

# THE ECONOMIC IMPACT OF SCHOOL DROPOUT IN ROMANIA

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Authors (in alphabetical order)

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Dragoș ILIESCU (coord.)

George GUNNESCH-LUCA

Claudiu HERȚELIU

Simona IFTIMESCU

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## ABOUT THE REPORT

This report was prepared by the University of Bucharest and the Laboratory for Large-Scale Educational Studies (Large Scale Testing) for the American Chamber of Commerce in Romania (AmCham Romania), at the request of the American Chamber of Commerce in Romania.

The study quantifies in economic (financial) terms the school dropout phenomenon in Romania, a worrying socio-educational issue that has reached considerable levels even though, we must note, the dropout rate has remained relatively constant in recent years, with no significant variations from one year to another. In Romania, school dropout has so far been discussed and written about in descriptive terms, without directly addressing the economic loss expressed as costs to society.

The report also seeks to support solutions for reducing school dropout. Experience shows that quantitative data provides more clarity in the development of public policies and intervention measures. Education in general, and school dropout in particular, should also be viewed through the lens of a “return on investment” analysis. This perspective allows for a much clearer assessment of the consequences of this phenomenon, supports the need for more substantial budget allocations for this strategic area, and highlights the importance of measures dedicated to reducing school dropout.

The main challenge in developing this study was the lack of data. Although Romania produces a large volume of statistical data, very little can be used in studies like this one, which require a social, economic, and educational research architecture that we do not yet have. We need

wide-ranging panels, conducted over multiple years, with multivariate data on the statistical effects of various phenomena on one another (in causal/mediation chains between antecedents, focal variables, and consequences). In the absence of such data, the modeling presented here is a simplified but accurate approach, conducted in accordance with applicable scientific rigor.

To date, very few studies of this type have<sup>1</sup> been conducted in Romania, insufficient to trigger a trend in educational, economic, and public policy research. Previous attempts are highlighted in Appendix 1, which contains a list of the 14 doctoral theses developed and defended in Romania after 2016<sup>2</sup> thematically relevant to school dropout. It is worth noting that these represent only 0.08% of the 17,887 theses in the portal of the Ministry of Education, and that more than a third of these 14 theses address a geographical area other than Romania. We hope that this study will encourage econometric research in education, which is why we are offering open access to the syntaxes used in the analysis (open syntaxes), encouraging other researchers to refine these analyses.

For AmCham Romania, the goal of this endeavor is to support the development of coherent public policies, aligned with the scale of the phenomenon and its impact on the economy and society.

Both the University of Bucharest and AmCham Romania wish for this analysis to signal the need for more determination, long-term commitment, and resources to address, at least in part, the national problem of school dropout.

<sup>1</sup> As an example, we can mention the studies conducted by the Institute of Educational Sciences in collaboration with UNICEF Romania in 2012 (Estimating the magnitude of the school dropout phenomenon using cohort analysis methodology) and in 2017 (At school. A look at participation in education using cohort analysis).

<sup>2</sup> Since 2016, the Ministry of Education has implemented a portal (<https://rei.gov.ro/teze-doctorat>) where information about these theses, or often the content of the thesis itself, is presented. The content is not available for those doctoral students who have opted to publish their PhD thesis with a publisher after submission. These cases enter an embargo period on the portal for 24 months.

## EXECUTIVE SUMMARY

Romania has one of the highest early school leaving rates (ESL)<sup>2</sup> in the European Union - 16.6% in 2023. The rural environment is particularly affected, with a rate of 27.5%, much higher than in urban areas, highlighting the vulnerability of pupils in rural areas. The main causes include financial problems, unstable family dynamics, poor rural conditions and lack of adequate educational resources. Lack of motivation and educational support also contribute significantly to dropout.

The overall average dropout rate, including the 2013-2021 cohort, is 23,147 pupils per cohort. Romania also has the lowest adult education rates in the EU, with the proportion of 25-64 year olds participating in education or training at 1% in 2020, 5.4% in 2022 and 6.7% in 2023.

School dropout negatively affects individuals, communities and society as a whole. The earnings of those who do not complete compulsory education are significantly lower than those who do. Taking into account differences in the length of working life, the average lifetime earnings of those who dropped school are €353,736 compared to a high school graduate's average lifetime earnings of €544,210. This translates into a significant lifetime economic disadvantage of €190,473. In addition, dropping out

generates high fiscal costs for the state, including lost tax revenues, increased spending on social care and health and increased crime-related costs. According to data reported by the Ministry of Labor and, in particular, by the National Agency for Social Payments and Inspection, the average amount paid in Romania for a person benefiting from social assistance and support programs is RON 301.33 per month, meaning RON 2,615.96 (€723.19) per year.

The lifetime costs of all those who dropped school over the period under analysis (i.e. 2005-2013 to 2016-2024) total €107 billion, which is about 35.67% of Romania's annual GDP (estimated at €300 billion). Social welfare expenditure and crime expenditure do not make significant contributions to these losses, even though they are direct costs: the main contributors are health care expenditure and tax losses - these are much less visible in budgets and for this reason perhaps harder to associate with school by decision-makers in the act of government. The lost tax revenue per individual (per year) amounts to €1749.74, which means lost tax revenue per individual over a lifetime of €81,465.61.

For these 12 cohorts analyzed (pupils who should have finished 8<sup>th</sup> grade between 2013-2024 and who instead dropped out of school), the cost

Romania bears year by year is €2.3 billion, or about 0,77% of Romania's annual GDP. Since 2013 (the year in which the first of the cohorts analyzed started to incur costs), Romania has had costs of about €15,7 billion, or about 5,23% of Romania's annual GDP.

A further statistical analysis (Monte Carlo simulation) confirms the stability of the results and assigns them, with 90% probability, an error range of plus-minus 23%. Thus, with a 90% probability, the total lifetime costs for Romania of the almost 275,000 school drop-outs over the last 12 years will be not less than €90 billion and not more than €140 billion, thus between 30-46% of Romania's annual GDP. The annual costs with these 275,000 people are placed with a 90% probability not below €1,8 billion and not above €3,0 billion per year, thus between 0,60-1,03% of Romania's annual GDP. The costs already incurred in recent years for these 275,000 school dropouts are placed with a 90% probability at no less than €12 billion and no more than €21 billion per year, between 4,04-7,01% of Romania's annual GDP.

Financial support programs for vulnerable families can reduce the economic pressures that lead to school dropout. Pedagogical interventions and psychological

counseling are essential to prevent school dropout by providing academic support and helping pupils to adapt to the school environment. Investing in continuous teacher training and improving school infrastructure, particularly in rural areas, is vital. Collaboration between authorities, schools, parents and the community can ensure constant support and a suitable environment for education. These measures can significantly reduce dropout and early school leaving rates, improving young people's prospects.

<sup>3</sup> The document ends with a glossary defining the main concepts used in this report.

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## INTRODUCTION

This report is an analysis of the costs of early school leaving and dropout in Romania. The analysis is based on existing data reported by various institutions in Romania and at European/international levels and comprises two components. A **first component** is based on descriptive statistics, in which we discuss the relationships that school dropout has with antecedents (causes) and consequences (effects); this component is based on data reported in various contexts. The aim of this section is to prepare readers to understand the complexity of the phenomenon and to approach the second section in an informed way. Readers who are pressed for time or who already know the phenomenon reasonably well can go straight to the second section. This **second component** of the report is an econometric estimation of the costs of school dropout for Romania, at the individual level (i.e., for the directly affected individuals who drop out of school) and at the societal level (i.e., for Romania). This econometric estimation is, of course, carried out as well as possible given the data scarcity that Romania faces in this respect. The econometric analyses that are applied for these estimations are reasonably well documented in the literature, but in order to apply more accurate models it is necessary to calibrate a number of input parameters, which is impossible

in the absence of research panels - panels that are non-existent in Romania. In the absence of these panels and consequently calibrated parameters, we have transparently documented the input data for the analysis based on those data that exist in Romania, or based on the international literature that could be extrapolated to the Romanian situation, after which we have carried out not only a simple analysis, but also a more complex approach: we developed a Monte Carlo simulation based on these input estimates, forecasting pessimistic and optimistic scenarios. We consider this analysis to be a consistent estimate of the costs, even if it is marked by some imprecision, given the limitations of the input data. The syntaxes used in the analysis are made available to researchers in the field, with the encouragement to continue the study, to supplement the input data and in general to contribute to this type of analysis, which goes beyond words and shows concrete and sometimes shocking data on the costs of actions or inactions in education.

## DEFINITION AND GENERAL ASPECTS OF SCHOOL DROPOUT

**School dropout** is often used as an umbrella term, which generally refers to the premature and definitive cessation of school attendance by a pupil before the completion of a compulsory education cycle. It implies that the pupil drops out without obtaining a recognized diploma or qualification at the appropriate level of education.

However, it is necessary to differentiate between two specific concepts: **school dropout** and **early school leaving**. The two concepts are often used interchangeably, leading to confusion or misinterpretation of the phenomena they describe. To outline the framework and purpose of this report, we refer to the definitions used by the Early Warning Mechanism in Education (MATE; Romanian Parliament, 2021).

- **Early School Leavers (ESL)** is an indicator defined at European Union (EU) level as the percentage of young people aged 18-24 who have completed lower secondary education (i.e. grade 8) or less and who are no longer in any other form of education or training.
- **School dropout** is an indicator calculated by the Ministry of Education (ME) based on official data from the National Institute of Statistics (INS), calculated as the difference between the number of

pupils enrolled at the beginning of a school year and the number of pupils at the end of the same school year, expressed as a percentage out of the number of pupils enrolled at the beginning of the year. According to the Pre-University Education Law No 198/2023, school dropout is defined as “the cessation of compulsory education attendance by a primary beneficiary of education, demonstrated by unexcused absences that have led to the impossibility of completing 2 successive school years” (Romanian Parliament, 2023, p. 93).

At the legislative level, a clearer differentiation between the two concepts has been made since their inclusion in the National Education Law no. 1/2011, with subsequent amendments and additions, thus also reflecting the alignment with the Europe 2020 Strategy, which set clear targets on reducing the early school leaving rate for EU Member States. These definitions and legislative developments reflect a continuous effort to understand and combat the phenomenon of early school leaving and dropout through tailored educational policies and appropriate support programs. Currently, the legislative framework proposes a range of support programs, monitoring, reintegration measures, financial support, community partnerships, flexible educational programs, as well as dedicated warning and intervention tools addressing both early school



leaving and dropout. However, the section dedicated to dropout reduction in Law No 198/2023 continues to use the expression `reducing dropout/early school leaving rate`, indicating addressing these two phenomena in an integrated way, including prevention, intervention and compensation measures (Section 5).

In practice, the weak differentiation between the two can to some extent be attributed to the prioritization of the school dropout rate, associated with the educational context, to which the phenomenon of early school leaving was subsequently added, associated rather with the transition to the labor market and professional development, with intervention and countermeasures in this case going beyond the educational context. By including this dimension and the relevant statistical indicators in national and European monitoring and evaluation reports (European Commission/Eurostat, OECD, etc.), the close relationship between the two phenomena is underlined: common causes leading to similar consequences. Pupils who drop out of school at a lower level of education are more likely to be later classified as early school leavers. In other words, school dropout is a proxy for early school leaving, and early school leaving reflects the impact of school dropout.

However, the difficulties do not stop there, as not only Romania uses different definitions, but also many member countries of the

Organization for Economic Co-operation and Development (OECD). The definitions reflected in different countries' national legislation differ for early school leaving and dropout, but also for the graduation rate of different educational levels, which makes it difficult to compare them at international level. For the European Union, the main definition used is that of early school leavers, which allows the data provided by the Member States to be reported and compared in line with the definition presented above, thus providing a clearer picture of the effect of the different dynamics that occur during the school career (e.g. dropout, re-entry, preventive or compensatory measures, etc.).

For the purpose of this report, the analysis will refer to both phenomena, in an attempt to provide as complete a picture as possible of the situation and its effects on economic and social development, respectively on the development of human capital and opportunities for social mobility.

## EARLY CHILDHOOD EDUCATION AND PRE-SCHOOL EDUCATION

In May 2019, the Council of the European Union adopted recommendations for high-quality early education and care systems, emphasizing their importance. It noted that the returns on investment in the early stages of education (pre-primary and pre-school) are the highest of

all educational stages, especially for children in disadvantaged situations.

In terms of quality, the evidence suggests that only high-quality early education and care services bring benefits, having a positive effect on children's well-being, learning and development in the early years (OECD, 2023). Low quality services have a significant negative impact on children and society as a whole (Eurostat, n/a). General trends also indicate that early participation has a positive impact on continuation in formal education.

According to the data presented in Table A1, Romania has one of the lowest rates of participation in early education in the European Union, which contributes to high rates of non-enrolment in education and subsequent dropout. OECD data show that participation in early education in Romania increases with the age of the child (Table A1).

It should be mentioned in this context that in Romania, the age of entry into compulsory education (upper kindergarten group and, since 2023,

middle kindergarten group) from the 2020/2021 school year onwards is 5 years old. With regard to children aged between 0 and the starting age for compulsory education at primary level, the data for 2022 indicated enrollment rate of 42.9% for Romania - the EU average being 58.2%.

According to Eurostat data, the coverage rate of children aged between 3 years and the starting age for compulsory primary education in Romania was 75.6% in 2021, compared to the data available for 2013 (84.1%). By comparison, the EU average for the above indicator was 92.5% in 2021, relatively close to the 96% target proposed for 2030 (Eurostat, 2022).

The data made available by the Ministry of Education for 2022/2023 do not specifically refer to the total percentage of the population under 3 years of age (inclusive) to identify the pre-school enrolment rate (but the data reported by the OECD can give a general picture of this rate). From the data reported at national level for 2022/2023 we can extract the following (Ministry of Education, 2023):

**Table A1.** Participation rates in early childhood education at OECD level and in Romania for 2022

Age of children	Participation rate in early education OECD	Participation rate in early childhood education Romania
2 years	-	15%
3 years	73%	64%
4 years	88%	78%
5 years	84%	85%

Source: OECD (2023)

- The total number of children in early childhood education (nurseries) was 27,000 in 2022/2023, an increase of almost 5,000 children compared to 2018/2019.

- Of the children who are enrolled at pre-school level, there are significant disparities between urban (94.1% of all children enrolled) and rural (5.9% of all children enrolled), largely explained by the **absence of dedicated institutions**.

- The data reflect a relatively balanced ratio between the number of girls and boys, with a slight advantage in favor of the latter (792 more boys than girls).

- At pre-school level, out of the total enrolled: 0.6% are children under 1 year old, 22% are 1 year old, 65.5% are 2 years old, 11.2% are 3 years old. The decrease in the percentage for 3 year olds (compared to 2 year olds) can be explained by the fact that, once they turn 3, they move to the pre-school level (from nursery to kindergarten).

## NON-PARTICIPATION RATE

The rate of non-participation in the education system is an important indicator for assessing access to education and the challenges facing the education system. **The non-enrolment rate** refers to the percentage of children in a generation or cohort who are not enrolled in the education system at compulsory school age.

In this context, the indicator can be translated into the *gross enrolment rate*, which is calculated by reporting the number of pupils enrolled in all levels of education, regardless of age, to the total population of official school-age (3-23 years) resident on July 1 of the year for which the reporting is made (Ministry of Education, 2023).

According to the Report on the state of pre-university education in Romania (2023), the indicator for the gross enrolment rate in pre-university education for the school year 2022/2023 is 73% (population 3-21 years).

For the population aged 3-18 years, the gross enrolment rate in pre-university education (pre-school to secondary education) is 82.7% in the school year 2022/2023, compared to 88.5% in 2014/2015.

This shows a **downward trend in the share of those who are included in the education system** in both categories by about 5% over the last 9 years.

## CAUSES OF SCHOOL DROPOUT

School dropout is influenced by a number of interrelated factors and dimensions, such as personal, family, financial, school or community factors.

Family structure and its internal dynamics can significantly affect school attendance, and problems such as divorce, absence of a parent (e.g. through migration abroad), abuse or neglect are common causes of school dropout. In this category can also be included financial problems of the family, which is thus unable to support neither the *direct costs of education*, those that influence participation in education (e.g. school supplies, uniforms/clothing, transportation, etc.), nor the *indirect costs of education*, which contribute

additional resources to the outcomes generated by participation in education (e.g. tutoring, extracurricular activities, support services such as social-emotional counseling, therapy, etc.).

Health problems, including disabilities and chronic conditions, can prevent regular school attendance, particularly as some schools lack the resources to adequately support children with special educational needs. Lack of resources, coupled with the lack of support that children may experience from the school community (teachers, school management, peers, etc.), as well as an inadequate environment, including violence or discrimination, which can have an impact on pupils' overall well-being - all these factors can significantly influence participation in education.

**Table A2.** Gross enrolment ratio in pre-university education (pre-primary to post-secondary education as a ratio of the population aged 3-21).

	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Total	78.1	76.8	76.4	76.4	76.3	76.1	75.3	74.4	73.0
Female	78.6	77.3	77.0	77.2	77.2	77.1	76.4	75.6	74.0
Male	76.6	76.3	75.8	75.6	75.5	75.2	74.3	73.4	72.1

Source: Report on the state of pre-university education in Romania (Ministry of Education, 2023).

**Table A3.** Gross enrolment ratio in pre-university education (pre-primary to secondary education) as a share of the population aged 3-18.

	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Total	88.5	88.7	88.2	88.1	88.0	87.8	86.8	85.0	82.7
Female	88.6	88.3	87.9	88.0	87.9	87.7	86.8	85.0	82.8
Male	88.1	91.0	88.4	88.2	88.1	87.8	86.7	84.9	82.7

Source: Report on the state of pre-university education in Romania (Ministry of Education, 2023).



A review of the literature on school dropout (Witte et al., 2013) identifies a number of factors as ‘predictors of early school leaving’, as shown in Table A4.

Studies indicate that while socio-economic and demographic characteristics influence school drop-out rates, pupils’ place of residence and conditions in rural schools are significant contributors to the increase in the drop-out rate.

Schools in rural areas face specific challenges such as limited resources, higher rates of teacher turnover and increased demands on student mobility, which negatively affect student performance and increase the risk of dropout (Ripamonti, 2018).

The concentration of schools with high dropout rates in rural areas, a phenomenon documented in different geographical regions, supports the idea of specific rural difficulties exacerbating educational challenges (Marsh & Williamson, 1999).

Data for Romania published by the Ministry of Education in 2021 shows that the highest numbers of pupils and schools at high risk of dropping out are predominantly in rural areas.

Data published by the Ministry of Education in 2021 and depicted in Figure 1 show that most pupils at high risk of dropping out are in the counties of Iași (10,993 pupils), Mureș (8,298 pupils) and Constanța (6,676 pupils), while most

pupils at medium risk of dropping out are in Suceava (12,148 pupils), Prahova (11,529 pupils) and Bacău (8,598 pupils). These visual representations reveal regional disparities and suggest the existence of a broader socio-economic context with a negative impact on the schooling path of pupils in these counties.

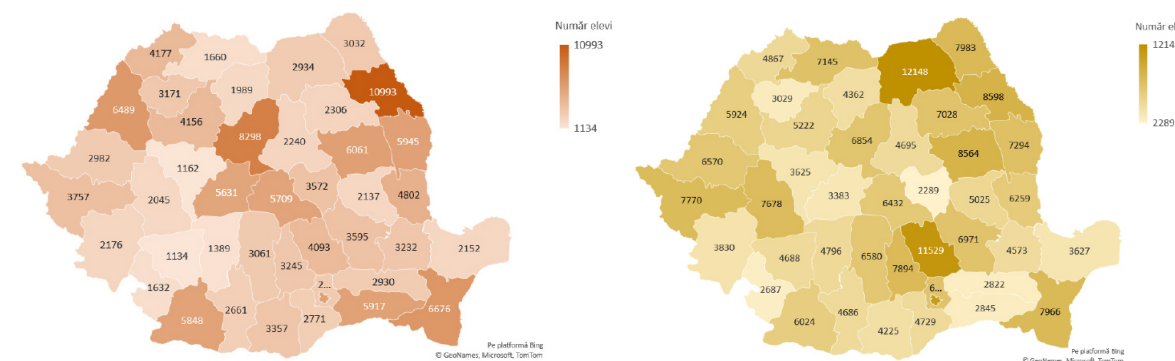
Most of the pupils at high risk of dropping out are in rural areas, as shown in Figure 2. In terms of their

distribution by county, Iași county has the highest number of rural pupils at high risk of dropping out (9,354 pupils). Also in Mureș and Bihor counties there are significant numbers of rural pupils at high dropout risk (6,275 pupils and 5,668 pupils respectively). In urban areas, Bucharest stands out, with 6,010 pupils at high dropout risk. This suggests the need for public policies tailored to the educational problems of pupils in Bucharest.

