

Migration-related intentions of secondary school graduates. The example of youth from the cities of the Świętokrzyskie Voivodeship

Wioletta Kamińska^{1, CM}, Iwona Kiniorska^{2, CMR}, Patryk Brambert^{3, CDFMR},
Iwona Kopacz-Wyrwał^{4, CDFMR}, Przemysław Śleszyński^{5, MR}

^{1,2,3,4}Jan Kochanowski University of Kielce, Faculty of Sciences and Natural Sciences, Institute of Geography and Environmental Sciences, Kielce, Poland; ⁵Polish Academy of Sciences, Institute of Geography and Spatial Organization, Warsaw, Poland; ¹e-mail: wioletta.kaminska@ujk.edu.pl, <https://orcid.org/0000-0002-8770-9834>; ²e-mail: iwona.kiniorska@ujk.edu.pl, <https://orcid.org/0000-0001-5630-4554>; ³e-mail: patryk.brambert@ujk.edu.pl (corresponding author), <https://orcid.org/0000-0001-5320-5657>; ⁴e-mail: iwona.kopacz@ujk.edu.pl, <https://orcid.org/0000-0002-9796-3959>; ⁵e-mail: psleszyn@twarda.pan.pl, <https://orcid.org/0000-0002-1369-6129>

How to cite:

Kamińska, W., Kiniorska, I., Brambert, P., Kopacz-Wyrwał, I. & Śleszyński, P. (2025). Migration-related intentions of secondary school graduates. The example of youth from the cities of the Świętokrzyskie Voivodeship. *Bulletin of Geography. Socio-economic Series*, 67(67): 23-39. DOI: <http://doi.org/10.12775/bgss-2025-0002>

Abstract. The purpose of this study is to determine the specific characteristic of migration intentions among post-secondary youth living in cities of the Świętokrzyskie Voivodeship. We identify the directions and characteristics of migration in this social group by considering their migration intentions, which stem from their personal and professional preferences and goals. Based on this, we create a typology of the reasons for the spatial mobility of the surveyed secondary school graduates. We used data from surveys conducted among 438 respondents. These provided the basis for classifying the types of reasons for migration using cluster analysis based on Kohonen's self-organizing maps (neural networks). We demonstrate that the vast majority of respondents intended to continue their education outside the Świętokrzyskie Voivodeship. When making decisions about further education, they most often considered their own interests, while the main reasons for their migration were educational, professional and environmental. Next were reasons of an educational and developmental nature, followed by economic and developmental ones.

Article details:

Received: 01 October 2024
Revised: 03 December 2024
Accepted: 16 January 2025

Key words:

migration intentions,
post-secondary youth,
migration types,
Kohonen's method,
Poland

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1. Introduction

One pattern of contemporary migration is its overrepresentation of young people (Black, 2021; OECD, 2021). This results from the life cycle of a person, who, upon reaching adulthood, becomes independent and starts a family. Young people usually make their migration decisions when choosing a university and later in connection with seeking employment (Hoare & Corver, 2010; Herbst & Rok, 2016; Tverdostup & Masso, 2016; Dolińska et al., 2020b). The research confirmed that both the quality (of academic considerations and teaching itself) and the prestige (popularity) of universities influence young people's migration choices and, subsequently, the interregional mobility of secondary school graduates (Faggian et al., 2007; Hansen & Niedomysl, 2009; Jończy & Rokita-Poskart, 2014). Consequently, universities become tools of "supply" for policymakers, helping to balance the negative impact of brain drain on the accumulation of regional human capital (Gibson & McKenzie, 2012; Ciriaci, 2014; Gérard & Sanna, 2017).

In Poland, talented young migrants are most often attracted to large cities with well-developed academic functions and thriving job markets, which contributes to the spatial differentiation of population redistribution and the polarization of socio-economic development (Kamińska, 2011; Biegańska & Szymańska, 2013; Herbst et al., 2017; Śleszyński et al., 2018; Rokita-Poskart & Mach, 2019; Rokita-Poskart, 2021; Wiśniewski et al., 2021). This, in turn, leads to the brain drain (Kamińska & Mularczyk, 2022). Additionally, there is a decrease in human capital resources in the local labor market, resulting in a deficit of people of working age, which makes the issue of aging society increasingly significant (Kamińska, 2011). This phenomenon most intensely affects highly developed countries, including those in Western and Southern Europe (Kiniorska et al., 2023b). Currently, this is further exacerbated by high levels of unemployment and discrepancies between the needs of the labor market and the educational paths chosen by young people (Hadrien et al., 2017; Moroşanu et al., 2018; Coca Gamito, 2022). For these reasons, the migration of graduates is considered a critical element of the global labor-force pool (Punch, 2015; Corcoran & Faggian, 2017; Lulle et al., 2021).

In conclusion, the migration of young people has serious, even crucial, consequences for regional and local development processes. Therefore, this issue has been the subject of numerous discussions within academic, political and local community circles for many years.

Based on the above background, the aim of our study is to determine the specific nature of migration intentions among post-secondary youth living in cities of the Świętokrzyskie Voivodeship. We identify a research gap consisting in the still insufficient number of studies on the migration intentions of young people according to their territorial origin. The selected research area is characterized by distinct socio-economic polarization. Firstly, the Świętokrzyskie Voivodeship lies in the zone of the overlapping influence of Warsaw and Cracow: two socio-economic centers that are significant at the national level and at the level of Central and Eastern Europe and that strongly attract migrants, especially young women aged around 20–30. Secondly, the voivodeship itself is internally polarized, with a relatively stronger central economic hub, Kielce, and "internal peripheries", which are areas bordering other voivodeships (Churski et al., 2024). We focus on identifying the directions and characteristics of migration for this social group by considering their migration intentions. We present a new typology of the reasons underlying the migration decisions of the surveyed group of secondary school graduates.

2. Literature

The issue of population migration occupies one of the most important places in scientific research in the humanities and social sciences (Brettell & Hollifield, 2015). Hence, there are numerous meta-analyses and bibliographic inquiries that synthesize research findings from various thematic, methodological and regional perspectives (Vlasta, 2015; Garcia & Birman, 2018; Cörvers et al., 2021; Selod & Shilpi, 2021). This also includes the causes and effects of migration related to economic, cultural, political and environmental factors. In Poland, the most comprehensive work is the study by the Committee for Migration Research of the Polish Academy of Sciences, edited by Horolets et al. (2018), which covers demographic, economic, geographical, historical, legal, political and other perspectives. Regarding the links between demographic changes, migration and regional and local development, the study by Śleszyński et al. (2018) is quite up to date and covers the entire period after World War II.

