

# Analysis of life quality development in the administrative districts of South Moravia

## *Analýza vývoje kvality života mezi okresy Jihomoravského kraje*

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**Abstract:** The equitable regional development and mitigation of disparities among the individual regions are main objectives of regional policy not only in the Czech Republic but in the whole European Union. The paper presents an analysis of life quality disparities among the administrative districts of the South-Moravian region (Jihomoravský kraj): Blansko, Brno-City, Brno-Province, Břeclav, Hodonín, Vyškov and Znojmo. The region of South Moravia belongs to the regions with a significant economic potential. However, not all districts contribute to this potential equally, the reason being their size, population and life quality. Life quality is affected by the environmental, social and cultural resources and by the region's economic performance. It can be viewed from various aspects. The work is focused on the life quality indicators of social and cultural resources, which assess demographic development, age and intelligence structures, employment, unemployment and labour market, health care standard and civil amenities. The statistical analysis of the acquired data was made by using the methods of regression and correlation analyses and the cluster analysis.

**Key words:** region, regional disparity, life quality, social aspects, South Moravia, district

**Abstrakt:** Zabezpečení rovnoměrného rozvoje regionů a snižování disparit mezi jednotlivými regiony patří k hlavním cílům regionální politiky nejen v České republice, ale i v celé Evropské unii. Cílem příspěvku je analýza disparit v kvalitě života mezi okresy Jihomoravského kraje, a to okresy Blansko, Brno-město, Brno-venkov, Břeclav, Hodonín, Vyškov a Znojmo. Jihomoravský kraj patří v České republice k regionům s významným ekonomickým potenciálem. Ne všechny okresy však k tomu přispívají stejnou měrou. Je to dáno nejen jejich rozlohou a počtem obyvatel, ale také kvalitou života v regionu. Kvalita života je ovlivněna přírodními, sociálními a kulturními zdroji regionu i jeho ekonomickou výkonností. Kvalitu života lze posuzovat prostřednictvím různých indikátorů. Příspěvek se zaměřuje zejména na indikátory kvality života z pohledu sociálních a kulturních zdrojů. Posuzují demografický vývoj, věkovou strukturu obyvatelstva, nezaměstnanost a trh práce, úroveň zdravotní péče a občanskou vybavenost. Pro statistickou analýzu daného materiálu bylo použito metod regresní a korelační analýzy a shlukové analýzy.

**Klíčová slova:** region, disparita mezi regiony, kvalita života, sociální aspekty, Jihomoravský kraj, okres

Equable regional development and mitigation of disparities among the individual regions are the main objectives of regional policy not only in the Czech Republic but also in the whole European Union. A prerequisite for the establishment of suitable tools of the regional policy is the objectification of regional disparities at various levels.

The Act No 248/2000 Coll. on support to regional development provides the primary definition of region

in the Czech Republic. In the sense of this Act, region is defined as a territorial unit demarcated by the means of administrative boundaries of regions, districts, municipalities or association of municipalities.

Higher self-governing territorial units are in the Czech Republic denoted as regions. Regions include lower self-governing territorial units, which are districts. Districts further split into municipalities. For the purposes of the European statistics, districts rep-

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resent the NUTS 4 units and are further divided into municipalities as the lowest self-governing units.

The paper presents the results of the research design number WD-57-07-1 "Possibilities of disparity solution among chosen regions" that is solved with the support of the Ministry for Regional Development.

