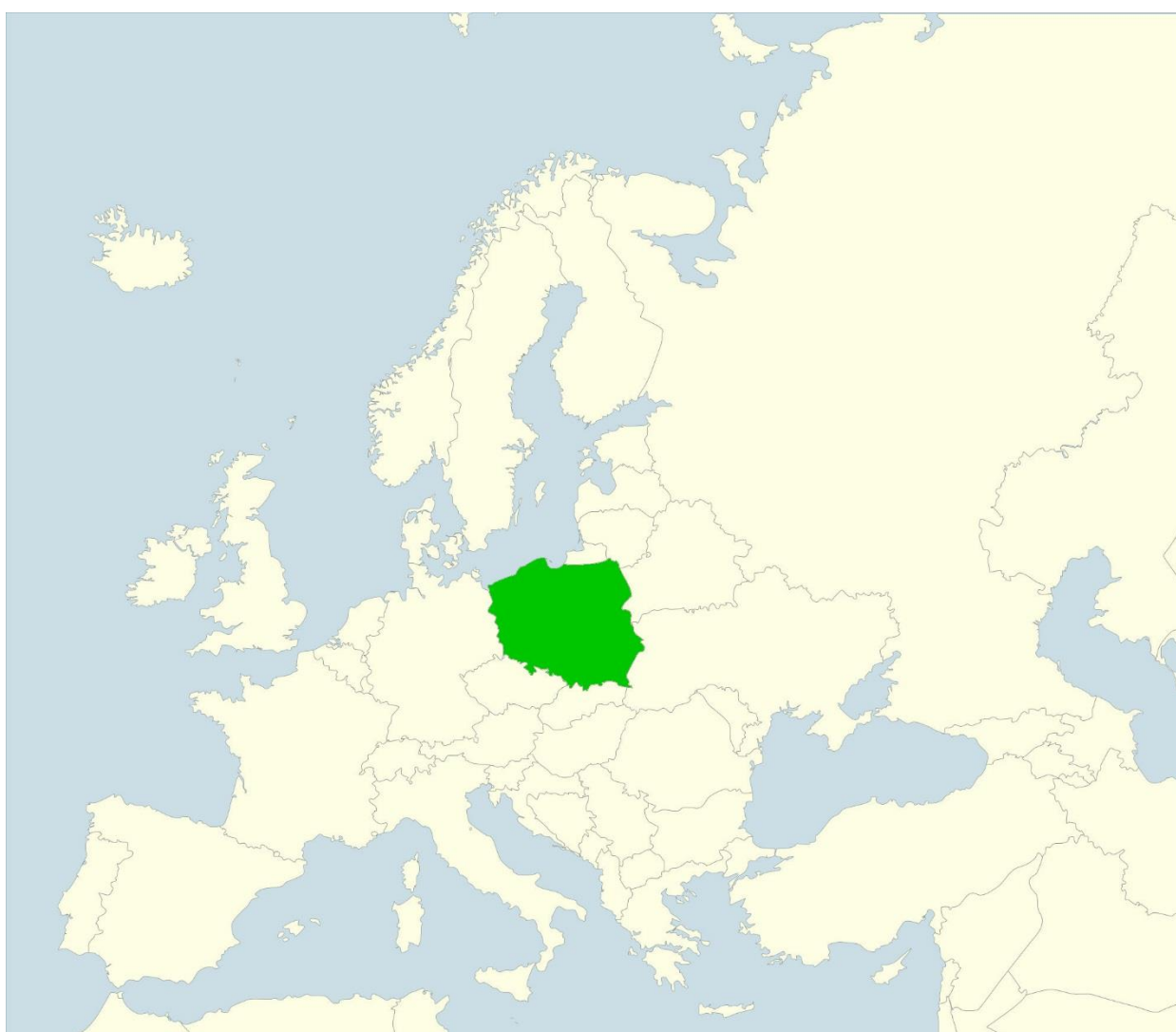**European Countryside**

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CHANGES IN THE STANDARD OF LIVING IN RURAL POPULATION OF POLAND IN THE PERIOD OF THE EU MEMBERSHIP

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Abstract: Polish rural areas face various social, economic and ecological problems. These processes greatly affect diversification of the standard of living in rural areas. The goal of the study was to assess spatial diversification of the standard of living in rural areas in Poland. It focused on all rural gminas as well as rural parts of rural-urban gminas. In the analysis, the standard of living was evaluated with Perkal's synthetic index, with 12 variables concerning demographic and economic issues. The time span for the analysis was the period of 2003–2013. The highest standard of living was reported for rural areas located in the vicinity of urban agglomerations. The lowest standards of living were in typical rural gminas with poorly developed service functions. These were mainly depopulated areas from the outskirts of voivodeships. The Vistula River marked the dividing line in the standards of living in rural areas of Poland.

Keywords: rural gminas, standard of living, classification, Perkal's synthetic index, Poland, European Union membership

1. Introduction

Standards of living of populations are an interdisciplinary research area. They are a matter of interest for scholars representing a range of different fields. One of them is geography, which investigates both the distribution of certain phenomena in the geographical space and the interpretation of the causes of their territorial diversification. Comprehensive understanding of this branch of science makes it justifiable for geographers to play an important role in conducting analyses of the spatial structure of standards of living. The issues related to the standard of living constitute a research area that can be both investigated theoretically and applied in practice. Those issues have attracted much discussion and become subject of considerations related to, among others, socio-demographic and economic determinants.

The goal of the study was to assess spatial diversification of the standard of living in rural areas in Poland in the period of its European Union (EU) membership. The time span for the analysis was the period of 2003–2013 and it focused on all rural gminas as well as rural parts of urban-rural gminas in Poland – 2,257 administrative units in total. The Central Statistical Office of Poland defines *gmina* as a basic unit of the lowest level of fundamental three-tier territorial division of the country. It is a self-government community (gmina inhabitants) with its relevant territory, i.e., a unit as much uniform as possible in terms of settlement and spatial layout as well as social and economic ties, ensuring the capability of performing public tasks. There are three types of the unit in Poland: urban gminas, urban-rural gminas and rural gminas. Therefore, the unit of the study referred to rural areas located in both urban-rural gminas and rural gminas. Whenever the term *poviat* appears in this study, it refers to administrative units corresponding to the local level NUTS 4 in the EU's Nomenclature of Units for Territorial Statistics. The term 'voivodeship' refers to the unit of the country's territorial division that corresponds to the regional level of this nomenclature – NUTS 2.