As regards post-secondary migration and young people in general, a comprehensive review can be found in the chapter by Kamińska and Kopacz-Wyrwał (2021) in the monograph edited by Kiniorska and Brambert (2021a). Therefore, we limit ourselves here to the most important findings

regarding the current state of knowledge. The main observed regularities concern the place of origin of the migrant and their personal characteristics, such as: age, gender, education, marital status and financial situation. Within the study of youth migration, several dominant research directions can be distinguished, based on:

- a. the causes of migration (motives, preferences and intentions of young migrants) (Van Mol, 2014; Punch, 2015; Edwin & Glover, 2016; Vaishar & Pavlů, 2018; Cuzzocrea & Cairns, 2020; Jończy et al., 2021; Lulle et al., 2021);
- b. youth educational migration (Faggian et al., 2007; Trevena, 2013; Ciriaci, 2014; Corcoran & Faggian, 2017; Coca Gamito, 2022);
- c. youth labor migration (Hoare & Corver, 2010; Trevena, 2013; Tverdostup & Masso, 2016; Cuzzocrea & Cairns, 2020);
- d. youth migration from peripheral areas (Gavonel, 2017; Kosec et al., 2018; Mirkowska, 2018; Moroşanu et al., 2018; Vaishar & Pavlů, 2018);
- e. youth migration from cities (Tolley et al., 2012; Gérard & Sanna, 2017; Jończy et al., 2021; Naik, 2024; Triandafyllidou et al., 2024);
- f. behaviors and lifestyle of young migrants (Trevena, 2013; Moroşanu et al., 2018; Aresi et al., 2022);
- g. the consequences of youth migration – socio-cultural, economic, political (Punch, 2015; Gérard & Sanna, 2017; Lulle et al., 2021);
- h. the methodology of youth migration research (Findlay, 2011; Cairns, 2022; Çiftçi & Karaman, 2021).

In the Polish literature on the movement of young people up to the 1980s, analyses mainly focused on commuting to schools. After 1989, the scale and scope of migration movements changed – not only did they intensify, but they also began to take on different socio-cultural meanings (Horolets et al., 2018). Hence, over the past three decades, interest in youth migration has significantly increased – migration studies have expanded their scope and become a field of research for a larger number of scholars. This is due to several factors. Firstly, changing institutional conditions led to the coexistence of various forms of geographic mobility among young citizens of Central and Eastern European countries (Grabowska Lusińska, 2012). An equally significant event shaping subsequent migration processes in Europe was the 2004 enlargement of the EU, which guaranteed freedom of movement within its borders. On the one hand, Poland's integration into the EU became a great opportunity for change and improvement in living conditions, especially for youth from peripheral areas

and smaller towns. On the other hand, it contributed to one of the largest exoduses in Poland's history, deepening contemporary demographic problems. According to the data from Statistics Poland at the end of 2022, 1.5 million Polish citizens were residing abroad “temporarily”. In the fairly consistent opinion of researchers and experts, the vast majority of these individuals are unlikely to return to Poland. This issue is universal for all of Central and Eastern Europe, particularly countries like Bulgaria and Romania (Sardadvar & Vakulenko, 2021), as well as for countries that emerged after the dissolution of the Soviet Union (Bastianon, 2019).

After the accession to the EU, educational migration also intensified, often taking the form of long-term stays, frequently resulting in those involved finding well-paid jobs. Thanks to the experience of open borders, multiculturalism, diverse educational methods and new acquaintances, young people have become a driving force that facilitates integration and generates progress. For the same reasons, often not seeing development prospects in their homeland, they choose to stay abroad. This has been particularly noted by, among others: Skoczek (2012), Jończy et al. (2013), Jończy and Rokita-Poskart (2014), Herbst and Rok (2016), Herbst et al. (2017), Rokita-Poskart (2017), Dolińska et al. (2020a,b) and Maleszyk (2021).

The migration intentions and preferences of young people have also proven to be of interest to researchers. Analyses most often focused on the characteristics of push factors, preparations, and plans regarding the nature, direction or duration of migration (Dolińska et al., 2020a; Kiniorska & Brambert, 2021a).

A significant proportion of the studies has focused on the migration of young people from rural areas to European economic centers, where they could pursue their professional goals and ambitions. Research has shown that the migratory outflow primarily affected the smallest villages, contributing to the deformation of their demographic structures, including changes in gender distribution and an intensified aging of the population (e.g., Jończy, 2010; Kiniorska & Brambert, 2021c).

In recent years, the number of publications dedicated to the migration of youth from small and medium-sized towns has also increased. It has been noted that young migrants are leaving these centers in growing numbers, with push factors including insufficient economic potential and conditions in their hometowns, the desire for personal development (language learning, studies) and family matters (Przybyszewska, 2020; Maleszyk, 2021; Lisowski, 2022; Kiniorska et al., 2023a). This will also be analyzed in our study.

3. Materials and methods

The Świętokrzyskie Voivodeship, which we have chosen as the area of our study, is an internally polarized region with a clear division between the more developed central part (where the regional capital, Kielce, is located) and the less-developed peripheries. This is due both to urbanization delays and contemporary socio-economic polarization mechanisms. Within the voivodeship, depopulation and problem areas have long been distinguished (Eberhardt, 1989; Śleszyński et al., 2017). Moreover, in recent decades, the region has seen a decline in migration attractiveness compared to other regions of the country. There has been a drain of human resources, including: at the national level – primarily towards Warsaw, Cracow and Katowice; and at the intra-regional level – towards Kielce (Śleszyński & Kopacz-Wyrwał, 2021). Between 2004 and 2022, a total of 26,800 people officially relocated from the Świętokrzyskie Voivodeship to the metropolitan area of Warsaw, 16,600 to Cracow, and 23,300 to Kielce (excluding migration from the suburban zone to Kielce). In addition, significant international emigration, which is poorly recorded in official statistics, should be taken into account. According to data from the most recent census, in 2021, 49,000 residents of the Świętokrzyskie Voivodeship had been abroad for 12 months or more. In 2011, this number was 64,100 (for more than 3 months).

