

OBJECTIVE AND SUBJECTIVE STUDY OF THE DYNAMIC DEVELOPMENT OF THE CITY OF GYÖNGYÖS (HUNGARY)

Antónia Szűcs*, Gábor Koncz

Hungarian University of Agriculture and Life Sciences, Hungary

Cities play a key role in EU regional policy, and to this end the Leipzig Charter called for the development of Integrated Urban Development Strategies (IVS) emphasizing an integrated approach in the 2007–2013 budget period, which was replaced in the period 2014–2020 by Integrated Settlement Development Strategies (ITS). We can find many experiments in the methodological elaboration of the measurement of regional and municipality development in the Hungarian and international literature. However, due to the complexity of the topic, no more widely accepted procedure has emerged, however, there is a common consensus that development is treated as a complex phenomenon. In the present study, we attempted to examine the development of the city of Gyöngyös through a complex system of indicators for the period 2010–2018. In addition, an important part of our research is to supplement the results obtained with statistical data and, if possible, to compare them to the subjective judgment of the residents. Our main goal was to answer how the changes of the indicator groups in the indicator system and their totality are perceived by the residents.

Keywords: settlement development, complex indicator system, residential satisfaction, Gyöngyös

Introduction

There is a lot of research in the literature on the delimitation of underdeveloped settlements (Faluvégi, 1995; Péntes, 2015; Harcsa, 2015), but there is no complete agreement on the methodology used or the number and composition of indicators included in the studies (Papp et al., 2017). The possibility of measuring the development of settlements and regions, evaluating and utilizing the obtained results has been occupying professionals for a long time. According to Harcsa (2014), in order to ensure complexity, it is important to include as many indicators of development as possible in the complex index. However, to some extent, the method suggests that development is a consistent phenomenon, it assumes that in each of the indicators / components considered there are more or less similar differences between the settlements in the ranking (Fertő and Varga, 2014). It is important to note that certain components may eliminate the effect of each other or, amplifying each other's effect, generate much larger differences than real (Garau and Pavan, 2018).

Comparing cities using indicators that represent different aspects of urban life is only possible with a well-structured set system. If several indicators are added to achieve a single index, there is uncertainty and interpretation of the obtained results can be difficult (Petrova-Antonova and Minkov, 2020). Similar effects can be achieved using larger, non-aggregated indicators, therefore, the definition of an appropriate small number of relevant indicators is essential (Valtenbergs et al., 2013).

According to some international examples, Mavrič and Bobek (2015) classifies cities on the basis of 12 performance indicators in a Glasgow case study. Among the indicators of the development of the central urban area, Nițulescu (2000) uses 11. The World Bank urban development indicators include:

1. the proportion of the urban population with access to better health services,
2. the proportion of the urban population with access to water resources,
3. the number of vehicles per 1,000 inhabitants,
4. the number of passenger cars per 1,000 inhabitants,

5. PM10 emissions (micrograms/m³),
6. poverty rate,
7. fuel prices,
8. per capita fuel consumption,
9. urban population.

The research results of Rodrigues and Franco (2019) allow construction of a Composite Index for Sustainability supported by multivariate statistical techniques (Exploratory Factor Analysis and Principal Component Analysis). The result shows that the dimension of urban sustainability in the 308 Portuguese cities/towns is threefold: economic, social, and environmental.

Presenting Hungarian examples, Molnár (2002) used the method of cluster analysis to rank the settlements on the basis of the development-underdevelopment concept pair. Its results showed that the ranking is similar to the current official results. In Hungary, the official legislation on the delimitation of disadvantaged areas and settlements is considered to be the official methodology. This is the National Assembly resolution No. 105/2015. (IV. 23.) on the classification of beneficiary settlements and the system of conditions for classification, which examines and delimits the settlements with the lowest indicators from a socio-economic and infrastructural point of view (Figure 1).

