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THE SPATIAL DISTRIBUTION OF LIVING STANDARDS IN THE MAŁOPOLSKIE VOIVODSHIP

Abstract: The author identifies the spatial distribution of the standards of living in the Małopolskie Province during 1988-1997

Key words: Małopolskie Voivodship, standard of living, standardisation, synthetic standard of living index.

1. Introduction

A number of disciplines including economy, geography and sociology are interested in standards of living, as their research object. The geographical approach combines methods used by economy and sociology and complements them with the spatial dimension, a unique geographical feature, seems very well suited to render the several aspects of a standard of living.

There is no single universal definition of the standard of living; there are basically as many definitions as studies published. Usually, the standard of living of a population within a given spatial unit is described as a combined influence of the following components: food, living quarters and conditions, health, security, communication options, mobility, access to and level of education, and participation in the mass culture (Gutkowska, Ozimek, Laskowski 2001). These components represent material and cultural needs of a community and the research into the standards of living primarily focuses on the fulfilment of these needs (Kędzior 1999).

The study takes into account the following categories of needs: living conditions, apartment infrastructure and equipment, education, culture and health. The study looks at the degree to which they are fulfilled and maps that against types of territorial units (urban or rural gminas; *gmina* being the smallest unit of Polish territorial division) and their spatial location (within the Małopolskie Voivodship).

2. Measurement of standards of living with the standardised value sum method

The project employs a set of sub-measures of standards of living in urban units and rural gminas within the Małopolskie Voivodship in 1988 and 1997. The analysis covers the territorial units currently within the boundaries of the new Małopolskie Voivodship the, but during the studied period belonging to various former provinces. All statistical data come from documents and data banks of the local divisions of the Main Statistical Offices, located in Cracow, Katowice, Tarnów, Limanowa, Bielsko-Biała, Kielce and Krosno.

The following sub measures of the standard of living were taken into account:

Group 1 – Accommodation:

1. useful area per resident in m²
2. residents per room
3. newly commissioned apartments per 1000 marriages

Group 2 – Apartment infrastructure and equipment:

4. mains household water consumption per resident in m³
5. telephone subscribers per 1000 inhabitants

Group 3 – Education and culture:

6. elementary school pupils per one teacher
7. kindergarten capacity (excl. kindergartens incorporated in elementary schools) per 1000 inhabitants
8. number of volumes lent in libraries per one reader

Group 4 – Health:

9. surgeons per 10 000 inhabitants
10. pharmacies per 10 000 inhabitants
11. infant mortality per 1000 live births

The choice of measures was guided by how representative they were of the type of territorial unit, as well as of the standard of living. Indeed, some measures were more adequate for small territorial units (such as *gmina*), and other for larger units (such as *poviats* or provinces; *powiat* is the middle tier of Polish administrative division). Hence, measure No. 3 and No. 11. (newly commissioned apartments per 1000 marriages; infant mortality per 1000 live births, respectively) were applied to three-year periods (i.e. 1988-1990 as representative of 1988; and 1995-1997 as representative of 1997), rather than single years, because otherwise they would have yielded too random a value at the *gmina* level. On the other hand, variable No. 7 (kindergarten capacity per 1000 inhabitants), was originally intended to measure the number of children in kindergartens per 100 places, but gaps in available statistics made it impossible and the finally adopted measure is certainly less relevant.

The scarcity of published statistics for small territorial units such as *gminas* restricted the choice of measures. As a consequence, it was impossible to measure a very important group of needs related to the natural environment. Neither were there measures available for the material needs such as hi-fi, TV, white-goods, car and mobile phone.

Subjective measures, such that would have required polling were not applied deliberately. In an area so large, as the Małopolskie Province this would have been a troublesome process and the results could have been less than representative.

All of the sub-measures of the standards of living for every territorial unit were standardised using the following formula:

$$Z_{ij} = \frac{X_{ij} - \overline{X}_i}{S_i}$$

whereby X_{ij} is the value of the variable $-_i$ for spatial unit $-_j$; \overline{X}_i is the mean value of the variable $-_i$; S_i is the standard deviation of the variable $-_i$.

