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# METHODOLOGY FOR COLLECTING DATA ON THE EDUCATIONAL AND PROFESSIONAL PATHWAYS OF STUDENTS ACCORDING TO THEIR SOCIAL AND ECONOMIC STATUS

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# Introduction

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The *Methodology for collecting data on the educational and professional pathways of students according to their social and economic status* was developed within the project *Social and International Dimension of Education and Recognition of Acquired Learning (SIDERAL, 2019 - 2021)*,<sup>1</sup> which provides support for the implementation of the *National Plan for the Enhancement of the Social Dimension of Higher Education in the Republic of Croatia 2019 – 2021*.<sup>2</sup> The *National Plan* was adopted by the Government of the Republic of Croatia at the beginning of 2019, and contains six key goals. As part of the implementation of the first goal - systematically gather, analyse and use the data related to the social dimension of higher education - specific sub-goals and activities include the integration and systematization of existing databases run by different bodies, and the adoption of a single standardized methodology for collecting, managing and using data on the social and economic status of students as well as other conditions of vulnerability.

In addition to linking and improving the existing records in higher education, i.e. the relevant sectors outside higher education (central state registers), the *National Plan* envisages the collecting of data through regular EUROSTUDENT surveys as well as qualitative research and a study on educational experiences of vulnerable and underrepresented groups. That is why this project yielded a study *On Underrepresented and Vulnerable Groups of Students: Contributions to the Enhancement of the Social Dimension of Higher Education in Croatia*<sup>3</sup>, by a group of authors, researchers from the Institute for Social Research in Zagreb. The study analyses the current situation and provides additional insight into the individual experiences of students from these groups, especially focusing on the reasons for dropping out of their studies. Also, the study largely looks at the barriers faced by students that cannot be identified by analysing the records system. The study has thus contributed to the development of a proposed methodology for collecting data on vulnerable and underrepresented groups in higher education in a way that makes visible what would otherwise remain unseen.

Finally, the *Methodology* was also developed on the basis of information collected from higher education institutions (HEIs) through a survey on the implementation of the measures from the *National Plan*, as well as own analyses of the data collection and management systems

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<sup>1</sup> Erasmus+ KA3 Support to the Implementation of European Higher Education Area (EHEA) Reforms, agreement number — 2018 - 3821 / 002 – 001 project number — 607066-EPP-1-2018-1-HR-EPPKA3-BOLOGNA.

<sup>2</sup> Available at:

<https://mzo.gov.hr/UserDocImages//dokumenti/Obrazovanje/VisokoObrazovanje/RazvojVisokogObrazovanja//Nacionalni%20plan%20za%20unaprje%C4%91enje%20socijalne%20dimenzije%20visokog%20obrazovanja%20u%20Republici%20Hrvatskoj%202019.%20-%202021.pdf>.

<sup>3</sup> Available at:

<https://mzo.gov.hr/UserDocImages//dokumenti/Obrazovanje/VisokoObrazovanje/RazvojVisokogObrazovanja/SIDERAL/O-podzastupljenim//On%20Underrepresented%20and%20Vulnerable%20Groups%20of%20Students%20-%20Contributions%20to%20the%20Enhancement%20of%20the%20Social%20Dimension%20of%20Higher.pdf>

that are run by the Ministry of Science and Education through official records of students, programmes, higher education institutions and various types of support.<sup>4</sup> In doing so, special attention was paid to the protection of personal data and the pertinence of their collection. That is why the purpose of the *Methodology* is to lay the foundations for the establishment of a technical system for collecting relevant and appropriate data that would serve public funding policy- and decision makers, as well as higher education institutions for targeted decision-making and improving the social dimension within the institutions, while taking account of the protection of sensitive data.

## Context for Methodology Development

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Numerous research, international and national strategic documents and recommendations indicate that the higher education system should be built not only on the needs of the labour market, scientific research or general needs of the society, but that the very foundations of this level of education should lay on the principles of equality and the social dimension. Thus, the *London Communiqué* (2007) indicates that vulnerable groups of students are unable to complete their study programmes “without obstacles related to their social and economic background”, and the *Paris Communiqué* (2018) refers the EU member states to the fact that the student population enrolling and completing higher education usually does not reflect the diversity of our societies. The key strategic document of the European Higher Education Area is the *Yerevan Communiqué* (2015), because its strategic goal *Widening Access* encourages and commits member states to inclusivity in higher education.

*Widening access* refers to providing higher education opportunities for people coming from different backgrounds. Higher education institutions have an obligation to provide access to higher education to all those who have the necessary desire and skills. Increasing access to higher education should not be a “numbers game”, nor should it be just about potential students from a particular community. It is about giving every person, regardless of the circumstances, the opportunity to access the higher education experience that is appropriate, relevant and valuable.

