

Travelling to services in the daily urban system of Olomouc

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Abstract. The service sector is quite broad: it includes basic services for the population as well as highly sophisticated services, public as well as commercial services, etc. Commuting to services is one of the fundamental regional processes and together with work commuting it creates an entry basis for the construction of so-called catchment, or nodal regions which should be crucial in the construction of an administrative division of a country.

The main objective of this paper is to identify a selected group of spatial interaction in the daily urban system of Olomouc, i.e. in a region dominated by work commuting to the city of Olomouc. More specifically, the paper deals with the interaction of commuting to a wide range of services of non-commercial (social) as well as of commercial character in two hierarchical levels – local and micro-regional. Based on the data obtained by the method of questionnaire research from local leaders (mayors) we analysed the mobility of people to primary and secondary schools, hospitals, shops, culture and sport. As far as the retail network is concerned, the analysis of spatial differentiation of the catchment area to three large department stores was made for villages in Olomouc hinterland. Individual catchment regions for specific services were constructed by a verified method based on commuting flows. Synthetic evaluation contains an identification of so-called complex service regions in the daily urban system of Olomouc. In comparison with our previous studies we tried to describe basic trends in service infrastructure and changes in travelling to services.

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Contents:

1. Introduction	24
2. Theoretical background, methodology	24
2.1. Theoretical basis of research, literature overview	24
2.2. Methodology	26

3. Identification of the accessibility of services and amenities in the daily urban system of Olomouc	28
3.1. Accessibility of health care	28
3.2. Accessibility of education	30
3.3. Accessibility of retail and services	32
3.4. Accessibility of culture and sports	35
3.5. Complex accessibility of services and amenities	36
4. Conclusions	38
Notes	39
Acknowledgement	39
References	39

1. Introduction

Horizontal flows are not restricted only to nature but their analogy can be found also in society. In geography they are called 'spatial interactions' and their basic bearers are individuals and their activities which help to adjust a certain inhomogeneity of social space. These interactions significantly influence geographical organisation and express mutual dependence between areas of geographical space (regions) of various hierarchical level.

Basic questions deal with the character of spatial interactions, especially their direction, intensity and rhythmicity. Real data on spatial interactions are generally difficult to access, especially for larger areas (e.g. countries). Practically the only accessible source of data is data on population migration, more specifically on school and work commuting, which is, however, in the Czech lands part of the Census of Population and Housing analysed from 1961 with approximately ten-year intervals, which, in some cases, does not cover the development of spatial organisation. Other data on spatial interaction (e.g. number of passengers, number of visitors of shopping centres, etc.) are not the subject of further analysis or they are the subject of commercial confidentiality. The primary aim of this paper is the identification of selected spatial interactions in the daily urban system of Olomouc, i.e. in a region dominated by work commuting. More specifically, the paper deals with the interaction of commuting to a wide range of services of non-commercial (social) as well as of commercial character in two hierarchical levels – local and micro-regional. As far as the retail network is concerned, the analysis of

spatial differentiation of the catchment area to three large department stores was made for villages in Olomouc hinterland. Individual catchment regions for specific services were constructed by a verified method based on commuting flows. Based on these catchment regions it is possible to construct catchment regions for a specific range of services, more specifically synthetic or complex service regions. In comparison with our previous studies we tried to describe basic trends in service infrastructure and changes in travelling to services.

2. Theoretical background, methodology

2.1. Theoretical basis of research, literature overview

Services, or the tertiary sector in general, are of increasing importance in a country's economy and the proportion of jobs in this sector is growing. It is also a very broad sector, which includes giving primary and simple services to the population as well as sophisticated branches with high value added. Based on the method of financing, services can be divided into public and commercial. As far as public services are concerned, they should be supported by the government by finance redistribution from the state budget. This characteristic includes sectors such as health care or education, which require a certain solidarity. Public services can be completely non-market or semi-market (i.e. participation of inhabitants in service financing). Commercial, or market services, are purely based on the market principle as a result of a balance of demand and supply.

The localisation of the service sector depends on cities, or regional centres with a lower or higher value of concentration. The availability of basic services and infrastructure is one of the most important topics in urban geography. In the British environment, we can notice this research is becoming more multidisciplinary and new research methods and approaches are used, e.g. segregation and congregation, neighbourhood and community of place, quality of life (Knox, Pinch, 2006), usage of secondary data, qualitative methods based on semi-structured interviews, etc. (Clifford et al., 2010). The spatial growth of a city is closely connected with a reduction in housing development compactness, or with its loosening in suburban areas. The solution to the urban sprawl issue has been known in western countries for decades (e.g. Cloke, 1978); as far as socialist countries are concerned, this process appeared after 1990. The incompactness of housing development has a negative influence on the availability of services, especially when new residential areas are fundamentally mono-functional (Hnilička, 2005).

In the past when data on travelling to services, more specifically to retail, were missing, the hinterland of shopping centres was defined by gravity models. One of the oldest gravity models is Reilly's law of retail gravitation, which was called by Stewart (1948: 35) the first case of recognition and application of demographic gravitation. Reilly (1929: 48–50) argues that the attraction strength of two centres towards an interjacent centre is approximately directly proportional to the number of the centres' inhabitants and inversely proportional to the square of the distance between the centres and an interjacent centre. This model was later supplemented by Converse (1949) and Huff (1964). Reilly's model was originally constructed in order to find out the catchment area of retail and it was based on a purely formal relationship. The model was applied mainly in mapping the population trends in commuting to various kinds of services to the centres and also in identifying the borders of centres (e.g. Fotheringham, O'Kelly, 1989). Löffler (1998) pointed out the different behaviour of the distance function in centres of different sizes when the function of larger centres is usually with an inflection point and larger "bottom" area (the area below the distance function determines the number of

centres' customers). Löffler also provides a detailed overview of input data, which deal with distance as well as with mass, to Reilly's model. As far as Czech literature is concerned, Reilly's model is mentioned by, for example, Maryáš (1983), Řehák et al. (2009) and Halás, Klapka (2010). Maryáš (1983) critically evaluates the ways of delimitation of spheres of influence of retail centres, especially in connection with the validity of original models on the area of Czechoslovakia (CSSR), while conclusions based on studies of Brno and Prague hinterlands correspond to foreign experience. Halás, Klapka (2010) refer to possible application of Reilly's model to more general and contemporary research topics.

Not many studies that would focus directly on the delimitation of catchment regions based on travelling to services can be found in the world's scientific literature. One of the classic studies is a piece of research by Berry (1967), who focused on travelling to services using the example of retail centres in various states of the USA. Berry later tried to generalise his findings also for other regionalisation tasks. A slightly changed type of task was and still is the delimitation of catchment areas of shopping centres (as opposed to settlements/centres – e.g. Lee, Pace, 2005; Baray, Cliquet, 2007). It must be mentioned that the studies are not only products of geographers but also of spatial economists. Lee and Pace (2005) deal with spatial distribution of retail turnover between shopping centres in connection with their mutual location based on the example of Houston. Baray and Cliquet (2007) discuss the possibility of mathematical morphology analysis for the delimitation of shopping centres' hinterland. In the surrounding post-socialist countries' literature there are only works evaluating the transformation of the service sector against the background of social changes (Jakubowicz, 2000; Wilk, 2001; Lauko, 2005) or studies focusing on a specific retail issue (Taylor, 2000; Pokorska, Maleszyk, 2002). Works dealing with spatial differentiation of retail in intra-urban structures can be treated as a separate category, e.g. studies identifying food deserts in changing urban space (Wrigley, 2002; Shaw, 2006; Križan, Danielová, 2008).

