy tests"; a deeper analysis reveals, however, that it does probably not make much sense to supplement PIRLS with AccDet 3.3 PIRLS is focused on the area of reading literacy and not digital and AI literacy.

Interestingly, this shows that these three Access determinants, in particular "Digitalisation and AI literacy" are not so well represented in the datasets investigated (see Figure 5).

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[19] PISA, PIRLS, TIMSS, EUROSTUDENT, AES, EU-SILC, EU-LFS, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS
[20] PISA, PIRLS, EUROSTUDENT, AES, EU-SILC, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS, UIS
[21] PISA, PIRLS, TIMSS, EUROSTUDENT, AES, EU-SILC, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS, NEPS, UIS, STEP, HLO, YAE, GEM
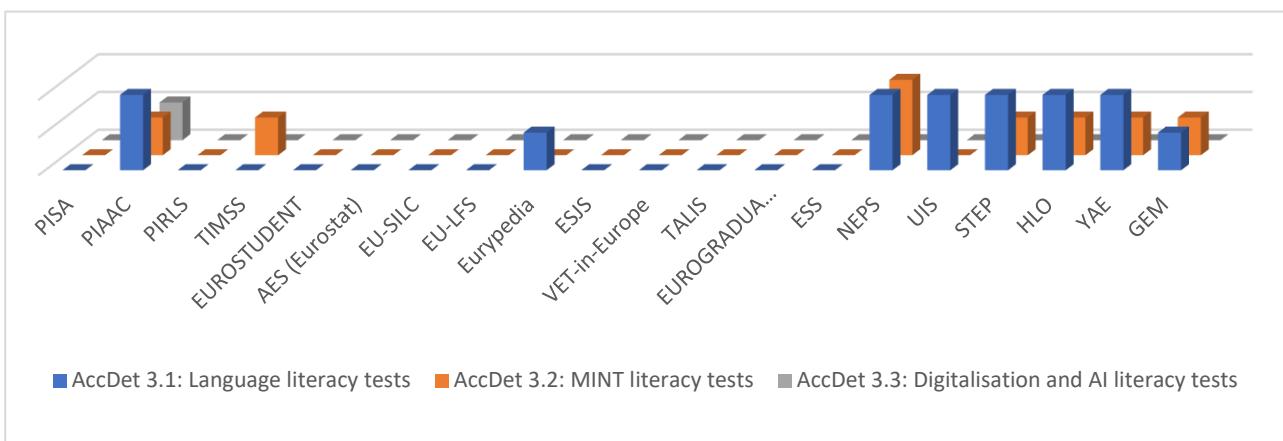
Figure 5: Datasets' coverage of the three Access determinants of the determinant group "Content-related entrance qualification": each bar indicates that the said dataset covers the Access determinant AccDet 3.1 (blue bar), AccDet 3.2 (orange bar) and AccDet 3.3 (grey bar) (large bar indicates full, small bar indicates partial, no bar indicates no coverage)

For the group of Access determinants (AccDet) several further restrictions of coverage by the 20 datasets are given (see Appendix 5, Section 8.5.2):

- The 2 Access determinants AccDet 1.1 (Availability of the desired GE or PVET programme in the region of proximity) and AccDet 1.2 (Availability of the desired GE or PVET programme in the overall country) are generally not well covered by the datasets investigated. In particular, this is true for AccDet 1.1.
- 15% of the datasets investigated – PISA; PIRLS; TIMSS – do not cover any of six Access determinants of type 2 (Formal entrance qualification), AccDet 2.1-2.6.
- 10% of the datasets investigated – PIRLS; ESJS – do not cover any of the 10 Access determinants of type 4 (Practice measures for access support), AccDet 4.1-4.10. Further, AccDet 4.4 is directly covered by no dataset; AccDet 4.2 and AccDet 4.7 are directly covered by only one dataset; AccDet 4.5, AccDet 4.6, AccDet 4.8, AccDet 4.9 and AccDet 4.10 are directly covered by only two datasets.
- Relevant deficiencies can also be identified with respect to coverage of AccDet 5.1 (Fostering information and education in democracy and universal human rights), AccDet 5.3 (Fostering diversity, equity and inclusion), AccDet 5.4 (Support for applicants with disabilities or chronic medical conditions) and AccDet 5.7 (Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market) which are less covered (only one or two direct coverages) than other Access determinants.

More details and related general recommendations can be found in Appendix 5, Section 8.5.2. Again, more specific assessments and recommendations than those presented there, can only be given against the background of more specific research questions.

Datasets' coverage of determinants of Participation

The analysis of datasets with respect to their coverage of determinants of Participation provides the generally simple picture that the *15 Participation determinants are well covered by the 20 datasets investigated*, see Appendix 5, Section 8.5.3, where related general recommendations are also suggested. Again, more specific assessments and recommendations than those presented there can only be given against the background of more specific research questions.

Datasets' coverage of determinants of Progression and Completion

Several "dataset gaps" are identified for determining factors of Progression in and Completion of E&T programmes, i.e., some datasets investigated do not well cover various Progression and Completion determinants (see Figure 6). Therefore, recommendations can be given for supplementing certain datasets to fill these "dataset gaps". Here are a few selected examples: 13 out of 20 datasets could be supplemented to also cover the Progression and Completion determinant ProgCompDet 3.1: "Low prosperity of country"; 15 out of 20 datasets could be supplemented to also cover ProgCompDet 3.2: "Lack or low quality of freedom of country"; 19 out of 20 datasets could be supplemented to also cover ProgCompDet 3.3: "Failed state situation"; 18 out of 20 datasets could be supplemented to also cover the ProgCompDet 3.4: "War". *Interestingly, this shows that these four Progression and Completion determinants, especially the last two mentioned, are not so well represented in the datasets investigated. This seems to demonstrate that basic economic and anti-democratic disruptions including war are not convincingly represented in the datasets as determining factors of progression and completion. This is all the more relevant given that we are living in a time of regional and global uncertainty, caused by attacks on democracy, declining economic prosperity, a lack of environmental sustainability, and actual and threatening wars.*
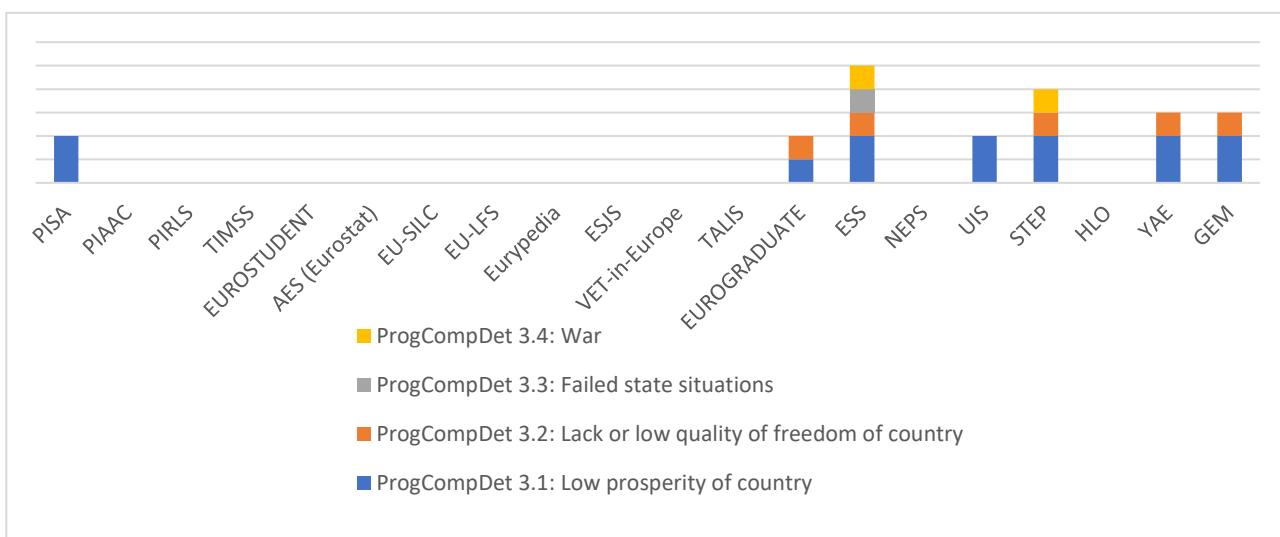
Figure 6: Profiles of 20 datasets with respect to their coverage of the four determinants from the determinant group "Progression and completion delay, or discontinuation because of socio-political and economic deficiencies": each bar for a certain dataset shows which of the Progression and Completion determinants ProgCompDet 3.1, ProgCompDet 3.2, ProgCompDet 3.3, ProgCompDet 3.4 are covered by the dataset to which extent (large bar indicates full, small bar indicates partial, no bar indicates no coverage)

The two Progression and Completion determinants of type 4, ProgCompDet 4.1 (Dissatisfaction with pathway), ProgCompDet 4.2 (Lack of employment vacancies), are not well covered by the 20 datasets investigated (Figure 7). *This seems to demonstrate that basic self-satisfaction issues and employment issues are not convincingly represented by the datasets.*

Also, 50% of datasets do not cover any of the Progression and Completion determinants ProgCompDet 4.1-4.2: AES, Eurypedia, EU-SILC, HLO, PIAAC, PIRLS, PISA, TALIS, TIMSS, UIS.
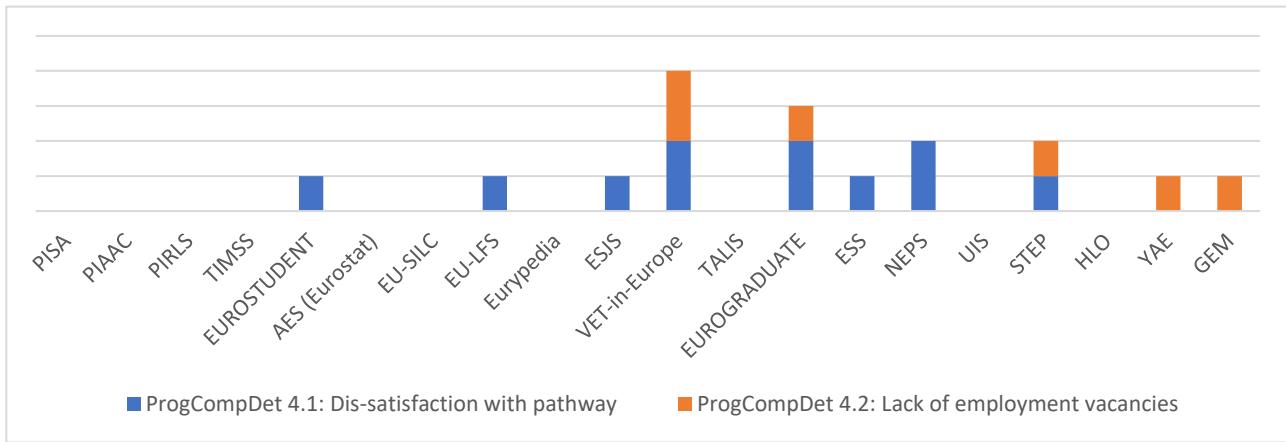
Figure 7: Profiles of 20 datasets with respect to their coverage of the two determinants from the determinant group "Progression and completion delay, or discontinuation because of dissatisfaction": each bar for a certain dataset shows which of the Progression and Completion determinants ProgCompDet 4.1, ProgCompDet 4.2 are covered by the dataset to which extent (large bar indicates full, small bar indicates partial, no bar indicates no coverage)
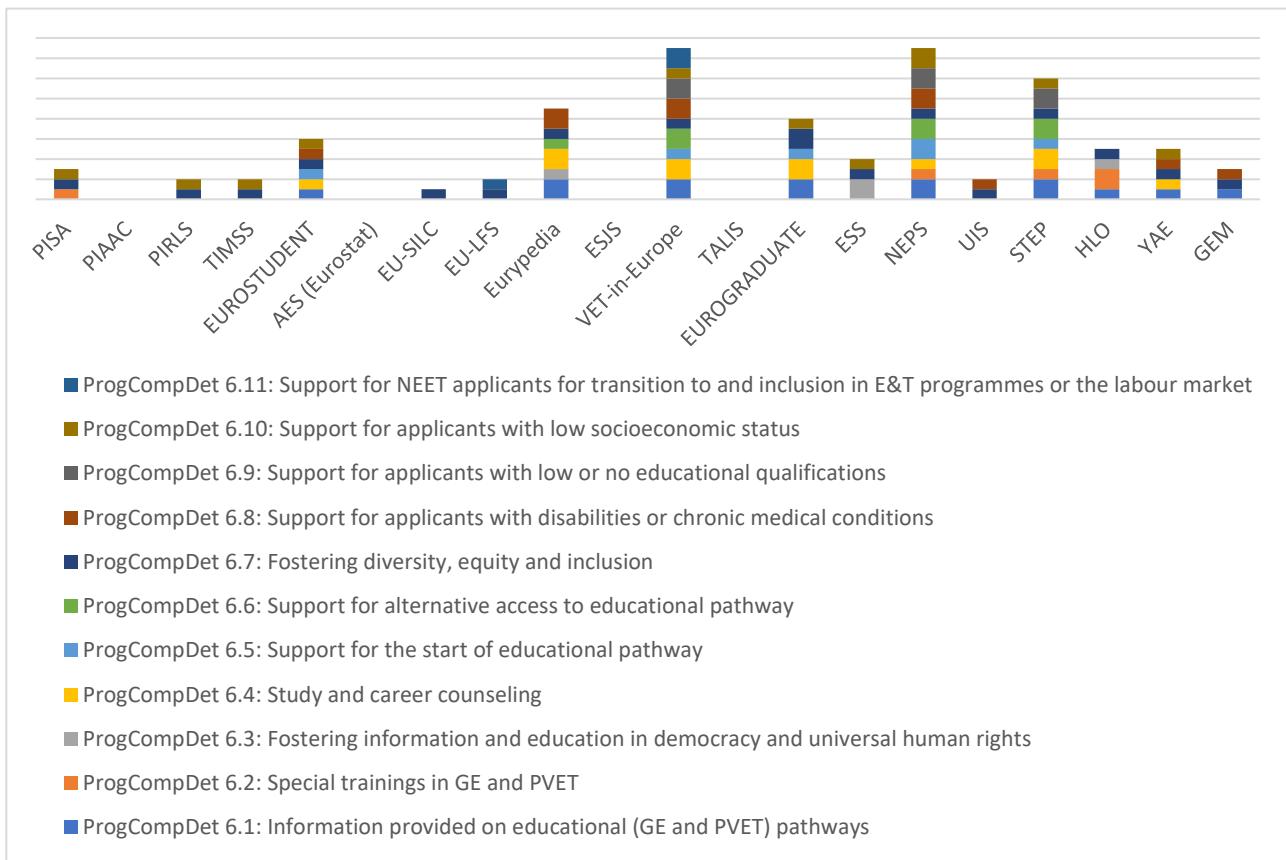
Figure 8: Profiles of 20 datasets with respect to their coverage of the 11 determinants from the determinant group "Practice measures for progression and completion support": each bar for a certain dataset shows which of the Progression and Completion determinants ProgCompDet 6.1-6.11 are covered by the dataset to which extent (large bar indicates full, small bar indicates partial, no bar indicates no coverage)

In general, the 11 Progression and Completion determinants of type 6 "Practice measures for progression and completion support", ProgCompDet 6.1-6.11, seem to be rather well covered by the 20 datasets investigated although the coverage is varying from dataset to dataset. VET-in-Europe, NEPS and STEP are best in addressing these determinants (see Figure 8 and Appendix 5, Section 8.5.4) while the following four datasets out of 20 (20%) do not cover any ProgCompDet 6.1-6.11: AES, ESJS, PIAAC, TALIS. However, for AES, ESJS and PIAAC this lack of coverage seems to be justified because AES and PIAAC focus on the adult competences and ESJS focuses on job skills and all three do not focus on measures for progression and completion support.

Relevant general recommendations can be found in Appendix 5, Section 8.5.4.

5.3. Datasets' coverage of transitions of E&T pathways and to the world of labour

Datasets' coverage of Legally Allowed Transitions in E&T

The analysis of datasets with respect to their coverage of Legally Allowed Transitions in E&T (LATET) shows that "dataset gaps" exist in the following sense (see Figure 9 and Appendix 6, Section 8.6.1):

- 11 out of 20 datasets (55%) do not cover any LATET, namely PISA, PIRLS, TIMMS, AES (Eurostat), EU-SILC, EU-LFS, ESJS, TALIS, ESS, HLO, YAE.
- 11 LATETs – namely LATET 5, LATET 8, LATET 11, LATET 13, LATET 14, LATET 15, LATET 16, LATET 18, LATET 20, LATET 21, LATET 24 (see Figure 9) – are not covered by any of the datasets investigated. It should be noted, however, that these 11 LATETs are transitions that are assumed to be "not generic" or "probably not generic"[22]; therefore, these sorts of dataset gaps are probably not so urgent to be closed.

Hence, from a theoretical viewpoint it can be recommended to complement one or more of the 20 datasets to cover some of these transitions or introduce a new dataset for that purpose.

Anyway, one must be careful in suggesting amendments to datasets because of this analysis because the latter, for the moment, relies on and refers to the "comprehensive" system of LATETs in the German E&T system which is neither representative nor typical for the E&T systems in the EEA.[23]

Datasets' coverage of other transitions in E&T and to the world of labour

The analysis of datasets with respect to their coverage of other transitions in E&T and to the world of labour shows that "dataset gaps" exist in the following sense (see Figure 10 and Appendix 6, Section 8.6.2):

- Five out of 20 datasets 25%) do not cover any of the further transitions T1-T8, namely PISA, PIRLS, TIMMS, AES (Eurostat),–TALIS. However, as every transition T1-T8 is covered by at least one dataset and T1, T3, T4, T5, T6, T7 and T8 are covered by at least six datasets, *no strong argument can be given for complementing any of the 20 datasets investigated* for covering further transitions or introducing a new dataset for that purpose.

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[22] Meaning they are somehow specific to a certain E&T system but do not occur in (many) other E&T systems
[23] To develop a "more typical baseline system of E&T" for the EEA, if possible, is a future task, see also Section 6.
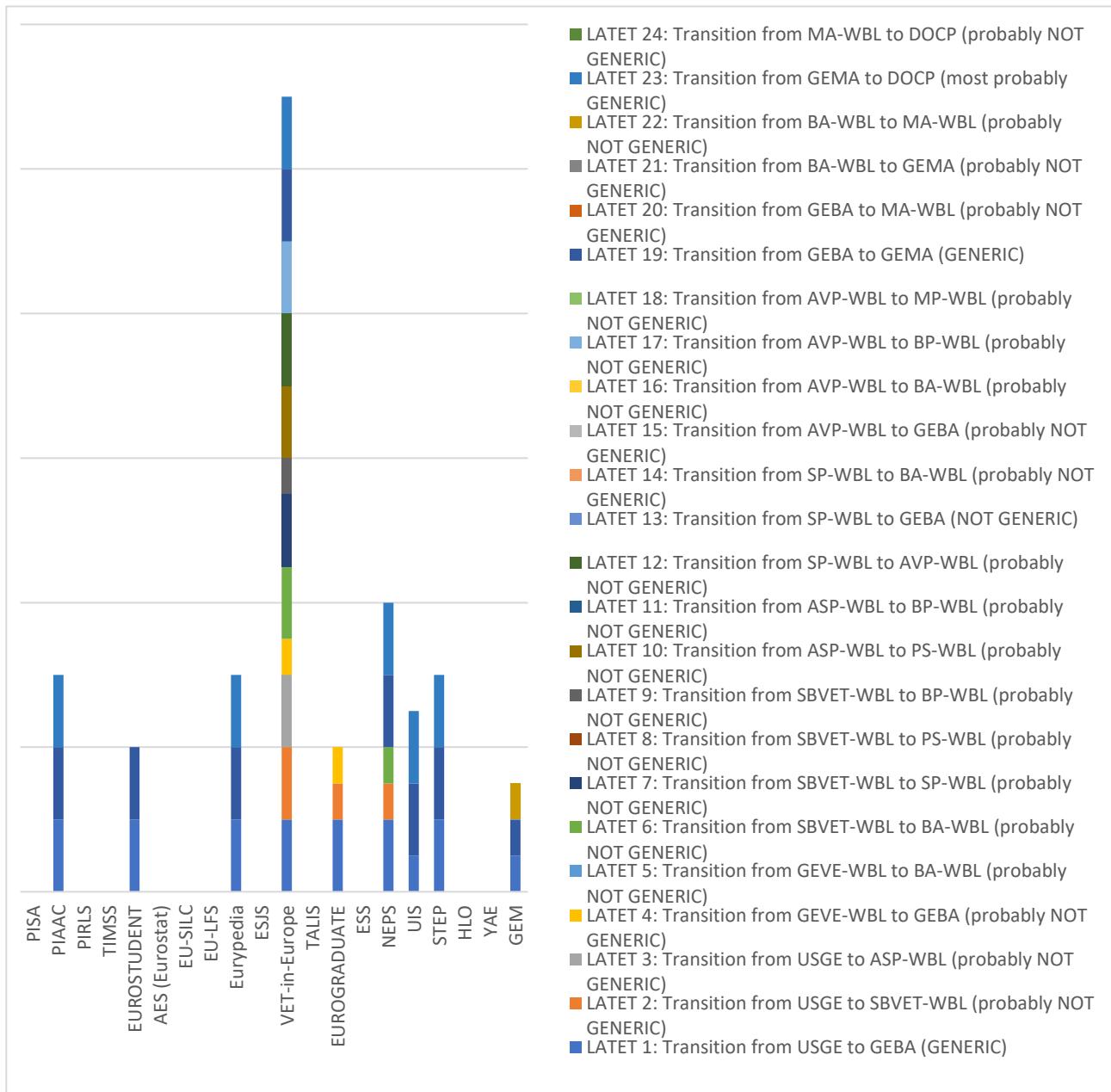
Figure 9: Profiles of 20 datasets with respect to their coverage of 24 LATETs: each bar for a certain dataset shows which of the LATETs are covered by the dataset to which extent (large bar indicates full, small bar indicates partial, no bar indicates no coverage)
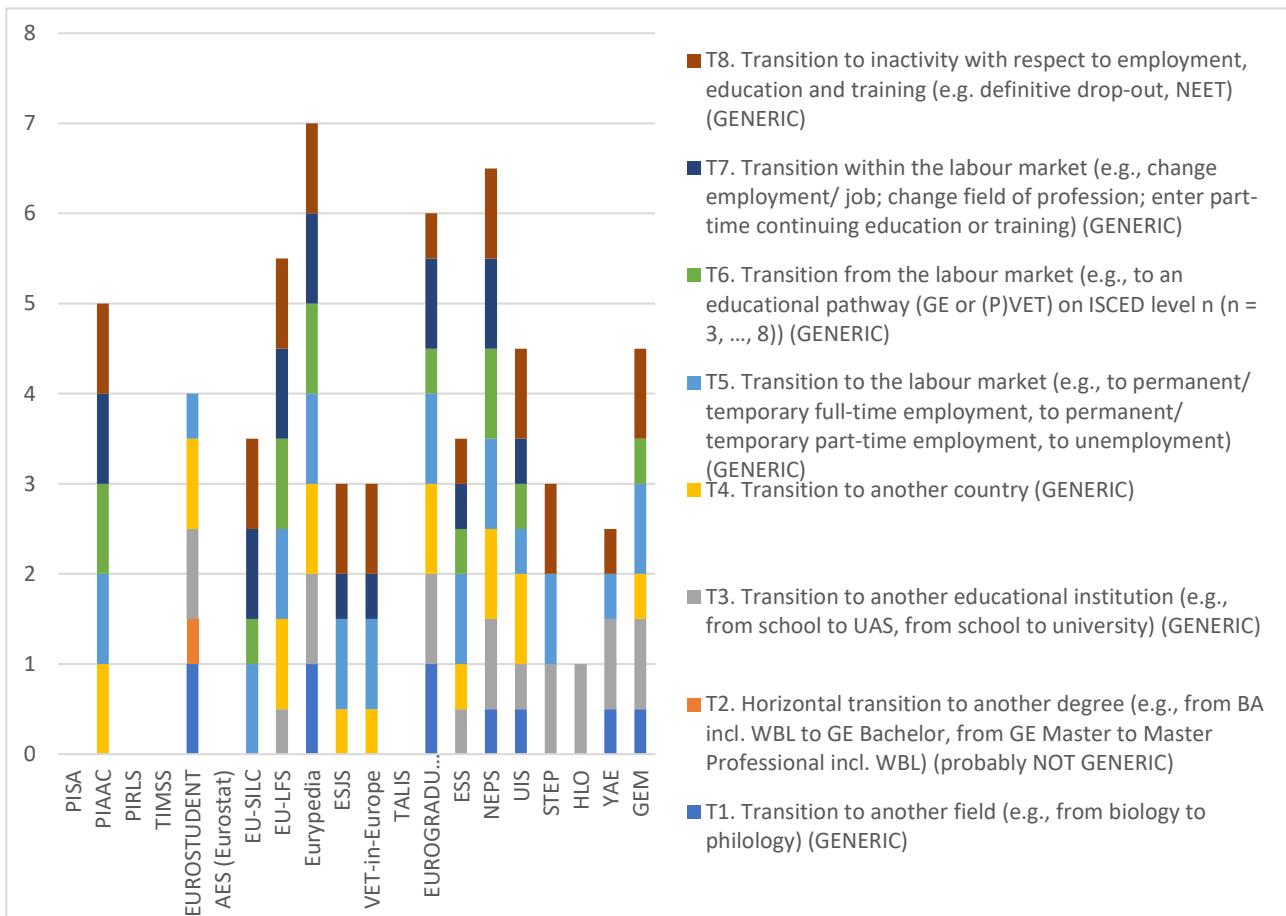
Figure 10: Profiles of 20 datasets with respect to their coverage of eight further transitions: each bar for a certain dataset shows which of the LATETs are covered by the dataset to which extent (large bar indicates full, small bar indicates partial, no bar indicates no coverage)

The above analysis shows that the datasets' coverage of transitions to, within and from the world of labour (e.g., transition to another country to get a permanent full-time employment) *is generally better than the datasets' coverage of transitions within E&T systems* (e.g., transition from Upper Secondary General Education to School-based Vocational Education and Training including Work-based Learning). Part of this difference may be, due to the fact, however, that the reference line for LATETs was pragmatically chosen to be the richest and most complex E&T system of Germany. It can be expected that for simpler LATET systems coverage by datasets is better.