Finally, the *Rome Communiqué* (2020) emphasizes the importance of inclusiveness and equal access to higher education for every individual and the necessary support for completion of studies and training, i.e. that students of different socio-economic, professional, cultural and educational backgrounds must have the possibility and the tools to seek out and avail themselves, at any time of life, of the educational options most useful for them. The *Rome Communiqué* also contains the *Principles and Guidelines to Strengthen the Social Dimension*

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<sup>4</sup> In accordance of Article 90 of the Act on Scientific Activity and Higher Education (Official Gazette, no. 123/03, 198/03, 105/04, 174/04, 2/07 – Decision of the Constitutional Court, 46/07, 45/09, 63/11, 94/13, 139/13, 101/14, – Decision of the Constitutional Court, 60/15 – Decision of the Constitutional Court and 131/17).

of Higher Education in the European Higher Education Area<sup>5</sup>, stating that reliable data are a necessary precondition for improving the social dimension of evidence-based higher education.

Students and citizens belonging to vulnerable groups often remain outside public policies and are “invisible” in the everyday life of higher education. The United Nations have included quality education for all in their Sustainable Development Goals (2015), adopted by 193 member states, as a central instrument for combating social and gender inequality. Therefore, one of the most important aspects of improving the social dimension, i.e. enabling equal opportunities for success in higher education, is improving the visibility of vulnerable and underrepresented groups and recognizing the obstacles they face.

Improving the methodology of data collection is one of the ways in which institutions and their practices systematically improve the visibility of a diverse student population, and thus enable the adoption of measures to remove barriers and empower vulnerable groups in higher education.

International experiences indicate the intensification and development of international, national and institutional policies aimed at increasing the visibility of vulnerable groups in higher education. A number of member states of the European Union and the European Higher Education Area, such as Austria, the Netherlands, Sweden and Croatia, have adopted plans to enhance the social dimension, and active stakeholders in this field also include relevant associations and institutions at the international level, such as the European Students’ Union and the European University Association.<sup>6</sup>

With the adoption of the *National Plan for the Enhancement of the Social Dimension of Higher Education*, which represents the operationalization of the goal of the *Strategy of Education, Science and Technology* (2014),<sup>7</sup> and the identification of *Underrepresented and Vulnerable Groups in Higher Education*,<sup>8</sup> or rather the *Guidelines for Improving Support for Students with Disabilities in Higher Education*,<sup>9</sup> Croatia has joined a group of countries that have decided to strategically advance the social dimension by adopting separate, comprehensive and operational strategic plans.

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<sup>5</sup> Available at: [http://www.ehea.info/Upload/Rome\\_Ministerial\\_Communique\\_Annex\\_II.pdf](http://www.ehea.info/Upload/Rome_Ministerial_Communique_Annex_II.pdf)

<sup>6</sup> See the INVITED project of the European Association of Universities, available at <https://eua.eu/101-projects/737-invited.html>.

<sup>7</sup> Available at: <http://www.novebojeznanja.hr/>.

<sup>8</sup> Available at: <https://mzo.gov.hr/UserDocImages//dokumenti/Obrazovanje/VisokoObrazovanje/RazvojVisokogObrazovanja//Podzastupljene%20i%20ranjive%20skupine%20u%20visokom%20obrazovanju%20u%20Republici%20Hrvatskoj.pdf>.

<sup>9</sup> Available at: <https://mzo.gov.hr/UserDocImages//dokumenti/Obrazovanje/VisokoObrazovanje/RazvojVisokogObrazovanja//Smjernice%20za%20unapre%C4%91enje%20sustava%20potpore%20studentima%20s%20invaliditetom%20u%20visokom%20obrazovanju%20u%20Republici%20Hrvatskoj.pdf>.

**The Strategy of Education, Science and Technology (2014)** lists among its main higher education goals the enhancement of the social dimension through the improvement of student standards, monitoring and analysis of access and performance of underrepresented and vulnerable groups, infrastructural (accommodation) opportunities and accessibility of higher education (with a special focus on students with disabilities). In particular, measure 6.4.8. refers to the improvement of the data collection system for students from vulnerable groups (especially persons with disabilities) who exercise their rights and use some form of support in the higher education system, with the aim of monitoring their course of studies and improving support.

