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**DEPOPULATION OF RURAL AREAS AS PERIPHERAL
AREAS IN THE WARMIAN-MAZURY VOIVODESHIP
IN COMPARISON WITH THE COUNTRY**

Key words: depopulation, natural increase, migration balance, rural areas,
peripheral areas

ABSTRACT. The aim of the study was to diagnose the situation demographic situation in rural areas in Poland, with particular emphasis on Warmińsko-Mazurskie Voivodeship as a peripheral region. John W. Webb's method of classifying territorial units was used. Rural areas in the Warmińsko-Mazurskie Voivodeship were among the most depopulated areas in this category compared to Poland. Given the dynamics and direction of changes demographic situation in rural areas of the Warmińsko-Mazurskie Voivodeship in the last 10 years, it can be expected that the future demographic situation in the area will worsen. Not without significance is also the fact that out of the 12 largest cities in Warmińsko-Mazurskie Voivodeship almost all of them are qualified as cities losing socio-economic functions. In addition, more than half of rural and urban-rural communities in Warmińsko-Mazurskie Voivodeship is threatened with permanent marginalisation. Consequently, the prospect of stopping negative demographic trends is a difficult undertaking to realise.

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INTRODUCTION

Due to the conditions found in peripheral areas, these areas are often referred to as problem areas [Proniewski 2014, p. 80], as they are characterized by, among other things, traditional economic sectors, underdeveloped communications infrastructure [Bernard and Keim-Klärner 2023, p. 463], lack of R&D potential [Torre 2022, p. 12], and a low technological level [Kraska and Pietrowski 2023, p. 53]. Peripherality can result, for example, from geographic location. In the European Union, by location, peripheral regions are referred to as areas furthest from economic, political and social centres [Proniewski 2014, p. 80]. The region's peripherality in terms of social aspects refers to places with undeveloped social capital and the depopulation occurring in their areas, caused by migration trends, with consequences such as brain drain, an ageing population, and a distorted gender structure [Grosel 2023, p. 78].

Regional peripherality can also be defined in terms of economic aspects. In European Union cohesion policy, one criterion for the economic peripherality of regions is a low level of economic development, measured by GDP per capita. When a region does not reach 75% of the EU average GDP *per capita* then it is counted as peripheral [Proniewski 2014, p. 81]. In addition, places with a low level of economic development, a traditional economic structure [Torre 2022, p. 12] and also significant employment in primary sectors are considered peripheral regions [Proniewski 2014, p. 81]. Taking into account the factors indicated above, it can be seen that the attempt to qualify the region as an peripheral area is therefore multifaceted.

Peripheral areas, in terms of the criteria mentioned, cover almost half of Europe's surface, about 4/5 of which is also rural [Blečić et al. 2023, p. 2]. Although they are found in almost every country in the European Union, it is possible to identify their largest concentrations. These include countries in Eastern and Central Europe, as well as the Iberian Peninsula [Noguera et al. 2017, p. 10]. In the case of Poland, the places where the problem of peripherality mainly occurs are the provinces of Eastern Poland, i.e. Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie [Gałęcka 2023, p. 64]. According to Grzegorz Ślusarz [2021], this is justified by: a high degree of poverty and social exclusion, a high dependence on state transfer and external investment funds, an unfavourable age structure of the population, a high unemployment rate and, in the case of rural areas, additionally high hidden unemployment.

The development problems of peripheral areas are related to the elements on the basis of which it is possible to determine whether a place is or is not a territory of this category. In peripheral areas, the economy is diversified to a low degree. It is characterised by a backward production structure and the dominance of traditional industries [Strojny and Niewiadomski 2023, p. 108]. The development of such an economy is then dependent on central regions [Bernard et al. 2023, p. 106], from which innovations and technologies are transferred to peripheral regions [Strojny and Niewiadomski 2023, p. 108]. This is mainly

due to the low level of development, inadequate to the real needs of the modern economy of the above-mentioned regions in the area of technology and innovation [Anokhina and Kuzin 2019, p. 313]. The lack of such integration also exists in the services, education or health sectors. As a consequence, this leads to a loss of human capital, through the emigration of entrepreneurial and better-educated people. The demand for services is then reduced, and this weakens the attractiveness of such an area in terms of living and investment opportunities [Bernard and Keim-Klärner 2023, p. 465]. One of the problems that arises in this way and at the same time causes even more constraints on the development of peripheral areas is the phenomenon of depopulation [Naranjo Gómez et al. 2021, p. 8].