Quality of life and life satisfaction are topics that are currently receiving a lot of attention both in the European Union and worldwide (Abdallah et al., 2013). There are several approaches that use both qualitative and quantitative methods to determine these phenomena. Historically, quality of life has been measured solely by economic indicators (Hicks and Streeten, 1979). However, it is indisputable that other factors influence people's life satisfaction, which is recorded by data based on a subjective survey. The objective side of judging the development of a settlement is given by the set of human living conditions, while the subjective side is formed by personal evaluations and the feelings attached to them (Havasi, 2009). An indispensable complement to objective studies is the subjective indicators of society's quality of life, due to shortcomings in economic and social indicators. Subjective judgment can provide external control over economic indicators and can be a corrective factor (Diener et al., 2009). The advantage of objective data is that they are easy to obtain and cover a wider range, in terms of population and area.

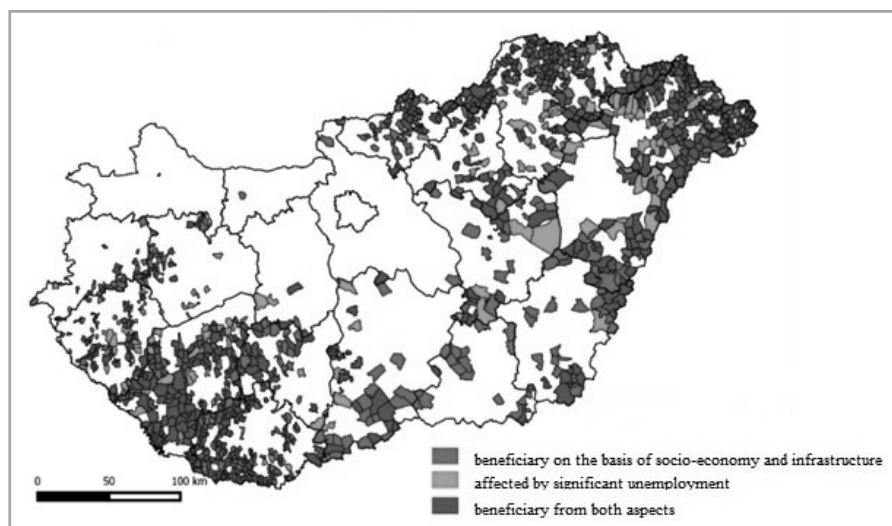


Figure 1 The beneficiary settlements according to the National Assembly resolution No. 105/2015. (IV. 23.)
Source: Papp, 2018

modified by the database available to us, we focused on assessing the development of the city of Gyöngyös. In addition, in order to assess subjective development, we conducted a questionnaire survey to compare objective and subjective results. The results of resident questionnaire surveys can help urban area leaders identify and prioritise the features of the city that need attention and resources to increase resident satisfaction. The information generated in this way can be used to build the loyalty of existing residents and to promote the settlement of new residents. Local government leaders can highlight key drivers of satisfaction when communicating the attractiveness and identity of the settlement to stakeholders.

Material and methods

For the objective measurement of the development of the city, a complex system of indicators is used, which we compared with data at the national level. For the analysis, the indicators listed in Annex 3 of the National Assembly resolution No. 105/2015. (IV. 23.) on the classification of beneficiary settlements were used. However, as not all data were available at the settlement level, there were indicators that

Subjective indicators are usually obtained via a questionnaire using a subjective satisfaction scale. Subjective indicators are often criticized for being incomparable or incomprehensible and difficult to monitor (Diener et al., 1997). According to Kahneman and Krueger (2006), the main problem in measuring subjective satisfaction is that its results are partly determined by the

respondent's current mood and memory, as well as the direct context. Macků et al (2020) use the multiple fuzzy linear regression model in their research to explain the relationship between subjective life satisfaction and selected objective indicators used to assess quality of life.

