

## Article

# Stratification and Inequality in the Secondary Education System in Romania

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**Abstract:** Education is a complex system with implications for educational policy and management. Education systems that are more comprehensive generate more equal outcomes, fostering access to opportunities for all children. On the other hand, systems with early selection and tracking are more stratified and register higher inequalities in educational outcomes. Educational inequalities imply unequal access to education and, subsequently, career opportunities. The present study employs classification techniques, such as decision trees, in order to highlight lines of stratification and inequality in the upper secondary education system in Romania, focusing on the selection of students in general or vocational programs. Our results show that the education of parents and area of residence are factors that influence the stratification of students in the Romanian secondary education system, and the selection process contributes to the reproduction of social inequalities. The conclusions of this study are consistent with the cultural capital theory in education. Policy and strategic management implications are discussed in light of our results.

**Keywords:** education system; tracking; stratification; inequalities



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## 1. Introduction

In 2015, the United Nations developed a set of 17 global objectives known as the Sustainable Development Goals (SDGs). The 2030 Agenda for Sustainable Development includes these goals, with SDG 4 focusing on education. The aim of SDG 4 is to ensure inclusive, equitable, and high-quality education for all individuals and promote lifelong learning opportunities. The main actions of SDG 4 include ensuring access to quality education; promoting lifelong learning opportunities for all ages; enhancing literacy, numeracy, and teacher training; expanding early childhood education; creating safe and inclusive learning environments; and promoting global citizenship and sustainable development.

Education is a complex system with implications for educational policy and management. Stratification in the education system implies that access to educational opportunities is a function of social class, economic resources, and preferences. Stratification in education is favored by processes of tracking in which students enter one educational path from the ones available to them. Tracking for vocational orientation is considered a way to better prepare students for the labor market. Alternative paths are differentiated based on the curriculum, generating further selectivity in terms of educational attainment and career choices [1]. However, more stratified educational systems are characterized by larger inequalities. Previous studies have shown that more stratified educational systems make a trade-off between improved employability of graduates and equality of opportunity [2]. While increasing specialization, tracking is detrimental to educational attainment, enhancing the influence of parental background on the educational outcomes of children [3]. More stratified educational systems contribute to reduced intergenerational educational mobility [3,4].

In accordance with rational action theory [5–7], decisions are based on the costs, benefits, and success probabilities associated with alternative educational paths in the perception of students and parents. Performance uncertainty is higher for disadvantaged students than for their better-off counterparts. Other theories state that education is linked to various social conditions, pointing to the reproduction of social stratification through the education system [8].

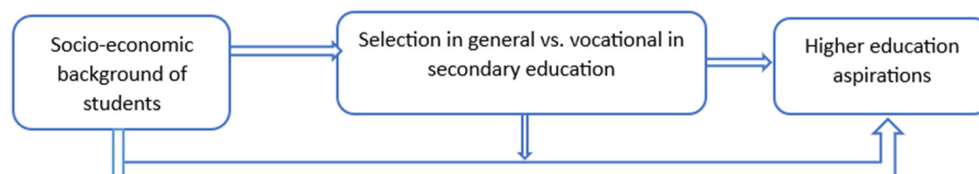
The process of tracking in education aims to divide students by their abilities or achievements. While in countries such as the United States and Canada, students are allocated to different classrooms based on their achievements, in Europe, students are commonly selected into different schools with either academic or vocational focuses [9]. The advantage of tracking is that education can be delivered more effectively to more homogeneous groups of students. Those criticizing this approach argue that it contributes to the reproduction of inequalities. The effect of tracking on the distribution of students' achievements varies from country to country in relation to the characteristics of the tracking approach. Previous research shows that in most contexts, tracking students into vocational or academic-oriented schools aggravates inequalities, but further explanations are needed [9]. In the Romanian educational system, students are selected and allocated to upper secondary education institutions (providing general and vocational educational programs) at the age of 14. The selection is based on personal choices and performances exhibited by students in a national exam. More specifically, at the end of the 8th grade, students are tracked into different educational programs in high schools that are academically or vocationally oriented through a national system of computerized allocation that takes into account exam performances and the hierarchy of preferred programs for each student. Vocational-oriented programs provide qualifications to their graduates, as well as the possibility to further apply to higher education, with the condition of passing a final exam. However, the vocational track is considered a less prestigious educational path, with a low probability of entering higher education. The tracking process is largely shaped by the level of academic performance, with students with low performances ending up in vocational programs. In addition, private tutoring for preparing students for national exams is widespread in Romania, especially among families with resources. On the other hand, guidance and counseling services for students are poorly developed and not individualized, which could increase the influence of socio-economic backgrounds on educational trajectories. Considering all these factors, the way tracking relates to the inequalities affecting the Romanian education system represents an important topic of study. Therefore, this paper aims to highlight inequalities in educational outcomes between general and vocational programs and to assess the influence of students' socio-economic backgrounds on their selection between general and vocational programs. The research questions of the paper are as follows:

Q1: How does the social background of students relate to their enrollment in general vs. vocational education at the secondary level?

