

EDUCATIONAL MOBILITY, EXPRESSION OF TERRITORIAL INEQUALITIES. EVIDENCE FOR NORTH EAST REGION, ROMANIA

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ABSTRACT

This study aims to analyze the mobility of students assigned to high school in 2022 from the North-Eastern Region, Romania. The decision to choose a particular high school is a complex responsibility: firstly, it depends on the student's intellectual abilities, expressed through the results obtained at the National Assessment Exam, which determines his options in relation to the high school's prestige, location, proximity to home, competition and profile.

Since most of the high school educational offer is located in urban centers and isolated in some rural localities, which have only technological high schools, the pupils must choose wisely the institution, taking into account also the financial strength of the family and the ways of commuting and accommodation. The variety of the specializations, the absorption power of school centers, the competition for the most famous high schools in the region and the mobility potential of pupils outline the earliest large-scale migration flows, between rural and urban, on the intra-county and intercounty dimensions. The results of the flows analysis highlight the proportions of the polarization areas, their attractiveness being influenced both by the number of the population and by the administrative hierarchy within the county.

Keywords: polarization area, educational accessibility, migration flows, high school centers, school offer

INTRODUCTION

In contemporary society, people's existence is largely based on the skills and abilities acquired through education. If at the beginning of the 19th century few children received a formal education, today a good part of the population in developed countries has university education and the concept of "long life learning" is taken into account by the majority of active people [1], [2]. The benefits of education do not only extend to higher labour market earnings and more secure jobs, but also include broader advantages such as better health, greater life satisfaction, reduced criminal behaviour and greater civic involvement [12].

Therefore, the key factor in the development of a society is a high level of human capital, implicitly equal access to education, concepts that are in the attention of educational policies in every country [14]. Access to education services is considered a fundamental right of the individual, however, despite guaranteeing the rights to a free and quality compulsory education, there are currently exclusion phenomena from these basic services, related to factors such as the poverty of the population (which cannot afford the additional costs of these services) and the poor infrastructure, especially in rural areas [7].

As in the case of other countries in Central and Eastern Europe, the Romanian education system went through a period of change that can be categorized as a process of educational transition [25]. This was imposed through a fusion of three main components: (a) the transition from a totalitarian political system to a democratic one; (b) overcoming the deep structural economic crisis by creating a free market; (c) updating and adapting to global changes [13].

According to a recently published material - Education and Training Monitor 2022 - in Romania, the discrepancies between the results of the national exams indicate a structural inequality in the education system [5], [8]. The impact of socioeconomic status on school performance is high and equivalent to approximately 3 years of schooling (ie, children from higher socioeconomic backgrounds have an educational level equivalent to that of children 3 years older, compared to children from lower socio-economic backgrounds). This gap in poor learning outcomes in Romania is the highest in the EU. Overall, inequality within the Romanian education system affects future participation in civic and economic life and inhibits workforce development [29], [30], [31]. In recent years, Romania's teacher policy has focused on improving the recruitment and selection process of future teachers, especially for schools located in rural and economically disadvantaged areas. Reforms and policies aimed at increasing financial incentives and other measures to improve the attractiveness of the teaching carrier. In the current context, even if the quantitative differences between the socio-economically favored students and the disadvantaged ones are fading (in the sense of the number of years of schooling), the qualitative differences (the quality of primary education, methods and teaching resources) are deepening. Socially disadvantaged families, less informed and with a limited educational level and professional training, tend to orient their children toward vocational education and less or not at all towards secondary education [12].

On the other hand, inequalities are natural, and school performance and career are determined, in any society, by the characteristics of the family of origin [26], [33]. The peculiarity of the Romanian educational system is that it strengthens these inequalities, leading to major discrepancies within the society.

The Romanian education system is characterized by a differentiated structure by types of education, courses and specializations. Currently, according to Law no. 56/2019, high school education is mandatory, but this obligation ceases if the student has reached 18 years and has not managed to complete his high school studies (fig. 1).

