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The Quality of Life in Polish Cities with Poviat Rights

Abstract

Objectives: The study aims to measure the quality of life in cities with poviat rights and analyse whether differences depend on the number of city residents.

Research Design & Methods: It was hypothesised that the greater the number of inhabitants, the higher the quality of life in a given city. This hypothesis was verified with calculations based on the Statistics Poland data in the form of synthetic and auxiliary indicators.

Findings: The results confirmed the hypothesis. The highest scores characterise the largest Polish cities regarding health, ecology, and economic and social spheres. Simultaneously, it was the smallest cities with poviat rights that had the highest security and education levels.

Implications / Recommendations: All cities with poviat status need to improve ecological awareness, as it is an area with the lowest scores regardless of the size of the city.

Contribution / Value Added: The presented model uses commonly accessible data and is easy to replicate, although it might give less precise results than a custom-made analysis.

Keywords: the quality of life, standards of living, city

Article classification: research article

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Introduction

The quality of life is an extremely complex and subjective concept. For example, in a spatial context, different people can perceive the environment as attractive or unattractive. Some people's key factors in choosing a place to live will be irrelevant to others. Therefore, attempts to quantify the quality of life are doomed to simplification and references to indicators representing the fulfilment of needs.

The study aims to measure the quality of life in cities with poviat rights, and determine whether there are differences depending on the number of residents. It was hypothesised that the greater the number of inhabitants, the higher the quality of life in the city. To verify this hypothesis, data was collected from the Local Data Bank from Statistics Poland (LDB SP). The quality of life index was calculated using the zero unitarisation method. The value of this indicator, together with the information on the number of inhabitants of individual cities, made it possible to verify the hypothesis. The analysis was enriched with the calculation of the quality of life in six areas – social sphere, education, economy, ecology, safety, and health.

Understanding and measuring the quality of life

The quality of life is a comprehensive concept that is of interest to scientists from many fields – economics, sociology, psychology, philosophy, and medicine. As a result, many definitions capture the quality of life from various perspectives specific to a given field. Trzebiatowski points to four main groups of definitions: existential, life-oriented, needs-oriented, and distinguishing between objective and subjective trends (2011, p. 26).

The economic perspective naturally tends towards the concept of needs and their fulfilment as a measurable and quantifiable feature. In a meta-analysis of research on the broadly understood happiness in cities, Papachristou and Rosas-Casals (2019) indicate that the concepts of 'quality of life' and 'well-being' are those most frequently chosen by researchers. The former one most often relates to the housing situation, economic development, or health, while the latter one is used primarily in psychological approaches to the subject (Papachristou & Rosas-Casals, 2019, p. 202).

The quantitative expression of the quality of life makes it possible to average and compare the units and groups of units. Therefore, it is evident that the economic understanding of the quality of life will be built around the fulfilment of needs. Objective determinants of the quality of life can include wealth, living conditions, the availability of health care, environmental safety, social relations, social support system, social activity, or personal development (including education) (see Trzebiatowski, 2011, p. 28).

Contemporary mega-trends, commercialisation, and consumerism can pose serious threats to the quality of life, especially in cities (see Kudłacz, 2017, p. 51). The weakening of social ties and the commercialisation of space make it more and more difficult to meet the needs in the social sphere. Public space is also at risk, including access to landscaped green areas. In effect, there can be a decrease in the social activity of the inhabitants. Also, participation in and access to culture can be an important factor influencing the quality of life. As Sanetra-Szeliga notes, participation in culture can positively affect the subjectively-perceived health condition as well as the sense of life satisfaction (2017, p. 56).

The subjectivity of the perception of the quality of life often demands interviews and questionnaires to be used for their measurement. On the one hand, it gives an extremely valuable opportunity to thoroughly understand the needs and the degree of their fulfilment, especially those of a higher order, which escape quantitative measurements (Trzebiatowski, 2011, p. 28). On the other hand, such research is time-consuming and costly. The 2018 study by Kotarski (2018) in Rzeszów, Poland, carried out with the use of the WHOQOL-

BREF questionnaire, shows that key indicators influencing the quality of life are age, wealth, and health, emphasising the prevalence of overweight or obesity. A sense of safety is also vital for the quality of life, and this applies to both public safety, manifesting through the number of crimes or their detectability, as well as road safety (see Murawska, 2016). Data corresponding to these factors is available in the LDB SP and can be employed to build a quantitative quality of the life satisfaction indicator.