In a next step, the sub-measures were added up producing a synthetic index (WST) for every gmina.

Those synthetic measures, which had the nature of destimulating factors, i.e. residents per room, elementary school pupils per one teacher and infant mortality per 1000 live births, were multiplied by -1.

3. Urban versus rural standards of living

In 1988, the WST synthetic standard of living index was derived for 205 territorial units including 50 urban units (poviats and gminas) and 155 rural gminas. In 1997, there were 218 units including 53 urban units and 165 rural gminas. In 1988, the mean WST value for all units was -1.69, and it rose to 1.63 in 1997. The increase was recorded in both urban and rural units. In 1988, the mean WST value for urban areas was 3.22 and in 1997 it rose to 7.78, i.e. by 4.56 pts. In rural gminas the index value rose from -3.27 to -0.35, i.e. by 2.92 pts but remained in the negative.

The urban/rural disparity was visible both for the WST and the standardised sub-variables. For both studied years, most of the mean standardised values of variables for towns were in the positive, while they were negative for rural gminas.

In 1988, only 2 out of 11 variables had negative mean values for urban units (i.e. apartment useful area per one resident and the number of elementary school pupils per one teacher). In rural gminas, only 2 variables had positive mean values (newly commissioned apartments per 1000 marriages and the number of elementary school pupils per one teacher). In 1997, again, there were only two measures with negative mean values in urban units (newly commissioned apartments per 1000 marriages and the number of elementary school pupils per one teacher). In rural gminas, there was an upturn in the number of mean positive values to reach five measures (Tab. 1).

In the group of measures of accommodation there were positive trends in the useful apartment surface per one resident and number of residents per one room. In both of the cases the mean values increased in urban, as well as in rural gminas. This is even more interesting as there was a considerable drop in another measure from the same group (newly commissioned apartments per 1000 marriages) in both urban and rural gminas.

One of the measures related to the accommodation infrastructure and equipment was the mains water consumption in households per one resident. Generally during the period, this measure recorded a mean overall decrease, but while in urban units

Tab. 1. Summary of mean standardised sub-measures of the standard of living in towns and rural gminas within the borders of the current Małopolskie Voivodship.

Tab. 1. Zestaw średnich wartości standaryzowanych cząstkowych mierników poziomu życia dla miast i gmin wiejskich w latach 1988 i 1997 w granicach obecnego województwa małopolskiego.

Group of needs	No.	Sub-measure of standard of living	Mean standardised value of sub-measure of standard of living					
			1988			1997		
			Total	Urban	Rural	Total	Urban	Rural
Accommodation	1	Useful area per resident in m ²	-0.38	-0.20	-0.43	0.35	0.60	0.27
	2	Residents per room	-0.21	0.62	-1.15	0.24	1.06	-0.03
	3	Newly commissioned apartments per 1000 marriages	0.39	0.85	0.24	-0.37	-0.43	-0.34
Apartment infrastructure and equipment	4	Mains household water consumption per resident in m ³	0.02	1.39	-0.40	-0.02	0.69	-0.25
	5	Telephone subscribers per 1000 inhabitants	-0.59	0.29	-0.88	0.56	1.72	0.18
Culture and education	6	Elementary school pupils per one teacher	-0.34	-1.69	0.09	0.32	-0.30	0.89
	7	Kindergarten capacity (excl. kindergartens incorporated in elementary schools) per 1000 inhabitants	0.19	0.67	-0.11	-0.18	0.74	-0.47
	8	Number of volumes lent in libraries per one reader	-0.12	0.03	-0.16	0.12	0.39	0.04
Health	9	Surgeons per 10 000 inhabitants	-0.06	1.04	-0.41	0.05	1.35	-0.37
	10	Pharmacies per 10 000 inhabitants	-0.33	0.12	-0.48	0.32	1.74	-0.14
	11	Infant mortality per 1000 live births	-0.26	0.05	-0.23	0.24	0.20	0.26

Source: Author's research.

it dropped from 1.39 to -0.02, the rural gminas saw the measure go up from -0.40 to -0.25. Far from suggesting deterioration in urban water supply this pattern reflects more rational water consumption owing to newly installed water consumption meters and more water-efficient household equipment. The increase in rural areas is a result of the expanding water supply systems.