Q2: How does the educational track interact with socio-economic factors in shaping higher education aspirations?

Figure 1 outlines the conceptual model of this study. Following this approach, the obtained results will shed light on the extent to which students' selection between general and vocational education while transitioning to upper secondary education contributes to the reproduction of social inequalities. The paper continues with a literature review and a descriptive analysis of differences in educational outcomes between general and vocational students, arguing that the two educational tracks reflect a form of horizontal stratification. After that, the paper presents the participants in the study and the statistical methods employed for data analysis. The research design is based on classification statistical methods capable of highlighting the probabilities of belonging to one group, based on a set of predictors that include socio-economic factors. Two alternative dependent variables are used: enrollment in educational tracks in secondary education and intentions of pursuing higher education. This design enables us to highlight the way students with

specific social origins enter different educational tracks and to what extent this selection further influences their aspiration to pursue higher education. The results are presented and discussed in view of the research questions of this study.



**Figure 1.** Conceptual model of this study.

## 2. Literature Review

One of the most important perspectives on education and its effects is based on the Human Capital Theory [10–12]. It suggests that people invest in themselves through education or training to improve their employability and future earning potential. By acquiring new skills and knowledge, individuals can gain a competitive edge in the job market. This theoretical perspective is often used by state governments to develop education policies that promote investment in education. However, this functionalist approach, based on a meritocratic education system, represents just a general and optimistic perspective that neglects other contextual factors that intervene in individuals' choices to invest in education [13].

Education policies and investment priorities in developing countries were influenced by human capital theory [14]. The standard for prioritizing public expenditures in education shifted from vocational to general education, with rates of return on educational investment becoming the guiding principle. This approach assumes that individuals make educational investment decisions based on rates of return. Although human capital theory has been widely used as a framework for policymaking, significant limitations associated with its application have been identified [14]. At the macro level, the theory overlooks the role of institutions such as education and the labor market, while at the micro level, it fails to consider other factors that influence human behavior beyond instrumental rationality. As a result, education policies relying extensively on the assumptions of the human capital theory failed to effectively address poverty reduction objectives while not considering other factors with a major influence on the education demand among certain social groups [14].

An alternative theoretical framework suggests that a person's social status is shaped not only by economic capital, but also by other types of capital such as social, cultural, and symbolic capital. This perspective looks beyond economic factors by taking into consideration the multifaceted nature of social differences [15–17]. Economic capital can be obtained through inheritance, through family income, or by participating in economic activities for financial gain. On the other hand, social capital is accumulated through social connections, family ties, and community interactions. The symbolic capital is represented by personal reputation and power [15–17]. The term "habitus" refers to an individual's cultural and familial background, including the individual's embodied preferences that are reflected in their attitudes toward the world. The habitus emerges from an early age in relation to the social environment of children's home and family life [17]. From this theoretical perspective, a field is a set of relationships between individuals and institutions that are mediated by different forms of capital. These interactions shape an individual's sense of self, identity, aspirations, and ultimately abilities across various fields [17]. While the human capital theory is an economic-centered approach omitting sociological or anthropological insights, it limits human behavior to utility functions. In contrast, the cultural capital theory integrates the role of students' cultural and family background in shaping their relations and abilities within education institutions.

Previous studies examining mechanisms that lead to school segregation identified several key factors that contributed to this phenomenon, including residential segregation, poverty in certain neighborhoods, migration flows, demographic trends, and cultural

closure and emulation [18]. The model created by Carroll (1963) has incorporated five categories of variables to account for variations in school learning. Three of these variables can be expressed in terms of time, while the other two can be expressed in terms of achievement. The model highlights that attitude plays a crucial role in determining the time required for learning. To achieve equal opportunities for learning, it is important to focus on predicting each student's potential and designing instruction to match this capability [19]. Coleman (1966) studied the factors that affect educational achievements. His research aimed to investigate how school resources such as funding, facilities, and teacher quality impact students' outcomes [20]. The main findings revealed some factors that interfere with students' achievements. It was discovered that family background and socio-economic status had a stronger influence on students' success than resources provided by schools. Parental involvement and family support also played a significant role. Peer influence was found to be another crucial factor influencing student outcomes. The socio-economic composition of a student's classmates can have a significant impact on the student's academic performance. Students tend to perform better in schools with higher-achieving peers, regardless of the school's resources. The study also found that desegregation had a significant impact on students' achievements. Minority students enrolled in integrated schools exhibited better academic performances as compared to those enrolled in segregated schools. Contrary to the belief that improving school resources would lead to a significant improvement in educational outcomes, there was little correlation found between school resources, including funding and facilities, and students' achievements. In conclusion, Coleman's research emphasized the complex relationships between family background, peer influences, and the educational environment. His findings challenged the idea that improving education can be achieved solely through resource allocation. Rather, they contributed to the ongoing discussion about educational equity and the various factors that impact students' opportunities for academic success.