As far as the Czech scientific literature is concerned, the issue of travelling to services has very long tradition mainly thanks to studies coming from the former Geographical Institute of the Czecho-

slovak Academy of Sciences (ČSAV). In the early 1980s Maryáš (Maryáš, 1983) published his theoretical work focusing on the methodology of selection of retail centres and the sphere of their influence, which foreshadowed the research and delimitation of service regions in the next years. This research resulted in the detailed regionalisation of Czechoslovakia (Maryáš, Řehák, 1987a) based on the philosophical concept of the region where residential, work and service functions are relatively closed. This regionalisation comes from a survey on travelling to services in the area of the whole republic, which was published in the Atlas of the population of CSSR and a list of delimited regions was published in Reports of the Geographical Institute of ČSAV (Maryáš, Řehák, 1987b). This regionalisation was followed by Maryáš (1992) with his hierarchy of service centres of Czechoslovakia in which he used all his theoretical as well as empirical findings. Some of the approaches to the question of commuting to services are outlined in the work by Toušek et al. (2008) in a chapter focusing on the geography of services. Besides the traditional approaches applied by Maryáš (1983, 1992) it focuses also on behavioural methods of research in the geography of services, mainly in the intra-urban environment.

2.2. Methodology

The first step in regions-oriented research is a definition of the research area which, in our case, is the region of the daily urban system of Olomouc. The concept of daily urban systems (DUS) was used for the first time by the American geographer Berry (Berry, 1973), on the European continent it was the British geographer Hall (e.g. Hall, 1974; Hall, Hay, 1980) and we are talking about systems which are rooted in the daily life cycle of a region's inhabitants, they are internally coherent and externally (relatively) closed regarding the daily movement of population. This concept is close to the regionalisation of Sýkora and Mulíček (2009), or Sýkora and Mulíček (2009). In both cases, it is the delimitation of regions based on the daily travelling of the population to work. Compared to Hampl (2005) not so many criteria were established for making a municipality the centre of travelling and therefore it is possible to identify also the micro-regional or lo-

cal level. The principle of both types of regionalisation mentioned above is identical (delimitation according to the largest catchment flow). It differs only in details, i.e. in the classification of municipalities which are on the border of the sphere of two or more centres. According to Sýkora and Mulíček (2009) the region of Olomouc has 67 municipalities, according to Halás et al. (2010) it has 65 municipalities (both cases include Olomouc). Both types of region delimitation overlap in 63 municipalities, which is the region which can be called the daily urban system (or work hinterland) of Olomouc and it will be our research region which will be analysed in this paper. Almost identical is the delimitation of the catchment area of Olomouc according to Reilly's model (Kladivo et al., 2010).

The whole area researched belongs to the Olomouc region, most of the municipalities can be found in the district of Olomouc, two municipalities in the district of Prostějov (Olšany u Prostějova and Slatinky) and one municipality in the district of Přerov (Brodek u Přerova). The basis of the area researched is represented by the administrative district of a municipality with extended power (MEP) Olomouc (45 municipalities), a part belongs to the administrative district of MEP Litovel (ten municipalities), Šternberk (five municipalities), Prostějov (two municipalities) and Přerov (one municipality).

The methodology comes from the works by Maryáš (1983, 1988, 1992). Data on the travelling of inhabitants to services are usually not part of statistics and thus it is necessary to complete these data by questionnaire research. Maryáš (1988) recommends for this survey the participation of local leaders, mayors. Although these data can be subjective, they reflect the reality more believably than an analysis of accessible statistical characteristics. The method of questionnaire research was used also in this research. The same unmodified methodology was used also in some Master's theses focusing on research on commuting to services in individual regions of Central and South Moravia, mainly in regions of rural character with small regional centres (e.g. Blešová, 2009; Laštůvková, 2012).

The original, three-decades-old questionnaire was modified and adjusted to present-day reality. The focus of the survey was commuting to public services (health care, education), retail and commercial services, specifically for relaxation (culture,

sport – regions of culture and sport have not been taken into account in previous studies, their inclusion in this study can also be explained by the general classification of the United Nations, which defines them separately). The mayors filled in the questionnaire from the point of view of the main (predominant flow), secondary (partial flow) as well as peripheral (occasional flow) municipalities of commuting to these activities and infrastructure. Following the methodology of Maryáš (1988, 1992) the predominant flow was given 10 points, partial flow 5 points and occasional flow 1 point. Every destination in individual municipalities which was made into a specific service process j by a municipality was given the value v_{ij} . This value represents the relative meaning of destination i for a certain municipality in a certain service process:

$$v_{ij} = \frac{T_{ij}}{PC_{ij} * PT_j} * 100,$$

where T_{ij} is a point value of travelling to destination i in the service process j , PC_{ij} is the number of destinations in this type and PT_j a sum of point values of all types of catchment intensity of the municipalities mentioned in the service process j .

In every municipality, the sum of values v_{ij} was equal to 100% for every service process j . Every service process was then assigned the coefficient k_j according to the meaning, or the frequency of usage. The overall meaning cv_i of destination i for a given municipality for all evaluated service processes is then the following:

$$cv_i = \frac{\sum_j v_{ij} * k_j}{\sum_i \sum_j v_{ij} * k_j} * 100.$$

Again, each municipality $\sum_{cv_i} = 100\%$.

Municipalities were assigned to centres on the basis of prevailing flow in the case when the overall relative meaning of the second centre did not reach more than two thirds of the value of the first one. Municipalities which did not belong to any centre were regarded as oscillatory.

A municipality can, as a centre, be applied on more hierarchical levels of regional scope. The main service level can be defined as being the local level

within which the most important and the most frequented service processes are closed. A municipality was regarded as a centre of local meaning when it was the main destination for three municipalities, taking into account travelling to services also to cities outside this region. A higher service level was defined as being the micro-regional level which includes less frequented service processes. The centre of such a micro-region serves a higher number of municipalities (cca 10–40 municipalities); however, their minimal number is not possible to state because we are often on the border of two or more service micro-regions. The specific service was then regarded as a generator of the micro-regional service level in the case when it was stated as a main destination four or more times less often compared to the most frequent destination.

In order to capture the specific character of travelling to different types of services and simultaneously to maintain the complexity of the research, the partial regions of health care, education, retail and services, or culture and sport, will be analysed separately. Subsequently, based on these sectors we will try to delimitate the complex service regions. Centres of complex service regions will be regarded as being municipalities which were chosen as centres in three out of four partial regions. To individual partial spheres we will assign coefficients based on their overall regional meaning. Based on the assumption that the education region includes only commuting of pupils and students, and it is therefore purely selective, education centres will be assigned the coefficient 1. Health care centres, or retail and services, will be assigned the coefficient 2 because they express the potential commuting of all inhabitants of the area researched. The centres of culture and sport were also selected on the basis of commuting of all inhabitants; nevertheless, the lower coefficient 1 will be assigned to them. The reason is not only their specific nature but predominantly the innovation of their inclusion in regionalisation on the service principle and the effort to keep the highest value possible of their comparability with previous studies where travelling to free time activities was not considered. The next steps will be analogical to the delimitation of partial service regions.

As far as the evaluation of commuting to retail services is concerned, the research is extended by a questionnaire dealing with the catchment of cities

to large shopping centres located on the edge of Olomouc. The representative sample of a minimum of 3% of the population took part in this questionnaire in individual cities. Data on the availability of individual services are complemented by qualitative research which includes informal interviews with inhabitants, city representatives and stakeholders, mainly in the nearest suburban hinterland of Olomouc.

