




The socioeconomic development of rural municipalities representing various demographic and functional types

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Abstract

Motivation: Rural areas are usually characterised by a slower pace of growth as compared with urban areas. However, they do not constitute a uniform group of entities, representing a considerable diversity in terms of development. Among the determinants of the socio-economic development of rural areas, an important role is played by their demographic potential and the economic functions performed. The demographic typology of municipalities is used in identifying population development types in the analysed entities, depending on natural growth rates and a migration balance. The functional typology of rural municipalities is based on differences between them in terms of socio-economic structure. Understanding the relationship between the development of a municipality and its demographic and functional type is indispensable for planning the development policy and for formulating local strategies.

Aim: The aim of the paper is to assess gaps in the level of development of the rural municipalities of Małopolska Voivodeship, depending on the demographic types they represent and the economic functions they perform.

Results: The results of the conducted analyses indicate that the highest levels of development among Małopolska's rural municipalities are recorded by urbanised areas. These levels are much higher than in the remaining entities classified as multi-income, agricultural and tourist municipalities. It was proved that the best developed municipalities record an increase in the number of population resulting from a positive migration rate. There is a correlation between a demographic and functional type of municipalities.



Keywords: demographic types; functional types; rural municipalities; socioeconomic development
JEL: O18; R13

1. Introduction

The diversity of locations in geographical space, related to specific economic, social, natural, and cultural conditions implies the existence of diversified territories. Socioeconomic development has a different pace and directions in particular regions. Development factors concentrate in the most attractive locations in terms of the quality of life and economic activities, so the development of particular areas is characterised by various levels of intensity and effectiveness.

Rural areas tend to record lower levels of development than urban territories. However, they do not represent uniform groups of entities, showing different levels of development. The processes of socioeconomic development in rural areas are influenced by historical, natural and socioeconomic factors. A significant role is played by geographical factors related to the vicinity of large cities, natural conditions, the availability of raw materials, and tourist attractions. One of the changes which occur in rural areas is the urbanization of suburban municipalities, resulting in changes in land development in villages, income structure and lifestyles. Simultaneously, peripheral areas can be affected by the process of depopulation and marginalization.

The development of rural municipalities is strictly related to their economic functions. The on-going structural changes mainly result from the loss of the dominant share of agriculture in GDP generation as well as changes in employment and income structures. In the process of socioeconomic changes, the dominant position of agriculture in many rural areas has been lost in favour of industrial, tourist, recreational and housing activities. Municipalities with a diversified functional structure develop in different ways, which translates to the level and dynamics of socioeconomic development and, consequently, inhabitants' general prosperity. Economic changes are accompanied by various demographic processes. Well-located and developing rural areas offer good financial opportunities and high-quality living standards, being attractive destinations for migrating rural populations. Underdeveloped and marginally located municipalities are affected by the opposite process of out-migration.

In this context, an interesting area for research is an analysis and evaluation of the diversity of rural areas and the identification of factors influencing the socioeconomic development of different types of rural municipalities.

This article aims to assess differences in the development levels of Małopolska's rural municipalities from the perspective of their demographic types and economic functions.

The presented statistical analyses are based on secondary data collected from the Local Data Bank of the Central Statistical Office. Data analyses and conclusions make use of Webb's method, Hellwig's method of development pattern,

one-factor ANOVA, and a statistical inference method based on chi-square tests.

The rest of the paper is structured as follows: Section 2 describes the background theory related to the socio-economic development of rural areas; Section 3 explains materials and methodology; Section 4 presents the research results related to development gaps in Małopolska's rural municipalities, depending on the demographic types they represent and the economic functions they perform; Section 5 presents a discussion of the results and their comparison with the results of studies by other authors; the last section presents conclusions.

2. Literature review

Socioeconomic development can be defined as quantitative and qualitative changes aimed to achieve a sustained increase in the social, economic and cultural potential of a given territorial entity.

Rural areas face a number of significant development problems. As a rule, inhabitants have limited access to jobs, technologies, infrastructure and services as compared with people living in cities (Esteban-Salvador et al., 2020). A serious issue is the migration of young people to big cities, resulting in the aging of rural populations. Also, the inhabitants of rural areas represent lower levels of formal education. Rural areas have limited access to human and financial resources, economic environment institutions, and they are located farther from the markets and various services. Many rural communities are located far from the main business networks (Deller et al., 2019, pp. 30–42), being deprived of institutional mechanisms supporting SMEs. Distant locations and limited financial opportunities hinder the development of entrepreneurship in rural areas. Due to small populations and low-density levels, local demand is limited, making it difficult for entrepreneurs to benefit from economies of scale.