The study is based on the results of a larger survey conducted in the spring of 2021, which involved 910 secondary school graduates from the voivodeship. For our sample we selected 438 surveys from respondents residing in cities. This group consisted exclusively of students from general secondary schools. We excluded students from vocational and specialized classes because their decisions regarding further education or employment may be influenced by their specialization. According to data from the Kielce Board of Education, the total number of secondary school graduates in the 2020/2021 school year amounted to 4,830. Considering the degree of urbanization in the voivodeship and the high concentration of secondary school students in Kielce, it can be estimated that at least half of them are youths residing in the urban areas of the Świętokrzyskie region (2,415 individuals). With a confidence level (alpha) of 95.0%, a fraction size of 0.5 and a maximum statistical error of 5.0%, the required number of respondents was 331. A total of 438 surveys (48.1% of the total) were qualified for further analysis, making it a representative sample. The survey was administered electronically due

to the SARS-CoV-2 pandemic and the resulting remote-learning mode. Access to the required group of students was facilitated by the headmasters of 64 general secondary schools in the region. We utilized telephone communication and official email correspondence, confirming the research process with the appropriate documentation. It is worth emphasizing that we succeeded in reaching out to representatives from cities within nearly all counties of the voivodeship.

The questions in the survey covered several thematic blocks, including: intentions for the near future, educational intentions, professional aspirations, place of future residence, reasons for young people to migrate and assessment of their own chances on the local labor market.

We conducted a typology of the reasons for spatial mobility of high school graduates using the method of self-organizing (self-learning) neural networks with a topological map (Kohonen, 2001). This method is relatively rarely used in migration studies (a query using the Publish or Perish program and keywords such as “Kohonen” and “self-organizing maps” with “migration/population” returned only a few results related to population migration). We use it because neural networks, like other forms of artificial intelligence, have the ability to learn from an input data set. The networks do not require assumptions for variables or any predefined output models. Classification with this procedure is based on the internal logic of the data through the network's insight into the structure contained in the dataset. It has the capability to discover “hidden” patterns within a given set. Moreover, neural networks provide a means to address the complexity of multidimensionality that significantly complicates attempts by other methods to model nonlinear functions with a large number of independent variables. These features contribute to the potential for a highly objective interpretation (typology) of the data. A trained Kohonen network consists of neurons specializing in recognizing and grouping similar cases. During the training process, the algorithm identifies the neuron whose center is closest (in terms of Euclidean distance) to an individual training case. These clusters are illustrated on the Kohonen map, being a two-dimensional topological grid (Kiniorska & Brambert, 2021b).

The statistical population in the presented cluster analysis consisted of 438 secondary school graduates living in cities within the region. For the analysis, we compiled 16 qualitative features describing the nature of the causes of migration which were reflected in survey data – the input information matrix of dimensions 438×16 included encoded variants of

both “yes” and “no” responses. The causes were formulated as follows:

1. Improvement of material and/or living conditions
2. Lack of employment in the place of residence
3. Family reasons, e.g., marriage
4. Professional and personal development
5. Getting to know other cultures, regions and countries
6. Gaining independence, or reluctance to live with parents
7. Escaping from the environment, problems or family/friends
8. Continuing education without taking up work
9. Continuing education while also working
10. Taking up work without continuing education
11. Other future intentions
12. Certain or almost-certain chance of finding a job
13. High chances of finding a job
14. Low chances of finding a job
15. Minimal or no chances of finding a job
16. Other reasons

For the cluster analysis in the input layer of the neural network, we specified 100% of the sample size for training. We used a Kohonen map of dimensions 2×2 neurons to achieve an optimal and interpretable training outcome for the network. To perform the typology, we also had to set training parameters, namely: the number of training epochs (1,000 cycles), the initial learning rate (0.1), and the initial neighborhood value (2.0). The learning error of the trained Kohonen network was ~2.9. The resulting classification stages were done using the Automatic Neural Networks – Cluster Analysis module of Statistica 13. In our analyses, we distinguish secondary school graduates particularly based on gender, as this demographic characteristic most strongly differentiates the studied population in terms of migration issues.

We define post-secondary migration as the movement of secondary school graduates within or outside an administrative unit for educational and/or professional purposes, leading to a change in their temporary or permanent place of residence, occurring directly after the period of secondary school graduation exams (Kiniorska & Brambert, 2021b). Following the definition and research assumptions, we established migration intentions for both in-country (domestic) and external (international) migrations, as respondents could indicate these directions in the survey.

It is also worth specifying that in this work we use different terms interchangeably in reference to

the group under consideration, i.e.: respondents, the surveyed, secondary school graduates, secondary school seniors, youth, students, secondary school students. This was due to linguistic reasons.

4. Results and discussion

Women predominated among the respondents, accounting for 65.3% of the surveyed group. This distribution correlates with the fact that general secondary schools are more frequently chosen by girls, while boys tend to prefer schools that directly prepare them for a profession. The respondents came from cities belonging to 12 out of 13 counties in the Świętokrzyskie Voivodeship (excluding Włoszczowa County) and one city with county rights (Kielce). The largest group consisted of students from Kielce (41.3%), followed by those from Ostrowiec County (9.8%), Skarżysko County (9.6%) and Starachowice County (7.5%). In the remaining counties, the percentage of students ranged from 1.1% to 6.0%. The youth represented 33 out of the 45 cities that existed in the region in 2021. Besides Kielce, the largest numbers of respondents came from Skarżysko-Kamienna (8.7%), Ostrowiec Świętokrzyski (~8.0%), Starachowice (7.3%), Pińczów (4.4%), Busko-Zdrój (3.9%), and Opatów (~3.0%). Only 2.3% of respondents did not indicate their place of residence. Additionally, half of the secondary school seniors lived in cities with a population of over 50,000, more than a quarter in cities with 10,000–50,000 inhabitants, and 23.7% in the smallest cities of up to 10,000 residents. Another important metric characteristic was the average grades obtained by secondary school students at the end of the previous school year. Polish secondary schools grade according to a six-point scale; grades 2 to 6 are positive, while grade 1 is negative. The largest single group of respondents comprised those with an average grade within the range of 4.0–4.5 (27.2%), and those with an average grade between 4.5 and 5.0 accounted for slightly fewer, but still over a quarter of the respondents (26.9%). Secondary school seniors with an average of 5.0 and above constituted 16.9% of the total, slightly outnumbering students with an average of 3.5–4.0 (15.3%). Approximately 6.0% of respondents did not disclose their average grade. The average grade for the group was 4.3.

The main question we asked to the surveyed secondary school students coming from cities in the Świętokrzyskie Voivodeship concerned their primary intentions after graduating. The vast majority (94.8%) of respondents intended to continue their education, with 57.5% intending to work at the same time, while

37.2% intended to focus solely on their education. Only 3.4% of the surveyed declared that they did not expect to continue their education but would take up work instead. The distribution of responses among secondary school seniors, broken down by gender, shows some differences in their post-secondary school aspirations (Fig. 1). A noticeable difference concerns the proportion of those intending to continue their education while also starting work, as in the case of women (59.4%), this percentage was ~5.5 percentage points (p.p.) higher than among men (53.9%). An equally noticeable but opposite difference (~6.0 p.p.) exists regarding the decision to solely take up employment, where a higher percentage of men (7.2%) indicated this option.