2. Theory

The literature on the subject provides a lot of definitions of the standard of living. The standard of living refers to a degree, to which material and spiritual needs are fulfilled (Liszewski, 2004). Scholars all over the world have been concerned with the standard of living in populations. Definitions and descriptions can be found in the studies written by, among others, Knox (1974), Gillingham & Reece (1980), Cutter (1985), Johansson (2002), and Fontinelle (2008).

For instance, according to Fontinelle (2008), the standards of living are evaluated by means of comfort, wealth, material assets and the availability of life-necessary means. For the author, the most important factors include: income, employment possibilities, availability and quality of health service, costs of services, economic and political stability, and security.

In accordance with 'The Columbia Encyclopedia' (2015), it is relatively difficult to assess the standards of living, and the assessment is related to the position of the observer. The relative index of the standards of living depends on income and remuneration received by an employee. In addition to material aspects, the index also accounts for family relations, educational opportunities, and free time options.

Investigations into the standards of living have been conducted within economic sciences (e.g. Kramer, 1997; Bywalec & Rudnicki, 1999), social sciences (e.g. Sen, 1998; Szymczak, 2000; Korpi et al., 2007) and geographical sciences (e.g. Smith, 1973, 2002; Knox, 1974, 1975; Coates et al., 1977; Pacione, 1982, 2003; Rogerson et al., 1989; Chojnicki & Czyż, 1991; Smith & Pile, 1993; Liszewski, 1995; Zborowski, 2004; Zborowski & Winiarczyk-Raźniak, 2007; Raźniak & Winiarczyk-Raźniak, 2013; Winiarczyk-Raźniak, 2014). Analyses of the standard of living, and of their diversification in urban and rural areas, or in different regions of Europe constitute a large group of studies (e.g., O´Leary, 2001; Crescenzi, 2009; Royuela et al., 2010; Manca, 2012; Sorensen, 2014). Other rich collection of studies concerns the quality of life (e.g. Giannias et al., 1999; Knox & Pinch, 2000; Marchante & Ortega, 2006; Royuela & Artís, 2006; Shucksmith et al., 2009; Rodríguez-Pose & Tselios, 2012; Colombo et al., 2014; Boncinelli et al., 2015).

For over a decade there has been a strong tendency to change thematic areas and to widen their ranges. Such diversified approach has spurred the emergence of interdisciplinary analyses. The resulting perspective has both positive and negative consequences. It was equipped with a series of research techniques with numerous brand new indices measuring the standard of living. However, the professional literature still lacks one homogenous research model that takes into account local peculiarity of particular regions.

It is well-exemplified in Europe, where perception of the standard of living differs. According to the studies of Shucksmith et al. (2009), the richest countries in the EU showed little evidence of significant urban-rural differences, whereas in the poorer countries of the east and south, rural areas had much lower level of perceived welfare and quality of life, particularly in the candidate countries. Despite this, subjective well-being did not differ significantly, and this paradox was explored through multilevel modelling.

When describing territorial units of lower levels the standard and quality of life have not always been conditioned by their hierarchy of the settlement system. It may be supported with conclusions from the studies of Sorensen (2014). According to him, rural dwellers were found to have a significantly higher life satisfaction than city dwellers when holding socio-economic factors constant. It was noted across three EU country clusters defined by their level of affluence (GDP).

The latest professional literature provides new suggestions for measuring the quality of life in rural areas. The work of Boncinelli et al. (2015) is particularly worth mentioning as it suggests analysing the subject matter with opportunities addressed to rural populations, which are quantified as the availability of healthcare, education, economic opportunities, environmental conditions, human pressure, and the accessibility of the areas.

The authors also noted in their study, "that the most recent thinking in regional science was offered by Ballas and Tranmer (2012) who suggest a multilevel model to quantify the subjective well-being of households within regional clustering. Brereton et al. (2011) instead, analyse functioning in rural areas, especially through environmental characteristics, the social environment, and infrastructure. They build an index of quality of life. Buettner and Ebertz (2009) start from the potential of an area to build an index of quality of life for several German cities. Nuvolati (2003), however, proposes adopting a quality of life evaluation based on the actual use of the basic services offered to a population, quantified as hospital beds, police officers, and theatres. An interesting methodological proposal to attempt to assess well-being through the point of view of capabilities was made by Casini et al. (2000, 2011). In these works, they propose to measure the quality of life of Tuscan rural families by evaluating the real usage of services and opportunities offered by the territory" (Boncinelli et al., 2015).

3. Methodology

The basic source of information was the Local Data Bank of the Central Statistical Office of Poland, and various data on projects co-financed with the European Funds, published by the Ministry of Infrastructure and Development (European Funds Portal 2007–2013).

The background for the analysis was the evaluation of spending EU funds received in the period of 2007–2013. It focused on the total value, the sum granted and the direct EU subsidies per capita in 16 voivodeships (NUTS 2).

The standard of living in rural areas of Poland was assessed with Perkal's synthetic index (Chojnicki & Czyż, 1991; Sobala-Gwosdz, 2004; Runge, 2007; Churski, 2014; Konecka-Szydłowska & Maćkowiak, 2014). It uses multidimensional comparative analysis referred to in professional literature as the z-score index (Smith, 1972). Comparative analysis concerned two years: 2003 and 2013. Perkal's synthetic index was based on objective descriptors. It included the following:

X_1. Percentage of population at pre-working age, from 0 to 18 years,

X_2. Percentage of population at working age,

X_3. Deaths per 1,000 inhabitants,

X_4. Natural increase per 1,000 population,

X_5. Net migration per 1,000 inhabitants,

X_6. Useful floor area of dwellings per capita,

X_7. Number of dwellings per 1,000 inhabitants,

X_8. Percentage of users of water supply network in the total population,

X_9. Percentage of users of sewage system in the total population,

X_{10}. Percentage of unemployed persons in the population at working age,

X_{11}. Entities per 1,000 inhabitants at working age,

X_{12}. Income per capita.