Compulsory education																								
age	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Nursery			Kinder-garten			Primary school				Secondary school				High school: <i>Theoretical</i> <i>Technological</i> <i>Vocational</i>			University						
																		Post-secondary school (non-university)						

Figure 1. The structure of the education system in Romania.

Source: Education and Training Monitor 2022

The transition from secondary school to high school is a key moment in the school life of students and is often marked by the beginning of the phenomenon of segregation, pupils from different categories of schools having unequal chances to obtain good results [16]. Access to high school is achieved by means of a National Evaluation Exam held in two

subjects, Romanian Language and Mathematics, the admission average being crucial for access to high school education and later to university education. All students who graduated from secondary school in that year or those who did not pass the exam in previous years can take this assessment. The schools themselves are administratively differentiated into highly hierarchical types of institutions (national and vocational colleges, theoretical high schools, technological high schools – former arts and crafts schools). It is unanimously accepted that the type of school can strengthen several advantages – a certain distribution of social status, educational capital developed in the family, the attitude and involvement of teachers, etc.

At the same time, students from disadvantaged categories benefit if they are enrolled in classes with a large share of students from families with high educational capital. Participation in extracurricular activities, satisfaction with school, higher educational aspirations are class-wide characteristics that positively influence the school results of each individual [16], [17]. Coleman [3] explains the positive impact of the share of white students as “the middle-class entourage” effect. Besides that, the study demonstrates that students with good results and high motivation help to create a “culture of success” in the school, while students with modest results and unmotivated disrupt this atmosphere conducive to achieving school performance. As early as 1966, Coleman, in the famous study *Equality of educational opportunity*, stated: “the social composition of the student group is more strongly related to results, independent of the social origin of the student himself, than any other school factor” [4]. More than 30 years later, the PISA 2000 study produced the same result: “school status, measured by the average level of parents' professions, wealth and “cultural capital” has a major impact on individual performance at the international level - an even greater impact greater than the effect of the characteristics that describe the environment of origin at the individual level, in many countries” [8], [9], [18].

Since Romania has a strongly differentiated educational system at the high school level and there are significant differences between schools (and even between classes within the same school, depending on the specialization), educational mobility is determined by the desire to control the type of school attended, the composition of the group of students, the relationships between them, their families and the teaching staff, teaching-learning and evaluation methods, etc. There are classes with a large share of students from highly educated families, where an educational climate is crystallized and has created conditions for academic performance, a culture of school success that leads to good results by meeting the perseverance of pupils and parents with the positive expectations of teachers [10], [16]. Catalin Zamfir, in his 2005 study on poverty and the risks in the development of children in Romania, shows that there is a marked tendency of educational polarization and inequality of opportunities between children who complete only the compulsory level of education, with less prospects for socio-professional integration, and those completing all levels of education [34]. Moreover, the highest values of school dropout are also recorded at this stage, at the transition from the secondary to the high school (upper secondary) cycle [23], [24]. School dropout outlines negative personal developments, determining the reduction of the range of the professional opportunities for young adults [21], [22]. The measures that want to be effective must aim not only at developing the educational infrastructure, increasing the quality of education offered by the school or increasing financial transfers from the state budget and/or local budgets to children in difficulty and their families, but also at changing attitudes, the behaviors of the population towards education. [27], [28].

DATA AND METHODS

In order to analyze the mobility of the flows of pupils admitted to high school in 2022, we created a database taking the raw information from two government sources: the official website of the Ministry of Education, the section of admission to high school, and the database of graduates from the National Assessment Exam 2022, of candidates from the North-East Region and of the candidates from all other counties of the country who have been admitted to continue their studies at a high school in this region. Thus, in the 6 counties of the region, 20430 students were admitted, 52 of them coming from other regions; at the same time, 147 secondary school graduates chose high schools in localities outside the North-East Region and they are not included in the analysis.