We asked the declared future students within the considered sample to indicate their chosen field of study. Unfortunately, almost one fifth (19.0%) of the respondents were unable to specify what decision they would make. Among the others, the most frequently chosen fields were medicine (9.4%), psychology (8.0%) and law (4.8%). Slightly fewer graduates were determined to study computer science and criminology (both 3.4%), English philology (3.1%) or physiotherapy (2.9%). The most commonly chosen academic centers were Cracow (25.5%), Warsaw (21.7%), Kielce (18.1%) and Wrocław (8.9%).

We refined the questions concerning preferences for continuing education by addressing the factors that influence the decisions of young people from cities in the Świętokrzyskie Voivodeship when choosing their field of study. Over half of the respondents pointed to their personal interests (53.4%), while half as many

students (26.0%) mentioned their own abilities and talents as the reason. The third influencing factor was the prospect of high earnings in the chosen profession (16.9%). Men (24.0%) nearly twice as often as women (13.3%) considered this material factor to be the dominant reason for choosing their future field of study (Fig. 2). On the other hand, women more frequently (55.8%) than men (48.9%) were guided by their personal interests. However, abilities and talents played an equally important role for both women and men (around 26.0%).

The surveyed secondary school seniors who intended to engage in professional activity after graduating, whether alongside continuing their education or solely through work, indicated where they intended to find employment. The largest percentage consisted of those who wanted to work in Poland but outside the Świętokrzyskie Voivodeship (64.8%), mainly in Cracow (30.6%) and Warsaw (26.6%), which are not only large job markets but also centers of top-tier educational institutions in Poland. This pattern of responses is primarily influenced by the local job market situation, which poses a significant developmental problem as it leads to the loss of the most valuable part of human capital in the voivodeship (Kamińska, 2011; Kiniorska & Brambert, 2021c; Kiniorska et al., 2023a). On a positive note, one quarter (25.8%) of the youth declared they would seek employment in their place of residence or nearby. In this group, nearly three fifths of respondents (59.4%) indicated Kielce as the city where they intended to work. Additionally,

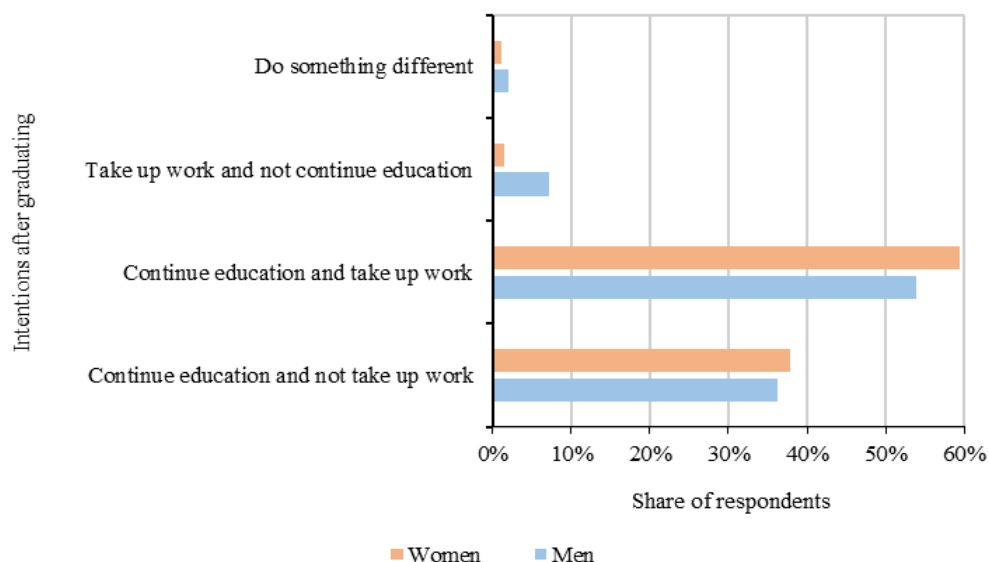


Fig. 1. Intentions of respondents from cities of Świętokrzyskie Voivodeship after graduating from secondary school, aggregated by gender

Source: own elaboration based on survey research

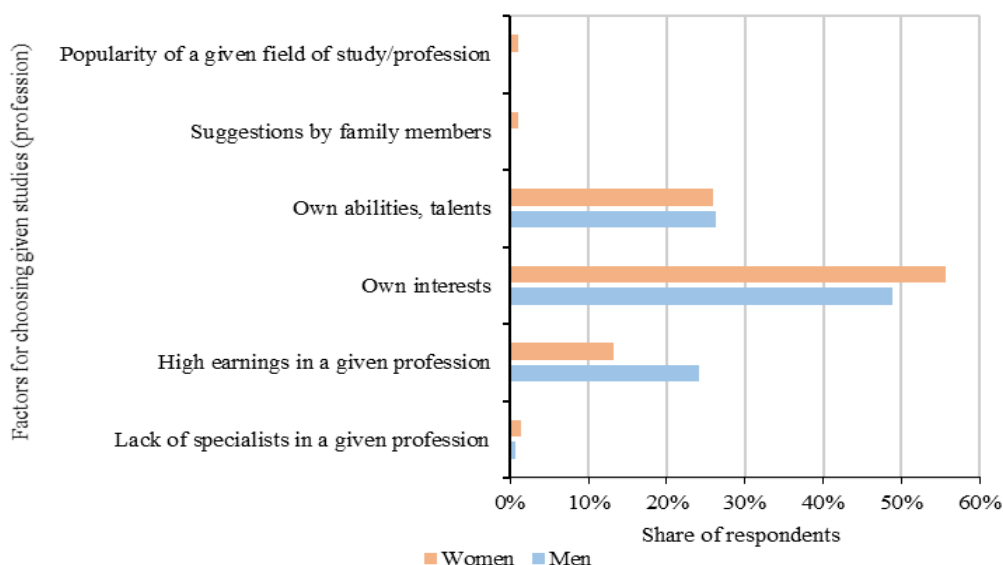


Fig. 2. Dominant factor taken into account when choosing the subject of further education by respondents from cities in the Świętokrzyskie Voivodeship, aggregated by gender
 Note: Factors with values below 1.0% were not included in the graph.
 Source: own elaboration based on survey research

a small percentage of respondents (5.6%) intended to go abroad for work. The proportions presented in Figure 3 show some differences in choosing the location for future careers between women and men. Regarding the dominant choice of location, young women were more likely to express a desire to move to another region of Poland for work. The

proportion of women in this regard was 66.7%, compared to 61.3% of men. The opposite proportions were observed in the case of those considering working abroad (10.8% of men, 2.9% of women). This subgroup exhibited the greatest variation (~8.0 p.p.). This situation confirms the greater tendency of men to migrate longer distances (see Jończy, 2010;