Furthermore, in the goal no. 5, that aims at improving the information and communication structure in higher education, the Strategy explicitly states that the information and communication infrastructure should support the educational needs of various vulnerable and underrepresented groups. Namely, the existing ISVU system (Information System of Higher Education Institutions) is not sufficient for quality management, or rather policy-making and the implementation of measures. ISVU is an information system owned by the Ministry of Science and Education that is installed in the form of individual modules in higher education institutions, its use is free and optional, and software development and regular operation of the system is provided by the University Computing Centre – Srce. ISVU, among other things, includes data on students and their educational and personal characteristics, but student data is not structured in a way that would allow the identification of all vulnerable groups that have a need for monitoring during their education.

For example, ISVU does not contain information on students' nationality (i.e. belonging to the Roma national minority), socio-economic status, parents' educational qualifications or even information on disability. In addition to ISVU, higher education institutions collect data at the time of enrolment (via the enrolment form) or at the end of studies, but this data is usually unavailable or inadequately managed for any analyses, even to the higher education institutions themselves. Other databases of state and public administration bodies that include some of the data for identifying vulnerable groups (data on disability, belonging to a national minority, income and property, parental qualifications, etc.) are also often insufficient or not connected to records of higher education.

The only national information system intended for the management and funding of the higher education system, i.e. the adoption of public policies, is the ISSP (Information System of Student Rights). ISSP combines data from the ISVU, but only on the number of students by study programmes, years and type of study (full-time or part-time), and the number of achieved ECTS. Therefore, it is currently not possible to analyse the student population and its performance with regard to vulnerable and underrepresented groups.

Strategic guidelines in higher education have also been developed for the purpose of using funding from the European Social Fund. Thus, for example, the **Operational Program Efficient**

**Human Resources 2014-2020** has identified several priority axes in education that are related to the social dimension of higher education, such as “Improving the quality and efficiency of, and access to, tertiary and equivalent education with a view to increasing participation and attainment levels, especially for disadvantaged groups”. Specific targets within this priority include, among other things, increased completion rates, which is the rationale behind providing scholarships for students of lower socio-economic status, students from the Roma national minority and other special groups of students, including students with disabilities, students from the alternative care system or those without both parents, and students with children. However, these measures that are based on strategic determinants for the use of EU funds also face obstacles in the field of information infrastructure (for example, lack of a comprehensive student database that combines data on scholarships and study progress). Furthermore, though scholarship databases are often the only source of information on certain vulnerable groups, they do not provide sufficient information for any of the vulnerable groups. This is another area in which the existence of a comprehensive information system for higher education, which would be interoperable with other public administration systems, would prove to be a key factor in improving public policies.

### **The National Plan for the Enhancement of the Social Dimension in Higher Education in Croatia 2019-2021**

In 2019, the *National Plan for the Enhancement of the Social Dimension in Higher Education in Croatia* provided a more detailed outline of the measures that needed to be implemented in order to improve data collection and information infrastructure as the basis for the adoption of public and institutional policies for vulnerable groups. The addition of the *National Plan*, as well as the list of vulnerable and underrepresented groups and their definition, represented the first step in the implementation of strategic activities. Furthermore, the *National Plan* adopted a comprehensive approach in the sense of the entire educational vertical, inter-sectoral cooperation, and specific measures and institutional responsibilities. The objectives and sub-objectives related to data collection are as follows:

<b>OBJECTIVE 1: Systematically collect, process and apply data relevant for enhancing the social dimension of higher education.</b>
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| <ul style="list-style-type: none"><li>• Ensure that students data can be entered in the system only once, in a student register kept by the higher education institution.</li><li>• Make publicly available the existing data on the social and economic status of the student body at all levels of higher education in Croatia.</li><li>• Carry out analyses and research with the aim of identifying underrepresented and vulnerable groups, and enhancing the understanding of the educational experience of students from vulnerable groups on which there is insufficient data.</li><li>• Conduct research on the reasons why students from vulnerable groups drop out of higher education.</li><li>• Enable the collection and analysis of comparative data on the social dimension of higher education.</li></ul> |
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- Develop a standardised methodology for monitoring the students' educational and professional paths (enrolment, study, graduation, employment) according to their social and economic status.
- Base activities aimed at enhancing the social dimension on relevant empirical data.
- Evaluate the success of existing activities aimed at enhancing the social dimension of higher education.

**OBJECTIVE 5: Improve the student financial support system for members of underrepresented and vulnerable groups.**

- Consolidate and centralise the collection of data on student financial support at the national, local and institutional level.

Finally, while reliable data exists for some of the vulnerable groups in the information system of the Ministry of Science and Education or related systems (female students in the technical fields, male students in the humanities, students of professional studies, students coming from vocational secondary schools, students who work or commute, mature students, etc.), this is not the case for others (for example, students whose parents have a lower level of education, students from lower-income families). Ultimately, it is necessary to design and build a comprehensive, relevant and operable information system of records in higher education which, in addition to monitoring the total number of students and activities related to the funding of higher education institutions, would enable adequate monitoring of vulnerable groups and their success in accessing and progressing through higher education.

