

# Spatial diversity of the activity of sports clubs in Poland in 2016

## Authors' Contribution:

- A Study Design
- B Data Collection
- C Statistical Analysis
- D Data Interpretation
- E Manuscript Preparation
- F Literature Search
- G Funds Collection

Tomasz Michalski<sup>1 ABCDFG</sup>, Tomasz Wiskulski<sup>2 CDE</sup>

<sup>1</sup> Faculty of Oceanography and Geography, University of Gdansk in Gdansk, Poland

<sup>2</sup> Faculty of Tourism and Recreation, Gdansk University of Physical Education and Sport in Gdansk, Poland

## abstract

**Background** The article is part of the current trend in publications showing the diversity of Poland at a local level. Its aim is to find regularities in spatial diversity of participation in and the offer of sport and recreation activity by sports clubs in Poland in 2016.

**Material/Methods** The analysed data come from the Local Data Bank of the Central Statistical Office. Poviats (LAU 1) is the basic research unit. 5 variables were applied: persons practising sport per 1,000 population; the percentage of women among all practising; the percentage of persons under 18 years old among all practising, the number of sports sections per 100 practising; the number of sports coaches and sports instructors conducting sports activities per 100 practising. The following measures and methods were applied: arithmetic mean, coefficient of variation (CV), division into quintiles, PCC, Perkal's indicator, and k-means cluster analysis.

**Results** Spatial diversity was analysed mainly with a view to the influence of two groups of factors arising from historical-cultural determinants and those related to urbanization. In the case of three variables (practising in sports clubs per 1000 population, the percentage of women among all practising in sports clubs, the percentage of people under 18 years old among all practising) there were, in fact, areas with high or low values, but they cannot be linked to the two groups of factors mentioned above. However, in the case of the next two variables (number of sections in sports clubs per 100 practising and the number of coaches and instructors per 100 practising), the impact of the factor associated with urbanization processes is notable.

**Conclusions** Unlike many other aspects of human activity – distribution of the activity of sports clubs does not show any underlying spatial regularities and is not related to the former divisions of Poland. Yet, a weak relationship with contemporary processes of urbanization was found.

**Key words** sports club, Poland, poviat

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**Corresponding author:** prof. nadzw. dr hab. Tomasz Michalski, Uniwersytet Gdański – Katedra Geografii Rozwoju Regionalnego, Bażyńskiego 4, 80-309 Gdańsk, Poland; e-mail: tomasz.michalski@ug.edu.pl

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## INTRODUCTION

The article is part of the current trend in publications showing the diversity of Poland at a local level, i.e. in division into poviats (LAU 1) or municipalities (LAU 2). These are publications on both the economic [1, 2, 3], social [4, 5, 6], health and demographic [7, 8, 9], infrastructural [10, 11, 12], and ecological [13, 14] diversity, as well as its other types.

The purpose of the present study is to find regularities in spatial diversity of participation in and offer in terms of sport and recreation activity offered by sports clubs.

According to the Polish law, a sports club acts as a legal person. Pupils' sports club is its special type [15]<sup>1</sup>. One should, however, be aware that activity of a sports character can be conducted by institutions of varying legal status. For example, in 2014, 7% of foundations and 1% faith-based charities provided sport, tourism, recreation and hobbies as a field of their activity [17]. In 2016, in Poland 14,858 sports clubs operated (Tab. 1); they employed 24,652 coaches, 21,103 instructors and 8,761 persons conducting sports classes. Over 1,030,000 people practiced in them, the majority (74.8%) being male, and age-wise people until 18 years of age (71.3%) [18].

Table 1. Sports clubs according to sport departments in 2016

Type of a sports club	Number
pupils' sports clubs	5989
sports clubs of the "Popular Sports Teams" Association	2621
sports clubs of the Academic Sports Association	83
sports clubs of the Sports Association	71
faith-based sports clubs	60
other sports clubs	6034

Source: [17, Tab. 1, p. 2].

Based on the research conducted by the Central Statistical Office of Poland in the period from 1 Oct. 2015 to 30 Sept. 2016, it was found that 46% of the inhabitants of Poland participated in sports or recreational activities (and compared to 2012, this percentage increased by less than one percent), of whom 22% participated regularly and 25% occasionally [19]. 10% of those practising actively part took in sports and recreational competitions [19].

From among many factors that affect the attitude to one's own body, the somatic culture patterns widespread in the given community take a special place. Krawczyk [20, 21] distinguishes their following types:

- aesthetic (referring to the category of beauty functioning in terms of axiology);
- hedonistic (associated with three types of hedonistic bodily sensations: taste, sexual and kinetic);
- ascetic (proclaiming the superiority or dominance of the sphere of the spirit over the needs of the flesh);
- hygienic (in two sub-patterns: the existential one accompanying the human fight against disease and death and the utilitarian one subordinate to

<sup>1</sup> On 20 July 2017 a bill amending it was adopted, but its provisions do not concern the issues discussed in the present paper (Dz.U. 2017 poz. 1600) [16].