In our study, based on the indicators of the Government Decree in force in Hungary,

Table 1 Indicators used for the objective development study

Indicators		Database
1. Indicator group: Social and demographic situation		
I.1.	urbanity (population density per capita/km ²)	HCSO
I.2.	mortality rate (the number of deaths per 1,000 inhabitants) (‰)	HCSO
I.3.	average monthly number of recipients of regular child protection benefits per 1,000 permanent residents (persons)	HCSO
I.4.	rejuvenation index (percentage of residents younger than 15 to those over 60) (%)	HCSO
2. Indicator group: Housing and living conditions		
II.1.	proportion of dwellings built during the last five years out of the stock of dwellings at the end of the period (%)	HCSO
II.2.	average annual price per square meter of residential real estate (HUF)	www.ingatlanet.hu
II.3.	number of passenger cars operated by natural persons per 1,000 inhabitants (pcs)	HCSO
3. Indicator group: Local economy and labor market		
III.1.	total net income per capita (HUF)	RDSPIS
III.2.	number of registered unemployed per 100 working-age population (persons)	RDSPIS
III.3.	proportion of registered unemployed under 25 (%)	RDSPIS
III.4.	number of active enterprises per 1,000 inhabitants (‰)	HCSO
4. Indicator group: Infrastructure and environment		
IV.1.	proportion of dwellings connected to the public drinking water supply network (%)	HCSO
IV.2.	number of road traffic accidents with personal injuries per 1,000 inhabitants (case)	HCSO
IV.3.	proportion of dwellings connected to the cable television network (%)	HCSO
IV.4.	number of broadband internet subscribers per 1,000 inhabitants (pcs)	HCSO

Source: own compilation, 2020

were taken out and supplemented with other indicators that fit each indicator group. We originally used 19 indicators in our indicator system, however, the results showed in the first round that 4 indicators had outliers, so they were excluded from further examination due to their distortion effect: migration difference per 1,000 inhabitants (persons); the number of nursery school places per 10,000 permanent residents aged 0–2 (pcs); number of cultural events per 1,000 inhabitants (pcs); proportion of dwellings connected to the public sewer network (%). After that we continued to work with 15 indicators to evaluate the results (Table 1). The Regional Statistics of the Dissemination Database of the Hungarian Central Statistics Office (HCSO) and the database of the National Regional Development and Spatial Planning Information System (RDSPIS) were also applied to compile municipal indicators.

The period of the study was 2010–2018, in the case of both Hungary and Gyöngyös we calculated the percentage change of each indicator. After that we averaged group indicator and finally calculated an average out of the four group averages which shows the total percentage on average and the direction in which the two areas have changed over the past 8 years. However, for those indicators that have a negative effect on the development of a region, we used the opposite sign of the obtained result. The following indicators are concerned in it: mortality rate (the number of deaths per 1,000 inhabitants), ‰; average monthly number of recipients of regular child protection benefits per 1,000 permanent residents (persons); number of registered unemployed per 100 working-age population (persons); proportion of registered unemployed under 25 (%); number of road traffic accidents with personal injuries per 1,000 inhabitants (case).

To examine the subjective assessment of the development of the city, we prepared a questionnaire. In addition to answering basic demographic questions, we asked to evaluate the changes in the settlement over the past eight years on the Likert scale ranging from 1 to 5. We have adjusted each aspect to be evaluated, if possible, to the variables included in our indicator system in order to be comparable. The questionnaire was conducted online between December 2019 and January 2020. The sample size was 200 people.

Regarding the demographic characteristics of the respondents to the questionnaire survey, it can be said that women were over-represented in the sample with a share of 74%, only 52 people out of men filled in the questionnaire. Based on the age distribution, about a half of the sample (52%) represented the 31–50 age group, 21% of the respondents were between 18 and 30 years old, and the proportion of those over 50 years of age was 27% among the respondents. Examined by education, the vast majority of respondents (58%) have at least a secondary education. The reliability of the answers is enhanced by the fact that the majority of respondents (66%) are indigenous, so their opinions are significantly emphasized within the sample.

Results and discussion

The development of the city in an objective approach

Based on the two examined dates (2010, 2018), we first analysed the development of Gyöngyös' from the aspects of the demographic and social dimension (Indicator group 1). The basis of the comparison, as in the case of further analyses, was the average value of Hungary. The first indicator of the dimension, the degree of urbanity, was expressed by population density. The presence of people fundamentally influences the possibility of interactions between them (including those of an economic nature) as well as the size and concentration of the consumer market. Population change in itself can be considered an important indicator that summarizes the changes that have taken place in the city and points out how much population retention power or attraction it has. Since the extent of the studied spatial units did not change, we focused on the issue of population. In the case of Gyöngyös, the rate of population decline was more than four times the national average (Table 2).