3. Identification of the accessibility of services and amenities in the daily urban system of Olomouc

3.1. Accessibility of health care

Based on the questionnaire research, the area was analysed from the point of view of commuting to general practitioners, paediatricians, dentists, specialists and commuting to hospitals. The basic cri-

terion for health centres on the local level was the presence of a first contact doctor (i.e. GP, paediatrician and dentist). Centres on the micro-regional level are regarded as being municipalities in which the service of a specialist can be found. Also travelling to hospitals was a focus of the questionnaires; however, in this case it is a process characteristic for the micro-regional level of travelling that is higher than the basic level, so it would be better to call it a meso-regional process. Thus travelling to hospitals was omitted from the final evaluation. If it was evaluated separately, the whole region analysed would belong to Fakultní Nemocnice Olomouc (FNOL), while only a few municipalities would oscillate between Olomouc and Šternberk (seven municipalities), Olomouc and Prostějov (two municipalities) and Olomouc and Přerov (two municipalities). In Šternberk, Prostějov and Přerov there are hospitals belonging to health centres AGEL; however, all procedures of medium difficulty and high difficulty are performed by FNOL.

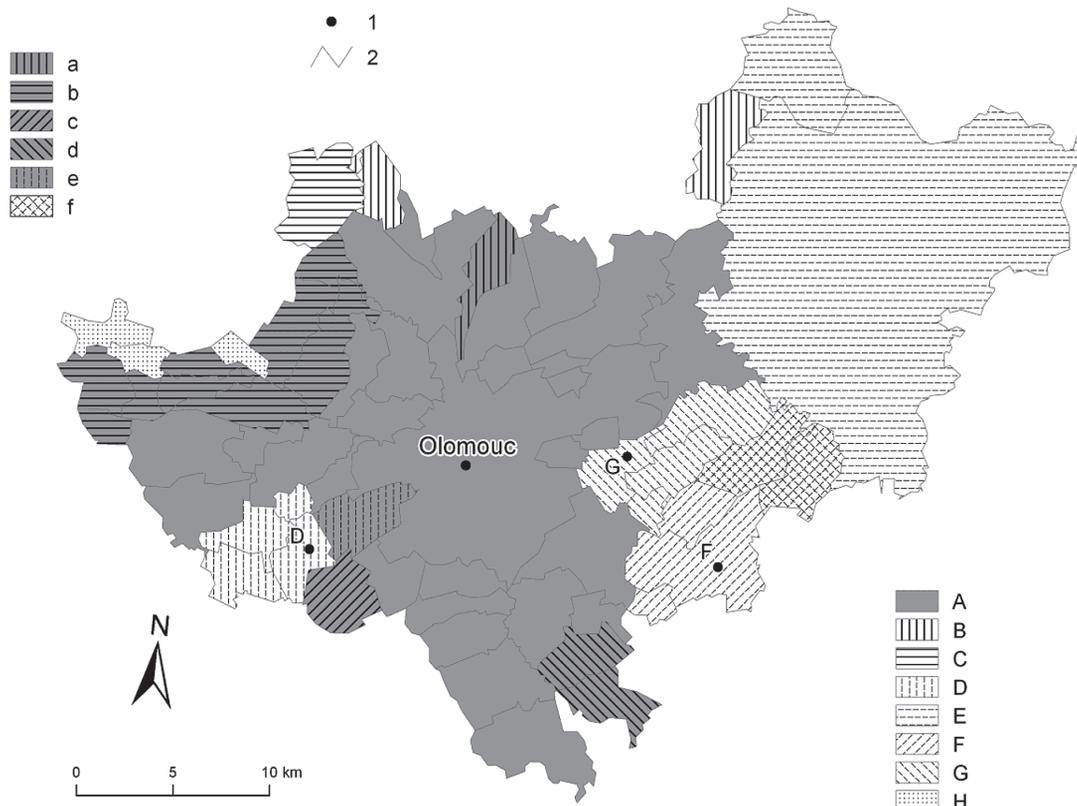


Fig. 1. Health care regions on the local level in DUS Olomouc

Explanation: 1 – centre of local level; 2 – border of municipality; centre, catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Lutín; E – Moravský Beroun; F – Tršice; G – Velká Bystřice; H – Cholina; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov; e – Olomouc / Lutín; f – Tršice / Velká Bystřice

Source: Own research



Fig. 2. Health care regions on the micro-regional level in DUS Olomouc

Explanation: 1 – centre of micro-regional level; 2 – border of municipality; catchment area: A – Olomouc; B – Šternberk; C – Litovel; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov

Source: Own research

At the local level, we can identify a strong influence of the city of Olomouc, although it was possible to define three internal health care regions (Lutín, Velká Bystřice, Tršice) in its close hinterland and a few catchment municipalities in the periphery (Fig. 1). Simultaneously, we can find an influence of larger cities outside the region in the peripheral municipalities appearing mainly in the oscillation of commuting. Higher levels of travelling to Olomouc can be seen along the roads of regional significance, while highways are felt to be more negative. There is an assumption that commuting to smaller health centres is the case of mainly economically inactive inhabitants on the local level. One of the results of work migration is the usage of health centres in the city by the younger and middle generation working in Olomouc.

From the point of view of the health service on the micro-regional level, the dominance of Olomouc is more noticeable (Fig. 2). In the region there

is no other centre of this hierarchical meaning; only in its periphery can we find a few municipalities belonging to and oscillating between Olomouc and centres outside the region. The most noticeable is the influence of Litovel in the north-western part of the region, mainly in municipalities which administratively belong to ORP Litovel. At the same time it is still valid, of course, that the centres of higher service level are also centres on the lower level of service.

The network of health care institutions has not changed rapidly. It can only be noted that the adaptation to new semi-market conditions took place as did changes in ownership relations. The level of travelling to health care institutions is stable. According to Szczyrba et al. (2006) a huge increase in independent surgeries (from 34 in 1989 to 61 in 2005) can be noticed in MEP Olomouc; most of these surgeries were founded directly in the city of Olomouc.

3.2. Accessibility of education

While evaluating the level of commuting to schools, travelling to primary and secondary schools was analysed in the area researched. From primary schools, we took into consideration only complete primary schools, i.e. schools with lower as well as higher grades (from 1st to 9th grade). Tertiary education can be considered to be the process on a meso-regional, or lower macro-regional level so it was not included in the research.

The only process evaluated in education on the local level was commuting to complete primary schools. Participants of the process of commuting to primary schools are children and therefore

its distance must be minimised regardless of the centre's hierarchy. For this reason the education regions of the local regions in the surroundings show quite a high level of dispersion. In the area analysed, 11 local regions were formed in the surroundings of these centres – Dub nad Moravou, Libavá, Lutín, Náměšť na Hané, Pňovice, Olomouc, Senice na Hané, Tršice, Velká Bystřice, Velký Týnec and Velký Újezd (Fig. 3) (1). Complete primary schools can be found also in other municipalities; however, they do not have the catchment region of minimally two more municipalities. In the peripheral municipalities we can notice also the influence of Šternberk, Litovel, Přerov and Prostějov, either by obvious catchment or by oscillation of commuting.