With all these suggestions and recommendations, it should be noted that changes or additions to datasets should only be made after a comprehensive review to determine whether the already available datasets suffice for the specific purposes of a specified intended secondary data analysis and explanation.

5.4. Secondary analysis of transition regimes in E&T and into the world of labour

The analysis of transitions through E&T pathways and to and from the world of labour is a core interest of the EDU-LAB project. Hence, this section reflects on related transition regimes and, for that purpose, can make direct use of the above analysis of "dataset gaps" with respect to transitions (see Section 5.3).

5.4.1. Selection of most relevant transitions

Based on the above analysis of the coverage of 32 possible transitions in E&T as well as into and from the world of labour by (20) datasets, as a first step, the following selection of the most relevant and important transitions is proposed for further analysis, including secondary data analysis:

- Generic transitions[24]: LATET[25] 1; LATET 19; LATET 23; T1; T3; T4; T5; T6; T7; T8[26]

    This choice is because generic transitions – those which are independent from specifications of national E&T and national labour systems –- are assumed to be relevant and important in any E&T system (at least throughout the EEA).

    This selection of generic transitions already includes the important transitions to, from and within the labour market (T5, T6, T7), the transitions to inactivity with respect to employment, education and training (NEET) (T8) and the transitions to another country (T4). Their choice is because:

    - The first group of T5, T6 and T7 comprises core transitions of importance and interest when it comes to making progress and completion of E&T pathways successful by entering the world of labour.
    - The transition T8 is a core transition of importance and interest that should be investigated to analyse consequences of unsuccessful E&T pathways which do not lead to employment or (further) E&T.
    - The transition T4 is a core transition of importance and interest that should be investigated to analyse consequences of young people leaving their country for better educational prospects and/or better labour prospects. Under certain circumstances, e.g., a young population and/or a weak economy and/or political instability, transitions to another country may be frequent and an indicator of lower and higher performing countries and their E&T systems as well as a signature of brain drain (cf. Milasi, 2020; OECD, 2025b).

5.4.2. Choice of datasets for secondary analysis of selected transitions

Against this background and the above analysis of datasets, a choice of datasets for secondary analysis focusing on the above choice of most relevant transitions is suggested. As an exemplary case, Table 4 shows the choice of datasets for secondary analysis of LATET 1. Further choices of datasets for secondary analysis of LATET 19, LATET 23, T1 and T3-T8 are given in Appendix 7, Tables 13–21.

5.4.3. Priority list of the selected transitions for secondary analysis

With a view on the most pressing issues around transitions in E&T and to labour, the following priority list may be selected from the above analysed set of transitions:

- LATET 1: Transition from Upper Secondary General Education (USGE) to General Education Bachelor (GEBA)
- LATET 19: Transition from GEBA to General Education Master (GEMA)
- LATET 23: Transition from GEMA to Doctoral Programme/ Doctorate (DOCP)
- T4: Transition to another country
- T5: Transition to the world of labour (e.g., to permanent/ temporary full-time employment, to permanent/ temporary part-time employment, to unemployment)

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[24] Transition T2 is omitted here because it is only indirectly covered by only one dataset (i.e., EUROSTUDENT).
[25] Legally Allowed Transition in E&T
[26] For details about these transitions, see Section 8.2.

LATET 1: Transition from Upper Secondary General Education (USGE) to General Education Bachelor (GEBA)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	Cross-country comparison	tbd
	Regression studies	tbd
	Policy evaluation	tbd
EUROSTUDENT / ISCED 5-8	Cross-country comparisons	tbd
	Cross-sectional studies	tbd
	Regression studies	tbd
Eurypedia / ISCED 0-8	Comparative studies/ Cross-country studies	tbd
	Policy monitoring	tbd
	Regression studies	tbd
VET-in-Europe/ ISCED 3-5	Panel/ Progression studies	Not longitudinal individual tracking; system-level trends, e.g., enrollment changes over time
	Comparative studies	E.g., cross-country benchmarking, e.g., apprenticeship participation rates; policy analysis, e.g., impact of dual VET systems
	Regression studies	Limited microdata for econometric analysis; macro-level correlations, e.g., VET spending vs. youth employment
EUROGRADUATE / ISCED 6-7	Panel/ Progression studies	Not a panel study per se; the 2018 dataset is cross-sectional, but future implementation could allow for longitudinal analysis
	Comparative/ Cross-country studies	Core goal of EUROGRADUATE to allow for cross-country comparison of graduate outcomes
	Regression studies	Dataset contains sufficient variables to allow for regression analysis, e.g., socio-demographic data, study experiences, labour market outcomes
	Policy evaluation and benchmarking of higher education systems	Useful for exploring links between education and employment outcomes, e.g., relevance of qualification, skill match/mismatch; offers insights into graduates' satisfaction with their higher education experience
NEPS / ISCED 0-8	Panel studies/ Progression studies	Ideal for longitudinal analyses, e.g., educational trajectories, skill development over time
	Comparative studies/ Cross-country studies	Limited direct cross-country comparability, but harmonized variables allow indirect benchmarking
	Regression studies	Suitable for multilevel modeling and causal inference, e.g., effects of socio-economic background on educational outcomes
STEP / ISCED 3-8	Panel studies/ Progression studies	Limited longitudinal data but provides valuable snapshots of skills and employment patterns
	Comparative studies/ Cross-country studies	Designed for cross-country comparisons on skill levels and labor market outcomes
	Regression studies	Suitable for regression analysis to explore relationships between education, skills, and labor market outcomes
	Policy evaluation (policymaking)	Policymaking) (focusing on skills mismatch, productivity, and employment outcomes

Table 4: Choice of datasets for secondary analysis of LATET 1 (only datasets with direct coverage of LATET 1 are included)

- T6: Transition from the world of labour (e.g., to an E&T pathway, GE or PVET)
- T7: Transition within the labour market (e.g., change employment/ job; change field of profession; enter part-time continuing education or training)
- T8: Transition to inactivity with respect to employment, E&T (e.g., definitive drop-out, NEET)

5.4.4. Preliminary research questions for further EDU-LAB analyses

At this stage the question arises which transitions from E&T to work (Roberts, 2025), including which transition from the priority list should be scrutinized more closely along which topic by which type of secondary analysis (see Tables 3, 13–21) and other data analyses (e.g., literature reviews). Such a decision is ultimately based on or emerges from relevant research questions.

The basis for more relevant and specific research questions for further EDU-LAB analyses is laid by the general goals, research questions and research objectives presented in Section 2. Leaning on these, more specific – though still rather abstract – research questions can be formulated that should guide further analyses in the EDU-LAB project, in particular secondary data analysis (WP3A together with WP1) and literature reviews (WP1). These basic research questions exploit the analysis of intersectional determinants and transitions in E&T pathways and to the world of labour (see Sections 5.2 and 5.3) and are listed below. As just mentioned, they are suggested to investigate into the above listed transitions by secondary data analysis and other analyses.

It should also be noted that it remains unsolved at this point whether and to what extent the research questions proposed below can be adequately and reliably answered based on secondary analysis of one or more of the datasets investigated in Sections 5.1-5.3. This issue will be solved by further in-depth analyses of research questions and datasets together with other WPs (particularly WP3A) and practice in secondary dataset analysis as well as literature reviews.

Along these considerations, the following research questions can be derived for further analyses of pathways and transitions in E&T and to labour. These questions are, among other things, oriented at fulfilling the primary goals of the further two deliverables of WP1 (D1.2 and D1.3, see Section 2):

- To which extent do intersectional General Selection determinants [X][27] *support/hinder general selection of the E&T programme* [Y][28]?
- To which extent do intersectional Access determinants [X][29] *support/hinder access to the E&T programme* [Y][30]?
- To which extent do the intersectional Participation determinants [X][31] *support/hinder participation in the E&T programme* [Y][32]?
- To which extent do the intersectional Progress and Completion determinants [X][33] *support/hinder progress and/or completion of the E&T programme* [Y][34]?
- How successfully do *cohorts of learners progress the E&T programme* [X][35]?
- How successfully do *cohorts of learners complete the E&T programme* [X][36]?
- To which extent do intersectional determinants [X][37] *support/hinder the transitions* [Y][38]?

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[27] For example, insert determinants from the comprehensive list of General Selection determinants.
[28] For example, insert one E&T programme as documented, e.g., in a CEDEFOP chart.
[29] For example, insert determinants from the comprehensive list of Access determinants.
[30] For example, insert one E&T programme as documented, e.g., in a CEDEFOP chart.
[31] For example, insert determinants from the comprehensive list of Participation determinants.
[32] For example, insert one E&T programme as documented, e.g., in a CEDEFOP chart.
[33] For example, insert determinants from the comprehensive list of Progress and Completion determinants.
[34] For example, insert one E&T programme as documented, e.g., in a CEDEFOP chart.
[35] Ditto
[36] Ditto
[37] For example, insert determinants from the comprehensive lists of intersectional determinants.
[38] For example, insert intersectional transitions from the list LATET 1, LATET 19, LATET 23, T1, T3, T4, T5, T6, T7, T8.

- To which extent is the stakeholder group [X][39] affected by the transitions [Y][40] *satisfied/dissatisfied with the way the transitions work*?
- *How frequently are the transitions* [X][41] *used?*
- *How often are the transitions* [X][42] *successfully used*?
- Further (alternative, additional, revised) research questions: to be determined as appropriate.

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[39] For example, insert one stakeholder group, e.g., students, teachers, ….
[40] For example, insert intersectional transition from the list LATET 1, LATET 19, LATET 23, T1, T3, T4, T5, T6, T7, T8 or else.
[41] Ditto
[42] Ditto

6. Summary, limitations and future analysis

This section presents a summary and some limitations and tasks for future analysis, that are planned to be carried out by WP1 during the second and third year of the EDU-LAB project.

6.1. Summary of achieved results

The main goal of this report, Deliverable 1.1, was to identify a *"Set of data and information gaps about educational pathways and transitions and intersectional determinants"* as part of the main outputs of WP1 *"Modelling pathways and transitions in GE and PVET and to the labour market"*. To achieve this goal, 20 identified available datasets (see Section 4.2) were tested to what extent they cover 80 identified intersectional determinants (see Appendix 1) and 32 identified transitions that may occur in E&T pathways and to the world of labour (see Appendix 2).

From the results of these analyses (see Section 5), the following main conclusions can be drawn:

- *For the datasets investigated, there are no serious deficiencies detectable regarding the methodological reliability of the datasets (assessed along the criteria of rigorous sampling, high-quality psychometric scaling, inclusion of background questionnaires for contextual data, quality monitoring). Datasets are methodologically fine.*

- *The datasets have restricted profiles with respect to seven types of secondary analysis, i.e., regression analysis; cross-sectional studies; cross-country comparison; trend analysis; panel/ progression studies; panel/ longitudinal progression studies; policy evaluation* (see Figure 4). More specifically, this means that none of the datasets investigated offers all seven types of secondary analysis as usability options. For example, all 20 datasets offer regression analysis and cross-country comparison, 11 datasets offer progression studies, seven datasets offer cross-sectional studies, four datasets offer trend analysis, four datasets offer policy evaluation, and no dataset offers longitudinal progression studies as methodological options. From this follows that for each dataset it can be recommended to extend it by three or four types of secondary analysis – if, and this is an important condition which must be checked, the full range of seven types of secondary analysis is required and appropriate. *It is perhaps remarkable that longitudinal progression studies are a lacking methodological option.*

- *As 65% of datasets investigated are not downloadable and 65% do not offer access to microdata for research, it can be recommended that the accessibility of certain datasets should be improved.*

- *Datasets do well cover determinants from the group of General Selection of E&T pathways. A few recommendations for supplementing the datasets are given however, as two General Selection determinants – GenSelDet 2.6 (Integrating their family planning) and GenSelDet 2.8 (Integrating arguments of other stakeholders) – are not well covered by the datasets investigated.*

- *Several "dataset gaps" are identified for determining factors of access to E&T programmes, i.e., some datasets investigated do not well cover various Access determinants* (see Figure 5). Therefore, recommendations can be given for supplementing certain datasets to fill these "dataset gaps". Here are a few selected examples: 12 out of 20 datasets could be supplemented to also cover the Access determinant "Language literacy tests"; 13 out of 20 datasets could be supplemented to also cover the Access determinant "MINT literacy tests"; 19 out of 20 datasets, among them PISA, EUROSTUDENT, VET-in-Europe, NEPS and others, could be supplemented to also cover Access determinant "Digitalisation and AI literacy tests". *Interestingly, this shows that these three Access determinants, in particular "Digitalisation and AI literacy" are not so well represented in the datasets investigated.*

- With respect to determinants of Participation no evidence for needed amendments or extensions is given.

- *Several "dataset gaps" are identified for determining factors of Progression in and Completion of E&T programmes, i.e., some datasets investigated do not well cover various Progression and Completion determinants* (see Figure 6). Therefore, recommendations can be given for supplementing certain datasets to fill these "dataset gaps". Here are a few selected examples: 13 out of 20 datasets could

be supplemented to also cover the Progression and Completion determinant "Country's low level of prosperity in terms of E&T and work"; 15 out of 20 datasets could be supplemented to also cover the Progression and Completion determinant "Lack or low quality of freedom of country"; 19 out of 20 datasets could be supplemented to also cover the Progression and Completion determinant "Failed state situation"; 18 out of 20 datasets could be supplemented to also cover the Progression and Completion determinant "War". *Interestingly, this shows that these three Progression and Completion determinants, especially the last two mentioned, are not so well represented in the datasets investigated.*

- *The datasets' coverage of transitions to, within and from the world of labour (e.g., transition to another country to get a permanent full-time employment) is generally better than the datasets' coverage of transitions within E&T systems (e.g., transition from Upper Secondary General Education to School-based Vocational Education and Training including Work-based Learning).*
- The analysis of LATETs and T1-T8 helps to select "most relevant" transitions for the purposes of EDU-LAB and suggest a priority list of eight transitions for secondary analysis. For each of these transitions, usable datasets and applicable types as well as topics of secondary analysis and research questions are suggested (see Section 5.4).

With all these suggestions and recommendations, it should be noted that changes or additions to datasets should only be made after a comprehensive review to determine whether the already available datasets are sufficient for the specific purposes of a specified intended secondary data analysis and explanation.

6.2. Methodological and data-related limitations

The main limitations of the present report are the following:

- So far, only 20 datasets have been investigated for their coverage of intersectional determinants and transitions of E&T and labour world pathways. Conclusions may change in detail if further datasets are included in the analysis.
- Further conceptual clarification and corroboration of proposed intersectional determinants and transitions may be requested and are planned to be carried out (e.g., by literature review and expert assessments).
- So far, the question remains unanswered to which extent existing policy programmes for fostering E&T and transitions to the world of labour address intersectional determinants and transitions.[43]
- So far, the following questions remain unanswered and will be addressed in the further course of the project: To what extent are the available datasets interoperable, or how difficult is it to combine them for secondary data analysis?

6.3. Prospects of the further work in WP1

6.3.1. Structural models of E&T pathways and transitions

The further deliverables of WP1, D1.2 and D1.3, define the forthcoming project work:

- Deliverable D1.2 is entitled "Mapping pathways and transitions and their determinants" which is a composed deliverable and thus subdivided into
  - D1.2.A entitled "Mapping of pathways and transitions in GE and PVET and to the labour market in the EEA" and
  - D1.2.B entitled "Comprehensive set of supporting and hindering intersectional determinants of the above-mentioned educational pathways and transitions"
- The final Deliverable D1.3 is entitled "Models of pathways and transitions in GE and PVET and to the labour market in EEA"

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[43] Currently, answering this question is only considered an option. WP2 has identified more than 40 policy programmes that might be relevant.

Altogether, these analyses shall lead to the development of structural models of E&T pathways including transitions within E&T pathways and to and from the world of labour. Such analyses will build on the preliminary structural modelling perspective described in Section 3.3.

Several EDU-LAB research activities will contribute to the development of structural models of E&T pathways and transitions among them literature reviews (WP1), comparative analysis of E&T systems (e.g., CEDEFOP charts) (WP1, optional), efficiency analysis of policy programmes (WP2), secondary data analysis (WP3A), Delphi-like survey (WP3B) and participatory acquisition of youth's voice (WP4) to mention only a few.

6.3.2. Literature reviews

Literature reviews are research activities that will contribute to future work of WP1. The methodology of systematic literature reviews (SLRs) applicable in the EDU-LAB project, particularly in WP1 and WP2, was already developed and compiled in the first year of the project. Based on current research literature on the topic, the following methodological elements and instruments were composed:

- Detailed guidelines for conducting SLRs comprising, e.g., overview of literature review types; components of SLRs; structure of SLRs; SLR procedure overview (general roadmap); quality assessment of grey literature; Python script
- Possible research questions and search terms along the lines of the knowledge interests of WP1 and WP2

For the time being, the following research questions for SLRs are under consideration and partially already in progress:

- How do intersectional determinants[44] influence the choice of educational pathways in GE and PVET?
- How do intersectional determinants influence the transitions within educational pathways in GE and PVET and to and from the world of labour?
- How do discrepancies and mismatches between GE and PVET and the world of labour manifest themselves?

Further literature reviews may be carried out based on research questions that might emerge from the "gaps analysis" in this Deliverable D1.1.

6.3.3. Comparative analysis of CEDEFOP charts (including the identification of a few chart types)

Another research activity that will contribute to future work of WP1 may focus on CEDEFOP charts (CEDEFOP, 2025), as an optional goal for the coming project phase consists in doing some comparative qualitative analysis of CEDEFOP charts which model LATETs of national E&T systems of (most) EEA countries. One idea is to identify a few (e.g., 3 to 5) typical system models of LATETs that may represent in a reliable approximation all E&T systems in the EEA. It is planned to achieve this based on the following steps of analysis:

- Systematic comparison of existing CEDEFOP charts (CEDEFOP, 2025) of different EEA countries by identifying similarities and dissimilarities
- Collection of information/data about the usage of the possible (legally allowed) transitions in E&T systems of the EEA, for example, from literature and/or from expert online surveys
- Collection of information/data about possible and used transitions in EEA countries which do not have CEDEFOP charts yet

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[44] Taken from the 80 determinants identified, see Section 3.2.

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8. Appendices

8.1. Appendix 1: Set of intersectional determinants

A set of 80 intersectional determinants of pathways in GE and PVET were identified by narrative literature analysis and direct content analysis, respectively.[45] This set is shown in Table 5–8 below.

General Selection determinants – GenSelDet	GenSelDet type 1: **Financial issues** (GENERIC) with four sub-areas	GenSelDet 1.1: **Low-income family/ conditions**
		GenSelDet 1.2: **High tuition fees**
		GenSelDet 1.3: **High cost of living** (e.g., housing, transport)
		GenSelDet 1.4: **Low pay**
	GenSelDet type 2: **Applicants' self-determination** (GENERIC) with nine sub-areas	GenSelDet 2.1: **Following their own abilities and expected performance**
		GenSelDet 2.2: **Setting their achievement goals**
		GenSelDet 2.3: **Building on their prior educational biography**
		GenSelDet 2.4: **Aiming at a higher salary on completing study/ training**
		GenSelDet 2.5: **Possibility to combine study/ training and part-time work**
		GenSelDet 2.6: **Integrating their family planning**
		GenSelDet 2.7: **Integrating parents' expectations** [e.g., make offspring maintain or transcend educational level (ISCED levels) achieved by parents; make offspring maintain or transcend occupational/ income level achieved by parents; make offspring maintain or transcend social class (e.g., ISEI levels) achieved by parents; encourage offspring to make better choice of educational pathway (enrollment); ...]
		GenSelDet 2.8: **Integrating arguments of other stakeholders** (e.g., fellow peers; employers; politicians; …)
		GenSelDet 2.9: **Societal valorisation of E&T pathways**

Table 5: List of intersectional determinants of General Selection ordered in two subgroups

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[45] Among the sources used were the following: Agasisti & Maragkou, 2022; Burger, 2023; Dickinson, 2019; Galos & Kulic, 2022: Haas & Hadjar, 2020; Haasler, 2020; Haj *et al.*, 2018; Katsantonis, 2025; Milmeister *et al.*, 2022; OECD, 2023; OECD, 2025b; Urhahne & Wijnia 2023; Varsik, 2025; Vergori, 2025.