As migration loss in the city has been significant for decades and has mainly affected younger age groups, its effects are also strongly reflected in other demographic phenomena, such as aging, which continued between 2010 and 2018. As a consequence of the aging, due to the large scale presence of the elderly population, the increase in the value of the mortality rate was also significantly higher than the national average. Thus, based on some quantitative parameters, we were able to observe clearly unfavourable phenomena in Gyöngyös, which are not unique among small-medium-sized cities with similar characteristics. At the same time, it is important to point out that unfavourable demographic changes can also negatively affect other types of measures of territorial inequality.

Among the predefined indicators, we were able to point out the change in the social situation on the basis of the average monthly number of regular child protection benefits per 1,000 permanent residents. For this indicator, although the city's displacement was more favourable over the eight-year period under review, it should be recalled that the city's population has declined, including under the age of 15, which strongly distorts the result. Therefore, this indicator shows demographic changes in the city at least as unfavourable, as the declining extent of this social problem.

Based on the population decline observed both nationally and in the city, we could assume in advance that there is less interest in buying and building real estate. However, due to unequal territorial development and migratory anomalies, a particularly lively real estate market can be observed in some areas (especially in the capital agglomeration), the radiative effect of which can also be well measured in nearby and similar settlements. In addition, we must not forget that the purchase and rental of residential real estate is one of the most popular forms of investment in Hungary.

Table 2 Changes of the objective indicator group of the social and demographic situation between 2010 and 2018 (%)

Indicators		Gyöngyös	Hungary
I.1.	urbanity (population density per capita/km ²)	-9.73	-2.36
I.2.	mortality rate (the number of deaths per 1,000 inhabitants), ‰	-23.57	-2.88
I.3.	average monthly number of recipients of regular child protection benefits per 1,000 permanent residents, persons	55.28	48.97
I.4.	rejuvenation index (percentage of residents younger than 15 to those over 60), %	-18.83	-13.26
The average of indicator group 1		0.53	5.08

Source: own calculation, 2020

Even if the demand for real estate declines during certain periods, property owners do not want to make a loss, so demographic trends do not always have a direct impact on their prices. The first two indicators of Indicator group 2 point to the development of the housing market. The number of dwellings built decreased significantly both nationally and in Gyöngyös in the examined time intervals, however, the extent of this was somewhat smaller in Gyöngyös (Table 3). However, in the rise in housing prices, the city was unable to approach the nationally observed processes generated by the metropolitan agglomeration, the main migration destination. Due to differences in house prices and relative proximity, city workers prefer commuting rather than permanent relocation.

The third indicator of the indicator group measured the change in the number of passenger cars operated by natural persons, which developed very similarly in the two study area units. It is important to note that the quality side (age, price, performance, environmental parameters, etc.) of the transformation of the car fleet could not be pointed out by this indicator.

The objective of the indicator group 3 is to identify the main economic and labour market processes. Among the four indicators used there was the development of per capita income, which can be considered the most frequently used indicator at the settlement level in measuring territorial inequalities. In this case, the city lagged slightly behind the positive trends observed nationwide. Based on the major industrial investments made in the examined years (new factories and factory expansions), we could expect better data in the city than in the country. However, if we repeatedly refer back to the declining population and also to the unfavourable change in the

proportion of inactive and active age groups, we will soon find an explanation for the smaller-than-expected difference in incomes (Table 4).

The number of registered unemployed decreased faster than average in Gyöngyös due to the absorption capacity of new investments and site expansions. This was especially true for the highly treated under-25s, who also tend to be more prone to commuting and emigrating. The city and its region have been characterized for decades by the fact that larger enterprises have played a larger role than average in the employment of the population, while entrepreneurial activity has lagged behind the national average. The number of operating enterprises per 1,000 inhabitants did not increase in the period under review to the same extent as was observed nationally. At the same time, the 3rd of the four groups of indicators was the one in which the city of Gyöngyös had, albeit slightly, better value than the national average.