The phenomenon of depopulation is demographic and spatial in nature. It occurs when the population of a territory decreases over a certain period of time. This can occur as a result of a negative natural population growth rate, a negative migration balance, or both [Johnson and Lichter 2019, p. 1]. The negative demographic phenomena that were pointed out in the context of peripheral areas earlier, i.e. depopulation and population ageing, among others, are not an issue that concerns only these areas [Battino and Lampreu 2019, p. 1]. Not only are they a challenge in much of rural Europe, but the issue is problematic in the perspective of the entire European continent [Eurostat 2023].

The phenomenon of depopulation in Poland in recent years has been occurring mainly in rural areas [Szukalski 2019, p. 1]. Among the factors directly responsible for the decrease in population, those already mentioned earlier, i.e. the negative value of natural increase and migration balance, are indicated [Majdzińska 2022, p. 66-67], but in the context of peripheral areas, the leading element is population migration [Dolińska et al. 2020, p. 263]. The causes of rural depopulation are similar to those that result in a place being referred to as an outlying area. Indeed, the disproportion to cities in, among other things, relatively better quality of life, availability of services, opportunities to find employment, or level of remuneration, is indicated as factors affecting the formation of depopulation [Pinilla and Sáez 2021, p. 336].

The effects of the phenomenon of depopulation in a given area can include, among others, the deterioration of the biological structure of residents in terms of gender and age [Camarero and Oliva 2019, p. 3], a decrease in tax revenues or a decrease in interest in such an area among potential investors [Kolosov and Crivenco 2021, p. 264]. At a later stage, these effects are simultaneously becoming causes of increased depopulation, which can be described as a kind of “spiral”, dynamizing already existing negative trends [Kovács and Tagai 2021, p. 420-421]. The resulting economic disadvantage of the region contributes to the outflow of the young, often educated population, which in turn slows down the socio-economic development of the area [Majdzińska 2022, p. 85].

The aim of the study was to diagnose the demographic situation in rural areas in Poland, with particular emphasis on Warmińsko-Mazurskie Voivodeship as a peripheral region.

MATERIAL AND RESEARCH METHODS

Warmińsko-Mazurskie Voivodeship is counted among the areas in Poland primarily affected by the problem of peripherality. In 2022, it had the highest share of rural areas (97.5%) compared to other voivodeships [GUS 2024], the areas most frequently affected by depopulation. Taking into account the above conditions, the article decided to attempt to analyse and evaluate the current demographic situation and its changes of the above-mentioned voivodeship in 2022 in relation to 2012.

Firstly, an analysis was made of the phenomenon of depopulation of rural areas in the Warmińsko-Mazurskie Voivodeship in comparison to other voivodeships in Poland. For this purpose, the difference in population in rural areas of municipalities in different voivodeships in 2022 compared to 2012 was calculated. Next, a classification and evaluation of rural areas in communes in the Warmińsko-Mazurskie Voivodeship was made. For this purpose, the method of John W. Webb [1963] was used, in which, on the basis of the value of natural growth and the balance of migration, individual territorial units are divided into classes marked with letters from A to H. The first, in alphabetical order, four types A to D relate to units of positive character from a population change perspective – they achieve population growth. Types E to H refer to areas with a negative character – their population is decreasing. The characteristics of the individual types found in the methodology used are as follows:

1. Positive types (population growth):
 - A – positive birth rate exceeds negative migration balance,
 - B – positive natural increase is higher than positive migration balance,
 - C – positive birth rate is lower than positive migration balance,
 - D – positive migration balance more than compensates for the negative birth rate.
2. Regressive types (population decline):
 - E – the negative birth rate is not compensated for by a positive balance of migration,
 - F – the decline in population is caused more by negative natural increase than negative migration balance,
 - G – the decline in population is caused more by negative migration than negative natural increase,
 - H – the negative migration balance is not compensated for by a positive birth rate [Webb 1963, p. 132].