Access determinants – AccDet	AccDet type 1: **Availability of the desired GE or PVET programme** (COUNTRY- and REGION-SPECIFIC) with two sub-areas	AccDet 1.1: **Availability of the desired GE or PVET programme in the region of proximity**
		AccDet 1.2: **Availability of the desired GE or PVET programme in the overall country**
	AccDet type 2: **Formal entrance qualification** (GENERIC) with six sub-areas	AccDet 2.1: **Secondary school leaving certificate**
		AccDet 2.2: **General higher education access qualification/ certificate**
		AccDet 2.3: **Bachelor's degree**
		AccDet 2.4: **Master's degree**
		AccDet 2.5: **Journeyman's certificate**
		AccDet 2.6: **Master craftsman qualification**
	AccDet type 3: **Content-related entrance qualifications** (GENERIC) with four sub-areas	AccDet 3.1: **Language literacy tests**
		AccDet 3.2: **MINT literacy tests**
		AccDet 3.3: **Digitalization**
		AccDet 3.4: **AI literacy tests**
	AccDet type 4: **Practice measures and policy programmses for access support** (GENERIC) with ten sub-areas	AccDet 4.1: **Information provided on educational** (GE and PVET) **pathways**
		AccDet 4.2: **Fostering information and education in democracy and universal human rights**
		AccDet 4.3: **Study and career counselling**
		AccDet 4.4: **Support for the start of educational pathway**
		AccDet 4.5: **Support for alternative access to educational pathway**
		AccDet 4.6: **Fostering diversity, equity and inclusion**
		AccDet 4.7: **Support for applicants with disabilities or chronic medical conditions**
		AccDet 4.8: **Support for applicants with low or no educational qualifications**
		AccDet 4.9: **Support for applicants with low socioeconomic status**
		AccDet 4.10: **Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market**

Table 6: List of intersectional determinants of Access ordered in five subgroups

Participation determinants – PartDet	PartDet type 1: **Financial issues** (GENERIC) with four sub-areas	PartDet 1.1: **Low-income family/ conditions**
		PartDet 1.2: **High tuition fees**
		PartDet 1.3: **High cost of living (e.g., housing, transport)**
		PartDet 1.4: **Low pay**
	PartDet type 2: **Practice measures for participation support** (GENERIC) with 11 sub-areas	PartDet 2.1: **Information provided on E&T (GE and PVET) pathways**
		PartDet 2.2: **Special trainings in GE and PVET**
		PartDet 2.3: **Fostering information and education in democracy and universal human rights**
		PartDet 2.4: **Study and career counselling**
		PartDet 2.5: **Support for the start of educational pathway**
		PartDet 2.6: **Support for alternative access to educational pathway**
		PartDet 2.7: **Fostering diversity, equity and inclusion**
		PartDet 2.8: **Support for applicants with disabilities or chronic medical conditions**
		PartDet 2.9: **Support for applicants with low or no educational qualifications**
		PartDet 2.10: **Support for applicants with low socioeconomic status**
		PartDet 2.11: **Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market**

Table 7: List of intersectional determinants of Participation ordered in two subgroups

Progression and Completion determinants – ProgCompDet	ProgCompDet type 1: **Progression and completion delay, or discontinuation because of deficiencies of learning and teaching processes** (GENERIC) with seven sub-areas	ProgCompDet 1.1: **Lack of interest/ motivation**
		ProgCompDet 1.2: **Lack of achievement goal orientation** (e.g., educational and career goals and plans; realistic self-assessment; strategies for studying, test preparation, time management)
		ProgCompDet 1.3: **Low quality of teaching and training content** (e.g., programmes, course materials and objectives)
		ProgCompDet 1.4: **Lack of innovative learning, teaching and training methods and strategies** (e.g., self-directed, interactive, collaborative, research-based, work-based learning and training; student-centered teaching; digitalisation)
		ProgCompDet 1.5: **Lack of acquisition of cognitive competences** (e.g., digital and AI competences)
		ProgCompDet 1.6: **Lack of acquisition of personality competences** (e.g., social and self-competences)
		ProgCompDet 1.7: **Lack of emotional and mental health** (e.g., stress, anxiety)

Table 8: List of intersectional determinants of Progression and Completion ordered in six subgroups

Progression and Completion determinants – ProgCompDet	ProgCompDet type 2: **Progression and completion delay, or discontinuation because of deficiencies of learning and teaching resources** (GENERIC) with six sub-areas	ProgCompDet 2.1: **Limited access to educational resources** (e.g., library)
		ProgCompDet 2.2: **Lack or low quality of learning and teaching and training spaces** (e.g., formal, informal, digital, hybrid L&T spaces)
		ProgCompDet 2.3: **Lack or low quality of ICT systems** (e.g. computer equipment, WiFi access)
		ProgCompDet 2.4: **Lack or low quality of Artificial Intelligence in education (AIEd)** (e.g., building personalised learning systems for students)
		ProgCompDet 2.5: **Lack or low quality of accommodation**
		ProgCompDet 2.6: **Lack or low quality of extracurricular activities**
	ProgCompDet type 3: **Progression and completion delay, or discontinuation because of socio-political and economic deficiencies** (COUNTRY- and REGION-SPECIFIC) with four sub-areas	ProgCompDet 3.1: **Low prosperity of country**
		ProgCompDet 3.2: **Lack or low quality of freedom of country**
		ProgCompDet 3.3: **Failed state situations**
		ProgCompDet 3.4: **War**
	ProgCompDet type 4: **Progression and completion delay, or discontinuation because of dissatisfaction** (GENERIC) with two sub-areas	ProgCompDet 4.1: **Dissatisfaction with pathway**
		ProgCompDet 4.2: **Lack of employment vacancies**
	ProgCompDet type 5: **Progression and completion delay, or discontinuation because of pandemics** (COUNTRY- and REGION-SPECIFIC) with one sub-area	ProgCompDet 5.1: **Covid-19 restrictions**
	ProgCompDet type 6: **Practice measures for progression and completion support** (GENERIC) with ten sub-areas	ProgCompDet 6.1: **Information provided on educational (GE and PVET) pathways**
		ProgCompDet 6.2: **Special training in GE and PVET**
		ProgCompDet 6.3: **Fostering information and education in democracy and universal human rights**
		ProgCompDet 6.4: **Study and career counseling**
		ProgCompDet 6.5: **Support for the start of educational pathway**
		ProgCompDet 6.6: **Support for alternative access to educational pathway**
		ProgCompDet 6.7: **Fostering diversity, equity and inclusion**
		ProgCompDet 6.8: **Support for applicants with disabilities or chronic medical conditions**
		ProgCompDet 6.9: **Support for applicants with low or no educational qualifications**
		ProgCompDet 6.10: **Support for applicants with low socioeconomic status**

Table 8 (continued): List of intersectional determinants of Progression and Completion ordered in six subgroups

8.2. Appendix 2: Set of transitions in E&T pathways and to the world of labour

Transitions through E&T and labour pathways are subdivided into transitions that are legally regulated within (national) education systems (for an example see Table 9) and further generic transitions, especially to and from the labour market, that are not legally regulated in principle. The former group of transitions is taken from CEDEFOP charts (CEDEFOP, 2025), while the latter emerges from own analysis of complementary transitions.

Abbreviation	Transition type	Characteristics
LATET 1	From upper secondary GE (abbreviation: USGE) to GE Bachelor (abbreviation: GEBA)	Generic – assumed as an option in any E&T system with upper secondary and Bachelor levels Includes transitions from one type of educational institution to another type (in short: institution type transition, abbreviation: ITT)
LATET 2	From USGE to School-based VET incl. WBL (SBVET-WBL)	Most probably not generic – not assumed as an option in any E&T system in the EEA Includes ITT
LATET 3	From USGE to Apprenticeship Programmes incl. WBL (ASP-WBL)	Probably not generic / Includes ITT
LATET 4	From GE with Vocational Orientation incl. WBL (GEVO-WBL) to GEBA	Probably not generic / Includes ITT
LATET 5	From GEVO-WBL to BA incl. WBL (BA-WBL)	Probably not generic / Includes ITT
LATET 6	From SBVET-WBL to BA-WBL	Probably not generic / Includes ITT
LATET 7	From SBVET-WBL to Specialised Programmes incl. WBL (SP-WBL)	Probably not generic / Includes ITT
LATET 8	From SBVET-WBL to Professional Specialist incl. WBL (PS-WBL)	Probably not generic / Includes ITT
LATET 9	From SBVET-WBL to Bachelor Professional incl. WBL (BP-WBL)	Probably not generic / Includes ITT
LATET 10	From ASP-WBL to PS-WBL	Probably not generic / Includes ITT
LATET 11	From ASP-WBL to BP-WBL	Probably not generic / Includes ITT
LATET 12	From SP-WBL to Advanced Vocational Programmes incl. WBL (AVP-WBL)	Probably not generic / Includes ITT
LATET 13	From SP-WBL to GEBA	Probably not generic / Includes ITT
LATET 14	From SP-WBL to BA-WBL	Probably not generic / Includes ITT
LATET 15	From AVP-WBL to GEBA	Probably not generic / Includes ITT
LATET 16	From AVP-WBL to BA-WBL	Probably not generic / Includes ITT
LATET 17	From AVP-WBL to BP-WBL	Probably not generic / Includes ITT
LATET 18	From AVP-WBL to Master Professional incl. WBL (MP-WBL)	Probably not generic / Includes ITT
LATET 19	From GEBA to GE Master (GEMA)	Most probably generic
LATET 20	From GEBA to Master incl. WBL (MA-WBL)	Probably not generic / Includes ITT
LATET 21	From BA-WBL to GEMA	Probably not generic / Includes ITT
LATET 22	From BA-WBL to MA-WBL	Probably not generic
LATET 23	From GEMA to Doctoral Programme/Doctorate (DOCP)	Generic – assumed as an option in any E&T system with GEMA and doctorate levels
LATET 24	From MA-WBL to DOCP	Probably not generic

Table 9: Legally Allowed Transitions in E&T (LATETs) in the exemplary rich German E&T system based on (CEDEFOP & BIBB, 2023)

The above LATETs are taken from the CEDEFOP chart of the German education system (CEDEFOP & BIBB, 2023) because it is a structurally rich (complex-comprehensive) example of LATETs. However, different national GE/(P)VET systems are characterized by different LATETs, meaning that various (probably all) national education systems in the EEA should be comparatively analysed to systematically identify generic LATETs, which are common or similar between different countries, and non-generic LATETs, which are different between different countries. This may be done by comparing CEDEFOP charts (CEDEFOP & BIBB, 2023) of different EEA countries and building content-wise representative groups of GE/(P)VET gathering similar educational systems (see also section "Summary and future analysis").

As the CEDEFOP charts and therefore the LATET 1-24 do not comprise any transitions from E&T pathways to and from the world of labour, the following further generic types of transitions have been identified to complement the list of LATETs (cf. Table 9 and Figure 3)[46]:

- Keep educational institution and
  - [Keep degree, keep study field] = no transition
  - Keep degree and transition to/from another study field
  - Transition to/from another degree and keep study field
  - Transition to/from another degree and transition to/from another study field
- Transition to/from another educational institution and
  - Keep country and keep degree and keep study field
  - Keep country and keep degree and transition to/from another study field
  - Keep country and transition to/from another degree and keep study field
  - Keep country and transition to/from another degree and transition to/from another study field
  - Transition to/from another country (e.g., emigration) and keep degree and keep study field
  - Transition to/from another country (e.g., emigration) and keep degree and transition to/from another study field
  - Transition to/from another country (e.g., emigration) and transition to/from another degree and keep study field
  - Transition to another country (e.g., emigration) and transition to/from another degree and transition to/from another study field
- Transition to the world of labour and
  - Keep country and transition to permanent full-time employment
  - Keep country and transition to temporary full-time employment
  - Keep country and transition to permanent part-time employment
  - Keep country and transition to temporary part-time employment
  - Keep country and transition to unemployment
  - Keep country and transition to inactivity with respect to employment, education and training (e.g., definitive drop-out, NEET)
  - Transition to another country (e.g., emigration) and transition to permanent full-time employment
  - Transition to another country (e.g., emigration) and transition to temporary full-time employment
  - Transition to another country (e.g., emigration) and transition to permanent part-time employment
  - Transition to another country (e.g., emigration) and transition to temporary part-time employment
  - Transition to another country (e.g., emigration) and transition to unemployment
  - Transition to another country (e.g., emigration) and transition to inactivity with respect to employment, education and training (e.g., definitive drop-out, NEET)

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[46] Note that not all these options apply on all ISCED levels (ISCED = International Standard Classification of Education).

- Transition from the world of labour and
  - Keep country and transition to an E&T programme (GE or (P)VET) on ISCED level n (n = 3, …, 8)
  - Transition to another country (e.g., emigration) and transition to an E&T programme (GE or (P)VET) on ISCED level n (n = 3, …, 8)
  - [Participate in further education/LLL pathways (not a core issue for "youth" aged 16 to 30 who are in the focus of EDU-LAB)]
- Transition within the world of labour and
  - Keep country and keep job
  - Keep country and transition to/from another job
  - Transition to/from another country (e.g., emigration) and keep job
  - Transition to/from another country and transition to/from another job

8.3. Appendix 3: Possible datasets for (secondary) analysis

Table 10 shows the set of 48 datasets mentioned in Section 4.2 which was collected by the team of WP3A. These datasets are candidates for secondary data analysis.

INTERNATIONAL LARGE-SCALE EDUCATIONAL ASSESSMENTS	EUROPEAN SURVEYS & DATA PORTALS
PISA (Programme for International Student Assessment) **PIAAC** (Programme for the International Assessment of Adult Competencies) **PIRLS** (Progress in International Reading Literacy Study) **TIMSS** (Trends in International Mathematics and Science Study)	**EUROSTUDENT** (Student conditions) **EUROGRADUATE** (Graduate outcomes) **EHESO** (Higher Education Open Science) **ESS** (European Social Survey) **Eurofound** (Living/working conditions) **EURODESK Youth Info Survey**
EU & INTERNATIONAL STATISTICAL DATABASES	**NATIONAL EDUCATIONAL & SOCIOECONOMIC SURVEYS**
Eurostat (EU statistics, e.g., LFS, SILC, youth unemployment) **EU-LFS** (EU Labour Force Survey) **EU-SILC** (Income & Living Conditions) **AES** (Adult Education Survey) **UNESCO/UIS** (Global education data) **ILO/ILOSTAT** (Labour statistics) **World Bank** (Education & labour data) **CEDEFOP** (Vocational training) **ESJS** (European Skills and Jobs (ESJ) Survey) **EVRR (**European Vacancy and Recruitment Report) **SKILLS FORECASTS** **VET-I** (VET Indicators) **VET-in-Europe** country reports **Eurydice** (EU education policy) **EEA Reports** (European Education Area) **TALIS** (Teaching and Learning International Survey) **Eurypedia** – 38 education systems in Europe **INES** (Indicators of Education Systems) database	**Germany** **NEPS** (National Educational Panel Study) **G-SOEP** (Socio-Economic Panel) **IQB Ländervergleich** (State education comparisons) **Italy** **INVALSI Data Catalogue** **AlmaLaurea dataset** (Graduate employment) **Bank of Italy Household Survey** **Other European Countries** **Pordata**, Portugal **Young in Norway**, Norway **Growing Up in Ireland**, Ireland **LISS Panel**, Netherlands **Level-of-Living Survey**, Sweden **Longitudinal Study of Children**, France
GLOBAL SURVEYS & INDICES	**ADDITIONAL SOURCES**
WVS (World Values Survey) **EVS** (European Values Survey) **Economist Intelligence Unit** (Democracy Index) **World Press Freedom Index** **Academic Freedom Index** **GII** (Global Innovation Index)	**UNESCO Global Education Report** **UNICEF Datasets** **ISSP Surveys** (GESIS) **National Statistical Offices** (e.g., **ISTAT**, **Destatis**, **INSEE**)

Table 10: 48 available datasets which are candidates for secondary data analysis

8.4. Appendix 4: Analysis of basic characteristics of datasets

8.4.1. Methodological reliability

Analysis and assessment

From the 20 datasets chosen for this analysis, all of them have a level of methodological reliability that is assessed as "high" (see Figure 11). The reason for this assessment is that the datasets meet several methodological quality criteria some of which are depicted in Table 11.
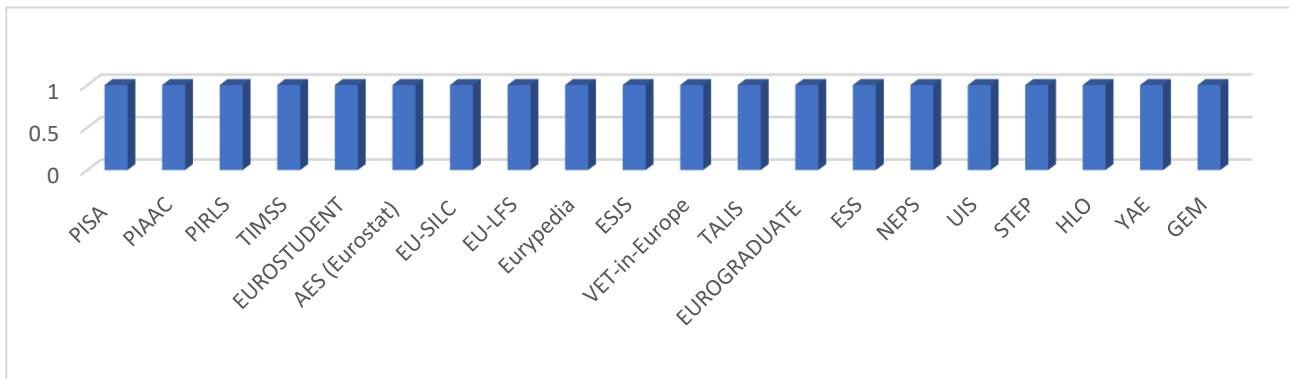

Figure 11: Level of methodological reliability of datasets: High = 1 / Middle = 0,5 / Low = 0,25

Consequently, from the viewpoint of methodological quality the 20 datasets listed in Figure 11 can be recommended for secondary analyses.[47]

Methodological criteria (choice)	Example datasets			
	PIAAC	**PIRLS**	**TIMSS**	**EUROSTUDENT**
Rigorous sampling (e.g., representative household surveys; student populations)	Yes	Yes	Yes	Yes
High-quality psychometric scaling (e.g., Item Response Theory)	Yes		Yes	
Includes background questionnaires for contextual data	Yes			
Quality monitoring (e.g., conducted under OECD guidelines)	Yes	Yes	Yes	

Table 11: Example datasets with attributed high methodological reliability and the quality criteria they fulfil

Recommendations

For the time being, no recommendations are given here as the methodological reliability of the 20 datasets investigated is high and generally satisfactory. However, further investigation might reflect about whether data acquisition by datasets could be methodologically improved or extended, for example, in the sense that the empty cells in Table 11 may be filled accordingly.

8.4.2. Usability for secondary analysis

Analysis and assessment

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[47] The obvious question whether all 48 datasets identified (see Appendix 1) might be rated of high methodological quality or whether some of them might be rated as 'middle' or 'low' in terms of their methodological reliability remains open at this point, as only 20 datasets have been analysed yet.

Figure 12 shows which of the 20 analysed datasets are, according to their data acquisition portfolio, usable in principle for the following types of secondary analysis: Regression analysis; Cross-sectional studies; Cross-country-comparison; Trend analysis; Panel/ Progression studies; Panel/ Longitudinal progression studies; Policy evaluation.

In more detail, Figure 12 exhibits the following points:

- All 20 analysed datasets are good for regression analysis.
- All 20 analysed datasets are good for cross-country comparison.
- 11 out of 20 (55%) datasets are good for progression studies.
- Seven out of 20 (35%) datasets are suitable for cross-sectional studies.
- Four out of 20 (20%) datasets are suitable for (supporting) policy evaluation.
- Three out of 20 (15%) datasets are suitable for trend analysis.
- One dataset (EU-SILC; 5%) is good for longitudinal progression studies.
- 0 datasets out of the 20 cover all usability types.
- The maximum number of usability types covered by individual datasets is four: PIAAC; PIRLS; TIMSS; AES (Eurostat); EU-SILC; VET-in-Europe; EUROGRADUATE.
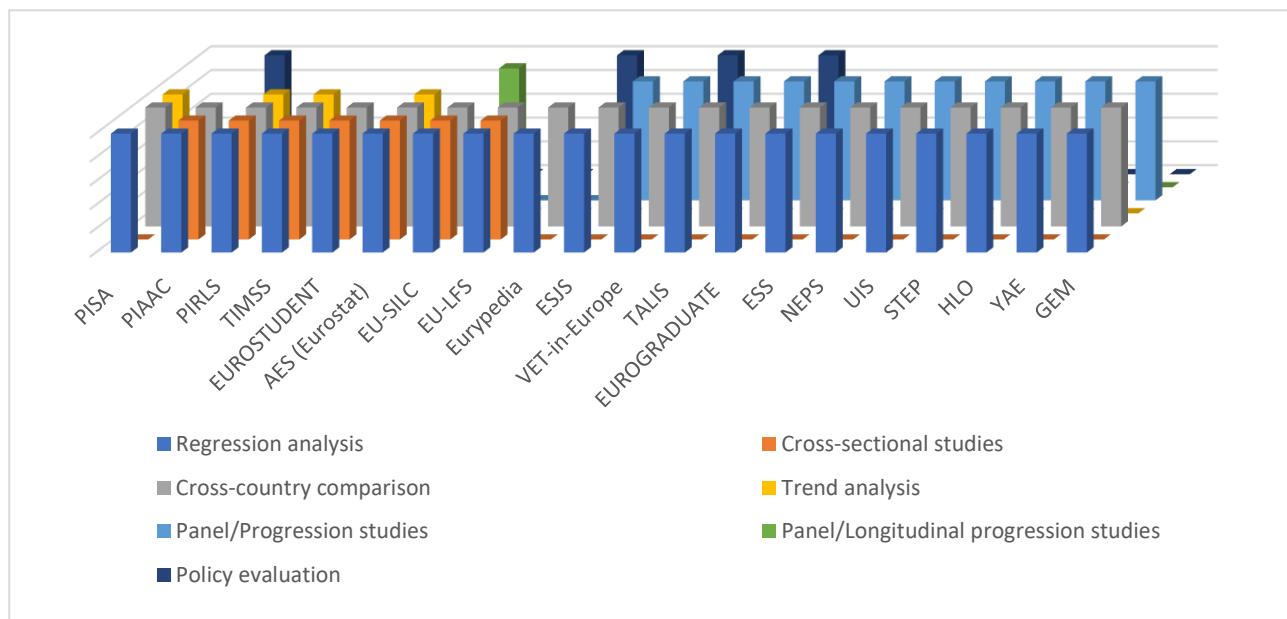

Figure 12: Usability options of datasets with respect to seven different types of secondary analysis (bar indicates usability, no bar indicates no usability)

Datasets	Usability options not covered by datasets and recommendations to supplement the datasets						
	Regression analysis	Cross-sectional studies	Cross-country comparison	Trend analysis	Progression studies	Longitudinal progression studies	Policy evaluation
PISA		X			X	X	X
PIAAC				X	X	X	
PIRLS, TIMMS, AES (Eurostat)					X	X	X
EURO-STUDENT, EU-LFS				X	X	X	X
EU-SILC				X	X		X
Eurypedia		X		X	X	X	
VET-in-Europe, EURO-GRADUATE		X		X		X	
ESIS, TALIS, ESS, NEPS, UIS, STEP, HLO, YAE, GEM		X		X		X	X

Table 12: "X" indicates usability options that are not covered by the respective dataset implying possible recommendations to supplement the dataset

Based on the above listed observations the following statements can be made that relate to the issue of "dataset gaps" in the sense that certain usability types are not covered by the analysed datasets (see Figure 12, where some of these gaps can be seen, while others are hidden behind larger bars):

- With respect to regression analysis and cross-country comparison, no "dataset gaps" can be identified since regression analysis and cross-country comparison are covered by each individual dataset (see Figure 12).
- With respect to cross-sectional studies and panel/ progression studies, some "dataset gaps" can be identified since 13 datasets (PISA; Eurypedia; ESJS; VET-in-Europe; TALIS; EUROGRADUATE; ESS; NEPS; UIS; STEP; HLO; YAE; GEM) do not cover cross-sectional studies and 9 datasets (PISA; PIAAC; PIRLS; TIMMS; EUROSTUDENT; AES; EU-SILC; EU-LFS; Eurypedia) do not cover panel/ progression studies (see Figure 12).
- Only EU-SILC covers panel/ longitudinal studies (see Figure 12).
- Only PIAAC, Eurypedia, VET-in-Europe and EUROGRADUATE cover policy evaluation (see Figure 12).
- While all seven types of usability are covered by at least one dataset, all datasets show up with non-coverage of three or four usability options (see Figure 12 and Table 12).

Recommendations

From an epistemological point of view the following recommendations might be suggested:

- The data collection procedures for the following datasets could be supplemented so that they also cover the usability options not covered yet ("dataset gaps"):
  - PISA could be supplemented to also cover cross-sectional studies; panel/ progression studies; panel/ longitudinal progression studies; policy evaluation.
  - PIAAC could be supplemented to also cover trend analysis; panel/ progression studies; panel/ longitudinal progression studies.
  - PIRLS, TIMMS, AES (Eurostat) could be supplemented to also cover panel/ progression studies; panel/ longitudinal progression studies; policy evaluation.

- EUROSTUDENT, EU-LFS could be supplemented to also cover trend analysis; panel/ progression studies; panel/ longitudinal progression studies; policy evaluation.
- EU-SILC could be supplemented to also cover trend analysis; panel/ progression studies; policy evaluation.
- Eurypedia could be supplemented to also cover cross-sectional studies; trend analysis; panel/ progression studies; panel/ longitudinal progression studies.
- ESIS, TALIS, ESS, NEPS, UIS, STEP, HLO, YAE, GEM could be supplemented to also cover cross-sectional studies; trend analysis; panel/ longitudinal progression studies; policy evaluation.
- VET-in-Europe, EUROGRADUATE could be supplemented to also cover cross-sectional studies; trend analysis; panel/ longitudinal progression studies.

The above recommendations for supplementing the data collection procedures of various datasets should now be critically reviewed or tested from a practical perspective. It must be clarified for which datasets which proposed extension is plausible and feasible, e.g., in terms of methodology and financial expenses in relation to information and data gain achievable. This clarification cannot be carried out from a purely theoretical perspective but must be contextualized in practice.

However, such an assessment may change upon closer examination, as possible recommendations for extensions or changes to datasets also depend on further requirements that the datasets should meet (e.g. relevant ISCED levels that should be considered; coverage of EEA countries that should be ensured; cross-border comparisons that should be enabled).