The fourth group of indicators characterizes the infrastructural and environmental dimensions, where the former can have a very significant impact on the latter dimension (Table 5). Since we can also point out the dynamic changes only in the analysis of this dimension with the applied methodology, it is important to note that in the case of main line utilities, Gyöngyös has a better-than-average development level as a result of its previous development trajectory. This fact can significantly limit the number of properties where it may still be necessary to introduce individual utilities and expand the network as a whole.

Of the three indicators showing the infrastructural provision of dwellings, the changes in the city were more favourable than in the country on the basis of the proportion of dwellings connected to the public drinking

Table 3 Changes of the objective indicator group of housing and living conditions between 2010 and 2018 (%)

Indicators		Gyöngyös	Hungary
II.1.	proportion of dwellings built during the last five years out of the stock of dwellings at the end of the period (%)	-57.57	-64.35
II.2.	average annual price per square meter of residential real estate (HUF)	7.54	49.21
II.3.	number of passenger cars operated by natural persons per 1,000 inhabitants (pcs)	23.60	23.45
The average of indicator group 2		-6.61	2.08

Source: own calculation, 2020

Table 4 Changes of the objective indicator group of the local economy and the labour market between 2010 and 2018 (%)

Indicators		Gyöngyös	Hungary
III.1.	total net income per capita (HUF)	77.29	80.11
III.2.	number of registered unemployed per 100 working-age population (persons)	60.62	55.20
III.3.	proportion of registered unemployed under 25 (%)	9.29	7.11
III.4.	number of active enterprises per 1,000 inhabitants (‰)	12.54	15.67
The average of indicator group 3		39.94	39.52

Source: own calculation, 2020

Table 5 Changes of the objective indicator group of infrastructure and environment between 2010 and 2018 (%)

Indicators		Gyöngyös	Hungary
IV.1.	proportion of dwellings connected to the public drinking water supply network (%)	3.29	0.43
IV.2.	number of road traffic accidents with personal injuries per 1,000 inhabitants (case)	-63.86	-6.45
IV.3.	number of road traffic accidents with personal injuries per 1,000 inhabitants (case)	12.61	17.61
IV.4.	number of broadband internet subscribers per 1,000 inhabitants (pcs)	37.28	32.23
The average of indicator group 4		-2.14	8.67

Source: own calculation, 2020

water supply network and the number of broadband Internet subscribers per 1,000 inhabitants. The proportion of dwellings connected to the cable television network increased to a lesser extent than in the country, however, it can be said that there were no major shortcomings in this area in the households of Gyöngyös.

In addition to the proper development of the road network, the number of road traffic accidents involving personal injuries per 1,000 inhabitants also characterizes the dangers to which the local population involved in road traffic is exposed in everyday life. In this respect, the changes in Gyöngyös can be described as particularly unfavourable, which, however, is not only affected by local conditions. This is also due to the fact that the main road serving the exploration of the Mátra and crossing the administrative area of Gyöngyös is one of the favourite sections of motorcyclists, where they also arrive from remote parts of the country. The number of accidents is highest among those who use public roads for sporty motorcycling.

The development of the city in a subjective approach

The subjective research results obtained on the basis of the questionnaire survey are discussed in the same order as the objective developmental dimensions based on statistical data series. In accordance with the objective indicators, the population painted an unfavourable picture of the demographic situation of the city, i.e. they also perceive well the decrease of the population and the emigration of young people. Respondents rated higher average scores for childbirth compared to general demographic trends. The situation of the institutional system providing care for children was assessed even better, however, even this score can only be called a strong average on the Likert scale from 1 to 5 (Table 6).