Rural areas perform important functions related to the provision of agricultural products, land and water resource management, and environmental protection (Heley & Jones, 2012, pp. 208–217). Currently, many rural areas are changing their traditional functions, usually associated with agricultural products and the food industry. Increasingly, rural areas perform non-agricultural functions, enabling their inhabitants to seek employment in more lucrative sectors. Empirical research shows that diversified economic activities increase household incomes (Gautam & Andersen, 2016, pp. 239–249). The demise of traditional functions is visible in rural areas in the close vicinity of large urban centres, resulting in the transformation of rural into urban areas (Casini et al., 2021, pp. 64–75). It broadens development gaps between urbanised suburban municipalities and peripheral areas characterised by lower income levels and limited access to infrastructure (Bonfiglio et al., 2017, pp. 78–87).

Many research studies undertake such issues as development levels, development factors, and reasons for regional gaps in rural areas (Agarwal et al., 2009, pp. 309–321; Courtney & Moseley, 2008, pp. 305–318; Czudec & Za-



jaç, 2021; Isserman et al., 2009, pp. 300–342; Kudelko, 2019, pp. 50–63; Lopez-Penabad et al., 2022; Stanny et al., 2018); development drivers (Abreu et al., 2019, pp. 1107–1123;), and identification of economic functions (Bański & Mazur, 2016, pp. 1–17; Stanny et al., 2021).

A significant aspect of the research is an attempt to identify the factors which influence the development of rural areas. On the basis of a multi-factor analysis of Latvia's municipalities, Bulderberga (2015, pp. 154–164) identified the following characteristics of better developed municipalities: larger populations, higher income levels, and favourable age structures. On the other hand, the major problems faced by underdeveloped areas included depopulation and aging, low employment and income levels, small farms, and low intensity farming. Tomal (2021, pp. 1098–1103) undertook research in the coordination level of socio-economic-infrastructure development in Polish rural municipalities. He identifies the following development barriers: low population density, a small number of large economic entities, and insufficient infrastructure. Standar and Kozera (2019) analysed Polish rural municipalities and pointed to a correlation between their development levels and municipal income levels and investment potential. Similar conclusions were drawn by Czudec and Zajaç (2021, pp. 644–657), who found a correlation between investment activities and the share of municipalities' tax revenue in budget receipts, and between investment activities and municipalities' geographical location.

Development-oriented activities in rural areas aim to improve the quality of life and prosperity of rural populations and to narrow gaps between rural and urban regions (Abreu et al., 2019, pp. 1107–1123). Adopting this assumption, Stanny et al. (2021) claim that the existing diversity of rural areas, resulting from their economic structure and performed functions, should be accepted. Priority should be given to raising the level of general welfare in all regions, while development policy instruments should be diversified and adapted to the specificity of particular regions.

Many authors stress the need for diversifying economic activities in rural areas and enabling their inhabitants to engage in other than farming activities in generating their income. In this context, an important role is played by stimulating entrepreneurship in rural areas (Barrett, 2015, pp. 182–204). The strengthening of the spirit of entrepreneurship requires developing an overall business ecosystem, engaging all rural stakeholders, and fostering life-long learning attitudes (Leonidou et al., 2020, pp. 245–258). Also, researchers stress the necessity of cooperation among rural entrepreneurs and creation of networks of all stakeholders, including local communities, in developing local entrepreneurship (Brandt et al., 2018; Steiner & Teasdale, 2019, pp. 144–154). A significant function in the process of stimulating the development of rural areas is performed by local authorities, which can create appropriate conditions for developing entrepreneurship through investment in technical and social infrastructure (Meador & Skerratt, 2017, pp. 144–155).

The socioeconomic development and diversity of rural areas are also stimulated by their demographic potential and performed economic functions — the factors of special significance from the perspective of this article.