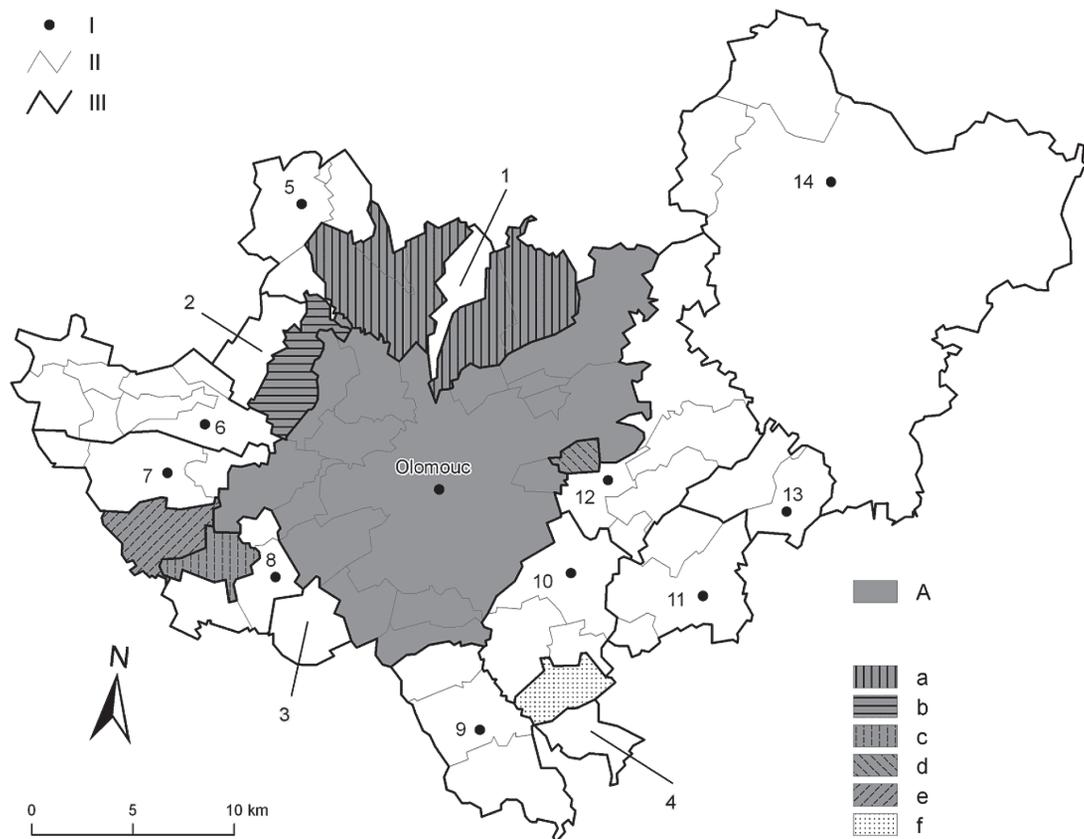


Fig. 3. Regions of education on the local level in DUS Olomouc

Explanation: I – centre of local level; II – border of municipality; III – border of catchment area; centre: 1 – Šternberk, 2 – Litovel, 3 – Prostějov, 4 – Přerov, 5 – Pňovice, 6 – Senice na Hané, 7 – Náměšť na Hané, 8 – Lutín, 9 – Dub nad Moravou, 10 – Velký Týnec, 11 – Tršice, 12 – Velká Bystřice, 13 – Velký Újezd, 14 – Libavá; catchment area: A – Olomouc; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Lutín; d – Olomouc / Velká Bystřice; e – Olomouc / Náměšť na Hané; f – Přerov / Velký Týnec

Source: Own research

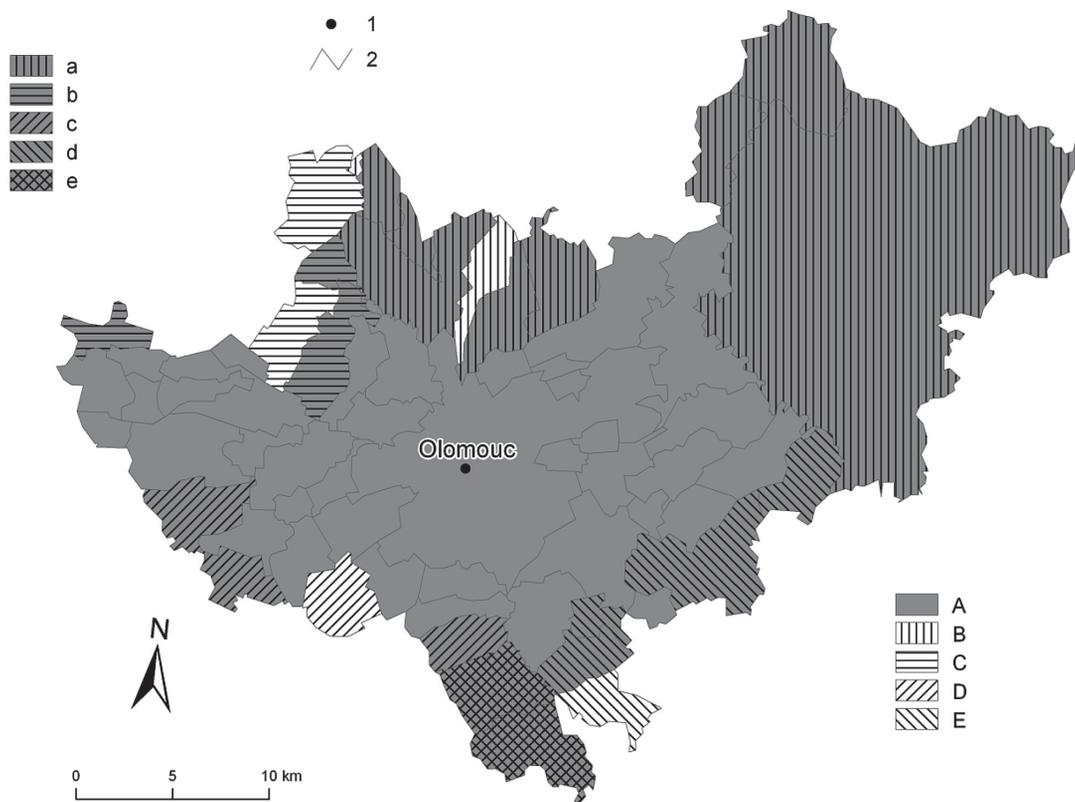


Fig. 4. Regions of education on the micro-regional level in DUS Olomouc

Explanation: 1 – centre of micro-regional level; 2 – border of municipality; catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Prostějov; E – Přerov; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov; e – Olomouc / Prostějov / Přerov

Source: Own research

An important phenomenon which can change the local level of education is the on-going process of suburbanisation. Suburbanisation processes cause an overall change in the social structure of the population in Olomouc hinterland and thus also their requirement for higher quality of services provided by town schools. Moreover, village schools in the close surroundings of Olomouc do not have to be able to absorb an increasing number of pupils in areas where the process of suburbanisation is the strongest (Hlušovice, Samotíšky, Tovéř, etc.). Also the ownership of a vehicle is becoming standard, which lowers or even eliminates the usage of public transport.

Another problem of education, mainly in the city of Olomouc, is the insufficient capacity of kindergartens. In the 1990s, when we experienced a huge increase in individualism and the birth rate decreased, the number of children of preschool age also fell. Therefore, some kindergartens (especially corporate, etc.) were closed because there was no

body to go there. Recently, due to delayed births and mainly to births of baby boomers 1974 – 1980, the capacity of kindergartens is not sufficient anymore. According to data from municipal governments, more than 15% of preschool children do not attend kindergartens.

On the micro-regional level, we focused on commuting to secondary schools, which includes a wide range of secondary vocational schools, training institutions and grammar schools. By the standard process, we identified the only centre – Olomouc. Its catchment area was, compared to health care, narrowed by the influence of surrounding cities, more specifically by Šternberk, Litovel, Prostějov and Přerov (Fig. 4). Secondary schools can be found also in other smaller cities in Olomouc hinterland (Lutín, Velký Újezd); these are, however, either private or narrowly specialised so their applicability is not universal and they almost do not influence regional processes (Zuskáčová, 2011). The charac-

teristics and quality of secondary schools is closely connected with their popularity. Unlike on the local level, it can be noticed that commuting is less bound to distance from the place of residence. Overall it is possible to argue that the network of primary and secondary schools in Olomouc region has not been changed a great deal.

3.3. Accessibility of retail and services

Changes which occurred in the retail sector during the transformation period were very dynamic and thus, for example, processes studied by Maryáš (1988) do not reflect the nature of contemporary shopping and consumer tendencies in society. According to Szczyrba (2005), the spatial-functional structure of the socialist retail network, on the one hand, concentrated retail in city centres; however, on the other hand, it strongly emphasised minimisation of social differences between the city and countryside. According to the concept of the settlement centre system, shops and shopping centres (so-called collective shops) were illogically built in certain villages. The liberalisation of the economy in the early 1990s caused extensive quantitative and qualitative changes in the industry and subsequently also changes in the spatial organisation of retail and services.