- purposes beneficial to the society);
- fitness (associated with an instrumental attitude to the body, which usually involves its subordination to practical and military purposes);
- agonistic (usually expressed in sports fight and rivalry).

Polish citizens' motivation to participate in physical recreation in 2016 was diversified (Fig. 1), but two somatic cultural patterns prevailed: the hedonistic and the hygienic one.

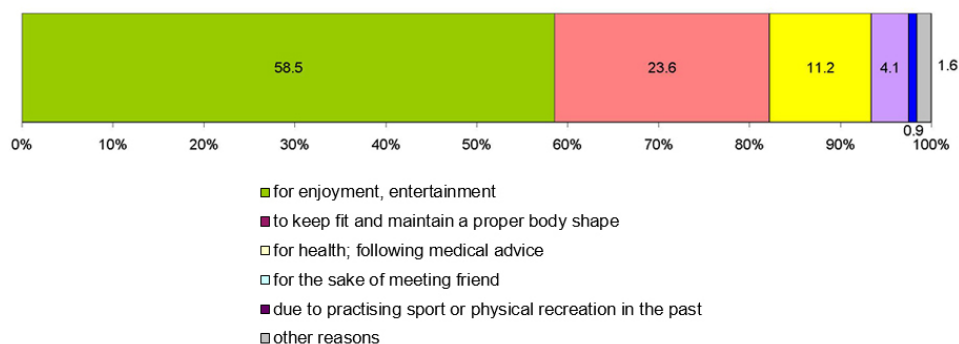


Fig. 1. Motives of participation in sports or physical recreation of Poles in 2016 (in %) Source: [19, fig. 32, p. 70].

## MATERIAL AND METHOD

The data used in analysis come from the Local Data Bank of the Central Statistical Office. The period of the study covers the year 2016. Poviats (LAU 1) is the basic research unit.

The analysis uses 5 variables:

1. Persons practising sport per 1,000 population. This informs us about popularisation of taking up sport in an institutional form. According to the Central Statistical Office of Poland, this term means a person who actively practises a specific kind of sport by participating regularly in trainings or in other forms of sports classes and in sporting or recreational events. In this case, regardless of how many disciplines a person practises in a club - he or she is counted only once. This variable is of a stimulus nature.
2. The percentage of women among all practising persons. This informs us about "gender equality" in using sport in its institutional dimension. This variable, in theory, is of nominative nature, as the ideal value would be about 50%, but in practice it is of a stimulus nature, because in no poviat did the percentage of women among all practising exceeded 50%.
3. The percentage of those practising under 18 years old among all practising. This variable was used only for cluster analysis. Although in theory it is of a dominant nature, it cannot be used to design a synthetic index, because it is difficult to determine the optimal percentage.
4. The number of sports sections per 100 practising informs us about the abundance of the sports offer. According to the Central Statistical Office of Poland, this is the basic organizational unit in sport clubs implementing statutory tasks and embracing competitors in one type of sport. Each sports section must be registered with the competent Polish sports association. This variable has the nature of a stimulus.

5. The number of sports coaches and sports instructors conducting sports activities per 100 practising informs us, indirectly, about the quality of care for the practising persons in clubs. Briefly, a coach is understood as a person who is over 18 years old, has at least secondary education, has the knowledge, experience and skills necessary to perform the task of sports coach in sports in which the Polish sports associations operate and has not been lawfully sentenced for intentional crime [16]. The same applies in the case of a sports instructor with the difference in the experience and skills necessary to perform the task of an instructor. This variable has the nature of a stimulus. However, people running sports activities, but not having a coaching or instructing licence have been omitted from analysis (e.g. Physical Education teachers or older athletes).

Preliminary statistical analysis of each variable is based on the basic statistical measures: the arithmetic mean and the coefficient of variation (CV). To distinguish groups of a similar intensity of the analysed variable, quintile was applied. In summary, Perkal's indicator was used [22]. 4 variables (except for variable number 3) were used for its design; all of them have undergone standardisation. The index has the nature of stimulus. To distinguish groups of poviats with a similar situation, cluster analysis was used, which was based on the method of k-means (Euclidean distance) [23]. All five variables were taken for calculations, all standardized. In both analyses, all the variables had the same weight. In addition, PCC was used.

## RESULTS

### ANALYSIS

In 2016 the mean number of persons practising in sports clubs per 1,000 inhabitants of Poland was 26.81. However, due to prolonged departure from the country of about 2.4 million citizens for employment purposes [24], we can assume that it remained at the level of 28.59. Analysing the level of distribution of this variable according to poviats, we find that the mean was 26.30 persons practising in sports clubs per 1,000 inhabitants, with the 29.6% coefficient of variation. Thus, the diversity of the situation was average. The extreme values were set by the Łosicki powiat (5.33) and the city with powiat rights - Tarnobrzeg (46.83).