Most researchers believe that human resources, one of the major internal resources of rural areas, have a significant impact on their development (Sorensen, 2018, pp. 78–87). One of the weaknesses of many rural areas is depopulation, a phenomenon which occurs with different levels of intensity in particular regions (Delgado, 2019, pp. 341–369). The depopulation of rural areas mainly results from the migrations of young adults to urban regions, leading to the aging of populations and reductions in birth rates. A decreased number of population has a negative effect on economic growth (Esteban-Salvador et al., 2020). General population growth, composed of natural growth and migration balance, can be regarded as the main development indicator (Humlerova, 2018, pp. 3485–3493).

Economic functions performed by rural municipalities are significant stimulants of their growth. The functional typology of rural areas adopts two approaches (Bański & Mazur, 2016, pp. 1–17; Stanny et al., 2021). One of them is based on location. In this approach, the typology refers to an urban-rural continuum which identifies the zones of impact of cities on rural areas. Delimitation criteria are based on such indicators as population density, peripheral location, and the type of business activity. In the other approach, based on the structural typology of rural municipalities, attention is given to differences between regions with regard to their social and economic structure. These are multi-dimensional typologies, based on many indicators which describe socioeconomic development (Stanny et al., 2021).

Researchers undertaking the issue of rural areas share the view that due to the contemporary trend of the decreasing significance of the agricultural function, the strategic development goal is the concept of a multi-functional development of rural areas. It is based on the diversification of economic activities and sources of household incomes in the context of corporate development and higher employment rates in non-farming sectors (Biczkowski & Jezierska-Thöle, 2021; Renting et al., 2009, pp. 112–123). The multi-functional development of rural areas comprises agriculture and other business activities including trade and socioeconomic, environmental and cultural functions. All such functions should develop symbiotically and cooperate for the purpose of promoting the growth of rural areas (Hall et al., 2004, pp. 211–225).

This article contributes to the research of rural areas through presenting an in-depth analysis of factors influencing socioeconomic development gaps between rural areas. It aims to assess development gaps in Małopolska's rural municipalities in the context of their demographic types and economic functions. It explores correlations between the demographic and functional types of regions. It represents a new research approach, particularly in the context of defining relationships between development and demographic types, as well as correlations between demographic and functional types. The study is based on statisti-

cal analysis using advanced statistical methods. The article fills the research gap in this field, allowing for the presentation of more specific conclusions with regard to the processes and mechanisms of the socioeconomic development of rural municipalities. A good understanding of correlations between development and particular demographic and functional types is indispensable for planning development policies and local strategies.

3. Methods

The presented study explores the rural municipalities of Małopolska. It aims to identify differences in their development levels, depending on their demographic and functional types. The research process comprises the following steps:

I. Identifying the functional types of Małopolska's rural municipalities. The analyses of functional structures are based on the typology of municipalities proposed by Komornicki and Śleszyński (2016, pp. 469–488), developed on the basis of the functional classification and typology of municipalities proposed by a research team headed by Stanny et al. (2018) (differences in socioeconomic structures. This is a basis for identifying 5 types of Małopolska's functional municipalities:

- urbanised municipalities with a strongly reduced agricultural function;
- multi-functional municipalities with a balanced sectoral structure;
- tourist municipalities — multi-income entities with a well-established tourist function;
- multi-income municipalities with fragmented farms, dominated by households which combine various sources of income and own small farms;
- agricultural municipalities with a dominant traditional agricultural function.

II. The second step identifies the demographic types of Małopolska's rural municipalities. For this purpose, we use Webb's (1963, 130–148) method, which makes use of two measures: birth rate and migration rate. For the needs of this analysis, four groups of rural municipalities are distinguished:

- group 1 — a development type — population growth is caused mainly by a positive birth rate (a positive birth rate exceeds a positive balance of migration or more than balances a negative migration rate);
- group 2 — a development type — population growth results mainly from a positive migration rate (a positive migration rate exceeds a positive birth rate or more than balances a negative birth rate);
- group 3 — a regression type — a decline in population is caused mainly by a negative birth rate (a negative birth rate exceeds a negative migration rate [in absolute terms] or is not balanced by a positive migration rate);
- group 4 — a regression type — a decline in population caused mainly by a negative migration rate (a negative migration rate exceeds a negative birth rate [in absolute terms] or is not balanced by a positive birth rate).