8.4.3. Accessibility

Analysis and assessment

The 20 datasets investigated so far were also analysed with respect to 6 features of accessibility of these datasets: Publicly available (e.g., website, data(base) platform); Downloadable; Separate national reports available; Reports in several European languages available; Access to microdata (research) is restricted; Access to microdata (research) requires request or registration (see Figure 13).

In more detail, Figure 13 exhibits the following points:

- Data of all 20 analysed datasets are publicly available [e.g., website, data(base) platform].
- Data of seven out of 20 (35%) datasets can be downloaded.
- Separate national reports are available for two out of 20 (10%) datasets.
- Reports in several European national languages are available for one out of 20 (5%) datasets.
- Two out of 20 (10%) datasets offer access to microdata for research with restriction.
- Five out of 20 (25%) datasets offer access to microdata for research upon request or registration.

Perhaps the most noticeable deficiencies regarding accessibility of datasets are that some datasets

- Are not downloadable (65%).
- Do not offer access to microdata (for research) (13 of 20, i.e., 65%).
- Do not offer separate national reports (90%).
- Do not offer reports in several European national languages (95%).
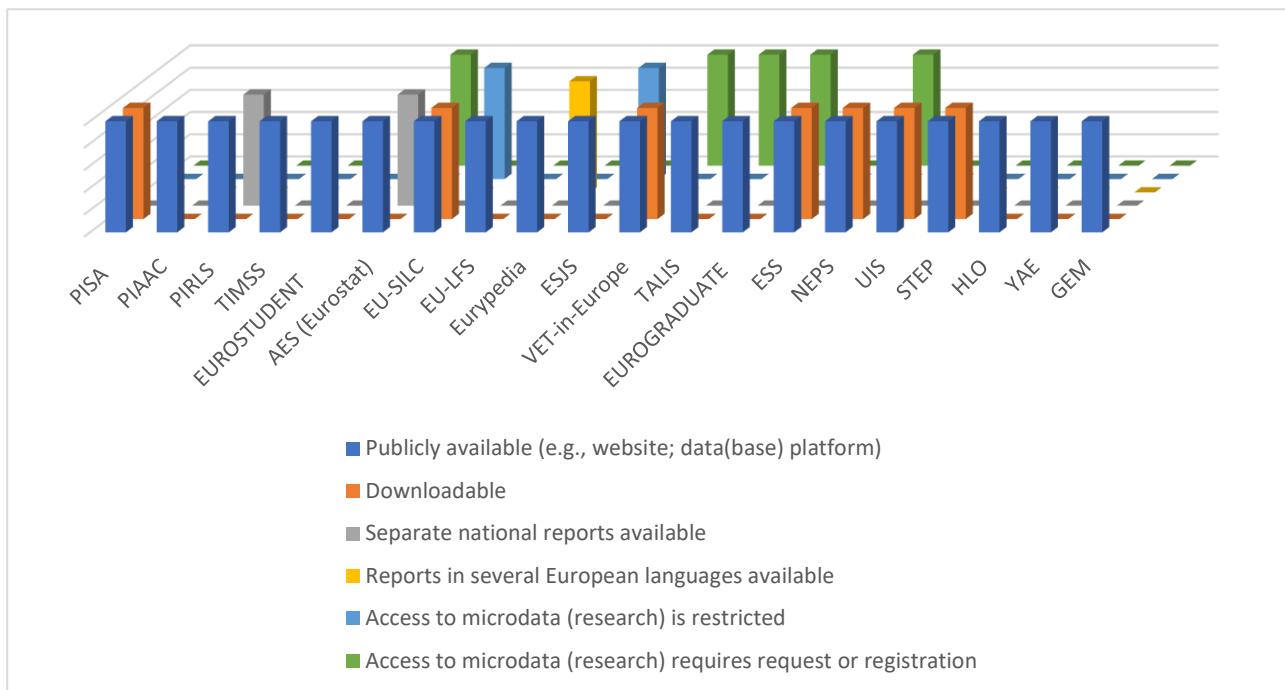
Figure 13: Accessibility of datasets for six different ways of availability (bars indicate accessibility, no bars indicate no accessibility)

Recommendations

Hence, from a general epistemological perspective in a first attempt straightforward recommendations are to rectify these deficiencies by

- Making the following datasets downloadable: PIAAC, PIRLS, TIMMS, EUROSTUDENT, AES (Eurostat), EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, HLO, YAE, GEM
- Offering access to microdata (for research) for the following datasets: PISA, PIAAC, PIRLS, TIMMS, EUROSTUDENT, EU-LFS, Eurypedia, ESS, UIS, STEP, HLO, YAE, GEM
- Offering separate national reports for the following datasets: PISA, PIAAC, TIMMS, EUROSTUDENT, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS, NEPS, UIS, STEP, HLO, YAE, GEM
- Offering reports in several European national languages for the following datasets: PISA, PIAAC, PIRLS, TIMMS, EUROSTUDENT, AES (Eurostat), EU-SILC, EU-LFS, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS, NEPS, UIS, STEP, HLO, YAE, GEM

Again, the above recommendations for extending the accessibility of various datasets should now be critically reviewed or tested from a practical perspective. It must be clarified for which datasets which proposed extension is plausible and feasible, e.g., in terms of methodology and financial expenses in relation to information and data gain achievable. This clarification cannot be carried out from a purely theoretical perspective but must be contextualized in practice.

However, such an assessment may change upon closer examination, as possible recommendations for extensions or changes to datasets also depend on further requirements that the datasets should meet [e.g. relevant ISCED levels that should be considered; coverage of EEA countries that should be ensured; cross-border comparisons that should be enabled].

8.4.4. Coverage of ISCED levels

Analysis and assessment

An intermediate summary on "ISCED levels covered by datasets" reads as follows (see Figure 14):

- First, it might be noticed that it can be seen as a core characteristic feature of a dataset which ISCED levels are covered by that dataset. In other words, if a dataset does not cover some ISCED level(s), this is a decision that should not be generally questioned and there is in general no need to change this and extend coverage of ISCED levels. This is particularly true, because ISCED levels 0 to 8 cover all E&T levels from pre-school and kinder garden to Master and PhD levels. Therefore, the fact that a dataset does not cover certain ISCED levels is generally not considered a fundamental deficiency.
- It would be considered a general deficiency (or "dataset gap") if one or more ISCED levels were not covered by any of the scrutinized datasets. However, such deficiency does not occur as Figure 14 shows.
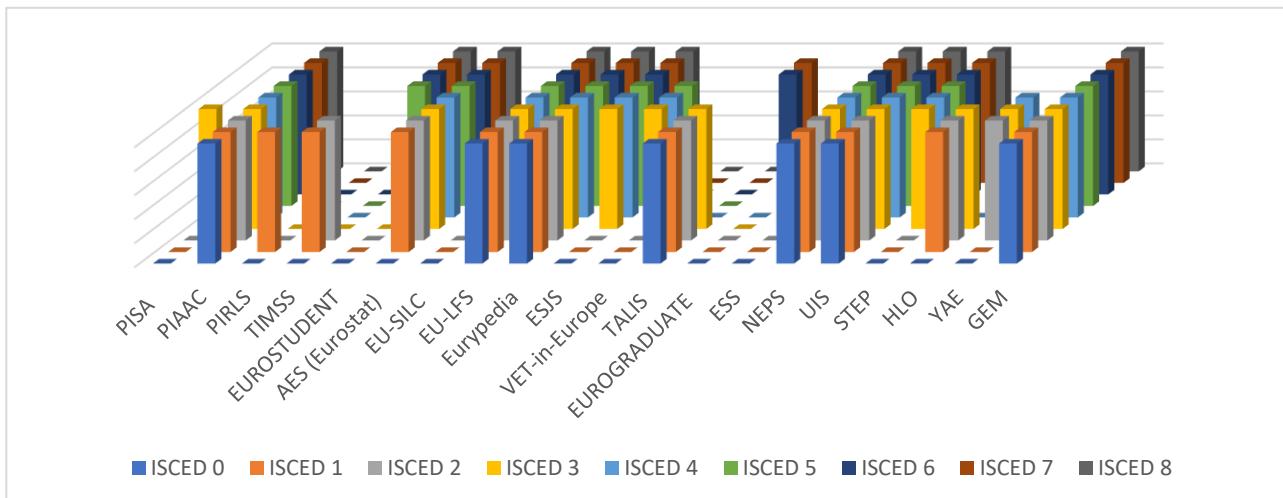

Figure 14: ISCED levels 0-8 covered by the various datasets (bars indicate coverage, no bars indicate no coverage)

- One dataset does not address any ISCED level: ESS (European Social Survey). The reason for this is that ESS is not primarily focused on E&T but on social variables (e.g., personal and social wellbeing; justice and fairness; gender) including variables on educational attainment (which are coded via ISCED levels).
- Six datasets cover all ISCED levels 0-8: PIAAC; EU-LFS; Eurypedia; NEPS; UIS; GEM. In this sense, there is no lack of datasets that cover all ISCED levels 0-8.
- The following datasets focus on a narrow range of ISCED levels which is well justified as a declared focus of the respective datasets: PISA – ISCED 3; PIRLS – ISCED 1; TIMSS – ISCED 1, 2; EUROGRADUATE – ISCED 6, 7.
- The following datasets cover ISCED 3-8 which is the focus area of EDU-LAB: PIAAC; AES (Eurostat); EU-LFS; Eurypedia; ESJS; NEPS; UIS, STEP; GEM.
- Each ISCED level is addressed by at least seven datasets (the seven is true for ISCED 0). In this sense, generally every ISCED level is well covered by datasets.

Recommendations

Hence, in a first attempt from a general epistemological perspective some straightforward recommendations may be the following:

- As PIAAC, AES (Eurostat), EU-LFS, Eurypedia, ESJS, NEPS, UIS, STEP and GEM cover ISCED 3-8, this might be an argument to give some preference in considering these datasets for secondary analysis in the EDU-LAB project because ISCED 3-8 is the focus area of EDU-LAB.
- As each ISCED level is addressed by at least 7 datasets, no formal deficiency in the sense of an ISCED level is not covered by any dataset can be assessed. Accordingly, no policy recommendation for introducing further datasets or amending existing datasets shall be made in this context.
- However, a deeper look into which data the different datasets cover within the ISCED level they address ("What is behind each of the columns shown in Figure 14?") may reveal other deficiencies. Such analysis relates to a detailed individual analysis of any dataset with respect to each of the ISCED levels the dataset covers. Due to limited space and resources, such an analysis cannot be pursued further here.

8.4.5. Coverage of EDU-LAB countries

Analysis and assessment

Figure 15 depicts which EDU-LAB countries are covered by which dataset. While focusing on the multi-national datasets (i.e., leaving aside NEPS for the moment), the following points can be read from Figure 15:

- The least covered EDU-LAB country is Kosovo[48] covered by 8 datasets at least: PIRLS, TIMMS, ESS, UIS, STEP, HLO, YAE, GEM.
- The most covered EDU-LAB countries are Austria and Italy (not covered only by STEP and YAE).
- With respect to coverage of EDU-LAB countries, Austria and Italy are followed by Finland, Germany, Poland and Portugal (only not covered by EUROGRADUATE, STEP and YAE). Then follow Greece (only not covered by EUROSTUDENT, EU-LFS, STEP and YAE) and United Kingdom (only not covered by EUROSTUDENT, EU-SILC, TALIS, EUROGRADUATE).
- That NEPS does not cover any EDU-LAB country except Germany is "by definition" as NEPS focuses solely on Germany.
- The following datasets can be called "complete" in the sense that they cover all EDU-LAB countries: PIRLS; TIMSS; ESS; UIS; HLO; GEM.

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[48] Reasons may include the fact that the statehood of Kosovo is not generally clarified, and many states do not recognize Kosovo as an independent state.
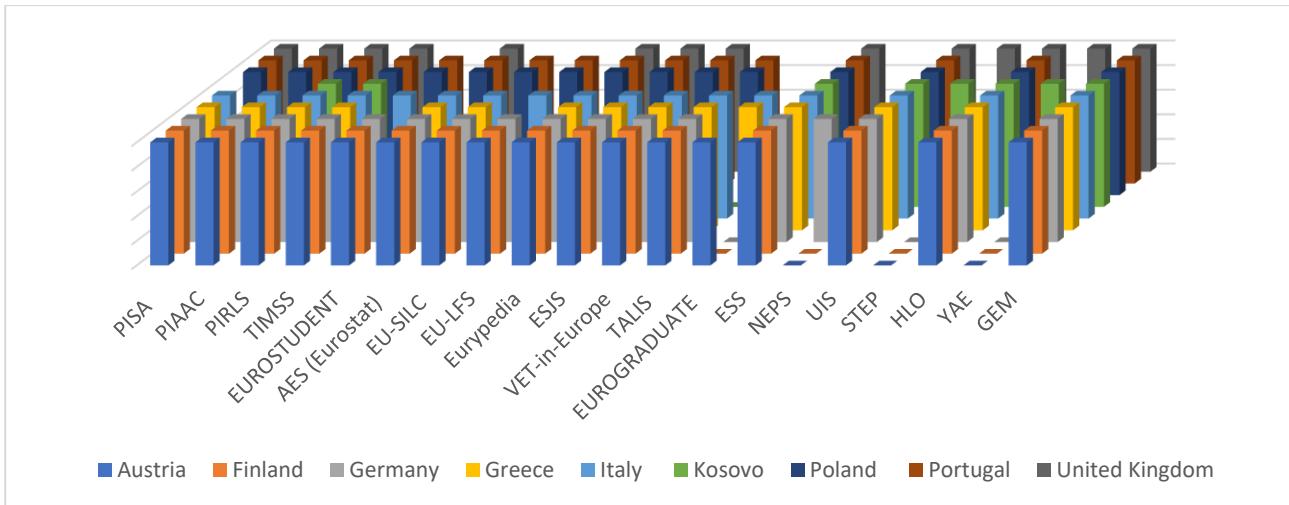
Figure 15: EDU-LAB countries covered by datasets (bars indicate coverage, no bars indicate no coverage)

Recommendations

Hence, from a general epistemological perspective in a first attempt it seems that no straightforward recommendations should be given here because, in general, sufficiently many datasets exist which cover sufficiently many EDU-LAB countries.

However, such consideration may change upon closer inspection as possible recommendations for extensions or amendments of datasets would also depend on further requirements that the datasets should fulfil (e.g., relevant ISCED levels that should be addressed; coverage of EEA countries that should be fulfilled; cross-national comparisons that should be enabled).

8.4.6. Coverage of EEA countries

Analysis and assessment

Figures 16–17 and 18–19 depict which EEA countries are covered by which dataset. While focusing on the multi-national datasets (i.e., leaving aside NEPS for the moment), the following points can be read from these figures:

- The least covered EEA countries are Armenia, Kazakhstan, Kosovo and Liechtenstein; they are not covered by 13, 12, 12 and 14 datasets out of 20, respectively.[49]
- The most covered EEA countries are Austria, Germany, Latvia, Norway (only not covered by STEP and YAE leaving NEPS aside).[50]
- Austria and Italy are followed by Finland, Germany, Poland and Portugal (only not covered by EUROGRADUATE, STEP and YAE). Then follow Greece (only not covered by EUROSTUDENT, EU-LFS, STEP and YAE) and United Kingdom (only not covered by EUROSTUDENT, EU-SILC, TALIS, EUROGRADUATE).
- That NEPS does not cover any EEA country except Germany is "by definition" (because NEPS focuses solely on Germany).
- The following datasets can be called "complete" in the sense that they cover all EEA countries: UIS; HLO; GEM. Conversely, this implies that none of the 17 other datasets cover all EEA countries, with some datasets covering only 8 countries (YAE) and others covering 42 countries (PISA) (see Figures 16–17 and 18–19).

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[49] Further analysis is needed to clarify reasons for this low coverage.
[50] Further analysis is needed to clarify the non-coverage by STEP and YAE.
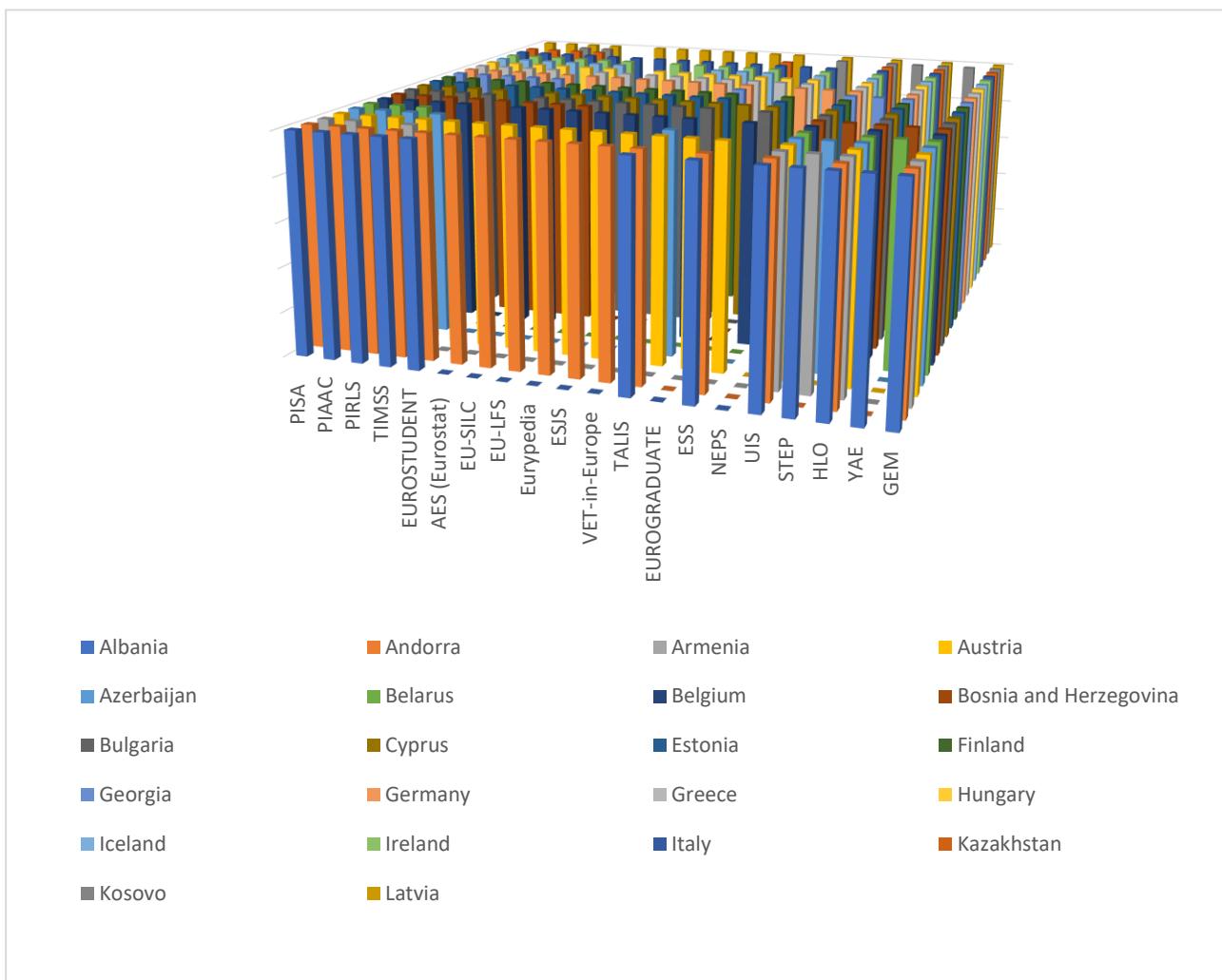
Figure 16: EEA countries covered by datasets – Albania to Latvia (bars indicate coverage, no bars indicate no coverage)

- A few other datasets may be called "almost complete" in the sense that they do not cover only very few EEA countries, such as is the case, e.g., for the following datasets and respective countries: PISA – Kosovo; PIAAC – Kosovo; TIMSS – Belarus, Liechtenstein (see Figures 17-18 and 19-20).
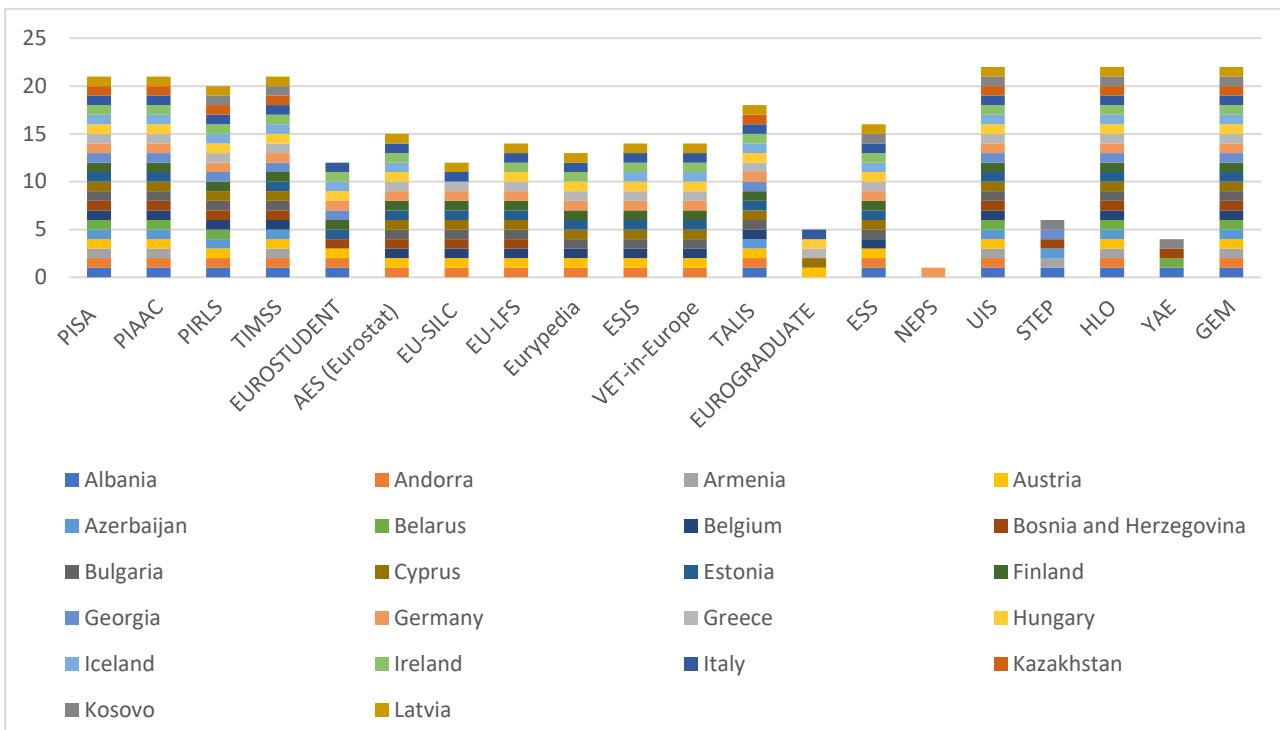
Figure 17: Profiles of 20 datasets with respect to their coverage of EEA countries – Albania to Latvia: each coloured part of a bar for a certain dataset shows which EEA country is covered by the dataset (larger parts of bar indicate full, smaller parts of bar indicate partial no coverage)
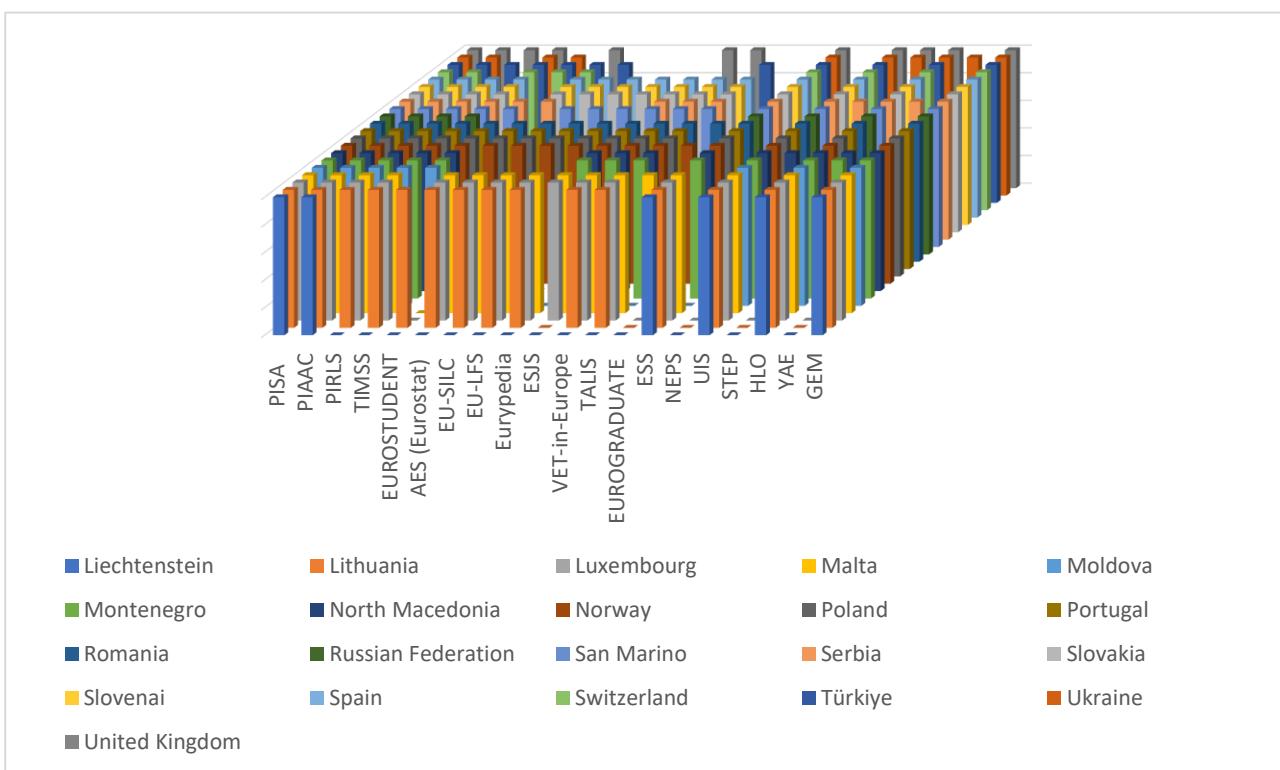
Figure 18: EEA countries covered by datasets – Liechtenstein to United Kingdom (bars indicate coverage, no bars indicate no coverage)