Looking at Fig. 2, no underlying spatial regularities in terms of the number of persons practising in sports clubs per 1,000 population are notable. Although a clearly worse situation is noticeable in the Podlaskie, Świętokrzyskie, Masovian and Lubelskie voivodships in the east and partly Warmian-Masurian and Pomeranian ones to the north and Lubuskie in the west, but it is difficult to link this worse situation to an influence of a particular historical-cultural factor<sup>2</sup>. On the other hand, the best situation occurs in one large area comprising Galicia (with the Strzyżów powiat being a clear exception) and smaller parts in the Opolskie and Lower Silesian voivodships, and the border of the West-Pomeranian and Greater Poland voivodships.

<sup>2</sup> These are factors mainly associated with the partitions of Poland as well as in changes in borders and migration of the population after World War II. The basic division of Poland in terms of these factors comprises the former partitions: Austrian (Galicia), Prussia (Poznan), Russian (the Polish Kingdom), and areas incorporated into Poland after World War II (the Western Lands) [25]. Sometimes instead of the term of the Western Lands, the name the Western and Northern Lands is used.

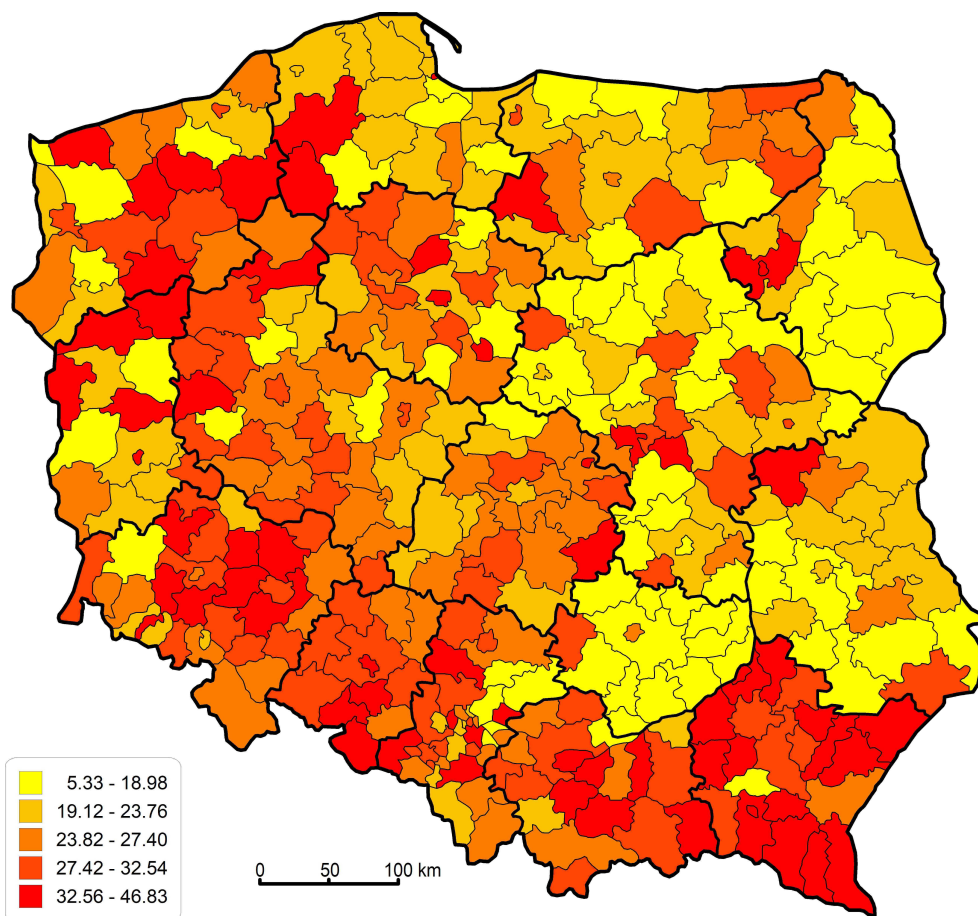


Fig. 2. Persons practicing in sports clubs per 1000 population, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

In the analysed year, women accounted for only 28.19% of all people practising in sports clubs in Poland treated as a whole. While analysing the level of differentiation of this variable from the poviats perspective, we observe that the mean was 24.14%, with the coefficient of variation of 26.9%. Hence, the diversity of the situation was average. The extreme values were set out by Średzki (7.50%) and Sejny poviats (48.81%). Symptomatic is the fact that in no poviats women constituted the majority, and only in four (the cities with poviats rights Leszno and Sopot and Suwałki and Sejny poviats) did they account for 40 or more percent of those practising.