Additionally, education systems and policies can also contribute to school segregation by favoring the separation of underprivileged or highly privileged students in private schools with selective student admission, early tracking, and institutional differentiation. Cervini (2011) conducted a study to explore the link between the provision of "opportunity to learn" (OTL) in the classroom and students' mathematics achievements [21]. The OTL effects on achievements were analyzed using multilevel linear modeling with two levels (student and classroom). The analysis included school climate and institutional organization. The data analysis suggested that OTL is an important intermediate variable between socio-economic school context and achievements [21]. Cueto et al. (2016) examined the recent trends in Peru's education system [22]. Their study identifies the major challenges that need to be addressed and provides policy recommendations. The researchers adopted a dynamic approach and analyzed the educational progress of two groups of children from different regions of the country. Although access to schools has improved, there are still major disparities in education outcomes for children and young adults based on their family socio-economic status and personal characteristics. In primary education, children from poor families, indigenous backgrounds, rural areas, or mothers who received less than a secondary education tend to have fewer opportunities and achieve lower results on standardized tests. The situation is even worse for those who display more than one of the above-stated characteristics. Fortunately, there are relatively small differences in opportunities and achievements by sex. However, privileged students still have more access to tertiary education than those who come from disadvantaged backgrounds. The current education system is reinforcing inequalities by not providing equal opportunities for all children [22]. Another recent study investigated the impact of school segregation on the academic performances of native and non-native Spanish students, taking into consideration the extent to which this impact is also influenced by socio-economic status or ethnicity [23]. The findings indicate that school segregation based on socio-economic and immigrant status has mixed impacts on academic achievements. While socio-economic segregation has a negative effect on both groups, immigrants' segregation has a stronger negative effect

on non-native students. This means that school segregation on socio-economic grounds has a considerable negative impact on achievements, regardless of a student's national origin. Ultimately, school segregation reinforces and magnifies conditions of social injustice [23].

It is widely believed that education serves as a mediator between social origins and social destinations [24]. However, previous research showed that the socio-economic background (especially parents' education) quite heavily influences young people's choices. A previous study of 2003 data from OECD's Programme for International Student Assessment (PISA) in 28 countries found that underprivileged youth have fewer aspirations than their more privileged counterparts, even when performing equally on PISA tests. Thus, a young person is more likely to aspire to university-level education when coming from a more privileged social background [25]. Another study showed that students from more privileged social backgrounds tend to achieve higher grades and have a lower likelihood of repeating a grade before reaching Grade 9 [26]. On the other hand, a more recent contribution offers evidence that the influence of social background is consistently more pronounced for educational attainment (measured in years of education) than for educational achievements (evaluated in terms of actual competencies, such as numeracy skills) [27].

Another aspect that has been investigated regarding educational inequalities is represented by the placement of students into various educational paths or programs, also called tracking [27]. Even though nations employ various approaches for student tracking, almost all education systems practically involve some form of student tracking [28]. Previous research conducted in this matter aimed to explore the connection between the age at which this initial division occurs and the extent to which educational inequality is influenced by socio-economic background. Several research findings have indicated that the delay in the initial selection process corresponds to a reduced impact of social background on educational achievements [1,24]. Therefore, students who are selected at a younger age are more likely to be more influenced by their socio-economic background, with a greater impact on their choices, so that youth from disadvantaged backgrounds are more likely to enroll in less prestigious educational paths [25]. This is due to the fact that younger students rely more on their parents' support and resources compared to older students [1]. Likewise, another study found that the likelihood of pursuing higher education is greater in late-tracking scenarios compared to early-tracking scenarios [29].

On the other hand, the influence of socio-economic background on track selection can vary from one country to another. A previous study aiming to compare the overall impact of social background on secondary school track enrollment in Italy, Germany, and the Netherlands found that the influence of social backgrounds on track selection is weaker in the Netherlands, more prominent in Germany, and moderate in Italy. Additionally, in Germany, parental background seems to hold less significance when access is determined by ability assessments [30]. The influences of social origin include primary effects on the abilities of children in early education and secondary effects reflected in the choices of families when enrolling children in various educational tracks, given ability. In this respect, educational choices vary in relation to the social background among students with similar performances. Social origin directly influences school choice as advantaged students tend to enter the academic track due to higher aspirations and lower costs. Also, it indirectly influences school choice as advantaged students have more parental support in education, achieving higher abilities and having a higher probability of enrolling in the academic track [30].