- From a theoretical point of view, this does not support the thesis that a certain lack of pan-European datasets exists: PISA, PIAAC, TIMMS, UIS, HLO and GEM can be called pan-European while each of these datasets covers all or nearly all EEA countries.
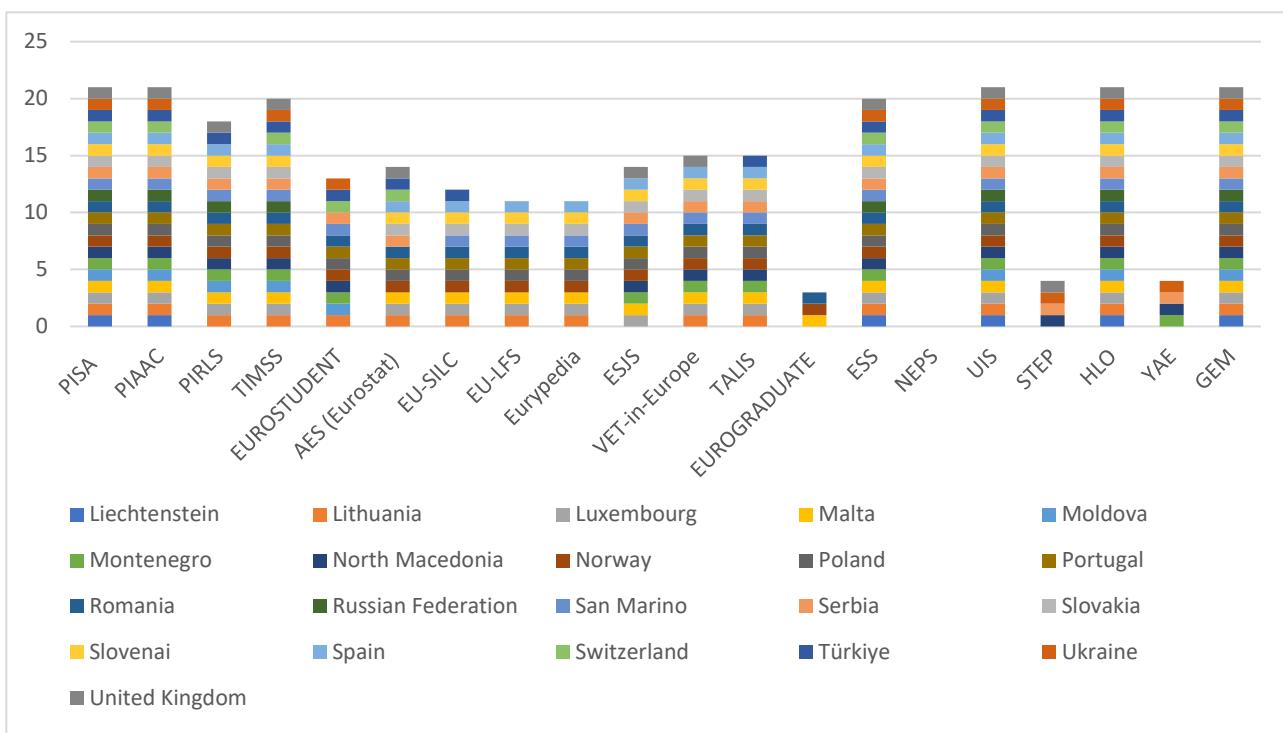

Figure 19: Profiles of 20 datasets with respect to their coverage of EEA countries – Liechtenstein to United Kingdom: each coloured part of a bar for a certain dataset shows which EEA country is covered by the dataset (larger parts of bar indicate full, smaller parts of bar indicate partial no coverage)

Recommendations

From a general epistemological perspective, in a first attempt the following recommendation may be given: As three datasets (UIS; HLO; GEM) cover all EEA countries and three further datasets (PISA; PIAAC; TIMSS) cover all EEA countries but one or two, there are no general strong arguments for amending datasets with the goal of covering more EEA countries.

However, this consideration may be revised if it occurs that one of these six datasets (UIS; HLO; GEM; PISA; PIAAC; TIMSS) would not fulfil certain criteria required for a specific secondary data analysis (e.g., covering a certain ISCED level or a certain timeframe/ frequency of data acquisition or a certain intersectional determinant or a certain E&T pathway transition).

8.4.7. Timeframe and frequency of data acquisition
Analysis and assessment

Figures 20 and 21 show the following points:

- There is no dataset among the 20 investigated datasets that is younger than five years in terms of data acquisition.
- The datasets with the longest tradition of data acquisition – more than 20 years – are the following: PISA; PIRLS; TIMMS; EUROSTUDENT; EU-SILC; EU-LFS; ESS; HLO; YAE.
- The frequency of datasets' data acquisition ranges from annual to every ten years while a 5:3 majority of datasets prefers data acquisition every year or every second year (EU-SILC; EU-LFS; Eurypedia; NEPS; UIS; YAE; GEM; VET-in-Europe; EUROGRADUATE; ESS).
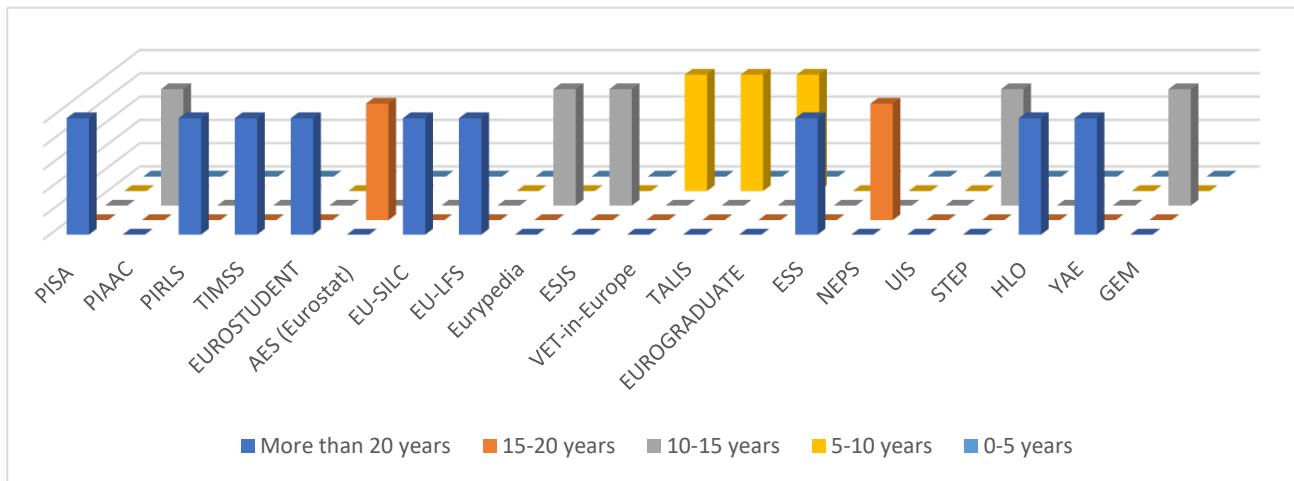
Figure 20: Timeframe of 20 datasets – Length of previous survey period of datasets' data acquisition (differently coloured bars indicate different timeframes of datasets)
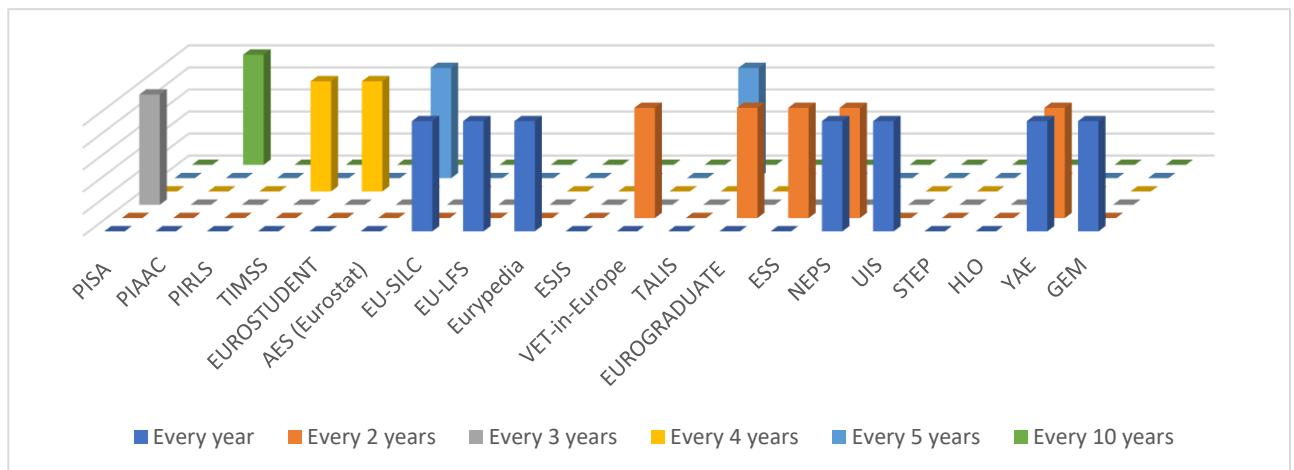

Figure 21: Frequency of 20 datasets' data acquisition (differently coloured bars indicate different frequencies of datasets)

Recommendations

From a general epistemological perspective, in a first step it seems that no straightforward recommendations should be given here.

8.5. Appendix 5: Analysis of datasets' coverage of intersectional determinants of E&T pathways

8.5.1. Datasets' coverage of determinants of General Selection

Analysis and assessment

GenSelDet type 1

Regarding the datasets' coverage of the four identified intersectional determinants of generic General Selection Determinant type 1: Financial issues – GenSelDet 1.1: Low-income family/ conditions; GenSelDet 1.2: High tuition fees; GenSelDet 1.3: High cost of living (e.g., housing, transport); GenSelDet 1.4: Low pay – the following points can be made (see Figure 22):

- Each of the four General Selection determinants GenSelDet 1.1-1.4 is directly covered by at least 2 datasets:
    - GenSelDet 1.1 – directly covered by five datasets, indirectly covered by 11 datasets
    - GenSelDet 1.2 – directly covered by four datasets, indirectly by six datasets
    - GenSelDet 1.3 – directly covered two datasets, indirectly by five datasets
    - GenSelDet 1.4 –directly covered by eight datasets, indirectly by two datasets
- Only one dataset does not cover any of the General Selection determinants GenSelDet 1.1-1.4: TALIS.

This means that, in terms of coverage by datasets most interest seems to be given to GenSelDet 1.4 followed by GenSelDet 1.1, GenSelDet 1.2 and GenSelDet 1.3.
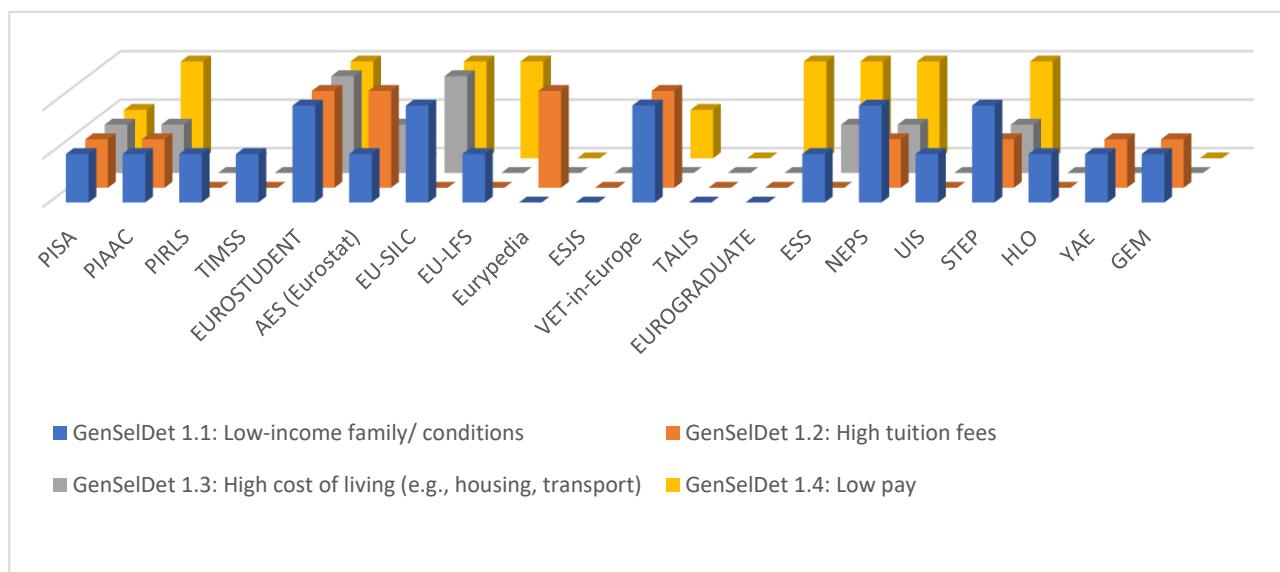
Figure 22: Datasets' coverage of General Selection determinants – GenSelDet type 1: Financial issues (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

GenSelDet type 2

Regarding the datasets' coverage of the nine identified intersectional determinants of generic General Selection Determinant type 2: Applicants' self-determination – GenSelDet 2.1: Following their own abilities and expected performance; GenSelDet 2.2: Setting their achievement goals; GenSelDet 2.3: Building on their prior educational biography; GenSelDet 2.4: Aiming at a higher salary on completing study/ training; GenSelDet 2.5: Possibility to combine study/ training and part-time work; GenSelDet 2.6: Integrating their family planning; GenSelDet 2.7: Integrating parents' expectations; GenSelDet 2.8: Integrating arguments of other stakeholders; GebSelDet 2.9: Soci(et)al valorisation of E&T pathways - – the following points can be made (see Figure 23):

- Seven of the nine General Selection determinants type 2 (Applicants' self-determination) are directly covered by at least one dataset:
  - GenSelDet 2.1 – directly covered by two datasets, indirectly covered by six datasets
  - GenSelDet 2.2 – directly covered by two datasets, indirectly covered by two datasets
  - GenSelDet 2.3 – directly covered by five datasets, indirectly covered by nine datasets
  - GenSelDet 2.4 – directly covered by three datasets, indirectly covered by six datasets
  - GenSelDet 2.5 – directly covered by two datasets, indirectly covered by six datasets
  - GenSelDet 2.6 – directly covered by no dataset, indirectly covered by one dataset
  - GenSelDet 2.7 – directly covered by four datasets, indirectly covered by five datasets
  - GenSelDet 2.8 – directly covered by no dataset, indirectly covered by two datasets
  - GenSelDet 2.9 – directly covered by one dataset, indirectly covered by nine datasets
- Two General Selection determinants are not directly covered by any dataset investigated:
  - GenSelDet 2.6 – directly covered by no dataset, indirectly covered by one dataset
  - GenSelDet 2.8 – directly covered by no dataset, indirectly covered by two datasets
- Only two datasets do not address or cover any of the General Selection determinants GenSelDet 1.1-1.4: ESJS; TALIS.

This means that, in terms of coverage by datasets most interest seems to be given to GenSelDet 2.3 (Building on their prior educational biography) followed by GenSelDet 2.7 (Integrating parents' expectations) and GenSelDet 2.4 (Aiming at a higher salary on completing study/ training).
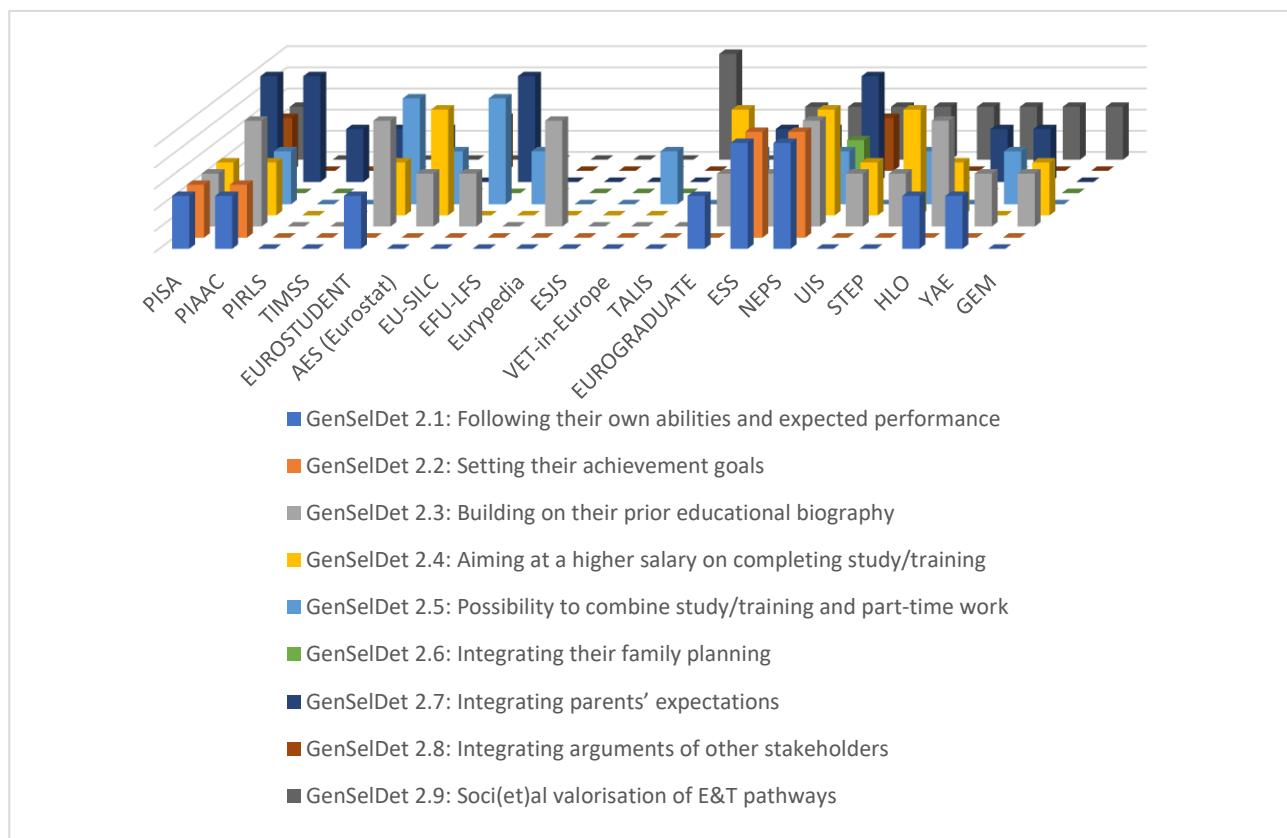

Figure 23: Datasets' coverage of General Selection determinants – GenSelDet type 2: Applicants' self-determination (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

Recommendations

GenSelDet type 1

For the case of GenSelDet type 1, in a first attempt it seems that no straightforward recommendations should be given from a general epistemological perspective as the 20 investigated datasets together cover quite well the group of four General Selection type 1 determinants.

GenSelDet type 2

For the case of GenSelDet type 2, in a first attempt the following straightforward recommendations could be given from a general epistemological perspective:

- The 20 investigated datasets together cover quite well the subgroup of seven General Selection type 2 determinants GenSelDet 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.9.
- The General Selection type 2 determinants GenSelDet 2.6 and 2.8 are not convincingly or well covered by the 20 datasets investigated. In other words, *some need could be stated that datasets – existing or new ones – should better cover the determinants "Integrating their family planning" and "Integrating arguments of other stakeholders"* (in case these two determinants are seen as relevant).

8.5.2. Datasets' coverage of determinants of Access
Analysis and assessment

AccDet type 1

Regarding the datasets' coverage of the two identified intersectional determinants of Access Determinant type 1: Availability of the desired GE or PVET programme – AccDet 1.1: Availability of the desired GE or PVET programme in the region of proximity; AccDet 1.2: Availability of the desired GE or PVET programme in the overall country – the following points can be made (see Figure 24):

- Both Access determinants AccDet 1.1-1.2 are indirectly covered by at least four datasets:
    - AccDet 1.1 – directly covered by no dataset, indirectly covered by four datasets
    - AccDet 1.2 – directly covered by five datasets, indirectly by six datasets
- Nine out of 20 datasets investigated (45%) do not cover any of the Access determinants AccDet 1.1-1.2: PIAAC; PIRLS; TIMSS; AES; EU-SILC; EU-LFS; ESJS; TALIS; HLO.

This means that, in terms of coverage by datasets more interest seems to be given to AccDet 1.2 than to AccDet 1.1. This is to be expected as the datasets studied are typically concentrating on issues that are (mostly) relevant on national and multi-national levels.