## MATERIAL AND METHODS

The paper aims at an analysis of disparities in life quality among the districts of the South-Moravian region (Jihomoravský kraj), which includes the districts of Blansko, Brno-City, Brno-Province, Břeclav, Hodonín, Vyškov and Znojmo. The region of South Moravia belongs into the group of regions with a significant economic potential. However, not all districts contribute to this potential to the same extent, the reason being not only their size and number of inhabitants but also the life quality in the region. Life quality is affected by natural, social and cultural resources of the region as well as by the region's economic performance (Collective of authors 2004). Life quality can be assessed by the means of various indicators. The paper focuses namely on the life quality indicators, which take into account the social and cultural resources (Živělová, Jánský 2007). The current standard and development of the selected life quality indicators were analyzed with the use of both primary and secondary coefficients. The attention was focused on demographic development, age structure of the population, labour market development, health care standard and civil amenities in the period 2002–2006. The statistical analysis of the concerned life quality data for the districts in the region of South Moravia was made by using the methods of regression and correlation analysis, cluster analysis, and methodological procedures of assessment published by Palát et al. (2007). Exploration of developmental dynamics in time series included also the assessment of changes in the values of the studied phenomena in time at the defined time intervals of the entire reference period, particularly the direction and rate of the changes. In the time series with a steady increase (decrease) and with an approximately uniform course, the *values of average growth coefficients* were derived as follows:

$$\bar{k} = \sqrt[n-1]{\frac{y_n}{y}}$$

After its multiplication by 100, we obtain the result in percent (*average growth rate*). After the deduction of 100 from this value, we obtain the *average rate of increase (decrease)*.

The districts of the South Moravian region were distributed into homogeneous groups with a similar life quality standard and development trends by using cluster analysis.

## RESULTS AND DISCUSSION

As to its size and population, the region of South Moravia occupies in the Czech Republic the fourth and the third place, respectively. It consists of 7 districts. The advantage of the region is its good traffic accessibility and strategic location on the crossing of the trans-European long-distance motorway and railway lines, which represent important arteries connecting Western Europe with the East, and Northern Europe with the South. In the national respect, the region of South Moravia is important by its economic performance. Gross domestic product per capita of the region is one of the highest among the Czech regions. The dominant sector is processing industry, also important is agriculture, developing sectors are building industry and trade including services.

Farmland occupies 60% of the region's area. Soil is the most important natural resource and at the same times the basic factor of production. South Moravia belongs to the regions with the developed agricultural production and a high share of arable land (83.2%). The districts with the highest percentage of arable land are Vyškov and Znojmo – both 91.4%. A greater part of non-agricultural land is in all districts occupied by forests that are most represented in the Blansko district.

Basic characteristics of the Czech Republic, the region of South Moravia and its districts for the year 2006 are presented in Table 1.

**District of Blansko** is one of the smaller administrative units in the South-Moravian Region. The Protected Landscape Area of Moravian Karst occurring in its territory is one of the most important karst areas in Central Europe. The Moravian Karst is a well-known tourist locality. The economy in the Blansko District is based on both industrial and agricultural production. A dominant position is that of engineering.

**District of Brno-City** is represented by the statutory town of Brno, which is the second largest city in the Czech Republic with nearly a third of the region's total population. Brno is one of the oldest industrial centres in Central Europe. It is a traditional business and social centre of South Moravia and a centre of trade fairs and congress tourism.

**District of Brno-Province** has retained its industrially agricultural character despite the recent

Table 1. Basic characteristics of South-Moravian districts

Region	Indicator				
	area in km <sup>2</sup>	number of municipalities	inhabitants	inhabitants per km <sup>2</sup>	share of urban population (%)
Czech Republic	78 867	6 249	10 266 646	130	70.3
South Moravia	7 196	673	1 132 563	157.4	62.7
Blansko	942	130	108 753	115.4	51.2
Brno-City	230	1	366 680	1 592.7	100.0
Brno-Province	1 238	162	175 151	141.5	36.1
Břeclav	1 174	70	123 194	105.0	50.0
Hodonín	1 088	81	156 951	144.5	47.0
Vyškov	889	81	87 443	98.4	48.5
Znojmo	1 637	148	114 392	69.9	41.2

Source: Czech Statistical Office

structural changes in the region's economy. Thanks to the favourable soil and climatic conditions, the local agricultural production has a long tradition and is focused on cereals, root crops, fruits, vegetables and viticulture.