The first step in selection of indicative data was the inclusion of various life aspects. Therefore, it referred to: demographics of younger and able to work part of the population, housing conditions and the use of technical infrastructure, labour market, entrepreneurship and well-being of inhabitants of rural areas. Their substantial selection was followed by evaluation of variability for both years, which showed that 11 variables (excluding X_2) had variability exceeding 10 per cent and they have considerable diversifying ability for the objects in question. Despite its insignificant variability X_2 was included in the next step of selection due to the fact that it is not replicated in the diversified set and its arbitrary selection in terms of significance of its interpretation.

The step producing the final collection of indices aimed at finding Pearson's correlation coefficient for the sample with its possible parallel reduction. First, invertible matrix was calculated to the correlation coefficient in order to establish diagonal elements from the range [1, ∞), (Neter et al., 1985). If it failed or exceeded 10, it would be possible to mark variable values as being too correlated with others and to exclude them. The goal was to build a collection when the invertible matrix to the matrix of correlation coefficients would have diagonal elements from the range [1, 10]. Within the collection of 12 diagnostic variables, there was only one critical value for diagonal elements – it was 10 (in 2003, the diagonal element for X_4 had the maximum value of 6, and in 2013 for X_4 again had its maximum at 7). It did not require reduction of the matrix. The invertible matrix of coefficients was additionally verified with the matrix of products. It's all diagonal elements amounted to 1 with the remaining at 0, which proved that the calculations were correct and indices for assessment of the standard of living in rural areas were well selected.

It should be emphasised that 10 of the indices are stimulants to the standards of living. Their high values are desirable in terms of characteristics of the phenomenon. Only the number of deaths

per 1,000 inhabitants (X_3) and percentage of unemployed persons in the population at working age (X_{10}) do not belong to stimulants (are destimulators) and their high values are not desirable for the standard of living of rural areas inhabitants.

Following the method applied for this study, the synthetic index was calculated for each rural area in Poland. It allowed for classification of rural areas in a non-accidental linear hierarchy concerning the standard of living, which came from the obtained values. The algorithm was composed of two stages (Runge, 2007):

1) normalization of particular indices for the study – using appropriate standardization formula of variables finding stimulants or destimulants (Konecka-Szydłowska & Maćkowiak, 2014) – allowing for the comparison and summing of all indices presented in standardized units,

2) calculation of synthetic indices (W_s) for the standard of living in rural areas:

$$W_s = \frac{1}{p} \sum_{j=1}^{p} y_{ij}$$

where:

W_s – synthetic index,

j – number of variable, 1, 2, …, p,

p – total number of variables considered,

y_{ij} – standardised value of the j-th variable for the i-th object.

The foundation for classes were ranges of the index based on the sum of arithmetic average and standard deviation. As a result, the following division into 6 groups emerged for both compared years:

- 0.68 and above – rural areas with the highest standard of living,
- 0.67 to 0.34 – rural areas with high standard of living,
- 0.33 to 0.00 – rural areas with relatively high standard of living,
- 0.00 to -0.33 – rural areas with average standard of living,
- -0.34 to -0.67 – rural areas with low standard of living,
- -0.68 and fewer – rural areas with the lowest standard of living.

The index used here belongs to the group of multidimensional comparative analysis and allows for finding regularities in mutual relations of elements. It facilitates the analysis of spatial diversification in development of objects with multiple attributes. Moreover, it is transparent and has low data loss during data aggregation.

4. The use of the EU structural funds in the period of 2007–2013

Poland's EU membership in 2004 introduced social and economic changes for this country. In the beginning, its economy followed procedures aimed at fulfilling the EU criteria.

The first document introducing the European Funds for the period of 2004–2006 was the National Development Plan 2004–2006. Its main goal was to improve labour market conditions as well as social, economic and spatial cohesion with the EU on regional and national levels. At that time Poland received 12.8 billion EUR in total.

The second period of 2007–2013 was the subject of this study. Its legal foundation was the National Strategic Reference Framework (NSRF), which in Poland was referred to as the National Cohesion Strategy (NCS). It defined the goals and the way of using EU funds: European Regional Development Fund (ERDF), European Social Fund (ESF) and the Cohesion Fund (CF). Moreover, it focused on improving competitiveness of the Polish economy based on knowledge and entrepreneurship, which was aimed at increasing employment rates and

improving social, economic and spatial cohesion. Possible financing options for projects were national operational programmes from the Ministry of Economic Development, regional operational programmes supervised on the voivodeship level, and those co-financed with structural means, i.e. (decreasing in value):

– Infrastructure and Environment Programme – within ERDF and CF (allocation of 28.3 billion EUR),
– 16 regional programmes – ERDF (17.3 billion EUR),
– Human Capital Programme – ESF (10.0 billion EUR),
– Innovative Economy Programme – ERDF (8.7 billion EUR),
– Development of Eastern Poland Programme – ERDF (2.4 billion EUR),
– European Territorial Co-operation Programmes – ERDF (0.7 billion EUR),
– Technical Assistance Programme – ERDF (0.5 billion EUR).

All funds used for the NCS amounted to about 85.6 billion EUR, with 67.3 billion EUR from the EU budget, and 11.9 billion EUR spent from national government funds (including 5.93 billion EUR from the state budget) and about 6.4 billion EUR received from private entities. Rules and guidelines for Poland for the funds in question in the period of 2007–2013 were compiled in the following documents: the National Development Plan, the Community Support Framework, and Operational Programmes with their amendments (Kowalczyk, 2007).

All finished EU projects in Polish voivodeships in the period of 2007–2013 amounted to 51,872 worth 85.9 billion PLN, with the EU funds amounting to 46.29 billion PLN (Table 1). In 2013, the average EU contribution per capita in Poland amounted to 1,202.27 PLN. Together with national agreements, the number of investments rose to 53,621, with expenditures of 91.44 billion PLN and subsidies amounting to 50.47 billion PLN, 1,310.84 PLN per capita.

