

# SHOPPING AND SERVICES RELATED TRAVEL IN THE HINTERLAND OF BRNO: CHANGES FROM THE SOCIALIST PERIOD TO THE PRESENT

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## Abstract

*Shopping and services related travel represent significant aspects of the service functions of settlements and belong to basic region-forming processes. They are relatively irregular movements, and the analyses of these processes are based on data which are not available from official sources. This article presents some results from a survey on the attraction of retail and services provision, as exemplified by service processes in the hinterland of Brno City. The results from our survey contain both a time dimension in a single-model space (in terms of a comparison between current results and those from the socialist era at the end of the 1970s), and the possibility to compare various methodologies using responses from municipalities and those from local residents. Hence, this article presents an outline of selected changes in the shopping resources and shopping and services related travel in the Brno hinterland, over a period of about three decades, with some interesting methodological aspects.*

## Shrnutí

### **Spádovost za obchodem a službami v zázemí Brna: srovnání období socialismu a současnosti**

*Dojíždka za obchodem a službami představuje významný aspekt obslužné funkce sídel a lze ji považovat za jeden ze základních regionotvorných procesů. Jedná se o pohyb nepravidelný, jehož analýzy jsou vázány na datovou základnu, která je z oficiálních zdrojů nedostupná. Příspěvek představuje vybrané výsledky šetření spádovosti obyvatel za obchodem a službami na příkladech obslužných procesů v zázemí města Brna. Výsledky šetření mají jak časovou dimenzi v jednom modelovém prostoru (srovnání výsledků z konce 70. let s aktuálními), tak nabízejí možnost srovnání odlišných metodických přístupů (odpovědi reprezentantů obcí a odpovědi místních obyvatel). Je tedy možné sledovat vybrané změny nákupních možností, resp. spádovosti za obchodem službami v horizontu zhruba tří desetiletí.*

**Keywords:** retail and services gravity, service processes, questionnaire survey, Brno hinterland, Czech Republic

## 1. Introduction

Linkages between places of residence and the locations of facilities providing retail and service functions are basic socioeconomic relationships, and travelling for retail and services can be considered one of the basic region-forming processes (see, e.g. Hampl et al., 1978). Compared to commuting to schools, which are regular movements, these are relatively irregular movements of inhabitants (e.g. Anděl, Bičík, 1980), and an analysis of the factors influencing such journeys is limited by available data. The shortage of suitable data about travels for shopping and services (there is no centrally-controlled acquisition process for such data) makes any detailed study of these mobility processes difficult.

Travelling for retail shopping and generally for services represents a significant aspect of the service function of settlements (Haggett, 1965; Berry, 1967). Retail facilities in settlements determine the size of the serviced area and other functional parameters of the territorial service-providing systems. In contrast to commuting for jobs and schools, data on travels for retail shopping and services are not available from any official statistical source because they are not collected within the national population survey. To be able to evaluate this phenomenon and compare changes in retail gravity, travel directions, influence spheres and centre attractiveness powers (both settlement and retailing

centres), it is necessary to conduct repeated surveys, most frequently in the form of questionnaire surveys and interviews. These methods make comparisons possible but, on the other hand, the current state of the spatial organization of the retail network cannot be compared with the situation of say 25 years ago, due to the emergence of new retailing concepts and their impacts on the shaping of consumer behaviours (Maryáš, 1988; Kunc et al., 2012a,b,c).

In this article we present the results of a survey concerning the retail and services gravity as exemplified by service processes in the hinterland of Brno city – within the territory of the current Brno-Province district. Besides the analytical outputs and evaluations of partial surveys, we compared the following:

- changes in the attraction area of retailing and service centres in the time period between 1979 and 2011; and
- the results of two related, yet different survey methods – acquiring survey data from the municipality representatives (mayors, secretaries, etc.) and from the inhabitants.

The many shopping centres and large hypermarkets on the outskirts of cities, which have been influencing service processes in the hinterlands of most large cities for many years, represent a significant aspect of the changes in the retail and services gravity.

## 2. Theoretical background

Methodological approaches based on interaction models and data from questionnaire surveys were used to define the hinterlands of retailing and service centres, i.e. to establish the regionalization of services. Gravity models and intervening opportunity models are among the most frequently used interaction models (e.g. Isard et al., 1998). The gravity models started to be used for defining the catchment areas of shopping or service centres in the 1920s when, using data from a questionnaire survey conducted in Texas, Reilly (1929) defined the so-called Retailing Gravitation Law – later called Reilly's law of retail gravitation. Under normal circumstances, two cities, which are retailing centres, attract shoppers from the surrounding communities in direct proportion to the sizes of populations of these two cities and in indirect proportion to some power of distance from each of these cities to the surrounding communities.