**District of Břeclav** is important in the sense of its connection to the international communication network in both road and railway transport, which favourably affects the development of entrepreneurial activities. Raw material resources provide supplies of sand, limestone, and in the marginal parts of the district, there are oil and gas deposits.

**District of Hodonín** is characterized by the impact of the transformation processes, during which many of large industrial enterprises, that were in the past main employers for the local population, dissolved or disappeared. The changes reflected in a high unemployment rate, which did not improve even after the rise of chiefly small-size enterprises, be they in the industrial or agricultural sphere.

**District of Vyškov** is of industrially agricultural character. Employment of local population is greatly affected by a generally easy accessibility of Brno. The Vyškov district is characterized by the well-preserved environment with extensive forests.

**District of Znojmo** is one of the largest districts in the Czech Republic. In economic terms, it is an agro-industrial district. Similarly as in the whole Czech Republic, foreign capital entered many enterprises in the district's territory during the last ten years. Some uncompetitive businesses became extinct. The district of Znojmo features a high unemployment rate, which increases in winter when the interest in seasonal workers in agriculture, building industry and services is lower.

The social and cultural resources very closely relate to economic development in the region. A high level of social development is a precondition for economic growth and hence competitiveness of the concerned region. The monitoring of social and cultural resources is focused namely on human resources – both in the respect to demographic development, population's age structure, employment and labour market, and in the respect to civil amenities, access, technical infrastructure, etc.

Social development is conditioned by human potential, which can be measured by various indicators. Basic indicators include the number of inhabitants in the concerned region, population density measured by the number of inhabitants per 1 square km and the share of urban population in the total number of inhabitants in the region. The indicators are shown in Table 1. Basic characteristics of population in the region include the population age structure and the total population increase per 1 000 inhabitants.

Basic demographic data of the South-Moravian region and individual administrative districts are as a whole stable, with a certain movement in the concerned time series observed only in the number of inhabitants. The latest available statistical data indicate that the region's population as by December 31, 2006 was 1 140 534 residents. The development of the total population increase per 1000 inhabitants in the respective districts in the period 2002–2006 is illustrated in Figure 1. The total population increase is a sum of the natural population increase and the population increase by migration. The natural population increase is a difference between the number of live born children and the total number of deceased persons in the studied period in the con-