AccDet type 2

Regarding the datasets' coverage of the six identified intersectional determinants of generic Access Determinant type 2: Formal entrance qualification – AccDet 2.1: Secondary school leaving certificate; AccDet 2.2: General higher education access qualification/ certificate; AccDet 2.3: Bachelor's degree; AccDet 2.4: Master's degree; AccDet 2.5: Journeyman's certificate; AccDet 2.6: Master craftsman qualification – the following points can be made (see Figure 25):

- In general, the 6 Access determinants AccDet 2.1-2.6 are well covered by the 20 datasets investigated. In particular, each of these determinants is directly covered by at least three datasets:
    - AccDet 2.1 – directly covered by 14 datasets, indirectly covered by two datasets
    - AccDet 2.2 – directly covered by 12 datasets, indirectly by four datasets
    - AccDet 2.3 – directly covered by 13 datasets, indirectly by three datasets
    - AccDet 2.4 – directly covered by 13 datasets, indirectly by one dataset
    - AccDet 2.5 – directly covered by three datasets, indirectly by no dataset
    - AccDet 2.6 – directly covered by three datasets, indirectly by no dataset

- 3 out of 20 datasets investigated (15%) do not cover any of the Access determinants AccDet 2.1-2.6: PISA; PIRLS; TIMSS.
- AccDet 2.5 and AccDet 2.6 are distinctively less covered by datasets than the other type 2 Access determinants. This reflects the fact that VET perspectives are more represented in certain datasets such as PIAAC, VET-in-Europe and NEPS (see Figure 25).
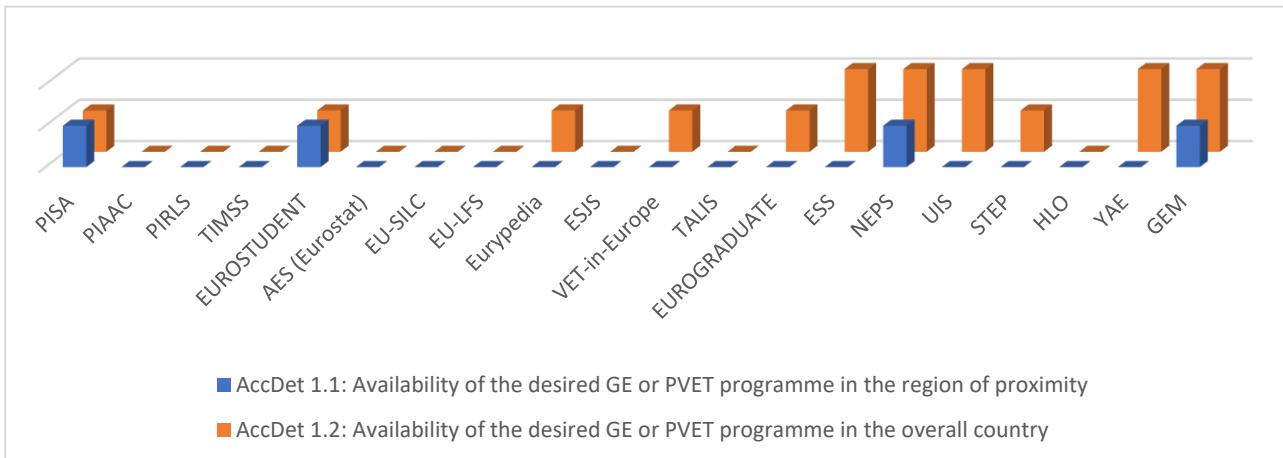
Figure 24: Datasets' coverage of Access determinants – AccDet type 1: Availability of the desired GE or PVET programme (COUNTRY- and REGION-SPECIFIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)
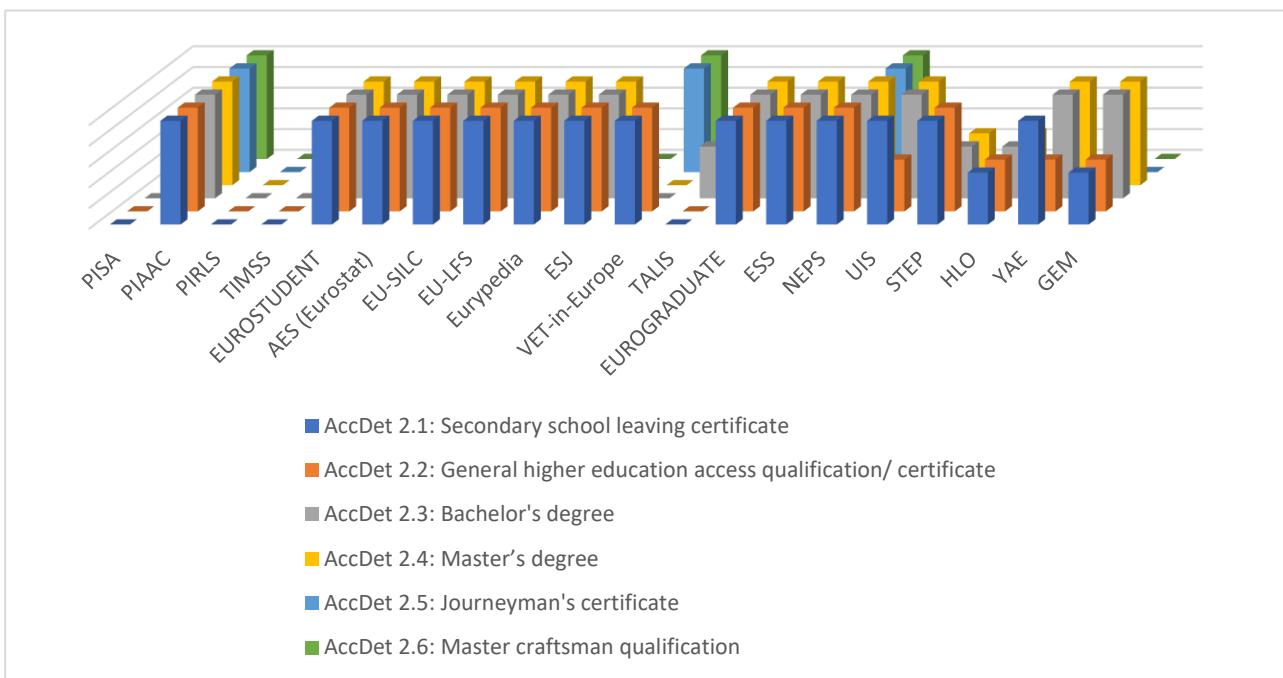
Figure 25: Datasets' coverage of Access determinants – AccDet type 2: Formal entrance qualification (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

AccDet type 3

Regarding the datasets' coverage of the three identified intersectional determinants of generic Access Determinant type 3: Content-related entrance qualification – AccDet 3.1: Language literacy tests; AccDet 3.2: MINT literacy tests; AccDet 3.3: Digitalisation and AI literacy tests – the following points can be made (see Figure 26):

- In general, the three Access determinants AccDet 3.1-3.3 do not seem to be well covered by the 20 datasets investigated:
  - AccDet 3.1 – directly covered by six datasets, indirectly covered by two datasets
  - AccDet 3.2 – directly covered by one dataset, indirectly by six datasets
  - AccDet 3.3 – directly covered by no dataset, indirectly by one dataset
- 11 out of 20 datasets investigated (55%) do not cover any of the Access determinants AccDet 3.1-3.3: PISA; PIRLS; EUROSTUDENT; AES; EU-SILC; EU-LFS; ESJS; VET-in-Europe; TALIS; EUROGRADUATE; ESS.
- AccDet 3.3 is distinctively less covered by datasets than the other type 3 Access determinants. This implies that digital and AI literacy are not adequately represented in the 20 datasets investigated (see Figure 26).
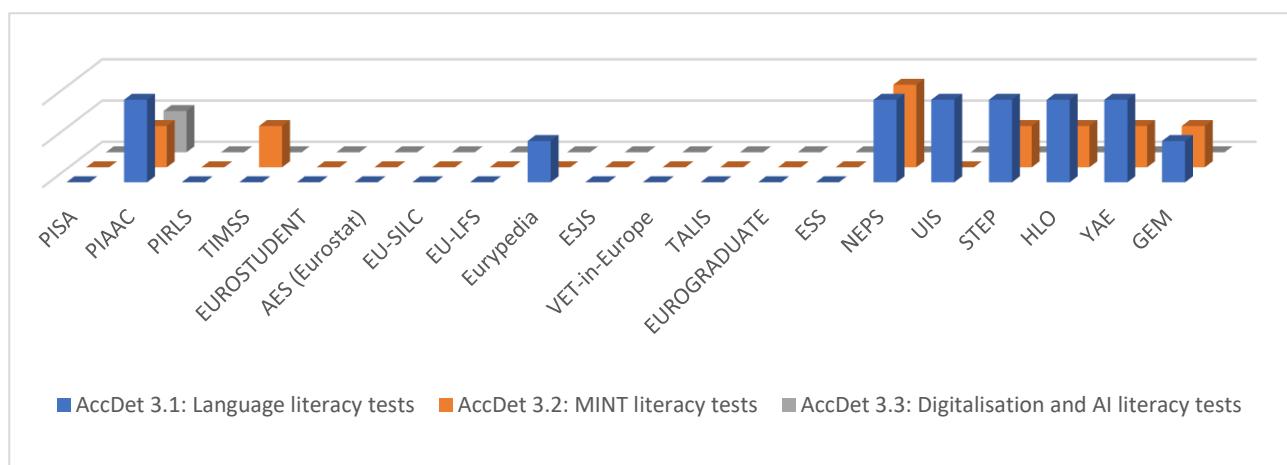
Figure 26: Datasets' coverage of Access determinants – AccDet type 3: Content-related entrance qualification (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

AccDet type 4

Regarding the datasets' coverage of the ten identified intersectional determinants of generic Access Determinant type 4: Practice measures and policy programmes for access support – AccDet 4.1-4.10, see Figure 27 – the following points can be made:

- In general, the ten Access determinants AccDet 4.1-4.10 do not seem to be well covered by the 20 datasets investigated:
  - AccDet 4.1 – directly covered by five datasets, indirectly covered by four datasets
  - AccDet 4.2 – directly covered by one dataset, indirectly by five datasets, i.e., *fostering information and education in democracy and universal human rights is a rather under-represented topic*
  - AccDet 4.3 – directly covered by three datasets, indirectly by five datasets
  - AccDet 4.4 – directly covered by no dataset, indirectly by five datasets, i.e., *support for the start of educational pathway is a rather under-represented topic*
  - AccDet 4.5 – directly covered by two datasets, indirectly by three datasets
  - AccDet 4.6 – directly covered by two datasets, indirectly by 11 datasets

- AccDet 4.7 – directly covered by one dataset, indirectly by five datasets, i.e., support for applicants with disabilities or chronic medical conditions is a rather under-represented topic
- AccDet 4.8 – directly covered by two datasets, indirectly by five datasets
- AccDet 4.9 – directly covered by two datasets, indirectly by six datasets
- AccDet 4.10 – directly covered by two datasets, indirectly by five datasets
- Two out of 20 datasets investigated (10%) do not cover any of the Access determinants AccDet 4.1-4.10: PIRLS; ESJS.

AccDet 4.1: Information provided on educational (GE and PVET) pathways

AccDet 4.2: Fostering information and education in democracy and universal human rights

AccDet 4.3: Study and career counseling

AccDet 4.4: Support for the start of educational pathway

AccDet 4.5: Support for alternative access to educational pathway

AccDet 4.6: Fostering diversity, equity and inclusion

AccDet 4.7: Support for applicants with disabilities or chronic medical conditions

AccDet 4.8: Support for applicants with low or no educational qualifications

AccDet 4.9: Support for applicants with low socioeconomic status

AccDet 4.10: Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market

Figure 27: Datasets' coverage of Access determinants – AccDet type 4: Practice measures and policy programmes for access support (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

Overall, the analysis shows that relevant deficiencies exist with respect to coverage of AccDet 5.1-5.7 by the 20 datasets investigated. In particular, AccDet 5.1 (Fostering information and education in democracy and universal human rights), AccDet 5.3 (Fostering diversity, equity and inclusion), AccDet 5.4 (Support for applicants with disabilities or chronic medical conditions) and AccDet 5.7 (Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market) are less covered (only one or two direct coverages).

Recommendations

AccDet type 1

For the case of AccDet type 1, in a first attempt the following straightforward recommendations could be given from a general epistemological perspective:

- It can be assumed that AccDet 1.2 is well covered by all 20 investigated datasets together, as it is directly covered by five datasets (ESS; NEPS; UIS; YAE; GEM). In this sense no general deficiency can be stated and no recommendations for addressing such deficiency could be given.
- As Figure 24 shows, AccDet 1.1 is distinctively less covered by the 20 datasets investigated. Consequently, a *recommendation can be given that "Availability of the desired GE or PVET programme in the region of proximity" should be better addressed by datasets*. A logical next step would be to examine to what extent the data acquisition of the datasets PISA, EUROSTUDENT, NEPS and GEM could be extended in such a way that AccDet 1.1 would be covered not only indirectly by these datasets, but directly.
- Whether such extensions are seen to be sufficient then depends on further criteria, such as, e.g., which dataset covers which ISCED levels or which EEA countries. For example, an interesting extension could be with GEM because GEM covers all ISCED levels 0-8 and all EEA countries.

AccDet type 2

For the case of AccDet type 2, no general recommendation based on strong argument can be given, with only one exception: it could be recommended that AccDet 2.5 (Journeyman's certificate) and 2.6 (Master craftsman qualification) could be covered additionally by further datasets. More detail of such recommendation depends on further requirements that the datasets should fulfil (e.g., relevant ISCED levels; coverage of EEA countries; cross-national comparison).

AccDet type 3

For the case of AccDet type 3, in a first attempt the following straightforward recommendations could be given from a general epistemological perspective:

- In general, the three Access determinants AccDet 3.1-3.3 do not seem to be well covered by the 20 datasets investigated, i.e., a distinct deficiency can be stated. Two immediate recommendations could be given:
  - The datasets that already cover three, two or one of the determinants AccDet 3.1-3.3 (see Figure 26) could be complemented so that they directly cover all three determinants.
  - Some datasets from the group of the 11 datasets PISA, PIRLS, EUROSTUDENT, AES, EU-SILC, EU-LFS, ESJS, VET-in-Europe, TALIS, EUROGRADUATE, ESS not covering any of AccDet 3.1-3.3 could be extended or complemented to cover them and thus heal the observed deficiency.

AccDet type 4

In general, the ten Access determinants AccDet 4.1-4.10 do not seem to be well covered by the 20 datasets investigated although there is no strong gap detectable. One immediate recommendation could be given:

- The datasets that already cover three, two or one of the determinants AccDet 4.1-4.10 (see Figure 27) could be complemented so that they directly cover more or even all ten determinants.

8.5.3. Datasets' coverage of determinants of Participation
Analysis and assessment

PartDet type 1

Regarding the datasets' coverage of the four identified intersectional determinants of generic Participation Determinant type 1: Financial issues – PartDet 1.1: Low-income family/ conditions; PartDet 1.2: High tuition fees; PartDet 1.3: High cost of living (e.g., housing, transport); PartDet 1.4: Low pay – the following points can be made (see Figure 28):

- Each of the four Participation determinants PartDet 1.1-1.4 is directly covered by at least three datasets:
  - o PartDet 1.1 – directly covered by eight datasets, indirectly covered by nine datasets
  - o PartDet 1.2 – directly covered by six datasets, indirectly by three datasets
  - o PartDet 1.3 – directly covered three datasets, indirectly by four datasets
  - o PartDet 1.4 –directly covered by six datasets, indirectly by three datasets
- Only two datasets do not cover any of the General Selection determinants PartDet 1.1-1.4: ESJS; TALIS.
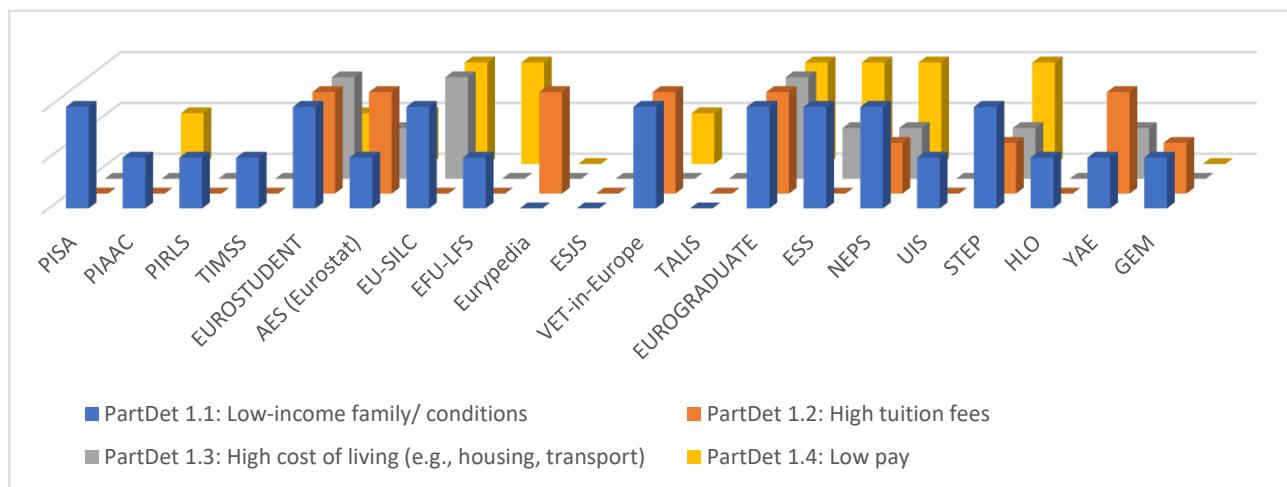
Figure 28: Coverage by datasets of determinants of Participation – PartDet type 1: Financial issues (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

PartDet type 2

Regarding the datasets' coverage of the 11 identified intersectional determinants of generic Participation Determinant type 2: Practice measures for participation support – PartDet 2.1-2.11, see Figure 29– the following points can be made:

- In general, the 11 Participation determinants PartDet 2.1-2.11 seem to be well covered by the 20 datasets investigated:
  - o PartDet 2.1 – directly covered by seven datasets, indirectly covered by three datasets
  - o PartDet 2.2 – directly covered by no dataset, indirectly by 11 datasets
  - o PartDet 2.3 – directly covered by two datasets, indirectly by three datasets
  - o PartDet 2.4 – directly covered by six datasets, indirectly by three datasets
  - o PartDet 2.5 – directly covered by one dataset, indirectly by five datasets
  - o PartDet 2.6 – directly covered by three datasets, indirectly by three datasets
  - o PartDet 2.7 – directly covered by three datasets, indirectly by 14 datasets
  - o PartDet 2.8 – directly covered by five datasets, indirectly by one dataset
  - o PartDet 2.9 – directly covered by two datasets, indirectly by six datasets

o PartDet 2.10 – directly covered by three datasets, indirectly by ten datasets
o PartDet 2.11 – directly covered by two datasets, indirectly by two datasets

PartDet 2.1: Information provided on E&T (GE and PVET) pathways
PartDet 2.2: Special trainings in GE and PVET
PartDet 2.3: Fostering information and education in democracy and universal human rights
PartDet 2.4: Study and career counseling
PartDet 2.5: Support for the start of educational pathway
PartDet 2.6: Support for alternative access to educational pathway
PartDet 2.7: Fostering diversity, equity and inclusion
PartDet 2.8: Support for applicants with disabilities or chronic medical conditions
PartDet 2.9: Support for applicants with low or no educational qualifications
PartDet 2.10: Support for applicants with low socioeconomic status
PartDet 2.11: Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market

Figure 29: Datasets' coverage of Participation determinants – PartDet type 2: Practice measures for participation support (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

- Every dataset investigated covers at least on Participation determinant type 2.
- Every Participation determinant PartDet 2.1-2.11 is covered by at least four datasets.
- Overall, the analysis shows that no strong deficiencies exist with respect to coverage of PartDet 2.1-2.11 by the 20 datasets investigated. However, lower general coverage in the sense of low direct coverage is observed for PartDet 2.2 (Special trainings in GE and PVET – no direct coverage), PartDet 2.5 (Support for the start of educational pathway – one direct coverage), PartDet 2.3 (Fostering information and education in democracy and universal human rights – two direct coverages), PartDet 2.9 (Support for applicants with low or no educational qualifications – two direct coverages) and PartDet 2.11 (Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market – two direct coverages).

Recommendations

PartDet type 1

For the case of PartDet type 1, in a first step it seems that no straightforward recommendations should be given from a general epistemological perspective as the 20 investigated datasets together cover quite well the group of four Participation type 1 determinants.

PartDet type 2

For the case of PartDet type 2, in a first attempt the following straightforward recommendation could be given from a general epistemological perspective: The 20 datasets' relatively lower direct coverage of PartDet 2.2 (Special trainings in GE and PVET – 0 direct coverage), PartDet 2.5 (Support for the start of educational pathway – 1 direct coverage), PartDet 2.3 (Fostering information and education in democracy and universal human rights – 2 direct coverages), PartDet 2.9 (Support for applicants with low or no educational qualifications – 2 direct coverages) and PartDet 2.11 (Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market – 2 direct coverages) could be attenuated by including these determinants directly in the data collection portfolio of the appropriate datasets.

However, such consideration may change, and recommendations may get more specific upon closer inspection as possible recommendations for extensions or amendments of datasets would also depend on further requirements that the datasets should fulfil [e.g., relevant ISCED levels that should be addressed; coverage of EEA countries that should be fulfilled; cross-national comparisons that should be enabled].

8.5.4. Datasets' coverage of determinants of Progression and Completion
Analysis and assessment

ProgCompDet type 1

Regarding the datasets' coverage of the seven identified intersectional determinants of generic Progression and Completion Determinant type 1: Progression and completion delay, or discontinuation because of deficiencies of learning and teaching processes – ProgCompDet 1.1-1.7, see Figure 30 – the following points can be made:

- In general, it may be stated that the seven Progression and Completion determinants ProgCompDet 1.1-1.7 are well covered by the 20 datasets investigated:
    - ProgCompDet 1.1 – directly covered by eight datasets, indirectly covered by three datasets
    - ProgCompDet 1.2 – directly covered by two datasets, indirectly by seven datasets,
    - ProgCompDet 1.3 – directly covered by two datasets, indirectly by six datasets
    - ProgCompDet 1.4 – directly covered by two datasets, indirectly by five datasets
    - ProgCompDet 1.5 – directly covered by four datasets, indirectly by five datasets
    - ProgCompDet 1.6 – directly covered by two datasets, indirectly by three datasets
    - ProgCompDet 1.7 – directly covered by four datasets, indirectly by two datasets
- This shows that ProgCompDet 1.1 (Lack of interest/motivation) is most frequently covered, followed by ProgCompDet 1.5 [Lack of acquisition of cognitive competences (e.g., digital and AI competences)] and ProgCompDet 1.7 [Lack of emotional and mental health (e.g., stress, anxiety)].
- Each Progression and Completion determinant type 1 is directly covered by at least two datasets and indirectly covered also by at least two datasets.
- Five out of 20 datasets investigated (25%) do not cover any of the Progression and Completion determinants ProgCompDet 1.1-1.7: EU-LFS; Eurypedia; ESJS; ESS; GEM.[51]

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[51] Further analysis is needed to clarify reasons for this non-coverage by the five mentioned datasets.
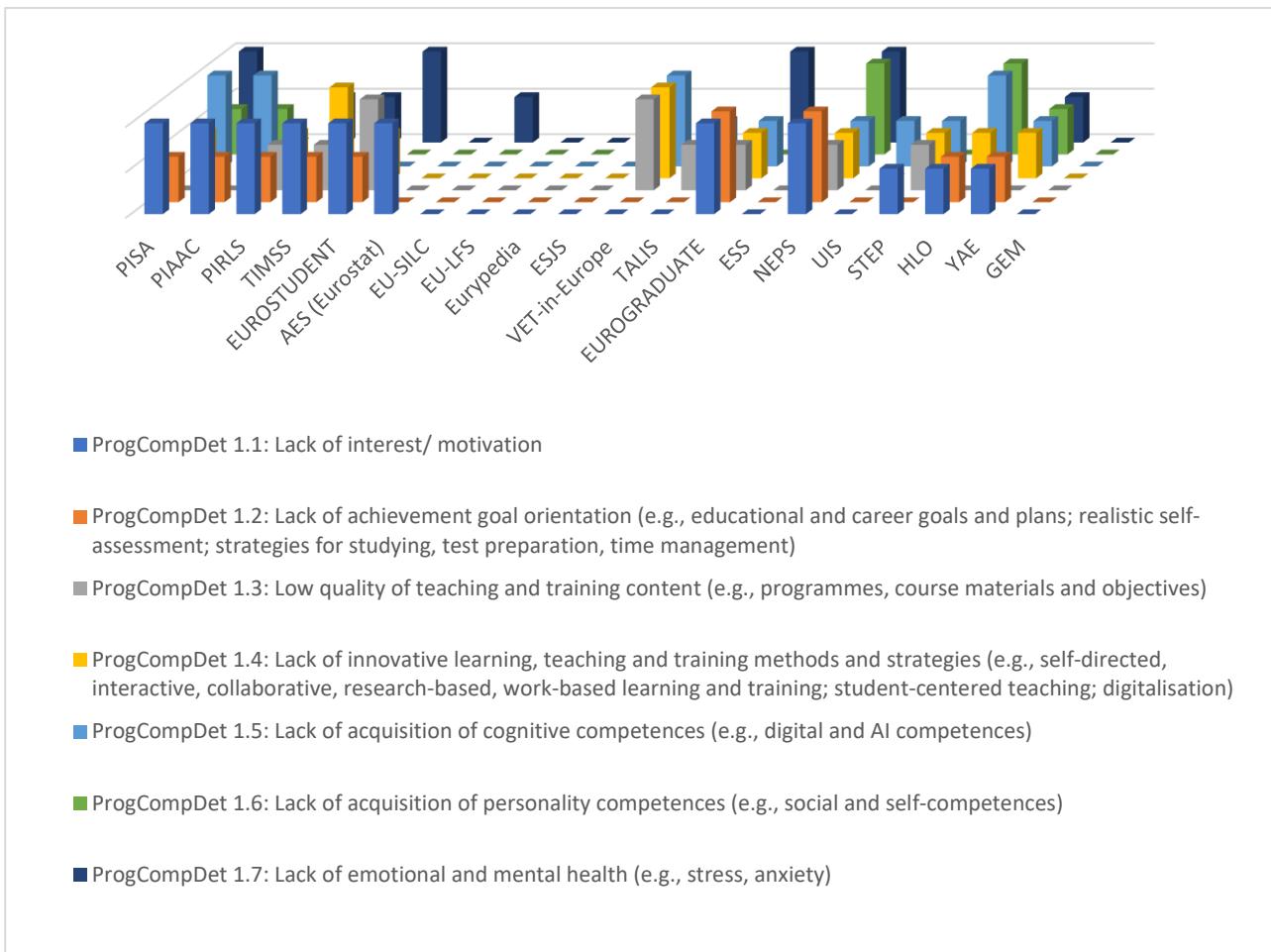
Figure 30: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 1: Progression and completion delay, or discontinuation because of deficiencies of learning and teaching processes (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

ProgCompDet type 2

Regarding the datasets' coverage of the six identified intersectional determinants of generic Progression and Completion Determinant type 2: Progression and completion delay, or discontinuation because of deficiencies of learning and teaching resources – ProgCompDet 2.1-2.6, see Figure 31 – the following points can be made:

- In general, it may be stated that the seven Progression and Completion determinants ProgCompDet 2.1-2.6 are almost well covered by the 20 datasets investigated:
  - ProgCompDet 2.1 – directly covered by three datasets, indirectly covered by nine datasets
  - ProgCompDet 2.2 – directly covered by one dataset, indirectly by seven datasets,
  - ProgCompDet 2.3 – directly covered by six datasets, indirectly by eight datasets
  - ProgCompDet 2.4 – directly covered by no dataset, indirectly by one dataset
  - ProgCompDet 2.5 – directly covered by one dataset, indirectly by four datasets
  - ProgCompDet 2.6 – directly covered by no dataset, indirectly by one dataset
- This shows that ProgCompDet 2.4 [Lack or low quality of Artificial Intelligence in education (AIEd) (e.g., building personalised learning systems for students)] and ProgCompDet 2.6 (Lack or low quality of extracurricular activities) are less frequently covered, followed by ProgCompDet 2.2 [Lack or low quality of learning and teaching and training spaces (e.g., formal, informal, digital, hybrid L&T spaces)] and ProgCompDet 2.5 (Lack or low quality of accommodation).