Later developments resulted in the establishment of a probabilistic concept and in increasing the number of centres, since Reilly's original model allowed for the division of a territory from two centres only. Generalization of variables followed: for example, rather than the number of inhabitants in the settlement, Wilson (1974) established a so-called production variable, basically representing the level of demand in the settlement, and a so-called attractiveness variable, which is a level of demand in the centre; and distance was replaced by a generalized travel function. Huff's model (1964) or rather its simplified version that belongs in the limited gravity model group, has been most often used for analyzing Central European settlements. In this model, the attractiveness variable is replaced by an alternative variable, e.g. by the number of service facility types, the number of people employed in retailing or in services, shop floor space or retail turnover (see, e.g. Maryáš, 1983).

There are not many studies in the available scientific literature that deal directly with defining catchment areas according to actual travel for services. In his study, one of the classic works, Berry (1967) focused on the catchment areas for services as exemplified by retailing centres in selected U.S. cities. Later he attempted to generalize his findings with respect to other regionalization tasks. In the mid-1980s, Wee and Pearce (1985) used Huff's retail gravity model in connection with customer behaviour in the shopping zones of Canadian cities. Löffler (1998), pointed to different shapes of distance functions for various centre sizes; he also provided a detailed overview of available input data for Reilly's model, specifically mass- and distance-related data. Fotheringham et al. (2000) and Wilson (2010) represent more recent work, expanding upon the theoretical starting points and the historical development of spatial interaction modelling, including possible future utilization.

The Czech specialized literature discussed Reilly's model in the work of the former Commerce Research Institute: for example, Hebák et al. (1972) analyzed the model's variables in detail. Maryáš (1983, 1988, 1992a,b) critically evaluated the methods used to define the retailing centre influence spheres, especially in association with the validity of the original models in the territory of Czechoslovakia, where the conclusions established according to the studies of Brno and Prague hinterlands agreed with foreign experience. After a long pause, Řehák et al. (2009) discussed and introduced model examples of regionalization in the Czech Republic and Slovakia using Reilly's model and its various

versions. Hubáčková and Krejčí (2007) used Reilly's model for assessing the regional impact of the ethnographic region of Slovácko. Halás and Klapka (2010, 2012) and Kraft and Blažek (2012) drew attention to the possible application of Reilly's model to more general and current research topics, besides retailing.

The following methodological approaches can be used for selecting the service sphere centres and for assessing their hierarchic levels, according to Smailes (1967) and Scott (1973), as quoted in Maryáš (1983):

- defining the centres according to data on the functions, capacity and utilization of retailing and service facilities in settlements - so-called static characteristics based on data commonly gathered by survey bureaus; and
- defining the centres according to the size of serviced areas, i.e. according to service processes between settlements – so-called dynamic characteristics based on data from questionnaire surveys of population attraction to settlement service facilities.

Two methods are used to define centre influence spheres according to the questionnaire surveys:

1. survey of selected facilities of the service sphere of a selected centre (e.g. Wokoun, 1983, and more recent works by Szczyrba, 2002; Kunc et al., 2011); and
2. surveys in all settlements of the area under investigation (e.g. Maryáš, 1988, and more recent works by Kunc et al., 2012b,c,d).

Most older studies based on questionnaire surveys claimed that almost every hierarchical level contains a zone of intense interaction, a zone of weaker travels, and an oscillation zone (Berry, 1967), and this is true today as well (Maryáš, 2010). When conducting a survey in the selected facilities of a centre, though, it is difficult to establish criteria determining the range of the catchment area and the intensity of the bonds. Questionnaire surveys of retail and service gravity represent a time-consuming and logistically demanding method, which is therefore not used frequently. This method strives to describe the essential functional characteristics of the intra-city and peripheral centres of retailing facilities and other types of shopping centres, and to generate their spheres of influence (e.g. Marjanen, 1995; Thomas and Bromley, 2003; Mitříková, 2008; Trembošová, 2009; Wagner, Rudolph, 2010; Kunc et al., 2012b).