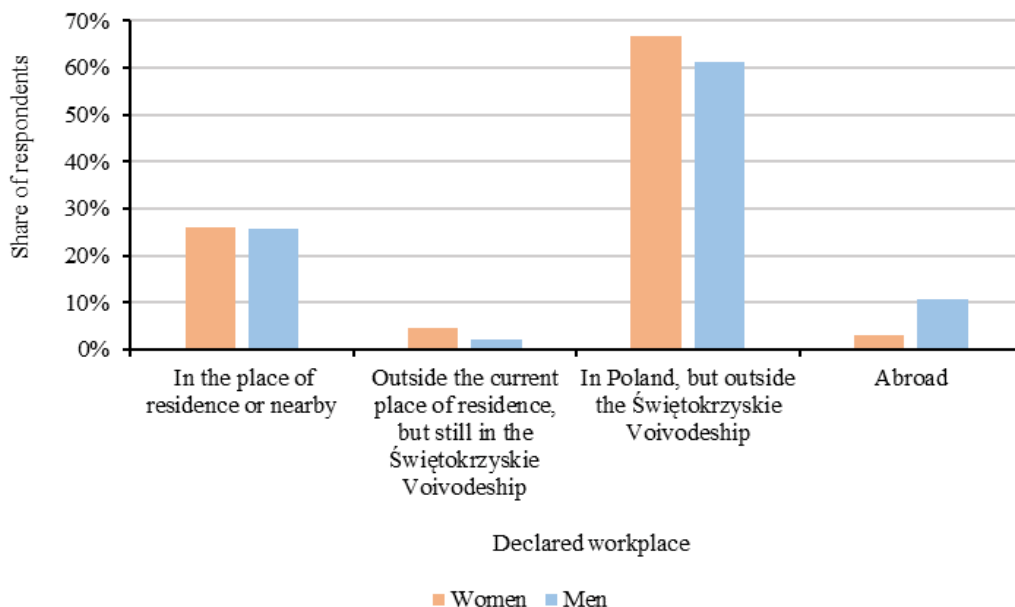


Fig. 3. Declared place of future work of surveyed secondary school graduates, aggregated by gender
 Source: own elaboration based on survey research

Dolińska et al., 2020a). It is also worth noting that over one quarter of both genders expressed a desire to work in their hometown or nearby.

We linked the issue of the work that the respondents intended to take up with a question about its connection to their current or future field of study. According to 56.9% of respondents, their job would not be related to either their current or intended education. Almost half as many secondary school graduates (30.7%) responded that their employment would be related to their potential field of study. The smallest group consisted of those whose future job would be related to their current field of study (12.4%). This may suggest that young people seeking employment are somewhat forced to take up work in the most available sectors rather than those aligned with their education (see Dolińska et al., 2020b; Kiniorska & Brambert, 2021c). Our research results indicated that gender significantly influences the contingency of secondary school graduates connecting their obtained or intended education with their future work (Fig. 4). Women were more likely (63.8%) than men (44.1%) to not link their career path with either their current or intended education. When considering the other two options, regarding the positive connection between work and the completed or targeted stage of education, young men showed greater certainty (15.1% and 40.1%, respectively).

Regarding secondary school graduates' assessment of their chances of finding work in their current place of residence after completing their education,

the largest number of respondents believed that these chances were low (42.9%). When adding the percentage of those who rated their chances as minimal or non-existent (14.4%), the negative assessment of job opportunities in their place of residence applied to over half of the respondents (57.2%). Just over a third of the post-secondary youth considered the chances of finding work to be good, and only 8.7% of all respondents viewed them as certain or nearly certain. It should be noted that there were again discrepancies in the evaluation of the local job market between men and women. The local job market was assessed significantly more positively by men (Fig. 5). A total of 44.1% of men considered the chances of finding job in their current place of residence to be good, compared to a significantly lower percentage of women (28.7%). Nearly one in ten men and a very similar proportion (8.4%) of women classified these chances as certain or nearly certain. A rather negative attitude towards the job market in their local area was recorded for ~63.0% of women.

From an economic perspective, migration is justified by factors related to the labor market and "indirect obstacles" (push-pull factors). In contrast, the sociological approach typically involves concepts that assume the existence of migration support networks. In this case, personal connections, such as interpersonal, family and friendship ties, significantly influence the decision to migrate (Czaika et al., 2021). Migration, in this view, is a network of events, feedback loops and information exchange networks

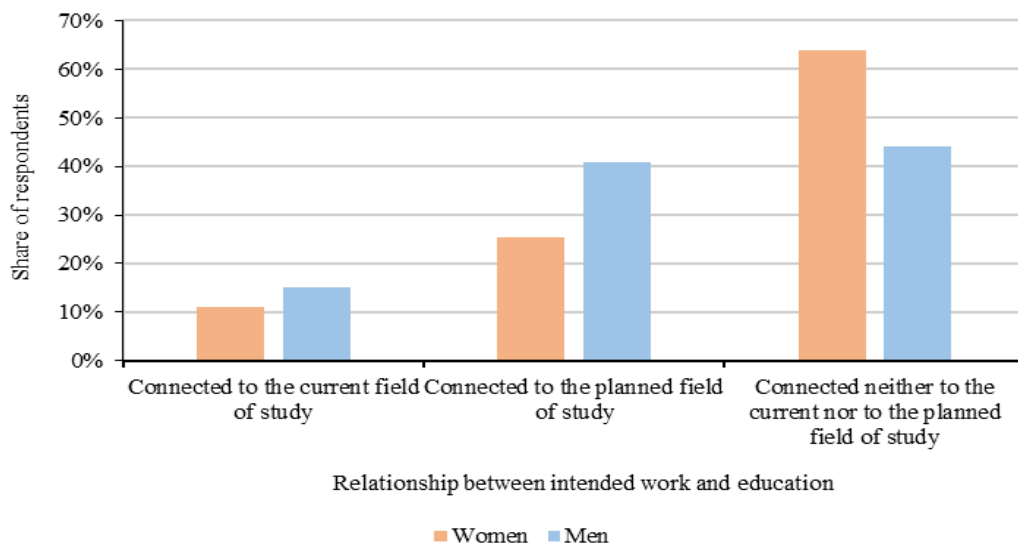


Fig. 4. Relationship between intended job and current or future field of education of respondents who intend to start working immediately after graduating secondary school, aggregated by gender
Source: own elaboration based on survey research