III. This step evaluates the levels of socioeconomic development of Małopolska's rural municipalities. The development of rural municipalities is assessed using a synthetic development measure, calculated on the basis of selected diagnostic features and Hellwig's (1968, pp. 307–327) taxonomic development pattern method. This method allows for ordering a set of objects (municipalities) in which each element is described by a set of diagnostic features — stimulants and destimulants. It is a pattern method based on a pattern object with the highest value of input variables (for stimulants) or the lowest value (for destimulants). A synthetic measure is constructed on the basis of the measurement of distance between the observed object and the pattern object using the Euclidean metric.

IV. At this stage, we compare development levels in the context of economic functions. Comparisons of different functional types are based on a statistical method — one factor analysis of variance (ANOVA). This method explores the significance of changes between several mean values for samples representing many populations.

V. This step compares development levels in the analysed municipalities from the perspective of demographic types. Similarly to the previous step, comparisons are based on a statistical method — one factor analysis of variance (ANOVA).

VI. The final step explores a correlation between functional and demographic types of municipalities. The analysis makes use of statistical inference based on chi-square tests, applied in qualitative data analyses.

The analysis is based on the year 2021, for which it was possible to collect the most up-dated figures.

The statistical analyses are based on secondary data provided by the Bank of Local Data of the Central Statistical Office in Poland. The statistical analyses are based on Excel and IBM SPSS Statistics.

The conducted study puts forward the following hypotheses:

- H1 — The highest level of development is recorded in urbanised municipalities.
- H2 The lowest level of development is recorded in rural areas.
- H3 — Population growth in the best developed municipalities results from positive migration rates.
- H4 — The least developed regions represent a regression demographic type with negative migration rates.
- H5 — There is a correlation between a demographic and functional type of rural municipalities.

4. Results

Małopolska has 120 rural municipalities. They account for 65.9% of the total number of the voivodeship's municipalities. The remaining administrative entities include 14 urban and 48 urban-rural municipalities. The combined area of rural municipalities amounts to 9.815 km², representing 64.6%

of the voivodeship. Rural areas are inhabited by 1238.5 thousand people, which accounts for 36.1% of the region's population.

The functional typology of Małopolska's rural municipalities indicates that the majority of areas are multi-income municipalities characterised by farmland fragmentation (Chart 1). The voivodeship has 51 such entities, representing 42% of the region's rural municipalities. They occupy 46% of the total surface of rural areas and account for 49% of the population. They are mostly located in the areas south of Krakow, a broad terrain zone extending from south-west to the west and north-east.

The second most populous group comprises agricultural municipalities dominated by traditional farming. The region has 32 such entities, representing 27% of rural municipalities. They account for 26% of the total area and 16% of the number of inhabitants, situated mainly in the north, north-east and south east of the voivodeship.

Among the voivodeship's rural municipalities there are 19 urbanised entities. Most of them are located in the close vicinity of the regional centre of Krakow as well as along the communication route from Krakow to Katowice. Urbanised municipalities represent only 16% of all entities and 11% of the total area. On the other hand, they account for 22% of the region's population.

Thanks to beautiful landscapes and natural values, many municipalities operate as strong tourist centres: Tatra County, and the southern parts of Nowy Targ, Nowy Sącz, and Gorlice Counties (poviats). The total number of such entities is 13, representing 11% of the region's rural municipalities. Tourist municipalities account for 13% of the total area of municipalities and 9% of their population.

The smallest group comprises multi-functional municipalities, characterised by a sustainable development of various business sectors. The voivodeship has only five such rural municipalities. They account for merely 4% of the structure of the region's municipalities in terms of both their area and number of inhabitants.

The demographic typology of Małopolska's rural municipalities indicates that the majority of entities represent a regression type with a declining number of inhabitants (groups 3 and 4) (Chart 2). There are 66 such entities, accounting for 55% of all rural municipalities and representing 40% of the analysed entities' populations. Group 3 is larger, comprising the municipalities in which declining populations results mainly from a negative birth rate. The region has 38 such areas. They represent 22% of rural inhabitants.

A smaller group is represented by a development type with an increasing number of inhabitants (groups 1 and 2). Małopolska has 54 such municipalities, accounting for 45% of all rural areas and 60% of their populations. The majority of development entities belong to group 2 with an increasing number of inhabitants caused mainly by a positive migration rate. There are 32 such municipalities, representing 36% of the rural population.

The development level of Małopolska's rural municipalities is evaluated using a synthetic development measure, calculated on the basis of selected diagnostic characteristics.