Regarding housing and living conditions, we can state that the population characterizes the construction of new dwellings as sufficient, but not good, and the housing prices were judged rather unfavourably. As for the latter issue, however, it does not matter, of course, whether someone is approaching this topic as an investor or as a buyer of a first home. Public services received average response values below 3 on a scale of 1 to 5. Slightly to the right, respondents rated the city's store network and available sports facilities. The former is positively influenced by the relatively extensive catchment area of the city, while the latter is positively influenced by the proximity of the Mátra Mountains with many outdoor sports events. (Table 7).

As we saw in the case of the values in the previous two tables, the respondents were quite critical of the situation in the city, so we obtained average values above 3 only in a few cases in the examined categories. This was not really the case when evaluating the local economy and labour market either, the value of the answers typically ranged between 2.5 and 3. The education and training background and the business environment were assessed positively by the respondents rather than the quality side of the labour supply and the level of disposable income (Table 8). The quality of adult education has been ranked behind full-time school-based education, which may raise questions about the extent to which this sector is able to respond to local labour market needs. At the same time, in connection with the higher quality education of children and young people, as well as the high emigration rate, the question may arise as to how much of the knowledge acquired there is utilized in Gyöngyös and its region.

Regarding the assessment of the infrastructure and the environment, we can best emphasize that the construction of the individual utilities can

Table 6 Changes of the subjective indicator group of social and demographic situation between 2010 and 2018 (average of the Likert-scale from 1 to 5)

Indicators	Gyöngyös
I.1. population retention force	2.55
I.2. rejuvenation of the settlement	2.52
I.3. social assistance provided by the local government	2.72
I.4. the proportion of the population with high social status	2.64
I.5. willingness to have children	2.95
I.6. nursery school and kindergarten places	3.15
The average of indicator group 1	2.76

Source: own calculation, 2020 (N = 200)

Table 7 Changes of the subjective indicator group of housing and living conditions between 2010 and 2018 (average of the Likert-scale from 1 to 5)

Indicators	Gyöngyös
II.1. construction of new dwellings	3.04
II.2. favourable average house prices	2.30
II.3. public security	2.55
II.4. public health care	2.49
II.5. public administration	2.97
II.6. shopping facility	3.47
II.7. entertainment facility	2.49
II.8. sporting facility	3.13
The average of indicator group 2	2.81

Source: own calculation, 2020 (N = 200)

Table 8 Changes of the subjective indicator group of the local economy and the labour market between 2010 and 2018 (average of the Likert-scale from 1 to 5)

Indicators		Gyöngyös
III.1.	business environment	2.97
III.2.	workplaces of low-qualification	2.57
III.3.	average income	2.54
III.4.	regular day education	3.01
III.5.	adult education	2.83
The average of indicator group 3		2.78

Source: own calculation, 2020 (N = 200)

Table 9 Changes of the infrastructure and environment subjective indicator group between 2010 and 2018 (average of the Likert-scale from 1 to 5)

Indicators		Gyöngyös
IV.1.	establishment of playgrounds and parks	3.27
IV.2.	the cleanliness of public areas	2.46
IV.3.	internet supply	3.49
IV.4.	the state of public roads	1.90
IV.5.	the safety and regulation of vehicular traffic	2.33
IV.6.	the expansion of the sewage system	3.37
IV.7.	waste removal	3.23
The average of indicator group 4		2.86

Source: own calculation, 2020 (N = 200)

Table 10 Objective and subjective results of the dynamic development of Gyöngyös (2010-2018)

Indicators	Objective (deviation in %)	Objective assessment of development	Subjective (average on a Likert-scale)	Subjective assessment of development
Indicator group 1	0.53	stagnant	2.76	stagnant
Indicator group 2	-6.61	declining	2.81	stagnant
Indicator group 3	39.94	developing in a moderate way	2.78	stagnant
Indicator group 4	-2.14	declining	2.86	stagnant
Complex development	13.86	developing in a moderate way	2.80	stagnant

Source: own calculation, 2020

be said to be good on the basis of the average standard of the answers, except for the condition of the public roads (Table 9). The poor condition of the roads due to the increasing motorization is not a unique phenomenon in the city, which, moreover, is quite conspicuous for all road users. Rather, the evaluation showed that, despite the relatively well-established background, the cleanliness of public spaces, the transport morale, is not adequate, which depends not only on their maintainers, but also on the people who use them, who throw away rubbish or do not drive in accordance with the regulations.