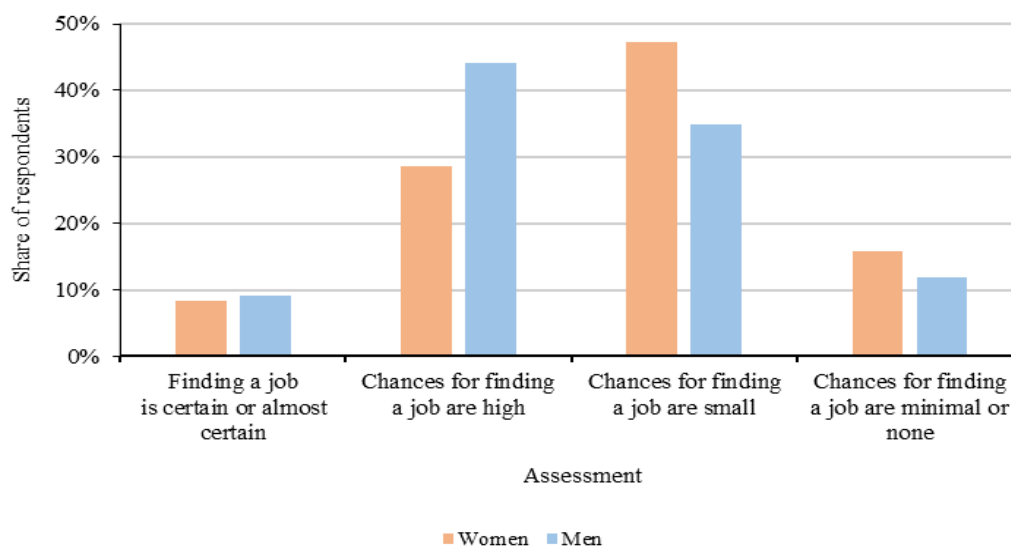


Fig. 5. Respondents' assessment of their chances of finding a job in their current place of residence (or its immediate vicinity) after completing education, aggregated by gender

Source: own elaboration based on survey research

(Kiniorska & Brambert, 2021c). Therefore, we asked secondary school graduates from the Świętokrzyskie Voivodeship, what, in their opinion, would be the most important reasons for young people to permanently leave their hometowns. The primary factor motivating young people to migrate was the desire for professional and personal development – this option was indicated by almost one third (33.1%) of respondents. The next reason, given by 26.9% of respondents, was the desire to improve their material situation and/or living conditions for themselves or their family. The third significant reason was the lack of jobs in their place of residence (14.2%). This indicates that the main reasons for migration among graduates were primarily economic and educational, and they appeared in about three quarters of the responses. Among the non-economic factors for permanently leaving their place of residence, the largest percentage was related to the desire for independence or the reluctance to continue living with or near their parents (9.1%). When analyzing the responses by gender (Fig. 6), it can be observed that both men and women predominantly mentioned the desire for professional and personal development (33.6% and 32.9%, respectively). The second most significant factor for the entire surveyed population, i.e. the opportunity to improve their material situation and/or living conditions, was more strongly emphasized by men (30.3%) than by women (25.2%), although the difference is not very great (5.1 p.p.). An even smaller difference (2.5 p.p.) was noted regarding the reason for migration related to the lack of job

opportunities, with women more likely to point to this factor (15.0%). Among non-economic factors, it is worth noting the equal desire for independence among both genders (~9.0% of responses).

As previously mentioned, to identify the main types of coherent reasons contributing to the migration decisions of secondary school graduates from the cities of the Świętokrzyskie Voivodeship, we used the Kohonen method. For the calculations, we utilized 16 qualitative variables describing the nature of migration reasons, which we extracted from the opinions expressed by 438 respondents. We identified four clusters, each recognized by a neuron with a specific Cartesian position in the network, namely: A – neuron (1, 1), B – neuron (1, 2), C – neuron (2, 1), and D – neuron (2, 2). These clusters vary in size but are relatively homogeneous in terms of the reasons determining graduates' decisions about future migration within each cluster. The Kohonen map, illustrating how the individual neurons group similar data cases (secondary school seniors), is shown in Figure 7. The generalized profiles of these clusters based on the diagnosed variables, along with the classification of the main types of migration reasons, are presented in Table 1.

The cluster labeled as A (educational and developmental type) includes 163 respondents (37.2%), making it the second-largest subset. This cluster was identified primarily based on a unanimous declaration regarding the pursuit of successive stages of education without taking up employment during that time (100% of cases), and secondarily on a focus