In defining the catchment areas of commercial units, hypermarkets and shopping centres located in inner cities or in a city's outskirts, have been used for research in the past twenty years. Attention has been given not only to various spatial and social aspects of daily and non-daily attraction of inhabitants in cities and their hinterlands to the shopping units of various types, but also to the influence of newly-built retailing centres on the relationship between the city centre and the periphery, i.e. to changes in retail gravity and the shopping behaviours of customers.

Formerly, using specific examples, researchers tried to describe the shopping behaviour model of the population with respect to the selection of shopping places (Timmermans et al., 1982; Coshall, 1985). Retail gravity, consumers' shopping behaviours and their interactions, became the most frequent types of research. Marjanen (1995) published a time-space comparison of shopping relationships and shopping behaviours of inhabitants in the Turku agglomeration at two time horizons at the beginning of the 1990s. The study demonstrated that the relationships between retail gravity and shopping behaviour had changed less than expected

for the specific period, despite the fact that the transition towards shopping in shopping centres at the edge of the city was quite apparent. Louviere et al. (2001) compared similar interactions in some USA, Canada and Norway cities in three time periods and, among other things, they pointed out the greater dynamism of these relationships in America. Thomas and Bromley (2003) analyzed the relationship between the building of new retailing units in Llanelli city centre (South Wales) and changes in the travels of inhabitants for shopping and services, within the context of a potential revitalization of the city centre. They also criticized the low efficiency of urban planning. Crosby et al. (2005) described the English town of Reading as an example, where the construction of a shopping centre, The Oracle, resulted in a significant regrouping of retailing relationships between the city centre and its periphery.

New forms of shopping behaviours in shopping centres located in a city environment, i.e. specific forms of behavioural implications, are discussed by Spilková (2003) for a Prague shopping centre. In their case studies of Slovak cities, Mitríková (2008), Križan et al. (2009) and Trembošová (2010) focused on interactions between retail gravity and shopping behaviours. Wilk (2005) and Namyšlak (2006) characterized the retailing environment in Poland using selected cities. The study by Dudek-Mańkowska and Križan (2012) presents a Polish-Slovak comparison of the spatial aspects of shopping centre localization in Warsaw and Bratislava. McEachern and Warnaby (2006) studied the issue of intense travels for shopping food products in a rural region of western Scotland, and arrived at a distance of approximately 32 km. Even before that, Smith and Sparks (2000) analyzed, also in Scotland, the general problem of preserving small independent shops in rural regions. The shift of shopping bonds between the cities and countryside towards the cities, or rather towards their peripheries, has been confirmed also by Leeuwen and Rietveld (2011), who demonstrated for five European countries that most households living in the city hinterlands do their shopping in the cities.

Large-scale surveys conducted as a part of the studies published by Kunc et al. (2012c, 2012d, 2012e) demonstrated the significant influence of new suburban shopping centres in the Czech Republic, specifically for the case of the Brno city agglomeration. It is not only the influence of travel distance and place of work on the intensity and frequency of both daily and non-daily shopping travels within an urban space and hinterlands (the resulting intense travel distance was similar to that published by McEachern and Warnaby, 2006), but also of a rather unique change in the shopping behaviour of the whole Czech population in connection with the attractiveness and offer of the new shopping centres. The attractiveness of shopping centres for many types of shoppers does not have to do with the population in the Czech Republic (see also Spilková 2012b) only; it has been confirmed by many studies from other countries as well, where this phenomenon had appeared several decades before (Underhill, 2004; Teller, 2008; Jackson et al., 2011, and many others).

In harmony with the above-presented theoretical background, we established the following research hypotheses:

- Brno city, as a regional metropolis, has increased its significance within the reach of its service area at the expense of smaller traditional centres;
- a growth in reciprocal contacts could be expected between the centre (Brno) and its hinterland, and the establishment of new local service centres with their own small hinterlands; and

- a significant decline in daily shopping (foodstuffs, drugstore goods) at the place of residence, especially in municipalities with the lowest population numbers, could be expected between 1979 and 2011, in connection with changes in rural areas in the past twenty years.

### 3. Research methodology, data, and research area

Analyses of retail gravity for population samples are not common, and when they were made in the past (e.g. by the Commerce Research Institute in Prague, Charles University Prague, Geography Institute of the Czechoslovak Academy of Sciences, Brno), then they were carried out in limited model territories only. The previous most complete survey of population attraction to communal facilities was performed by the Institute of Geography of the Czechoslovak Academy of Sciences in the territory of the Czech Republic at the end of the 1970s, and in the territory of Slovakia, in cooperation with the Institute of Geography of the Slovak Academy of Sciences, in 1978. This survey was conducted through municipal and local national committees, whose secretaries were questioned about the primary and secondary destinations of the settlement's inhabitants when shopping for basic foodstuffs and drugstore goods, common textiles and footwear, industrial goods (electrical appliances), medicines, books, furniture, special goods, and common and special services. On the basis of the above-mentioned surveys, Maryáš (1988) defined basic service regions, which represented a framework where supra-local service processes were relatively enclosed; these processes included shopping for common textiles and footwear, common industrial goods, medicines, books, furniture, and common and special services.