The quantitative flows of the student population include the main educational indicators: the environment (urban/rural) of the school of origin and the high school of destination, the profile and specialization. With the establishment of the volume of relations between the localities of origin and the high school centers, of the types commune⁶ to commune with high school, commune to city, city to city, city to commune with high school, it was necessary to create a database that included all the geographical coordinates of the LAUs that have secondary schools and high schools: of the 552 administrative units, only the schools in two communes in Bacău county, totaling 31 students, did not have any single student admitted to high school. ArcGis Pro software was used for the cartographic representation of student flows (fig.4). We used a multicolored flow structure in order to highlight the attractiveness of school centers of regional importance and to facilitate the research of intra-county educational mobility, the nuances representing high school destinations, and the circles – the number of students admitted in the same locality where they graduated from the secondary school.

In addition to this database, the second part of the study includes a detailed analysis of the determining factors in maintaining the limits of the educational attractiveness potential. According to the same data sources, for the Ascending Hierarchical Classification (AHC), using the PhilCarto software (fig. 5), we considered 5 indicators that derive from the first part of the study, for each pupil (origin and geographical environment), and locality with high schools (variety of typologies and specializations), including a composite index. The values obtained were standardized by reporting them to the maximum of the string, and the profiles of the classes – relative to the regional average.

- a) The number of high schools, separated according to their typology, represented in the form of a composite index (fig. 2);
- b) The share of students coming from the urban environment;
- c) The share of non-native students;
- d) The share of local students who stayed in the same locality where they graduated from secondary school;
- e) The number of specializations offered by the high schools of each school center.

The composite index includes the classification of localities according to the complexity of the school offer of each high school center, respectively the number of high schools and their typology, ranked according to reputation, school success and general admission averages. For example, national colleges are elite schools, which record the best academic results, determining the strongest competition between pupils with the highest exam

⁶ Commune, LAU or municipality – local administrative unit, composed of one or more villages

averages, both local areas and from outside of the county limits, while technological high schools, distributed mainly in rural localities and in cities with less than 20,000 inhabitants, manage to attract only students from the vicinity, most of the time with average of very poor results in the National Assessment, which leads, in the end, to a low graduation rate. Taking into account these factors, each typology is assigned an index, as follows:

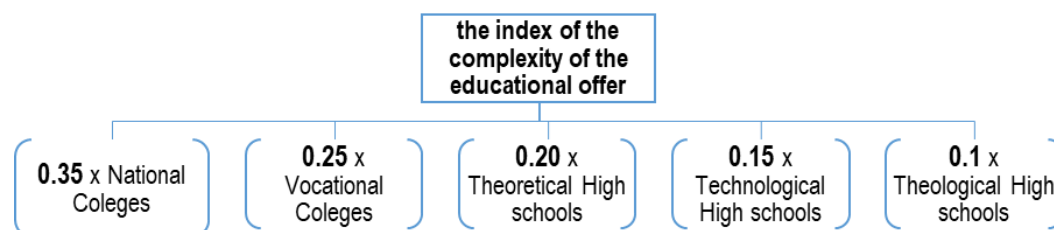


Figure 2. Calculation structure of the composite indicator of the complexity of the educational offer

RESULTS AND DISCUSSION

The school flows of high school students represent the earliest form of migration on a county and regional level. At this stage, the pupils are mature enough to take responsibility for the daily trips, in the case of commuters, as well as temporarily moving to a high school center if they come from localities that do not offer this type of educational service or their cities do not have the options and standards they target. Thus, educational mobility, due to the multitude of high school centers and the variety of school population pools, is shaped by a complex of factors, starting from the quality of the teaching act, the degree of competition in the classroom and the additional financial investments of the family during the secondary school cycle (4 years), which shape the intellectual capacities of each candidate, mathematically reflected through the admission average. Calculation formulas have fluctuated over the years, aiming to enroll as many pupils as possible in the system, including those with a pronounced school failure risk, trying to improve long-term imbalances caused by the interruption of the educational process at 8 or 10 classes (for those who enroll in professional schools, but don't pass the baccalaureate exam). In 2022, the formula applied was: the ratio of $80\% \times$ National Assessment average + $20\% \times$ the average of the V-VIII years (due to the increased amplitude of subjectivity, which is manifested by the students overevaluation by 15-20% compared to the exam results). This methodology proves to be against pupils from rural areas, besides the other challenges involved in attending high school: only 66.9% of them will continue their studies, compared to 81.4% of pupils that graduated from urban areas. In addition, of the 969 rejected pupils, 71% come from rural localities. Thus, from the stage of enrollment in the National Assessment and promotion to the admission to high school, the counties of the North-East region “lost” 7572 pupils (fig.3).