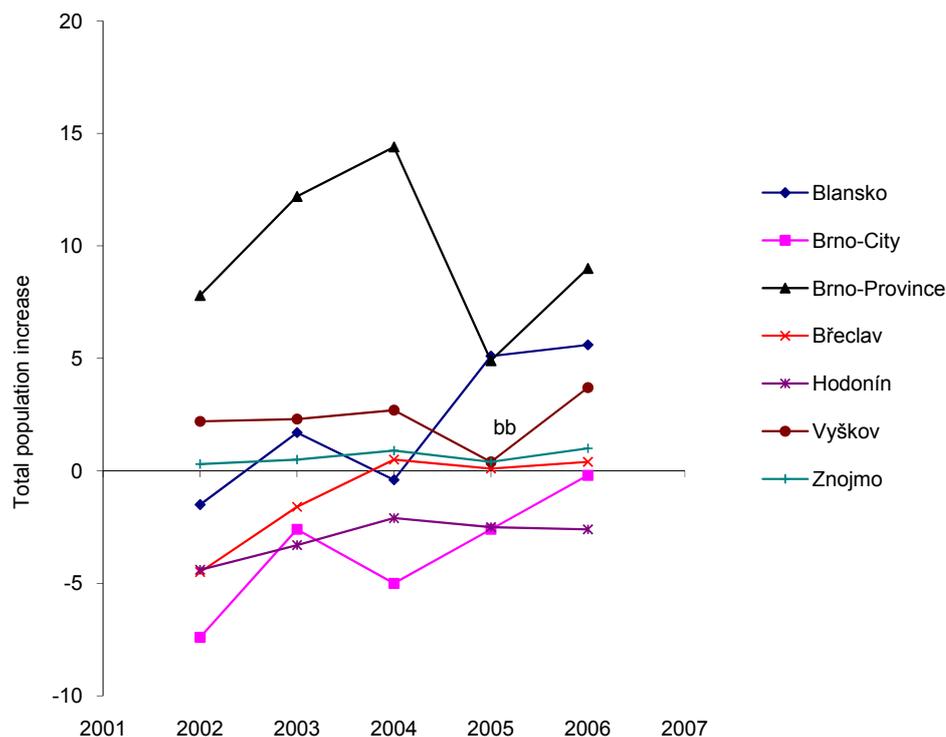


Figure 1. Total population increase per 1 000 inhabitants (in ‰) in the districts of South-Moravian region in the period 2002–2006

cerned area (Figure 2). The population increase by migration is understood as the domicile change across the boundary of the concerned territory (Figure 3). Unlike other districts of South Moravia, the district of Brno-Province shows a long-term population increase, particularly due to the migration increment. Although the total number of residents moving out of the district in 2006 amounted to 3 487, the number

of new immigrants was 4 813 – the migration balance thus reached 1 326 persons. An important share is represented by the immigrants from the district of Brno-City, who seek and use good conditions for building houses and apartments in the favourable environs of villages in the district of Brno-Province with a relatively good transport connection to Brno. The highest loss of population is recorded in the

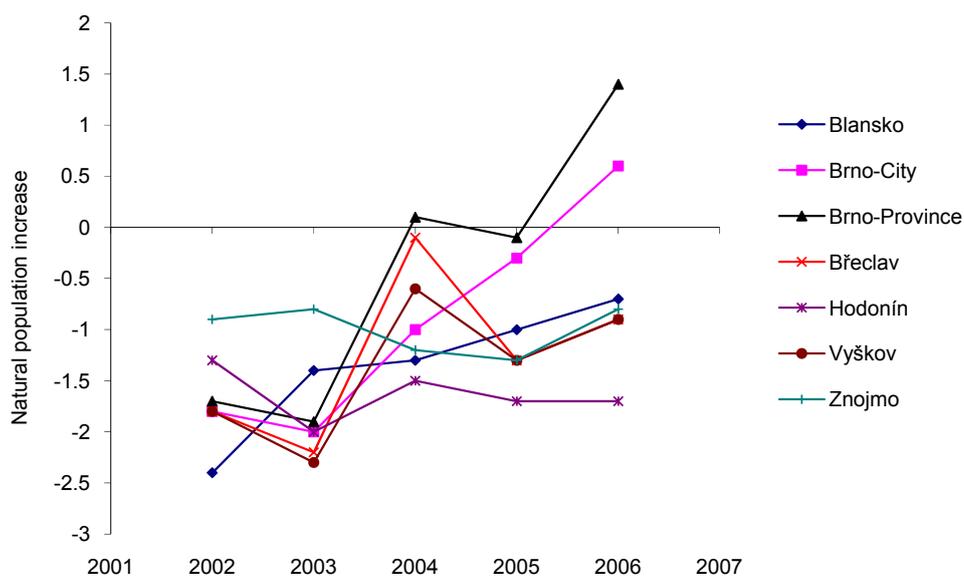


Figure 2. Natural population increase per 1 000 inhabitants (in ‰) in the districts of South-Moravian region in the period 2002–2006