This questionnaire survey methodologically followed the above-described surveys of inhabitants' mobility for services conducted in 1979 and the scope-limited survey conducted in 2004–2006 in the territory of Moravia by Palacký University in Olomouc and Masaryk University in Brno. Questions were constructed in a way that would allow for comparative analyses of those two time horizons (see Tab. 1).

The current survey was conducted through the system of municipal authorities: mayors or their secretaries were questioned about main, partial and exceptional destinations of the municipality's inhabitants in the above-specified processes. The territorial extent was chosen to cover the contemporary Brno-Province district, which is the nearest service hinterland of Brno (see Fig. 1). The survey was conducted by members of the author team and by graduates and post-graduate students of Masaryk University. Representatives of the municipal authorities

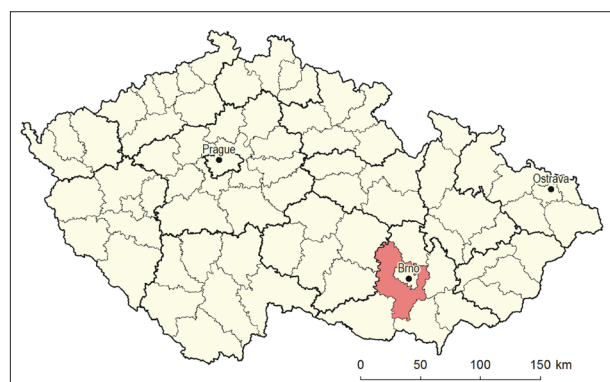


Fig. 1: Research area. Source: authors'



Need	Name of the center visited		
	Prevalingly* (regularly)	Sometimes (less frequently)	Exceptionally (very rarely)
Daily shopping (foodstuffs, small drugstore goods)			
Purchases of common textiles and footwear			
Common services (barber's, hairdresser's, clesner's, shoe repair's, a.o.)			
Visit to pharmacy			
Purchases of industrial goods (e.g. electric appliances, washing machines, refrigerators, a.o.)			
Purchases of books and records (CDs)			
Purchases of furniture			
Special services (photography, watchmaker's, dress maker's, tec.)			
Purchases of special goods (jewelry, choice textiles, footwear, car accesories, a.o.)			

Tab. 1: Questions in the questionnaire survey for municipality representatives (years 1979 and 2011)

\*The inhabitants satisfy their needs in one centre. If there is no prevailing direction of travelling for services, fill in the „Sometimes“ and „Exceptionally“ columns only (you are encouraged to mention 2 or more centres)

Sources: Maryáš (1992a,b); authors' survey

were contacted first by email, then by telephone and some of them were visited personally. This survey was conducted in the first half of 2011.

After performing the analyses of service processes, only those processes with utilization frequencies representing a particular hierarchical level, were selected for defining the service catchment areas. Here we tried to follow the previous survey of 1979, assessing only the shopping for textiles and footwear, industrial goods (electrical appliances), medicines, books, furniture, and common and special services. (Daily and special goods shopping was included in the questionnaire survey but not incorporated in the methodology for establishing the subgroups of service processes and their assessment; yet it was used in the subsequent analysis).

The selection of service centres was largely based on the original methodology of the service centre catchment area selection in the former Czechoslovakia (Maryáš, 1988), which, after performing the analysis of distances up to which the travels for shopping and services occur and after establishing the share of municipalities listed as the main destinations of travels within the service processes, defined the criteria for determining service centres based on the regional scope. The condition that a municipality should be listed as an unambiguous (main) destination of travels for at least one municipality in the above-analyzed service processes, was selected as satisfactory.