A nationwide survey comparing the quality of life in all cities with poviat rights would require a large-scale research project and a significant investment of funds in its implementation. Therefore, the search for quantitative indicators of the quality of life – based on the existing statistical data – is justified and is the only solution that allows low-cost and small research teams to monitor the quality of life in a large number of places.

The selection of indicators is crucial for obtaining reliable results. However, it can differ considerably between countries or cultures. The availability of data also differs (Sobol, 2019, p. 355). This means that indicators designed for Polish cities can be imprecise in other countries and may not be applicable due to the lack of data.

Quantifying the quality of life does not include individual, subjective feelings expressed through categories such as well-being. However, this approach reflects the "socially recognised set of values" through the eyes of decision-makers (Czepkiewicz & Jankowski, 2015, p. 102). As the authors rightly point out, the quantitative approach is, therefore, not sufficient for examining and describing the quality of life to a full extent (Czepkiewicz & Jankowski, 2015, p. 102). Still, it is the most effective and precise way to make comparisons between many entities.

In search of alternative methods of measuring the quality of life, Brzeziński (2018) suggested the analysis of participatory budgeting. It is an interesting concept based on the assumption that the projects submitted by the residents reflect both the areas of life of insufficient quality as well as

the highly-developed ones. However, this is an indirect and circumstantial method, and, therefore, it is susceptible to false interpretations more than a statistical data analysis.

Methods

Data from the Local Data Bank from Statistics Poland was used for the analysis. The study covered cities with poviat rights, which allowed access to a wider catalogue of data than in the case of research carried out at the commune level.

Limiting the study to cities with poviat rights excludes small cities. This restricts the obtained conclusions, but even in the case of analysis at the level of communes, the smallest cities would not be included, or the data would be very imprecise. The location of small cities in urban-rural communes would make it impossible to accurately diagnose the situation based on statistical data presenting the commune as a whole, including rural areas. On the other hand, the category of cities with poviat rights is so wide that it gives a good picture of the situation in medium-sized and large cities, including small cities below 50,000 inhabitants, such as Krosno or Świnoujście, and Warsaw with nearly 1.8 million inhabitants. For the analysis, cities with poviat rights were divided into three categories (see Table 1): small (up to 100,000 inhabitants), medium-sized (100,000–250,000 inhabitants), and large (over 250,000 inhabitants).

The selection of indicators to measure such a broad and underlying concept as the quality of life is problematic. This is well illustrated in the report titled *Jakość życia w Polsce. Edycja 2017* [*Quality of Life in Poland: The 2017 Edition*], in which the emphasis was placed on the comprehensiveness of the collected data. As a result, data come from different sources and from different years. It is available only at the nationwide level, which limits its usefulness when analysed at lower levels.

As Szaban notes, there is no universally accepted set of components of the quality of life, which results directly from the ambiguity and multidimensionality of this term (2019, p. 30). The author attempted to

Table 1. Size categories of cities with poviat rights

Category	Cities
small cities (up to 100,000 inhabitants)	Biała Podlaska, Chełm, Grudziądz, Jastrzębie-Zdrój, Jaworzno, Jelenia Góra, Konin, Krosno, Legnica, Leszno, Łomża, Mysłowice, Nowy Sącz, Ostrołęka, Piekary Śląskie, Piotrków Trybunalski, Przemyśl, Siedlce, Siemianowice Śląskie, Skierniewice, Słupsk, Sopot, Suwałki, Świętochłowice, Świnoujście, Tarnobrzeg, Zamość, Żory
medium-sized cities (100,000-250,000 inhabitants)	Bielsko-Biała, Bytom, Chorzów, Częstochowa, Dąbrowa Górnicza, Elbląg, Gdynia, Gliwice, Gorzów Wielkopolski, Kalisz, Kielce, Koszalin, Olsztyn, Opole, Płock, Radom, Ruda Śląska, Rybnik, Rzeszów, Sosnowiec, Tarnów, Toruń, Tychy, Wałbrzych, Włocławek, Zabrze, Zielona Góra
large cities (over 250,000 inhabitants)	Białystok, Bydgoszcz, Gdańsk, Katowice, Kraków, Lublin, Łódź, Poznań, Szczecin, Wrocław, Warszawa

Source: own elaboration based on the LDB SP data.