Therefore, the intention of this methodology is precisely to provide a conceptual design of such records, the explanations and the purpose of the data collected or proposed to collect, as well as the details of the records' data content.

# Preliminary Research on Collecting Data

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In order to prepare for developing a methodology for collecting data on vulnerable and underrepresented groups, the Ministry of Science and Education carried out two preliminary activities:

- in early 2019, the Ministry requested public universities to report on what data they collect for which group of students (whether through the ISVU, enrolment procedure, upon completion of studies or other);
- In mid-2020, the Ministry conducted a survey on the implementation of measures of the National Plan, in which each higher education institution had to state whether it intended to collect data for each vulnerable and underrepresented group (except for LGBTIQ students), or give a reason for not doing so.

The universities' responses in 2019 show that most of them collect data on previously acquired qualifications, students with disabilities, student grants, and progression through studies. Two of the universities that submitted their answers (University of Rijeka and University of Zadar) also collect data on the education of parents or guardians (acquired qualification), or on the socio-economic status of parents or guardians. In their responses, some of the universities mentioned obstacles to collecting this type of data (on vulnerable groups) in the form of regulations on the protection of personal information. A comprehensive table with the collected answers can be found in Appendix 1.

The 2020 survey on the implementation of the measures of the *National Plan for the Enhancement of the Social Dimension* was sent to all public and private higher education institutions in the Republic of Croatia (134 higher education institutions). 75 out of 134 higher education institutions responded to the survey, i.e. 56%<sup>10</sup>. Most of the questions were answered by HEI heads, i.e. deans, vice-deans for teaching or, exceptionally, HEI secretaries and heads of departments. The questionnaire was structured in such a way as to group certain related vulnerable and underrepresented groups, and ask questions on data collection, the implementation of measures, and plans for the future (connected with data collection and implementation of measures) for each of them. Here we present and analyse the responses related to data collection in 2020.

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<sup>10</sup> The survey was conducted during the COVID-19 pandemic, which most likely affected the response rate of higher education institutions, but the sample was satisfactorily representative.

Table 1. Overview of the results from the survey conducted in 2020

Group	% that collects	Reasons and obstacles to collecting data (examples of most frequent answers)	Plans (examples of most frequent answers)
<p><b>Students whose parents have a lower level of education</b></p>	<p>25%</p>	<p>Data on the level of education are collected via statistical sheets at the time of enrolment, but are not used for purposes other than statistical reporting. The University has a questionnaire on satisfaction with the study, in which this information is also examined.</p> <p>We give preference to data related to the students' social status (parental unemployment, single parents, severe illness of the student or in the family).</p> <p>Lack of expert staff for data monitoring.</p> <p>The initial obstacle to the implementation of measures and policies towards students in this group (whose parents have a lower level of education) is the lack of data on whether a student belongs to a particular vulnerable group. Without systematic data on this, it is not possible to detect how belonging to a particular vulnerable group affects students' educational experience, and which areas of education require improvement. It is also much more difficult to implement targeted measures for these groups. An additional obstacle is also that this group of students is not traditionally perceived as a distinct student subgroup that experiences difficulties during their studies (as is the case with, for example, students with disabilities or students of lower socio-economic status).</p> <p>There are no specific barriers to these measures other than data collection.</p>	<p>42% said that they planned to improve data collection and reporting.</p> <p>Examples of answers:</p> <p>HEI does not plan to collect data as this violates their right to protection of personal data.</p> <p>The Faculty plans on collecting data, but must find the optimal way (in cooperation with the MSE and the Central Application Office - SPU).</p> <p>We are working on a new intranet system, which should enable data collection.</p> <p>We don't have such plans because we don't have information on who are the members of vulnerable groups.</p>