Comparison of objective and subjective methodology

To conclude our study, we attempted to compare the results of evaluations based on the objective and subjective methodology of developmental analyses. Based on the average score of the responses of the local residents, it can be stated that the changes in the city are perceived as mostly stagnant from the aspect of development. From a methodological aspect, the question may arise as to how well we were able to obtain differentiated images of the studied dimensions using the Likert scale from 1 to 5. However, this is mainly due to the fact that the otherwise different average values obtained

for each indicator offset each other. The picture determined on the basis of objective indicators can be considered much more diverse, as we can discover declining and slightly developing categories in addition to the stagnant ones (Table 10). It is true that the decline in indicator groups 2 and 4 is also due to an extremely poor indicator. More specifically, they can be explained by the low number of newly built homes and the high number of road accidents involving personal injury. At the same time, the most significant progress was objectively measurable in the case of economic indicators, which we could see less in connection with the answers to our questionnaire.

Conclusions

In our study, we also highlighted the dynamics of the development of the city of Gyöngyös with the methodology used in the practice of the Hungarian development policy, which measures development on the basis of objective aspects, and with the subjective approach based on the survey of the local population. The nationally declining population can be observed more strongly in Gyöngyös, which is projected onto many other socio-

economic processes in the city and calls into question the sustainability and developability of certain functions from the social point of view. This can only be partially offset by the fact that the city plays a central role in the life of a district of 70–80 thousand people, which is well perceptible in the development of the service sector. The number one destination for economic development investments is still the city within the micro-region. Of course, the basis of the comparison is not always sought by the locals within the district, but by the neighbouring cities or even the cities of the capital agglomeration, where Gyöngyös has strong competitors.

Unfavourable demographic trends have already significantly weakened some sectors of the city's real estate market and service sector. The shrinking population and declining market demand can be seen in a number of indicators today, which is difficult to reverse with the progress made in recent years in the area of economic development. Gyöngyös' economic and social sustainability was significantly undermined by the fact that the decline of the diversified economic sector built in the socialist era was followed by larger-scale foreign capital investment only after a significant delay, and the intermediate period weakened the city's position. Further developments can be based on halting unfavourable demographic processes, which can be achieved by holding and attracting high-status population.

In the short term, it is advisable to focus on the development of features that significantly degrade the overall image of the city and require relatively less effort (e.g., cleanliness of public spaces). The objective and subjective methodological approach used in the research could be applied effectively. The average calculation used in the framework of the objective methodology is quite sensitive to the extreme values of each indicator. Because of this, in some cases we got a worse than real picture of the city. However, these extreme values can point to the most urgent tasks for the professionals.

Compared to other countries in East-Central Europe, such as neighbouring Slovakia, Hungary also has a distinctive urban structure, with a relatively high proportion of rural population and a dominance of small towns. In our opinion, the method used by us would be useful within the national as well as international comparable city sample. Due to the simplicity of the method, international comparisons depend only on the availability of data at the municipality level.