The analyses conducted used data from the Local Data Bank published by the CSO, i.e. the values of the natural growth rate per 1,000 population and the values of the migration balance per 1,000 population, as well as information on the state of the population. As the study used CSO data, rural areas were defined according to the TERYT classification also developed by the CSO. Rural areas are therefore municipalities with only villages, as well as areas in urban-rural municipalities that do not have urban status [Official Journal,

1998, item 1031]. In addition, the analysis, using materials prepared for the National Strategy of Regional Development 2030 (NSRD 2030), addressed the issue of the location of rural areas in relation to urban centres, including cities or towns losing their economic functions, as well as municipalities at risk of marginalisation. Reference was also made to the transport accessibility of the areas under study. For this purpose, the results of a study carried out by Robert Guzik et al. [2021] were taken into account.

In order to avoid factual errors with regard to the data used for the analyses, resulting from the change in status of the municipality of Wielbark from a rural municipality to an urban-rural municipality, this unit was omitted from the analysis for the years under study.

RESEARCH RESULTS

As a result of the analysis, it can be concluded that the Warmińsko-Mazurskie Voivodeship was one of the most depopulated voivodeships in Poland in the years under review. Only Podlaskie, Lublin, Świętokrzyskie and Opolskie voivodeships were in an even worse situation, as the share of depopulating municipalities was higher by at least 5 percentage points (p.p.) in relation to the Warmińsko-Mazurskie Voivodeship (Table 1). From the perspective of the conditions indicated in the theoretical part, regarding peripheral regions, the results obtained can be considered a kind of confirmation of the information contained therein. With the exception of the Opolskie Voivodeship, the areas mentioned as a result of the analysis, together with the Warmińsko-Mazurskie Voivodeship, belong to Eastern Poland, that is the areas most affected by the problem of peripherisation in comparison to the country. Thus, one of the problems whose occurrence in peripheral areas has been indicated, namely depopulation, has been illustrated to some extent.

Table 1. Scale of depopulation in rural areas by voivodeships, in 2022 compared to 2010

Voivodeships															
dolnośląskie	kujawsko-pomorskie	lubelskie	lubuskie	łódzkie	małopolskie	mazowieckie	opolskie	podkarpackie	podlaskie	pomorskie	śląskie	świętokrzyskie	warmińsko-mazurskie	wielkopolskie	zachodniopomorskie
depopulation – share [% of municipalities]															
68	75	88	78	72	37	67	91	70	90	49	47	88	83	53	82

Source: own elaboration based on LDB Statistics Poland data [GUS BDL 2012-2022]

There is also a large disproportion between voivodeships in terms of the percentage of municipalities containing depopulating rural areas, as the difference between the voivodeships with the two most extreme values (Opolskie and Małopolskie voivodeships) amounts to as much as 54 p.p. There is therefore a need for an in-depth diagnosis of the basic elements causing the phenomenon of depopulation. An extended analysis of changes in the population situation in the Warmińsko-Mazurskie Voivodeship was made using Webb's typology (Figure 1). On the basis of the information in Figure 1, it can be concluded that rural areas in Warmińsko-Mazurskie Voivodeship in 2012 according to Webb's classification were mainly characterised by a regressive type (E-H) of population situation. The predominant situation was one in which population growth was unable to