All regions finished 3,242 projects on average with seven voivodeships above the average (decreasing towards the average value): Śląskie, Mazowieckie, Wielkopolskie, Małopolskie, Lubelskie, Łódzkie, Podkarpackie. The average value of those projects amounted to 5.5 billion PLN and again referred to 7 voivodeships (decreasing towards the average value): Mazowieckie, Śląskie, Małopolskie, Wielkopolskie, Podkarpackie, Lubelskie, Dolnośląskie. The average EU subsidies amounted to 4.2 billion PLN, and it was higher in two voivodeships – Mazowieckie and Śląskie.

The highest value of all regional EU projects was in Mazowieckie Voivodeship, i.e., 9.74 billion PLN (11.3 per cent of all voivodeships). This region also had the highest EU subsidies – 5.31 billion PLN (11.5 per cent). The lowest number of agreements, value and financing was in Lubuskie Voivodeship – 1,501 projects worth 2.84 billion PLN with 3 per cent of the EU financing (1.41 billion PLN). The highest EU subsidies per capita was in Opolskie Voivodeship – 1,830.80 PLN, whereas the lowest – in Śląskie Voivodeship – 930.65 PLN (Figure 1). In terms of spatial distribution, the largest EU subsidies per capita were reported for voivodeships of Eastern Poland. What they have in common is the lowest level of regional development, far behind other parts of Poland, and they have considerable intraregional differences. (Kiniorska et al., 2014). Absorption of funds was the highest in richer regions and more dynamic in the public area (Golinowska & Kocot, 2013). Weaker, smaller regions, requiring greater support had relatively lower total values of spending, but higher percentage of the EU participation in comparison to their own funds.

Tab 1. Structure of all finished EU projects realised in the Polish voivodeships in the period of 2007–2013[a] (as of 30th June, 2013).

Voivodeship	Projects		Value of projects		EU subsidies			Subsidies per capita
	number	%	bn PLN	%	bn PLN	%	% of value	PLN
Dolnośląskie	3,083	5.9	5.59	6.5	2.88	6.2	51.5	987.73
Kujawsko-Pomorskie	2,738	5.3	4.02	4.7	2.11	4.6	52.5	1,007.51
Lubelskie	3,92	7.6	6.27	7.3	3.86	8.3	**61.6**	1,785.52
Lubuskie	1,501	2.9	2.84	3.3	1.41	3.0	49.5	1,375.10
Łódzkie	3,403	6.6	4.33	5.0	2.38	5.1	54.9	945.32
Małopolskie	4,208	8.1	7.13	8.3	3.81	8.2	53.4	1,134.79
Mazowieckie	5,407	10.4	**9.74**	**11.3**	**5.31**	**11.5**	54.5	1,000.29
Opolskie	1,934	3.7	3.49	4.1	1.84	4.0	52.9	1,830.80
Podkarpackie	3,258	6.3	6.87	8.0	3.83	8.3	55.7	1,796.69
Podlaskie	2,061	4.0	3.65	4.3	2.09	4.5	57.3	1,749.29
Pomorskie	2,698	5.2	4.22	4.9	2.28	4.9	53.9	993.57
Śląskie	**6,29**	**12.1**	8.51	9.9	4.29	9.3	50.4	930.65
Świętokrzyskie	2,285	4.4	4.22	4.9	2.25	4.9	53.4	1,771.59
Warmińsko-Mazurskie	2,704	5.2	4.35	5.1	2.42	5.2	55.7	1,673.22
Wielkopolskie	4,386	8.5	7.09	8.3	3.69	8.0	52.0	1,064.15
Zachodniopomorskie	1,996	3.8	3.59	4.2	1.86	4.0	51.8	1,080.72
Voivodeships	**51,872**	**100**	**85.90**	**100**	**46.29**	**100**	**53.9**	**1,202.27**
On national level[b]	**1,749**	**3.3**	**5.55**	**6.1**	**4.18**	**8.3**	**75.4**	**108.57**
Total	**53,621**	**100**	**91.44**	**100**	**50.47**	**100**	**55.2**	**1,310.84**

Note: [a] – including the following Operational Programmes: Development of Eastern Poland, Human Capital, Infrastructure and Environment, Innovative Economy, Technical Assistance Programme, 16 Regional Programmes of Voivodeships; no national projects by voivodeships; [b] – agreements for the whole country, not regionally restricted. Source: own calculations based on data from the Ministry of Infrastructure and Developments – https://www.funduszeeuropejskie.2007–2013.gov.pl.
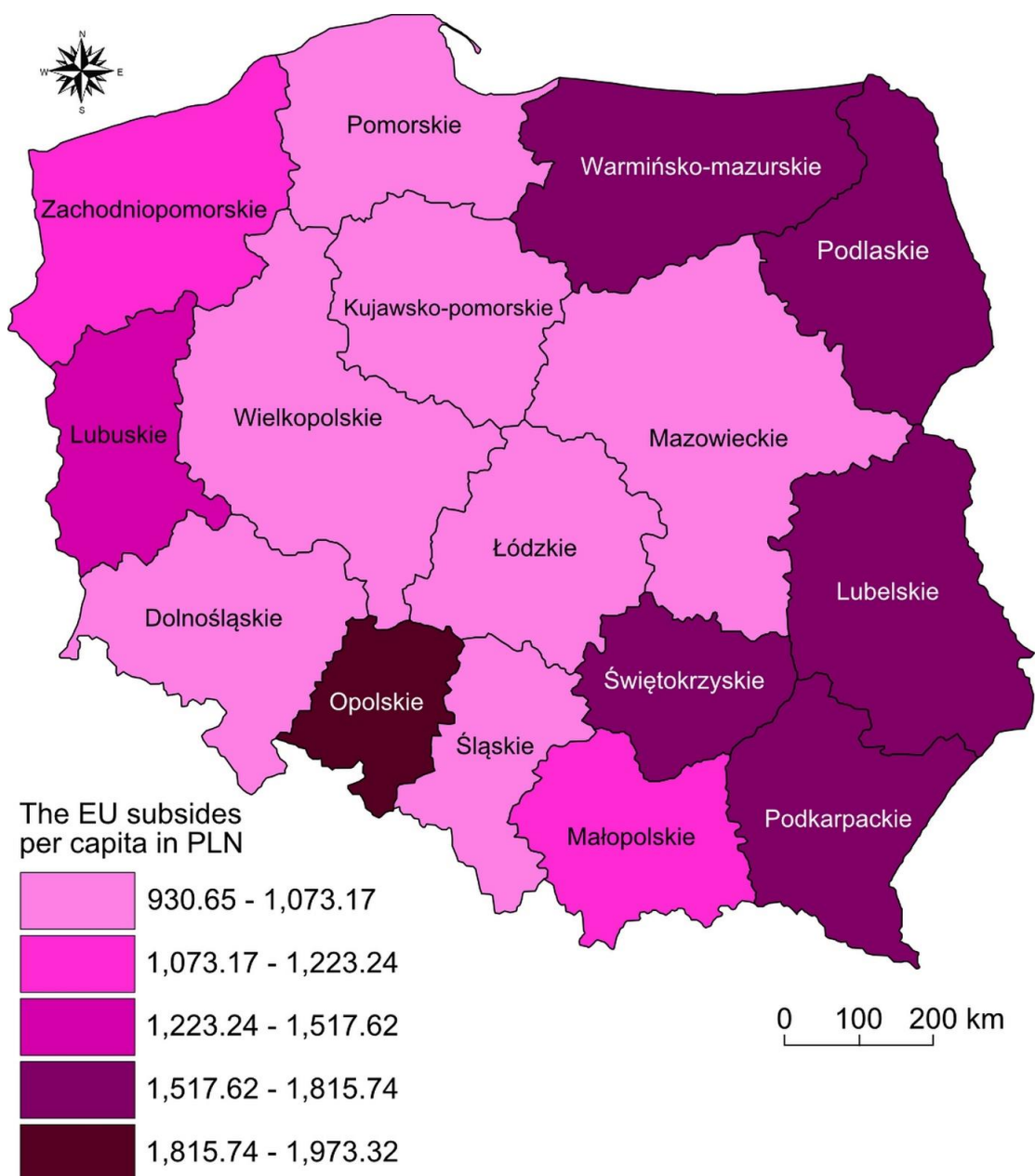
Fig 1. Total value of EU subsidies of projects finished in the period of 2007–2013 per capita by voivodeships. Source: own elaborations based on data from table 1