- Each Progression and Completion determinant type 2 is indirectly covered by at least one dataset.
- Four out of 20 datasets investigated (20%) do not cover any of the Progression and Completion determinants ProgCompDet 2.1-2.6: AES; EU-LFS; ESJS; ESS.[52]

ProgCompDet 2.1: Limited access to educational resources (e.g., library)

ProgCompDet 2.2: Lack or low quality of learning and teaching and training spaces (e.g., formal, informal, digital, hybrid L&T spaces)

ProgCompDet 2.3: Lack or low quality of ICT systems (e.g. computer equipment, WiFi access)

ProgCompDet 2.4: Lack or low quality of Artificial Intelligence in education (AIEd) (e.g., building personalised learning systems for students)

ProgCompDet 2.5: Lack or low quality of accommodation

ProgCompDet 2.6: Lack or low quality of extracurricular activities

Figure 31: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 2: Progression and completion delay, or discontinuation because of deficiencies of learning and teaching resources (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

ProgCompDet type 3

Regarding the datasets' coverage of the four identified intersectional determinants of Progression and Completion Determinant type 3: Progression and completion delay, or discontinuation because of socio-political and economic deficiencies – ProgCompDet 3.1-3.4, see Figure 32 – the following points can be made:

- In general, it may be stated that the four Progression and Completion determinants ProgCompDet 3.1-3.4 are not well covered by the 20 datasets investigated:
  - ProgCompDet 3.1 – directly covered by six datasets, indirectly covered by one dataset
  - ProgCompDet 3.2 – directly covered by no dataset, indirectly by five datasets,
  - ProgCompDet 3.3 – directly covered by no dataset, indirectly by one dataset
  - ProgCompDet 3.4 – directly covered by no dataset, indirectly by two datasets
- This shows that ProgCompDet 3.1 (Low prosperity of country) is most frequently covered with a clear distance to the other ProgCompDet type 3.

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[52] Further analysis is needed to clarify reasons for this non-coverage by the four mentioned datasets.

- 13 out of 20 datasets investigated (65%) do not cover any of the Progression and Completion determinants ProgCompDet 3.1-3.4: PIAAC; PIRLS; TIMSS; EUROSTUDENT; AES; EU-SILC; EU-LFS; Eurypedia; ESJS; VET-in-Europe; TALIS; NEPS; HLO.[53]
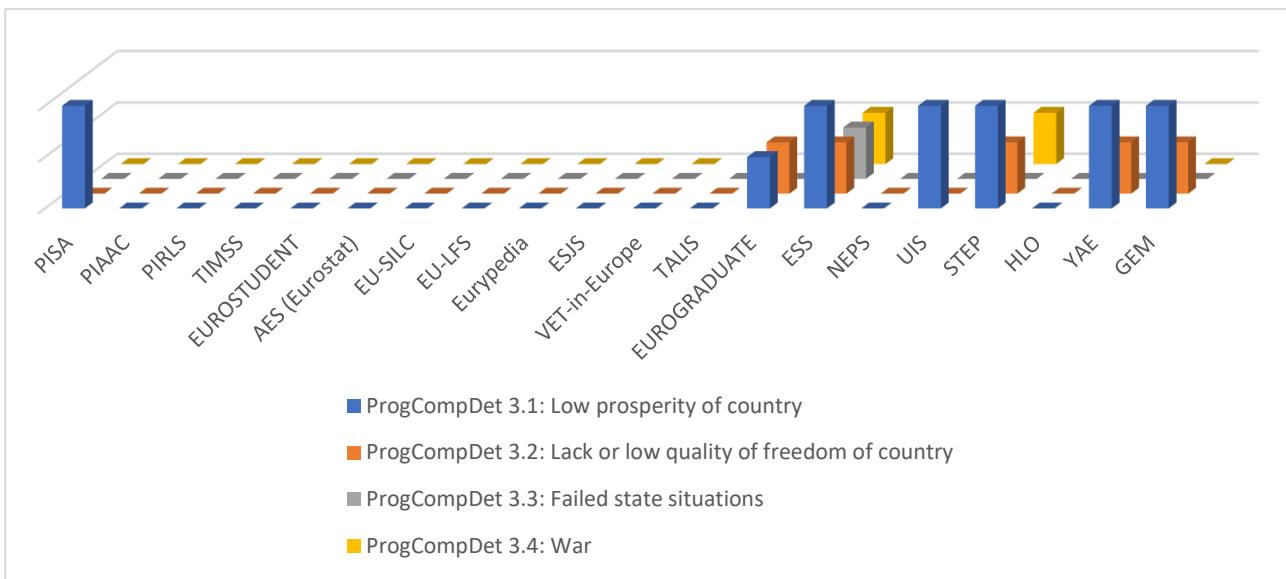

Figure 32: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 3: Progression and completion delay, or discontinuation because of socio-political and economic deficiencies (COUNTRY- and REGION-SPECIFIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

ProgCompDet type 4

Regarding the datasets' coverage of the two identified generic intersectional determinants of Progression and Completion Determinant type 4: Progression and completion delay, or discontinuation because of dissatisfaction – ProgCompDet 4.1-4.2, see Figure 33 – the following points can be made:

- In general, it may be stated that the two Progression and Completion determinants ProgCompDet 4.1-4.2 are not well covered by the 20 datasets investigated:
  - ProgCompDet 4.1 – directly covered by three datasets, indirectly covered by five datasets
  - ProgCompDet 4.2 – directly covered by one dataset, indirectly by four datasets
- This shows that ProgCompDet 4.2 (Lack of employment vacancies) is less frequently covered than ProgCompDet 4.1 (Dissatisfaction with pathway).
- Ten out of 20 datasets investigated (50%) do not cover any of the Progression and Completion determinants ProgCompDet 4.1-4.2: PISA; PIAAC; PIRLS; TIMSS; AES; EU-SILC; Eurypedia; TALIS; UIS; HLO.[54]

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[53] Further analysis is needed to clarify reasons for this non-coverage by the 13 mentioned datasets.
[54] Further analysis is needed to clarify reasons for this non-coverage by the ten mentioned datasets.
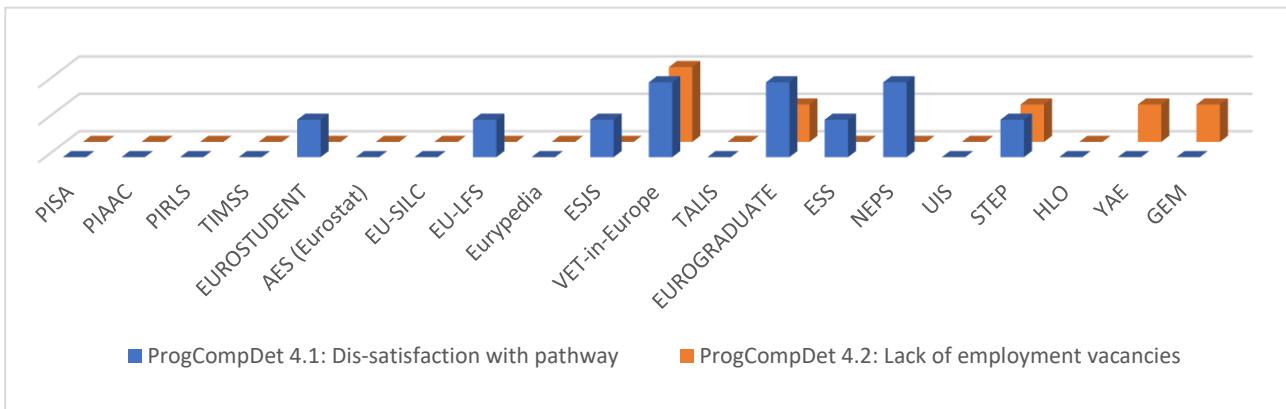
igure 33: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 4: Progression and completion delay, or discontinuation because of dissatisfaction (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

ProgCompDet type 5

Regarding the datasets' coverage of the intersectional determinant of Progression and Completion determinant type 5: Progression and completion delay, or discontinuation because of pandemics – ProgCompDet 5.1, see Figure 34 – the following points can be made:

- In general, ProgCompDet 5.1 seems to be well covered by the 20 datasets investigated:
  - ProgCompDet 5.1 – directly covered by two datasets, indirectly covered by 15 datasets, not covered by three datasets (PIAAC; ESJS; YAE).

Overall, no strong deficiencies can be assessed with respect to coverage of ProgCompDet 5.1 by the 20 datasets investigated.

ProgCompDet 5.1: Covid-19 restrictions
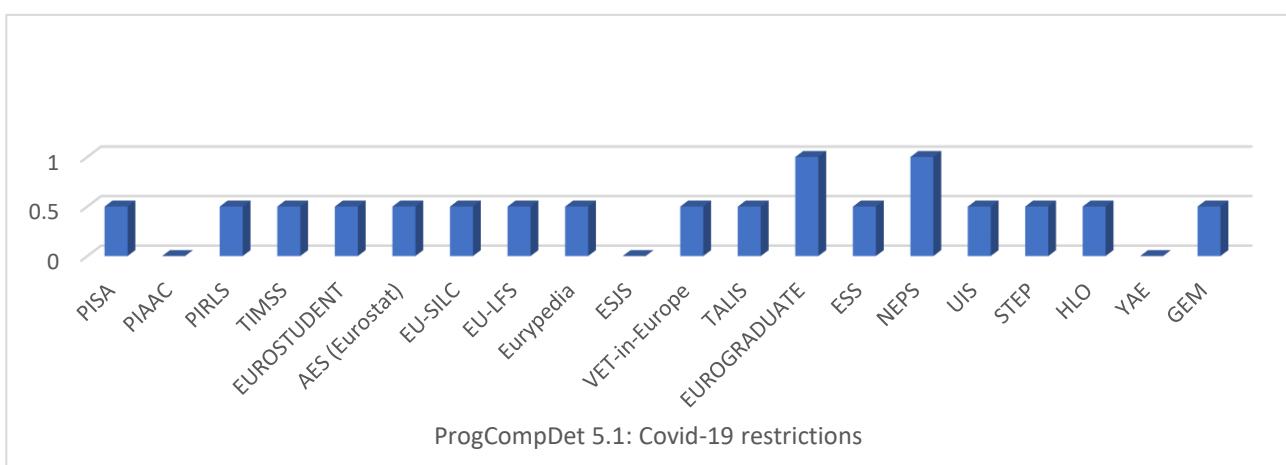
Figure 34: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 5: Progression and completion delay, or discontinuation because of pandemics (COUNTRY- and REGION-SPECIFIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

ProgCompDet type 6

Regarding the datasets' coverage of the 11 generic Progression and Completion determinants type 6: Practice measures for progression and completion support – ProgCompDet 6.1-6.11, see Figure 35– the following points can be made:

- In general, the 11 Progression and Completion determinants ProgCompDet 6.1-6.11 seem to be well covered by the 20 datasets investigated although the coverage is rather varying from dataset to dataset:
  - ProgCompDet 6.1 – directly covered by five datasets, indirectly covered by four datasets
  - ProgCompDet 6.2 – directly covered by one dataset, indirectly by three datasets
  - ProgCompDet 6.3 – directly covered by one dataset, indirectly by two datasets
  - ProgCompDet 6.4 – directly covered by four datasets, indirectly by three datasets
  - ProgCompDet 6.5 – directly covered by one dataset, indirectly by two datasets
  - ProgCompDet 6.6 – directly covered by three datasets, indirectly by two datasets
  - ProgCompDet 6.7 – directly covered by one dataset, indirectly by 12 datasets
  - ProgCompDet 6.8 – directly covered by three datasets, indirectly by three datasets
  - ProgCompDet 6.9 – directly covered by three datasets, indirectly by no dataset
  - ProgCompDet 6.10 – directly covered by three datasets, indirectly by three datasets
  - ProgCompDet 6.11 – directly covered by one dataset, indirectly by one dataset
- Four out of 20 datasets investigated (20%) do not cover any of the Progression and Completion determinants ProgCompDet 6.1-6.11: PIAAC; AES; ESJS; TALIS.[55]

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[55] Further analysis is needed to clarify reasons for this non-coverage by the 4 mentioned datasets.
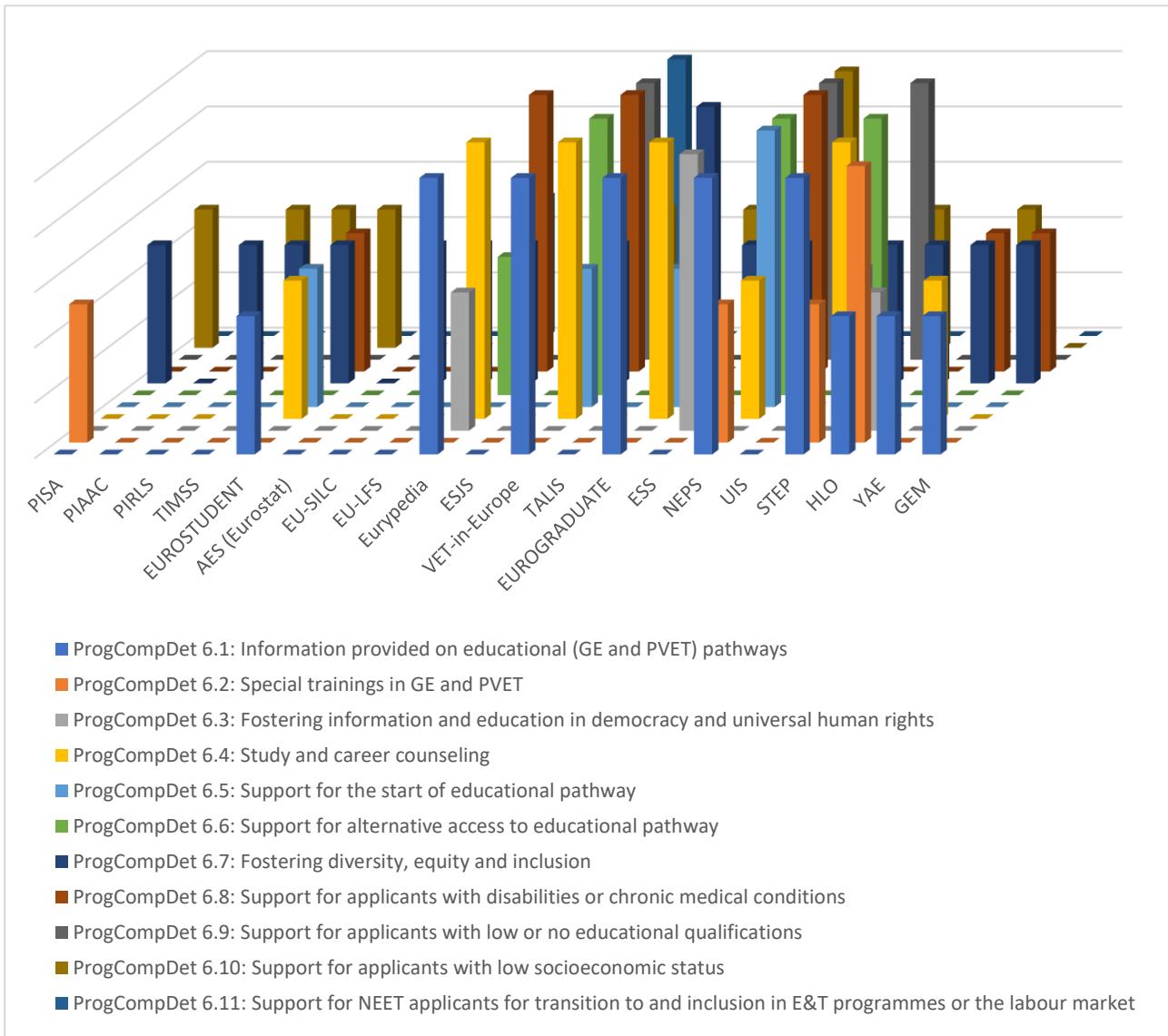
Figure 35: Datasets' coverage of Progression and Completion determinants – ProgCompDet type 6: Practice measures for progression and completion support (GENERIC) (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

Recommendations

ProgCompDet type 1

For the case of ProgCompDet type 1, no general recommendation based on strong argument might be given although suggestions for amendments would be possible: The scope of the five datasets EU-LFS; Eurypedia; ESJS; ESS; GEM could be expanded to also cover items ProgCompDet 1.1-1.7, which is not currently the case. Other expansions are also conceivable. More detail of such recommendation depends on further requirements that the datasets should fulfil [relevant ISCED levels; coverage of EEA countries; cross-national comparison].

ProgCompDet type 2

For the case of ProgCompDet type 2, no general recommendation based on strong argument might be given although general suggestions for amendments would be possible:

- The scope of the four datasets AES; EU-LFS; ESJS; ESS could be expanded to also cover items ProgCompDet 2.1-2.6, which is not currently the case.
- Other datasets could be extended to also cover ProgCompDet 2.4 [Lack or low quality of Artificial Intelligence in education (AIEd) (e.g., building personalised learning systems for students)] and ProgCompDet 2.6 (Lack or low quality of extracurricular activities). This might be particularly interesting for datasets that already cover ProgCompDet 2.1, ProgCompDet 2.2, ProgCompDet 2.3 and ProgCompDet 2.5 such as NEPS and STEP (and EUROSTUDENT).
- Other expansions are also conceivable. More detail of such recommendation depends on further requirements that the datasets should fulfil (e.g., relevant ISCED levels; coverage of EEA countries; cross-national comparison).

ProgCompDet type 3

For the case of ProgCompDet type 3, in a first attempt the following straightforward recommendations could be given from a general epistemological perspective:

- In general, the four determinants ProgCompDet 3.1-3.4 do not seem to be well covered by the 20 datasets investigated, i.e., a distinct deficiency can be stated. Two immediate recommendations could be given:
  - The datasets that already cover some of the determinants ProgCompDet 3.1-3.4 indirectly (see Figure 32) could be complemented so that they directly cover more or even all four determinants.
  - Some datasets from the group of the 13 datasets PIAAC, PIRLS, TIMSS, EUROSTUDENT, AES, EU-SILC, EU-LFS, Eurypedia, ESJS, VET-in-Europe, TALIS, NEPS, HLO not covering any of ProgCompDet 3.1-3.4 could be extended or complemented to cover them and thus heal the observed deficiency.

ProgCompDet type 4

For the case of ProgCompDet type 4, in a first step the following straightforward recommendations could be given from a general epistemological perspective:

- In general, the two determinants ProgCompDet 4.1-4.2 do not seem to be well covered by the 20 datasets investigated, i.e., a distinct deficiency can be stated. Two immediate recommendations could be given:
  - The datasets that already cover one or both determinants ProgCompDet 4.1-4.2 indirectly (see Figure 33) could be complemented so that they directly cover one or both determinants.
  - Some datasets from the group of the 10 datasets PISA, PIAAC, PIRLS, TIMSS, AES, EU-SILC, Eurypedia, TALIS, UIS, HLO not covering any of ProgCompDet 4.1-4.2 could be extended or complemented to cover them and thus heal the observed deficiency.

ProgCompDet type 5

For the case of ProgCompDet type 5, no recommendation for amendments may be given as ProgCompDet 5.1 (Covid-19 restrictions) is directly or indirectly covered by 18 out of 20 datasets (90%).

However, such consideration may change, and recommendations may get more specific upon closer inspection as possible recommendations for extensions or amendments of datasets would also depend on further requirements that the datasets should fulfil (e.g., relevant ISCED levels that should be addressed; coverage of EEA countries that should be fulfilled; cross-national comparisons that should be enabled).

ProgCompDet type 6

For the case of ProgCompDet type 6, in a first attempt the following straightforward recommendation could be given from a general epistemological perspective: The 20 datasets' relatively lower direct coverage of ProgCompDet 6.2 (Special trainings in GE and PVET), ProgCompDet 6.3 (Fostering information and education in democracy and universal human rights), ProgCompDet 6.5 (Support for the start of educational pathway), ProgCompDet 6.7 (Fostering diversity, equity and inclusion) and ProgCompDet 6.11 (Support for NEET applicants for transition to and inclusion in E&T programmes or the labour market) could be attenuated by including these determinants directly in the data collection portfolio of the appropriate datasets.

However, such consideration may change, and recommendations may get more specific upon closer inspection as possible recommendations for extensions or amendments of datasets would also depend on further requirements that the datasets should fulfil (e.g., relevant ISCED levels that should be addressed; coverage of EEA countries that should be fulfilled; cross-national comparisons that should be enabled).