Table 2. Indicators used to calculate the quality of life index (d – destimulant, s – stimulant)

Indicator	type
social sphere	
the dependency ratio	d
migration balance per 1,000 residents	s
natural increase per 1,000 residents	s
foundations, associations, and social organisations per 10,000 residents	s
education	
gross enrolment rate (primary schools)	s
places in kindergartens per 1,000 children in the age group 3–6 years old	s
expenditure per capita on Section 801 – Education	s
economy	
gas users (% of total population)	s
share of newly registered entities from the creative sector in the total number of newly registered entities	s
registered unemployment rate	d
registered entities per 1,000 residents	s
own income per capita	s
ecology	
waste collected selectively in relation to total waste	s
share of parks, lawns and estate green areas in the total area	s
safety	
the rate of detection of perpetrators of crimes identified by the Police (in total)	s
crimes identified by the police in total per 1,000 residents	d
road accidents per population of 100,000	d
fatalities per population of 100,000	d
health	
spendings per capita on Section 851 – Health Protection	s
doctors per 10,000 residents	s
infant deaths per 1,000 live births	d

Source: own elaboration based on LDB SP data.

translate popular indicators, including those from the aforementioned Statistics Poland report or *Social Diagnosis*, into data available in the LDB SP, resulting in 28 indicators. They constituted the starting point for the construction of the set of indicators used in this analysis. Ultimately, 23 indicators were selected. After the stage of data collection, two indicators were discarded due to very low variability (coefficient of variation below 5%), namely the percentage of sewage users and the percentage of sewage treatment plant users. Table 1 contains all the components of the quality of life index.

One of the best methods of normalisation in the case of the stimulant-and-destimulant analysis with a different scale of values is zero unitisation (see Kukuła, 2012), which reduces all values to the range from 0 (worst result) to 1 (best), enabling a simple and intuitive comparison of scores. The sum of the indicators is a synthetic value of the quality of life in each city with poviat rights.

The zero unitarisation method uses the following formulas:

$$z_{ij} = \frac{x_{ij} - \min_i x_{ij}}{\max_i x_{ij} - \min_i x_{ij}} \text{ for stimulant variables}$$

$$z_{ij} = \frac{\max_i x_{ij} - x_{ij}}{\max_i x_{ij} - \min_i x_{ij}} \text{ for destimulant variables,}$$

where:
z_{ij} – unitized value of j for item
x_{ij} – value of j for iitem
$\min_i x_{ij}$ – minimum value of j
$\max_i x_{ij}$ – maximum value of j

To make the interpretation of the results easier, the quality ranges were determined on the basis of the arithmetic mean and the standard deviation (Table 3). Cities where the quality of life has fallen below the average value by more than the value of the standard deviation should be interpreted as places where there can potentially be problems in meeting the needs of the inhabitants. At the other end of the scale, there are cities with results

higher than the average by more than the value of the standard deviation, most often characterised by high results in almost all of the examined aspects.

To verify the hypothesis, the data was visualised in the form of a histogram, together with values of the arithmetic mean for each of the size groups of cities with poviat rights (Figure 1).

The larger the city, the higher the quality of life in it. The group of cities with more than 250,000 inhabitants clearly stands out, with most of them achieving above-average results, with the exception of Łódź (8.96) and Szczecin (10.17). The average results in the other two categories are similar, and most cities scored results close to the national average (10.58). In the smallest cities with poviat rights (below 100,000 inhabitants), the quality of life was mostly lower than the average, i.e. only every third city achieved an above-average result. In the medium-sized cities, it was almost half of the cases.

The next step was to compare cities with poviat rights in six areas (Figure 2). This allowed a deeper analysis – the general quality of life index does not express the differences in individual aspects, averaging the situations in which a city might score very high in one aspect and very low in another.

The largest cities dominated in three areas, namely healthcare, economy, and the social sphere. This is mainly due to the concentration of specialised medical services, the largest companies, as well as creative sectors and dynamically operating non-governmental organisations in these cities. Attractive for foreign investors with scientific and infrastructural backgrounds, they are natural economic leaders in their regions. The availability of specialists and advanced technologies also contributed to the higher quality of healthcare. The overall attractiveness of the city, in turn, had a direct impact on the indicators assigned to the social area – large cities are not so severely affected by the ageing of the society, they also have the best-developed offer in terms of social activities.