The value of EU projects per capita in the period of 2007–2012 by poviats (NUTS 3) was characterized by high spatial diversification (Figure 2). The largest value groups, from 4,045 PLN to 11,635 PLN, referred to poviats from the following voivodeships: Podkarpackie, Lubuskie, Mazowieckie, Zachodniopomorskie, Lubelskie, Warmińsko-Mazurskie and Świętokrzyskie. Support was introduced to regions at risk of economic depression, often with peripheral location, high infrastructural underinvestment and poorly developed non-agricultural activity.
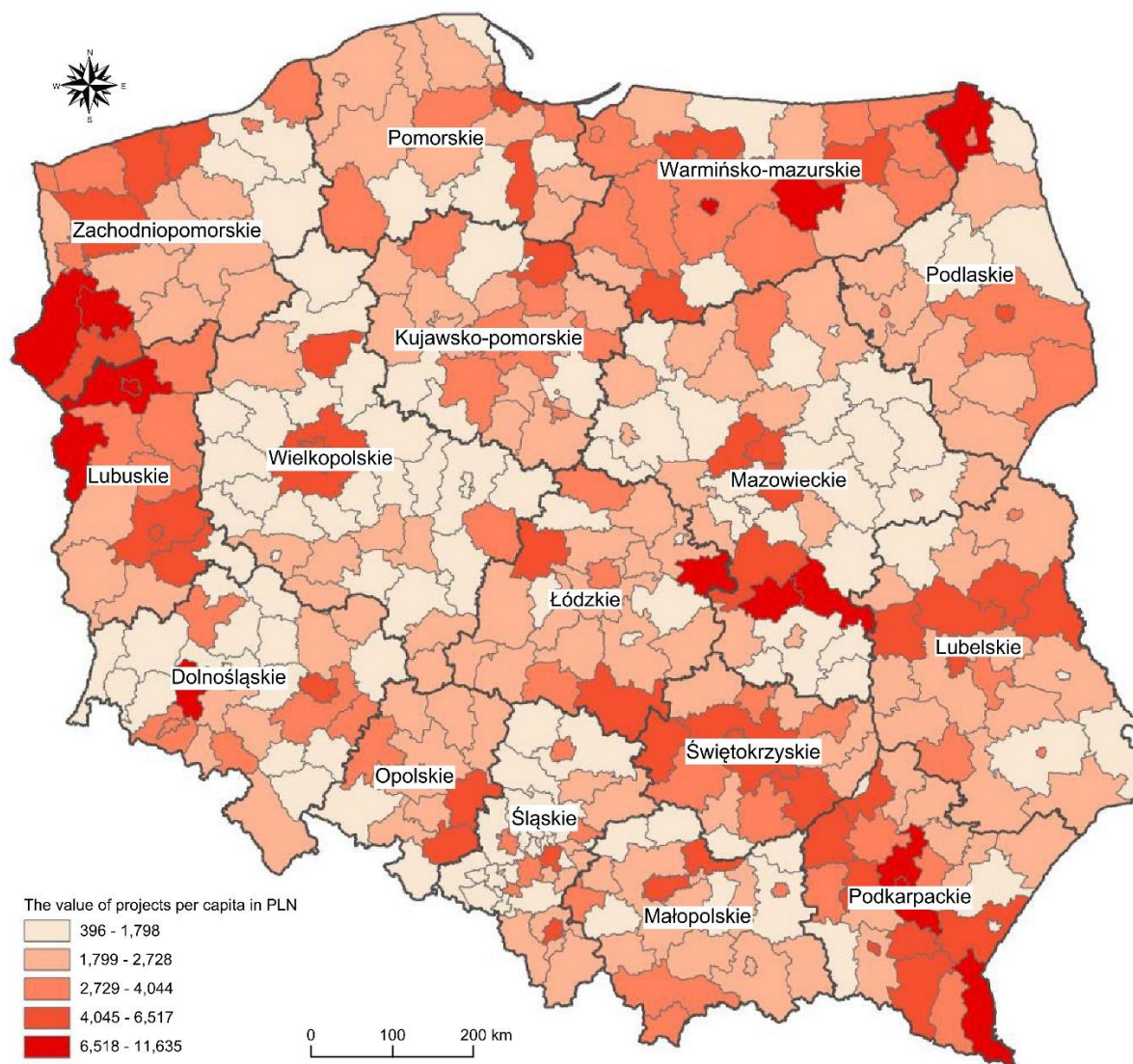
Fig 2. Total value of projects finished in the period of 2007–2012 per capita by poviats (NUTS 3). Source: own elaboration based on Gorzelak (2015)

It is worth mentioning that in the period of Poland's EU membership, Polish rural areas received large stream of state government and the EU subsidies, which highly boosted modernization processes. It seems that the detailed analysis of the impact of those funds will be possible in a longer term perspective, when its indirect consequences are visible (Dej et al., 2010).