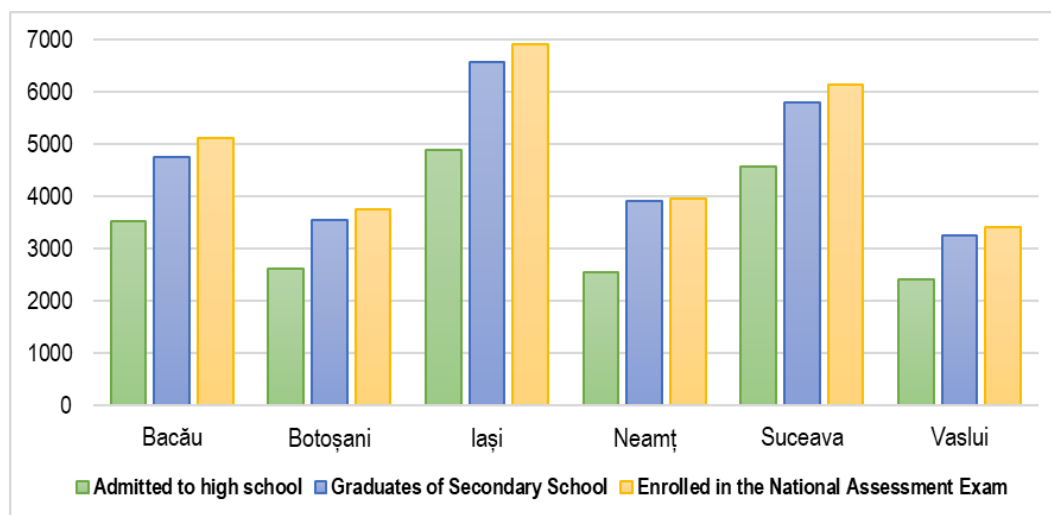


Figure 3. Distribution of the number of students from enrollment in the National Assessment, until admission to high school, by county

Once the competition average is established, the choice of high school, profile and specialization is influenced by a series of practical motivations, negotiated by financial capital (distance-time, (in)dependence on a means of transport, the possibility of obtaining a scholarship, accommodation options, the existence of public accommodation units of the high school, the capacity of the family budget to cover these expenses) and social-cultural (the high school's reputation, the typology of the pupils attending it, its geographical location in terms of ethnic landscape and security, the level of training of the teachers or the relations of kinship / friendship with other people who have connections with the institution). Thus, the selection preferences converge in the natural direction of creating the most important flows towards the largest urban centers, supporting the idea of the dependence of their attractiveness according to their demographic mass [25] and the complexity of the educational offer. Although the school population of the rural environment is roughly equal to cities ones, most relationships are urban to urban. (10,692 students), of which 93.6% stayed in the same city. Rural to urban relationships total 8562 students, representing 88.5% and create most of the migration flows in fig.4. Rural to rural ratios are limited both by the small number of places at these high schools (1-3 classes, for approximately 50-60 pupils,) and by the extremely small polarization area of local size. In particular, 66 students from the cities chose rural high schools from satellite localities (eg: Dorohoi to Șendriceni, Roman to Horia, Broșteni to Borca). Although this type of relationship is the rarest, due to the strong attraction of the "urban" status of the high schools in the locality of origin, the main motivation is explained by the quality of the teaching act: for a student with a medium admission average, who could aspire to a low-rated major from a technological high school with questionable reputation and results, it is a better choice to go to a theoretical high school in the suburbs, where he will have less competition and a superior academic training than the previous option [6], [19].