Poor telephone saturation in rural areas is a typical Polish feature also confirmed by this study. In 1988, the mean value of the measure of the number of telephone subscribers per 1000 persons in rural gminas stood at (-0.88) and in urban units at 0.29. In 1997, there had been an increase by 1.43 points in cities and by 1.06 in villages. This means that the urban versus rural gap not only failed had not shrunk, but opened wider.

In the group of measures of education and culture, an improvement was recorded both in urban units and rural gminas in the number of elementary school pupils per one teacher and in the number of volumes lent in libraries per reader. However, the mean value of the kindergarten capacity per 1000 inhabitants dropped as a result of rural deterioration in this department and only a slightly improved in towns.

All of the health-related measures went up. There was a particularly positive trend in towns in the numbers of pharmacies per 10 000 inhabitants (increase by 1.62 points).

Using the spatial distribution of the mean values of the sub-measures building the synthetic WST index it was found that the towns and cities of the Małopolskie Province were characterised by a higher standard of living than the rural gminas. It is worth a note, however, that should another set of measures were to be taken into consideration, this trend might have been weakened, if only because variables such as: air pollution, sense of security, community integration level, would have presented themselves better in the rural areas.

4. Regional standard of living patterns within the Małopolskie Voivodship

In 1997, the spatial distribution of the WST values was similar to that of 1988 (Fig.1, Fig.2). In both cases certain towns stood out featuring positive WST values. This was a dominant pattern in the central and southern parts of the Voivodship, where towns were typically encircled by rural gminas. A different picture was found in the more urbanised northwestern part of the Province, to the west of Cracow. Here, the pattern abounded with rural, as well as urban units with positive WST. This reflected a direct urbanisation impact on the standard of living. Indeed, many of the nominally rural gminas had lost their typical rural nature, as well as had been the fastest developing part of Małopolska for centuries. In this area, farming had ceased to be the main source of income, as the local rural population found its jobs in the nearby urban centres. In 1988, about 10 gminas of this region had positive WST and the number rose to more than 30 in 1997.

A similar concentration of rural gminas featuring relatively good WST values is also found to the east of Cracow in the direction of the city of Tarnów; i.e. gminas surrounding the towns of Bochnia, Brzesko and the city of Tarnów itself, as particularly evident in 1997. Relatively good results were recorded in rural gminas to the north of Cracow, i.e. in the northern parts of the krakowski powiat, in miechowski and proszowicki