Originally, the following characteristics were adopted for measuring different aspects of socioeconomic development:

- x1 — population per 1 km²,
- x2 — working population per 1 thousand of people at working age,
- x3 — share of registered unemployed people in the population at working age (%),
- x4 — entities of the national economy registered in REGON per 1 thousand of population,
- x5 — natural persons engaged in business activities per 1 thousand of population,
- x6 — municipality's budget revenue per 1 inhabitant (PLN)
- x7 — tax revenue from legal and natural persons contributing to the state budget per 1 inhabitant (PLN),
- x8 — total municipalities' expenditure per 1 inhabitant (PLN),
- x9 — capital expenditure per 1 inhabitant (PLN),
- x10 — average useful area of a flat per 1 person (m²)
- x11 — public libraries per 10 thousand of population.

The next step of the analysis explores correlations between the selected indicators, excluding strongly correlated ones to avoid the duplication of data. As a result, the synthetic measure is based on 6 diagnostic characteristics: x1, x2, x3, x4, x9, x11, while x5, x6, x7, x8, x10 are eliminated.

The value of the synthetic measure ranges from 0.38 in the municipality of Wielka Wieś in the powiat of Krakow to –0.03 in the municipality of Radgoszcz in the powiat of Dąbrowa (Chart 3).

The group of rural municipalities with the distinctly highest development level comprises six entities in which the value of the development synthetic measure exceeds 0.30. The group comprises four urbanised municipalities of the powiat of Krakow: Wielka Wieś, Zielonki, Liszki, one urbanised entity in the powiat of Olkusz–Bolesław, and one agricultural municipality — Jodłownik in the powiat of Limanowa.

The second group (20 entities) comprises municipalities with a relatively high level of development (the synthetic measure ranging from 0.20 to 0.29). This group also comprises many strongly urbanised areas with a significantly reduced agricultural function (nine entities), more than eight multi-income entities with fragmented farmland, and one tourist and two agricultural municipalities.

The third and largest group comprises entities with a relatively low development level. The synthetic measure in this group ranges from 0.10 to 0.19. The group is composed of 68 municipalities which, in most cases, represent multi-income entities with fragmented agriculture.

The fourth group comprises 26 municipalities with a very low level of socio-economic development. The value of the synthetic measure is below 0.10. Most of such entities represent the agricultural function.

A correlation between the level of socioeconomic development of rural municipalities and their performed functions is analysed on the basis of a special statistical procedure — one-factor analysis of variance ANOVA. The particular groups representing a given functional type are compared by the value of the synthetic development measure.

The further analysis excludes the group of multi-functional municipalities because of their rare occurrence. The region has only five such entities. This small sample is not representative, so the results of analyses do not justify any general conclusions.

Therefore, the conducted statistical analysis considers four groups of rural municipalities:

- group 1 — urbanised municipalities;
- group 2 — tourist municipalities;
- group 3 — multi-income municipalities;
- group 4 — agricultural municipalities.

The first step of the analysis checks compliance with ANOVA assumptions, i.e., whether the distribution of the dependent variable in the particular groups is consistent with a normal distribution and the variances of the dependent variable are uniform in the groups. The normal distribution of the dependent variable is checked using the Kolmogorov–Smirnov test. The obtained results for each group are as follows: $Z_1(19)=0.184$; ni; $Z_3(13)=0.172$; ni; $Z_4(51)=0.067$; ni; $Z_5(32)=0.126$; ni. The results indicate that the distribution of the variable in each group is consistent with the normal distribution. The next step checks variance uniformity using Levene's test: $F_{LEVENE'A}(3, 111)=1.349$; ni, confirming uniformity in each group. In this case, Fisher's classical statistic is applied: $F(3; 111)=18.294$; $p<0.001$.

The obtained results are statistically significant, which indicates significant statistical differences between the analysed groups with regard to their development levels.

The final procedure is a post hoc analysis using the Bonferroni test, which allows for a multiple comparison of pairs of groups to find out the existence of significant development differences between groups or the lack of statistically significant differences. It turns out that inter-group differences concern only group 1 — urbanised municipalities which differ significantly from the other groups in terms of their development level. Simultaneously, differences between groups 2, 3, and 4 are not statistically significant, so their development levels can be regarded as similar.