The spatial diversity of the percentage of women among all practising in sport clubs in 2016 looks very unusual (Fig. 3). Apart from minor exceptions (comprising up to a few poviats), greater participation of women in the North-Eastern and Northern Poland is apparent. In turn, it is particularly low in the South and West of the country. It is a startling image, incompatible with either the historical-cultural factors or the iconic ones associated with contemporary processes of the society's modernization.

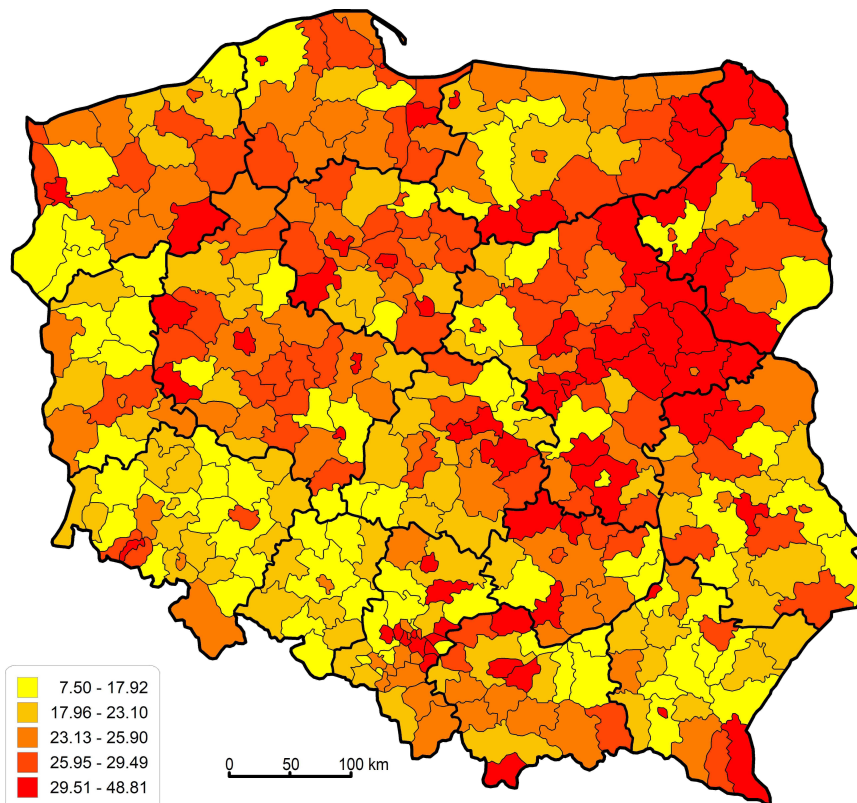


Fig. 3. The percentage of women among persons practising in sports clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

It is obvious that children and adolescents are more physically active. It is no wonder then that on a national scale in 2016 people under 18 years old constituted as many as 71.34% of those practising in sports clubs. Analysing the level of differentiation of this percentage according to poviats, we observe that the mean was 71.49% with the coefficient of variation of 12.0%. Therefore, the diversity can be considered as slight. Comparing to other poviats, the Łomżyński powiat was very unusual, as persons under the age of 18 years old amounted to just 19.97% of those practising. Also in three more poviats the participation of young people was below 50%: Grudziądz (41.64%), Ostróda (44.34%) and Środa Wielkopolska (49.16%). On the opposite side, there are poviats where almost only young people practice: Nidzica (93.19%), Zambrów (94.77%) and Łosice (99.40%).

Taking into account that, on the one hand, the process of ageing of the population is more advanced in urban areas, and, on the other hand, that the processes of modernization make more middle-aged and elderly people in cities (especially large ones) take care of their health, one would expect that the percentage of young people among those practising in sports clubs would be lower in large cities. Meanwhile, this is not so (Fig. 4). From among large cities, only the following cities with powiat rights are exceptions here Jastrzębie-Zdrój (adults amount to 43.33% of those practising), Siemianowice Śląskie (42.63%), Opole (42.16%), Bielsko-Biała (40.48%) and Poznań (38.09%). It is probably due to the fact that such persons more often use the services of other institutions, such as e.g. fitness clubs.

In spatial terms (Fig. 4), there are no underlying regularities. Although some small areas with an increased participation of young people among those practising are noticeable (especially in the North-East and East of the country) and with a low percentage (South-Western and Western as well as the South-Eastern region of Poland, except the Bieszczady mountains), but the numbers are insufficient to try and draw any serious conclusions.