We followed the original methodology (Maryáš, 1988) when defining the influence spheres of the service centres as well. Answers in the questionnaire survey were assessed as follows: travels to centres were categorized according to the attraction intensity into the following three types: prevailing 10 points, sometimes 5 points, and occasionally 1 point. For individual localities, each destination  $i$  reported by the municipality in the particular service process  $j$ , was assigned a  $v_{ij}$  value determining a relative significance of the  $i$ -th destination for the reporting municipality in the particular service process:

$$v_{ij} = \frac{T_{ij}}{PC_{ij} \cdot PT_{ij}} \cdot 100$$

where

$T_{ij}$  = point value of the attraction type into the  $i$ -th destination in the  $j$ -th service process;

$PC_{ij}$  = number of destinations within a particular type;

$PT_{ij}$  = sum of point values of all attraction intensity types indicated by a municipality within the  $j$ -th service process.

The sum of the  $v_{ij}$  values in each municipality was equal to 100% for each service process  $j$ . A  $k_j$  coefficient was assigned to each service process depending on its significance, or rather the frequency of use. Total relative significance  $cv_i$  of a destination  $i$  for the particular municipality from all assessed service processes then equals:

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

It holds once again then, that in each municipality  $\sum cv_i = 100\%$ .

Evaluation of individual services from the frequency of use standpoint, and therefore determination of the importance of a process for satisfying the population needs, was the main problem when defining the spheres of service centre influence. We based our assumptions on the numbers of indicated destinations, provided that the highest number of destination municipalities was indicated for the most frequently used communal facilities, i.e. for the most significant and most frequently used service processes (see Maryáš, 1988).

According to the analysis of the main destinations (i. e. destinations listed as prevailing places of shopping), the service processes were subdivided into groups and these

groups were assigned different coefficients for further evaluation. Each coefficient was determined by the ratio between the number of the main destinations of travel for book shopping; purchases of these goods had the lowest number of main destinations of all the studied service processes in the territory of the Brno-Province district. The ratios were as follows: *books shopping : furniture shopping : common industrial goods shopping : special services : textile and footwear shopping : visit to pharmacy : common services* = 1 : 1 : 1.5 : 1.6 : 1.6 : 2.1 : 3.2.

The service processes were then subdivided into four groups:

- coefficient 1 – books, furniture shopping,
- coefficient 1.5 – textile and footwear shopping, industrial goods shopping, special services,
- coefficient 2 – visits to pharmacy, and
- coefficient 3 – common services.

Other municipalities were assigned to selected centres according to the prevailing attraction trend – when a total relative significance of the strongest centre did not reach more than two-thirds of a total relative significance value of the first strongest centre. The other municipalities that failed to demonstrate a sufficient attraction to a specific centre were considered oscillating municipalities.

A household questionnaire survey, or rather a survey conducted at the place of the respondents' residences, was conducted at the same time (2011). Inhabitants of municipalities in the Brno agglomeration represented the base file of the survey; municipalities from the Brno-Province district were selected from this base survey to provide for a comparison with the survey conducted by means of the municipalities' representatives. The sample consisted of 5,500 respondents, aged 15 years and over and permanently living in the specific municipalities. The selection of respondents followed a double stage quota selection process. First, the number of respondents was selected for individual municipalities proportionally to the total population of these municipalities (the number of respondents fluctuated between 10 and 100 according to the municipality size), and then the respondents were selected according to basic demographic indicators (gender,

age), proportionally to the average population of the South Moravia Region. The interviewers were trained graduates and post-graduate students from Masaryk University (for partial results see Kunc et al., 2012a, b, c).

An interesting comparison between the current results of the survey of the inhabitants of the municipalities and the survey conducted via representatives of these municipalities, could be conducted for both daily needs shopping (foodstuffs, drugstore goods) and for common textiles and footwear, industrial goods, books and CDs and furniture shopping, as well as for many common and special services. In the second case we compared travels for selected goods and services to the above-specified centres (responses of the municipality representatives) with travels to shopping centres in the Brno suburbs (responses of the municipality inhabitants).

## 4. Survey results

### 4.1 Attraction to non-daily shopping: comparison of the basic service region of Brno between 1979 and 2011

Comparing the current territorial size of the Brno hinterlands (2012) at the level of the basic service region (Brno-Province district in contemporary boundaries) with the situation in 1979 (Figs. 2 and 3), we can see a declining influence of Brno in favour of some surrounding centres in the Brno-Province district. A growing influence of Brno was observed in the hinterlands of nearby district capitals Blansko, Vyškov and Hodonín (see also Szczyrba et al., 2005; Mašíček, 2007; Maryáš, 2010; Vepřek, 2012) and in the growing number of oscillating municipalities that listed Brno, besides their own centres, as an equal destination of the service attraction gradient (Tab. 2 and Figs. 2 and 3). Traditional centres in the Brno hinterlands (Ivančice, Pohořelice, Rosice, Tišnov and Židlochovice, with populations from 5 to 10 thousand inhabitants) have mostly preserved their service areas, even though centres in areas with good transport connections to Brno lost parts of their hinterlands. This particularly applies to centres beyond the Brno-Province district: Velká Bíteš in the west and Hustopeče in the southeast of the region. Nevertheless, strengthening of the town service facilities (see Szczyrba et al., 2005) resulted in the expansion of the service regions of some of these