<b>Students from lower-income families</b>	26%	<p>It is very difficult, for ethical reasons, to review the personal data of families who educate their children and are from a lower socio-economic status.</p> <p>For data collection: Personal Data Protection Act. Students are not required to provide such information or are reluctant.</p> <p>Measures are not implemented because the HEI does not collect data.</p> <p>The initial obstacle to the implementation of measures and policies towards students in this group is the lack of data on individual students' affiliation to a particular vulnerable group. For example, students report data on the socioeconomic status of their families only by applying to open calls. Without systematic data on this, it is not possible to detect how belonging to a particular vulnerable group affects students' educational experience, and which areas of education need improvement. Also, it is much more difficult to implement targeted measures for these groups.</p> <p>Lack of expert staff for data monitoring.</p>	54% plan to improve data collection and reporting.
<b>Female students in the technical fields and male students in the humanities</b>	(not applicable for 51%) 7% collect data	For data collection: Some students do not want to identify their gender.	19% plan to improve data collection and reporting.
<b>Mature students</b>	20%	Lack of expert staff for data monitoring.	35% plan to improve data collection and reporting.
<b>Students who work while studying and part-time students</b>	35%	A large number of answers come from study programmes that do not have part-time students, or do not know their work status and workload.	42% plan to improve data collection and reporting.
<b>Students with children</b>	19%	For data collection: Personal Data Protection Act. Students are not required to provide such information.	39% plan to improve data collection and reporting.

<b>Students with disabilities</b>	57%	<p>The Faculty has a system of registering and working with students with disabilities in accordance with the Regulations.</p> <p>The University monitors and collects data on students with disabilities, but does not systematically report on the performance of that group of students.</p> <p>At the national level, there is no systematic and reliable way of collecting data on students with disabilities. The University's data mainly concerns students with disabilities who, based on the degree of disability, had the right of priority in enrolment and / or dormitory accommodation, and those who have applied to the Office for Students with Disabilities for some kind of support.</p> <p>The main obstacle is the students' belated identification of their disability that is not directly visible (ADHD, dysgraphia, dyslexia ...). Encourage students to identify themselves earlier and apply for the status of students with disabilities. Besides that, there are no obstacles in the implementation of required measures.</p> <p>For data collection: Personal Data Protection Act. Students are not required to provide such information.</p>	<p>40% plan to improve data collection and reporting.</p> <p>Encourage students to identify themselves earlier and ask for the status of students with disabilities.</p>
<b>Students who have completed vocational education</b>	20%	<p>A large number of answers came from study programmes that do not have students from vocational secondary education, or where the majority of students are from that type of school, so they are not an underrepresented or vulnerable group. Other answers:</p> <p>The progress of such students is monitored and discussed at special sessions of the Faculty Council.</p>	<p>36% plan to improve data collection and reporting.</p> <p>Develop a mechanism for systematic data collection.</p>
<b>Students who are children of Croatian Homeland War veterans</b>	30%	Lack of expert staff for data monitoring.	44% plan to improve data collection and reporting.

<b>Roma students</b>	13%	<p>Most of the respondents claim that they did not have students from this group, which is why they do not have any measures, or do not collect information.</p> <p>For data collection: Personal Data Protection Act. Students are not required to provide such information.</p> <p>Lack of expert staff for data monitoring.</p>	34% plan to improve data collection and reporting.
<b>Students from alternative care systems, homeless students and those at risk of becoming homeless</b>	18%	<p>Part of the respondents claim that they did not have students from this group, which is why they do not have any measures or do not collect information.</p> <p>Other answers:</p> <p>For data collection: Personal Data Protection Act. Students are not required to provide such information.</p> <p>The initial obstacle to the implementation of measures and policies towards students in this group is the lack of data on individual students' affiliation to a particular vulnerable group, particularly since this is sensitive personal information that students are not required to declare during their studies.</p>	50% plans to improve data collection and reporting.
<b>Students who commute to their place of study, students from rural areas, small towns and islands</b>	20%	<p>Some answers point to the fact that most students come from outside the place of study, so they are not an underrepresented group.</p> <p>The initial obstacle to the implementation of measures and policies towards students in this group is the lack of data on individual students' affiliation to a particular vulnerable group. Without systematic information, it is not possible to determine how belonging to a certain vulnerable group affects the students' educational experience, and which areas of education require improvement. It is also much harder to implement targeted measures for this group.</p> <p>Lack of expert staff for data monitoring.</p>	40% plans to improve data collection and reporting.

<b>Refugees and asylum seekers</b>	7%	Most of the respondents said that they did not have students from this group (or they treat them as students from third countries), which is why they do not have measures nor collect data. Other examples of answers: Lack of expert staff for data monitoring.	30% plans to improve data collection and reporting.
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The questionnaire left out the LGBTIQ group as a group for which data are collected, because such data are not considered appropriate for mandatory collection. However, although there was no question about data collection for the LGBTIQ group in the questionnaire, some answers point to the problem of data collection as a precondition for the implementation of measures that would improve their study experiences:

*“The initial obstacle to the implementation of measures and policies for students in this group is the lack of data on individual students’ belonging to a particular vulnerable group, especially given that this is sensitive personal data that does not need to be declared during the studies. An additional obstacle is also the fact that this determinant of identity, though it causes vulnerability in general, is not traditionally perceived as affecting the students’ educational experience.”*

For students of professional studies, it was also not possible or meaningful to analyse how higher education institutions collect data, because if a HEIs perform such studies, then those students represent the majority.