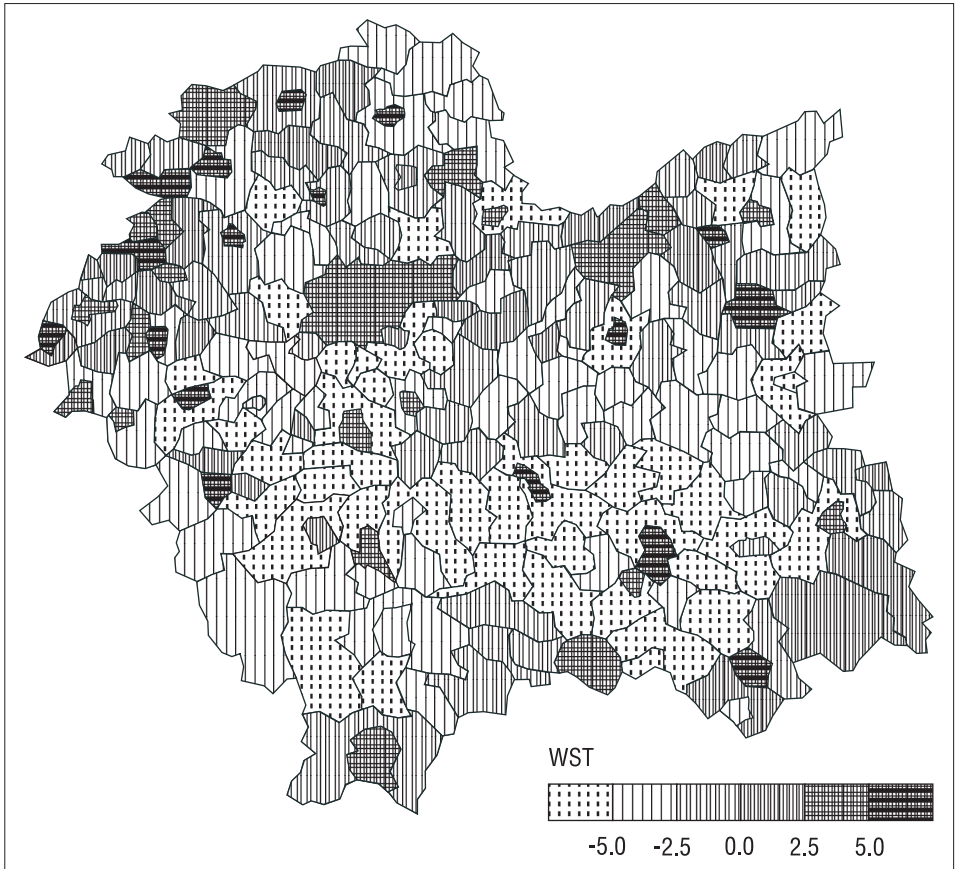


Fig.1. Spatial distribution of the synthetic standard of living index (WST) in towns and rural spatial units in the Małopolskie Voivodship in 1988

Ryc.1. Przestrzenne zróżnicowanie syntetycznego wskaźnika poziomu życia (WST) dla miast i gmin wiejskich w 1988 r. na obszarze obecnego województwa małopolskiego

Source: Author's research.

poviats and in the western part of olkuski powiat. Traditionally, the local rural population had exploited the good agricultural conditions by working in farming. Nevertheless, this area had recently been affected by strong outflow to urban areas. It is important to note that in this case the high WST values strongly rely on those sub-measures that involved calculation per 1000 or 10 000 inhabitants. It is not unlikely that, as a result of the outward migration this very method was boosting the indices. A similar effect was probably also at work in some of the gminas in the gorlicki powiat, i.e. Sękowa, Uście Gorlickie, Lipinki and Ropa with low population density.