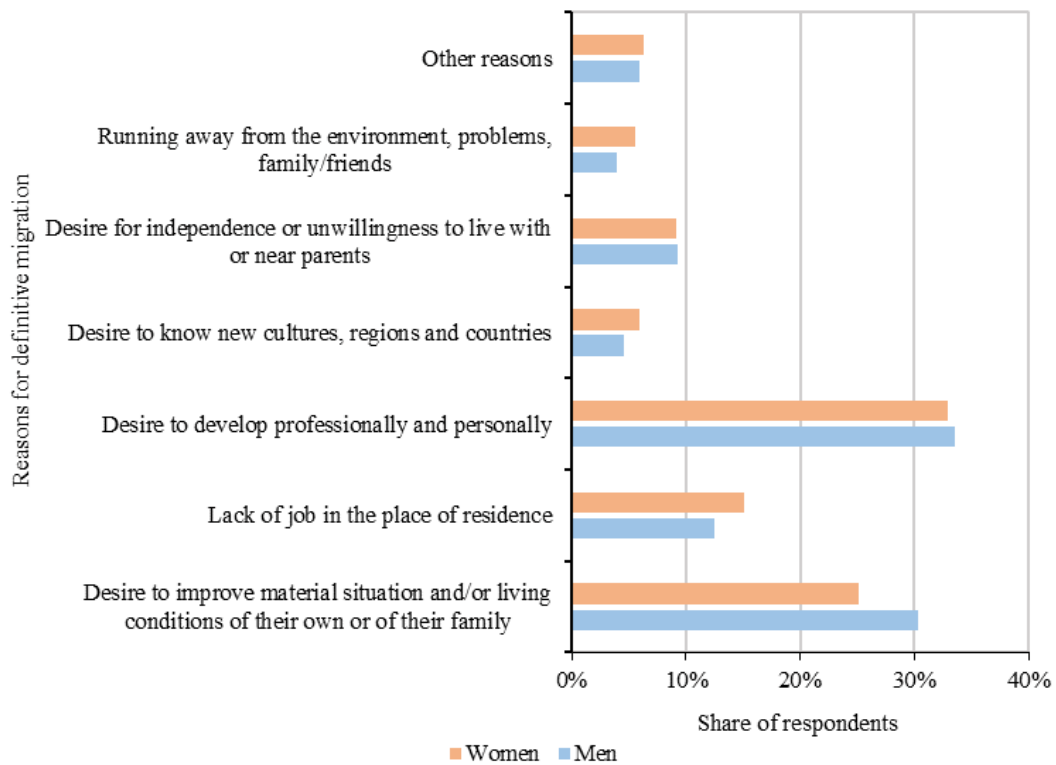


Fig. 6. Main reasons for young people permanently leaving their place of residence according to the surveyed secondary school graduates, aggregated by gender

Note: In the graph, the reasons with a value below 1.0% were included in the subset “other reasons”.

Note: In the graph, the reasons with a value below 1.0% were included in the subset “other reasons”

Source: own elaboration based on survey research

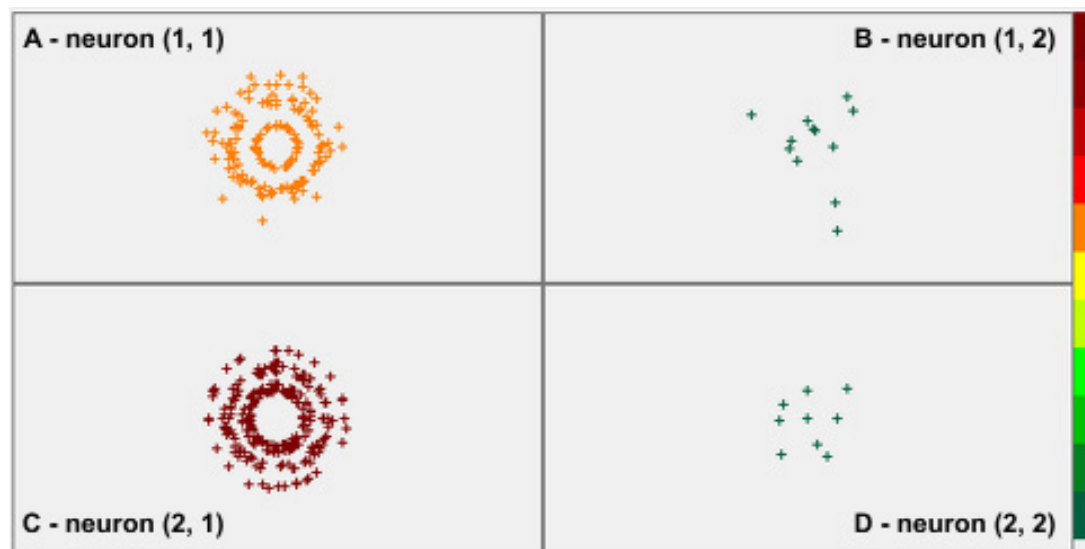


Fig. 7. Clusters of the surveyed secondary school graduates according to reasons determining their migration decisions, presented on a 2x2 neuron Kohonen map

Notes: Clusters marked with a letter symbol and the Cartesian position of the neuron in the network; color scale of marker indicates frequency of victories (cases) of individual neurons

Source: own elaboration based on survey research

Table 1. Generalized profiles of the examined secondary school graduates within clusters based on the reasons behind migration decisions, using the Kohonen neural network method – division of clusters into types

Concentration (neuron location)	Minimum level of neuron activity	Concentration size	Number of reasons given (% of cases)													Type of reasons for migration			
			1*	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16
A (1, 1)	1.37	163	38 (32.2)	24 (38.7)	0	69 (47.6)	6 (25.0)	11 (27.5)	7 (31.8)	163 (100)	0	0	0	20 (52.6)	55 (36.9)	63 (33.5)	25 (39.7)	8 (30.8)	Educational and developmental
B (1, 2)	1.35	12	3 (2.5)	3 (4.8)	0	2 (1.4)	2 (8.3)	2 (5.0)	0	0	0	11 (73.3)	1 (12.5)	2 (5.3)	8 (5.4)	0	2 (3.2)	0	Economic
C (2, 1)	1.47	252	71 (60.2)	34 (54.8)	1 (100)	71 (49.0)	16 (66.7)	26 (65.0)	15 (68.2)	0	252 (100)	0	0	16 (42.1)	86 (57.7)	114 (60.6)	36 (57.1)	18 (69.2)	Educational, professional and environmental
D (2, 2)	1.07	11	6 (5.1)	1 (1.6)	0	3 (2.1)	1 (2.5)	0	0	0	0	4 (26.7)	7 (87.5)	0	0	11 (5.9)	0	0	Developmental
Total			118 (100)	62 (100)	1 (100)	145 (100)	24 (100)	40 (100)	22 (100)	163 (100)	252 (100)	15 (100)	8 (100)	38 (100)	149 (100)	188 (100)	63 (100)	26 (100)	x

Order and descriptions of migration causes: 1. Improvement of material and/or living conditions; 2. Lack of employment in the place of residence; 3. Family reasons, e.g., marriage; 4. Professional and personal development; 5. Getting to know other cultures, regions and countries; 6. Gaining independence, or reluctance to live with parents; 7. Escaping from the environment, problems or family/friends; 8. Continuing education without taking up work; 9. Continuing education while also working; 10. Taking up work without continuing education; 11. Other future intentions; 12. Certain or almost-certain chance of finding a job; 13. High chances of finding a job; 14. Low chances of finding a job; 15. Minimal or no chances of finding a job; 16. Other reasons

Source: own elaboration based on survey research

on professional and personal development (47.6% of cases). This group also shows a varied, ambiguous attitude towards employment opportunities in the local labor market.

Cluster B (economic type) consists of 12 participants (2.7%) of the survey. Among the most significant similarities, they do not associate their future life with education at all. However, their personal decisions are guided by economic considerations, which is why an almost maximum proportion (73.3%) indicated the intention to seek employment without continuing education as the reason for migration. Notably, this group is barely motivated by the desire to improve their financial situation or living conditions when making migration decisions. Additionally, nearly all members of this group, in aggregate, rated the labor market in their current place of residence positively.