Similarly to the previous procedure, ANOVA is applied to check the significance of development differences between groups representing particular demographic types. Four groups of municipalities are analysed:

- group 1 — a development type with a positive birth rate as the major factor;

- group 2 — a development type with a positive migration rate as the major factor;
- group 3 — a regression type with a declining population resulting mainly from a negative birth rate;
- group 4 — a regression type with a declining population caused mainly by a negative migration rate.

The normal distribution requirement is not met for all the analysed groups (group 2) ($Z1(22)=0.164$; ni; $Z2(32)=0.179$; $p<0.05$; $Z3(38)=0.133$; ni; $Z4(28)=0.139$; ni). Levene's test points to variance uniformity ($F_{LEVENE'A}(3, 116)=0.541$; ni). The further analysis is not based on Fisher's classical statistic but the Kruskal–Wallis non-parametric test, which is used when the requirement of variable distribution consistency is not met for each group.

The results are as follows: $\chi^2=23.479$, $\chi^2(3)$; $p<0.001$. They are statistically significant, which indicates statistically significant development differences between the analysed groups.

The Mann–Whitney non-parametric test (pair comparisons) made it possible to draw a more precise conclusion — inter-group differences relate only to group 2, in which municipalities record the highest level of development, and the respective differences in comparisons with the other groups are statistically significant. Simultaneously, differences between groups 1, 3 and 4 are not statistically significant.

The last step of the analysis made use of statistical inference aimed to determine a possible correlation between municipalities' demographic types and performed functions. The analysis was based on chi-square test. The following result was obtained: $\chi^2(9, N=115)=45.400$; $p<0.001$. This result is statistically significant. It can be stated that a municipality's demographic type is correlated with a given area's function. The strength of this correlation is measured by the phi coefficient. The obtained results — $\phi=0.628$; $p<0.001$ indicates a strong correlation. The analysis of cross-sectional residuals indicates that urbanised municipalities are more frequently related to demographic type 2, in which an increase in population is caused mainly by a positive migration rate. Tourist municipalities more frequently represent demographic type 4, in which declining populations result mainly from a negative migration rate. Most multi-income municipalities represent type 1, in which an increase in the number of inhabitants is caused mainly by a positive birth rate. Agricultural areas represent type 3, in which the number of inhabitants falls because of a negative birth rate.

5. Discussion

The results of the conducted analyses indicate that the highest levels of development among Małopolska's rural municipalities are recorded by urbanised areas. These levels are much higher than in the remaining entities classified as multi-income, agricultural and tourist municipalities. Therefore, hypothesis H1 is confirmed. The research shows that urbanised municipalities have the high-

est level of development, while the assumption that agricultural areas record the lowest development level (H2) is not supported confirmed.

Surprisingly, rural municipalities with tourist functions do not represent higher development levels than multi-income and agricultural entities. It would seem that as areas specialised in tourist activities, they could generate higher income and rely on this industry more heavily as a source of prosperity. However, it can be assumed that the ineffective use of the tourist potential (landscape and natural values) is caused by underinvestment in the area of tourist infrastructure. Another reason for failure to attract more tourists is competition from urban municipalities, which offer a wider range of tourism-related services.

It should be noted that very few rural municipalities in Małopolska represent multi-functional areas characterised by a diverse sectoral structure. A multi-functional development of rural areas, based on a diversified rural economy and decreased reliance on animal and plant products in favour of non-agricultural activities, could accelerate the development of agricultural and multi-income municipalities.

Among municipalities representing different population types, the highest levels are achieved by development areas in which an increase in the number of inhabitants results mainly from a positive migration rate (they are more attractive for arriving populations).

The remaining municipalities, representing different population types, achieve comparable but significantly lower development levels than those with a positive migration rate. Such areas include municipalities with a growing population caused by a positive birth rate as well as regression regions in which declining populations result from negative migration and negative birth rates.

Hypothesis H3 is confirmed. It was proved that the best developed municipalities record an increase in the number of population resulting from a positive migration rate. On the other hand, the assumption about the lowest development levels in regression demographic type areas with a negative migration rate (H4) is not confirmed by the study.