Center	Number of municipalities in the hinterlands (1979)	Number of municipalities in the hinterlands (2011)	Number of oscillating municipalities (1979)	Number of oscillating municipalities (2011)
Brno	72	55	17	22
Tišnov	53	50	1	6
Rosice	11	13	5	8
Pohořelice	6	11	5	4
Ivančice	6	8	7	5
Židlochovice	5	5	4	5
Kuřim	0	2	0	5
Modřice	0	2	0	4
<i>Velká Bíteš</i>	8	0	2	4
<i>Moravský Krumlov</i>	1	0	3	0
<i>Mikulov</i>	0	0	0	1

Tab. 2: The basic Brno service region: comparison between 1979 and 2011. Sources: Maryáš, 1988; authors' survey  
Note: Centres in italics are situated beyond the Brno-Province district

centres, especially Pohořelice and Ivančice. The expansion of the hinterlands of the above-mentioned traditional centres in the Brno surroundings could be attributed to the establishment of new large-scale retailing concepts offering both foodstuffs and non-foodstuffs, assortments of goods (especially discount stores Penny Market and Lidl, and supermarkets Billa and Albert), the presence of which eliminates the need for some inhabitants to travel for some non-daily needs shopping all the way to Brno.

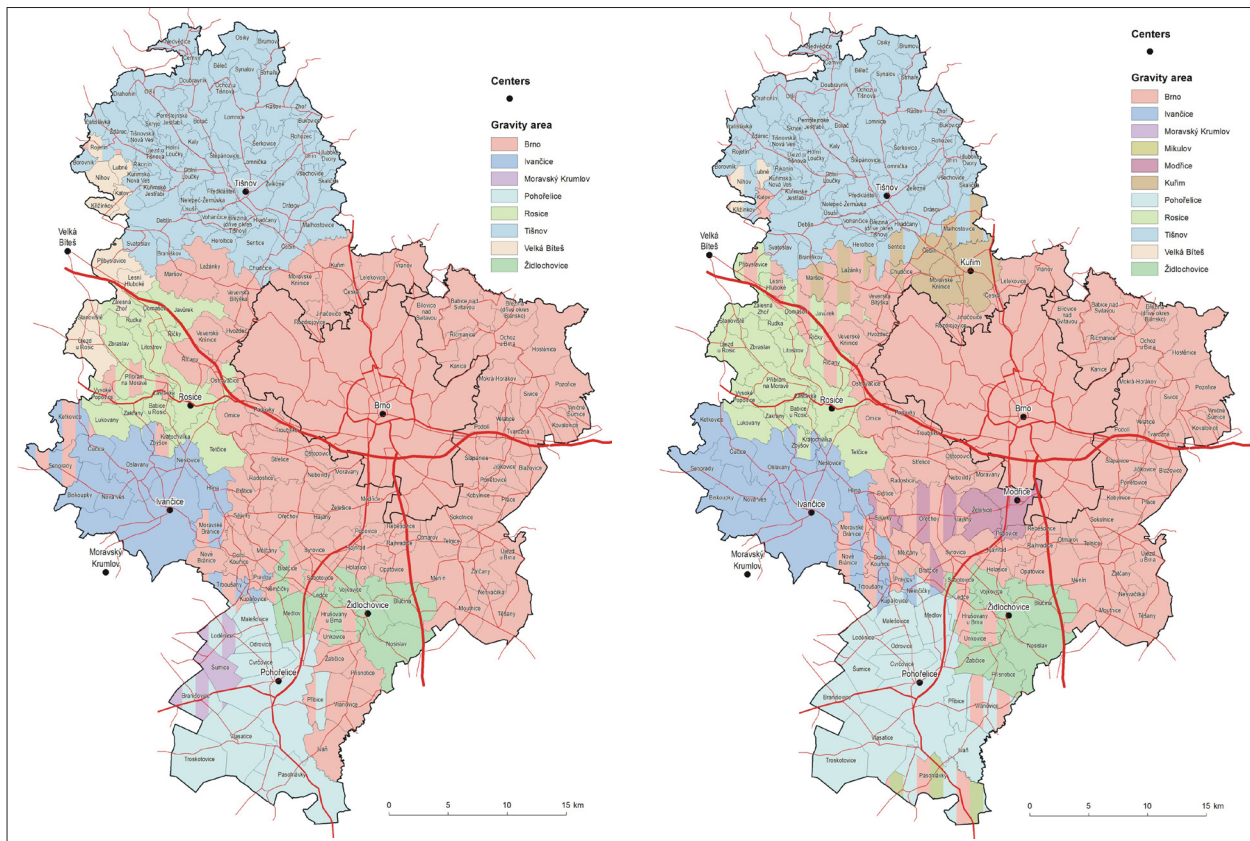
On the other hand, one can observe a development of city service functions in the suburban zone, frequently supported by the location of large-scale retailing units of all types, shopping centres and retail parks, resulting in the development of previously unknown service centres. This observation corresponds with the general theories