Processes that characterise the present-day organisation of the area according to the service principle comprised commuting for daily shopping (food and basic toiletries), buying of clothes and shoes, industrial goods (electrical goods, bikes, sports equipment, etc.) and shopping for furniture and home accessories, travelling to ordinary services (to the hairdresser's, dry cleaning, shoe repair, photographer, etc.), visit to a bank, an insurance company or a pharmacy.

Shopping for daily essentials is, in the absolute majority, restricted to the level of an independent municipality; the aim was to find out the possible deviations in the nature of commuting in the hinterland of the region's main city, especially the influence of concentrated business. Also in other processes it is possible to assume a certain change in relative isolation, or maximal distance of travelling to target municipalities compared to the values of the 1980s.

Compared to Maryáš' conclusions (1988, 1992), it can be stated that the commuting distance to retail has been lowered in all processes. The only increase can be seen in daily shopping, mainly because of shopping trends in large shopping centres and because of the change from daily periodicity to lower frequency periodicity. Local processes include, based on the selected methodology, shopping in a pharmacy or ordinary services, or a visit to banks or insurance companies. In comparison with the past mainly travelling to pharmacies has decreased. The network of pharmacies is denser: compared to 1989, the number of pharmacies in MEP Olomouc has increased at least three times (Szczyrba et al., 2006). This fact indirectly confirms the improvement of health care and availability of basic medical staff in municipalities. Other commuting processes (clothes and shoes, industrial goods, furniture and decorations) were defined as micro-regional travelling. The reverse nature of movement (rising distance) can be seen in travelling to shops with clothes and shoes. The quality of a shopping centre, the range of products or a particular brand are now preferred to its close distance (or price/quality relationship). A new feature is commuting to financial institutions, whose meaning has recently become more important. However, these institutions start to prefer electronic contact to physical, so it is not expected that there will be a dynamic development in this sphere.

In the area analysed, only two centres of retail and services able to create large catchment areas were identified – Olomouc and Náměšť na Hané. Outside the borders of the area, the centres are again Litovel, Šternberk, Prostějov and Moravský Beroun; Přerov has only oscillating influence (Fig. 5). In comparison with health care and education we can notice an enlargement of the catchment region of Olomouc corresponding to almost the micro-regional level in previous partial regions. The reason can be found in better service availability of Olomouc and in the fact that localisation of commercial services is adapted to the highest volume of demands and does not respect minor (e.g. less mobile) groups of inhabitants. While the urban network of retail and services works in conditions of highly-concentrated demand and provides a wide range of products, the rural retail network is satisfied with little concentrated demand and is

connected with higher costs of circulation of goods compared to the local network. Large retail units located on the edge of settled areas resulting from suburbanisation processes can be regarded as an exception. Similar shopping centres are in the cities Velký Týnec (Olympia) and Velká Bystřice (Makro). In both cases, it is very close to Olomouc and thus their meaning was highly unevaluated in the questionnaire research because they are regarded as parts of Olomouc.

On the micro-regional level, only the city of Olomouc was regarded as the centre, while marginal influence is assigned to Šternberk, Litovel, Přerov and Prostějov (Fig. 6). The catchment region of Olomouc covers practically the whole region; only a few border municipalities belong to other municipalities or they oscillate. The spatial depiction of commuting is similar to the local level; only the influence of Náměšť na Hané and Beroun is missing.

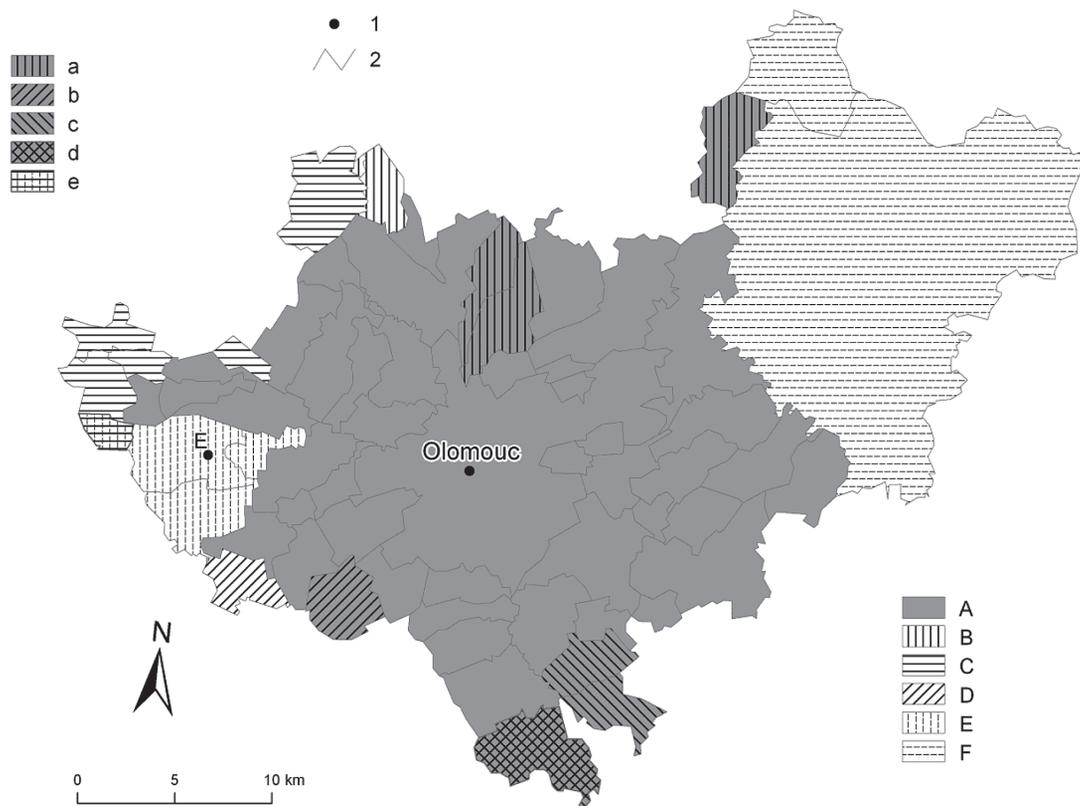


Fig. 5. Regions of retail and services on the local level in DUS Olomouc

Explanation: 1 – centre of local level; 2 – border of municipality; centre, catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Prostějov; E – Náměšť na Hané; F – Moravský Beroun; a – Olomouc / Šternberk; b – Olmouc / Prostějov; c – Olomouc / Přerov; d – Olomouc / Prostějov / Přerov; e – Litovel / Náměšť na Hané

Source: Own research

Apart from Olympia mentioned above and located on the border of the cities Velký Týnec and Olomouc with access to the R35 and the planned R55, two more large shopping centres can be found on the periphery of Olomouc. The shopping centre

Haná is close to the R46 Olomouc-Vyškov continuing to the highway D1 to Brno. Globus is close to the R35 Olomouc-Mohelnice, which should lead to Hradec Králové in the future. Based on the questionnaire research conducted in the towns 20 min-

utes distant from Olomouc (according to journey planner www.skoda-auto.cz), we delimitate the catchment region into the three shopping centres mentioned. In every town, a sample of at least 10% of inhabitants took part in the research. Univocal

catchment was achieved when at least a half of respondents agreed on it. When the superiority was not so clear, the catchment was divided into two shopping centres which were chosen by at least one third of respondents.