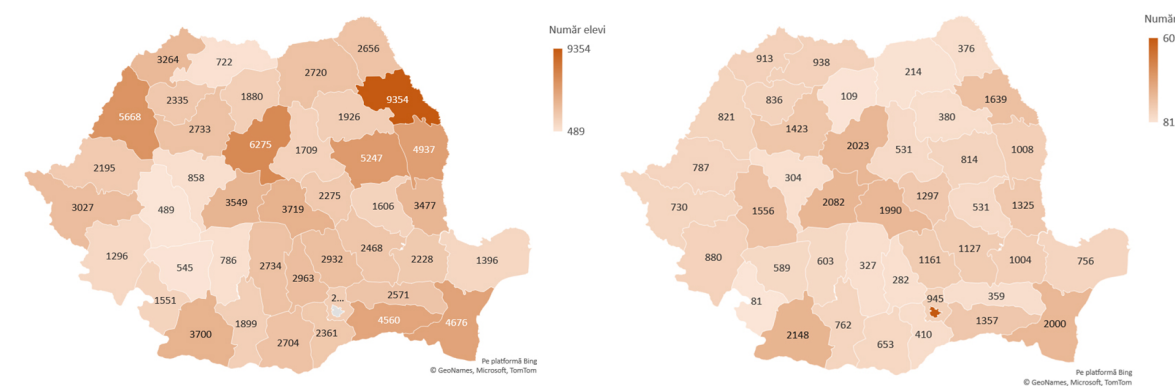
**Table A4. Predictors of school dropout**

Personal (which relate to pupils)	Family	School	Community
<ul style="list-style-type: none"> <li>Psychological and behavioral</li> <li>– Academic capacity</li> <li>– School situation-notes</li> <li>– Involvement in educational activities</li> <li>– Educational aspirations</li> <li>– Getting a job</li> <li>– Teenage pregnancy and marriage</li> <li>– Motivation</li> </ul>	<ul style="list-style-type: none"> <li>Socio-economic status (parents, education and employment)</li> </ul>	<ul style="list-style-type: none"> <li>Type of school (including student typology)</li> </ul>	<ul style="list-style-type: none"> <li>Neighborhood characteristics</li> </ul>
<ul style="list-style-type: none"> <li>Demographics</li> <li>– Gender</li> <li>– Race-ethnicity</li> <li>– Immigration status</li> <li>– Reference language</li> <li>– Disabilities</li> </ul>	<ul style="list-style-type: none"> <li>– Family structure (single-parent, step-parent and/or large families)</li> <li>– Social capital (relationships between parents, children, other families and school)</li> <li>– Human-cultural capital (parental education)</li> <li>– Financial capital (income, ownership)</li> </ul>	<ul style="list-style-type: none"> <li>– School resources (e.g. class size and teacher-student ratio)</li> <li>– Structural characteristics of schools (e.g. school size)</li> <li>– School policies and practices</li> <li>– Social and academic climate (discipline policy is considered fair, high attendance rates)</li> <li>– Quality of teachers and teaching</li> <li>– School social capital (student-teacher relationship)</li> </ul>	<ul style="list-style-type: none"> <li>– High-performing friends vs. friends who dropped out of school</li> <li>– Job opportunities</li> <li>– Social discrimination-injustice</li> </ul>

Source: Witte et al. (2013); Tinto (1993).



**Figure 1. Number of pupils at high/medium dropout risk (absolute values).**  
Source: Own data processing from Ministry of Education 2021.



**Figure 2. Number of pupils at high risk of dropping out, by background (absolute values).**  
Source: Own data processing from Ministry of Education 2021.

Most pupils at medium risk of dropping out are in rural areas, in the counties of Suceava (8,540 pupils), Prahova (6,825 pupils) and Bacău (6,369 pupils). As for urban pupils, in Bucharest there are 10,922 pupils at medium risk of dropping out, according to the data in Figure 3.

Most schools with high dropout risk are in Mureș (69 schools), Iași (67 schools) and Dolj (56 schools) counties,

according to the data in Figure 4. Most schools with medium dropout risk are located in Prahova (73 schools), Suceava (72 schools), and Bacău (65 schools).

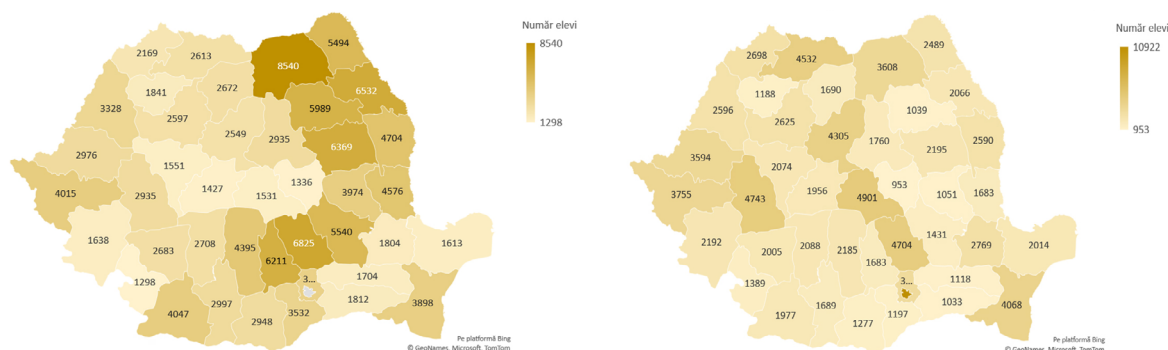
The distribution of schools at high dropout risk by background (see Figure 5) shows that schools in rural areas are much more exposed to this type of risk. The counties with the highest number of rural schools at high risk of dropout are Mureș (60 schools), Iași (59 schools)

and Bihor (50 schools). In urban areas, the highest number of schools at high risk of dropout are in Bucharest (34 schools), Dolj (13 schools), Sibiu (12 schools) and Constanța (12 schools).

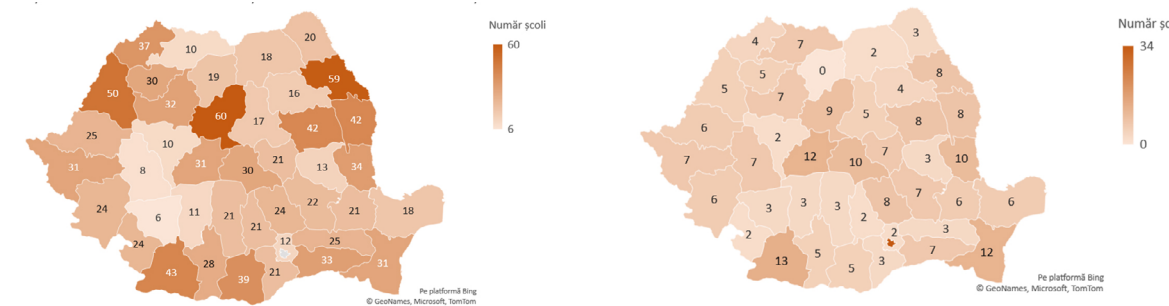
The data in Figure 6 again emphasize the educational difficulties in rural areas, given that a large number of schools at medium dropout risk are concentrated in this area of residence. Most of these schools are in Buzău

(56 schools), Suceava (55 schools) and Prahova (52). In urban areas, most schools with medium dropout risk are in Bucharest (42 schools) and Maramureș county (28 schools).

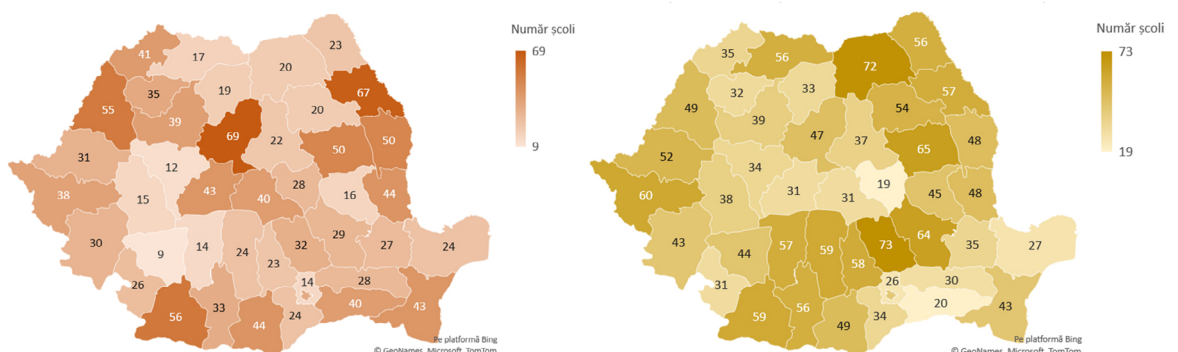
Pupils attending school in rural areas have specific vulnerabilities, being exposed to conditions that increase the risk of dropping out, which underlines the need for education policies to support rural schools and communities.



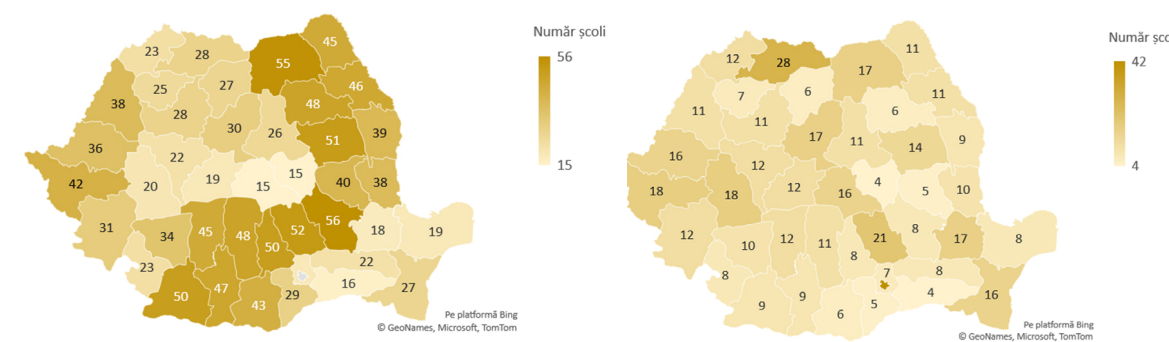
**Figure 3.** Number of pupils at medium risk of dropping out, by background (absolute values).  
**Source:** Own data processing from Ministry of Education 2021.



**Figure 5.** Number of schools at high dropout risk by background (absolute values).  
**Source:** Own data processing from Ministry of Education 2021.



**Figure 4.** Number of schools at high/medium dropout risk (absolute values).  
**Source:** Own data processing from Ministry of Education 2021.



**Figure 6.** Number of schools at high dropout risk by background (absolute values).  
**Source:** Own data processing from Ministry of Education 2021.

## DROPOUT RATES IN ROMANIA

### DROPOUT RATES IN ROMANIA BY EDUCATIONAL LEVEL

The data presented in Table A5 show that the dropout rate in Romania fluctuated over the period 2010-2021, peaking at 16.2% in 2014. The highest dropout rates in 2014 were recorded for post-secondary and professional (foreman) education (10.7%) and for primary and secondary education (2%). However, there was a general decrease in dropout rates in the following years, with the national rate falling to 10%

in 2020, and then increasing again to 12% in 2021. Primary and secondary education as well as secondary and vocational education have consistently maintained lower dropout rates compared to post-secondary and master craftsman education. In primary and secondary education, dropout rates ranged between 2% and 1.2% between 2010-2021, while in secondary and vocational education, the rate ranged between 4.2% and 1.7%, according to the National Institute of Statistics (NSI).

The comparative graph in Figure 7 shows some important trends over the period 2010-2021, highlighting the fluctuations in dropout rates in primary

and secondary education, secondary and vocational education, and post-secondary and master craftsman education. Primary and secondary, as well as secondary and vocational education show lower dropout rates, while post-secondary and vocational education show higher rates.

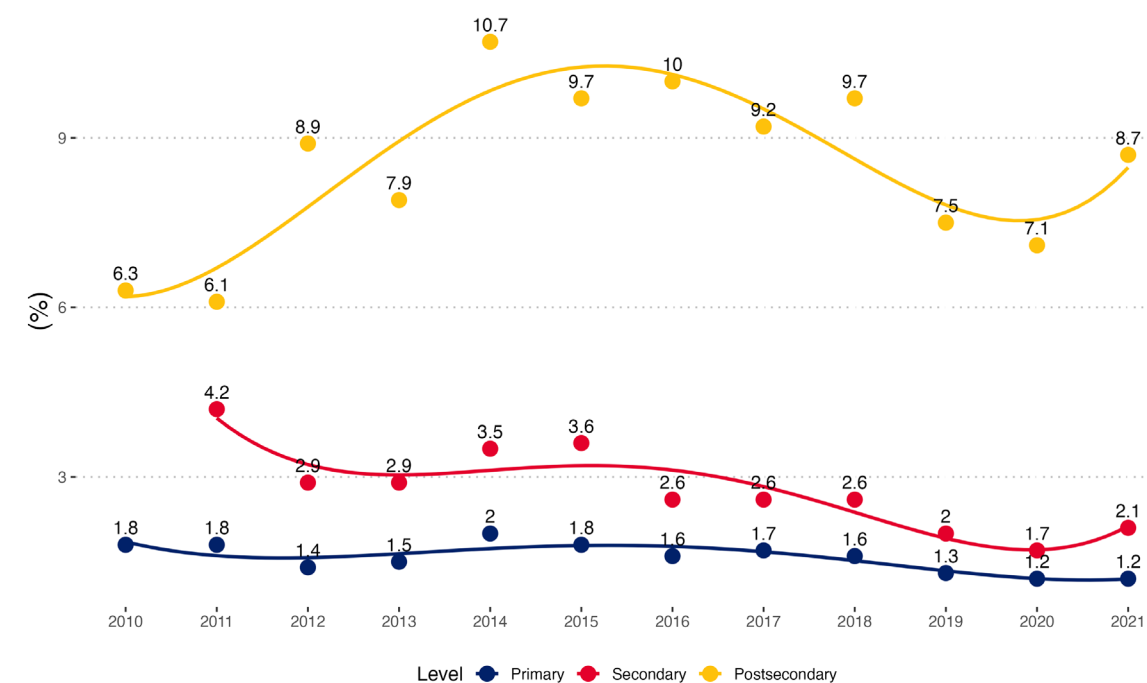
According to the Report on the State of Pre-University Education in Romania 2022-2023 (Ministry of Education, 2023), in the school year 2021/2022, the dropout rate for primary and lower secondary education was constant compared to the previous school year. Overall, 1.2% of primary and secondary school pupils (18,500 pupils)

dropped out of school. At the 2021-2022 level, 2% of secondary school pupils dropped out, most of them from the technological stream. In vocational education, the dropout rate increased in 2021-2022 compared to the previous school year (2.8%). The dropout rate in post-secondary and master craftsman education increased in 2021/2022 to 8.7%. The rural environment, the lower grades of the educational cycle respectively, register high dropout rates. The highest dropout rates in primary and secondary education were recorded in the rural school population (1.7% total, 1.8% primary, 1.6% secondary), respectively in the preparatory, first and fifth grades.

**Table A5.** School dropout rates in Romania.

Year	Dropout rate - Primary and secondary education (%)	Dropout rate - Secondary and vocational education (%)	Dropout rate - Post-secondary and master's education (%)
2010	1.8	-	6.3
2011	1.8	4.2	6.1
2012	1.4	2.9	8.9
2013	1.5	2.9	7.9
2014	2.0	3.5	10.7
2015	1.8	3.6	9.7
2016	1.6	2.6	10.0
2017	1.7	2.6	9.2
2018	1.6	2.6	9.7
2019	1.3	2.0	7.5
2020	1.2	1.7	7.1
2021	1.2	2.1	8.7

Source: Own processing of NSI data.



**Figure 7.** Comparative graph on the evolution of the dropout rate in Romania.

4. The report does not propose a granular analysis for each educational pathway, but rather an integrated perspective on the phenomenon at the level of upper secondary education (four-year high school education and three-year vocational education).



## DROPOUT RATES IN ROMANIA BY BACKGROUND

Table A6 shows dropout rates for 2023 by background. These data reveal significant disparities in dropout rates between backgrounds. Rural areas have the highest dropout rate at 27.5%, indicating substantial educational problems in these areas. In contrast, small urban areas (cities and suburbs) have a much lower drop-out rate

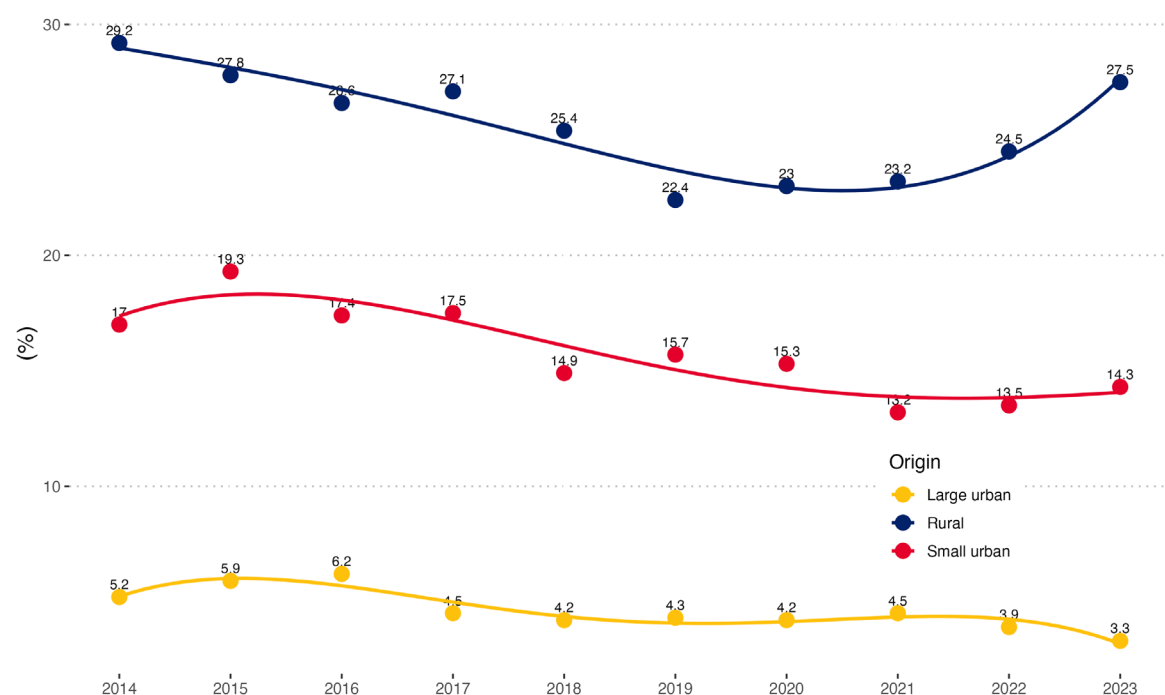
of 14.3%, while large urban areas (municipalities) have the lowest dropout rate of only 3.3%. Nationally, the dropout rate was 16.6% in 2023.

The data in Figure 8 underline the need for targeted interventions to address the problem of high school drop-out in rural areas in order to reduce the educational gap between different backgrounds.

**Table A6.** Differences in school dropout rates in Romania, by backgrounds of origin

Residence environment	Dropout rate 2022 (%)
Rural	27.5
Small urban (cities and suburbs)	14.3
Large urban (municipalities)	3.3
Total	16.6

Source: Own processing of Eurostat 2023 data.



**Figure 8.** Differences in dropout rates by background.  
Source: Own processing of Eurostat data.

## DROPOUT RATES IN ROMANIA BY COHORT

Table A7 shows the evolution of cohorts of pupils in the period 2005-2024, showing the differences between the total number of pupils enrolled in

grade I and the total number of pupils graduating from grade VIII of the same generation (cohort).