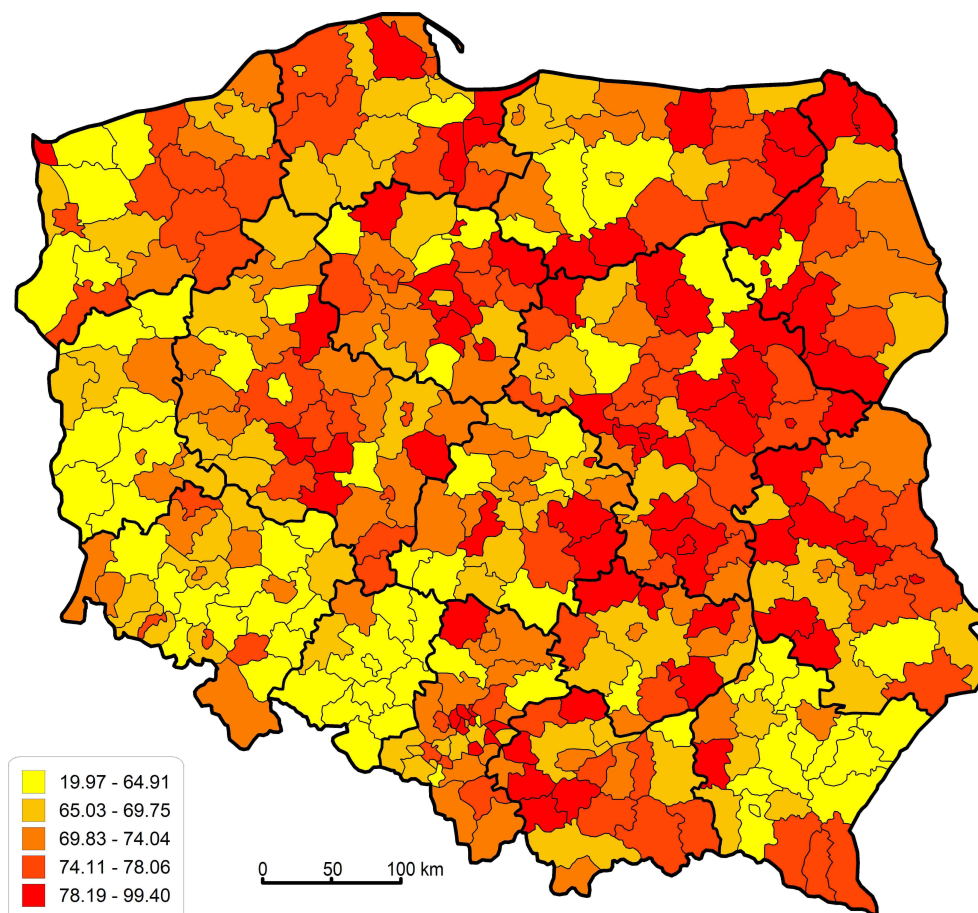


Fig. 4. The percentage of all persons under 18 years old practising in sports clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

On average, in Poland in 2016 there were 2.44 sports sections per 100 practising. Looking at the level of diversity of this variable per poviats, we find that the mean was 2.77, with the coefficient of variation of 30.22%. Thus, the diversity of the situation was average. Extreme values were set by poviats Dąbrowa Górnicza (0.91) and Słupca (5.92). It is characteristic that among the first 10 poviats with the worst situation as many as 7 are cities with the rights of poviats.

Searching for spatial regularities in the differentiation of the number of sections in sports clubs per 100 practising person, first of all, we see that it is relatively low in heavily urbanized area, i.e. in big cities with a suburban area (Fig. 5). This is particularly visible in the agglomerations of Warsaw and Krakow and the Upper Silesian urban area. On the other hand, in the regional terms, a better situation occurs in the area of the former Russian and Austrian partitions (of course, outside large urban agglomerations).