The conducted research study indicates that functional factors, related to economic structures, and demographic factors, related to the type of population growth, are strongly correlated in the process of developing Małopolska's rural municipalities. The best developed urbanised entities are characterised by a demographic growth based on a large inflow of migrants. Multi-income areas also record considerable increases in the number of inhabitants, but in this case they are caused by high birth rates. Most rural municipalities have a negative birth rate, which leads to a decrease in their populations. Similarly, most tourist municipalities represent a regression demographic type, and in this case declining populations result from negative migration rates. Therefore, hypothesis H5, which states that there is a correlation between a demographic and functional type, is positively verified.



The conclusions drawn from this research are, in certain aspects, consistent with the results obtained by other authors.

Many studies on development levels of Polish municipalities point out that the best results are achieved by areas located in the close vicinity of urban centres, and vice versa (Just & Łuczak, 2019, pp. 357–368; Kudelko, 2019, pp. 50–63). Such correlations are also observed in other Polish regions, e.g., in the region of Mazowsze, where the best developed entities are located close to Warsaw's functional area, as well as along the main communication routes leading to the capital city (Chrzanowska & Zielińska-Sitkiewicz, 2018, pp. 284–290). The location of rural municipalities in suburban areas stimulates their growth. Urbanization processes in rural areas around cities are accompanied by a decreasing role of agricultural functions (Heffner & Twardzik, 2022, pp. 420–438). The external zones of the functional areas of large cities offer new competitive opportunities on the labour market as well as a wide range of retail and cultural services (Heffner & Twardzik, 2015, pp. 194–209). Simultaneously, underdeveloped municipalities, located in peripheral regions, have limited access to funds for investment and overcoming development barriers (Standar & Kozera, 2019). The results of research point to correlations between development levels and functional types of rural municipalities. Traditionally, agriculture-dominated areas have lower development levels (Stanny et al., 2021). However, the areas which depart from typically agricultural functions can improve their situation if they rely their future development on multi-functional activities. Also, research indicates that municipalities with better developed non-agricultural functions make a more effective use of cohesion policy instruments (Mróz et al., 2023, pp. 497–510). In this context, a small number of multi-functional areas in Małopolska can be regarded as a counter-development factor.

Less attention in research studies is dedicated to demographic changes in Polish rural areas. The results presented in this article, related to a correlation between municipalities' development and their demographic type, are consistent with the findings of foreign authors. They are confirmed by Deller et al. (2019, pp. 30–42), who believe that the development of rural areas is mainly hindered by demographic factors and the inadequate human capital resulting from lower educational standards. Also, Danish research studies on relationships between local, internal resources and an increase in the populations of small communities point to a correlation between capital resources and increasing numbers of inhabitants (Sorensen, 2018, pp. 78–87). Research conducted in Czechia confirms the impact of the human capital on economic development (Humlérova, 2018, pp. 3485–3493; Perlin et al., 2010, pp. 161–187). Other studies show that migration rates reflect the attractiveness of regions from the perspective of inhabitants (Abreu et al., 2019, pp. 1107–1123; Floridi et al., 2011, pp. 1440–1447).

On the other hand, the conclusions presented in this paper are not shared by Vaya and Gonzalez (2022, pp. 131–163), who explored the development of tour-



ist municipalities in Spain and concluded that tourist functions performed by particular areas translate to a more favourable demographic situation.

6. Conclusion

The functional typology of Małopolska's rural municipalities indicates the most frequent occurrence of multi-income areas with fragmented agriculture, in which inhabitants have also other than farming-related sources of income. Such areas are located mainly in the zone extending from the region's south-west to the east. A large group of areas are represented by those with traditional farming activities. Most of them are located in the north and north-east of the voivodeship. The smallest group comprises multi-functional municipalities with a balanced sectoral structure and characterised by the sustainable development of particular sectors. Only five such rural areas are identified in the entire territory of the voivodeship. A relatively small group is represented by tourist municipalities — multi-income regions with a well-established tourist function. They are mainly located in Tatra County and the southern parts of the poviats of Nowy Targ, Nowy Sącz, and Gorlice.

Urbanised municipalities represent a specific group in which a traditional agricultural function has much decreased in its significance. These entities are located around the regional centre — the city of Krakow, and in the vicinity of the sub-regional centre — the city of Tarnów, as well as in the western part of the region, along the communication route Krakow–Katowice. This group is distinguished by a much higher level of socioeconomic development than most rural municipalities. The remaining functional types of municipalities represent similar levels but considerably lower than urbanised entities.