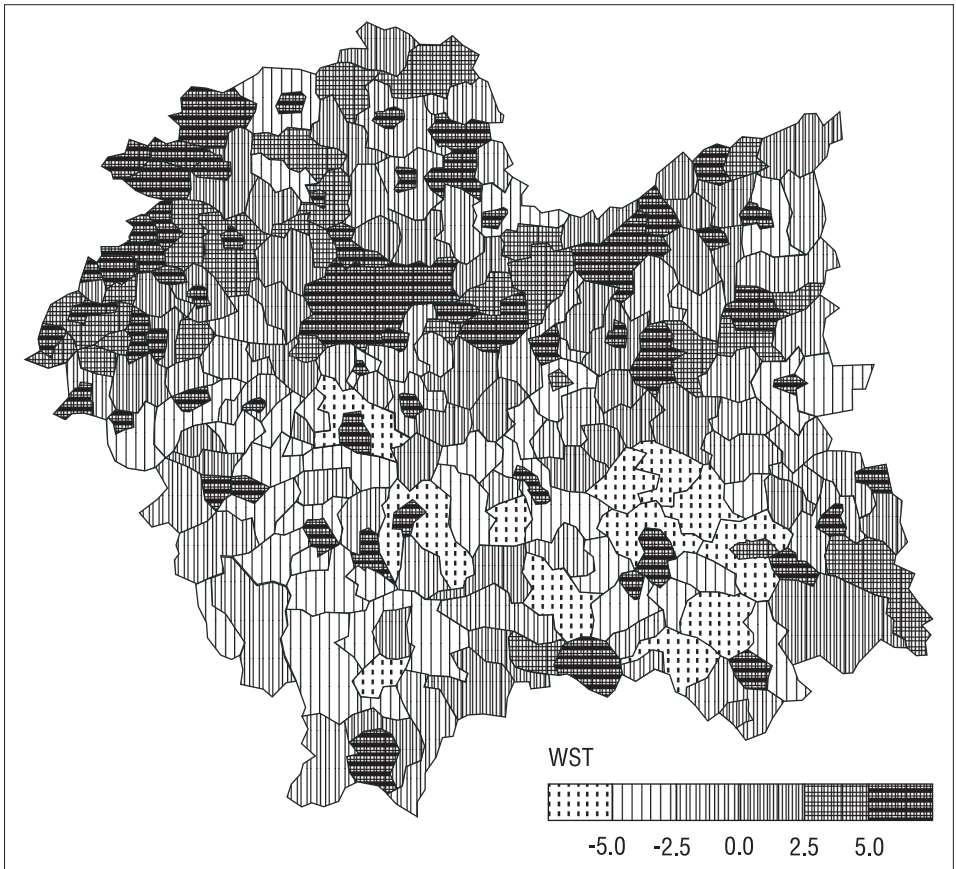


Fig.2. Spatial distribution of the synthetic standard of living index (WST) in towns and rural spatial units in the Małopolskie Voivodship in 1997

Ryc.2. Przestrzenne zróżnicowanie syntetycznego wskaźnika poziomu życia (WST) dla miast i gmin wiejskich w 1997 r. na obszarze obecnego województwa małopolskiego

Source: Author's research.

The province could therefore be divided into the northern part with higher standards of living and the southern with lesser standards. The northern region comprised the following poviats: chrzanowski, oświęcimski, wadowicki, krakowski, olkuski, miechowski, proszowicki, wielicki, bocheński, brzeski, tarnowski and dąbrowski. The remaining poviats formed the southern region.

The northern region was better urbanised and industrialised (except for the miechowski, proszowicki and dąbrowski poviats), with the industry contributing directly to the urban development and indirectly to the improvement of the standard of living.

At the other end of the spectrum, the rural gminas of the southern region featured the lowest WST values. In 1988, the area around the town of Nowy Sącz included a characteristic concentration of rural gminas with the province's lowest WST values (below -5.00): Gródek nad Dunajcem -10.59, Korzenna -10.35, Łososina Dolna -9.35, Grybów -9.33, Piwniczna -8.57. In 1997, the picture remained largely unchanged; the lowest WST values were still recorded in rural gminas including Piwniczna -14.38, Korzenna -9.03, Grybów -7.71, Łabowa -7.57, Gródek nad Dunajcem -7.47, Łososina Dolna -6.50.

There was another grouping of lowest-WST rural gminas in the limanowski, myślenicki, suski and nowotarski powiats. A degree of improvement in the standards of living may have taken place in this area, as all of those gminas recorded a slight WST increase during 1988-1997.

The mountainous southern part of the Małopolskie Voivodship offered poor conditions for farming and no large non-farming employers. This was probably the reason for the lower index values compared to the northern region. The geographic environment in southern region, however, is better suited to tourism, leisure and spa industry and it is the gminas featuring these functions that stand out with the better WST values: Krościenko, Czorsztyn, Ochotnica Dolna, Łapsze Niżne, Kościelisko, Poronin and Bukowina Tatrzańska.

High WST values were evident in well established leisure and spa-treatment centres. The town of Szczawnica was the best example with the WST value increased from 3.65 in 1988 to 13.72 in 1997. A similar but smaller improvement was recorded in other such towns: Krynica, Zakopane and Rabka.

Administrative centres tended to stand out with higher standards of living. Cracow is such city, formerly the seat of the Krakowskie Voivodship and currently of the new Małopolskie Voivodship, enjoying the rights of a separate urban powiat. In 1988, Cracow's WST stood at 4.59 and by 1997 it rose to 12.48. The other two towns-powiats in the province also feature high index scores; Tarnów rose from 5.82 in 1988 to 10.19 and the Nowy Sącz had 5.64 and 7.31 in the same time.