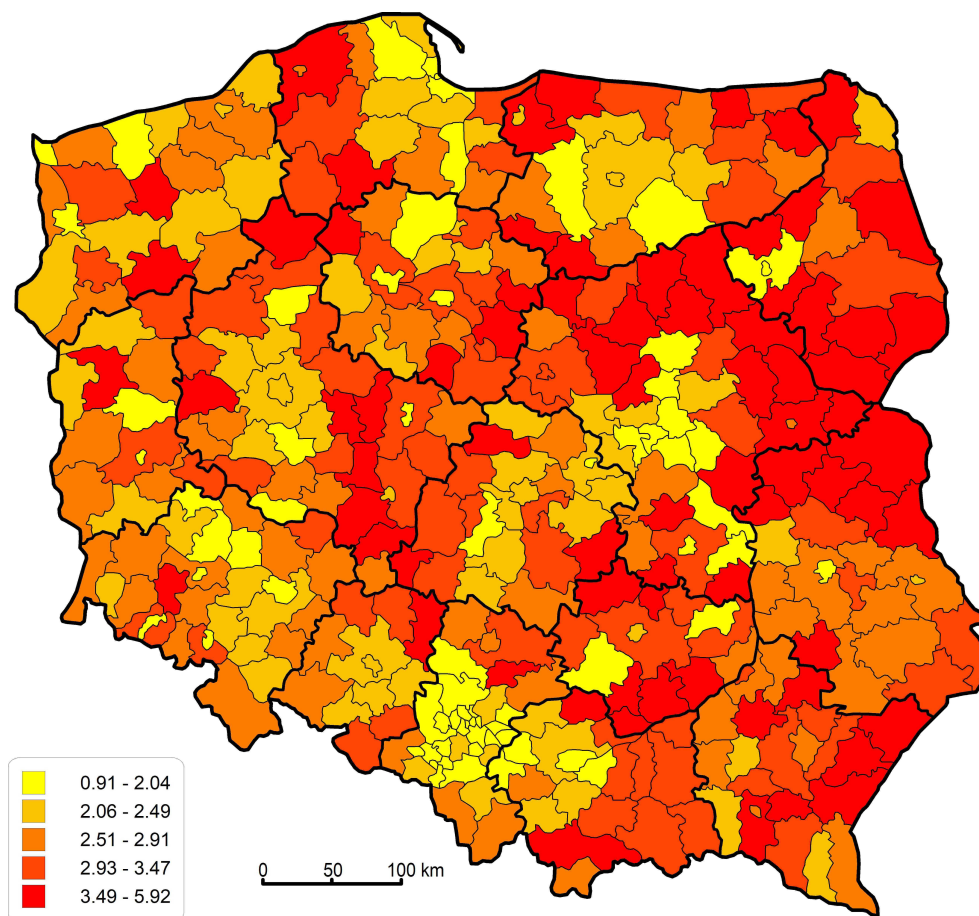


Fig. 5. The number of sports sections per 100 persons practising in sport clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

In 2016, on average in Poland there were 4.44 coaches or instructors per 100 practising persons. The arithmetic mean calculated for poviats was 4.36, with the coefficient of variation of 17.6%. It can, therefore, be concluded that the situation was little diverse. Extreme values were set by poviats: Pajęczno (2.57) and the city with poviats rights - Płock (7.46). Characteristic is that in the first 10 poviats with the best situation as many as 7 are cities with the rights of poviats.

It is symptomatic that the spatial distribution of the number of coaches and instructors per 100 practising persons in 2016 was largely the opposite of the distribution of the number of sports sections (although PCC amounted to as little as -0.06). The best situation occurred in the so-called Western and Northern lands (especially of the Pomorskie and Lubuskie Voivodships), while the worst one in the former Russian and Austrian partitions (except for the majority of the Podlaskie Voivodeship). As mentioned before, also the situation in town poviats was better than in country ones, regardless of the size of the city, although there were exceptions such as town poviats in Upper Silesia (Zabrze and Żory - 3.5 trainers and instructors per 100 practising persons) and Świnoujście (2.9).