Table A8 shows the educational trajectory of the cohort of pupils

**Table A7.** Evolution of student cohorts between 2005–2024

Cohortă	Elevi înscriși în clasa I	Absolvenți clasa a VIII-a	Repetenți clasa a VIII-a	Abandon
2005 - 2013	226,324	183,312	5,817	37,195
2006 - 2014	220,489	182,600	5,967	31,922
2007 - 2015	221,185	184,353	6,558	30,274
2008 - 2016	212,022	177,651	6,880	27,491
2009 - 2017	203,895	169,298	6,485	28,112
2010 - 2018	203,926	170,528	6,386	27,012
2011 - 2019	206,055	174,473	6,379	25,203
2012 - 2020	202,134	178,717	3,749	19,668
2013 - 2021	156,991	140,600	4,801	11,590
2014 - 2022	175,088	156,117	4,951	14,020
2015 - 2023	168,918	152,634	4,760	11,524
2016 - 2024	162,748	149,151	4,570	9,028

Source: Regular Public Reports, Ministry of Education. Cohorts from 2014 (-2022) to 2016 (-2024) were predicted based on previous cohorts using a regression equation.

**Table A8.** Student cohort evolution 2013–2021

	Pupils enrolled in preparatory class 2013-2014	Graduates class VIII 2021-2022	8th grade repeaters 2021-2022	School dropouts
Total	183,633	167,937	5,850	9,846
Female	89,344	81,844	2,709	4,791
Male	94,289	86,093	3,141	5,055
Urban	98,963	99,805	2,251	-3,093
Rural	84,670	68,132	3,599	12,939

Source: Report on the state of pre-university education in Romania (Ministry of Education, 2023).

enrolled in the 2013-2014 school year. By the end of the 2021-2022 school year, 9,846 pupils in this cohort had dropped out of school. The number of repeaters/pupils held back and dropouts is higher at least in absolute numbers for the male population than for the female population (5,092 boys dropped out compared to 4,825 girls). Of the total number of pupils enrolled in preparatory grade in 2013/2014, 98,963 pupils were from urban areas. However, the number of graduates from urban areas (99,805) exceeds the number initially enrolled by 842. This discrepancy may be due to new pupils moving to urban areas over the 2013-2021 period. The number of repeaters/pupils held back was lower in urban areas than in rural areas (2,251 repeaters in urban compared

to 3,599 repeaters in rural areas). **School dropouts had a negative value in urban areas of -3,093, suggesting that there was an influx of pupils to urban areas for the 2013-2021 cohort. In rural areas, on the other hand, the number of dropouts more precisely, those who left the cohort is much higher at 12,939.**

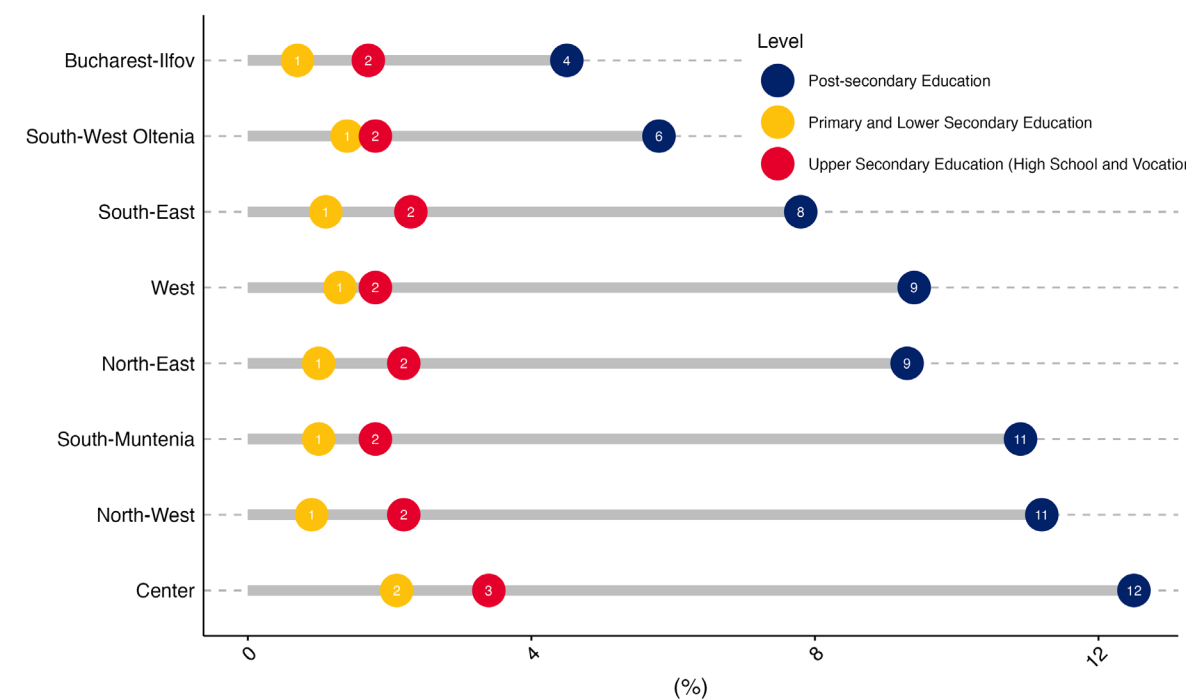
### DROPOUT RATES IN ROMANIA BY DEVELOPMENT REGIONS OF THE COUNTRY

At the level of the country's development regions, the dropout rates presented in Table A9 (reported by INS at 2021) are relatively low for primary and secondary education, with the Bucharest-Ilfov Region having the lowest rate of 0.7%

**Table A9.** Dropout rates (%) by education levels and development regions

Development Region	Primary and secondary education (%)	Secondary education cycle 2 (secondary and vocational) (%)	Post-secondary and teacher education (%)
North-East	1.0	2.2	9.3
South-East	1.1	2.3	7.8
South-Muntenia	1.0	1.8	1.9
South-West Oltenia	1.4	1.8	5.8
Vest	1.3	1.8	9.4
North-West	0.9	2.2	11.2
Center	2.1	3.4	12.5
Bucharest-Ilfov	0.7	1.7	4.5

Source: own processing of data INS 2021.



**Figure 9.** School dropout rate (%) by education cycles and development regions. Source: Own processing of INS 2021 data.

and the Center Region the highest rate of 2.1%. In the case of secondary and vocational education, drop-out rates increase slightly compared to primary and secondary education. The Center region once again has the highest rate, at 3.4%, while Bucharest - Ilfov has the lowest, at 1.7%. Drop-out rates are significantly higher in post-secondary and master craftsman education. The Center region has the highest rate of 12.5%, while Bucharest - Ilfov has a lower rate of 4.5%.

Figure 9 shows that there is an upward trend in dropout rates as pupils progress to higher levels of education, with marked differences between regions. The Center and North-West Regions have higher drop-out rates, especially in post-secondary and master craftsman

education, while the Bucharest-Ilfov Region maintains lower drop-out rates for all levels of education.

### EARLY SCHOOL LEAVING RATE

In order to allow a comparison between Romania and other EU countries, it is necessary to refer more specifically to the phenomenon of early school leavers (ESL), repeating the definition given at the beginning of this report: ESL is an indicator defined at European Union (EU) level as the percentage of young people aged 18-24 years who have completed lower secondary education (i.e. grade 8) and who are no longer in any other form of education or vocational training. Given the



different definitions of early school leavers in different countries, the ESL indicator provides a common EU-wide definition and allows comparisons between EU countries. The ESL rate reflects both the drop-out rate and the in/effectiveness of compensatory measures or remedial interventions (e.g. Second Chance) for those who have dropped out of school.

The data presented in Figure 10 illustrate the differences in early school leaving rates between EU countries in 2010 compared to 2023. Croatia, Slovakia and Slovenia had the lowest dropout rates, although Slovakia saw an increase from 4.7% to 6.4% in 2023. In 2010, Romania (19.3%) was among the countries with the

highest early school-leaving rates, after Portugal (27.8%), Spain (25.3%) and Malta (21.4%). In contrast to these countries, which saw significant decreases in early school-leaving rates between 2010 and 2023, Romania had a rate of 16.6% in 2023, the highest in the EU.

Reported early school leaving rates for Romania have consistently remained among the highest in the EU.

Also, in the period 2004-2023 (see Figure 11), Romania had the highest rate of early school leavers also compared to the countries in the region. In 2004, Romania had a rate of 22.4%, a level close to that of Bulgaria (21.5%). In 2023, Bulgaria's reported early school leaving rate was 9.4% and

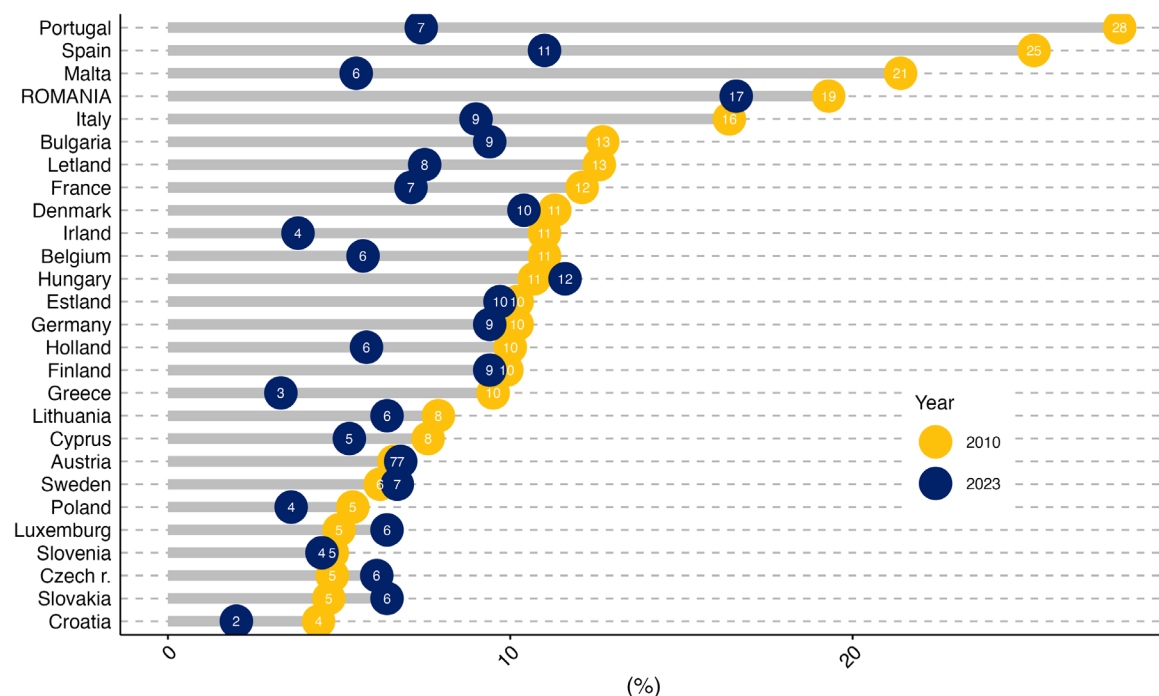
Romania's was 16.6%. Poland had the lowest rate of early school leavers in 2004 at 5.6% and 3.6% in 2023. Greece

had an early school leaving rate of 11.7% in 2004 and followed a downward trend over the whole period, reaching

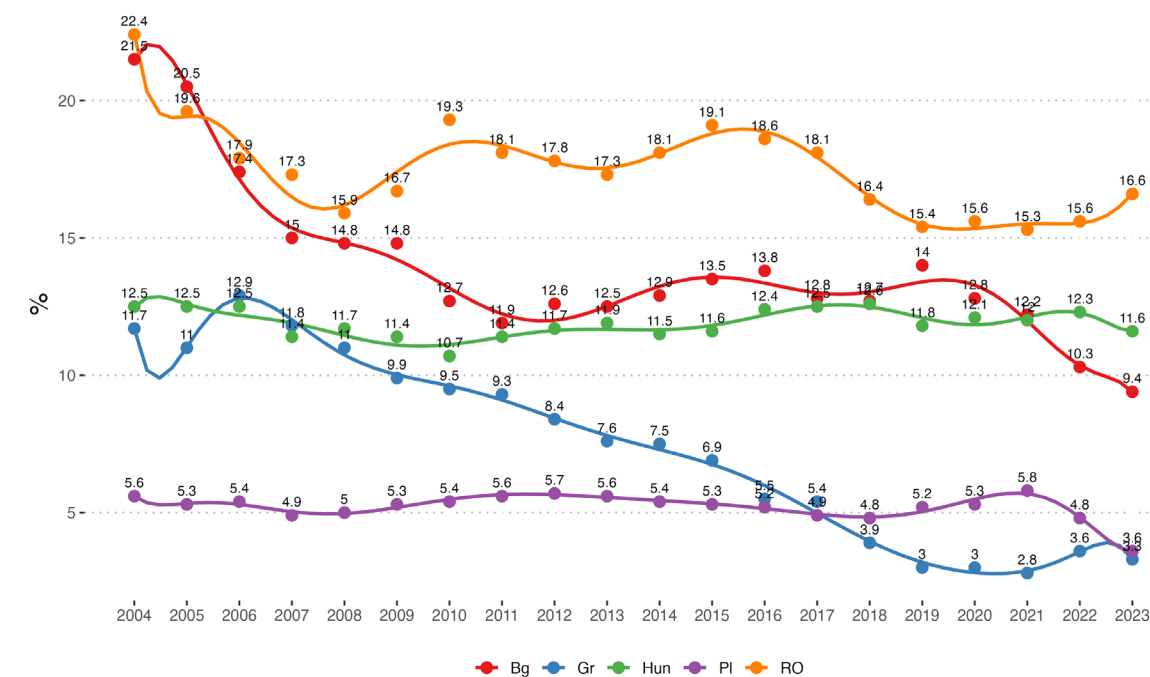
**Table A10.** Early school leaving rates in the EU and Romania (2010–2023)

An	European Union (%)	Romania (%)
2010	13.8	19.3
2011	13.2	18.1
2012	12.6	17.8
2013	11.8	17.3
2014	11.1	18.1
2015	11.0	19.1
2016	1.6	18.5
2017	1.5	18.1
2018	1.5	16.4
2019	1.2	15.3
2020	9.9	15.6
2021	9.7	15.3
2022	10.0	15.6
2023	9.5	16.6

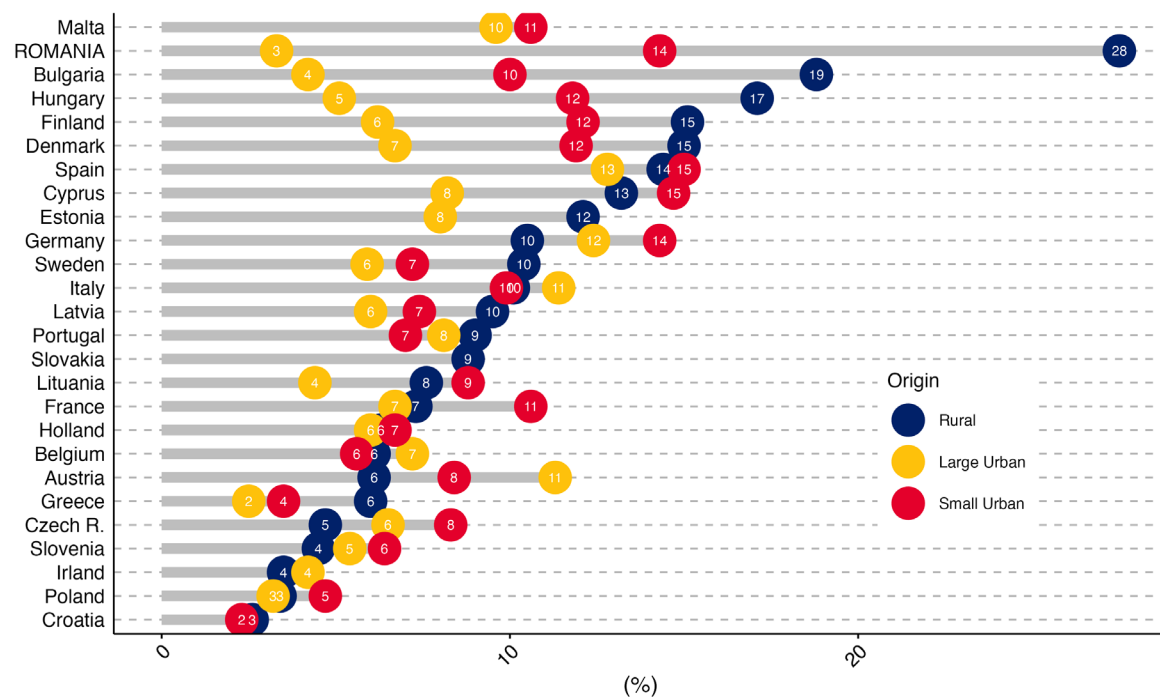
Source: Own processing of Eurostat data.



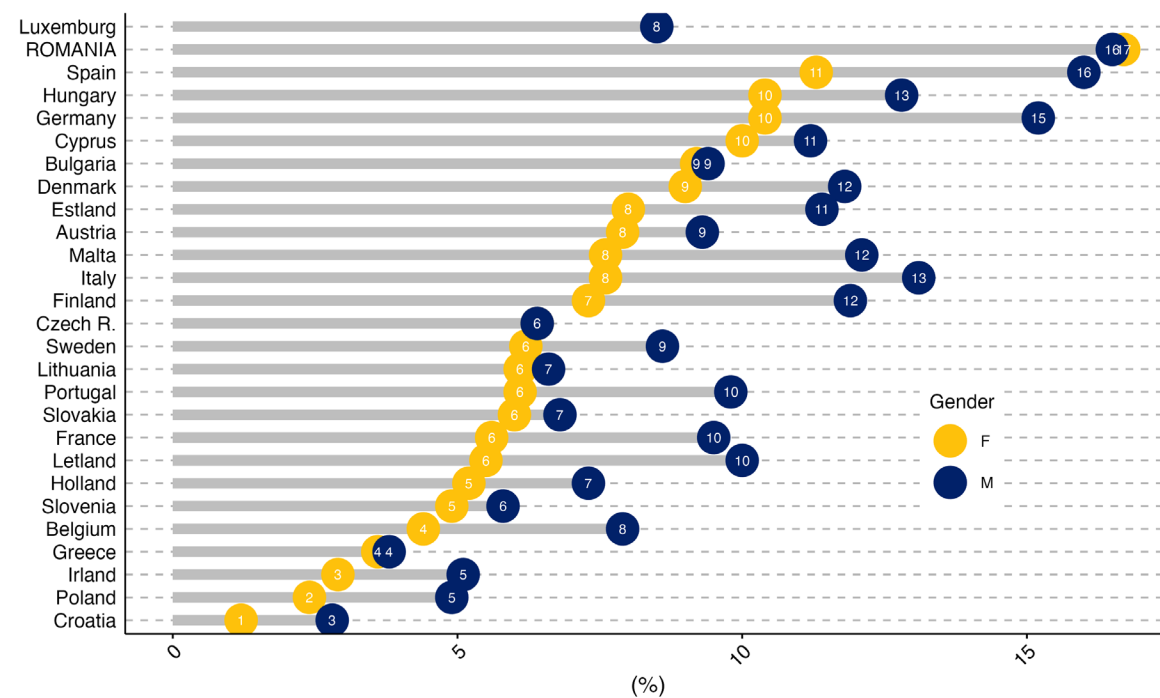
**Figure 10.** Early school leaving rates in EU countries. Source: Own processing of Eurostat data.



**Figure 11.** The evolution of early school leaving rates in Romania and the countries in the region, 2004-2023. Source: Own processing of Eurostat data.



**Figure 12.** Differences in early school leaving by background in EU countries.  
**Source:** Own processing of Eurostat data.



**Figure 13.** Differences in early school leaving rates by gender in EU countries.  
**Source:** Own processing of Eurostat data.

3.3% in 2023. Hungary experienced minor fluctuations between 2004 and 2023, starting at 12.5%, reaching a low of 10.7% in 2010 and a rate of 11.6% in 2023.

The graph in Figure 12 shows that Romania has the highest rate of early school leavers (27.5%) in rural areas in the EU, followed by Bulgaria with the highest rate in rural areas (18.8%). Spain (15%), Cyprus (14.7%) and Germany (14.3%) have rates comparable to Romania (14.3%) for early school leavers in small urban areas. In contrast, Romania has one of the lowest rates of early school leaving in large urban areas (3.3%). Poland and Greece have lower rates in large urban areas: 3.2% and 2.5% respectively.