Cluster C (educational-professional-environmental type) is the largest group, comprising 252 respondents (57.5%) of the surveyed secondary school graduates. It is characterized primarily by the high aspirations of the youth. They are the only group intending to continue their education while also working (100% of cases). They focus on professional and personal development (49.0% of cases) and seek to improve their financial situation and living conditions (60.2% of cases). Factors related to their social environment are also significant in their migration decisions, including: the wish to gain independence quickly or reluctance to live with parents (65.0% of cases); escaping from their environment and related problems (68.2% of cases); or the desire to explore other cultures, regions and countries (66.7% of cases). These intentions are clearly influenced by a negative assessment of the local labor market.

In cluster D (developmental type), similarly to cluster B, there are only 11 secondary school students (2.5%). They constitute a group of “undecided” individuals who have other unspecified intentions for the future (87.5% of cases). Partially, there is a willingness to take up work without continuing education (26.7% of cases). Moreover, in their possible future growth-related actions combined with migration, these young people see a chance to overcome what they clearly recognize as the low probability of finding suitable employment in the town or city they have been living in so far.

In the discussion of the presented results concerning the migration intentions of secondary school graduates, it is worth noting that the identified patterns do not differ significantly from those proven in both national and international academic literature, the most important examples of which were quoted in the introduction to the

present paper. It is worth mentioning, as an example, the latest empirical findings by Lisowski (2022), who noted a high willingness among secondary school graduates (especially from general secondary schools) to emigrate to outside the functional area of the city of Zielona Góra. Their migration intentions are, among others, a result of the functional area's varying and insufficient potential.

Other researchers (Kamińska, 2011; Corcoran & Faggian, 2017; Sardadvar & Vakulenko, 2021) also proved that youth internal migration is not temporary for the purpose of obtaining higher education, but permanent in its final intention. In the case of Poland, it was observed that migration is additionally directed towards metropolitan cities as major academic centers, which leads to a deepening of regional development disparities (Dolińska et al., 2020a).

In terms of identifying the main factors of youth migration, studies on well-educated Poles have discovered that their migration decisions and strategies can be explained in terms of structural factors, human capital characteristics, as well as variables related to “aspirations/opportunities”. This latter factor is emphasized by Herbst et al. (2017) and Maleszyk (2021). Similarly, in Gavonel's (2017) study on patterns and factors of internal migration among youth in developing countries, it is noted that the choices made during the transition to adulthood shape youth migration patterns, making migrants a highly heterogeneous group, as there are systematic differences in their characteristics depending on the reasons for their migration.

Moreover, due to our original typology of the causes of spatial mobility, we were able to provide new insights into the multidimensional factors that determine the directions of young people's movements at the intra-regional and national levels.

The situation of young people, including their perception of reality, aspirations and life goals, reflects various socio-economic changes. Youth are an important part of society, stimulating social development and progress on various levels. Unfortunately, the problem of youth migration is growing in our country and is increasingly affecting certain areas (including the region under consideration) where the presence of more conditions influencing the decision to emigrate can be observed. This is primarily, alongside global trends, a result of Poland's accession to the EU and the associated freedom of movement to other EU countries, as well as almost unlimited access to higher education within the country. If we add to this the large labor markets of migration destinations, we get an intensification of spatial differentiation in population dynamics and

development polarization through the aforementioned outflow of human capital, and consequently, a brain drain (cf. Rokita-Poskart & Mach, 2019; Sardadvar & Vakulenko, 2021). This worrying phenomenon is compounded by previously proven patterns: subsequent migration is linked to prior migration (the DaVanzo hypothesis); individuals with higher human capital are more geographically mobile (the Sjaastad-Becker hypothesis) (Faggian et al., 2007). Therefore, it is crucial to accurately and thoroughly analyze the migration intentions of young people already at the stage of their potential transition to higher or further education.

Thus, the results of such analyses become an important basis for researchers and representatives of local government units responsible for taking up activities related to education and the labor market, allowing them to better understand the “spatiality of youth in the 21st century” (Cairns, 2022), and then properly, in a timely manner, respond to the negative effects of this phenomenon.

5. Conclusions

Nowadays, young people are aware of the rules of the modern world. They direct most of their energy into investing in themselves. The factors that motivate them to migrate are those that focus on the desire to improve their living conditions.

The primary aim of our study was to explore the particularities of migration intentions of post-secondary youth living in cities within the Świętokrzyskie Voivodeship. The main trend emerging from the research is that the vast majority of respondents would like to continue their education, with over half intending to combine studying with working. The majority of secondary school graduates from the region intend to pursue their studies at academic centers located in other parts of the country, outside the voivodeship (such as Cracow, Warsaw and Wrocław). When making decisions about further education, secondary school graduates are more often guided by their personal interests, whereas high earnings and existing skills are of lesser importance. They rarely consider family advice or the shortage of professionals in a given profession.

We observed that gender has a fairly considerable influence on the migration intentions of secondary school graduates. When choosing their intended field of study (or profession), women more often base their decision on personal interests, whereas men prioritize financial factors (such as high earnings). In terms of evaluating the local job market, men were

more optimistic, whereas women more frequently indicated that the chances of finding a job in their current place of residence were low, minimal or nonexistent. As a result, women more often intended to find employment outside of the Świętokrzyskie Voivodeship but still in Poland. On the other hand, men were more likely to intend to leave the country for work. This situation confirms the strong phenomenon of the feminization of outmigration affecting the region, as well as the dominant tendency of men to migrate over longer distances. There is also a noticeable higher level of pragmatism among women in potentially combining their obtained or potential field of study with future employment. Women are more aware than men that they may have to take available jobs that are unrelated to their current or intended education.

Moreover, the research confirmed that the main determinants driving young people to leave their hometowns are: the desire for professional and personal development, the wish to improve living conditions, and the lack of employment in their place of residence. The conducted typology of migration causes provided significant qualitative insights into the migration of secondary school graduates, from both a cognitive and practical perspective. Identifying the various clusters revealed that the predominant pattern in the analyzed phenomenon is the dominance of the educational-professional-environmental factor as a determinant of migration decisions taken by secondary school graduates.

Acknowledgement

This research was funded by:

1. The Jan Kochanowski University in Kielce, grant no. SUPB.RN.23.100, “The spatial dimension of socio-functional transformations in Poland and Europe”.
2. The National Science Centre in Poland, grant no. 2021/41/B/HS4/02035, “Influence of internal migrations on socio-economic development of Poland after 1989”.

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