In several responses, HEIs expressed support for centralized and systematic data collection, which would then enable them to introduce measures that protect and support vulnerable and underrepresented groups of students in higher education. For example, HEIs believe that *“in this way, these groups become more visible not only at the national level, but also at the higher education institutions themselves. Regarding the measures taken to protect vulnerable and underrepresented groups, we believe that the issue should be viewed more inclusively and comprehensively, defining measures and monitoring their application to integrated groups. Therefore, the National Plan/Report should be in line with the recommended measures that holistically approach the difficulties faced by vulnerable groups in higher education.”* (University of Rijeka)

In conclusion, the answers submitted in the preliminary survey lead to the conclusion that, in addition to those groups for which data is evident (students according to gender, professional studies, part-time studies, mature students, etc.), or for which data should not be collected at all (LGBTIQ), for all other groups of vulnerable and underrepresented students:

- the data collection system should be improved as the basis for adopting measures
- where it is applicable and relevant, most HEIs have the intention or good will to improve data collection as the basis for the adoption of measures
- most HEIs said that, without help from the state level, they would not have enough capacity or expert staff, and pointed to the need for upgrading the record-keeping system (ISVU) in order to improve the collection of data for this purpose
- some of the answers highlighted obstacles that arise from the protection of personal data



- some of the answers pointed to the 'vicious circle' in which, due to the lack of data, there is no awareness that HEIs also have students from vulnerable groups; this in turn results in a belief that there is no need to collect data nor implement measures.

Specifically for some groups, a special need to improve data collection can be deduced from the responses provided. These are the following groups:

- refugees and asylum seekers
- Roma students
- students from the alternative care systems, homeless students and those at risk of becoming homeless
- students with children and mature students
- students whose parents have a lower level of education
- students from lower-income families.

HEIs plan to improve data collection for the following groups:

- students from lower-income families (54%)
- students from the alternative care systems, homeless students and those at risk of becoming homeless (50%)
- students whose parents have a lower level of education, students who work, students with disabilities, children of war veterans and students who commute (40 - 50%).

The preliminary research results therefore represent an additional confirmation of the efforts of the Ministry, i.e. bodies at the national level, to establish a central, comprehensive data collection system in accordance with, inter alia, goals and insights into the social dimension of higher education.

# The Proposed Methodology for Managing Data on the Social Dimension

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The legal framework that will regulate records in higher education will be the basis for the establishment of complete records, as well as connecting of existing records in the state information infrastructure system. On this basis, it is possible to improve the existing data collection system, so it is very important how well the system is designed in its conceptual phase.

The system will be built in a way that includes all previously established and useful data collection systems in the higher education system (eg ISVU, scholarships etc.) and links them with already established registers kept by other public bodies (eg pension and tax system registers), and to avoid multiple entries of the same data as well as to allow flexibility and interoperability (for example, if a higher education institution does not use ISVU). The data will be collected centrally from various existing databases based on the student's personal identification number (OIB), which will enable a quality database and eliminate the keeping of parallel records.

Furthermore, special attention is paid to the protection of personal data in a way that the purpose and use of each piece of data is defined, and that it is not collected unless it is necessary and meets the purpose defined by law. Consideration is also given to their storing and use. It is especially important that the data is relevant for clearly defined measures of support, meaning that, if it is personal data collected for the purpose of providing student support, that it represents voluntary, and not mandatory information that the student must provide even if they do not receive support.

The conceptual design of the system of complete records is being developed within the project documentation, and here we present the structure of interconnected records kept by the Ministry and higher education institutions in accordance with the law.

Table 2. Overview of records

Primary records	Secondary records	Purpose
Higher education institutions	COP system of public funds users	Register of higher education institutions Funding (performance agreements)
Study programmes	System of monitoring employability according to study programmes (Croatian Employment Service, HZZ), CROQF register, MOZVAG	Register of accredited study programs Funding of scholarships, student support and stipends, monitoring employability and recommendations for enrolment quotas, standardisation of qualifications, quality assurance.
Candidates	Main state register/ e-Citizen	Facilitation and transparency of enrolment procedures; monitoring the progression of candidates from vulnerable groups.
Students (by connecting with ISVU, database of scholarship recipients, etc.) and graduates	System of personal identification numbers (OIB), e-Citizen, system of monitoring employability according to study programmes (HZZ), etc.	Monitoring (especially for students from vulnerable groups): student progress from enrolment to graduation, monitoring of completion and employability rates, managing subsidised scholarships, student support funds and stipends, starting a database of graduates and facilitating verification, digitalisation of qualifications.
HEI employees	COP system of public funds users, MOZVAG	Funding and quality assurance.