In terms of differentiation of early school leaving rates by gender (Figure 13), Romania has similar rates for males (16.5%) and females (16.7%), the highest in the EU. Most countries have lower rates of early school leaving among females. Other countries where rates are similar for girls and boys are Bulgaria (9.4% for boys and 9.2% for girls), the Czech Republic (6.4% for both categories) and Greece (3.8% for boys and 3.6% for girls).

## THE RELATIONSHIP BETWEEN SCHOOL DROP-OUT AND SOCIO-ECONOMIC DIMENSIONS

In order to provide as comprehensive a picture as possible of the dropout phenomenon and its socio-economic impact, the chapter includes a theoretical foundation of the phenomenon and presents various correlations studied in the literature, which will further inform the analysis of the socio-economic impact of school dropout in Romania.

The importance of such an analysis is reflected in the literature, which points to a number of consequences of dropping out of school and a relevant impact of this phenomenon both on the individual and on society as a whole. An example of this is the analysis by Lansford (2016), which shows that **a young person who drops out of high school is four times more likely to be in receipt of government assistance, twice as likely to have been dismissed from work two or more times, more than three times as likely to have been arrested since the age of 18, twice as likely to have used illicit drugs in the past 6 months, and more than twice as likely to report poor health.**

**Table A11.** Comparison of high school dropouts and high school graduates by socially relevant outcomes measured at age 27

Consequences	% of abandon	% of graduates	$\chi^2$	p
Government assistance	67.9	17.6	65.48	< .001
Dismissal (more than one)	31.5	15.2	8.82	.006
Arrest after the age of 18	65.4	2.6	47.90	< .001
Illicit drugs in the last 6 months	43.9	22.9	11.49	.002
Poor health (self-reported)	21.8	9.4	7.62	.010
None of these options	1.5	47.7	95.11	< .001
Four or more of these options	19.3	.8	95.11	< .001

Source: Lansford (2016).

In this context, at the individual level, we consider an overall perspective on the impact of dropping out of school on an individual's further education, health and overall quality of life. From an economic perspective, we consider the impact of school dropout on employment opportunities and career trajectories, on personal/family income, and on income differentials compared to those with other levels of educational attainment. From a social perspective, we consider social mobility and the intergenerational impact of school dropout.

Dropping out of school has a profound and long-lasting impact on an individual's **subsequent education**, influencing chances of further education, labor market opportunities and personal and social development. Clearly, school dropouts fail to obtain the qualifications needed to enroll in upper secondary (high school) and university programs. This significantly reduces their chances of continuing their formal education pathway.

The data presented above on the percentage of school dropouts reflect the percentage of young people aged 18-24 who have completed lower secondary education (i.e. grade 8) at most and who are no longer in any other form of education or training. **Romania also has the lowest rates of adult education in the EU, with the proportion of 25-64 year olds participating in education or training being 1% in 2020 and 5.7% in 2022** (European Commission, 2023a). For example, at European level, in 2017, 15.7% of low-skilled young people aged 15-29 were not in employment/education or training, compared to only 9.6% of those with higher education (CEDEFOP, 2019).

Research shows that individuals with higher levels of education have a stronger incentive and are given more opportunities to accumulate additional human capital through on-the-job training. The microeconomic literature provides empirical support for the prediction that **individuals with higher levels of education**

**also benefit from better on-the-job training** (Blundell et al., 1999). Increased investment in education has been shown to lead to higher productivity and earnings for the individual, and such investments result in significant social rates of return. Returns on investment in vocational training are more difficult to demonstrate (Wilson & Briscoe, 2004).

Beyond the concrete aspects influencing participation in education and training, the motivation of low-skilled adults (correlated with lower educational attainment) differs significantly from that of other adult learners, being influenced largely by external obligations and social needs (e.g. getting a job, specific requirements to access social benefits) and less by intrinsic factors such as the desire to learn new things (Dæhlen & Ure, 2009).

Dropping out of school reduces **employability** and limits opportunities for professional and personal development. In the case of Romania, at the 8<sup>th</sup> grade level, there is a National Assessment which marks the transition to the secondary cycle/vocational/dual education. Graduation from secondary education provides a level 2 qualification.

The new Law for Pre-University Education No 198/2023 defines compulsory education from the upper kindergarten group (middle kindergarten group since 2023) up to and including grade 12. This

amendment allows that, upon completion of compulsory education of 12 grades, the graduate can obtain a level 4 qualification according to the National Qualifications Framework. In this context, it is important to note that an increase in the duration of compulsory education leads to an increase in the educational attainment and, implicitly, in the income of individuals affected by these changes, even though, in a study conducted in the UK, minor effects on self-reported health and health-related habits such as smoking or alcohol consumption were noted (Clark & Royer, 2013).

Biographical and life-course studies show that individuals with higher levels of education tend to have a better quality of life and to avoid health risks and antisocial behaviors. Education is a major determinant of health inequalities, with an impact on life expectancy and quality of life through life-course structure and the distribution of socioeconomic opportunities (Heise & Meyer, 2004).

In terms of **wage earnings**, research in the field indicates that education has a significant impact on wages for both genders (Pena-Boquete & Flores, 2013) and thus reduces wage inequality. A marginal increase in education decreases wage differentials by about 0,99 percentage points for men and 1,34 percentage points for women (Brunello et al., 2009). Other more recent studies indicate that **one standard deviation increase in education increases**



**earnings by about 20 percentage points, equivalent to 6 percentage points per year of education** (Capellari et al., 2017).

Dropping out of school is linked to various **health problems**. Research indicates that people who drop out of school are at higher risk of health problems such as mental health problems, chronic diseases and disabilities (Ridder et al., 2013; Tabuchi et al., 2018; Vaughn et al., 2014; Lindhardt et al., 2022; Valkov, 2018). These health problems not only affect individual well-being, but also have wider societal implications, leading to increased social costs and negative outcomes for school dropouts (Lansford et al., 2016).

Dropping out of school is associated

with multiple social and behavioral health problems, including poor mental and physical health, increased involvement in criminal activity, and reduced general well-being, and youth who drop out of school are significantly more likely to experience mental health problems, including suicide attempts (Maynard et al., 2015).

Mental health problems have been highlighted as a significant factor associated with dropping out of school (Andersen et al., 2021; Lawrence & Adebawale, 2022; Heradstveit, 2023; Idsoe & Keles, 2016; Lindhardt et al., 2022) including in dedicated reviews for Romania (Costache et al., 2014). Problems such as depression, anxiety, stress and other mental illnesses may contribute to a student's decision to leave school prematurely.

## EDUCATION AND HUMAN CAPITAL

**Human capital refers to skills that are relevant to economic activities.**

These skills are acquired through education, training, work experience and health and are essential for productivity growth and economic development. Human capital is considered a crucial factor for economic growth, as it directly influences labor productivity and thus a country's economic performance. Investments in education, health and training are considered investments in human capital (Schultz, 1961; Becker, 1964; Lucas, 1988). Another concept used in analyzing the relationship between education and economic development is the *Human Capital Stock*, which refers to the accumulated measure of human capital in a population or economy at a given point in time. It is a quantity

that reflects the total level of education and skills available to the labor force in a given region or country. In contrast to *human capital*, it is a static picture, reflecting the context of a given society/region/system at a given point in time (Mankiw et al., 1992; Barro & Lee, 2013).

With these concepts in mind, Sianesi and Reenen (2000) conduct a comprehensive review of research in this area, which indicates that there is convincing evidence on the influence of human capital on productivity growth. Although views differ depending on the research methodology used, estimates indicate that an average increase in the education of the population by one year would raise the level of GDP per capita by three to six percent or lead to an increase in the economic growth rate by more than one percent (Sianesi & Reenen, 2000).

**Table A12.** Impact of school dropout on health

Health Indicator	OR	95% CI
Chronic diseases <sup>1</sup>	1.28	1.12 – 1.46
Mental health disorders <sup>1</sup>	1.6	1.42 – 1.80
Insomnia <sup>1</sup>	1.41	1.22 – 1.62
Difficulty concentrating <sup>1</sup>	1.5	1.34 – 1.69
Asthma <sup>2</sup>	1.39	1.23 – 1.57
Diabetes <sup>2</sup>	1.28	1.12 – 1.46
Heart disease <sup>2</sup>	1.20	1.04 – 1.39
Stroke <sup>2</sup>	1.96	1.29 – 2.99
Ulcer <sup>2</sup>	1.36	1.07 – 1.73
Poor health (self-reported) <sup>2</sup>	1.56	1.51 – 1.61

Source: <sup>1</sup>Ridder (2013), <sup>2</sup>Tabuchi et al. (2018). OR = odds ratio CI = confidence interval

**Table A13.** Impact of school dropout on mental health

Mental health	Male OR (95% CI)	Female OR (95% CI)
Flourishing	1.00	1.00
Moderate mental health	1.43 (1.24 – 1.66)	1.73 (1.45 – 2.06)
Emotional problems	1.60 (1.37 – 1.88)	1.76 (1.52 – 2.04)
Exhaustion/apathy	1.70 (2.32 – 3.14)	3.43 (2.98 – 3.95)

Source: Andersen et al. (2021).

The same authors present a synthesis of existing studies at the time, highlighting the findings on the relationship between education and GDP (Table A14).

**Research indicates that an increase in investment in education is correlated with an increase in productivity and GDP per capita, and the efficiency with which educational resources are allocated**

**is crucial to maximizing the benefits of human capital investments**, which are not limited to the direct beneficiary but spread to other members of society through their effects, which include, among others, improved health, reduced crime and increased political stability (Wilson & Briscoe, 2004).

Also, the impact of learning at different educational levels seems to vary according to the level of development

**Table A14.** Relationship between educational attainment and GDP

Study	Illustrating the impact
Clay (1991)	A one percentage point increase in primary and secondary school enrollment rates is associated with an increase in the growth rate of GDP per capita by 2.5 and 3.0 percentage points respectively.
Levine & Renelt (1992)	A one percentage point increase in secondary school enrolment is associated with an increase in the growth rate of GDP per capita of between 2.5 and 3.7 percentage points
Murphy, Schleifer & Vishny (1991)	A one percentage point increase in primary school enrolment is associated with a 2.2 percentage point increase in the growth rate of GDP per capita.
Clay (1997)	An additional year of tertiary education for men is associated with a 1.2 percentage point increase in the growth rate of GDP per capita.
Hanushek & Kim (1995)	An additional year of secondary schooling for men is associated with an increase in the GDP per capita growth rate by .36 percentage points
Gemmel (1996)	For the OECD: A one percentage point increase in the tertiary human capital stock is associated with an increase in the growth rate of GDP per capita by 1.1 percentage points.  A one percentage point increase in tertiary human capital growth is associated with a 5.9 percentage point increase in the growth rate of GDP per capita.
Judson (1998)	A one percentage point increase in human capital development is associated with an increase in the GDP growth rate of 11 percentage points.

Englander & Gurney (1994)	A one percentage point increase in secondary school enrollment is associated with an increase in productivity of about 1.5 percentage points.
Barro & Lee (1994)	An additional year of secondary schooling for men is associated with a 1.4% increase in GDP per worker.
Benhabib & Spiegel (1994)	A 1% increase in the stock of human capital is associated with a 12 to 17% increase in the growth rate of GDP per capita.
Mankiw, Romer și Weil (1992)	A 1% increase in the average percentage of the working-age population of secondary school is associated with a .66% increase in GDP per working-age person. A 1% increase in the human capital stock is associated with a .28% increase.
de la Fuente & Doménech (2000)	A 1% increase in human capital stock is associated with a .27% increase in GDP. At the sample average, an increase in average education by one year would increase output per capita by about 3%.
Bassanini & Scarpetta (2001)	A 1% increase in human capital stock is associated with a .57% increase in GDP. At the sample average, an increase in average education by one year would increase output per capita by about 6%.
World Bank (2013) apud Costache et al. (2014)	As a result of under-investment in Roma education, Romania loses between €202 million and €887 million due to lower annual productivity and tax revenues.
Costache et al. (2014)	The impact of education on employment opportunities and earnings is higher among Roma than non-Roma. An extra year of school reduces the risk of becoming unemployed by 8.2%. An extra year of school increases earnings by 8-9%. An extra year of school reduces the risk of developing serious or very serious health problems or suffering from a chronic disease by 8.2%. The benefits of an extra year of schooling, on average, calculated at the macro level, represent 7-9% of GDP.

Source: Sianesi and Reenen (2000); Costache et al. (2014).

of a country. While skills acquired at the primary and secondary level seem to be related to economic growth in the poorest and intermediate developing countries respectively, **tertiary skills are the most important for economic growth in OECD countries** (Sianesi & Reenen, 2000).

An additional argument for increased

investment in education can be based on studies that investigate the returns on education as measured by labor market earnings. One such study that reports the private returns on education (results based on individual earnings, while the costs calculated are those allocated to school attendance - fees, tuition fees, and the indirect or opportunity cost of education in



**Table A15.** Calculated returns to education for Romania

Year	A	B	E	H	K
1994	5.8	3.0	–	–	–
2007	13.6	2.1	14.5	13.6	16.7
2008	12.6	2.0	13.2	13.1	14.7
2009	12.5	2.1	13.7	13.5	15.2
2010	11.1	2.1	12.0	12.4	12.9
2011	1.6	2.1	11.2	12.0	11.7
2012	1.3	2.1	11.2	11.5	11.9

Source: Montenegro & Patrinos (2014).

Note: A – Returns to one additional year of schooling; B – Standard deviation of returns to one additional year of schooling; C – Returns to total tertiary education; D – Returns to primary schooling for males; I – Returns to female primary schooling; E – Returns to female tertiary schooling.

the form of foregone earnings), also includes data calculated for Romania (Table A15).

The **Human Capital Index (HCI)** is an indicator developed by the World Bank that measures a country's development potential through the health and education of its population. The data available for Romania in 2020 indicates an HCI = 5.8, which means that a child born in Romania in 2020 will be 58% as productive compared to what he or she could be if fully educated and in full health. This index is lower than the average for the Europe and Central Asia region and for high-income countries. Between 2010 and 2020, the HCI for Romania decreased from 0.60 to 0.58 (World Bank, 2020). Given that the HCI is also calculated taking into account the years spent in the education system up to the age of 18 (11.8 years in the case of Romania) and the years of schooling adjusted for what children actually

learn (8.4 years in the case of Romania), the **direct influence of the losses generated by the high drop-out and early school leaving rates and the negative effects of dropping out on health can be noted.**

Dropping out of school has a significant impact on the **unemployment rate** by reducing the skills of the workforce, limiting employment opportunities and increasing pressure on the welfare system.

Education influences individuals' labor market participation opportunities, earning potential and economic stability. Highly educated people generally experience lower unemployment rates. This is due to the higher skill levels, better job preparation and greater adaptability that higher education offers (Blasques et al., 2021). People with only high school or lower educational attainment show

higher vulnerability to unemployment. They typically have fewer skills that are in demand in the modern economy and compete for a limited number of low-skilled jobs. In particular, school dropouts face higher unemployment rates compared to those who complete their education. **School dropouts are usually confined to lower-paying, unstable jobs that are more sensitive to changes introduced by economic downturns and automation** (Pompei & Selezneva, 2021).

In 2017, the unemployment rate among low-skilled working-age adults (aged 25 to 64) was 13.9% in the 28 EU countries, while the rate among high-skilled adults was 4.2% (CEDEFOP, 2019).

In the year 2022, the total number of unemployed was 464,360, as shown in Table A16. This data reveals a gender disparity - there are more unemployed males than females, both in terms of the distribution of the total population and the distribution by different education

**Table A16.** Number of unemployed in 2022 by educational attainment and gender

Education level	Gender	Number unemployed 2022
No schooling	Male	7,293
	Female	2,224
	Total	9,517
Primary	Male	19,339
	Female	8,624
	Total	27,963
Secondary	Male	80,259
	Female	41,909
	Total	122,168
High School	Male	107,098
	Female	89,105
	Total	196,204
University	Male	18,796
	Female	13,317
	Total	32,113
Total	Male	288,291
	Female	176,070
	Total	464,360

Source: Own processing of NSI data.

levels. The gender disparity is smaller among the unemployed with university education (18,796 males compared to 13,317 females).

The data in Table A17 show that the total number of unemployed is higher in rural areas (311,020) than in urban areas (153,340). **In the case of the unemployed who have not completed any schooling, the number of unemployed who have not completed any schooling is higher in rural areas - more than twice as many as in urban areas** (6,935 in rural areas compared to 2,582 in urban areas). Also, most of the unemployed with low and medium levels of education (primary, secondary and high school) are located in rural areas.

People with low levels of education are more likely to be unemployed. In addition to educational attainment, background is closely related to vulnerability to unemployment, with the majority of the unemployed located in rural areas. These data suggest that school dropouts face higher unemployment rates than those who have completed their education.

Education is an important factor for labor market participation. Individuals with low levels of education, as well as school dropouts, face difficulties in finding a job, which increases the chance that these individuals will join the ranks of the inactive population (Jež, 2015).

**Table A17.** Number of unemployed in 2022 by educational attainment and residence background

Education level	Residency environments	Number unemployed 2022
No schooling	Urban	2,582
	Rural	6,935
Primary	Urban	5,712
	Rural	22,251
Secondary	Urban	29,633
	Rural	92,535
High School	Urban	69,207
	Rural	126,997
University	Urban	23,594
	Rural	8,519
Total	Urban	153,340
	Rural	311,020

Source: Own processing of NSI data.

The national inactive population (population aged 15 and over with inactive status) in 2022 was over 7.5 million people (Table A18). Of these, most of the inactive population has a high school education (almost 2.5 million people) and lower secondary education (more than 2 million people), and is also included in the age range overlapping with compulsory education, thus including the full

high school cycle. Individuals with university education are less numerous in the inactive population (almost 400,000 people). The smallest group within the inactive population are individuals with no schooling at all (more than 130 000 people). The largest group in the inactive population is made up of individuals with low or medium education.

**Table A18.** Population aged 15 and over with inactive status in 2022 by level of education

Education level	Total inactive persons 2022
No schooling	138,767
Primary	810,155
Secondary	2,374,216
High School	2,466,944
University	396,033
Total	7,686,502

Source: Own processing of NSI data.

**Table A19.** Inactive population in 2022 by education level and gender

Education level	Gender	Number of inactive persons 2022
No schooling	Male	46,920
	Female	91,847
Primary	Male	238,190
	Female	571,965
Secondary	Male	783,719
	Female	1,590,497
High School	Male	860,857
	Female	1,606,086
University	Male	171,987
	Female	224,046
Total	Male	2,924,683
	Female	4,761,819

Source: Own processing of NSI data.

**Table A20.** Inactive population in 2022 by educational attainment and residence environment

Education level	Residence	Number of inactive persons 2022
No schooling	Urban	51,339
	Rural	87,428
Primary	Urban	195,578
	Rural	614,577
Secondary	Urban	835,808
	Rural	1,538,409
High School	Urban	1,500,151
	Rural	966,792
University	Urban	324,187
	Rural	71,846
Total	Urban	3,827,886
	Rural	3,858,616

Source: Own processing of NSI data.

Of the total inactive population, almost 3 million are men and over 4.7 million are women (Table A19). For every level of education analyzed, more women than men are inactive. For the inactive population with no completed schooling, as well as for the inactive population with completed primary, lower secondary and high school education, the number of inactive women is almost double that of inactive men. The gender gap is smaller for inactive persons with university education.

The inactive population is almost equally distributed between urban and rural areas - over 3,800,000

people (Table A20). If we also consider the educational level of the inactive population, there are more inactive people in rural areas who have not completed any schooling, or for whom the highest level of education is primary and secondary education, compared to the inactive population in urban areas who have these levels of education. By contrast, more inactive people in urban areas have a high school or university education, against a larger school population in urban areas.