The spatial distribution of the WST values was particularly interesting in the gminas of the krakowski and wielicki powiats, i.e. surrounding the city of Cracow. In 1988, only three of the 15 gminas directly neighbouring the city had positive WST, i.e. the towns of Wieliczka at 1.96 and Niepołomice at 0.62, as well as the rural gmina Igołomia-Wawrzeńczyce at 1.46. In 1997, however, almost all the gminas adjacent to Cracow had positive WST values, including the towns of Niepołomice 8.72, Wieliczka 7.31 and Skawina 4.89, as well as rural gminas: Zielonki 7.06, Wielka Wieś 3.75, Niepołomice 3.07, Michałowice 2.25, Zabierzów 2.09, Igołomia-Wawrzeńczyce 1.14, Kocmyrzów 0.72 and Liszki 0.37. Only four gminas still recorded negative WSTs: Świątniki Górne -4.43, Mogilany -1.48, Wieliczka -4.5 and Koniusza -0.55.

The evident improvement in the standards of living in gminas directly neighbouring Cracow was directly related to the suburbanisation process observed in the area during 1990s. The improvement in the Cracow suburbs was a result of the influx of relatively affluent population preferring higher than average standard of living.

5. Conclusion

In summary, there are a number of conclusions. Firstly, the standard of living in the Małopolskie Voivodship is generally following an upward trend. This improvement, however, is much more pronounced in urban than in rural areas. The third overall pattern is the split of the province into two regions: northern with higher standards of living and the southern with lower indices. A minor improvement has been recorded in the south especially in the rural gminas, which initially featured the province's lowest indexes of the standard of living.

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Przestrzenne zróżnicowanie poziomu życia ludności województwa małopolskiego

Streszczenie

Celem opracowania było określenie przestrzennego rozkładu poziomu życia ludności województwa małopolskiego. Badania przeprowadzono dla miast i gmin wiejskich, które 1 stycznia 1999 roku weszły w skład nowoutworzonego województwa małopolskiego. Jednak wszystkie dane statystyczne dotyczące analizowanych jednostek terytorialnych pochodziły sprzed wspomnianej zmiany administracyjnej, i zbierane były w ówczesnych granicach miast i gmin wiejskich.

Analizę przestrzenną zjawiska poszerzono o aspekt czasowy – badania objęły okres 1988-1997. Dla roku 1988 było to 50 miast i 155 gmin, natomiast dla 1997 roku – 53 miasta i 165 gmin wiejskich.

Poziom życia ludności określono jako stopień zaspokojenia szeregu potrzeb materialnych, społecznych i kulturalnych, które podzielono na następujące grupy: warunki mieszkaniowe, infrastruktura i wyposażenie mieszkań, oświata i kultura, zdrowie. W wymienionych grupach znalazło się 11 potrzeb, w oparciu o które, dla każdej jednostki terytorialnej skonstruowano 11 cząstkowych mierników poziomu życia. Mierniki cząstkowe poddano standaryzacji w celu utworzenia syntetycznego wskaźnika poziomu życia (WST).

Na podstawie rozkładu poszczególnych mierników cząstkowych, jak i samego miernika syntetycznego, określono przestrzenną i czasową rozpiętość poziomu życia mieszkańców województwa małopolskiego. Stwierdzono kilka prawidłowości.

Po pierwsze, rozkład przestrzenny poziomu życia ludności nie jest w obrębie województwa małopolskiego równomierny. Można przyjąć uproszczony podział województwa na część północną – o wyższym poziomie życia, i część południową – o niższym poziomie życia.

Po drugie, w porównaniu miasto – wieś, zdecydowanie wyższy poziom życia dotyczy ludności miejskiej. Im większe miasto i im bardziej zróżnicowane funkcje pełni, tym wyższym poziomem życia się charakteryzuje.

Po trzecie, w okresie 1988-1997 zaznaczyła się tendencja wzrostowa omawianego zjawiska, dotycząca głównie miast. Niemniej w ogólnym rozrachunku, również gminy wiejskie zanotowały tendencję rosnącą poziomu życia. Na uwagę zasługuje fakt, że poprawie uległa sytuacja gmin południowych (teren dawnego województwa nowosądeckiego), które w początkowym okresie notowały najniższe wartości syntetycznego wskaźnika poziomu życia.

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