In terms of territorial coverage with high school educational services, the county seats cities consolidate the largest polarization areas, while the catchment area of the other urban centres is limited to a local level, (with the exception of Câmpulung Moldovenesc city, where the only military high school in the whole region is located). In general, the densest flows develop within short distances from the high school centre. In the case of cities of higher administrative rank, due to the diverse school offer, they manage to create

flows from distant areas, going beyond the county boundaries. The mapping of multipolarised flows with separate shades highlights intercounty migration, characteristic of communes at administrative boundaries, where it is more convenient, in terms of distance, a high school from a modest school centre in the neighbouring county (Siret, Negrești, Roman). There are also a lot of rural areas with poor accessibility to educational services in units that are not found locally (at least one technological high school): the north-west of Suceava county, eastern part of Botoșani county. These restrictions, caused by the peculiarities of the relief or/ and the underdeveloped road infrastructure, negatively influence the educational and economic integration of the young population and act in the sense of their social isolation [25], [32]. At the regional level, each high school center competes to capture as gymnasium pupils as possible and to expand its local polarisation capacities:

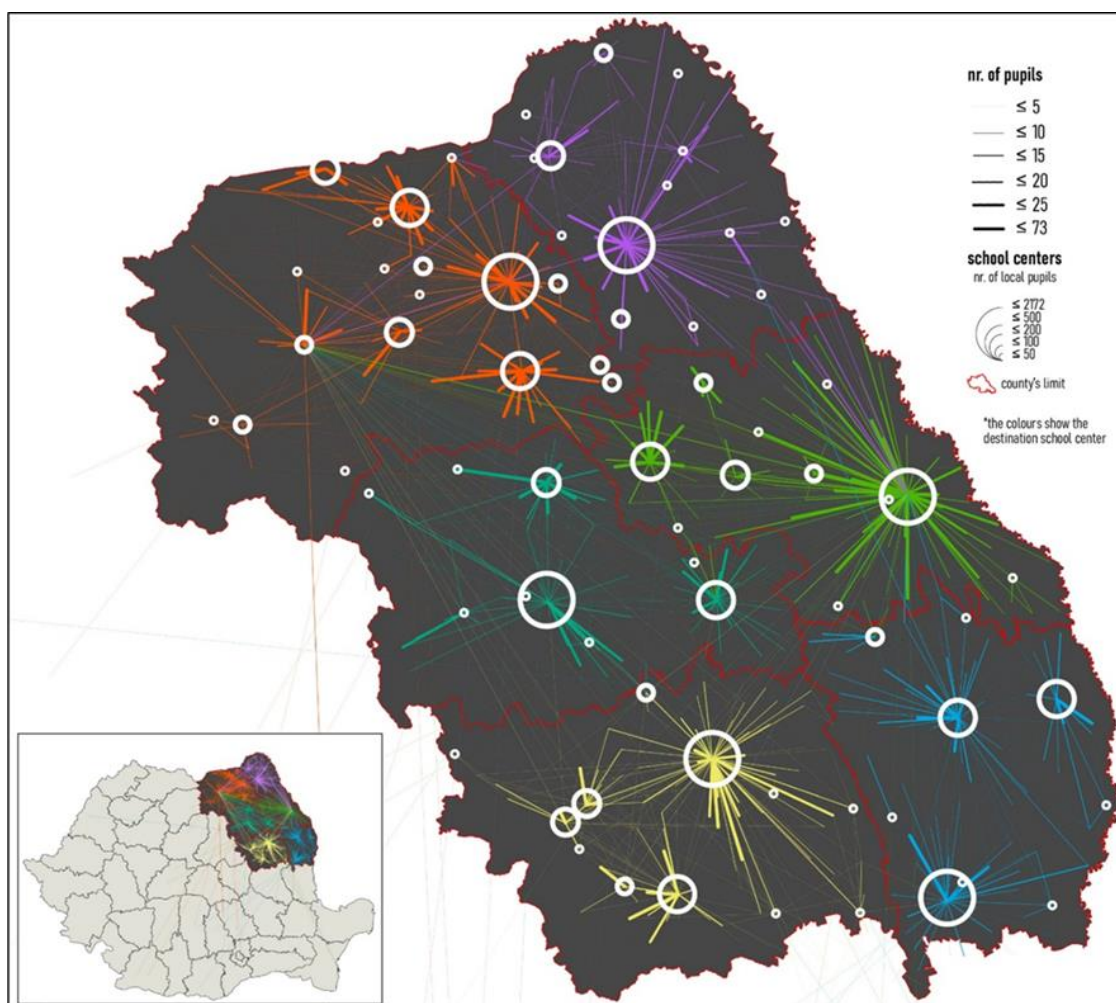


Figure 4. The flows of students enrolled in high school in 2022

Iași: at regional level, Iași stands out as the largest educational and cultural centre, which manages to attract students from all 5 neighbouring counties and dominates the intensity of flows from the entire county, being the only alternative even for students located more than 60 km away, in the southern part of Botoșani county. In fact, in Iași county the most important high school centres are located Iași and Pașcani city, which polarise the north-western communes. Pupils in the north-east and south-east have fewer options,

represented by rural high schools with a small number of places and majors (Belcești, Răducăneni, Țibănești, Vlădeni).

Botoșani: the county seat has the largest catchment area, but the multitude of secondary schools balances the length of the flows: the towns of Dorohoi, Săveni and Darabani, with average capacities to absorb the school population, take advantage of their peripheral position, draining the majority of pupils from the local area without competing with each other.

Vaslui: has the most christallerian geometric distribution of high school centres, with three main actors: Vaslui, Bârlad and Huși, which have developed their school flows over medium distances, due to the intersection of catchment areas. The other localities with high schools are unattractive even for their own students, the polarisation capacities are low and oscillating [25].