5. Classification of rural areas by the standard of living

Rural areas in Poland are highly diversified with respect to spatial and functional systems. Their conditions have large impact on the standard of living of inhabitants and their economic activities as well as directions and pace of development. Generally, the majority is composed of regions with lower socio-economic development, poorer potential for their development and more difficult conditions for economic growth, whose standards of living and quality of life need to be improved (Heffner, 2011). Since the 1990s, polarization processes in rural areas have been making poor people even poorer while the rest of society has been getting richer. It results in increasing economic and social disproportion in spatial systems with highly undesirable poverty succession from one generation to another (Zioło, 2011).

The standard of living in rural areas in the period of 2003–2013 was highly diversified in terms of spatial differences since particular locations differed in development conditions. There was a general trend – a division of areas into two parts with lower and higher standard of living. The borderline came along western parts of the following voivodeships: Warmińsko-Mazurskie,

Mazowieckie, Podlaskie, Lubelskie, Podkarpackie, Świętokrzyskie and Łódzkie. Areas located to the east of this line had lower standard of living and to the west – higher.

The standard of living in rural areas in 2003

In 2003, there were 6 groups of rural areas with diversified standards of living (Figure 3). Gminas with the most favourable standards of living amounted to 3 per cent (67 locations) out of 2,257 units in question. In this group, the synthetic index exceeded 0.68. The first clusters were composed mainly of areas located near urban agglomerations in such voivodeships as: Dolnośląskie, Mazowieckie, Pomorskie and Wielkopolskie. It is worth mentioning that Mazowieckie Voivodeship is the best in attracting and concentrating all development factors – financial, human and social capital, which guarantees their effective use.
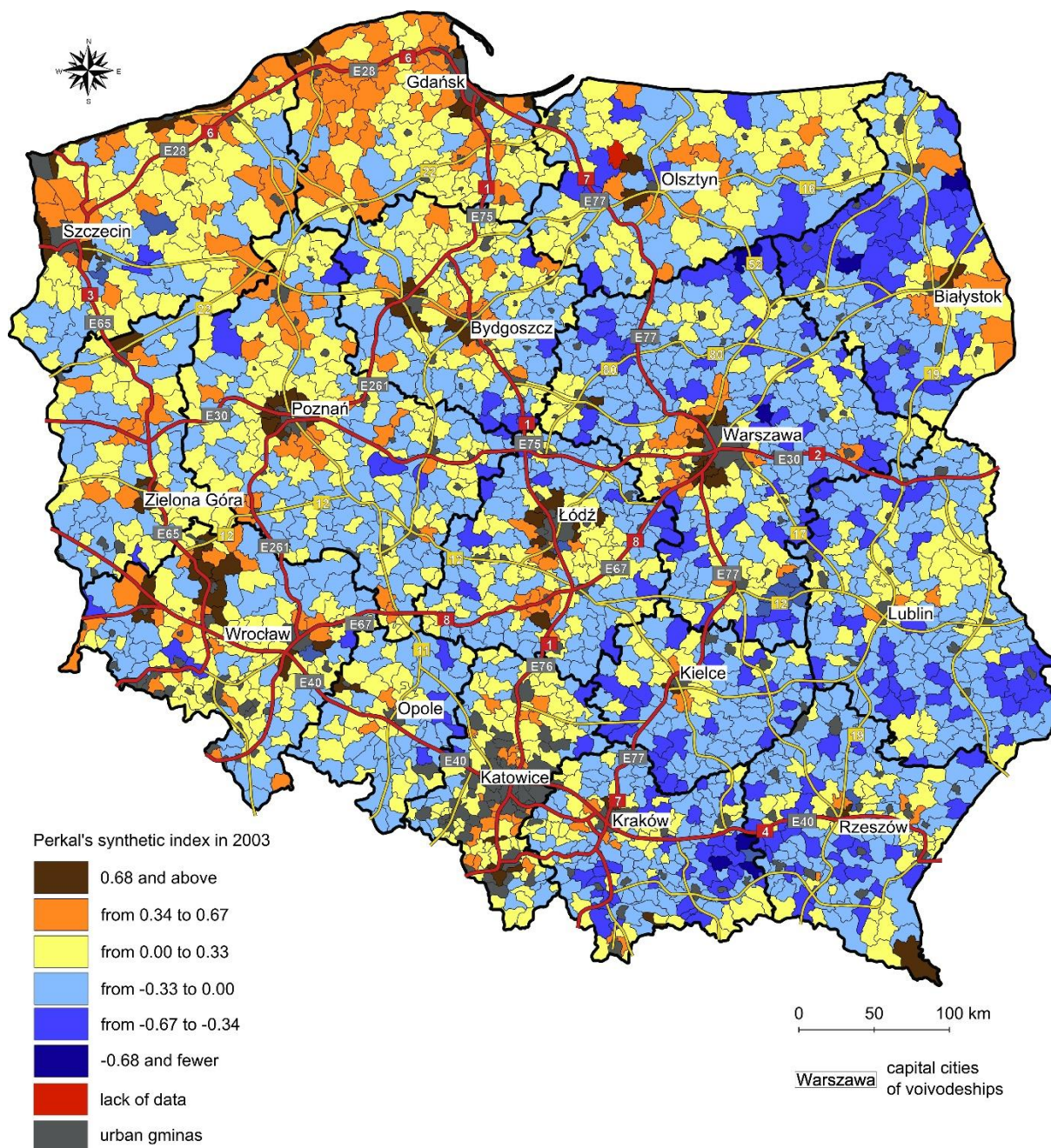