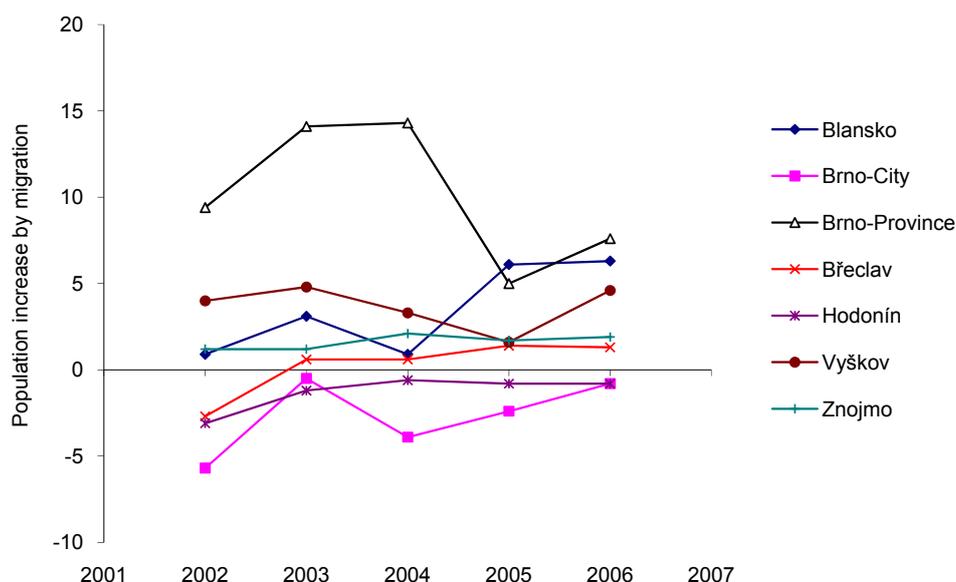


Figure 3. Population increase by migration per 1 000 inhabitants (in %) in the districts of South-Moravian region in the period 2002–2006

district of Hodonín. The decrease in this district is largely due to the natural loss of population.

Table 2 suggests that the development of the population age structure does not show any essential changes either in the South-Moravian region as a whole, or in the individual administrative districts. The highest average age in the monitored period was achieved in the district of Brno-City, namely 41.3 years with a growing trend. The district with the lowest average age was Znojmo with 38.9 years and a growing trend, too. Trend characteristics based on the regression and correlation analysis are not presented with respect to the limited size of the paper. However, the trend is characteristic of the whole Czech Republic, in which the 5-year national average is 39.8 years but the average age of Czech citizens in the last year of the studied time series reached 40.2 years.

An important indicator of regional disparities is the development of labour market. Coefficients of unemployment represent one of the main characteristics, which is assessed by the indicators of the registered unemployment rate in %, the total number of job applicants, the number of vacancies in the region, and the number of applicants per 1 vacancy.

The development of the registered unemployment rate can be seen from Figure 4. Average rates of the increase/decrease of studied characteristics are presented in Table 3.

The registered unemployment rate reached in the last year of the concerned time series in the district of Blansko the level 6.67%, which is the lowest rate of unemployment in the South-Moravian region after the Brno-Province with 5.71%. The situation issues from the easy reach of enterprises in Brno by

Table 2. The average age of inhabitants in the region of South Moravia (in years)

District	2002	2003	2004	2005	2006
South-Moravian region	39.5	39.8	40.0	40.3	40.5
Blansko	39.1	39.4	39.7	40.0	40.2
Brno-City	40.9	41.1	41.4	41.5	41.8
Brno-Province	39.4	39.6	39.7	39.9	40.0
Břeclav	38.5	38.8	39.1	39.4	39.7
Hodonín	38.6	39.0	39.3	39.6	39.9
Vyškov	39.0	39.2	39.4	39.6	39.8
Znojmo	38.3	38.6	38.9	39.2	39.5