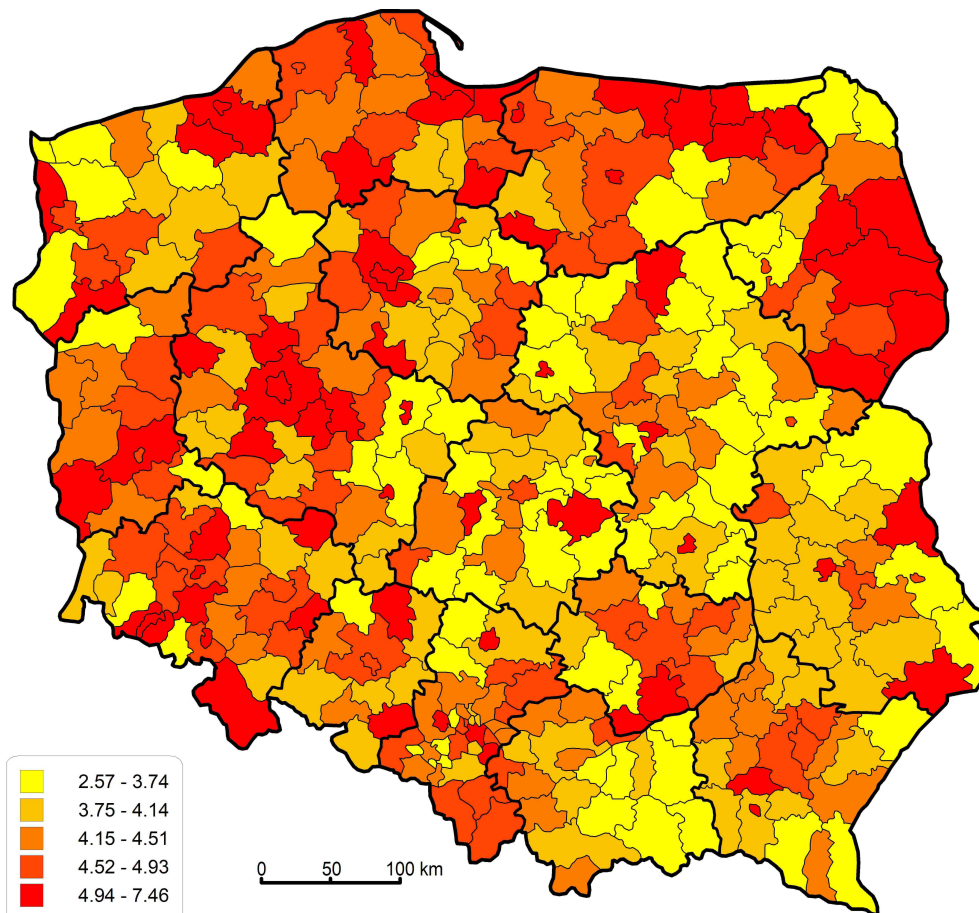


Fig. 6. The number of coaches and sports instructors per 100 persons practising in sport clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

## SYNTHESIS

The synthesis has two stages. In the first one, the synthetic Perkal's indicator was calculated, for the design of which 4 standardized variables were used (without the percentage of persons under the age of 18 among all practising). The results are shown in Fig. 7 - the higher the value of the indicator, the better the situation. No underlying regularities can be seen in the spatial diversity of its value (Fig. 7). One can only notice that a worse situation occurs in Central Poland, in Lower Silesia, and the Lublin Upland (and even this with some exceptions).

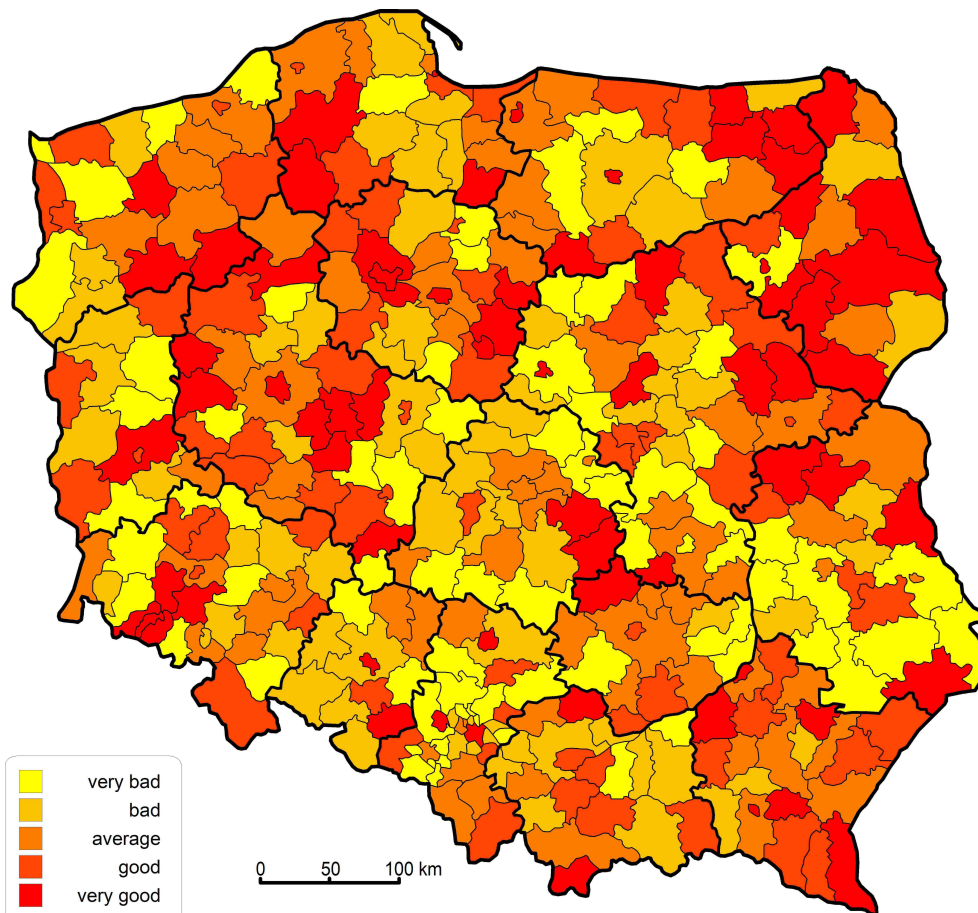


Fig. 7. Synthetic assessment of the situation in terms of activity in sport clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

Additional information is provided by an analysis of correlations between the analysed variables. For this purpose, cluster analysis was applied comprising all five standardized variables. As a result, three groups of poviats were distinguished. A common feature of poviats assigned to group A (92 poviats) is a very high proportion of women and people under 18 years old among all practising persons and an average level of the number of coaches and instructors per 100 practising persons. In turn, poviats that were placed in group B (138 poviats) are primarily characterised by a small percentage of people under the age of 18 years among all practising and a low number of coaches and instructors per 100 practising persons. Poviats classified in group C (150 poviats) mostly had a high proportion of women and people under 18 years old among all practising and also a high level of the number of coaches and instructors per 100 practising persons.