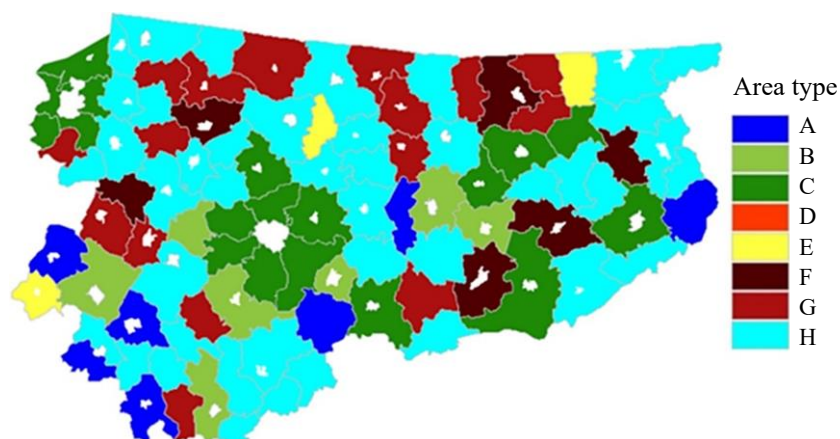


Figure 1. Division of rural areas in the Warmińsko-Mazurskie Voivodeship according to Webb's typology in 2012

Source: own elaboration based on LBD, Statistics Poland data [GUS BDL]

compensate for the negative migration balance (type H). In the context of the problem of depopulation in the studied voivodeship, this is an unfavourable situation, as it means that a significant part of the region had a depopulating character. It is also worth noting the types of dual-positive areas, i.e. areas with a positive population growth and positive migration balance at the same time (types B and C). They occurred only in the neighbourhood of the largest cities or towns in terms of population or, as in the case of rural areas in the Pasym municipality, were located between such areas. According to data from the CSO of 2012 on the number of citizens, out of the first 12 cities or towns in terms of population, almost all dual-positive rural areas were located in the neighbourhood of 9 of them.

From the perspective of the considerations undertaken in the theoretical part regarding the peripherality of areas, it can be noted that there is a dependence between the larger urban

centres, usually fulfilling the function of economic centres, and the peripheral areas. Only as a result of the existence of such interdependence² was there a fully positive population situation in rural areas. Analysing population changes in the Warmińsko-Mazurskie Voivodeship 10 years later, i.e. in 2022, it can be seen that the demographic situation in the study area has worsened (Figure 2). In 2022 in Warmińsko-Mazurskie Voivodeship, just as 10 years earlier, rural areas with negative population situation dominated, but this time there were much more numerous types of dual regressive types of areas, i.e. areas on the territory of which negative natural growth and negative migration balance are recorded at the same time (types F and G). In the case of the population situation in 2012, migration could be pointed out as the factor mainly responsible for the decrease

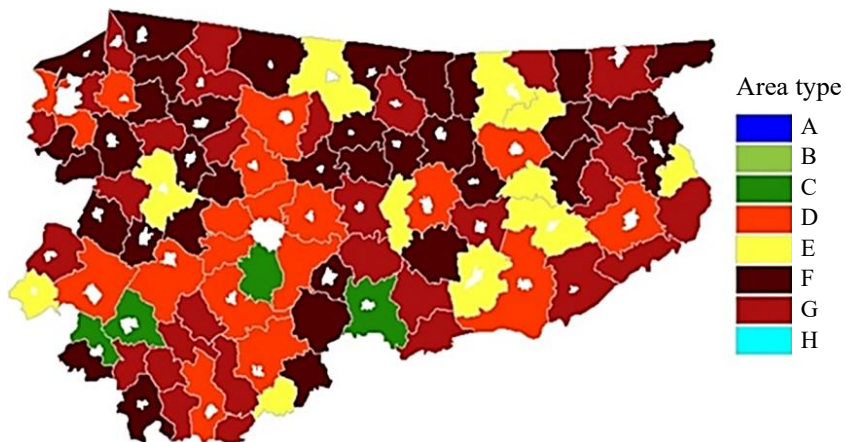


Figure 2. Division of rural areas in the Warmińsko-Mazurskie Voivodeship according to Webb's typology in 2022

Source: own elaboration based on LBD, Statistics Poland data [GUS BDL 2022]

in population, so 10 years later, negative natural growth should also be pointed out as an equally important factor. From the perspective of the demographic situation, it is also important to note that of all the surveyed dual-positive municipalities in 2012, only in 2 this population situation held. Among the 12 largest cities or towns in terms of population in Warmińsko-Mazurskie Voivodeship in 2022 (compared to 2012, this did not change), again, in the surroundings of 9 of them, all the rural areas in their neighbourhood were characterised by a positive type of population situation.