The smallest cities with poviat rights had the best situation in terms of safety and education.

Table 3. The criteria of the quality of life

the quality of life	criteria	range
moderate	$< (x - \sigma)$	$< 9,14$
decent	$x - \sigma$	$9,14 - 10,58$
high	$x + \sigma$	$10,58 - 12,02$
very high	$> (x - \sigma)$	$> 12,02$

Source: own elaboration.

On the one hand, the higher level of security is due to less traffic on the roads. On the other hand, the largest cities can invite more crimes. They can be less detectable due to crimes committed by visitors, who are often attracted by the wealth of the inhabitants or the luxurious offer of shops. A greater anonymity of the largest cities' residents is probably also affecting the results. In terms of education, smaller cities were characterised by better availability of kindergartens and higher expenditure on education per capita. The former indicator was the lowest in the largest cities. On the other hand, the level of expenditure on education in large cities can be lower due to scale (larger schools), which can lead to a more effective use of funds.

In the area of ecology, the indicators are gradually increasing along with the city size. Waste segregation is related to the residents' greater environmental awareness and sensitivity, and partly also due to the environmentally worse living conditions and daily contact with air or noise pollution. In the smallest cities, a lower share of parks and squares can also result from the feeling of "closeness" to nature – natural green areas in the form of forests, lakes or other recreational areas can be located in a short distance
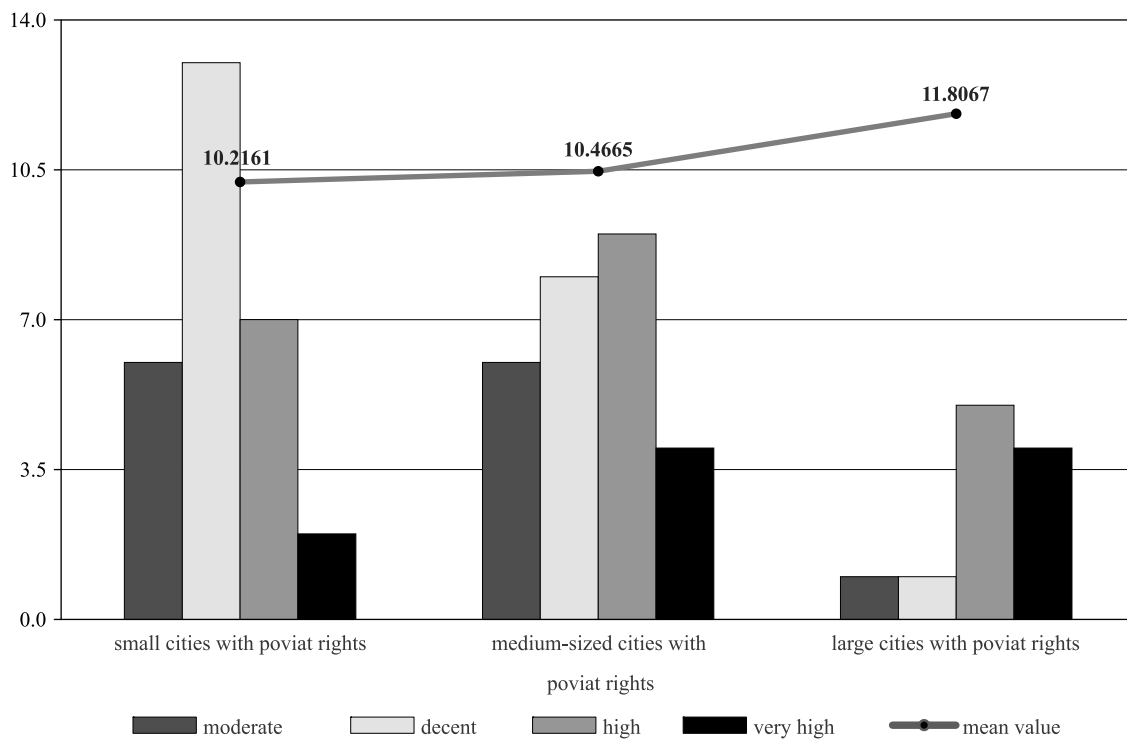