Fig 3. Diversification of the standard of living in rural areas in Poland by the synthetic index in 2003. Source: own elaboration based on data from the Local Data Bank of the Central Statistical Office of Poland

However, this region also had the highest socio-economic disparities (Czapiewski et al., 2016). The most important factor for its highest pace of development is the presence of the capital city – Warsaw. However, the growth of this city as a European metropolis is at the expense of other parts of the region and the quality of life of the inhabitants (Golinowska & Kocot, 2013). Spatial cohesion was achieved in Wielkopolskie and Dolnośląskie Voivodeships, where rural gminas formed a tight ring surrounding large cities. For the former – it was Poznań with well-developed agricultural areas, and for the latter in Dolnośląskie Voivodeship – the area of the Legnica-Głogów Copper District.

The second group was composed of gminas with favourable standards of living and Perkal's index ranging from 0.67 to 0.34. It was 8.7 per cent (197) of all units included in the study. These areas were usually located in northern and central-western Poland, and scattered around capitals of the following voivodeships: Dolnośląskie, Łódzkie, Mazowieckie, Podlaskie, Śląskie and Wielkopolskie. The largest single dense group of rural areas with good standards of living was located in Pomorskie and partially Zachodniopomorskie Voivodeship. These were areas of high environmental value and developed tourist offer in the summer season. According to Golinowska & Kocot (2013), inhabitants of Pomorskie Voivodeship are the greatest optimists: they have positive opinions on their prospects for the future, and their satisfaction with their material living conditions belongs to the highest in Poland (after Małopolskie Voivodeship).

The third group was composed of rural areas with the index between 0.33 and 0.00 and they constituted 35.7 per cent (806) of all units in this study. Their standard of living was relatively good and they were mainly located in northern and central-western Poland. They formed dense territories, very often located in the so-called, second ring of suburban zone. However, in the eastern part of Poland, they were mainly scattered, with some exceptions like Lubelskie, Podkarpackie and Świętokrzyskie Voivodeships, where they formed dense groups of rural areas located in the vicinity of the capital's background.

The fourth group was composed of areas with the index ranging from 0.00 to -0.33. It was the largest group comprising over 41.6 per cent (939) of rural gminas. Its standard of living was medium. Within this group, the majority of rural areas were located in south-eastern, eastern and partially central Poland.

The fifth group was composed of gminas with the index values between -0.34 and -0.67. They had low standards of living and amounted to 10.7 per cent (241) of all analysed areas. They were mainly located far from urban areas, in Eastern Poland. This region was also internally diversified and its development was far behind the rest of Poland. In numerous papers and studies, it is often classified as so-called, problem area, where negative demographic phenomena correspond to economic ones. A dense group of areas with low standards of living appeared also in Małopolskie Voivodeship.

The lowest standards of living was reported for 7 gminas constituting only 0.3 per cent of all analysed gminas. The synthetic index was lower than -0.68. This group included 3 rural areas in Małopolskie Voivodeship, 2 in Mazowieckie Voivodeship and 2 in Podlaskie Voivodeship.

The standard of living in rural areas in 2013

The synthetic classification of rural areas by the standard of living in 2013 showed particular tendencies, generally close to those from 2003. Similarly, there were 6 groups of the index values (Figure 4). The highest standard of living was in 3.1 per cent (70) of gminas. They were usually located in the vicinity of the largest agglomerations.

In comparison to 2003, the group of gminas with very good standards of living was slightly smaller – 7.8 per cent (175) of rural gminas. The largest areas were rural areas in the vicinity of Warsaw, Tricity (Gdańsk, Sopot, Gdynia), Toruń and Opole. In many cases, gminas formed single zones in the vicinity of the largest cities in particular voivodeships, e.g. Kielce, Krakow, Lublin and Rzeszów. It mainly depended on the direction of expansion of residential areas, development of transportation system, infrastructural investment as well as popularity of particular locations.
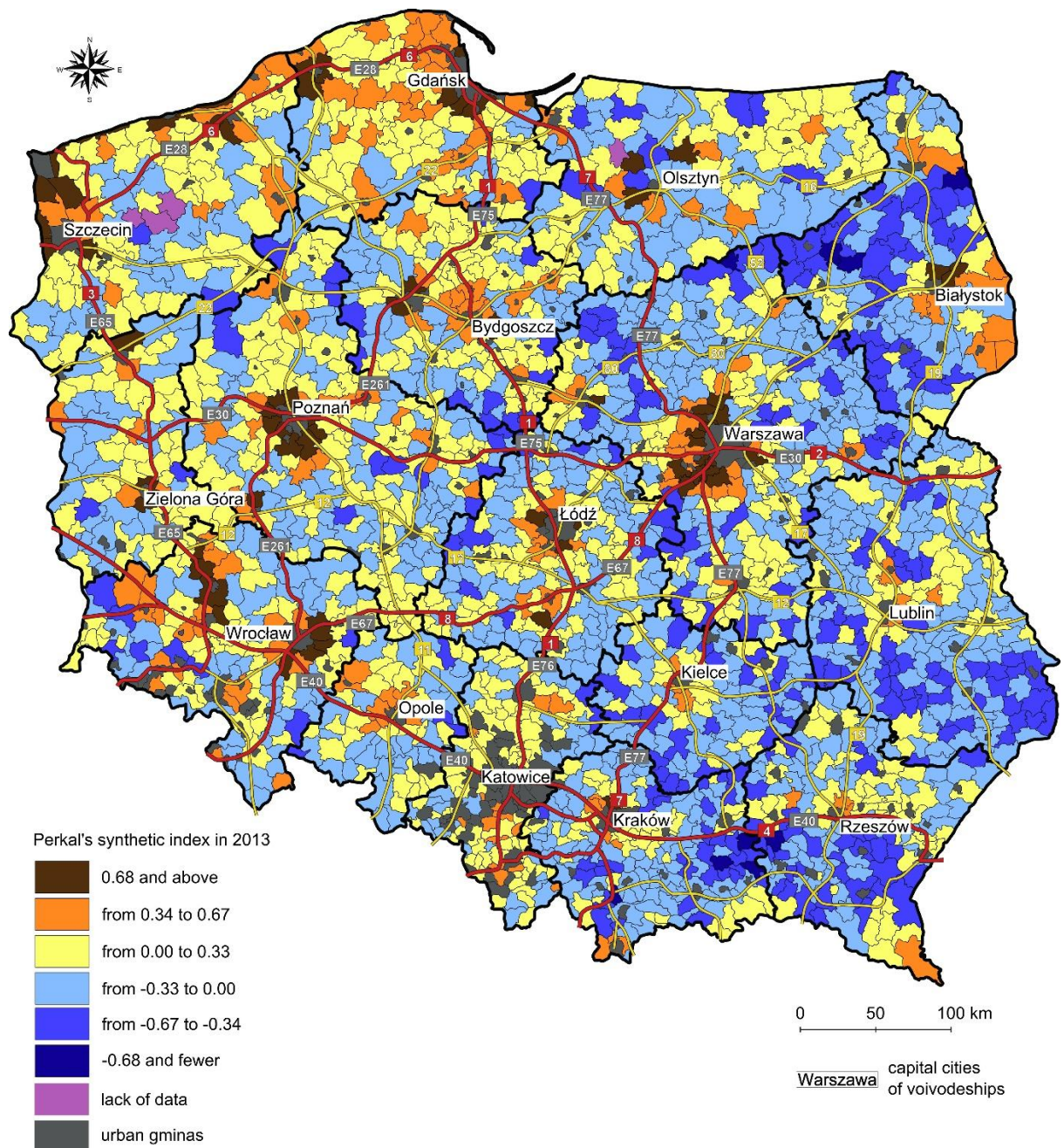
Fig 4. Diversification of the standard of living in rural areas in Poland by the synthetic index in 2013. Source: own elaboration based on data from the Local Data Bank of the Central Statistical Office of Poland