Source: Czech Statistical Office

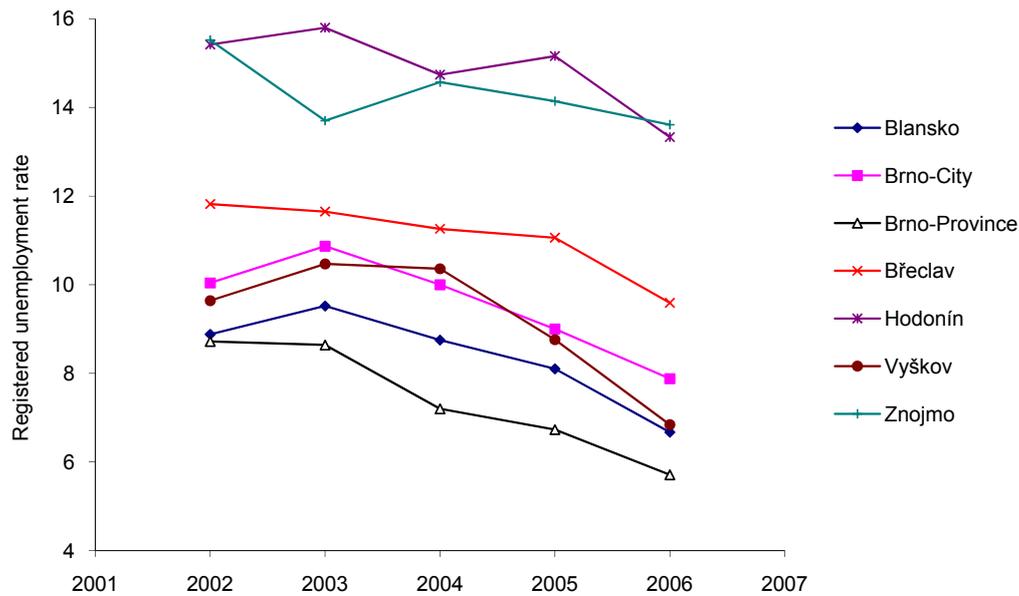


Figure 4. Rate of registered unemployment (in %) in the districts of South-Moravian region in the period 2002–2006

public and private transport. The district of Břeclav has been long recording a relatively high rate of registered unemployment, which amounted to 9.59% as by December 31, 2006. The disappearance or transformation of large industrial enterprises that

were in the past the main employers in the district of Hodonín fully reflected in the high unemployment rate of local population, which did not improve even after the coming to existence of smaller businesses – be they of industrial or agricultural character. The

Table 3. Development of selected unemployment indicators in 2002–2006

District	Variation coefficient	Average growth coefficient	Average increase/decrease rate
<b>Total number of applicants for job</b>			
South-Moravian region	6.27	0.9647	–3.53
Blansko	9.34	0.9474	–5.26
Brno-City	7.31	0.9626	–3.74
Brno-Province	7.33	0.9548	–4.52
Břeclav	5.60	0.9687	–3.13
Hodonín	5.60	0.9708	–2.92
Vyškov	11.80	0.9420	–5.80
Znojmo	3.98	0.9842	–1.58
<b>Number of applicants per 1 vacancy</b>			
South-Moravian region			
Blansko	40.27	0.7401	–25.99
Brno-City	49.72	0.7274	–27.26
Brno-Province	47.79	0.7227	–27.73
Břeclav	39.00	0.7268	–27.32
Hodonín	26.23	0.8330	–16.70
Vyškov	45.54	0.6481	–35.19
Znojmo	40.27	0.7127	–28.73