Educational inequalities are also found between different educational programs, in particular between general and vocational education. Moreover, students whose parents have lower educational attainment are more inclined to pursue vocational studies, whereas those with highly educated parents tend to pursue general education [27]. It seems that the vocational-oriented pathway exerts two contradictory effects: it allows more students from underprivileged backgrounds to obtain upper-secondary-level qualifications, thereby diminishing inequality in accessing upper secondary education, but it also reduces the probability of these students pursuing higher education, thereby exacerbating inequality



in access to tertiary education [31]. Therefore, students who choose a vocational path in upper secondary education have reduced access to university, limiting the expansion of tertiary education with the inclusion of more disadvantaged groups [32]. On the other hand, vocational upper secondary education offers the possibility of entrance to higher education for students who might not have otherwise enrolled in general upper secondary education [31].

### 3. Inequality in Educational Outcomes in the Secondary Education System in Romania

One of the most comprehensive sources of data on educational inequalities is the OECD's Programme for International Student Assessment (PISA) [33]. Since 2000, PISA has provided an international assessment of student learning outcomes in member and partner countries. It measures 15-year-olds' ability to use their reading, mathematics, and science knowledge and skills to meet real-life challenges. In addition, it collects relevant data linking the socio-economic background of students with their level of skills and other educational outcomes such as their expectation to complete tertiary education and career aspirations.

Table 1 shows the percentage of Romanian upper secondary education students who expect to complete tertiary education divided by the type of educational program they are enrolled in. One can see that 67.2% of those attending general education expect to complete tertiary education, while only 11.6% of those enrolled in vocational education have such an expectation. The gap between the two types of programs is very large in Romania, more than 55 pp, whereas at the OECD level, the difference is 24.4 pp, considering that 72.6% of students in general education expect to complete tertiary education and about half of those in a vocational program have a similar expectation (49.5%). These differences are explained by important cross-country variations with respect to institutional features of the academic and vocational schools and their relation to tertiary education decisions [31]. In addition, Romania registers a higher difference in skill levels between general and vocational students than the OECD average.

**Table 1.** Students who expect to complete tertiary education, by program orientation.

	General	Vocational	General – Vocational
Romania	67.2	11.6	55.6
OECD	72.6	49.5	24.4

Source: OECD, Education GPS, <http://gpseducation.oecd.org>, accessed on 1 September 2023.

Table 2 shows the expectations of students regarding their future careers with respect to occupational aspirations (according to the International Standard Classification of Occupations (ISCO)), both in Romania and at the OECD level. ISCO groups 1 to 3 require a high level of specialization, including legislators, senior officials and managers, professionals, technicians, and associate professionals. ISCO groups 4 to 8 include medium-skilled occupations such as clerks, service workers and sales workers, skilled agricultural workers, craft workers, plant and machine operators, and assemblers. ISCO group 9 includes elementary occupations requiring low-skilled or no qualification. The majority of students who aspire to work in highly qualified occupations (ISCO groups 1 to 3) are those enrolled in a general program (70.9% in Romania and 79% in the OECD), while those who attend a vocational school program and aspire to this type of occupation reach 14.8% in Romania and 56.5% in OECD countries. Therefore, for this class of occupation, the difference between the two types of school programs is much higher in Romania (56 pp) compared to the OECD average (22.5 pp). With respect to the percentage of students who aspire to perform medium-skilled occupations (ISCO groups 4 to 8), one can see that in Romania, a quarter of those enrolled in general education have such career expectations, while the percentage of vocational students in a similar situation is 83.7%, the difference between the two types of programs being again very large (57.9 pp). The same trend is registered in OECD countries, but the gap between the two types of programs is significantly smaller

(22.3 pp). The percentage of students who aspire to low-skilled occupations (ISCO group 9) is very low, both in Romania and in OECD countries, with Romania registering a lower percentage in both types of programs compared to the OECD average.

**Table 2.** Career expectations, by skill level of occupation and program orientation.

		Romania	OECD
High-skilled occupations (ISCO groups 1 to 3)	General	70.9	79.0
	Vocational	14.8	56.5
	General – Vocational	56.0	22.5
Medium-skilled occupations (ISCO groups 4 to 8)	General	25.8	18.6
	Vocational	83.7	40.5
	General – Vocational	−57.9	−22.3
Low-skilled occupations (ISCO group 9)	General	0.5	0.9
	Vocational	1.0	1.1
	General – Vocational	−0.6	−0.2

Source: OECD, Education GPS, <http://gpseducation.oecd.org>, accessed on 1 September 2023.

## 4. Materials and Methods

### 4.1. Participants

Our analysis was performed on data collected through a questionnaire-based survey from a random sample of 502 students enrolled in the final year of high school in 2019. The target population included students who had just entered the final year of secondary education (12th grade) and who were going to apply to university at the end of the year. We constructed a multistage stratified sample. Primary sampling units were represented by counties, and secondary sampling units were represented by high schools. The sample covered 11 counties and 35 high schools providing general and/or vocational education programs. The final sample of students was stratified by educational track (general and vocational). Participants in this study are well balanced in terms of gender (51.8% females and 48.2% males) and area of residence (60.2% urban and 39.8% rural). The distribution of the participants by subjective well-being and education of their parents is presented in Table 3.