Bacău: benefits from a democratic distribution of high school centres, the most important urban poles are Bacău, Onești, Moinești and Comănești, which have retained their catchment areas from areas for which they are the most suitable high school option. The location of the other small and rural urban centres is the only resort for educationally isolated areas.

Neamț: as in the previous counties, the three main urban centres (Piatra-Neamț, Târgu Neamț and Roman) ensure accessibility to the eastern area of the county, and for pupils in the sparsely populated mountainous west the most viable options are Bicăz and Borca. Suceava: is the county with the densest urban network, therefore the flows have developed over short distances. Even small towns (Siret, Vicovu de Sus) manage to consolidate their own polarisation area without interfering with larger centres. Rural high schools, although with a modest variety of specialisations, are numerous and balance educational accessibility.

The second part of the study aims to classify the localities according to the above mentioned values:

- Complexity of the school offer: high schools with a diverse school offer compete for the best pupils and attract the most numerous and distant flows;
- Share of pupils from urban areas: the high share of pupils from urban areas generally increases competition due to higher averages;
- Share of local pupils who chose the high schools in the same city/commune: high school centers with a high share of secondary school graduates who have stayed in the same locality are the most attractive at county level; a pupil from Iași would have few reasons to leave for another high school in another city (except for circumstantial reasons such as family migration);
- The proportion of pupils who are non-local: a key element in defining the county and regional hierarchy. The high proportion of pupils from other localities reflects a wide area of polarisation;
- Number of majors (specialisations): determines the level of competition for the best high schools, and those with rare majors (military, railway) favour them regionally.

The application of the AHC method and the ranking of centres in 5 classes was considered the most appropriate to reveal educational differences conditioned by administrative rank, geographical position, population density and territorial competition (fig. 5). Thus, the 5 classes are differentiated as follows:

Class I: complex school centres with wide polarisation areas, due to the variety of elite educational units and numerous specialisations;

Class II: mainly rural secondary schools and small towns with rural characteristics, with elementary specialisations, with few pupils, attracted from the immediate vicinity;
Class III: small rural and urban high schools with simplistic high school provision, located near to the large centres, which attract their pupils but provide a local alternative for those with poor backgrounds from nearby localities.