Source: own calculations

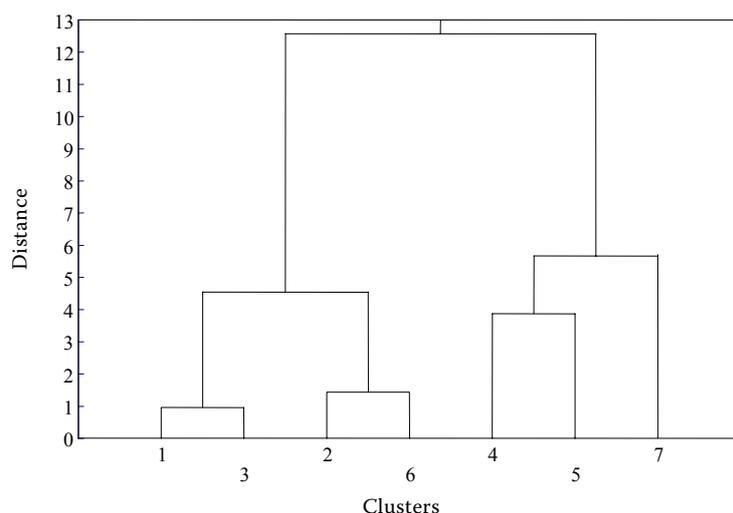


Figure 5. Dendrograph constructed from the registered unemployment rates and numbers of applicants per 1 vacancy in the districts of South-Moravian region in 2006. (1 = Blansko, 2 = Brno-City, 3 = Brno-Province, 4 = Břeclav, 5 = Hodonín, 6 = Vyškov, 7 = Znojmo)

rate of unemployment in this district reached 13.33% at the end of the year 2006 and it is one of the highest in the Czech Republic in the long-term comparison of administrative districts. The registered unemployment rate in the district of Znojmo (13.61%) is the highest in the South-Moravian region.

The national average in the Czech Republic was 7.67% in the same year. However, the coefficient exhibits a very positive development because all districts report a significant decrease, which is expected to continue in the coming period. As by December 31, 2007, the rate of in the same year registered unemployment dropped to 5.98% in the Czech Republic and the decrease was recorded by all regions. The South-Moravian region recorded the registered unemployment rate of 6.92% in the concerned year, which

is a decrease by nearly 2% as compared with the year 2006. The value is further decreasing in 2008 in all administrative districts of which the highest decrease occurs in the district of Břeclav and namely in the Znojmo district, which, however, still belongs among the districts with the highest unemployment rate. The above mentioned favourable development in the labour market fully corresponds with the calculated growth rates presented in Table 3.

Districts with a similar development in terms of unemployment were disclosed by cluster analysis using the indicators of the registered unemployment rate and the number of applicants per 1 vacancy. The graphical illustration of the results is apparent from the dendrograph presented in Figure 5. The analysis revealed that similar signs of development in unem-

Table 4. Selected health care indicators in the districts of South-Moravian Region (2006)

Region	Physicians		Inhabitants per 1 physician	Average sickness leave (%)
	total	per 1 000 inhabitants		
Czech Republic	41 031	4.0	270	5.814
South-Moravian region	4 859	4.3	233	6.192
Blansko	306	2.8	355	6.954
Brno-City	2 876	7.8	127	7.935
Brno-Province	310	1.8	562	8.178
Břeclav	360	2.9	342	8.504
Hodonín	434	2.8	362	8.914
Vyškov	244	2.8	357	7.619
Znojmo	329	2.9	348	8.701

Source: Czech Statistical Office

ployment are shown by the districts of Blansko and Brno-Province, which belong to the districts with the lowest unemployment and the lowest number of job applicants per 1 vacancy. A similar development is recorded in two other districts, namely Brno-City and Vyškov, in which the studied indicators exhibit less favourable values, though. Unemployment is least favourable in the districts of Břeclav, Hodonín and Znojmo. In a follow-up research, factors will be assessed by the means of the analysis of the main components, which condition the rise of the concerned clusters.

The dendrograph constructed from the registered unemployment rates and numbers of applicants per 1 vacancy in the administrative districts of South-Moravian region for the year 2006, which is presented

in Figure 5, revealed three clusters of which the first one contains 2, the second 2 and the third 3 districts: (1) Blansko and Brno-Province, (2) Brno-City and Vyškov, (3) Břeclav, Hodonín and Znojmo.

An important role in assuring social security is played by the system of health care. The health care standard can be assessed by the means of the following indicators: the total number of physicians, the number of physicians per 1 000 inhabitants, the number of inhabitants per 1 physician, and the average sickness leave in % – see data in Table 4.