**Table 3.** Distribution of the sample of students.

Characteristics	No.	%	
Subjective economic well-being of the origin household	Very good	49	9.8
	Good	125	24.9
	Pretty good	159	31.7
	Some difficulties	126	25.1
	With difficulties	27	5.4
	With lots of difficulties	16	3.2
Education of father	No education	2	0.4
	Primary and lower secondary	20	4.0
	Apprenticeship and vocational	83	16.5
	High school	181	36.1
	Post-secondary non-tertiary	106	21.1
	Tertiary	110	21.9

Table 3. *Cont.*

Characteristics	No.	%
Education of mother	No education	6
	Primary and lower secondary	18
	Apprenticeship and vocational	48
	High school	227
	Post-secondary non-tertiary	91
	Tertiary	112

Source: authors' calculation.

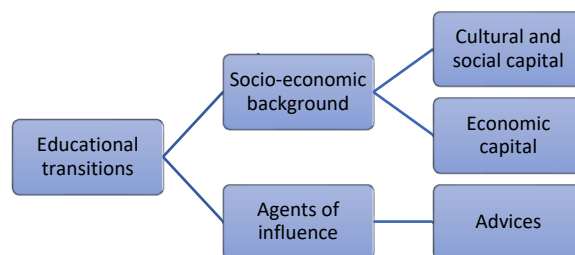
#### 4.2. Data Analysis

The purpose of the questionnaire was to explore educational decision models among secondary education students. Thus, the questionnaire collected data on the orientation of the educational program in which students were currently enrolled (general vs. vocational), socio-economic background (educational attainment of parents and subjective economic well-being of the origin household), and involvement of various agents who gave advice to students choosing educational programs (parents/family, school teachers, private tutors, peers/friends, school counselor). The questionnaire was applied face-to-face by specialized field operators on the school premises, with an average completion time of 25 min.

The methodology was based on decision tree models that represent predictive models with high stability and ease of interpretation. The method is suitable for data that display any probability distribution. Moreover, it displays results in a non-technical and very visual manner. We used the decision tree method in order to build tree-based classification models that group students in relation to their likelihood of belonging to one of the categories of the dependent variable, based on the predictors included in the model. Decision tree models are an effective method for non-linear relationships in data and for capturing interactions between independent variables. The results of tree-based classification models identify groups and sub-groups of similar cases that form the so-called parent and child nodes of the tree. The method predicts the most commonly occurring category of the dependent variable in each sub-group of cases (node of the tree). The nodes are constructed based on the interaction between independent variables that significantly predict the dependent variable. The CHAID growing method (chi-squared automatic interaction detection) was used. Originally introduced by Kass in 1980, this method is based on the chi-squared statistic. In each level of the growing tree, the method identifies the strongest predictor for the dependent variables. Practically, at each step, the CHAID method chooses the independent variable that has the strongest interaction with the dependent variable. This growing method is analogous to stepwise regression. CHAID uses Pearson's chi-squared to decide on variable splits. In the constructed tree, the splits occur in order of importance. The significance level was 0.05. For categorical predictors, the method can merge categories showing a similar relation of association with the dependent variable.

We constructed two different models with two different dependent variables: one concerning the educational track in which students are enrolled (general and vocational) and one concerning their intention to further apply to tertiary education. The two models are related to the two main transitions or turning points in the educational careers of students. The first model is focused on the transition from lower secondary education to high school, when two alternative educational tracks are available for students (general and vocational). This selection of students refers to horizontal stratification within secondary education. The second model is focused on the decision to transition to higher education, reflecting the vertical stratification in education. By identifying the influence of predictors related to the socio-economic background of the students in the two transitions, we highlight inequalities in the educational system. The concept of the relationship between the variables is presented in Figure 2.





**Figure 2.** Concept of the relationship between the variables.

For the first model, classification analysis was employed in order to identify the most important factors predicting the selection of students in general educational programs or vocational educational programs. Gender, the socio-economic background of the students and sources of advice were used as independent variables. Further, we constructed a second classification model having the intention of students to pursue higher education as a dependent variable. The predictors included in the model were the program orientation (general or vocational) and factors characterizing the socio-economic background of the students.

## 5. Results

In our sample, 46% of students are enrolled in vocational programs, and 54% are enrolled in general programs. The results of the decision tree model are displayed in Figure 3. The constructed tree has three levels and includes 14 nodes, out of which 8 are terminal nodes.

We find that the most important predictor for the program orientation of students is the education of the father. On the one hand, a student whose father has no education or graduated from primary, lower secondary, apprenticeship, or vocational education is more likely to attend vocational education. On the other hand, a student whose father graduated from tertiary education or post-secondary non-tertiary education is more likely to be enrolled in general education. At the same time, students with a father who graduated from a general high school have no clear prevalence for general or vocational education. However, in the case of this sub-group, the area of residence has a further significant influence. Thus, rural students with a father who graduated from high school register a higher likelihood to be enrolled in vocational education, while urban students are more likely to be in general programs. For these urban students, a further influence is exerted by the education of the mother. We found that tertiary, apprenticeship, vocational, and post-secondary non-tertiary education levels of the mother increase the likelihood of students being enrolled in general education.