Analysing spatial distribution of the analysed three groups (Fig. 8), we see, however, quite a clear regularity that poviats belonging to group A are concentrated mainly in Pomerania and partly in Greater Poland and the Upper Silesian conurbation as well as the Cracow and Warsaw agglomeration. In turn, poviats belonging to group B are located principally in the South and the South-Western part of the country, while poviats belonging to group C are located mostly in a belt stretching from the Podlaskie Voivodeship (and partially Warmińsko-Mazurskie), through the eastern part of the Masovian and the northern part of Lubelskie voivodships as far as the Świętokrzyskie

voivodship. Such spatial distribution of groups of poviats cannot be linked with cultural and historical factors. One can only conclude that among poviats belonging to group A there are many large cities with poviats rights and a large part of poviats located in suburban areas of big cities.

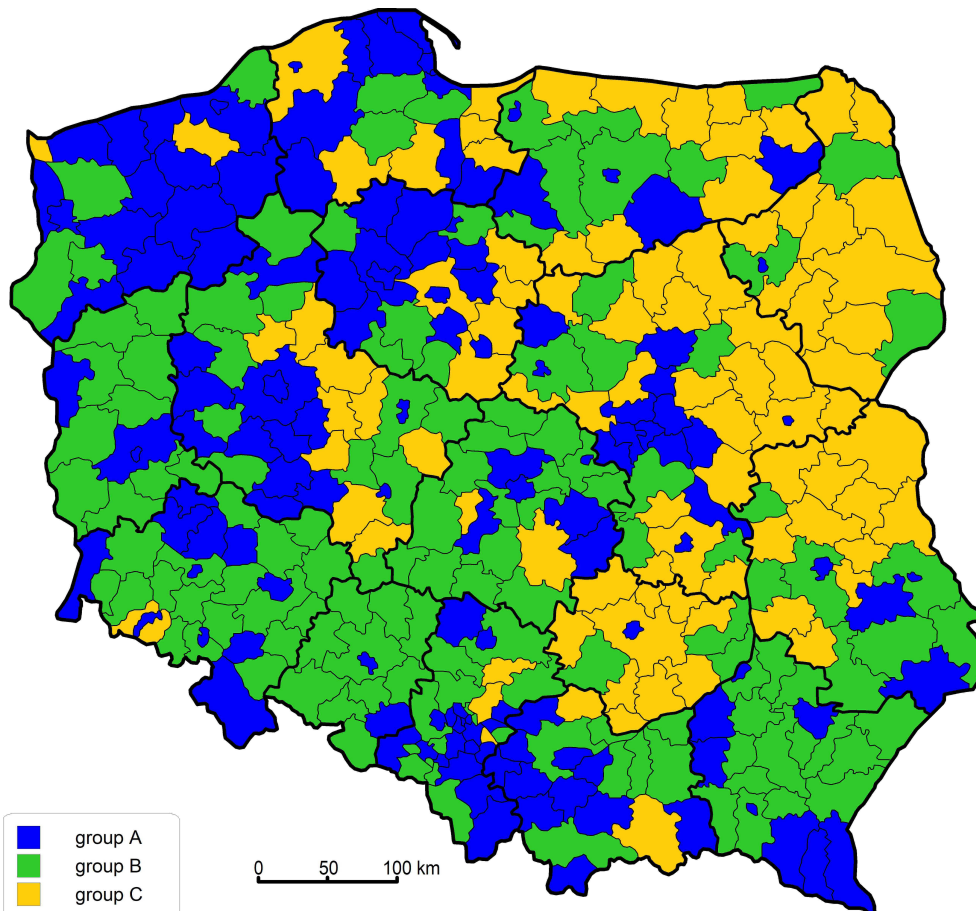


Fig. 8. Types of situation in terms of activity in sport clubs, 2016  
Source: the Local Data Bank, the Central Statistical Office of Poland.

## CONCLUSIONS

The conducted analysis has shown that, unlike other aspects of human activity, both tangible (e.g. arrangement of railway infrastructure, the size of agricultural holdings) and intangible (e.g. political elections, religiousness), the distribution of the activity of sports clubs shows no underlying spatial accuracy and is not related to the former divisions of Poland.

However, a weak relationship with contemporary processes of urbanization was noted. This correlation is probably connected with the influence of familial or environmental patterns of physical activity [26, 27].

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