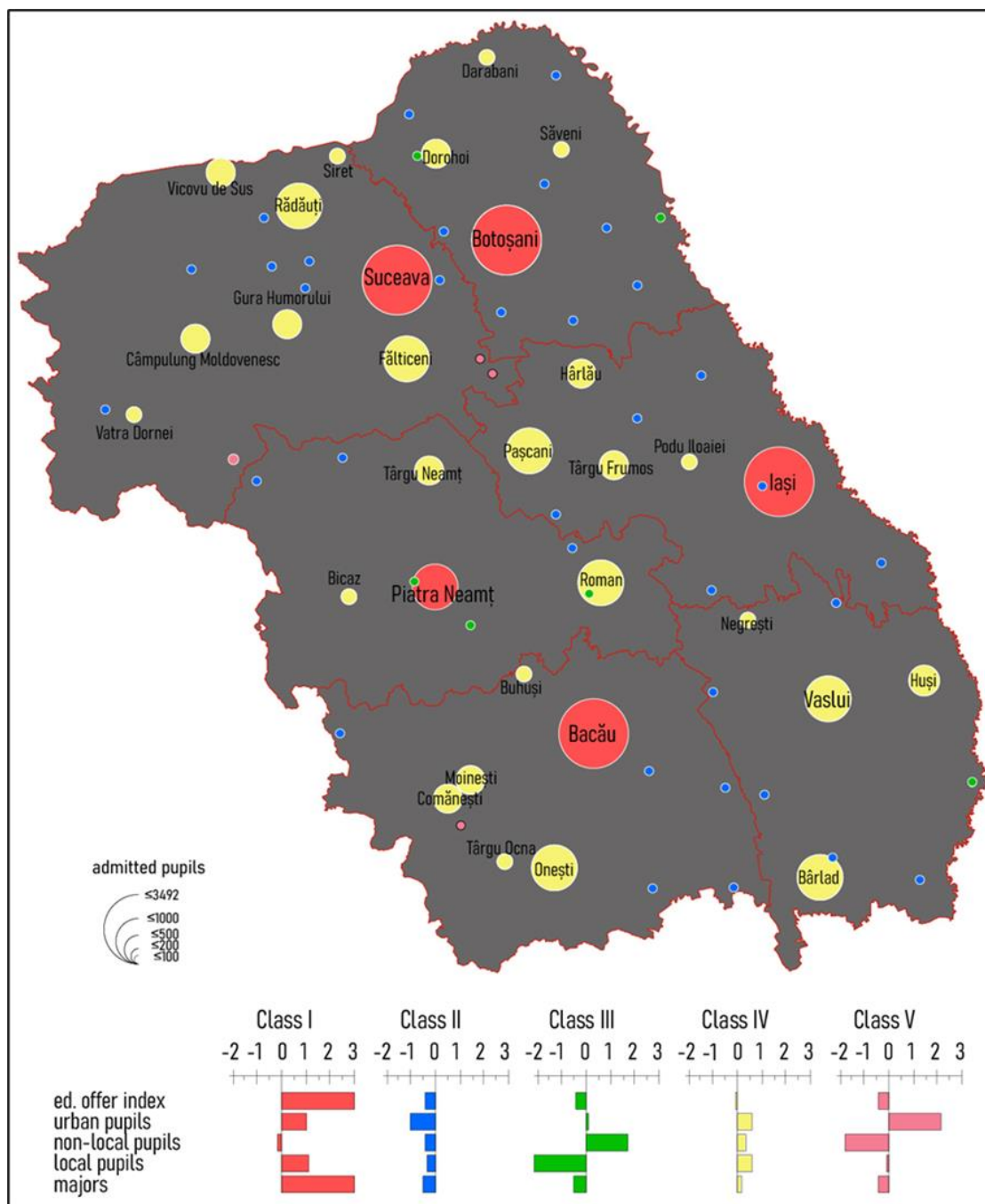


Figure 5. The Ascending Hierarchical Classification of high school centers in the Northeast Region

Class IV: school centres of county importance, with more modest offers in relation to county seats, but varied in relation to small towns (except Vaslui municipality, which is a county seat, but does not act like one, in terms of complexity of the educational provision), and with zonal polarisation areas;

Class V: local urban high schools, with insignificant polarisation areas, attractive only to local students.