Health care in the district of Blansko is provided by 2 hospitals and 4 specialized medical institutions. Health services in the district of Brno-City are provided by 12 hospitals with almost 4 500 beds, 5 specialized medical institutions and by other 181 in-

Table 5. Selected indicators of civil and technical amenities by districts (2006)

Region	Dwellings				
	started	under construction as at 31 Dec.	completed	refurbished	completed per 1 000 inhabitants
Czech Republic	43 747	168 825	30 190	.	2.9
South-Moravian region	5 909	20 157	3 985	3 558	3.5
Blansko	509	1 951	574	236	5.3
Brno-City	1 836	6 055	1 443	2 419	3.9
Brno-Province	1 635	4 607	808	256	4.6
Břeclav	729	2 696	200	58	1.6
Hodonín	316	1 987	244	40	1.6
Vyškov	470	939	312	196	3.6
Znojmo	414	1 922	404	353	3.5

Source: Czech Statistical Office

Table 6. Selected indicators of transport and technical infrastructure by districts (2006)

Region	Speedways (km)	Motorways (km)			Inhabitants per 1 car
		Class I	Class II	Class III	
Czech Republic	633	6 172.0	14 660.0	34 118	2.50
South-Moravian region	135	448.3	1 480.8	2 437	2.61
Blansko	–	50.5	210.0	402	2.95
Brno-City	18	41.1	57.7	62	2.49
Brno-Province	42	37.2	330.1	517	2.47
Břeclav	45	74.5	227.9	326	3.01
Hodonín	–	115.1	156.6	278	2.86
Vyškov	31	59.9	113.8	292	2.95
Znojmo	–	70.0	384.8	559	2.67

Source: Czech Statistical Office

dependent medical facilities. In the district of Brno-Province, health care is provided by 2 hospitals and 2 specialized medical institutions, in the district of Hodonín by 2 hospitals with nearly 800 beds, in the district of Vyškov by 1 hospital and in the district of Znojmo by 1 hospital. The highest number of medical doctors is in the district of Brno-City.

The disparities among the districts in the field of social and cultural resources follow out from the different civil and technical amenities as well as from the differences in the transport infrastructure and services.

The standard of civil and technical amenities and the standard of transport infrastructure and services are illustrated in Tables 5 and 6.

With respect to its location, the district of Brno-City is a territory of considerably high traffic intensity. The city lies on the crossing of the speedways D1 (Prague-Brno) and D2 (Brno-Bratislava), which are the components of the trans-European speedway network. It is also an important railway junction, being situated on the international railway line from the Balkans via Budapest, Brno, Prague, Berlin to Scandinavia. The international civil airport in the municipal district Brno-Tuřany meets the requirements for the year-round operation of all types of aircrafts. A considerable traffic intensity features with respect to its location also the district of Brno-Province. Running through the district territory, road traffic (the speedways Brno-Prague, Brno-Bratislava and Brno-Ostrava) and railway lines favourably affect the local economy and development of business activities. Important in terms of the connection to international road and railway networks is the Břeclav district. The Hodonín district is one of the territories with a high intensity of namely road traffic.

## CONCLUSION

In the interest of the general stability of the country, the regional policy attempts at the mitigation

of economic and social disparities among districts. For the selection of the appropriate tools of the regional policy, disparities among the districts need be objectivised and the factors sought that cause them. The paper presents the selected factors that to a considerable extent affect life quality in the individual administrative districts of the South-Moravian region, focusing on the life quality indicators with respect to social resources. A similar methodological procedure will be used in the follow-up project part for the analysis of factors affecting life quality in the region with respect to natural resources and economic performance. The analysis will be extended by the use of statistical methods enabling to establish prognoses of the development for a longer time series. Moreover, the further research will include the methods of multidimensional statistical analysis that will enable to assess the mutual interaction of the indicator groups.

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