² But not always, as exemplified by 1 of the 10 largest cities or towns in terms of population – Bartoszyce in the far north, along with the surrounding rural areas.

However, the difference is that in 2012 Elbląg was among these nine cities or towns, while 10 years later it no longer met this criterion, but in 2022, Ostróda was included in the referred group. Significantly, it is important to note that with the exception of the town of Szczytno and partly the area around the city of Olsztyn, the rural areas neighbouring the 12 largest cities or towns in the voivodeship had a negative population growth rate. This may mean that their functionality from the perspective of the city – peripheral area was not at a sufficient level to meet the dependencies indicated in such a relationship in the literature review, such as the transfer of technology and innovation from the cities to the peripheral areas, or a relatively better service offer in the cities, which could result in the activation of positive development impulses [Bernard et al. 2023, p. 106, Strojny and Niewiadomski 2023, p. 108].

This situation is reflected in one of the documents prepared under NSRD 2030. Apart from the capital of the voivodeship, which belonged to the group of 12 largest cities or towns included in the analysis of the discussed research results, the remaining 11 cities or towns, namely: Elbląg, Ełk, Iława, Ostróda, Giżycko, Kętrzyn, Szczytno, Bartoszyce, Mrągowo, Działdowo and Pisz, were presented on the list of 139 medium-sized cities or towns losing socio-economic functions [MFIPR 2019]. Therefore, it cannot be ruled out that despite the population situation being dual positive e.g. in rural areas in the neighbourhood of the town of Iława or in the neighbourhood of the town of Szczytno, it will not become negative in the perspective of the coming years. Acknowledging that the mentioned cities or towns are losing their socio-economic functions and the fact that problems connected with population decrease have appeared in almost every rural area neighbouring the largest city in the region, the occurrence of such a scenario is realistic.

According to the study by Robert Guzik et al. [2021], a certain correlation can be observed, recurring in almost every case (except for the rural areas surrounding the towns of Kętrzyn and Bartoszyce), concerning the population situation in rural areas neighbouring the 12 largest cities or towns of the Warmińsko-Mazurskie Voivodeship. The population situation with a positive migration balance more than compensating for the negative population growth (type D), occurring in almost every case, may be related to the fact that the areas surrounding the above-mentioned cities or towns were characterised by transport organised by local authorities. This relationship is particularly pronounced in the rural areas around Elbląg. Indeed, the positive population situation in the neighbourhood of that city occurred only in municipalities where such transport was organised [Guzik et al. 2021, p. 43-44]. However, there must be certain conditions for using public transport, i.e. jobs mainly in urban centres, educational opportunities or the possibility to use a range of other public services.

Taking into account the rural areas in Warmińsko-Mazurskie Voivodeship in general and referring again to the materials prepared in the framework of NSRD 2030, it can be concluded that the future of this voivodeship in terms of, inter alia, population changes

will not be heading in a positive direction. In the ranking concerning municipalities threatened by permanent marginalisation, there were 66 units from Warmińsko-Mazurskie Voivodeship, 65 of which were rural or urban-rural municipalities [MFiPR 2021]. This means that, of the municipalities in this voivodeship covering rural areas, almost 2/3 of them are threatened by permanent marginalisation.

In the period under review, the population situation in the Warmińsko-Mazurskie Voivodeship deteriorated to a fairly significant extent. This is evidenced by the fact that for some rural areas with a dual-positive population situation in 2012, there was a reversal towards a dual-negative population situation in 2022. In contrast, a parallel situation did not exist. In addition, an increase in the share of rural areas with a dual negative population situation was also observed.

Historical conditions of the region (high share of state-owned farm in the past) [Hryniewicz 2022, p. 47-49], low housing availability, unattractive labour market [Lisowska and Łojko 2023, p. 73], as well as uncompetitive salary levels in relation to other parts of Poland [GUS 2023]. As a result, the population decides to emigrate from the Warmińsko-Mazurskie Voivodeship to, inter alia, neighbouring voivodeships, i.e. the Mazowieckie Voivodeship and the Pomorskie Voivodeship, because these voivodeships offer, for example, more favourable salaries [Guzik et al. 2021, p. 114-118]. These relationships are confirmed by the results of the study, as in the years covered by the analysis, the element influencing the population change was the negative migration balance. The determinants, direction, type and scale of changes in population processes in the study area should therefore be precisely defined. This will make it possible to refine policies to counteract the negative changes in the population situation that are taking place.