While the registers of higher education institutions and study programs (as well as employees) are under the jurisdiction of the Ministry, basic records intended for financing and quality assurance in higher education, records of applicants, students and graduates are collected and kept at the higher education institutions. This means that data on candidates and students primarily depends on the individuals who enter them into the system and the HEIs that manage them, both of whom are guided by their own 'view' of the system and the activities that are within their jurisdiction. Therefore, it is important to ensure that the records include what is necessary for the HEIs and useful for the students themselves (to obtain certain types of support), followed by their usefulness for certain statistical and analytical purposes, which in turn form the basis for the introduction of public policies and grants.

### Records of Candidates

The proposed data content for applicants for HEIs enrolment procedures (as part of the centralized system of applications for study programmes) contains a balance of the abovementioned principles so that, in addition to basic identification data and information on previous education and grades that includes the following data for vulnerable groups (residence for future students who commute, gender for students in gender-underrepresented groups, vocational education), it is necessary to state the nationality, employment status, social status, special status (for refugees) or belonging to a vulnerable and underrepresented group (option to choose from the list), and information about a parent or a guardian, i.e. the provider (parent's level of education and information on the alternative care). This makes it possible not only to monitor students from the phase preceding higher education (the enrolment phase), but also to introduce certain measures such as priority in enrolment (which currently exists on the basis of the 2016 Rectors' Assembly decision for children of war veterans and deceased veterans, and students with disabilities over 60%), or early scholarships.

### Records of Students and Graduates

Already from the students' basic identification and education data (name and surname, personal identification number (OIB), gender, date of birth, place of residence, citizenship and contact data, and all the relevant information on the study programme and the HEI) it is possible to identify students of vulnerable and underrepresented groups. Thus, gender and place of residence, in combination with the programmes they attend, indicate groups that are underrepresented by gender in certain areas of education, or rather persons who commute or come from rural and remote places.

Data on the student status and the consequent student standard rights and support enable not only the identification of all other vulnerable groups, but also all types of support they receive. From the table below, it is possible to see what data on vulnerable and underrepresented groups can be extracted from the records.

Table 3. Data on vulnerable and underrepresented groups

Information from the records	Information on vulnerable and underrepresented groups
Identity	Basic information
Sex	Female students in technical fields and male students in the humanities (gender-underrepresented students)
Address of residence	Homeless students and those at risk of homelessness Students from rural areas, smaller towns and islands

Study programme	Students of professional studies (and gender-underrepresented students)
Previously acquired qualification	Students who have completed vocational education
Information on a parent or guardian (name and surname, address, level of education, profession, social status)	Students from the alternative care system Students whose parents have not acquired higher education qualifications Students from lower income families and of lower socioeconomic status
Socio-economic status of the student (income)	Students of lower socioeconomic status
Students' employment status and type of study	Part-time students and students who work while studying
Information on disabilities (obligatory only if they want to claim rights on the basis of this information)	Students with disabilities
Nationality (obligatory only if they want to claim rights on the basis of this information)	Students from the Roma minority
Refugee status (obligatory only if they want to claim rights on the basis of this information)	Refugee students
Belonging to some other vulnerable or underrepresented group of students (obligatory only if they want to claim rights on the basis of this information)	Students with children Students who are the children of Croatian veterans and victims of war Mature students LGBTIQ students Other groups
Information on student support (scholarships, stipends, accommodations, employment, etc.)	Type of support for vulnerable and underrepresented groups
Information on studying: progression through study (points, grades, duration, mobility, points awarded through RPL) reason for dropping out or not completing the study	Successful progression and completion of education of vulnerable and underrepresented groups
The acquired qualification and monitoring of graduates after studies (connecting with the database of the Croatian Employment Service/ Croatian Pensions Insurance Institute)	Monitoring completion and employment rates for vulnerable and underrepresented groups