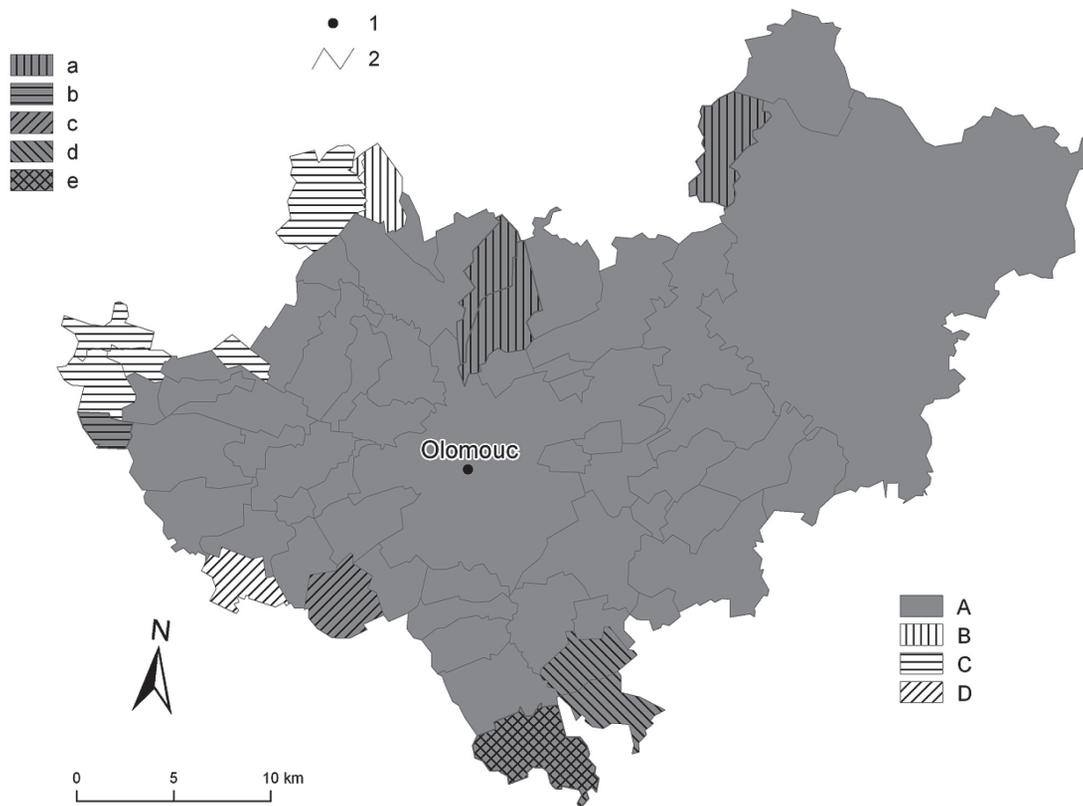


Fig. 6. Regions of retail and services on the micro-regional level in DUS Olomouc

Explanation: 1 – centre of micro-regional level; 2 – border of municipality; catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Prostějov; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov; e – Olomouc / Prostějov / Přerov

Source: Own research

Globus has the largest, according to size as well as according to population, hinterland in towns outside Olomouc; in contrast, the smallest hinterland is that of Haná, which has to compete with the nearby shopping centres of Prostějov to the southwest. We also noticed the dependence of shopping centre preference and distance, but only at lower distances. If the centre is located less than 8 km from a town, its inhabitants always prefer this centre. In towns which are more distant from the closest shopping centre (more than 8–10 km), the role

of distance is not important because inhabitants decide according to other criteria. The greatest diversification of preference is in municipalities located to the northeast of Olomouc, where no shopping centre can be found. It is an area without highways in the pleasant natural surroundings of Nízký Jeseník and Oderské vrchy, where also for these reasons intensive suburban processes have taken part since 2000. Fig. 7 shows a detailed description of spatial differentiation of shopping centre preferences.

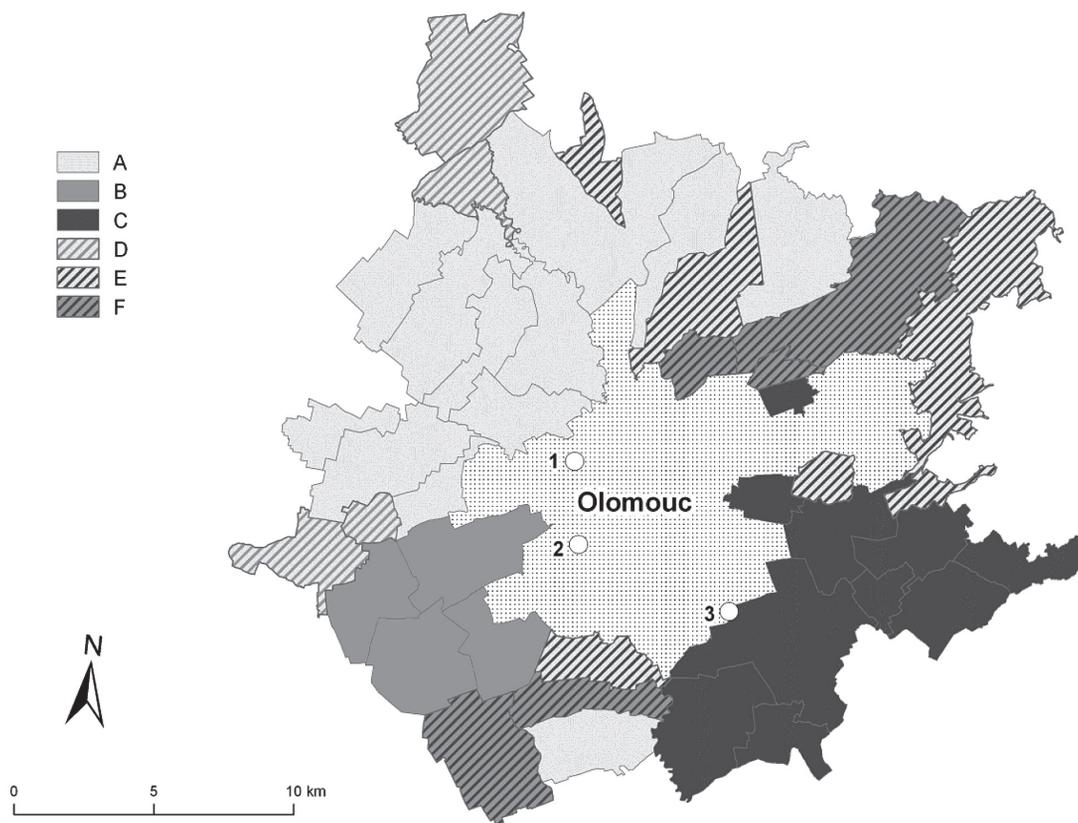


Fig. 7. Travelling to shopping centres from municipalities in Olomouc hinterland

Explanation: shopping centre: 1 – Globus; 2 – Haná; 3 – Olympia; catchment area of shopping centre: A – Globus; B – Haná; C – Olympia; D – Globus / Haná; E – Globus / Olympia; F – Haná / Olympia

Source: Own research

3.4. Accessibility of culture and sports

Culture and sports commuting regions have not been defined so far in the Czech Republic. Questions determining commuting to cultural and sports events, clubs and cinema were included in the questionnaire. All questions were related to the local level according to the methodology chosen, except for cinema commuting. The sole cinema commuting belongs to the micro-regional level and its travelling network will not be presented in a map here. In the case of cinema commuting, the whole area travels to Olomouc, with the exception of 5 municipalities travelling to Litovel, one travelling to Šternberk and one to Prostějov. Cinemas belong to the cultural amenities that spatially waned significantly – in the MEP Olomouc its number was lowered to one third compared to 1989 (Szczyrba et al., 2006). Also

their diversity was decreased as most of them were moved to so-called “consumption centres” within large shopping centres. Even in the thousand-inhabitant city of Olomouc itself only one non-multiplex cinema remained in operation.