Rural areas with high standard of living are often located along the most important transportation routes, e.g., Warsaw and the arrangement of gminas in southern and western directions with weaker expansion to the east. Another good example is Kielce with its expansion in northern and southern directions (along the route Warsaw-Radom-Kielce-Krakow). Similarly, in Lublin, it is linked with the transportation routes (towards the capital city). This aspect was previously mentioned by Rosner (2014). Areas in the vicinity of large cities attract localization of huge investments (more free space, well developed transport system, lower prices for lots, vicinity of R&D institutions, large labour market for professionals, etc.) – (Ciok, 2011). Due to their location these areas are "made for success". Other conditions follow their favourable locations (Bański, 2011).

Gminas with good standard of living amounted to 37.6 per cent (849) of all units from this study. This group slightly rose in comparison to 2003. Their highest density was registered in northern, western and south-western Poland. They were located in the vicinity of the former (the old

administrative system of 49 voivodeships in the period of 1975–1999) and present voivodeship's capital cities.

Similarly to 2003, the largest group was the fourth one; however, it was composed of fewer rural gminas – 39 per cent (884). They dominated in eastern and south-eastern Poland. Their relatively large enclaves were also visible in western and south-western parts of Poland.

The fifth group with poor standards of living included 12 per cent (270) of gminas. Their highest number was registered in eastern Poland. The analysis of their spatial distribution leads to a thesis that these areas are presumably located far from important urban areas. They also have poor relations with smaller towns and their economic attractiveness is low. Their majority is located on mostly agricultural territories, in peripheral areas.

The group with the lowest standard of living was the smallest – only 0.4 per cent (9 gminas). These were singular units with peripheral locations in 4 voivodeships: Małopolskie (4 gminas), Podlaskie (3), Mazowieckie (1) and Podkarpackie (1).

6. Discussion of results and conclusions

The results of the study prove that the standard of living in rural areas in Poland is highly diversified in terms of spatial distribution, which is connected with socio-economic development of those locations. Other important factors include industrialization, urbanization of rural areas and activities of urban areas within their voivodeships. This fact was frequently emphasized by such scholars as Zeliaś (2004), Kamińska (2010), Kopacz (2011). Further growth of disparities in socio-economic development between particular voivodeships is a negative phenomenon, proved by the studies. It is particularly visible in accumulation of unfavourable development elements in rural areas of eastern and south-eastern Poland. These regions have high percentage of agricultural employment with divided, small-sized farms. Moreover, these areas have to face the problem of migration of young persons as well as depopulation and unbalanced age structure. All phenomena mentioned above badly affect possibilities of development and improvement of quality of life in the areas in question.

One method of improvement of social, economic and spatial cohesion in the European countries currently emphasized is the aspect of the EU cohesion policy connected with national economic policy, which aims at reducing regional diversification. However, this study shows that despite cohesion policy – neutralizing differences in socio-economic development of rural areas – these disparities do not decrease. This means that cohesion policy instruments (including balancing subsidies) are not used to their full potential in order to reach the goal. However, as Kołodziejczak (2014) claims, obtaining the EU subsidies and cohesion of development policy often depend on awareness and activity of people governing particular gmina.

The standard of living is not a uniform category and its diversification largely depends on the character of a particular region, its structure, and above all socio-economic conditions. Characteristic features of rural areas located in the vicinity of urban centres include fast development; however, it is based to a great extent on labour resources and potential of a particular zone connected with large cities. Rural areas with economic and often social underdevelopment, with low development dynamics – appear in peripheral locations with respect to the main urban network (Heffner, 2012). Their majority is located in eastern Poland.

Similar results may be found in the study of Boncinelli et al. (2015) as the authors say that distances to essential services (e.g. hospitals, schools) in rural areas largely affect the quality of life. They also add that kindergarten schools (social services) are highly important in rural areas because they facilitate better work-life balance of inhabitants. Rural households also tend to have higher commuting time than urban areas.

The results of the analysis might be disputable and they should be treated as such. It is mainly due to the problem of selecting appropriate indices and parameters which always reflect subjective view of their authors. Nevertheless, the task of diagnosing diversification of the standard of living on a local level and recognizing its main features is crucial for economic and social policy as well as regional policy (cohesion policy) aimed at neutralizing differences and securing effective development of voivodeships.

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