These data emphasize the role of education in the participation of the population in economic activities. People with low levels of education

**Table A21.** Poverty rate (%) in 2022 by education level

Education level	Poverty rate (%) 2022
Low education level (primary and secondary - ISCED 0-2)	42.8
Medium education level (secondary and post-secondary - ISCED 3 and 4)	14.5
Higher education level (ISCED 5-8)	2.4
Total	19.9

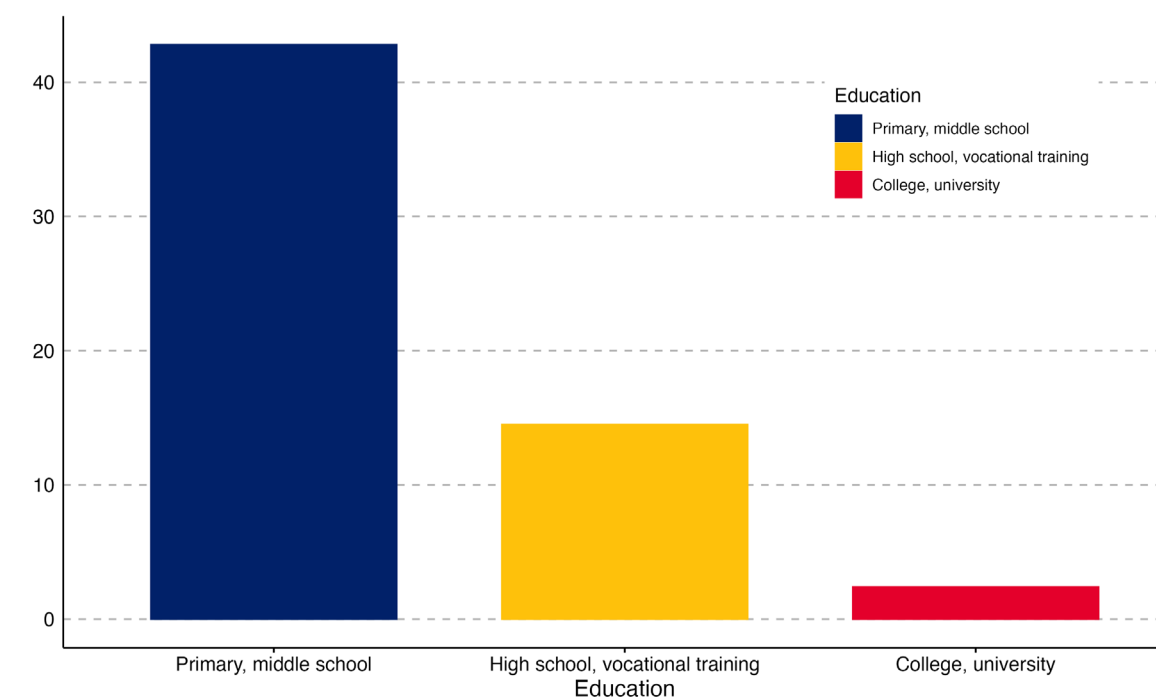
Source: Own processing of NSI data.

account for the majority of the economically inactive population in Romania, while people with university education account for a smaller share of the economically inactive population. This highlights the **protective effect of education against economic inactivity**.

The level of education of individuals in a community has a direct and significant impact on the **economic development of that community. Investing in education is essential for increasing productivity, stimulating innovation, attracting investment and improving quality of life**. These investments contribute to sustainable economic growth and reduce social and economic disparities.

Table A21 shows the variation in the poverty rate, expressed in percentages at the national level for the year 2022, by educational attainment of the population. The highest poverty rate (almost 43%) is among the low-educated who have completed only primary and lower secondary education. For individuals with a medium level of education (higher secondary and post-secondary), the poverty rate is lower (14.5%). **The lowest poverty rate (2.4%) is among those with a higher level of education (university graduates). These data demonstrate the importance of increasing educational attainment in reducing poverty.**

The graph in Figure 14 visualizes the relationship between educational



**Figure 14.** Poverty rate (%) in 2022 by educational attainment. Source: Own processing of NSI data.

attainment and the poverty rate - as the educational attainment of individuals increases, the poverty rate decreases.

The level of education of the members of a community significantly influences the attractiveness of **foreign direct investment (FDI)**. A well-educated and skilled workforce, capable of sustaining innovation and adapting to economic change, is a major factor in investors' decisions to allocate resources to a particular region. Investment in education is essential to stimulate economic development and attract FDI, thereby contributing to economic growth (especially in more sophisticated industries) and improving quality of life.

Thus, human capital seems to be associated with significantly higher investment (Barro, 1991; Benhabib & Spiegel, 1994; Gemmel, 1996). For OECD countries in particular, the stock of human capital at the secondary education level seems particularly important in stimulating investment, while the direct effects on growth come through increasing the stock of human capital at the tertiary level and its accumulation.

In the case of Romania, in the first four months of 2024 ` direct investments of non-residents in Romania amounted to €3,230 million (compared to €2,408 million in January-April 2023), of which equity participations (including estimated reinvested earnings) amounted to a net value of €3,014

million and intra-group loans to a net value of €216 million` (National Bank of Romania, 2024), an increase of 34.14% compared to the same period of the previous year.

Dropping out of school is associated with increased involvement in **criminal activities**. The international literature reflects the impact of dropping out of school on future offending, indicating a higher likelihood of being arrested for theft, assault or drug possession among school dropouts (Maynard et al., 2015). The link between dropping out and delinquency appears to be bi-univocal: involvement in criminal activity increases the likelihood of dropping out of school; this effect appears to be exacerbated by stigmatization and negative interactions with authorities (Rud et al, 2018). Studies in the field tell us that involvement in criminal activity increases the probability of dropping out of school by 11 percentage points, and observable and unobservable factors explain 73% of the unconditional correlation between involvement in criminal activity and dropping out of school, while different individual characteristics, such as gender and background, may influence the relationship between criminality and dropping out (Rud et al., 2018).

Empirically, research indicates that there is a significant association between involvement in criminal activities and dropping out of school (Rud et al., 2018; Bäckman, 2017). Dropping out of high school has

**Table A22.** Correlations between dropout rates and crime

Source	Relationship researched	Result
Bäckman, O. (2017)	Correlation between high school dropout rates and subsequent criminal convictions.	Small to medium positive effect on increased risk of criminal convictions for men (d = .26).
Ruud et al (2016)	The relationship between involvement in adolescent criminal activities and school dropout in the Netherlands using longitudinal administrative data.	Involvement in such activities is associated with an 8 to 11 percentage points higher probability of dropping out of school.
Cook and Kang (2016)	The link between delayed school entry-admission, dropout rates and subsequent criminal behavior.	Students who are late entering school are 6,42 percentage points less likely to repeat a grade between the ages of 11 and 15, but 3,14 percentage points more likely to drop out by 12th grade and .80 percentage points more likely to commit a serious crime by age 19.
Sweeten et al (2009)	The relationship between dropping out of school and subsequent delinquent behavior.	Boys who dropped out of school for other reasons (other than economic and academic) showed a modest increase in the diversity of delinquent behavior (r = .15, p < .10)

Source. Own processing of research results in the field.

been associated with an increased likelihood of engaging in delinquent and criminal behavior (Sweeten et al., 2009). In addition, studies have shown that high school dropouts have higher rates of crime, suggesting a direct causal link between dropping out of high school and criminal activity (Cook & Kang, 2016).

### SCHOOL DROP-OUT AND SOCIO-ECONOMIC IMPACT

The relationship between school dropout (or, if we use another method of quantification, early school leaving) and various socio-economic factors is complex. Factors such as the level of economic development of a country and the level of human capital have a bidirectional relationship with early school

leaving. The Early School Leaving Rate (ESL), as calculated by Eurostat, captures individuals aged 18-24 for whom the highest level of education is lower secondary education (grades 5-8).

Table A23 presents the Pearson correlation coefficient between the ESL (expressed in percentages for each of the EU countries in 2023) and a number of associated factors (measured at country level for the EU Member States). This analysis reveals a moderate positive correlation (0.55) between early school leaving and inactivity rates among young people aged 15-34 not in education. These are young people who are neither active in the labor market nor registered as unemployed. **With a high early school leaving rate,**



**Table A23.** Correlation coefficients between ESL (2023) and associated factors

Associated factors	% ESL (2023)
Life expectancy (2021)	-.24
GDP per capita (2021)	-.12
Annual net salary income € (2023)	-.09
Unemployment rate for 15-34 year olds not in education % (2023)	.10
Inactivity rate for 15-34 year olds not in education % (2023)	.55
Social protection expenditure - € per capita (2021)	-.04
% People at double risk of poverty (2020)	.33
% People in very good perceived health (2023)	-.35
% People with depressive symptoms (2019)	-.09
Total detainees per 1000 places (2022)	.04
Juvenile inmates per 1000 places. (2022)	-.11
HDI (2021)	-.27
Teachers as % of total working population (2022)	-.40

Source: Eurostat and UNPD own processing.

Note: Persons at double-risk of poverty are persons considered to be at risk of poverty on at least two of the following three dimensions: income, consumption or liquid assets.

**the rate of inactive young people at country level is also higher. This correlation indicates the difficulties for young people with low educational attainment to acquire an occupational status.**

Other moderate correlations were found between ESL and the percentage of teachers in the total working population (-0.40), ESL and the percentage of people who perceive their health as very good (-0.35) and between ESL and the risk of poverty (0.33). **A higher level of ESL is associated with fewer teachers in the labor market in a country.** Staff in the education

system may influence early school leaving. A higher percentage of ESL is associated with a lower percentage of people in very good health and a higher percentage of ESL is associated with a higher risk of poverty. These correlation coefficients suggest that early school leaving is related to economic precariousness as well as lower health status.

Weak correlations were found between ESL and the Human Development Index (HDI) (-0.27) and between ESL and life expectancy (-0.24). A high rate of ESL is associated with a low level of the HDI, suggesting that early school leaving is

a phenomenon that tends to affect less developed societies (the HDI is an index that aggregates life expectancy, average education and GDP per capita at country level). Also, higher HDI is associated with lower life expectancy at country level.

Very weak correlations were found between the ESL and the following indicators: GDP per capita (-0.12), the rate of juvenile prisoners (-0.11), the unemployment rate for young people aged 15-34 (0.10), net earnings (-0.09), the proportion of people with depressive symptoms (-0.09), social security expenditure (-0.04) and the total rate of prisoners at country level (0.04).

## CULTURES OF MIGRATION

This section discusses migration as a phenomenon that produces its own cultural elements, its own specific cultures in which the socio-economic aspirations of individuals are scaled to the levels that can be satisfied by the chosen mode of migration. For Romania, this predominantly means cultural structures that support seasonal, low-skilled work or other types of precarious activities carried out in developed EU countries. In these patterns of understanding the world, school education beyond secondary school ceases to be useful and even becomes undesirable, delaying the realization of the aspirations preached and accepted by the members of these cultures. The focus of the analysis has been placed on emigration areas, circular migration and the phenomenon of dropping out of school at secondary school level. Specifically, the verification

of cultural influence was done through a statistical analysis of the relationship between seasonal or circular migration of less than 12 months and the dropout rate at county level (NUTS 3).

**Migration cultures** are sets of values, beliefs, norms and behaviors that produce and reproduce the phenomenon of intra-EU migration for work. Possibly grafted on certain local beliefs and values - which produced the first forms of desires/aspirations that could only be satisfied through earnings obtained `abroad` - migration cultures seem to provide support for modes of existence accepted as moral by the community. The aim of the present discussion is to analyze how these cultures generate or contribute to school drop-out.

Romanian migration has gone through a number of `waves`, each wave touching different social worlds and presenting different cultural aspects. If the first wave seems to have been a `brain drain`, the second wave is that of people taking unskilled jobs in immigration areas, these waves being mainly supported by labor recruitment firms. The third wave, which is much more voluminous, takes place after Romania's entry into the European Union and relies much more heavily on migration networks, personal connections, etc. Beyond this point it is difficult to construct `waves` with distinct characteristics of intra-EU migration, as the intensity of movement of people is more likely to be influenced by macroeconomic or social conditions at the regional level. However, one



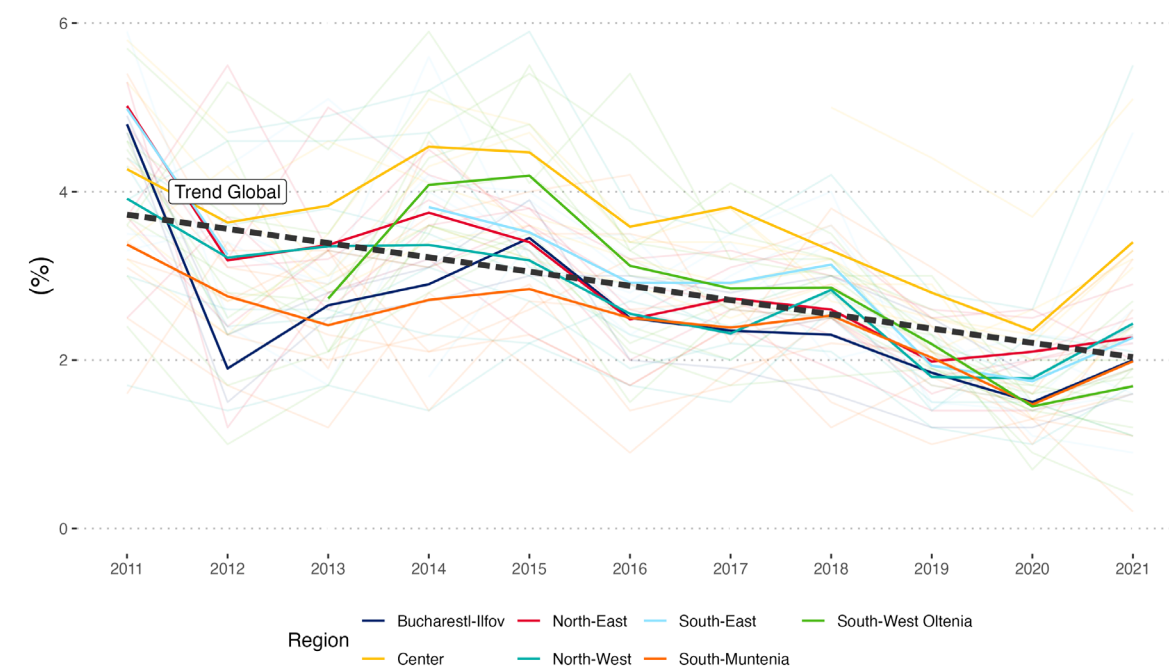
point needs to be emphasized: in the analyses produced around the 2010s, the cumulative migration of `brains` has a relatively small share, at the level of a few percent, while the migration of unskilled or low-skilled workers accounts for about 80% (Alexe et al., 2011). This transformation in the character of the migrant population was also visible in the processing of the 2011 Population and Housing Census (RPL2011) data, with a progressive decrease in the qualification of emigrants between 1990 and 2011, with the proportion of those who had completed high school dropping from 71% to only 38%, the most common jobs practiced in the emigration areas being unskilled or medium-skilled jobs in construction, agriculture and the domestic sector (Ghețău, 2018). This transformation is important and implies that the core elements of the dominant migration culture are a product of the experience of this large category, that of low-skilled individuals who accept undesirable, seasonal, possibly low-paid work and where school education beyond secondary school is likely to lose its practical value.

Analyzing migration phenomena is not straightforward, mainly due to the lack of certain types of data and micro-data. The scale of migration, as shown above, seems difficult to assess accurately, as does the number of those who work for periods shorter than 12 months outside Romania. The type of work done predominantly in these cases and the professional qualification required for this type of work are also difficult to

identify and more importantly, when these data do exist, they are not always associated with a specific area/county. These reasons have led the analysis to focus on data series produced by the INS (INSSE, 2024d), together with data provided cross-sectionally by the 2021 Census of Population and Housing (RPL2021, Table A4.6, i.e., Temporarily absent persons gone abroad or within the country by sex, age groups, residence areas and counties, as of December 1, 2021, and Table A1.01, i.e., Population at the 1948, 1956, 1966, 1977, 1992, 2002, 2011 and 2021 censuses by counties and residence environments) (INSSE, 2024e, 2024f) which allowed the transformation of gross migration figures into county-level percentages. From the existing data in the INS SCL113A matrix, we were interested in dropout at the primary and secondary school level, as well as dropout at the high school, vocational and post-secondary school level.

In the analysis, the dropout data, interpreted as a summary picture of the phenomenon at county level, are further compared with the RPL2021 data describing the percentage of individuals abroad for less than 12 months - circular, cross-border or labor migration.

The analysis showed a significant ( $p = .038$ ) although weak ( $r = .279$ ) correlation between the percentage of circular migrants and the percentage of high school dropouts for the period 2011-2021, for which data are available, understood as a sample that can represent the dropout phenomenon.



**Figure 15.** High school dropout by counties/NUTS 3, cumulative percentages, 2011-2021  
**Source:** Data taken from Table A, INS statistic SCL113A available on the TEMPO platform, <http://statistici.insse.ro/>. Each line represents a county; the total suggested effect is decreasing.

**Table A25.** Table of correlations between the cumulative dropout rates at secondary and middle school, respectively high school and vocational school level and the percentage of persons not living in Romania at the time of the 2021 census.

	1	2	3
1. Dropout in high school and vocational school	–		
2. Dropout in primary and secondary school	.48	–	
3. Circular migration less than 12 months	.28	–.11	–

**Source:** Own statistical processing. There is a weak but statistically significant direct proportional correlation between the size of migration and high school dropout. The sample size (n) was 42.

On the other hand, the relationship between migration and dropout at secondary or primary school level was not found to be significant.

Data analysis revealed a relationship at NUTS 3 (counties) level between short-term migration and the dropout rates at high school level over a 10-year period. This observation seems to confirm **the existence of a migration culture that**

**places a low value on continuing education beyond secondary school.** The practical significance of this observation is that it supports a cultural, substantive perspective as an explanation for the phenomena of school dropout (SD), early school leaving (ESL), early leaving from education and training (ELET), early leaving from vocational education and training (ELVET) and points to the need

to understand the community ethos if we are to change this situation. At this moment, in the context of an apparent calming of migration flows between European countries and the return of a large number of Romanian citizens to the country (RPL 2021), we can expect that this type of short-term migration culture which, as Sandu (2018) observes, pursues low-skilled, modestly paid jobs, may take on more important dimensions further accentuating the phenomenon of early school leaving.

## ECONOMETRIC ANALYSIS

### METHODOLOGY

To answer the research questions, we used models for estimating both individual costs and societal/national costs.

To estimate the costs at the individual level, we used the Human Capital Model, which postulates that investments in education and training improve an individual's skills, knowledge and productivity. These improvements lead to higher earnings and better economic performance. Using a cost-benefit analysis framework, we compare the costs of educational investments with the expected future benefits to assess the economic returns. This approach allows us to assess how differences in human capital investment influence

both individual economic outcomes and broader macroeconomic growth.

More sophisticated models are possible, such as the Mincer Earnings Function, Difference-in-Differences (DiD) approaches, Instrumental Variable (IV) approaches, Propensity Score Matching (PSM), Cohort Studies and Longitudinal Data Analysis. All of these require a large panel of individuals with several characteristics, depending on the analysis framework chosen. For example, the PSM requires a matched sample of dropouts and non-dropouts based on their propensity to drop out estimated from observable characteristics, and the DiD approach compares outcomes over time between a group that dropped out and a group that did not drop out, if both groups would have followed similar trends in the absence of dropout. These panel data were not available to us - we doubt that Romania has such data - and we have noted this significant limitation of our analysis and the available input data in the conclusions section.

Estimating costs at national level requires scaling individual costs at national level, incorporating wider economic impacts and taking into account both direct and indirect costs. Here are the steps and methodologies used to estimate these costs:

1. Aggregation of individual costs: individual costs were aggregated based on the average individual-level cost of dropping out of school (per individual) multiplied by

the number of dropouts in the country. These are costs due to lost productivity and earnings, i.e. the differences in average lifetime earnings between dropouts and graduates multiplied by the total number of dropouts.

2. Fiscal costs: fiscal costs are estimated in two areas - foregone tax revenue and increased welfare expenditures. Lost tax revenue costs (2a) are estimated by calculating the difference in tax contributions between dropouts and graduates. The costs of increased welfare expenditures (2b) are estimated by the additional welfare benefits and public assistance provided to dropouts.

3. Health and social costs: health and social costs are also estimated in two areas - health expenditure and crime and incarceration costs. Health expenditures (3a) are estimated based on higher health care costs associated with lower education levels. Crime and incarceration costs (3b) are estimated by calculating the increased costs associated with higher crime rates among dropouts.

It is also possible to analyze intergenerational costs, but these are more difficult to estimate. They are usually estimated on the basis of one or both of two elements: children's educational attainment and long-term economic growth. In terms of children's educational attainment,

costs are estimated on the basis of the impact of parental dropout status on children's educational outcomes and future earnings. In terms of long-term economic growth, costs are estimated by modeling the impact of lower educational attainment on overall economic growth, e.g. using the Human Capital Coefficient. In the current iteration of our analysis, we have not estimated intergenerational costs.