about the growth of reciprocal contacts between centres and hinterlands in the post-industrial stage of development (see, e.g. Reynolds, 1992; Marjanen, 1995; Hampl, 2005). Kuřim (the nearest northern hinterland of Brno), Modřice (the nearest southern hinterland), and possibly in future also Šlapanice (east of Brno), are among these incipient centres in the nearest suburban zone of Brno (Fig. 3). We also compared the number of main destinations (Tab. 3) for different product/service categories.

The hierarchy of individual processes related to services changed due to the massive growth of retailing and provision of services after 1989. While special services were typical for a city service centre, i.e. at a micro-regional level, at the end of the 1970s (see Maryáš, 1988), these services have come closer to customers currently and belong to a group of

Special goods purchases	1979	2011
Daily shopping	184	114
Common services	43	35
Visits to pharmacy	18	23
Purchases of common textiles and footwear	34	18
Purchases of common industrial goods	43	17
Special services	12	18
Purchases of books and records	12	11
Purchases of furniture	12	11
Purchases of special goods	5	10

Tab. 3: The number of main destinations in the individual service processes in the Brno-Province district  
Sources: Maryáš (1992a,b); authors' survey with municipality representatives, 2011



Figs 2 and 3: Comparison of catchment areas for non-daily shopping and services in the Brno hinterlands between 1979 (left) and 2011 (right)

Source: authors' survey



processes located between the supra-local and micro-regional hierarchical level. Similar changes could be observed also in the medicine shopping position (Tab. 3). The growth in motor-vehicle use in the last twenty years caused a change in the hierarchical level of the vehicle-related shopping process (included in the special goods shopping category in our questionnaire), which used to be considered a service process of higher than micro-regional level in the past century.

The most remarkable changes were caused by the concentration trends in retailing and by the new phenomenon of hypermarkets and shopping centres located mostly at the edge of Brno. The construction of these units in the peripheral locations of cities initiated the process of decentralization of retailing functions within the hierarchy of retailing facilities of these cities. Retailing in city centres began to lose its traditional and key positions in favour of new retailing centres growing in the periphery. The process of commercial suburbanization started in the post-socialist urban environment (Szczyrba, 2002; Šveda and Křížan, 2012).