Figure 1. The histogram of the quality of life in cities
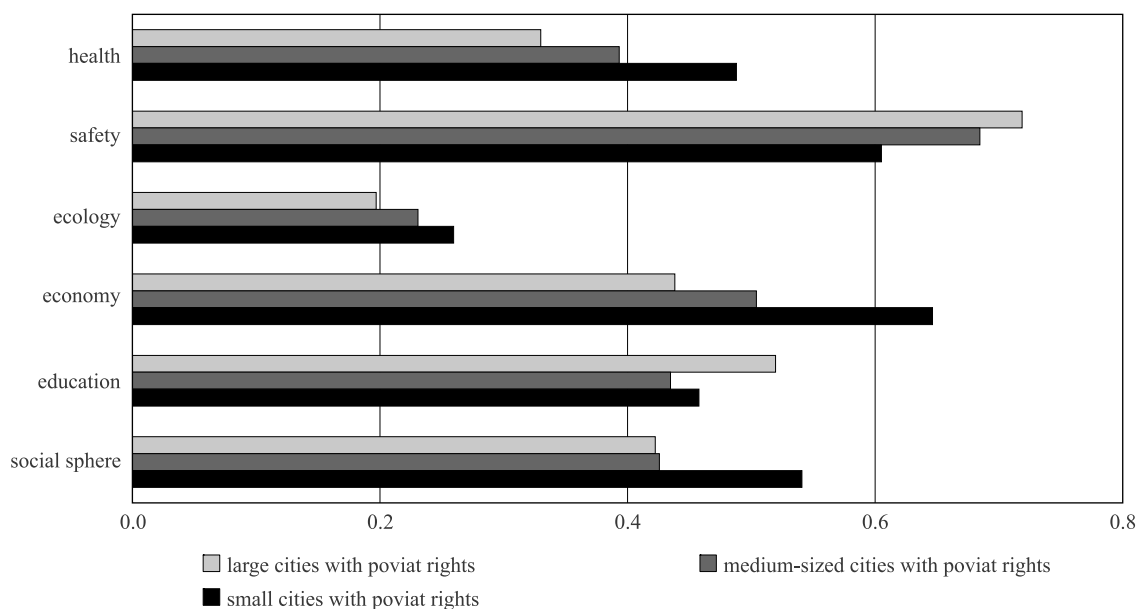
Source: own elaboration.

Figure 2. The mean value of indicators from six sub-categories of the quality of life

Source: own elaboration.

from the place of residence, even if they are outside the city's administrative boundaries. Due to their spatial extent, residents of the largest urban centres should have access to greenery within the administrative boundaries of a given city, most often in the district. In large cities, green zones outside the city's administrative borders are located even several kilometres from residential areas and are inaccessible by foot.

Conclusion

The study aimed at measuring the quality of life in cities with poviat rights, highlighting the differences depending on their size. The quality of life indicator was proposed with the use of data from Statistics Poland. In the form of a complementary analysis, the situation in six areas was examined (social sphere, education, economy, ecology, safety, and health).

All in all, the largest Polish cities are characterised by the strongest position in the economic and social areas, which is not surprising and results directly from their strong position at the regional and national levels. Also in the case of ecological issues, greater activity of large cities is visible, probably due to greater awareness and higher expectations of their residents. Small cities, on the other hand, are safer and offer better access to education. All cities with poviat rights need to improve the ecological awareness, as it is an area with the lowest scores regardless of the size of the city.

Data analysis for cities with poviat rights has two main limitations. Firstly, it does not take into account the smallest cities, which makes it unlawful to extend the conclusions to all Polish cities. Secondly, it takes into account only the city within its administrative boundaries. In the case of the largest cities, this may not fully correspond to the functional urban area, covering several municipalities from the surrounding area. This should be taken into account when analysing

the obtained results, but it does not diminish the comparability of data.

The presented analysis is an example of a survey that can be carried out cyclically for the entire country. Although data availability restricted the study to cities with poviat rights, their diversity allowed for a relatively good reflection of the situation in medium-sized and large cities. The ease of replication is an undoubted advantage and makes the method handy in monitoring changes in the quality of life in the future.

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