Class I groups the largest cities in the region, with higher rank in the county administrative structure, 3 of them (Iasi, Suceava and Bacau) are also university centers, a parameter that strengthens their superior position both in terms of the volume of student flows, catchment areas existing throughout the county, and the pressure on the number of places, due to both the high population density of the cities and the flows from the peri-urban area, which determines the general increase in the last admission average. In general, most of the pupils with the highest averages (above 9.00) from towns over 30 km choose county seats, even if they have at least one centre with similar quality educational services nearby. Of this class, the length of the flows is reduced only in the case of the cities of Suceava and Piatra-Neamț, due to the urban alternatives in the vicinity, with a long educational tradition and renowned institutions (Rădăuți, Roman).

Class II combines rural high schools and a number of small towns with similar educational characteristics (Flămânzi, Solca, Murgeni), with only one technological high school, where more than 70% of students come from rural areas. These localities with high schools are not attractive either for those from other localities or for local pupils with higher academic results, who prefer reputable alternatives, although they involve higher costs. However, they are of vital importance in the territory as they are located in areas of a deep rural character, with low-income population, facing poor road infrastructure, inhibiting the overall moral development, factors reflected in the lower percentages of people with middle or higher education levels [11], [20]. These technological high schools address to pupils with a high risk of dropping out, offering them accessible specialisations with which they could quickly earn an income: agriculture, mechanics, tourism and catering.

Class III includes localities with only one secondary school, either technological or theoretical, with more than 90% of pupils coming from rural areas, from nearby localities and represent a good alternative to relieve the pressure from the large centres near which they are located (Horia, Roznov, Șendriceni). They essentially concentrate pupils from other localities as they are not on the list of preferences for local pupils, who opt for the higher administrative options, which are in the immediate vicinity.

Class IV is represented by the majority of medium-sized cities, with secondary or tertiary administrative rank, they have created a constant catchment area, managing to establish themselves as educational centres with local polarisation. In most cases they intersect their polarisation areas (Vaslui vs. Bârlad, Gura Humorului vs. Câmpulung Moldovenesc or Pașcani vs. Târgu Frumos). The centres that have peripheral positions in relation to the county seats and are the only centres with a “quality” reputation in relation to the rural alternatives maximise their potential for attraction through local monopolisation, extending their area of influence (Roman, Vatra Dornei, Darabani, Negrești) [15].

Class V is represented by only 4 urban high schools: Dărmănești, Dolhasca, Liteni and Broșteni, small localities, located in the shadow cone of large cities or in a sparsely populated and demographically ageing area, respectively with a low potential of school emissivity (Broșteni). This category of centres manages to keep most of its local pupils, but is unable to attract those from nearby localities as they have a rural type of school offer, with elementary specialisations, which does not stimulate competition between pupils, and the better alternatives are nearby.

CONCLUSIONS

This study demonstrates the importance of physical-geographical location in relation to educational centres as a defining factor for socio-economic success in adulthood. The transition from 8th grade to high school is certainly the most critical transition stage, which needs to be considered responsibly. The Northeast region, with the largest school population compared to other regions, has a dense network of high school centers, with few areas that remain outside of school polarization areas. Many medium-sized towns are the legacy of forced urbanisation during the communist period, which lost their demographic momentum after 1990 due to migration and an ageing population. For them, attracting young high school graduates is essential for urban revitalisation and securing economic strength. Inevitably, both these and rural high schools, as well as towns with the same educational offer as a commune, will compete for pupils with county centres, which, thanks to their superior polarisation capacities and prestigious institutions, will always be the resorts that will 'draw away' local elites. Naturally, locally polarised and proximity-based high schools are the best alternative both for low-performing students in rural areas isolated in terms of infrastructure and for those who could not afford the cost of migrating to a higher educational centre. These are the cheapest mechanisms for the state to keep them in the education system, providing them with vocational qualifications that can facilitate their integration into the labour market. Although it is morally wrong, educational equity can be ensured by the state in terms of improving territorial inequalities in terms of quality (access to high schools renowned for the performance of pupils and teachers), by developing the infrastructure for access to high school services, but this does not exclude substantial financial efforts that affect the most vulnerable social groups, calling into question the free status of education..

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