# Conclusion

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From all the above, and especially as an outcome of strategic goals, recommendations and insights of documents such as the national *Strategy for Education, Science and Technology* (2014), the *National Plan for the Enhancement of the Social Dimension of Higher Education in Croatia 2019-2021*, and the study on *Underrepresented and Vulnerable Groups of Students: Contributions to the Enhancement of the Social Dimension of Higher Education in Croatia* (2020), it is necessary to approach the collection of data on the social dimension of higher education in a quality and comprehensive manner. The methodology for collecting data should serve as a basis for monitoring student performance and improving the social dimension, so that all students are afforded the same opportunities for success in higher education, or rather that the obstacles arising from their unequal position are removed. The study conducted within the SIDERAL project provides insight into the experiences of students of underrepresented and vulnerable groups by using qualitative research methods. The valuable findings of this study, as well as our own analyses of the data collection system, demonstrate that the data collection methodology should be relevant, sufficiently comprehensive and applicable. Using the already available data, their upgrades with the solutions here proposed should serve the purpose of collecting only those information that are relevant for identifying students of underrepresented and vulnerable groups as well as other variables connected to the social dimension, while paying special attention to the protection of personal data. It is also important that such data collection system enables the monitoring of student performance from applying for enrolment to the completion of studies, and even later in their professional careers. Finally, performance data should be linked to the data on other relevant student support such as scholarships, etc.

Thus, by building a comprehensive but relevant and applicable data collection system, it is possible to make better decisions and public policies that will enhance the social dimension of higher education, such as policies related to incentives for enrolment or early scholarships, policies of scholarship and ensuring other types of student support and, finally and no less importantly, employment policy.

It should be noted that a large part of the responsibilities and activities for providing a quality data collection system as well as policies based on that data are shouldered by the higher education institutions. However, this preliminary research shows that, with adequate national support and a system of data collection, higher education institutions are very positively inclined toward the enhancement of the social dimension, which they have already been encountering on a daily basis. Therefore, inter-sectoral cooperation is an equally important aspect of the success of the methodology and the implementation of the data collection system as is the design of data content or technical solutions.

# Appendix 1

## Universities' answers in the preliminary research conducted in 2019 for the purpose of developing the methodology of collecting data on vulnerable and underrepresented groups of students

<b>University of Rijeka</b>	Collecting data on the previous study at a certain level of education at some other HEI (name of the HEI, year of enrolment, number of semesters of studying with MSE support, information on the completed study).
	Collecting data on the year of first enrolment in the study year for which a person is applying.
	Collecting data on the concurrent study at some other HEI.
	Collecting data on studying with the support of the Ministry of Science and Education.
	Collecting data on the received scholarship.
	Collecting data on dormitory accommodation.
	Collecting data on previously acquired ECTS credits.
	Collecting data on the parents' qualifications.
	Collecting data on the parents' education.
	Collecting data on the parents' jobs.
Collecting data on the parents' professional standing (one answer for the father and one for the mother).	
<b>University of Zagreb</b>	Short description of difficulties that are the basis for making a request.
	Collecting data on the study programme, year of study, type of disability (student enrolled in a course – support provider, and student with a disability – support provider).
	Collecting data on students who use the support for students with disabilities in a student dormitory (faculty, name of study programme, year of first enrolment in the study, current study year and semester, type of physical impairment and the percentage of disability, description of the necessary assistance within support provided in the dormitory, employment information – Employment contract). Collecting information on exercising rights from the social welfare system that include assistance in meeting basic everyday needs (e.g. right to assistance and care, right to a personal assistant, parent – parent caregiver status).
<b>University of Zadar</b>	Collecting data on the exact name of the programme completed prior to enrolling at the HEI.
	Person who completed a programme for a secondary school qualification shall provide the acquired title and profession.
	Person who has already graduated from a HEI shall provide the name of the HEI
	Person who attended higher education, but did not graduate, shall provide the name of the completed secondary school, regardless of whether the HEI

	recognised one or more semesters or not.
	Collecting data on the school year when the person completed the previous programme.
	Collecting data on the qualifications of the father and/or mother (university, college, secondary school, primary school, incomplete primary school education or no schooling).
	Collecting data on the provider's occupation – for dependant students (occupation means the type of work one does to earn a living. One should provide as detailed answer as possible – e.g. car mechanic, menswear tailor, bank teller, etc. General names of professions are not accepted – farmer, worker, clerk, etc. For retirees, one should state the occupation that preceded retirement, with a note that the person is now retired).
	Collecting data on the social position of the provider – e.g. company – institution employee; 2) government official – employee in government service; 3) employee of a self-employed person or other persons; 4) a self-employed person, does not employ anyone else; 5) a self-employed person, employs additional persons; 6) working in an artisan's or other workshops owned by a member of the household; 7) person with personal income (retiree, recipient of a disability pension or social welfare, etc.; 8) a dependant; 9) employed abroad; 10) other.
<b>J. J. Strossmayer University of Osijek</b>	Bearing in mind that information on the social and economic status is of a personal nature and extremely sensitive, and that their collection is not prescribed, the Josip Juraj Strossmayer University of Osijek did not collect such information and does not have a developed methodology.