Two centres of culture and sports were delineated on the local level using the chosen methodical procedure – Olomouc and Přáslavice. Similarly to the previously mentioned partial regions, the influence of the surrounding cities (namely Litovel, Šternberk, Moravský Beroun, Přerov and Prostějov; Fig. 8) was manifested in the case of border municipalities. The birth of the travelling centre of Přáslavice points to the different nature of the service processes of free time activities. Municipalities of Hlubočky (several times larger than Přáslavice) and Mrsklesy declared their travelling preference to Přáslavice. There is not only one single dominant activity in Přáslavice, but a new multifunctional centre was built there in 2009

and locals are active in, for example, floor ball or fitness. Other delimited regions more or less fol-

low the travelling pattern set by commuting to retail and services.

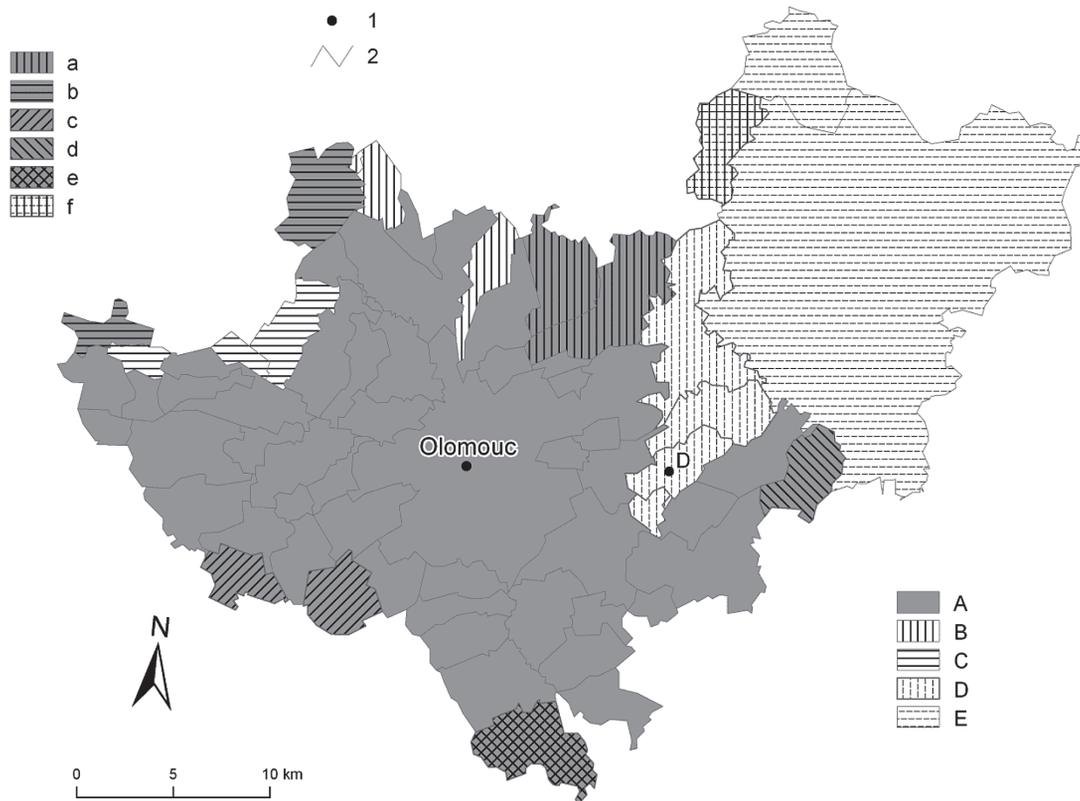


Fig. 8. Culture and sports regions on the local level in DUS Olomouc

Explanation: 1 – centre of local level; 2 – border of municipality; centre, catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Přáslavice; E – Moravský Beroun; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov; e – Olomouc / Prostějov / Přerov; f – Šternberk / Moravský Beroun

Source: Own research

3.5. Complex accessibility of services and amenities

Although Hampl (2005) declares his regionalisation of the area of the Czech Republic as a complex socio-geographic regionalisation and delineated regions as complex micro-regions, meso-regions and macro-regions, he worked only with data on work commuting. Service commuting was substituted by school commuting, which concerns only strictly age-limited population groups and often has a different direction from overall commuting. Service commuting, both real and model, is taken into account in the previous works of the Hampl team, though the map output from Maryáš and Řehák

(1987a) in the Atlas Obyvatelstva ČSSR may be considered to be the most complex regionalisation work. The service travelling network in the hinterland of Olomouc will be formulated in general as a synthetic summary of a single partial travel network for the analysed service areas in the conclusion of this study.

The dominant position of the central city of Olomouc and its regular coexistence with surrounding centres (e.g. Přerov, Prostějov, Litovel, Šternberk or Moravský Beroun) is clearly confirmed in the daily urban system of Olomouc. We also notice a fairly high concordance rate with the daily urban system delimitation itself, which was delimited based on the most frequent and numerous kind of travelling – work commuting. The synthesis confirms that in

the hinterland of such a large city as Olomouc there is no great difference in service region delimitation on the local and micro-regional level. The regions delimited differ only in one part (Fig. 9, 10) – on the local level Libavá (2) and Norberčany belong to Moravský Beroun, while on the micro-regional level Moravský Beroun does not create an independent region and thus Libavá and Norberčany oscillate between Olomouc and Šternberk. On the local level, there are also some minor centres but only in partial processes. Their greater complexity, as far as the offer of services is concerned, was not confirmed.

Out of 63 municipalities in the region, on the micro-regional level nine of them travel to services outside Olomouc – four of them to Litovel (Bílsko, Dubčany, Loučka and Pňovice), four of them to Šternberk (Domašov nad Bystřicí, Strukov, Štarnov and Žerotín) and one to Prostějov (Slatinky). Four towns oscillate between the influence of Olomouc and Litovel (Náklo, Olbramice, Příkazy and Vilémov), two towns between Olomouc and Šternberk (Libavá and Norberčany), one town between Olomouc and Prostějov (Olšany u Prostějova) and two towns between Olomouc and Přerov (Majetín and Věrovany).