For any of the costs at the national level, more sophisticated models such as Dynamic Stochastic General Equilibrium Models (DSGE) or Computable General Equilibrium (CGE) models can also be used. Dynamic models estimate the wider economic impacts over time, considering the interactions between different economic variables and simulating the economy-wide impact of changes in educational attainment or estimating longer-term macroeconomic effects such as productivity and GDP growth. Unfortunately, these models also require data that have not been available to us and that Romania may not have available, such as composite panel data containing education attainment and dropout rates, earnings and employment statistics, tax contributions and public expenditure, health and crime statistics, demographic and socio-economic variables. These indicators can be collected in the future by adjusting the current statistics to allow for the most in-depth analysis of these topics.

Our approach, based on the data we had access to, is summarized in Table B1.

Throughout this analysis, the input data on which we rely are characterized by some uncertainty. Some are data based on the reality in Romania, but which fluctuate to a greater (e.g. minimum wage) or lesser extent (e.g. taxation). Others are data that characterize Eastern Europe, or Europe as a whole, and are used because more consistent data do not exist for Romania - but these data have a higher uncertainty. In order to estimate the degree to which these uncertainties may combine to influence our analysis, we ran a Monte Carlo simulation, in which the input parameters were allowed to vary freely in the likely ranges. The analysis generated 100,000 simulations, and we extracted at the end the lowest possible (at the 5% threshold) and highest possible (at the 95% threshold) values for the calculated costs.

## INDIVIDUAL LEVEL COSTS

Before estimating the parameters on a larger, national scale, it is necessary to calculate the **individual-level costs associated with school dropout**. Table B2 shows the comparison between different levels of educational attainment and the corresponding economic returns, measured by monthly and annual earnings and lifetime earnings.

The input assumptions in this table are described below.

### Average monthly gross wage income.

We used a benchmark of RON 8,523 as the average monthly income in Romania, which is the value reported by INS for April 2024. We also used an average RON-EUR exchange rate of 5 RON to 1 EUR; this brings the average gross monthly average wage income in Romania to €1,704.60.

### Income differentiation by education.

We were unable to find direct sources indicating the differences in wage earnings associated with different education levels. However, we compiled a defensible hierarchy of these earnings using sources such as the following:

- National Institute of Statistics (INS): the INS regularly publishes earnings reports and labor market statistics, which sometimes include breakdowns by education levels (<https://insse.ro/cms/en>).
- Eurostat: Eurostat provides comprehensive data on earnings in the European Union, including Romania. Their database includes information on earnings by education levels (<https://ec.europa.eu/eurostat>).
- OECD Reports: The OECD frequently publishes reports on education and its impact on earnings. These reports include country-specific data and comparisons (<https://www.oecd.org>).
- World Bank: World Bank database and reports provide insights on the economic impact of education, including earnings data (<https://data.worldbank.org>).
- Ministry of Education: the Romanian Ministry of Education publishes data and reports on educational achievements and their economic impact (<https://www.edu.ro>).

- Studies and academic papers: various academic studies analyze the relationship between education and earnings and either focus directly on Romania or can be extrapolated to the Romanian situation. Notable sources include Barro & Lee (2013), Harmon et al. (2003), Psacharopoulos & Patrinos (2014) and Sylwester (2002).

Overall, we concluded that:

1. **People who did not graduate from high school:** people with less than a high school education generally earn the least. Their monthly earnings are often significantly lower compared to those with higher educational qualifications. Estimates suggest that their incomes may be 30-40% lower than the national average, placing their monthly income in the range of RON 5,113 to RON 5,966.
2. **High school graduates:** high school graduates earn more than high school dropouts but less than college graduates. Their earnings are typically 10-20% lower than the national average, translating into around RON 6,818 to RON 7,670 per month.
3. **Higher education (Bachelor's degree):** people with a Bachelor's degree usually earn significantly more than those with only a high school diploma. Their earnings can be 20-30% higher than the national average, placing their monthly

**Table B1.** Levels of analysis and methods used for estimation

	Levels of analysis	Method
0	Individual	Individual costs (human capital model)
1	Country	Costs caused by loss of productivity and income
2	Country	Tax costs
2a	Country	Opportunity cost of unearned income
2b	Country	Costs of increased spending on social assistance
3	Country	Health and social costs
3a	Country	Health expenditure
3b	Country	The costs of crime and imprisonment
4	Country	Intergenerational costs
4a	Country	Children's educational level
4b	Country	Long-term economic growth



income in the range of RON 10,227 to RON 11,079.

4. **Masters and above:** those with a Master’s degree or higher tend to earn the most. Their earnings can be as much as 30-50% higher than the national average, putting their monthly income in the range of RON 11,079 to RON 12,784.

In our first line of estimations, we used the average value of these percentages and ranges as input values.

• **Length of working life.** The average length of working life in Romania is among the lowest (if not the lowest) in the EU, at 31.3 years (Eurostat). This figure indicates the expected number of years that a person at the age of 15 is likely to remain in the labor force during their lifetime. In the EU, the average length of working life is around 36.0 years, with the longest in countries such as the Netherlands (42.5 years) and Sweden (42.3 years). Other countries with low lengths are Italy (31.6 years) and Greece (32.9 years). The length of working life varies significantly by educational attainment. In general, individuals with higher educational attainment have longer working lives. Data from the OECD (e.g. Education at a Glance 2023 report) and Eurostat suggest that:

• **People with primary education or less** tend to have the shortest working lives. They often face

significant employment challenges and higher rates of early exit from the labor market. We have used an estimate of 10-20% below the average length of working life, i.e. between 25 and 28 years, with an average of 26.61 years.

• **People with secondary education (especially upper secondary education)** also have relatively long working lives, but slightly shorter than those with tertiary education. We used an average estimate for this group, i.e. between 28 and 34 years, with an average of 31.30 years.

• **People with higher education (i.e. tertiary education, university degree)** typically have the longest working lives, reflecting better job stability and higher employment rates. They often work more years than those with lower education levels. We used an estimate of 10-20% above the average working life, i.e. between 34 and 37 years, with an average of 36.00 years.

• **Individual-level cost analysis.** The data show significant disparities in earnings based on educational attainment. **Individuals who dropped out of school before obtaining a high school diploma earn RON 5,539 per month, resulting in lifetime earnings of RON 353,736 over an average of 26.61 years.**

**Table B2.** Comparison between different levels of education and the corresponding economic benefits measured by monthly and annual earnings and lifetime earnings

Education level	Comment	Monthly income (RON)	Annual revenues (RON)	Annual revenue (EUR)	Length of working life (years)	Lifetime earnings (EUR)
Average	–	8,523	102,276	20,455	31,30	640,247
People who have not graduated from high school	30–40% below average	5,539	66,479	13,295	26,61	353,736
High school graduates	10–20% below average	7,244	86,934	17,386	31,30	544,210
Bachelor	20–30% above average	10,653	127,845	25,569	36,00	920,356
Masters or higher	30–50% above average	11,932	143,186	28,637	39,13	1,120,433

**Note.** Income is calculated in Romanian Lei (RON) and Euro (EUR) for both monthly and annual values. The active lifetime is estimated in years and lifetime earnings are calculated on the basis of these durations.

• **The economic cost of school dropout.** The economic cost of school dropout is obvious in the reduced earnings potential. High school graduates earn about RON 20,000 more per year than high school dropouts, and the average annual income is about RON 35,000 higher than the income of high school dropouts. This difference in earnings highlights the financial disadvantages faced by school dropouts, mainly caused by limited employment opportunities and lower wages. This contributes to long-term financial instability and a higher risk of poverty for school dropouts.

By comparing these differences in earnings, we can quantify the individual economic loss due to school dropout. For example, the annual difference in earnings between high

school graduates and school dropouts is about RON 20,455 (€4,091).

Taking also into account differences in the length of working life, the average lifetime earnings of a school dropout are €353,736 compared to those of a high school graduate, which are €544,210. This translates into a significant lifetime economic disadvantage of €190,473.

## COSTS AT NATIONAL LEVEL

### 1. Costs due to lost productivity and earnings

To estimate the national economic impact, we aggregated the results at the individual level. Using data from the Ministry of Education, we calculated the number of dropouts in primary-secondary education between 2005-2024. These data are summarized in Table B3.

These show the initial number of pupils enrolled in grade 1, the number of pupils who graduated from grade 8, and the number of pupils who dropped out over the 8-year period of each cohort. Overall, the data show a gradual decline in both enrollment and dropout over the years. For example, the 2005-2013 cohort started with 226,324 pupils,

of whom 183,312 graduated and 37,117 dropped out. In contrast, the 2011-2019 cohort started with 206,055 pupils, of whom 174,473 graduated and 25,139 dropped out, showing a slow decrease in dropouts over time. The overall average dropout value, including the 2013-2021 cohort, is 23,147 pupils per cohort. Based on this evolution of

dropout, we have visualized lifetime costs per cohort due to aggregate individual costs in Table B4.

## 2. Tax costs

Tax costs include lost government revenue and increased government spending due to school dropouts. One aspect of this method is the calculation of lost tax revenue, as lower-earning individuals contribute less to taxes over their lifetime. This reduction in tax contributions affects public finances by limiting the resources available for government spending on public services and infrastructure. In addition, the method also takes into account increased spending on social assistance, as school dropouts are more likely to rely on government assistance programs throughout their lives. These include various forms of social assistance such as unemployment benefits, housing assistance and food subsidies. Together, these factors highlight the fiscal pressure on government budgets due to higher dependency ratios and lower revenue flows.

### 2a. Costs of lost tax revenues

This calculation involves determining the tax revenues that the government fails to collect because of lower earnings of individuals who did not finish high school. The cost per dropout is calculated based on the difference in earnings between dropouts and high school graduates.

The assumptions that went into this model were based on the following sources: the Fiscal Code of 2024, Laws 153 and 177 and the application that can be found at <https://www.calculator-salarii.ro/>. In Romania, we do not have an average tax on gross salary. These taxes are uneven: total taxes on the minimum gross salary are 38.31%, for salaries above the minimum they become 40.86% and can reach 42.77% for salaries above RON 5,251 gross. Given that the estimated average gross wage for school dropouts was RON 5,539, we used the 42.77% tax rate for our subsequent calculations.

Table B5 summarizes lost tax revenue.

**Table B3.** Pupil cohort evolution and school dropout between 2005-2024

Cohort	Pupils enrolled in grade I	Eighth grade graduates	Eighth grade repeat	Dropout
2005 - 2013	226,324	183,312	5,817	37,195
2006 - 2014	220,489	182,600	5,967	31,922
2007 - 2015	221,185	184,353	6,558	30,274
2008 - 2016	212,022	177,651	6,880	27,491
2009 - 2017	203,895	169,298	6,485	28,112
2010 - 2018	203,926	170,528	6,386	27,012
2011 - 2019	206,055	174,473	6,379	25,203
2012 - 2020	202,134	178,717	3,749	19,668
2013 - 2021	156,991	140,600	4,801	11,590
2014 - 2022	175,088	156,117	4,951	14,020
2015 - 2023	168,918	152,634	4,760	11,524
2016 - 2024	162,748	149,151	4,570	9,028

**Table B4.** Lifetime costs per cohort due to aggregate individual costs (EUR)

Cohort	Dropout	Cost caused by loss of productivity
2005-2013	37.117	7.069.812.642
2006-2014	31.971	6.089.634.938
2007-2015	30.302	5.771.734.318
2008-2016	27.563	5.250.026.830
2009-2017	28.138	5.359.549.213
2010-2018	26.918	5.127.171.288
2011-2019	25.139	4.788.318.560
2012-2020	21.830	4.158.041.059
2013-2021	11.617	2.212.733.073
2014-2022	14.783	2.815.772.834
2015-2023	12.393	2.360.540.671
2016-2024	10.003	1.905.308.507
Total	277.774	52.908.643.933

**Table B5.** Tax revenue lost due to school dropouts

Description	Value
Income gap (per year)	4,091.04 EUR
Income gap (lifetime)	190,473.71 EUR
Average tax rate	42.77%
Tax revenue lost per individual (per year)	1,749.74 EUR
Tax revenue lost per individual (lifetime)	81,465.61 EUR



## 2b. Increased welfare expenditure costs

School dropouts often rely more heavily on government welfare programs, leading to increased public spending. Table B6 summarizes increased welfare spending.

The assumptions that went into this model were based on the following sources: data reported by the Ministry of Labor and, in particular, by the National Agency for Social Payments and Inspection (ANPIS, mmanpis.ro). These sources report that the average amount paid in Romania for a person benefiting from social assistance and aid programs is RON 301.33 per month, meaning RON 2,615.96 (€723.19) per year. According to the latest available data, approximately 23% of Romania's population relies on some form of social assistance (Earle & Pauna, 1998; World Bank, 2011). This includes various benefits such as unemployment benefits, child allowances and guaranteed minimum income. The probability of needing social assistance is influenced by factors

such as long-term unemployment, economic instability and low income levels. We also assumed that school drop-outs would have a 100% higher chance of needing social assistance than the general population - there is no clear evidence on this point and this is a decision based on the research team's estimation.

We have not taken the average of 31.30 years (i.e. the average length of working life) as the 'lifespan' for this calculation. Theoretically, after the end of this period, citizens benefit from a pension scheme. It could be argued that during the time they were receiving social assistance programs as working adults, these individuals did not contribute to the pension system, and pension benefits under these circumstances in fact continue to be social assistance programs. If this position is accepted, the calculation should be made not with 31.30 years, but with 58,60 years, i.e. the average life expectancy in Romania (76.6) minus 18 years. We further deduced from this period the average reduction in

**Table B6.** Increase in social assistance expenditure due to school dropout

Description	Value
Average cost of social assistance per individual (per year)	723.19 EUR
Average probability of an individual receiving social assistance	23%
Average probability of a school drop-out receiving social assistance	46%
Average welfare cost per dropout (per year)	332.67 EUR
Duration for social assistance costs	50.10 years
Average cost of social assistance per dropout (lifetime)	16,666.68 EUR

probable life span for individuals with low education. Individuals with low socioeconomic status are more likely to experience health disparities, including lower life expectancy compared to those with higher socioeconomic status. For example, research shows that they tend to have poorer health and higher mortality rates (Fledsberg, 2023; Loef et al., 2021; Smits, 2002). Inferences at the population level are more difficult, but UK data from the Office for National Statistics (ONS) show that in England, between 2017 and 2019, the difference in life expectancy at birth between the richest and poorest areas was 9,4 years for men and 7.6 years for women between 2017 and 2019 (Office for National Statistics, 2019). We settled on an average of 8.5 years of reduced life expectancy. In total, this

brings the average duration for social care to 50.10 years.

Table B7 extrapolates these costs for cohorts starting in 2005 and calculates the total lifetime expenditure due to tax costs (lost tax revenues and increased welfare expenditure) in Romania.

## 3. Health and social costs

Health and social costs encompass the wider social impacts of school dropouts beyond direct economic measures. This method examines the increased health expenditure associated with lower educational attainment, as school dropouts often have poorer health and higher rates of chronic diseases. This leads to higher demand for health services and higher public health spending. In addition, the method takes into

**Table B7.** Lifetime costs per cohort due to tax costs (EUR)

Cohort	Dropout	(2a) Lost tax revenue	(2b) Increased spending on social assistance
2005–2013	37,117	3,023,758,867	281,525,642
2006–2014	31,971	2,604,536,863	242,494,175
2007–2015	30,302	2,468,570,768	229,835,116
2008–2016	27,563	2,245,436,475	209,060,303
2009–2017	28,138	2,292,279,198	213,421,573
2010–2018	26,918	2,192,891,160	204,168,096
2011–2019	25,139	2,047,963,848	190,674,708
2012–2020	21,830	1,778,394,161	165,576,549
2013–2021	11,617	946,385,935	88,112,816
2014–2022	14,783	1,204,306,041	112,126,346
2015–2023	12,393	1,009,603,245	93,998,634
2016–2024	10,003	814,900,448	75,870,922
Total	277,774	22,629,027,010	2,106,864,880

account costs related to crime and incarceration, as school dropouts are statistically more likely to engage in criminal activity and be incarcerated. These costs include law enforcement, court procedures and correctional facilities, reflecting the social challenges and safety concerns that arise from lower educational levels.

### 3a. Health expenditure costs

People with lower educational attainment tend to have poorer health, leading to higher health expenditure. This section calculates the increase in health expenditure associated with school dropout.

The assumptions that went into this model were based on the following sources: data reported by the Ministry of Health, Eurostat, the U.S. Trade Administration, and Dumitru's analysis (2023). These sources report annual per capita health expenditure per year in Romania in the years 2021-2023 as between €817 and €2,385, with an average reported by Eurostat of €1,310. The average health expenditure for high school dropouts is significantly higher compared to graduates. Studies show that school dropouts have 1.5 to 2 times higher health care costs than those with higher educational attainment, due to poorer health status and higher dependence on health care (National Research Council, 2011). We have operated in our analysis with an average increase of 1.75 times (75% higher), which brings the annual health care cost of a school dropout to about €3,602.

We took the average of 50.10 years as an estimate of life expectancy, i.e. the average life expectancy in Romania (76.6) minus 18 years, minus again the reduction in life expectancy for dropouts (8.5 years), which brings the lifetime expenditure for a dropout to €114,854.30. Table B8 summarizes these health care costs.

### 3b. Crime and incarceration costs

People with lower educational attainment are more likely to engage in criminal activity and be incarcerated. This section calculates the increased costs associated with crime and incarceration for school dropouts.

The costs of crime are difficult to calculate - they include direct costs of the actual crime, such as loss of property or life, as well as the cost of legal proceedings and incarceration. The direct costs of crime were impossible for us to calculate, but we focused on the costs of court proceedings and incarceration.

The average cost of court proceedings in Romania varies depending on the type of case. According to the CEPEJ 2022 report (CEPEJ, 2022), European countries, including Romania, spent on average €79 per capita on their judicial systems. This includes all judicial procedures and services, but specific costs can vary widely depending on the nature and complexity of the case. For example, more complex and serious cases, such as homicides, are significantly more expensive, costing between €20,000

**Table B8.** Increased health expenditure due to school dropout

Description	Value (EUR)
Average health cost per individual (per year)	1,310.00 EUR
Average increase for dropouts compared to graduates	75%
Average health cost per school dropout (per year)	2,292.50 EUR
Duration for healthcare costs	50.10 years
Total health expenditure per school dropout (lifetime)	114,854.30 EUR

and €40,000 per case, according to the RAND Corporation. On the other hand, simpler cases, such as theft or minor civil disputes, would have much lower costs, possibly a few hundred euros per case (Hunt et al., 2017). This wide range illustrates the diversity of court costs depending on the specific legal issues and resources required for each type of case. School dropouts are more associated with petty crime than violent crime - for example, robbery, aggravated assault, burglary, theft and vehicle theft. They have low prosecution costs, in the range of €200-1,000 per case. We therefore settled on an average of €600 per prosecution, based on average figures from Hunt et al. (2017).

The average cost of incarcerating a prisoner in Romania is approximately €43 per day (the European average is €64 per day) (Aebi & Tiago, 2021), which is approximately €15,695 per year. This estimate covers various expenses associated with maintaining the prison system, including accommodation, food, security and administrative costs. These figures are in line with wider trends observed in European countries, where incarceration costs can vary depending

on the level of security required and the specific services provided to prisoners. The average length of incarceration in Romania is approximately 23.4 months. These data reflect the typical length of time individuals spend in incarceration for various offenses in the country (Prison Insider, 2021).

The average incarceration rate in Europe is around 108 inmates per 100,000 inhabitants as of 2022. This figure reflects data from the European Union (Eurostat, 2023; Council of Europe, 2021; Council of Europe, 2023) and represents a slight increase from previous years due to the resumption of normal social and judicial activities post COVID-19. Specific countries in Europe vary significantly, with the highest rates found in Hungary and Poland (around 190-200 per 100,000) and the lowest rates in Finland, the Netherlands and Slovenia (between 52 and 65 per 100,000). Romania has a figure of 118 inmates per 100,000, a rate of 0.118%.