The majority of Małopolska's rural municipalities represent a regression type, characterised by a declining number of inhabitants. The highest development levels are recorded in development type entities, in which population growth is caused mainly by a positive migration rate. Population growth resulting from migrations is greater than increases caused by birth rates, or more than balances negative birth rates. Such municipalities, the most attractive areas for migrants, are mainly located in the vicinity of Krakow but also farther away from the regional centre — in the poviats of Wieliczka, Wadowice, and Bochnia.

The remaining rural municipalities, representing different demographic types, have lower development levels, but differences within this group are not statistically significant. It is true of entities where population growth results from a positive birth rate as well as regression types with decreasing populations.

The conducted study shows a strong correlation between functional factors, related to economic structures, and demographic factors, related to growth population types, in the process of developing Małopolska's rural municipalities. The majority of best developed urbanised entities attribute their population growth to a considerable inflow of migrants. Also, most multi-income areas are characterised by an increase in the number of inhabitants but resulting from



a high birth rate. On the other hand, populations in agricultural and tourist municipalities, more frequently than in the remaining entities, decrease.

The presented conclusions open the way for further in-depth analyses. The limitations of this study result from the fact that the conducted statistical analysis is based only on one year and the single case of Małopolska. A certain research limitation is also the selection of indicators for the analysis. Their subjective selection results from the substantive value of the data and their availability. Only rural municipalities were included in the research, and urban-rural municipalities were omitted, because in the case of urban-rural municipalities, public statistics do not extract data exclusively for rural areas.

Future research could include other cases and comparisons with other regions in Poland and the European Union. Another research area could be an analysis of development changes in rural areas over longer periods of time.

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Appendix

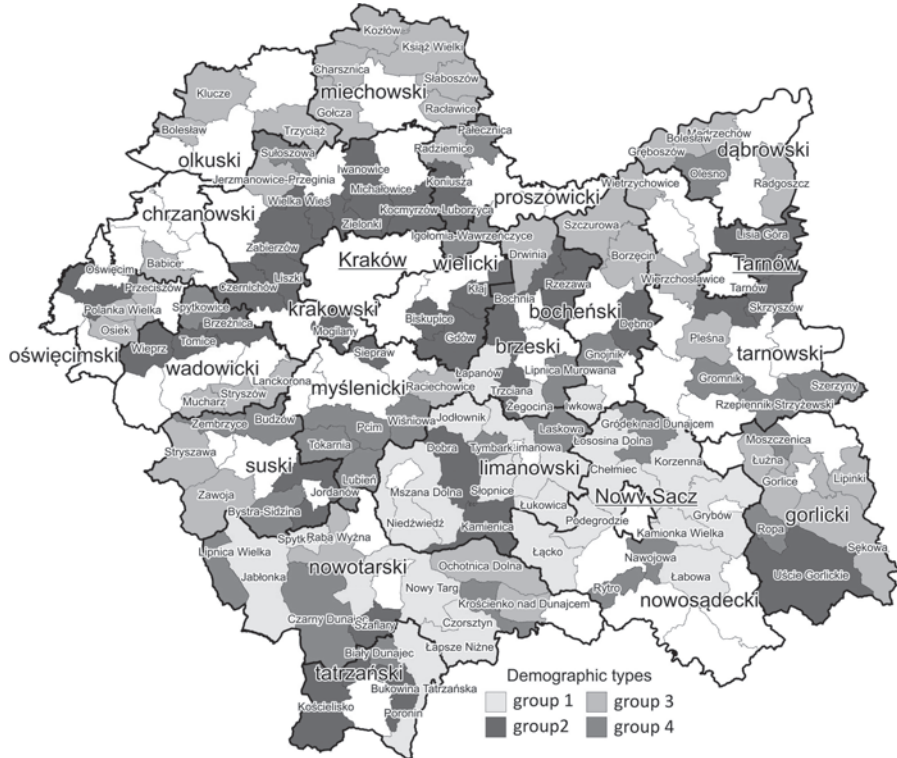
Chart 1.
Functional classification of Małopolska's rural municipalities



Source: Own preparation based on Komornicki & Śleszyński (2016); Stanny et al. (2018).



Chart 2.
Demographic types of Małopolska's rural municipalities in 2021



Source: Own preparation based on the Central Statistical Office.



Chart 3.
Development levels of Małopolska's rural municipalities in 2021



Source: Own preparation based on the Central Statistical Office.