In the case of students with a father who graduated from tertiary education or post-secondary non-tertiary education, those advised by private tutors when choosing their educational program have a higher propensity toward general education. For those receiving no advice from private tutors, living in urban areas further increases the chances of enrollment in general education.

For students with a father who had no education or graduated from primary, lower secondary, apprenticeship or vocational education, we find that living in rural areas very much increases the likelihood of attending a vocational program, while living in urban areas fosters a more balanced selection between general and vocational programs.

The other independent variables included in the model (gender, subjective economic well-being of the origin household, and other sources of advice when choosing the program) have not been retained by the decision tree model, suggesting that the selection of students is best explained by the interactions between the above-stated predictors. The constructed decision tree indicates that although they could be important, the other independent variables are not as influential as those retained in the model. Interactions between the education of the parents, area of residence, and advice from private tutors accurately

explain the enrollment of students in general or vocational programs, suggesting the high influence of socio-economic status.

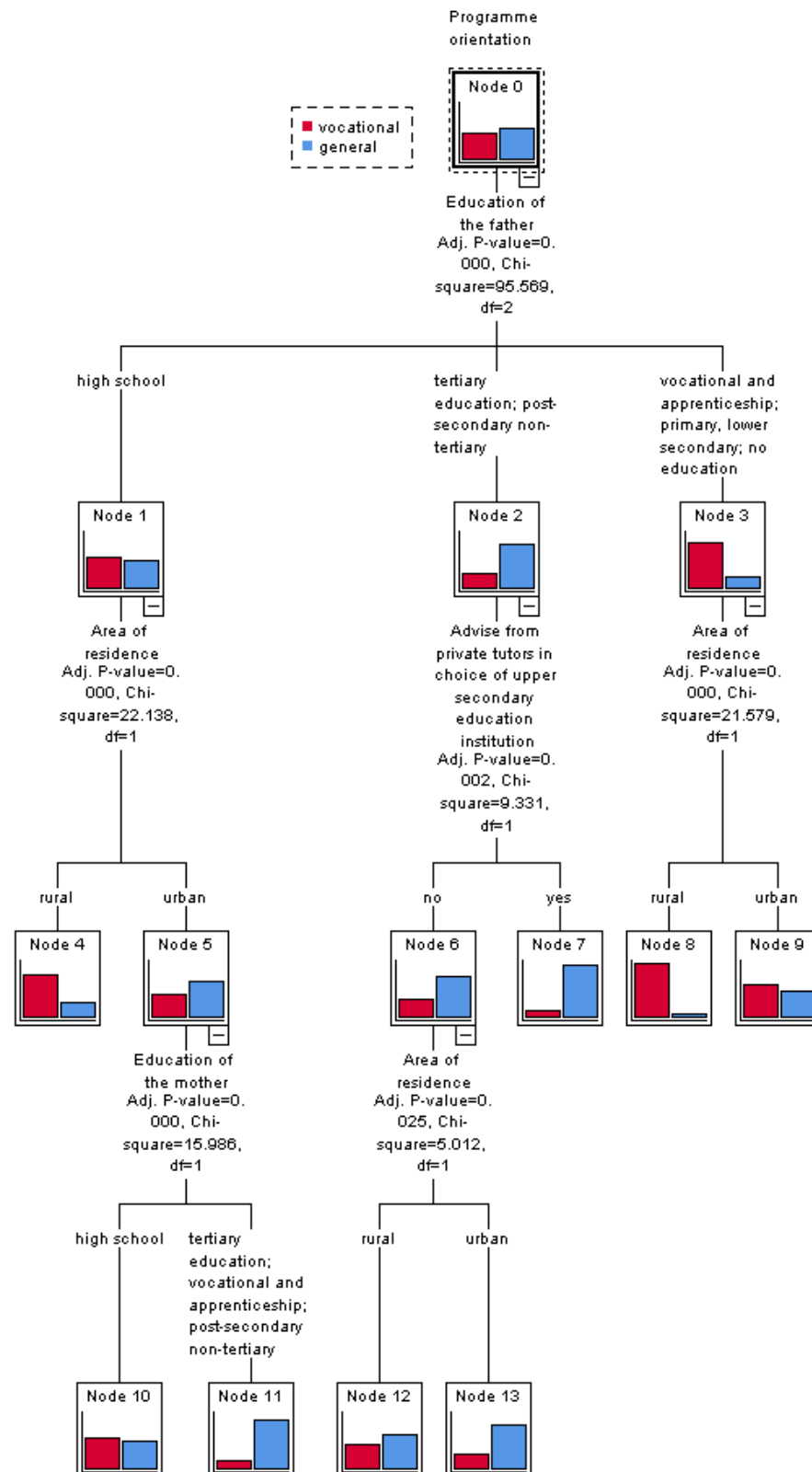
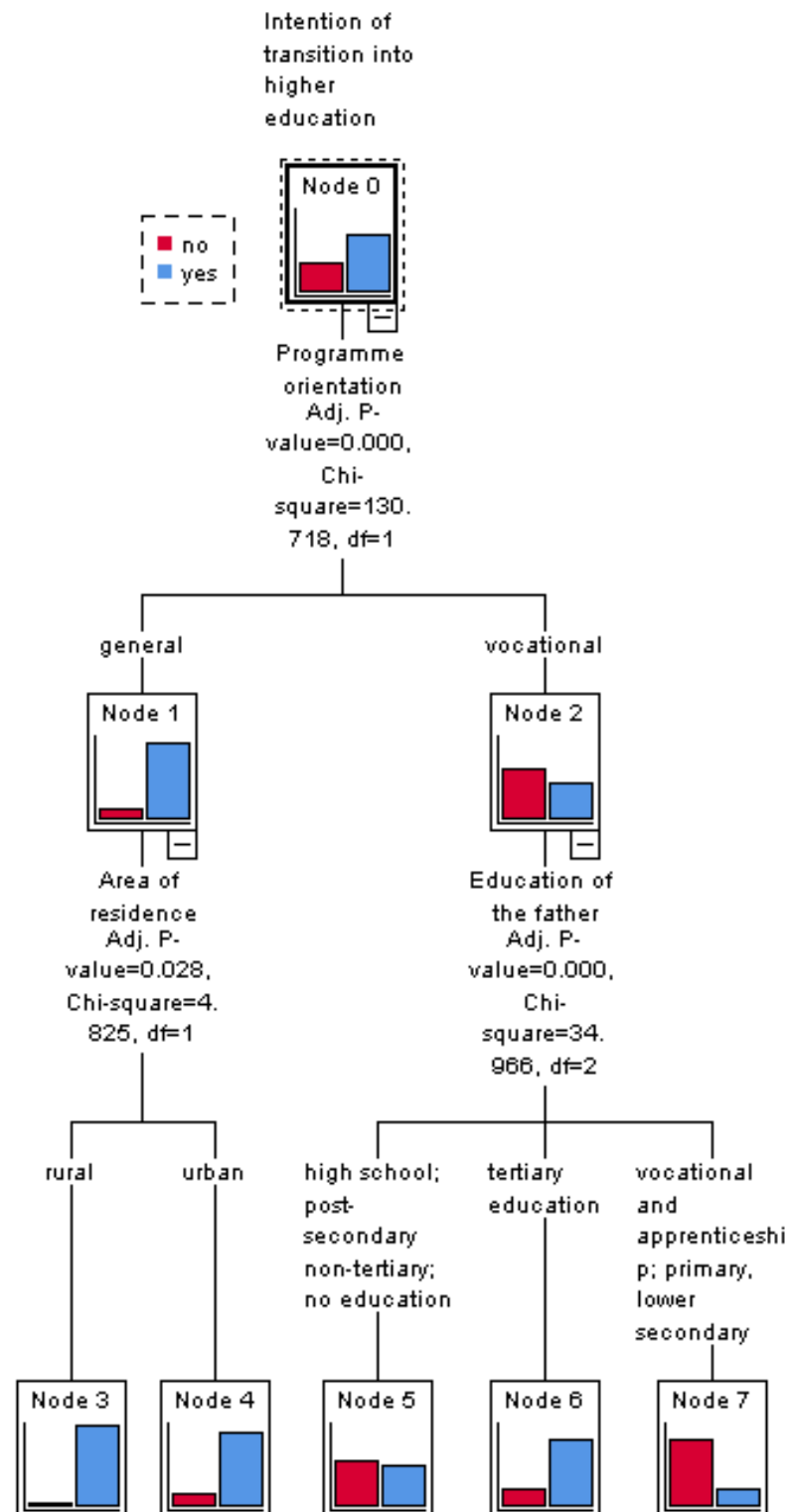


Figure 3. Tree-based model for educational program orientation. Source: authors' calculation.

Figure 4 shows the decision tree constructed for the intention of transition to higher education among upper secondary students. At the level of the sample, 31% of students

have no intention to enter higher education, while 69% are interested in continuing education. The constructed tree has two levels with eight nodes and five terminal nodes. The most important predictor for the intention of enrolling in higher education is the program orientation. Thus, students in general programs are very likely to attend tertiary education, while vocational students display more balanced intentions in this respect.



**Figure 4.** Tree-based model for the intention of transition into higher education. Source: authors' calculation.

In the case of students enrolled in general education, the area of residence exerts a further influence on their intentions of pursuing university-level programs. Rural students in general education are slightly more likely to continue education as compared to their urban counterparts.