References

- Abdallah, S. – Stoll, L. – Eiffe, F. 2013. Quality of Life in Europe: Subjective Well-being. Publications Office of the European Union, 2013, 124 p.
- Diener, E. – Suh, E. 1997. Measuring quality of life: Economic, social, and subjective indicators. In *Soc. Indic. Res.*, 1997, no. 40, pp. 189–216.
- Diener, E. – Lucas, R. E. – Schimmack, U. – Helliwell, J. F. 2009. *Well-Being for Public Policy*. Oxford: Oxford University Press, 2009, 245 p.
- Faluvégi, A. 1995. Az elmaradott térségek lehatárolásának módszerei. In *Statiztikai Szemle*, vol. 73, 1995, no. 7, pp. 571–590.
- Fertő, I. – Varga, Á. 2014. A jóllét területi különbségei Magyarországon: egy lehetséges térségfejlettségi index alkalmazása. In *Statiztikai Szemle*, vol. 92, 2014, no. 10, pp. 874–891.
- Garau, C. – Pavan, V. M. 2018. Evaluating Urban Quality: Indicators and Assessment Tools for Smart Sustainable Cities. In *Sustainability*, vol. 10, 2018, no. 3, pp. 575.
- Harcza, I. 2014. A települések fejlettségét mérő mutatószámok. Műhelytanulmányok. Központi Statisztikai Hivatal, 2014, pp. 5–93.
- Harcza, I. 2015. A területi fejlettség és egyenlőtlenségek lehetséges értelmezései – kritikai értékelés és kutatási eredmények II. In *Statiztikai Szemle*, vol. 93, 2015, no. 6, pp. 521–551.
- Havasi, V. 2009. Az értékrend és az életminőség összefüggései. Doktori értekezés, Debreceni Egyetem, Közgazdaságtudományi Doktori Iskola, 2009.
- Hicks, N. – Streeten, P. 1979. Indicators of Development: The Search for a Basic Needs Yardstick. In *World Development*, 1979, no. 7, pp. 567–580.
- Kahneman, D. – Krueger, A. B. 2006. Developments in the Measurement of Subjective Well-Being. In *J. Econ. Perspect.*, 2006, no. 20, pp. 3–24.
- Macků, K. – Čaha, J. – Pászto, V. – Tuček, P. 2020. Subjective or Objective? How Objective Measures Relate to Subjective Life Satisfaction in Europe. In *ISPRS Int. J. Geo-Inf.*, 2020, pp. 320.
- Mavrič, J. – Vito, B. 2015. Measuring Urban Development and City Performance. In: Bobek, V. (Ed.) *Perspectives on Business and Management*, IntechOpen, 2015, pp. 71–99.
- Molnár, L. 2002. A települési szintű relatív fejlettség meghatározása. In *Közgazdasági Szemle*, vol. 49, 2002, no. 1, pp. 74–90.
- Nițulescu, D. C. 2000. Indicatori comunitari ai dezvoltării urbane. In *Calitatea vieții*, vol. 7, 2000, no. 1–4, pp. 71–77.
- Papp, S. – Nagy, Gy. – Boros, L. 2017. A kedvezményezett települések objektív életminőség alapján történő lehatárolási lehetőségei. In *Területi Statisztika*, vol. 57, 2017, no. 6, pp. 639–664. DOI: 10.15196/TS570603
- Papp, S. 2018. A hátrányos helyzetű területek lehatárolásának lehetőségei. In: *Eötödöt VI. Az Eötvös József Collegium és az Eötvös Loránd Kollégium VI. közös konferenciáján elhangzott előadások*. SZTE Eötvös Loránd Kollégium, Szeged, 2018, pp. 149–160. ISBN 978-963-306-592-1.
- Petrova-Antonova, D. – Minkov, M. 2020. Evaluation of Cities' Smartness through Multidimensional Platform of Performance Indicators. In: *Proceedings of the 12th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management – KMIS, 2020*, pp. 140–146. DOI: 10.5220/0010024401400146
- Pénzes, J. 2015. A kedvezményezett térségek lehatárolásának aktuális kérdései. In *Területi Statisztika*, vol. 55, 2015, no. 3, pp. 206–232.
- Rodrigues, M. – Franco, M. 2019. Measuring the urban sustainable development in cities through a Composite Index: The case of Portugal. In *Sustainable Development*, 2019. DOI: 10.1002/sd.2005
- Valtenbergs, V. – González, A. – Piziks, R. 2013. Selecting Indicators for Sustainable Development of Small Towns: The Case of Valmiera Municipality. In *Procedia Computer Science*, 2013, no. 26, pp. 21–32. <https://doi.org/10.1016/j.procs.2013.12.004>

Contact address

Antónia Szűcs, Hungarian University of Agriculture and Life Sciences, Mátrai út 36. 3200 Gyöngyös, Hungary, e-mail: Szucs.Antonia@uni-mate.hu