8.6. Appendix 6: Analysis of datasets' coverage of transitions in E&T and labour

8.6.1. Datasets' coverage of Legally Allowed Transitions in E&T (LATET)

Analysis and assessment

Regarding the datasets' coverage of the 24 LATETs the following points can be made (see Figure 36):

- A general observation is that many positions (1 - 38/480 = 92 %) in the two-dimensional array of Figure 36 are empty. In other words, "dataset gaps" do exist.
- The following 11 datasets do not cover any LATET: PISA; PIRLS; TIMMS; AES (Eurostat); EU-SILC; EU-LFS; ESJS; TALIS; ESS; HLO; YAE.
- The following eight datasets directly cover some LATETs:
  - PIACC directly covers: LATET 1 (GENERIC); LATET 19 (GENERIC); LATET 23 (MOST PROBABLY GENERIC)
  - EUROSTUDENT directly covers: LATET 1; LATET 19
  - Eurypedia directly covers: LATET 1; LATET 19; LATET 23
  - VET-in-Europe directly covers: LATET 1; LATET 2; LATET 3; LATET 6; LATET 7; LATET 10; LATET 12; LATET 19; LATET 23
  - EUROGRADUATE directly covers: LATET 1
  - NEPS directly covers: LATET 1; LATET 19; LATET 23
  - UIS directly covers: LATET 19; LATET 23
  - STEP directly covers: LATET 1; LATET 19; LATET 23
- The following five datasets indirectly cover some LATETs:
  - VET-in-Europe indirectly covers: LATET 4; LATET 9
  - EUROGRADUATE indirectly covers: LATET 2; LATET 4
  - NEPS indirectly covers: LATET 2; LATET 6
  - UIS indirectly covers: LATET 1
  - GEM indirectly covers: LATET 1; LATET 19; LATET 22
- The following LATET are covered by at least one dataset:
  - LATET 3 is directly covered by one dataset: VET-in-Europe.
  - LATET 7 is directly covered by one dataset: VET-in-Europe.
  - LATET 9 is indirectly covered by one dataset: VET-in-Europe.
  - LATET 10 is directly covered by one dataset: VET-in-Europe.
  - LATET 12 is directly covered by one dataset: VET-in-Europe.
  - LATET 17 is directly covered by one dataset: VET-in-Europe.
  - LATET 22 is indirectly covered by one dataset: GEM.
  - LATET 4 is indirectly covered by two datasets: VET-in-Europe; EUROGRADUATE.
  - LATET 6 is directly or indirectly covered by two datasets: VET-in-Europe; NEPS.
  - LATET 2 is directly or indirectly covered by three datasets: VET-in-Europe; EUROGRADUATE; NEPS.
  - LATET 23 is indirectly covered by six datasets: PIAAC; Eurypedia; VET-in-Europe; NEPS; UIS; STEP.
  - LATET 19 is directly covered by seven datasets: PIAAC; EUROSTUDENT; VET-in-Europe; NEPS; UIS; STEP; GEM.
  - LATET 1 is directly or indirectly covered by nine datasets: PIAAC; EUROSTUDENT; Eurypedia; VET-in-Europe; EUROGRADUATE; NEPS; UIS; STEP; GEM.
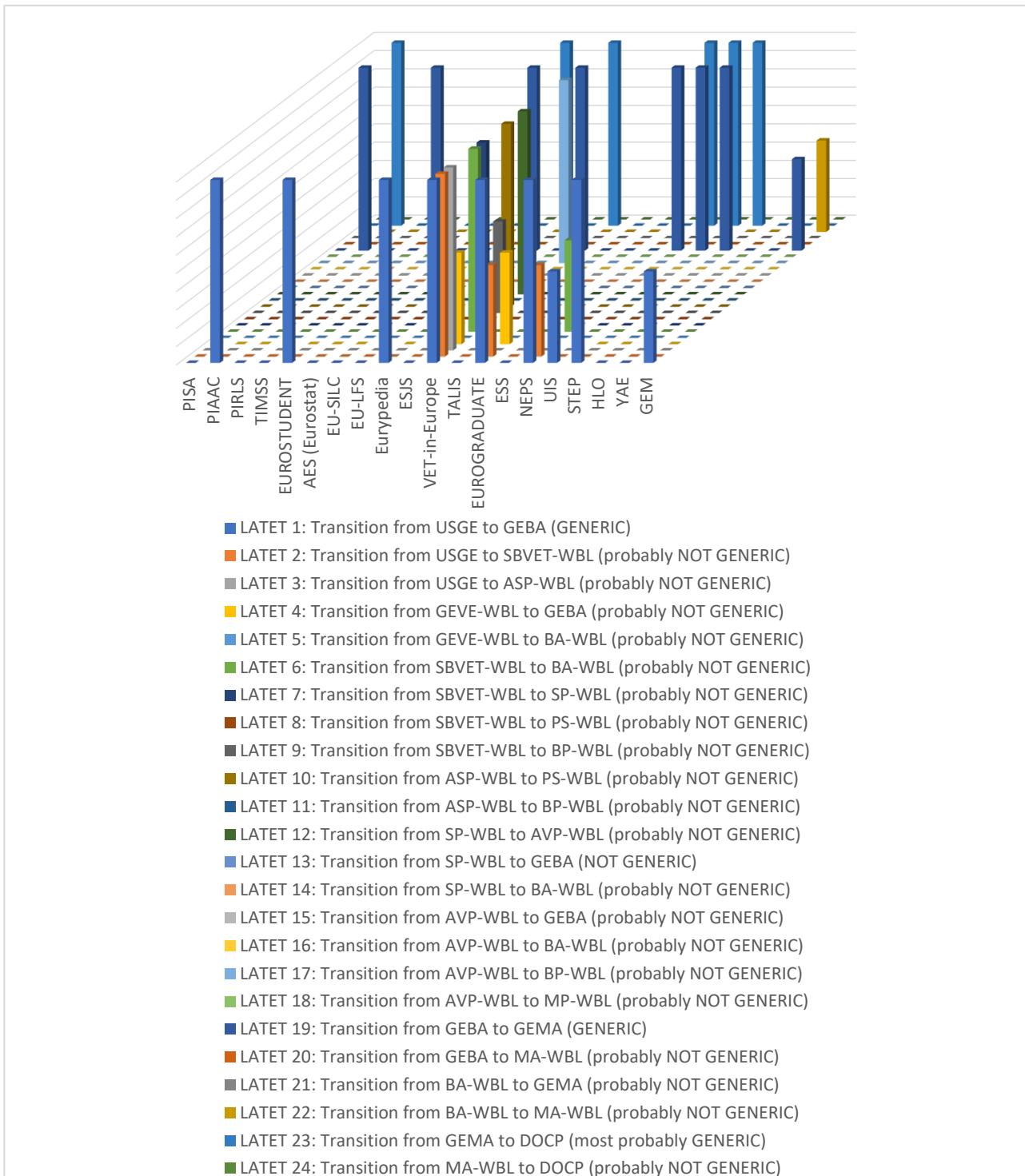
Figure 36: Datasets' coverage of LATETs (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

- The following LATETs are not covered by any of the 20 datasets:
    - LATET 5 = Transition from GEVO-WBL to BA-WBL (probably NOT GENERIC)
    - LATET 8 = Transition from SBVET-WBL to PS-WBL (probably NOT GENERIC)
    - LATET 11 = Transition from ASP-WBL to BP-WBL (probably NOT GENERIC)
    - LATET 13 = Transition from SP-WBL to GEBA (NOT GENERIC)
    - LATET 14 = Transition from SP-WBL to BA-WBL (probably NOT GENERIC)

- LATET 15 = Transition from AVP-WBL to GEBA (probably NOT GENERIC)
- LATET 16 = Transition from AVP-WBL to BA-WBL (probably NOT GENERIC)
- LATET 18 = Transition from AVP-WBL to MP-WBL (probably NOT GENERIC)
- LATET 20 = Transition from GEBA to MA-WBL (probably NOT GENERIC)
- LATET 21 = Transition from BA-WBL to GEMA (probably NOT GENERIC)
- LATET 24 = Transition from MA-WBL to DOCP (probably NOT GENERIC)

Recommendations

Hence, in a first attempt from a general epistemological perspective some straightforward recommendations with reference to LATETs may be the following:

- As several LATETs – LATET 5; LATET 8; LATET 11; LATET 13; LATET 14; LATET 15; LATET 16; LATET 18; LATET 20; LATET 21; LATET 24 – are not covered by any of the investigated datasets, from a theoretical viewpoint it may recommended to complement one or more of the 20 datasets investigated to cover some of these transitions or introduce a new dataset for that purpose.
- That the 11 LATETs not covered by any of the 20 datasets are transitions that are assumed to be "not generic" or "probably not generic", however, makes is at least less urgent to undertake such complementing activities.
- Further, before any complementing activity might be considered, it should be checked which of these 11 LATETs are relevant in which country (of the EEA), i.e., in which countries do LATET 5, LATET 8, LATET 11, …, LATET 24 apply. Such check could be done by analysing the respective CEDEFOP charts (CEDEFOP, 2025):
  - For example, LATET5, LATET 8, LATET 11, …, LATET 24 apply to Germany, i.e., for Germany there is a "dataset gap" in the sense that these 11 LATETs are not covered by the investigated 20 datasets.
  - Among the EDU-LAB countries, LATET5 applies only to Germany but does not apply to Austria, Finland, Greece, Italy, Poland, Portugal, the United Kingdom (and most probably also not to Kosovo).[56]

8.6.2. Datasets' coverage of other transitions in E&T and to the world of labour

Analysis and assessment

Regarding the datasets' coverage of the 8 further transitions (T1-T8) the following points can be made (see Figure 37):

- A general observation is that many positions (1 - 67/160 = 58 %) in the two-dimensional array of Figure 37 are empty. In other words, "dataset gaps" do exist.
- The following five datasets do not cover any of the further transitions T1-T8: PISA; PIRLS; TIMMS; AES (Eurostat);-TALIS.
- The following 14 datasets directly cover some of the other transitions T1, T3-T8:
  - PIACC and EU-LFS each directly cover: T4; T5; T6; T7; T8
  - EUROSTUDENT directly covers: T1; T3; T4
  - EU-SILC directly covers: T5; T7; T8
  - Eurypedia directly covers: T1; T3; T4; T5; T6; T7; T8
  - ESJS and VET-in-Europe each directly cover: T5; T8
  - EUROGRADUATE directly covers: T1; T3; T4; T5; T7
  - NEPS directly covers: T3; T4; T5; T6; T7; T8
  - UIS directly covers: T4; T8
  - STEP and GEM each directly cover: T3; T5; T8
  - HLO and YAE each directly cover: T3

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[56] Similar considerations may be added referring to other countries. Clarification of these and further related issues is planned to be included in future work of WP1, see Summary (Section 6).
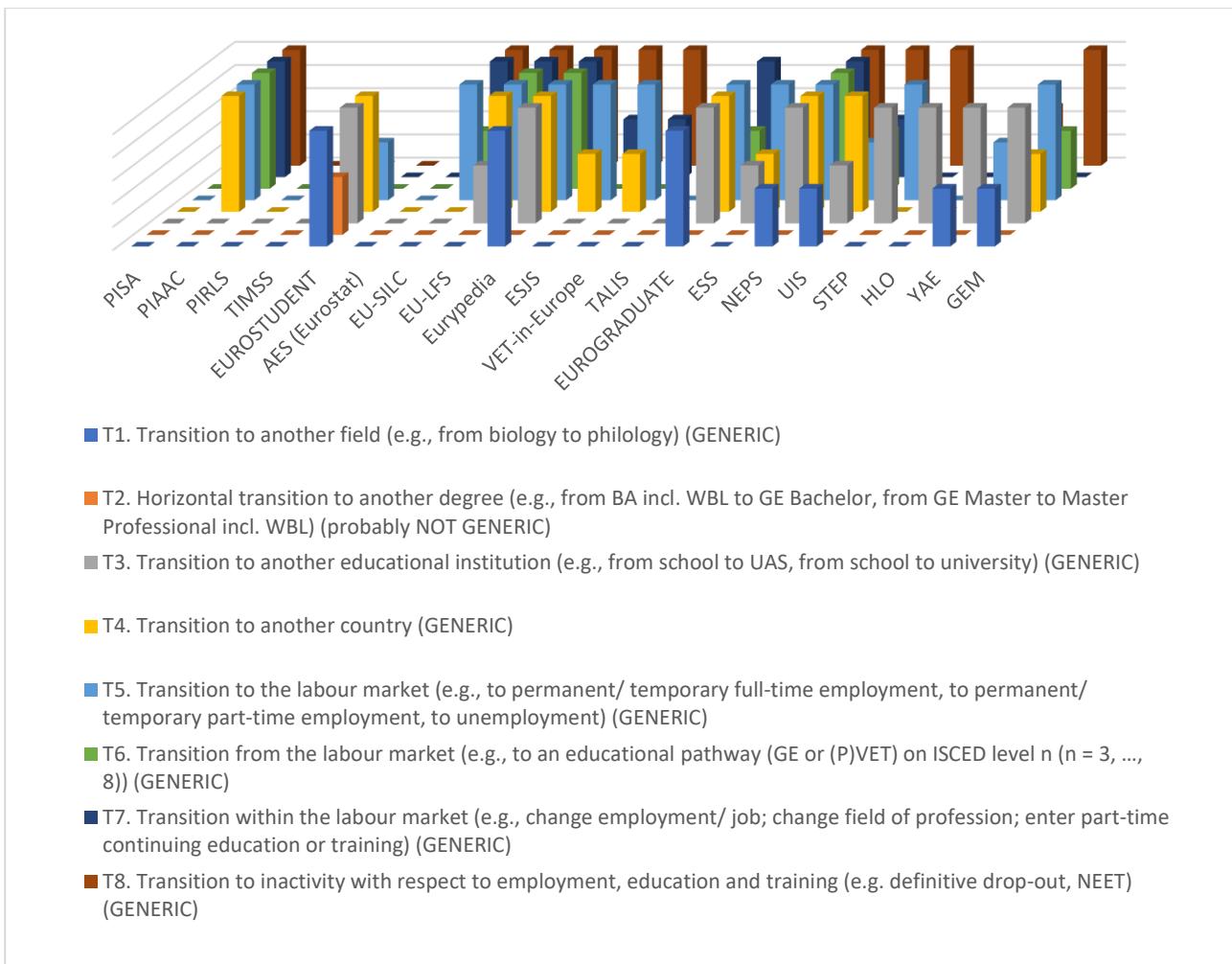
Figure 37: Datasets' coverage of other transitions T1-T8 (large bars indicate coverage, small bars indicate indirect coverage, no bars indicate no coverage)

- The following ten datasets indirectly cover some of the other transitions T1-T7:
    o EUROSTUDENT indirectly covers: T2; T5
    o EU-LFS indirectly covers: T3
    o Eurypedia indirectly covers: T2
    o ESJS and VET-in-Europe each indirectly cover: T4; T7
    o EUROGRADUATE indirectly covers: T6
    o NEPS indirectly covers: T1
    o UIS indirectly covers: T1; T3; T5; T6; T7
    o YAE indirectly covers: T1; T5; T7
    o GEM indirectly covers: T1; T4; T6
- Every transition T1-T8 is covered by at least one dataset:
    o T2 (= horizontal transition to another programme degree) is indirectly covered by one dataset: EUROSTUDENT.
    o T6 (= transition from the labour market) is directly or indirectly covered by six datasets: PIAAC; EU-LFS; Eurypedia; EUROGRADUATE; NEPS; GEM.
    o T1 (= horizontal transition to another field) is directly or indirectly covered by seven datasets: EUROSTUDENT; Eurypedia; EUROGRADUATE; NEPS; UIS; YAE; GEM.

- o T7 (= transition to the labour market) is directly or indirectly covered by nine datasets: PIAAC; EU-SILC; EU-LFS; Eurypedia; ESJS; VET-in-Europe; EUROGRADUATE; NEPS; UIS.
- o T8 (= transition to inactivity with respect to employment, education and training) is directly or indirectly covered by ten datasets: PIAAC; EU-SILC; EU-LFS; Eurypedia; ESJS; VET-in-Europe; NEPS; UIS; STEP; GEM.
- o T3 (= transition to another educational institution) is directly or indirectly covered by 11 datasets: EUROSTUDENT; EU-LFS; Eurypedia; EUROGRADUATE; ESS; NEPS; UIS; STEP; HLO; YAE; GEM.
- o T4 (= transition to another country) is directly or indirectly covered by 11 datasets: PIAAC; EUROSTUDENT; EU-LFS; Eurypedia; ESJS; VET-in-Europe; EUROGRADUATE; ESS; NEPS; UIS; GEM.
- o T5 (= transition to the labour market) is directly or indirectly covered by 14 datasets: PIAAC; EUROSTUDENT; EU-SILC; EU-LFS; Eurypedia; ESJS; VET-in-Europe; EUROGRADUATE; ESS; NEPS; UIS; STEP; YAE; GEM.

Recommendations

From a general epistemological perspective in a first step straightforward recommendations with reference to T1-T8 may be the following:

- As every transition T1-T8 is covered by at least one dataset and T1, T3, T4, T5, T6, T7 and T8 are covered by at least six datasets, there is no strong argument for complementing any of the 20 investigated datasets for covering further transitions or introducing a new dataset for that purpose.

8.7. Appendix 7: Datasets for secondary analysis of transitions in E&T and into labour

The following Tables 13–21 show datasets suggested for secondary analysis for prioritized transitions LATET 19, LATET 23, T4, T5, T6, T7 and T8 (see Section 5.4.2 and 5.4.3).

LATET 19: Transition from GEBA to General Education Master (GEMA)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	Cross-country comparison	tbd
	Regression studies	tbd
	Policy evaluation	tbd
EUROSTUDENT / ISCED 5-8	Cross-country comparisons	tbd
	Cross-sectional studies	tbd
	Regression studies	tbd
Eurypedia / ISCED 0-8	Comparative studies/ Cross-country studies	tbd
	Policy monitoring	tbd
	Regression studies	tbd
VET-in-Europe/ ISCED 3-8	Panel/ Progression studies	Not longitudinal individual tracking; system-level trends, e.g., enrollment changes over time
	Comparative studies	E.g., cross-country benchmarking, e.g., apprenticeship participation rates; policy analysis, e.g., impact of dual VET systems
	Regression studies	Limited microdata for econometric analysis; macro-level correlations, e.g., VET spending vs. youth employment
NEPS / ISCED 0-8	Panel studies/ Progression studies	Ideal for longitudinal analyses, e.g., educational trajectories, skill development over time
	Comparative studies/ Cross-country studies	Limited direct cross-country comparability, but harmonized variables allow indirect benchmarking
	Regression studies	Suitable for multilevel modeling and causal inference, e.g., effects of socio-economic background on educational outcomes
STEP / ISCED 3-8	Panel studies/ Progression studies	Limited longitudinal data but provides valuable snapshots of skills and employment patterns
	Comparative studies/ Cross-country studies	Designed for cross-country comparisons on skill levels and labor market outcomes
	Regression studies	Suitable for regression analysis to explore relationships between education, skills, and labor market outcomes
	Policy evaluation (policymaking)	Policymaking) (focusing on skills mismatch, productivity, and employment outcomes

Table 13: Choice of datasets for secondary analysis of LATET 19 (only datasets with direct coverage of LATET 19 are included)

LATET 23: Transition from GEMA to Doctoral Programme/ Doctorate (DOCP)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	See Table 13	See Table 13
Eurypedia / ISCED 0-8	See Table 13	See Table 13
VET-in-Europe/ ISCED 3-8	See Table 13	See Table 13
NEPS / ISCED 0-8	See Table 13	See Table 13
STEP / ISCED 3-8	See Table 13	See Table 13

Table 14: Choice of datasets for secondary analysis of LATET 23 (only datasets with direct coverage of LATET 23 are included)

T1: Transition to another field (e.g., from biology to philology)		
Datasets suggested for secondary analysis/ ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
EU-LFS / ISCED 0-8	Cross-sectional studies	tbd
	Regression studies	tbd
	Comparative/ Cross-country studies	tbd
EUROSTUDENT / ISCED 5-8	See Table 13	See Table 13
Eurypedia / ISCED 0-8	See Table 13	See Table 13
EUROGRADUATE / ISCED 6-7	Panel/ Progression studies	Not a panel study per se; the 2018 dataset is cross-sectional, but future implementation could allow for longitudinal analysis
	Comparative/ Cross-country studies	Core goal of EUROGRADUATE to allow for cross-country comparison of graduate outcomes
	Regression studies	Dataset contains sufficient variables to allow for regression analysis, e.g., socio-demographic data, study experiences, labour market outcomes
	Policy evaluation and benchmarking of higher education systems	Useful for exploring links between education and employment outcomes, e.g., relevance of qualification, skill match/mismatch; offers insights into graduates' satisfaction with their higher education experience

Table 15: Choice of datasets for secondary analysis of T1 (only datasets with direct coverage of T1 are included)

T3: Transition to another educational institution (e.g., from school to UAS, from school to university)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
EUROSTUDENT / ISCED 5-8	See Table 13	See Table 13
Eurypedia / ISCED 0-8	See Table 13	See Table 13
EUROGRADUATE / ISCED 6-7	See Table 15	See Table 15
NEPS / ISCED 0-8	See Table 13	See Table 13
STEP / ISCED 3-8	See Table 13	See Table 13
HLO / ISCED 1-3	Cross-country comparative studies	On learning outcomes trends over time and by socio-economic groups
	Regression studies	Linking learning outcomes to contextual factors (e.g., education spending, teacher quality)
	Progression and panel-like studies	By combining repeated cross-sectional data
YAE / ISCED 2-4	Panel studies/ Progression studies	E.g., supports longitudinal tracking of youth education progression over time
	Comparative studies/ Cross-country studies	Strong usability for cross-country comparisons due to standardized indicators and harmonized definitions
	Regression studies	Data suitable for regression analysis to investigate factors affecting educational outcomes in youth and adolescents
GEM / ISCED 0-8	Panel studies/ Progression studies	Supports longitudinal analysis of education trends over time
	Comparative studies/ Cross-country studies	Designed for international comparisons of education systems
	Regression studies	Suitable for analyzing relationships between variables like education access and socioeconomic outcomes

Table 16: Choice of datasets for secondary analysis of T3 (only datasets with direct coverage of T3 are included)

T4: Transition to another country		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	See Table 13	See Table 13
EUROSTUDENT / ISCED 5-8	See Table 13	See Table 13
EU-LFS / ISCED 0-8	See Table 15	See Table 15
Eurypedia / ISCED 0-8	See Table 13	See Table 13
EUROGRADUATE / ISCED 6-7	See Table 15	See Table 15
NEPS / ISCED 0-8	See Table 13	See Table 13
UIS / ISCED 0-8	Panel studies/ Progression studies	Suitable for tracking education trends over time, e.g., enrollment, completion rates, gender parity, etc.
	Comparative studies / Cross-country studies	Widely used for benchmarking education systems, e.g., SDG 4 monitoring; allows comparison of indicators like literacy rates, teacher-student ratios, and education expenditure
	Regression studies	Widely used in policy impact assessments, such as analyzing the relationship between education expenditure and learning outcomes

Table 17: Choice of datasets for secondary analysis of T4 (only datasets with direct coverage of T4 are included)

T5: Transition to the labour market (e.g., to permanent/ temporary full-time employment, to permanent/ temporary part-time employment, to unemployment)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	See Table 13	See Table 13
EU-SILC	Panel/ Longitudinal progression studies	tbd
	Cross-sectional studies	tbd
	Comparative cross-country studies	tbd
	Regression studies	tbd
EU-LFS / ISCED 0-8	See Table 15	See Table 15
Eurypedia / ISCED 0-8	See Table 13	See Table 13
ESJS / ISCED 3-8	Panel/ Progression studies	tbd
	Comparative/ Cross-country studies	tbd
	Regression studies	tbd
VET-in-Europe/ ISCED 3-5	See Table 13	See Table 13
EUROGRADUATE / ISCED 6-7	See Table 15	See Table 15
NEPS / ISCED 0-8	See Table 13	See Table 13
STEP / ISCED 3-8	See Table 13	See Table 13
GEM / ISCED 0-8	See Table 16	See Table 16

Table 18: Choice of datasets for secondary analysis of T5 (only datasets with direct coverage of T5 are included)

T6: Transition from the labour market (e.g., to an E&T pathway)		
Datasets suggested for secondary analysis) / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	See Table 13	See Table 13
EU-LFS / ISCED 0-8	See Table 15	See Table 15
Eurypedia / ISCED 0-8	See Table 13	See Table 13
NEPS / ISCED 0-8	See Table 13	See Table 13

Table 19: Choice of datasets for secondary analysis of T6 (only datasets with direct coverage of T6 are included)

T7: Transition within the labour market (e.g., change employment/ job; change field of profession; enter part-time continuing education or training)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIAAC / ISCED 0-8	See Table 13	See Table 13
EU-SILC	See Table 18	See Table 18
EU-LFS / ISCED 0-8	See Table 15	See Table 15
Eurypedia / ISCED 0-8	See Table 13	See Table 13
ESJS / ISCED 3-8	See Table 18	See Table 18
VET-in-Europe/ ISCED 3-5	See Table 13	See Table 13
EUROGRADUATE / ISCED 6-7	See Table 15	See Table 15
NEPS / ISCED 0-8	See Table 13	See Table 13
STEP / ISCED 3-8	See Table 13	See Table 13
GEM / ISCED 0-8	See Table 16	See Table 16

Table 20: Choice of datasets for secondary analysis of T7 (only datasets with direct coverage of T7 are included)

T8: Transition to inactivity with respect to employment, education and training (e.g., definitive drop-out, NEET)		
Datasets suggested for secondary analysis / ISCED levels covered	**Types of secondary analysis covered by dataset** (to be selected according to research interest)	**Some topics of secondary analysis covered by dataset** (to be determined and selected according to research interest)
PIACC / ISCED 0-8	See Table 13	See Table 13
EU-SILC	See Table 18	See Table 18
EU-LFS / ISCED 0-8	See Table 15	See Table 15
Eurypedia / ISCED 0-8	See Table 13	See Table 13
NEPS / ISCED 0-8	See Table 13	See Table 13

Table 21: Choice of datasets for secondary analysis of T8 (only datasets with direct coverage of T8 are included)