On the other hand, enrollment in vocational education interacts with the educational attainment of the father in predicting intentions of enrollment in higher education. Vocational students with a father who graduated tertiary education have significantly higher chances to continue their education at the university level. At the same time, students with a father who reached at most apprenticeship or vocational education are significantly less likely to enroll in tertiary education.

## 6. Discussion

Education is one of the most important aspects of a person's life. Our paper focuses on educational stratification and inequalities, emphasizing the influence of socio-economic background on the placement of students into general or vocational education and further implications regarding their transition to tertiary education.

There is a gap in educational and career aspirations between students from academic and vocational secondary education programs. Our study provides evidence of social selectivity in different educational tracks, showing that socio-economic background, particularly the educational attainment of parents, plays an important role in the choices and selection of children in educational paths. As students from families with higher cultural capital and from urban areas are more likely to be enrolled in academic education than those with less advantaged origin, tracking acts to reinforce preexisting socio-economic inequalities in educational outcomes. On the one hand, low parental education is associated with a higher probability of enrollment in the vocational track. On the other hand, being enrolled in vocational programs is the most important predictor for not applying to higher education, followed by parental education and area of residence. Our results confirm previous findings that tracking enforces and widens inequalities with respect to educational attainment. In this context, educational inequality will persist across generations since educational tracking and higher education attainment are linked to parental education, confirming the conclusions of previous studies [32,34]. Our findings are consistent with the theory concerning the role of cultural capital in educational attainment, showing that cultural capital that includes skills and values possessed by higher-status families offers children an advantage in achieving higher educational attainment [17]. Attitudes towards education vary across social groups, shaping the choices and trajectories of children and youth [35]. By confirming the relevance of the cultural capital theory in relation to tracking in academic and vocational routes, our findings point to the fact that the inequalities in education are maintained through horizontal stratification associated with tracking between general and vocational education.

Although trajectories should become more individualized, our results show that socio-economic background continues to shape educational choices, while the placement into general and vocational education contributes to inequality reproduction. Thus, according to our findings, selection in general and vocational tracks is a part of the complex and contextualized mechanisms that lead to inequality reproduction. In general, social stratification is determined by the social mobility and capability of individuals to move between strata (categories of people based on their income, occupation, and social status). Systems in which mobility is low are characterized by high and persisting inequalities.

Our results confirm that education is a complex system [36] based on collective behaviors and that students' educational trajectories remain sensitive to initial conditions (their socio-economic status). In this case, the "butterfly effect" is illustrated by the way disadvantaged students tend to achieve lower educational outcomes [36–38]. Strategic management has to ensure tracking mechanisms of students between various components of the system (such as general and vocational routes) that are able to provide more equal educational outcomes. The institutional features of education systems have to reduce the

influence of social origin as much as possible in such a way as to enable equality of opportunity. This paper contributes to the ongoing debate on the effect of horizontal stratification in education systems on student outcomes and equity. The design of educational systems regarding the alternative educational routes available to students has to enable the social mobility of individuals by reducing the influence of social origin on educational attainment.

From the strategic management and policy implication point of view, social and educational support measures targeting low performers will foster equality in the educational outcomes as low performers tend to be more disadvantaged. On the one hand, increasing resources and support granted to disadvantaged students or schools will contribute to inequality reduction. In addition, based on our findings, educational systems need to increase the age of first selection in order to be more comprehensive and inclusive. At the same time, improved counseling services provided to disadvantaged students will weaken the influence of the education level of parents on the educational choices of children.

Nevertheless, this study has some limitations. On the one hand, all the data were collected directly from students via a questionnaire-based survey as the researchers had no access to administrative information. Therefore, the reported data could be influenced by students' subjectivity or knowledge. On the other hand, the second classification model which is focused on the transition to higher education uses as a dependent variable the intentions or aspirations of students and not their actual entrance to higher education. At the time of the survey, students were enrolled in their final year of high school, meaning that they would be needed to pass a final exam (Bacalaureat) at the end of high school in order to be able to apply to higher education. Finally, causality cannot be claimed from the design of this study; our results simply illustrate the way different socio-economic backgrounds are associated with the tracking of students in vocational or academic-oriented programs and their further aspirations of enrolling in higher education.

The findings of our study need to be further advanced based on studies on larger samples of students from various educational systems. Future directions of research involve studying the educational aspirations of disadvantaged students before selection in order to shed light on the role of vocational programs in the educational attainment of those most disadvantaged. In addition, a complementary analysis with modeling of structural equations to explain or predict educational transitions could broaden the understanding of educational inequalities.

## 7. Conclusions

Our results are relevant for decision-makers and education authorities in charge of education strategies and policies. Strategic management in education should target a reduction in educational inequalities by limiting the influence of the socio-economic background of students on their selection in various educational paths. Employing a systems-thinking approach calls for ensuring a more comprehensive education system through improved support measures and guidance services targeting students from disadvantaged groups and lower social classes.

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**Data Availability Statement:** Data are available upon request to the authors.

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