This is a lower bound estimate of the (lifetime) probability that a Romanian citizen will be prosecuted for a crime,

**Table B9.** Increased costs of crime and incarceration due to school dropout

Description	Value
Cost of legal proceedings	600.00 EUR
Incarceration costs (per day)	43.00 EUR
Prison costs (per year)	15,695.00 EUR
Average length of imprisonment	1.95 years
Average lifetime probability of being prosecuted and imprisoned	0.118%
The lifetime probability of a school dropout being prosecuted and imprisoned	0.413%
Total costs of legal proceedings and incarceration (lifetime)	128.88 EUR

**Table B10.** Lifetime costs per cohort due to health and social costs (EUR)

Cohort	Dropout	(3a) Health care expenditure	(3b) Crime-related expenditure
2005 - 2013	37,195	4,272,003,829	4,793,605
2006 - 2014	31,922	3,666,377,369	4,114,033
2007 - 2015	30,274	3,477,097,565	3,901,643
2008 - 2016	27,491	3,157,458,187	3,542,976
2009 - 2017	28,112	3,228,782,676	3,623,009
2010 - 2018	27,012	3,102,443,001	3,481,244
2011 - 2019	25,203	2,894,671,663	3,248,104
2012 - 2020	19,668	2,258,953,389	2,534,766
2013 - 2021	11,590	1,331,160,758	1,493,692
2014 - 2022	14,020	1,610,256,585	1,806,865
2015 - 2023	11,524	1,323,580,377	1,485,186
2016 - 2024	9,028	1,036,904,169	1,163,508
Total	273,039	31,359,689,566	35,188,634

found guilty and imprisoned. The increased probability of criminality for a dropout is a great unknown. Statistics provided for the US (Fight Crime: Invest in Kids, 2008) show that high school dropouts are 3.5 times more likely to be arrested and over 8 times more likely to be incarcerated compared to high

school graduates. We were unable to find such statistics from Europe or for Romania specifically. Therefore, we decided to operate with a conservative figure (the lowest value shown), i.e. an average 3.5-fold (350%) increase in the likelihood of school dropouts being involved in a crime. Therefore, the

### probability of a school dropout being prosecuted for a crime is 0.413%.

We therefore operate in our calculations with a cost of legal proceedings of €600 (one-time cost), a cost of incarceration of €15,629 per year, and an average incarceration duration of 1,95 years and a probability of 0.413%, which brings the average lifetime cost per dropout to €128.88. At an average adult life expectancy of 50.10 years, this adds only €2.57 cost per year for each dropout. Table B9 summarizes these costs.

Table B10 extrapolates these costs for cohorts from 2005 onwards and calculates the total lifetime expenditure due to health and social costs (health expenditure and crime and incarceration costs) in Romania.

### CONCLUSIONS ON COSTS AT NATIONAL LEVEL

Table B11 presents the lifetime costs of school dropouts by cohort and separately for each cost category. The last column sums the total lifetime costs for each cohort. The last row shows the percentages that each of the cost categories contributes to the total.

**The lifetime costs of all eschool dropouts over the period under analysis (i.e. 2005-2013 to 2016-2024) total €107 billion, which represents about 35.67% of Romania's annual GDP (estimated at €300 billion).**

It is noticeable that neither welfare spending nor crime spending are significant contributors to the losses: the main contributors are health

**Table B11.** Life-time costs of school dropout by cohort: cost categories and totals

Cohort	Dropout	(1) Revenues lost	(2a) Taxes lost	(2b) Expenditure on social assistance	(3a) Expenditure on Health	(3b) Expenditure on crime	Total
2005 - 2013	37,195	7,084,669,591	3,030,113,184	282,117,258	4,272,003,829	4,793,605	14,673,697,468
2006 - 2014	31,922	6,080,301,726	2,600,545,048	242,122,519	3,666,377,369	4,114,033	12,593,460,695
2007 - 2015	30,274	5,766,401,054	2,466,289,731	229,622,741	3,477,097,565	3,901,643	11,943,312,734
2008 - 2016	27,491	5,236,312,723	2,239,570,952	208,514,196	3,157,458,187	3,542,976	10,845,399,034
2009 - 2017	28,112	5,354,596,896	2,290,161,092	213,224,368	3,228,782,676	3,623,009	11,090,388,042
2010 - 2018	27,012	5,145,075,817	2,200,548,927	204,881,069	3,102,443,001	3,481,244	10,656,430,058
2011 - 2019	25,203	4,800,508,878	2,053,177,647	191,160,136	2,894,671,663	3,248,104	9,942,766,428
2012 - 2020	19,668	3,746,236,901	1,602,265,522	149,178,175	2,258,953,389	2,534,766	7,759,168,754



2013 - 2021	11,590	2,207,590,283	944,186,364	87,908,026	1,331,160,758	1,493,692	4,572,339,122
2014 - 2022	14,020	2,670,441,395	1,142,147,784	106,339,130	1,610,256,585	1,806,865	5,530,991,760
2015 - 2023	11,524	2,195,019,018	938,809,634	87,407,428	1,323,580,377	1,485,186	4,546,301,643
2016 - 2024	9,028	1,719,596,641	735,471,483	68,475,725	1,036,904,169	1,163,508	3,561,611,527
Total	273,039	52,006,750,922	22,243,287,370	2,070,950,772	31,359,689,566	35,188,634	107,715,867,264
Total %	-	48.28	20.65	1.92	29.11	0.03	100.00

spending and tax losses – and, of course, the lost earnings of individuals who have dropped out of school.

Table B12 highlights the annual costs of school drop-outs by cohort and in total figures, separating costs into categories.

**The annual expenditure on dropouts in the 12 cohorts analyzed is about €2.3 billion, or about 0.77% of Romania's annual GDP.**

Table B13 reflects the costs that have been incurred with dropouts to date, starting

**Table B12.** Annual costs of school dropouts by cohort: cost categories and totals

Cohort	Dropout	(1) Revenues	(2a) Taxes lost	(2b) Expenditure on social assistance	(3a) Expenditure on Health	(3b) Expenditure on crime	Total
2005 - 2013	37,195	152,166,233	65,081,498	12,373,564	85,269,538	95,681	314,986,513
2006 - 2014	31,922	130,594,179	55,855,130	10,619,409	73,181,185	82,116	270,332,019
2007 - 2015	30,274	123,852,145	52,971,562	10,071,173	69,403,145	77,877	256,375,902
2008 - 2016	27,491	112,466,781	48,102,042	9,145,359	63,023,118	70,718	232,808,018
2009 - 2017	28,112	115,007,316	49,188,629	9,351,946	64,446,760	72,316	238,066,967
2010 - 2018	27,012	110,507,172	47,263,918	8,986,012	61,925,010	69,486	228,751,598
2011 - 2019	25,203	103,106,481	44,098,642	8,384,216	57,777,878	64,832	213,432,049
2012 - 2020	19,668	80,462,575	34,413,843	6,542,902	45,088,890	50,594	166,558,804
2013 - 2021	11,590	47,415,154	20,279,461	3,855,615	26,570,075	29,814	98,150,119
2014 - 2022	14,020	57,356,381	24,531,324	4,663,997	32,140,850	36,065	118,728,617
2015 - 2023	11,524	47,145,145	20,163,978	3,833,659	26,418,770	29,644	97,591,197
2016 - 2024	9,028	36,933,909	15,796,633	3,003,321	20,696,690	23,224	76,453,777
Total	273,039	1,117,013,471	477,746,661	90,831,174	625,941,908	702,368	2,312,235,582
Total %	-	48.31	20.66	3.93	27.07	0.03	100.00

**Table B13.** Dropout costs by cohort, incurred to date over the last 11 years (as of 2013): cost categories and totals

Cohort	Dropout	Years paid so far	(1) Revenues lost	(2a) Taxes lost	(2b) Expenditure on social assistance	(3a) Expenditure on Health	(3b) Expenditure on crime	Total
2005 - 2013	37,195	1,673,828,561	715,896,475	136,109,203	937,964,913	1,052,488	3,464,851,640	3.457.585.652
2006 - 2014	31,922	1,305,941,789	558,551,303	106,194,087	731,811,850	821,164	2,703,320,194	2.707.469.767
2007 - 2015	30,274	1,114,669,305	476,744,062	90,640,556	624,628,305	700,894	2,307,383,121	2.309.517.187
2008 - 2016	27,491	899,734,245	384,816,337	73,162,876	504,184,940	565,745	1,862,464,142	1.867.342.009
2009 - 2017	28,112	805,051,215	344,320,405	65,463,622	451,127,320	506,209	1,666,468,771	1.668.010.041
2010 - 2018	27,012	663,043,035	283,583,506	53,916,071	371,550,060	416,915	1,372,509,587	1.367.733.343
2011 - 2019	25,203	515,532,406	220,493,210	41,921,082	288,889,388	324,162	1,067,160,247	1.064.450.322
2012 - 2020	19,668	321,850,299	137,655,373	26,171,610	180,355,560	202,377	666,235,218	739.470.958
2013 - 2021	11,590	142,245,461	60,838,384	11,566,845	79,710,225	89,443	294,450,358	295.136.307
2014 - 2022	14,020	114,712,762	49,062,648	9,327,994	64,281,700	72,130	237,457,234	250.380.192
2015 - 2023	11,524	47,145,145	20,163,978	3,833,659	26,418,770	29,644	97,591,197	104.950.339
2016 - 2024	9,028	0	0	0	0	0	0	0
Total	273,039	7,603,754,221	3,252,125,681	618,307,606	4,260,923,030	4,781,172	15,739,891,709	15.832.046.118
Total %	-	48.31	20.66	3.93	27.07	0.03	100.00	100.00

in 2013 (the year in which the first of the cohorts analyzed began incurring costs). All these costs are shown by cohort and in total figures, separating costs into categories. For each cohort, the estimate takes into account the total years in which costs were incurred.

**The costs incurred with dropouts in the 12 cohorts analyzed, over the last 11 years, are about €15.7 billion, about 5.23% of Romania's annual GDP.**

### Monte Carlo analysis

Throughout this analysis, the input data on which we rely is characterized by some uncertainty. To estimate the total degree of uncertainty, we performed a

Monte Carlo simulation<sup>3</sup>, in which the input parameters were allowed to vary freely in the likely ranges. The analysis generated 100,000 simulations and we extracted at the end the lowest possible (at the 5% threshold) and the highest possible (at the 95% threshold) values for the calculated costs. Table B14 shows the results of this analysis.

The conclusion we draw is that our results lie with 90% probability in the plus-minus 23% range around the above conclusions.

<sup>3</sup> The Monte Carlo method (sometimes also called „Monte Carlo experiments” or „Monte Carlo simulations”), is a broad class of computational algorithms based on repeated random sampling of input data in deterministic models. The basic principle is that of using probability (and randomness) to solve problems of numerical estimation of outcomes (consequences, effects) of these deterministic models. The name comes from the Monte Carlo casino in Monaco, where the Polish mathematician and physicist Stanislaw Ulam was inspired to develop this method.



**Table B14.** Monte Carlo simulation results (100,000 cycles)

	(1) Revenues lost	(2a) Taxes lost	(2b) Expenditure on social assistance	(3a) Expenditure on Health	(3b) Expenditure on crime	Total
<b>Lifetime costs</b>						
Reported result	52.908.643.933	22.629.027.010	2.106.864.880	31.903.524.440	35.798.869	109.583.859.131
Average	52.887.135.582	21.437.941.135	2.111.159.663	38.943.195.872	151.414.669	115.530.846.920
Median	52.937.166.862	21.431.561.580	2.061.977.646	38.653.408.647	143.495.365	115.417.488.054
5% estimation threshold	40.363.088.237	16.272.198.083	1.357.315.936	21.544.753.040	18.560.613	89.892.572.178
95% estimation threshold	65.251.732.110	26.587.330.730	3.019.909.218	58.002.095.934	320.853.097	141.515.980.326
<b>Annual costs</b>						
Annual costs	1.136.384.545	486.031.670	92.406.354	636.796.895	714.548	2.352.334.012
Reported result	1.136.591.166	460.718.752	92.602.603	777.352.515	3.022.705	2.470.287.741
Average	1.136.616.016	460.456.646	90.485.249	771.815.610	2.864.245	2.469.555.608
Median	748.440.455	302.367.479	59.652.776	430.364.963	370.423	1.812.069.779
5% estimation threshold	1.524.816.913	620.338.445	132.175.393	1.157.959.877	6.404.261	3.134.081.654
<b>95% estimation threshold</b>						
Reported result	7.648.272.919	3.271.166.327	621.927.692	4.285.870.015	4.809.165	15.832.046.118
Average	7.649.663.550	3.100.801.367	623.248.518	5.231.859.421	20.343.883	16.625.916.738
Median	7.649.830.804	3.099.037.305	608.997.971	5.194.594.075	19.277.390	16.620.989.222
5% estimation threshold	5.037.270.959	2.035.040.876	401.484.437	2.896.509.556	2.493.076	12.195.875.311
95% estimation threshold	10.262.561.165	4.175.098.783	889.587.493	7.793.482.588	43.102.961	21.093.486.311

**In other words, with a 90% probability, the total lifetime costs for Romania of the almost 275,000 school dropouts over the last 12 years will be no less than ~€90 billion and no more than ~€140 billion, and therefore between 30-46% of Romania's annual GDP.**

**The annual costs for these 275,000 citizens are placed with a 90% probability at no less than €1,8**

**billion and no more than €3.0 billion per year, thus between 0.60-1.03% of Romania's annual GDP.**

**The costs already incurred in recent years for these 278,000 school dropouts are placed with a 90% probability at no less than €12 billion and no more than €21 billion per year, between 4.04-7.01% of Romania's annual GDP.**

## BEST PRACTICES AND RECOMMENDATIONS

As a preamble to this section dedicated to recommendations, we can consider a series of good practices at European/international level, which can guide similar approaches in Romania, with the aim of reducing the dropout/early school leaving rate.

A prime example is **Portugal**, which had an early school-leaving rate of 50% in 1992, 45% in 2002 and 20.5% in 2012, decreasing to 8% in 2023, significantly below the EU target.

In 2004 (when the ESL rate was 39.3%), Portugal launched the National Plan for the Prevention of Early School Leaving (PNPTSE), with the aim of halving the ESL rate by 2010, targeting young people under 25. Preventing and combating early school leaving has been achieved through a series of initiatives and measures integrated into other national plans, operational programs or public policies, adopting a **cross-sectoral and inter-institutional perspective in areas such as education, youth and employment, involving a wide range of organizations and public institutions**. The main focus of the strategy to combat early school leaving is to recognize that early school leaving is also the result of learning difficulties.

Key measures include the extension of compulsory education to 18 years of age in 2009 and the strategy of joint policy

development and implementation by various entities of the Ministry of Education and the Ministry of Social Security, particularly in the area of adult education through the New Opportunities initiative (Alvares et al., 2015). This program focused on the **recovery of young adults and adults who had dropped out of school, developing a network of training centers in schools, businesses and community associations**. Measures also included providing **special support for schools in disadvantaged areas** (through the Educational Territories for Priority Intervention Program), as well as ensuring compliance with compulsory education and vocational certification for minors exploited through child labor (Child Labor Elimination Plan).

The National Program for the Promotion of School Success - PNPSS (implemented since 2016) is based on a logic of proximity and is implemented either by creating local diagnostic and intervention initiatives or by using the knowledge produced by schools in the development of interventions tailored to local contexts and the specific needs of the target audience. It also promotes practices that enable the anticipation and prevention of failure, with an emphasis on early intervention (European Commission, 2023b).

Among the measures included in the strategy to reduce the early school leaving rate are:

1. Strengthening individual student monitoring mechanisms.
2. Review curriculum to increase teaching and learning time.
3. School autonomy, allowing local adaptation of the curriculum.
4. Improving the transition between school and alternative pathways in education.
5. Affirmative action measures for pupils at risk of dropping out or who have already left the Integrated Education and Training Program (IETP).
6. Strengthening school welfare support.
7. Stronger inclusion of pupils with Special Educational Needs (SEN). (European Commission, 2023b)

Within the PNPSS, a Personal, Social and Community Development Plan for the 2020/2021 school year has also been created. This initiative is based on socio-behavioral interventions that are made available to schools as additional resources for implementing measures to improve educational success and inclusion. They focus for example on improving social, emotional and personal development skills, strengthening the school-family relationship and involving the community in the partnership for success.

Alongside this example, a report by the European Commission to assess the implementation of the Council Recommendations (2011) on policies to reduce early school leaving rates identifies a number of good practices at Member State level (Donlevy et al., 2019). Among these, the following are worth mentioning:

- **Early education and early care (ECEC):** Access to quality early childhood education plays a crucial role in children's development of key competences and later school success, and is particularly beneficial for children from disadvantaged backgrounds. For example, Bulgaria, Greece, the Czech Republic, Italy and Croatia have national strategies for Roma inclusion which include measures to increase access to ECEC. Recommendations made in this respect concern the professionalization of staff, the development of educational guides, the provision of specific language support and support measures for parents. Of course, these measures must be accompanied by integrated interventions at the community level, ensuring the necessary infrastructure and human resources.
- **Increasing education and training provision beyond compulsory education:** Providing education and training options beyond compulsory education can prevent early school leaving. For example, in Serbia and Bulgaria there are legislative options

to validate skills and create bridges between education and training pathways.

- **Flexibility and permeability of educational pathways:** Inflexible educational regulations can be a major obstacle to the completion of upper secondary education. For example, in Denmark, pupils in upper secondary education programs can choose which study programs they wish to pursue. In France, measures are in place to facilitate transitions between educational pathways, Portugal proposes a flexible curriculum, and Sweden implements introductory programs, which facilitate access to upper secondary education.
- **Promoting anti-segregation policies:** School segregation is a serious form of discrimination and a violation of children's rights. For example, in France and Sweden, there are regional pilot programs to increase social diversity in schools. In Bulgaria, the 2015 Pre-school and School Education Act includes desegregation measures, National Plans to combat discrimination have been implemented in Croatia, and in the Czech Republic and Ireland there are dedicated programs for the integration of Roma pupils.
- **Supporting multilingual teaching and learning:** Multilingual programs help non-native learners to become

proficient in the language of the host country. For example, programs have been implemented in Austria and Bulgaria that make language and culture courses in the host country compulsory for migrants. In Romania, the right of national minorities to study in their mother tongue is guaranteed by the Constitution and the law on pre-university education.

- **Measures for parental involvement:** Involving parents in school life is a key factor in preventing PTSD. For example, the pilot project `La Mallette des parents` in France involves parents in school information sessions. In Austria, Denmark and Estonia there are legislative provisions stipulating parental involvement in the educational process.
- **Ensuring access to high quality vocational and technical/dual vocational/technical education (TVET):** TVET offers an alternative to traditional school curricula and can prevent early school leaving. For example, in Portugal, a Vocational Education and Training (VET) school has set up an internal system for monitoring absences and transmitting information between pedagogical and psychological staff.

The significant economic costs associated with school dropout justify investments in preventive, remedial and compensatory programs that

can reduce these costs by improving graduation rates and reducing dependence on public assistance. Some of the following recommendations are already at an implementation stage or are planned for implementation in the future, while others aim at improving existing measures. The recommendations also include a number of measures outlined on the basis of the data analyzed and examples of good practice identified.

## PREVENTIVE MEASURES

Develop and further implement educational support programs:

- “Hot Meals in School” (now “A Healthy Meal”) and “School After School” programs: these programs provide social support to pupils through measures to ensure the food necessary to sustain bio-physical activity and supplementary educational activities, contributing to improved school attendance and performance.
- Remedial and tutoring activities (in small groups or 1:1) for pupils at risk of ESL / dropout, to recover learning losses, adapt teaching-learning to the typology of each pupil with difficulties, accurate assessment of learning difficulties and appropriate adaptation of educational approaches through personalized interventions that allow accompanying pupils on an educational path as long as possible.

Reducing the direct and hidden costs of education:

- Redistributive policies (conditional on attendance, participation): Providing fixed grants for pupils from disadvantaged families to cover the direct costs of education (school supplies, uniforms/clothing, transportation).
- Supporting dedicated preparation and tutoring programs for participation in national exams to cover the `hidden` costs of education (tutoring, supplementary educational activities, socio-emotional support measures, counseling, etc.).

Quality early childhood education:

- Expanding access to pre-primary and pre-school education: Investing in high quality early education and care services (accompanied by integrated measures in the school network, infrastructure, and human resources) to ensure a solid educational start, especially for children from disadvantaged backgrounds.
- Ensure access to pre-school education for all children aged 3 to 5.

Adapting educational practices:

- Individualization/personalization of educational interventions: the use of individual learning plans for pupils at risk of dropping out and/or from disadvantaged backgrounds.