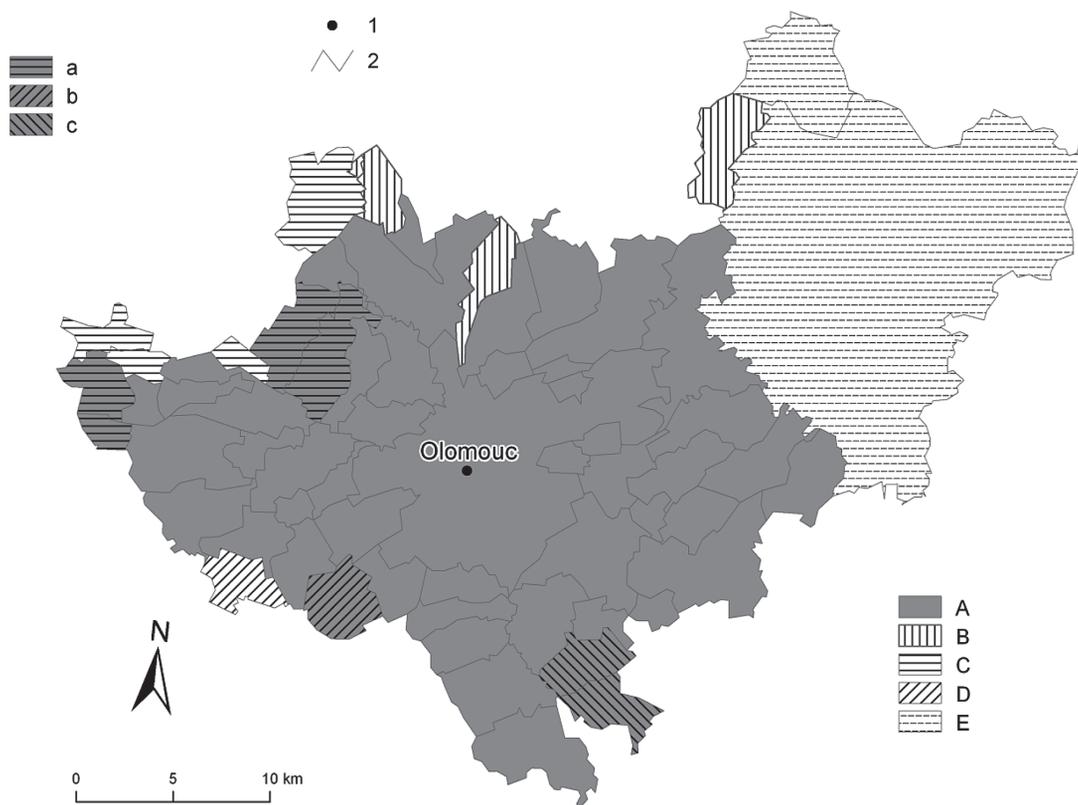


Fig. 9. Complex service regions on the local level in DUS Olomouc

Explanation: 1 – centre of local level; 2 – border of municipality; catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Prostějov; E – Moravský Beroun; a – Olomouc / Litovel; b – Olomouc / Prostějov; c – Olomouc / Přerov

Source: Own research

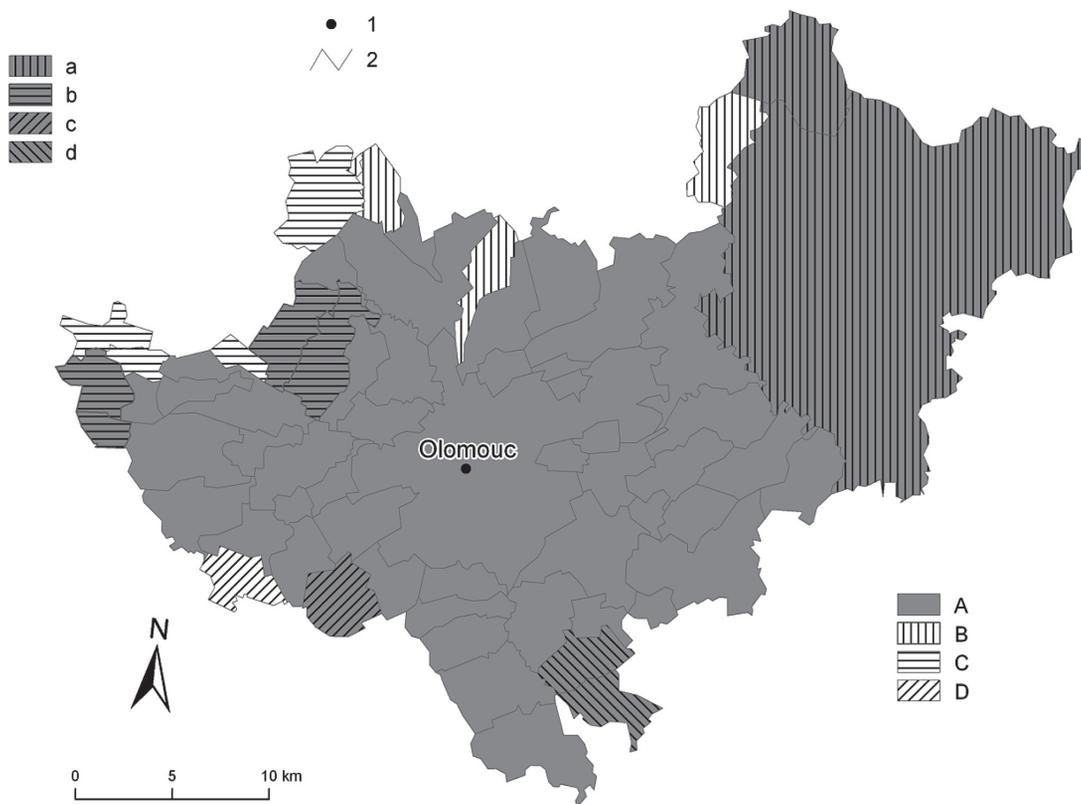


Fig. 10. Complex service regions on the micro-regional level in DUS Olomouc

Explanation: 1 – centre of micro-regional level; 2 – border of municipality; catchment area: A – Olomouc; B – Šternberk; C – Litovel; D – Prostějov; a – Olomouc / Šternberk; b – Olomouc / Litovel; c – Olomouc / Prostějov; d – Olomouc / Přerov

Source: Own research

4. Conclusions

Services commuting analysis in the daily urban system of Olomouc confirmed some basic tendencies of service sector development in the transformation period. Above all, the development of public and commercial services was different. Commercial services gradually adapted to the demand, which means mainly an improvement in the amenities (and thus a decrease in the distance of commuting) of larger towns in the hinterland of Olomouc – mainly pharmacies, basic services facilities, banks and insurance companies. In contrast, clothes and footwear shopping was transferred to large commercial centres, where also basic food shopping was relocated in most cases. Groceries of different sizes remained in all towns of the region; however, in some cases there are only corner shops and small-scale local shops with a limited range that does not

reflect the size of the municipality (e.g. in Bystrovany).

Fewer changes were introduced within the educational and health facilities network in the region. The overall organisation of the location as well as the size structure of the municipalities provides a reasonable probability for all these locally or regionally governed facilities to be maintained and used by the population of the region in general, as well as by minorities. The primary schools network and commuting to these schools determines the most diversified system of regions on the local level. In the public services there might theoretically be a sort of risk connected with commercial sector entry into the hospitals of neighbouring regions (Šternberk, Prostějov, Přerov) – predominantly the risk of basic healthcare substitution for commercial and more profitable health services.

During delimitation of complex service regions, exactly in the relationship of the travelling region

of Olomouc to oscillating regions, we observe their strong similarity compared to MEP delimitation. In contact with Prostějov, Přerov and Šternberk the relationship is almost in concordance. In contact with Litovel, three municipalities from MEP Litovel were registered (Senice na Hané, Senička and Strěň) that were absorbed by the service influence of Olomouc. In contrast, the service commuting of the municipality of Příkazy from MEP Olomouc oscillates between Olomouc and Litovel municipalities. In general, the complex service region of Olomouc comprises 160,000 inhabitants. Out of 45 municipalities, two have the status of a city – Olomouc and Velká Bystřice. The region-creative significance of Velká Bystřice was not manifested in the service sector due to its border position next to the military training area of Libavá. Except for Olomouc, the most important employers in the region are Mora Moravia s.r.o. Hlubočky and Sigma Group a.s. Lutín. Even though both municipalities are rich in population (4,400 inhabitants and 3,200 inhabitants) neither of them has manifested itself as the key service centre in the region.

The city of Olomouc forms a dominant nucleus of the studied area where local administration, service facilities of the micro-region and the majority of job opportunities are concentrated. In addition, more than 60% of the service region inhabitants are concentrated there. The rest of the area cannot have any ambition to compete with the travelling power of Olomouc, but due to a reasonable infrastructure takes the advantage that this proximity provides instead. At the same time, as a source of labour force, traditional agricultural production and relaxation opportunities it creates a city hinterland. Positively, in the larger municipalities the service facilities are maintained, in the easily accessible surroundings of the border areas other micro-regional centres are located and thus the phenomenon of so-called inner-periphery scarcely occurs in the region.

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Notes

- (1) In order to make map 3 clearer, a different cartographic method was used than in other maps.
- (2) In the case of the town of Libavá we are talking about the independent town, and not about the whole military training area.

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