SUMMARY

Analysis of the results of the study showed that rural areas of the Warmińsko-Mazurskie Voivodeship are characterised by the problem of depopulation. The significance of this problem results from the fact that the studied voivodeship is counted among peripheral areas in Poland, and depopulation is one of the consequences resulting from the peripherality of a particular area. Keeping in mind that peripherality, as well as depopulation, are of a complex nature, one may conclude that attempts to find effective solutions to the resulting problems are becoming increasingly difficult. At the same time, given the progressive nature of the depopulation phenomenon in the region under study, finding effective measures will be characterised by an increasing degree of complexity. Thus, from the perspective of the socio-economic development of the region, depopulation is becoming an important element of it. Particular attention should therefore be paid to finding optimal solutions to reduce the direction and rate of depopulation in the region.

On the basis of the analysis and evaluation of the population situation in rural areas of the Warmińsko-Mazurskie Voivodeship, it was concluded that depopulation is of a progressive nature, and the factor mainly responsible for its occurrence was the negative migration balance. The positive natural increase that occurred in the studied voivodeship in 2012 was not high enough to compensate for the negative migration balance. In 2022, the natural increase became negative, which made it, together with the further negative migration balance, an element contributing to the phenomenon of depopulation.

It should also be kept in mind that Warmińsko-Mazurskie Voivodeship, apart from belonging to the peripheral regions in Poland, was at the same time one of the 5 voivodeships characterised by the largest decrease in population in rural areas. Due to the fact that the largest urban centres (except for the capital of the voivodeship) are classified as cities or towns losing socio-economic functions, the factors determining depopulation have grown stronger, and more than a half of municipalities covering rural areas are classified as municipalities threatened by marginalisation, it should be concluded that the examined rural areas of the Warmińsko-Mazurskie Voivodeship are at a high risk of negative consequences resulting from the occurrence of depopulation. Given such a direction and dynamics of population changes, and the fact that most rural areas in the Warmińsko-Mazurskie Voivodeship are threatened by permanent marginalisation, it can be concluded that an attempt to reverse the negative population situation in most rural areas of the voivodeship will be even more complicated.

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WYLUDNIANIE SIĘ OBSZARÓW WIEJSKICH
JAKO OBSZARÓW PERYFERYJNYCH
W WOJEWÓDZTWIE WARMIŃSKO-MAZURSKIM NA TLE KRAJU

Słowa kluczowe: depopulacja, przyrost naturalny, saldo migracji, obszary wiejskie, obszary peryferyjne

ABSTRAKT. Celem badania była diagnoza sytuacji demograficznej na obszarach wiejskich w Polsce, ze szczególnym uwzględnieniem województwa warmińsko-mazurskiego, jako regionu peryferyjnego. Wykorzystano dane wtórne pochodzące z baz Eurostatu i Banku Danych Lokalnych GUS. Zastosowano metodę klasyfikacji jednostek terytorialnych Johna W. Webba. Obszary wiejskie w województwie warmińsko-mazurskim były jednym z najbardziej wyludniających się terenów w tej kategorii na tle całej Polski. Ze względu na dynamikę i kierunek zmian demograficznych na obszarach wiejskich województwa warmińsko-mazurskiego w ostatnich 10 latach, można spodziewać się, że przyszła sytuacja demograficzna na tym terenie ulegnie pogorszeniu. Nie bez znaczenia jest również to, że spośród 12 największych miast w województwie warmińsko-mazurskim, niemal wszystkie zakwalifikowano jako miasta tracące funkcje społeczno-gospodarcze. Dodatkowo, ponad połowa gmin wiejskich i miejsko-wiejskich w województwie warmińsko-mazurskim jest zagrożona trwałą marginalizacją. W konsekwencji, perspektywa zatrzymania negatywnych trendów demograficznych jest przedsięwzięciem trudnym do zrealizowania.

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