- Implementation of specific pedagogical and tutorial support programs for the pupils.
- Extra-curricular and non-formal activities to stimulate the motivation of pupils at risk of ESL, dropout or exclusion, to provide them with perspectives and a socio-cultural and professional horizon different from the cultural environment of their family and community, to stimulate their educational aspirations, to enhance their personal resources for learning and success.

Adapting the curriculum:

- Adapt the curriculum to increase teaching and learning time.
- Curriculum reorganization to ensure relevant teaching processes and learning experiences for pupils, adapted to the age profile to the specificities of vulnerable pupils and current learning modalities, specific to the generations in the education system (integrated approaches, direct action based methods, collaborative methods, accessibility of content, etc.).

Support programs for pupils:

- Implement tutoring and mentoring programs to provide individualized support to pupils at risk of dropping out.
- Develop career guidance and counseling services to help pupils

plan their educational and career paths.

- Provision of support services for social-emotional development, increasing the capacity to manage emotions and increasing the level of emotional coping and self-regulation in relation to the school and exam experience, as well as for taking on a longer educational pathway with different and specific ways of learning and lifestyle impact.

## INTERVENTION MEASURES

Monitoring and early intervention:

- Early Warning Mechanism in Education (MATE): Sustained implementation of the MATE system to identify and intervene promptly in cases at risk of school dropout and early school leaving, using accurate data and coordinated actions.
- Using data to identify trends and develop evidence-based policies to combat early school leaving.

Collaboration between education and other related fields (health, social care, etc.):

- Integrated services and multidimensional approach: development of integrated services including educational support, psychological counseling, social work, community mediation, health and criminal justice services/restorative justice programs, counseling and educational



interventions to address the complex needs of vulnerable pupils.

- Integration of measures addressing school drop-out with measures addressing mental health and bullying, phenomena with a significant presence among young people and educational institutions.
- Develop information and training programs for parents to support them in exercising their educational role effectively and to improve the relationship between family and school for the benefit of pupils.

### Compensation measures

Educational reintegration/remedial programs:

- The `Second Chance` program: Providing opportunities for school dropouts to complete their studies with adequate educational and financial support. Programs such as `Second Chance` are essential to give school dropouts an opportunity to complete their studies. Although these types of programs involve significant upfront costs, they bring long-term economic benefits by increasing incomes, reducing welfare dependency, lowering crime rates and improving public health. Investment in such programs is essential to stimulate sustainable economic and social development.
- Youth Contract (YC): Implementing a similar program to the one run in the UK, providing

support for young people not in education, training or employment (NEET) to return to education, training or work with training. The Youth Contract (YC) provides additional support for NEET 16-17 year olds to help them re-enter education, training or a combination of work and training. In most parts of England, the program is managed by specialist providers and is funded by the Education Funding Agency (EFA), implementing a payment by results (PbR) system. In addition to EFA-funded areas, the program is locally managed in three main cities (Nafilyan & Speckesser, 2014).

- Setting up resource and support centers to support the reintegration of young people into the education system (skills assessments, re-enrolment bureaucracy and communication, support to access rights and facilities offered for the child/young person's at-risk situation).

### Short- and medium-term measures

National support programs:

- National Program for Dropout Reduction (PNRAȘ): Implementation and monitoring of this program, efficient distribution of resources so that they reach the pupils who need them most. Support schools in accessing and implementing grants.
- Youth Guarantee: Supporting and

developing the Youth Guarantee, an initiative through which EU countries ensure that young people up to the age of 25 are offered a job offer, options for further education and/or an apprenticeship within four months of leaving education or becoming unemployed.

Community partnerships:

- Public-private partnerships: working with business to provide internships, work-based learning, training and employment opportunities for pupils at risk of dropping out of school and/or benefiting from the `Second Chance` program.
- Local community: Active involvement of the local community in supporting education and creating a favorable learning environment.
- Empower local decision-makers and local authorities, community representatives in representative and decision-making institutions at national level with regard to local human capital at educational risk, with implications and socio-economic impact at community level.

### Long-term measures

Multidimensional approach to school dropout:

- Integrated policies: Develop an integrated approach that includes education, public health

and criminal justice, working collaboratively to address risk factors and support vulnerable pupils.

- Creating inter-sectoral and inter-institutional action flows that lead the beneficiary from the alert state to the integration on the support pathways (providing appropriate support and triggering intervention mechanisms adapted to the alert situation); integrating alert mechanisms with intervention mechanisms.

Improving the transition between school and alternative pathways in education:

- Integrated/flexible educational pathways: developing alternatives to formal educational pathways for people to acquire or upgrade basic skills at different points in their lives. A potential solution in this respect could be the development and implementation of *micro-credentials*, with the support of employers and training providers.
- Implementation of an alternative modular system to the regular school curriculum for pupils over 16.

### Lifelong learning:

- Promoting lifelong learning: creating continuing education and training opportunities for all ages, offering flexible and accessible pathways to meet the evolving



needs of the labor market.

- Development of community education-specific infrastructure: non-formal/community education centers, appropriate local budgeting of continuing education activities for young people and adults identified as at risk or vulnerable educationally or in terms of employability.
- Recognizing prior learning and non-formal and informal learning: the need for public interventions to improve skill levels through education and lifelong learning to support economic and social development. The definition of low skills needs to be multidimensional and dynamic, going beyond formal education and including skills acquired outside the formal education environment. (CEDEFOP, 2019).

#### Investing in tertiary education

- Increasing funding for post-secondary education: developing appropriate policies to financially support tertiary education, thus responding to increased demand and stimulating further study at tertiary level.

An important conclusion of this section of recommendations is that the recommendations are varied and

numerous: such complex issues cannot be solved with simple measures.

However, if we were forced to identify three measures that stand out from the plethora of possible interventions mentioned, we would emphasize the following three priorities:

- (1) **Preventive measures** (for example, developing and continuing the implementation of **educational support programs**, expanding **access to early childhood and preschool education, personalizing educational interventions**, and **developing counseling and career guidance services**).
- (2) **Intervention measures** (for example, the sustained implementation of the **MATE system** to promptly identify and intervene in cases at risk of school dropout, using accurate data, coordinated actions, and collaboration between education and other related fields).
- (3) **Strategic monitoring measures** (for example, efforts toward a clearer definition of the phenomenon and associated indicators, as well as a correct and transparent reporting process at all levels).

## LIMITATIONS

This study has a number of limitations that should be noted.

### DATA LIMITATIONS

The main limitation is the data on which we could base our analysis. Although we note that Romania has much more statistical data and much more transparently analyzed data than was the case even just a decade ago, the country seems to lack both the consistent data that are necessary for this type of analysis and the data collections that could make it possible to extract them.

Static input data on some of the parameters we used for modeling were missing, so they had to be estimated from proxy data, or from existing regional (Eastern Europe), European or, in some cases, international data. Each of these concentric circles of estimation increases the error rate of the results. Serious quantitative studies on both the antecedents and the consequences of school dropout are also lacking: the literature in Romania is abundant in common-sense qualitative descriptions, but without rigorous descriptions of effect sizes (e.g., probabilities or correlations) describing the causes or effects of school dropout. Finally, panels where longitudinal data have been collected, which are imperative for calibrating more sophisticated econometric models, are missing, as we noted in the methodology section.

All this has led to an amplification of the **uncertainty of our results to the level of plus-minus 23% - this is a large level of error, but an acceptable one, since the objective was not to indicate a perfectly accurate value** (it is doubtful whether this is actually possible), but rather to indicate a localization estimate of the costs.

### LIMITS OF STATISTICAL MODELING

In general, models of this type are simple and fail to represent reality in all its complexity. In particular, the interdependencies of these phenomena, which could have amplified or attenuated the results obtained, and in particular the interdependencies with the economy as a whole and the various phenomena that govern it, have not been modeled.

For example, an argument sometimes encountered against this type of analysis is that, even if the statistical simulation shows consistent economic outcomes that would be associated with a potential increase in educational attainment, individual income growth is still dependent on the ability of the economy to pay higher wages. In reality, the number of jobs that can utilize workers' preparation at the high school or college level (and pay them accordingly) are limited.

In 2022, quarter IV, the average wage by CAEN categories of the national economy ranged from RON 12,241 for the Information and Communications

category to RON 3,578 for Hotels and Restaurants - a 342% variation (INSSE, 2024a), with the number of employees with wages in the bottom half of the income range being roughly equal to those in the top half, with economic sectors showing a relatively linear wage growth (INSSE, 2024b). Also in 2022, Q4, the unemployment rate was only 3% (INSSE, 2024c) suggesting a good absorption of the labor force in economic activities in Romania. Taken together, the data point to a reduced capacity of certain economic branches with a large number of employees to offer wages at the higher level even with their higher education.

The idea that an economy may also need less well-trained employees can also be supported by the observation that among the top ten economies of the European Union in terms of GDP per capita there are countries that are also in the top ten in terms of early school leavers (e.g. Germany, Denmark) (World Bank Group, 2024; Eurostat, 2024). **This observation may point to a more complex link between school dropout and the economy, which recognizes that dropping out has costs, but also emphasizes that the economy has - in a bizarre and**

**unexpected way - to gain in the long run from the spillover effects of dropping out.** For example, people of low socio-economic status contribute to society through higher fertility rates. At a time of steadily declining fertility worldwide, human resources can be a compensating factor for the high costs of lack of education in general.

Another aspect of the economic effects at individual, regional or national level of school preparation/leaving is related to labor migration phenomena, which is a large-scale phenomenon in countries such as Romania, meaning that the economic benefits of high school education will be felt most strongly in areas of immigration, whether permanent or temporary. In the case of Romania, for example, data provided to the Ministry of Foreign Affairs by the UK and EU states indicate a number of around 4,800,000 Romanians living abroad, with Italy, Spain, Germany and the UK ranking first (as destination countries) (MFA, 2021).

## GLOSSARY OF TERMS

**Adult education participation rate:** Percentage of adults (usually aged 25-64) participating in education or training programs in a given year.

**Average annual income:** The total amount of income earned in a year by a person divided by the total number of persons. This indicator is used to assess living standards and economic prosperity.

**CEDEFOP:** European Center for the Development of Vocational Training.

**CEPEJ:** Council of Europe European Commission for the Efficiency of Justice.

**Cultures of migration:** Phenomena related to international migration that can influence both school drop-out rates and the socio-economic dynamics of sending communities.

**Early school leavers (ESL):** Percentage of young people aged 18-24 who have completed lower secondary education (grade 8) or less and are no longer in any other form of education or training. It is an indicator used at EU level to measure this phenomenon.

**Early Warning Mechanism in Education (EWEM):** a system put in place to identify and intervene in cases of at-risk dropout and early school leaving, using various definitions and indicators to measure and combat these phenomena.

**Employment rate:** The percentage of the economically active population that has a job. This indicator is important to assess the ability of the economy to provide job opportunities.

**GDP:** Gross Domestic Product is a macroeconomic indicator that reflects the

sum of the market value of all goods and services for final consumption produced in all branches of the economy within a country in a given year.

**Gross enrolment ratio in pre-university education:** The ratio of the number of pupils enrolled in all levels of education to the total population of official school age (3-23 years). Indicator used to measure access to education.

**Human Capital Index:** The Human Capital Index, developed by the World Bank, measures a country's development potential in terms of the health and education of its population.

**Human Capital Stock:** The stock of human capital, measuring the accumulated level of education and skills of the labor force in a population or economy at a given point in time.

**Human capital:** Human capital - referring to the skills acquired through education and training that contribute to an individual's productivity and economic development.

**Human Development Index (HDI):** The Human Development Index is a comparative measure of life expectancy, literacy, education and living standards.

**INS:** National Statistical Institute (Romania).

**Job mobility:** The ability of individuals to move between different jobs, industries or career levels within the labor market.

**Labor productivity:** A measure of labor efficiency, calculated as the ratio of total output to total hours worked, used to assess the economic performance of an economy.

**Life expectancy:** The average number of years a person is expected to live, calculated from current mortality rates for different age groups in a population.

**NEETs:** Acronym for “Not in Education, Employment, or Training”, referring to young people aged 16-24 who are not involved in education, training or work.

**OECD:** Organization for Economic Co-operation and Development.

**Office for National Statistics (ONS):** Office for National Statistics (England).

**PDPS:** Personal, Social and Community Development Plan.

**PNPSS:** National Program for Promoting School Success.

**Poverty index:** A measure that reflects the proportion of the population living below the poverty line, indicating the level of poverty in a region or country.

**Quality of Life Index:** A composite measure that assesses the general standard of living in a region or country, taking into account factors such as income, health, education, safety and the environment.

**Redistributive policies:** Policies that provide fixed subsidies to the less privileged in order to increase equality of opportunity and reduce income differentials due to family background.

**School drop-out:** Premature and definitive cessation of school attendance by a pupil before completing a compulsory education cycle (full-time education). According to the Pre-University Education Law No 198/2023, it is defined as “the cessation of compulsory education by a primary education beneficiary demonstrated by unexcused absences leading to the impossibility of completing 2 successive school years”.

**The social and economic costs of dropping out:** the negative impact of school drop out and early school leaving on society and the economy, including losses in productivity, reduced incomes, increased unemployment and crime, and additional costs for the welfare and health systems.

**Unemployment rate:** The percentage of the labor force that is looking for a job and cannot find one. This indicator reflects the health of the labor market and can be influenced by the educational level of the population.

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### Annex 1.

Doctoral dissertations defended in Romania since 2016 relevant to the topic of early school leaving

Nr.	Institution	Doctoral School/ Faculty	Thesis Title	PhD student	Coordinator	Year of support	Content
1	West University of Timisoara	Sociology and Psychology	Youth at Risk of Dropping out of School in the Northern Bedouin Society of Israel: the School's Role in Constructing a Community	Usama Heib	Theofild-Andrei Lazăr	2022	<ul style="list-style-type: none"> <li>- Geographical area: Israel;</li> <li>- quantitative research;</li> <li>- qualitative research;</li> <li>- Young people at risk in Israel</li> <li>- School dropout in Arab and Bedouin societies;</li> <li>- the impact of Covid-19 on young people at risk;</li> <li>- A case study on school dropout in a school in Tuba Zangaria.</li> </ul>
2	Babeş-Bolyai University of Cluj-Napoca	Psychology and Educational Sciences	Teacher Dropout from Their Work at Schools for At-Risk Youth	Keren Bavli	Vasile Chiş	2020	<ul style="list-style-type: none"> <li>- Geographical area: Israel;</li> <li>- Quantitative research (questionnaire applied to a sample of 50 teachers);</li> <li>- qualitative research (structured interviews with 14 teachers and/or school principals; focus group with 4 school principals).</li> </ul>
3	Alexandru Ioan Cuza University of Iasi	Philosophy and Social Political Science	Future Orientation and Occupational Aspirations of Dropout Youth	Neta Arkin	Ştefan Cojocaru	2019	<ul style="list-style-type: none"> <li>- Geographical area: Israel;</li> <li>- young people at risk;</li> <li>- NEET;</li> <li>- Qualitative research (semi-structured interviews with 16 young school dropouts; focus group with 8 relevant local government staff).</li> </ul>
4	Babeş-Bolyai University of Cluj-Napoca	Psychology and Educational Sciences	The Contribution of Teacher-Student Relationships to Reducing School Dropout Case Study in a "Second Chance" High School	Judith Shefi	Vasile Chiş	2018	<ul style="list-style-type: none"> <li>- Geographical area: Israel;</li> <li>- Quantitative research (questionnaire applied to a sample of 101 at-risk pupils);</li> <li>- qualitative research (interviews with 15 teachers; interviews with 9 graduates; 3 rounds of classroom observation).</li> </ul>
5	Alexandru Ioan Cuza University of Iasi	Philosophy and Social Political Science	Relația dintre Persistența Motivațională și Fenomenul de Dropout	Loredana Constantin (Mihăileasa)	Ana Constantin	2017	<ul style="list-style-type: none"> <li>- Geographical area: Romania;</li> <li>- the importance of motivation and motivational persistence;</li> <li>- terminological delimitations of the concept of school/university dropout (including cohort analysis);</li> <li>- Quantitative research (questionnaire applied to a sample of 264 pupils and 191 students).</li> </ul>
6	West University of Timisoara	Economics and Business Administration	Multi-stakeholder Management Model for Reducing Dropout of Israeli Engineering Students	Ran Bar-Am	Nicolae Bibu	2017	<ul style="list-style-type: none"> <li>- Geographical area: Israel;</li> <li>- The costs of dropout are briefly discussed in the literature review section;</li> <li>- Quantitative research (questionnaire applied on a sample of 45 students from two colleges in Israel);</li> <li>- qualitative research (semi-structured interviews with 12 students);</li> <li>- The costs of dropout are briefly discussed in the literature review section.</li> </ul>
7	National University of Physical Education and Sport Bucharest	National University of Physical Education and Sport Bucharest	School Dropout Prevention at Secondary School Level in Rural Areas through Extracurricular Sports Programs	Ana Stănică (Gavrilescu)	Monica Iulia Stănescu	2023	<p>Content still under embargo (24 months), extended summary available on UNEFS website.</p> <ul style="list-style-type: none"> <li>- Geographical area: Romania (Vrancea);</li> <li>- experimental research (two groups – experiment and control – of 20 students each; the students come from two rural secondary schools in Vrancea County).</li> </ul>
8	University of Craiova	Doctoral School of Social Sciences and Humanities	School Absenteeism and Dropout	Doina - Alina Ionescu (Dascălu)	Maria Constantinescu	2022	<p>Content still under embargo (24 months).</p>



9	University of Petrosani	University of Petrosani	An Exploratory Study Regarding the Use of Blogs in a Project Management Approach in Teaching and Learning for the Case of "Students at Risk"	Ahmad Fuad Saad	Andreea Cristina Ionica cotutelle with Monica Leba	2021	Content still under embargo (24 months). From the summary available on the university website we note: – “the introduction of blogging can be useful to reduce the dropout rate of students, improving their motivation to learn by introducing elements such as Gamification, Google Analytics and Augmented Reality (AR) for students at risk of dropping out”.
10	University of Bucharest	Sociology and Social Work	Education and Quality of Life - Skill Acquisition vs. Dropout	Lavinia Dragan	Maria Voinea	2020	– Geographical area: Romania; – secondary analysis of statistical data; – content analysis of "social documents on education"; – Quantitative research (questionnaire applied on a sample of 177 students and 100 teachers from pre-university and university).
11	University of Craiova	Doctoral School of Social Sciences and Humanities	Social Environment and School Dropout	Raluca-Gabriela Loga	Adrian Gorun	2020	– Geographical area: Romania; – secondary analysis of statistical data (over the last century) on the education system with school dropout tangentially present; – case study "Dropping out of school in Romania. Causes and social effects" - a sociological pseudo-anchor (in fact, still a secondary analysis of statistical data) with a more in-depth treatment of school dropout.
13	Babeş-Bolyai University of Cluj-Napoca	Psychology and Educational Sciences	The Multidimensional Impact of Temporary Parental Abandonment on the Development of Small Schoolchild Case Study - Neamt County	Irina Turcu (Sullivan)	Muscat - Dacia Bocoş - Binţinţan	2019	– Geographical area: Romania (Neamt county); – School drop-out is not an objective per se of the PhD thesis; – only as a subsidiary, inadequate early school development could lead to dropout (discussed on page 219); – quantitative and qualitative research on a sample of 50 children in parental abandonment.
13	University of Bucharest	Sociology and Social Work	School dropout in Romania, between mystification and reality. Reasons, responsible, challenges	Rodica - Cristina Balan - Liseanu	Poliana Ştefănescu	2019	– Geographical area: Romania; – secondary analysis of statistical data; – The State of Education documents published by the Ministry of Education (2007 and 2008) include dropout losses by cohort; – quantitative mini-monographic research on three schools: one in Piatra commune and two in Alexandria municipality; – Qualitative research (semi-structured interviews) with a sample of administrators, teachers, parents and pupils.
14	Bucharest Academy of Economic Studies	Cybernetics and Statistics	An Econometric Model of Educational Attrition Among the Roma Population	Andrei Teofil Pârvan	Tudorel Andrei	2022	Content still under embargo (24 months). However, one of the co-authors of the present study was on the committee for the public defense of the doctoral thesis and thus had access to it. – Geographical area: Europe (with focus on Romania); – NEET; – secondary analysis of statistical data; – Quantitative research using analytical methods (e.g. classical or panel regression models).