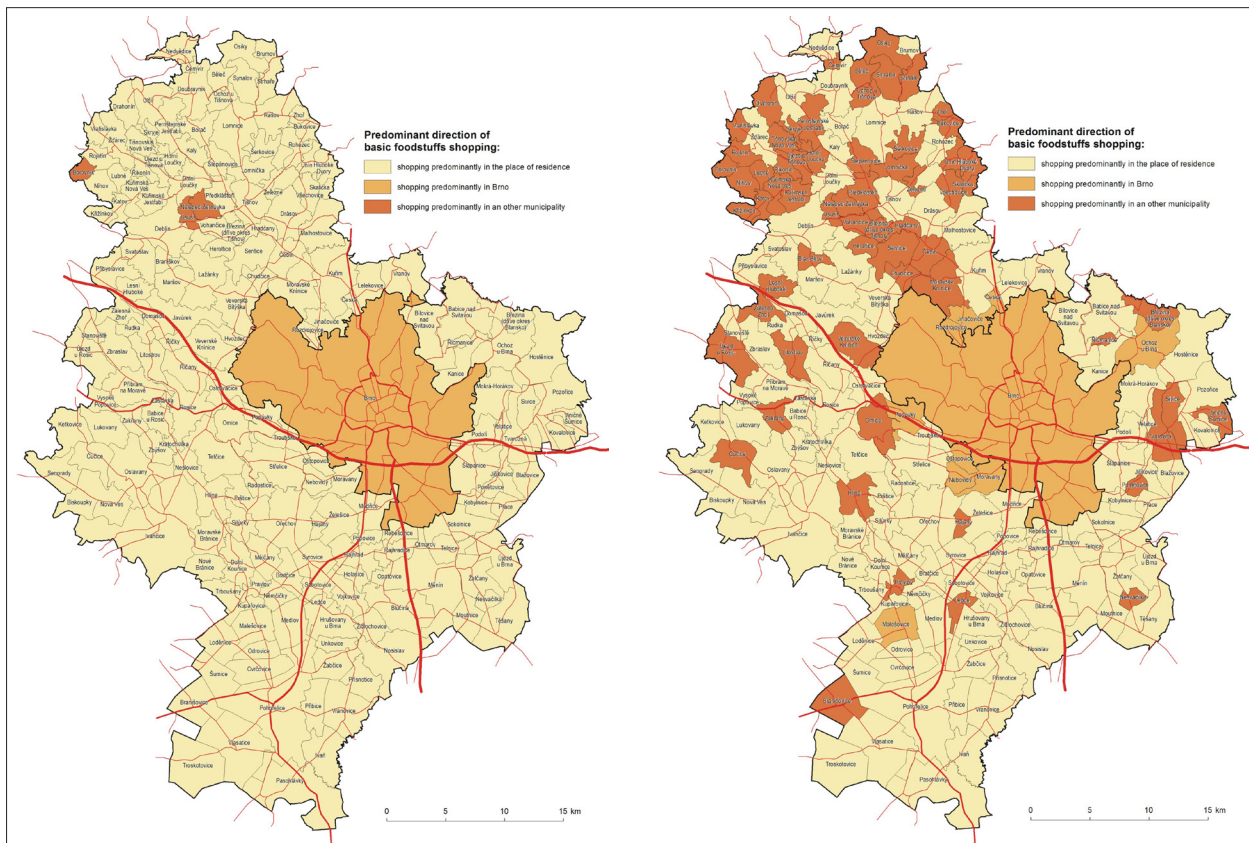
#### 4.2 Attraction gradients for daily shopping: comparison for the basic service region of Brno between 1979 and 2011

In the following Figures 4–6, one can compare the daily needs shopping attraction for the inhabitants of the Brno-Province district, which is primarily focused on basic foodstuffs and small drugstore goods. Figs 4 and 5 are based on the same methodology - answers from the representatives of municipalities, while Fig. 6 is based on the responses of local inhabitants. It is clear that there is a transition from the centrally-controlled retailing model of the socialist period (1979) towards the market environment that has

been gradually established in the Czech Republic since 1990. Cooperative retailing units (Jednota) were typical of socialist rural areas from the 1950s (Szczyrba, 2005; Kunc et al., 2013). Due to socio-political reasons, it was important for planners of the then-communal facilities to provide at least a small retail shop in each municipality or a local part of a municipality, despite the fact that the population in some of these municipalities was less than 100 permanent inhabitants. So-called mobile retail shops were an alternative for the smallest settlements at the end of the 1970s. In our assessment, we do not consider these mobile shops to be comparable with the other retailing units, and this is why the mobile shops listed by the municipality representatives as main destinations of daily shopping were not taken into account (this was the case for two municipalities). The mobile shops and later also other retail facilities in small settlements in peripheral areas, especially northwest of Brno, ceased to exist after 1989.

Comparing the survey results from 2011 in Figures 5 and 6, one can clearly see the similarity between the responses of the municipality representatives and those of the inhabitants, despite the fact that especially in the first case these are opinions of local experts expressing their views on behalf of the whole municipality. This opinion could be somewhat subjective; our research did not reveal any significant discrepancies, however.

Inhabitants from only a few municipalities located close to central Brno, do their daily shopping directly in Brno; this is both because the smooth operation of the public transport system and the fact that the people work in Brno (Kunc et al., 2012c). The shopping for daily needs outside the municipality is necessary for inhabitants in



Figs 4 and 5: Places of daily shopping in the Brno hinterland in 1979 (left) and 2011 (right) according to the responses of municipality representatives

Sources: Maryáš, 1988; authors' survey with the municipality representatives, 2011

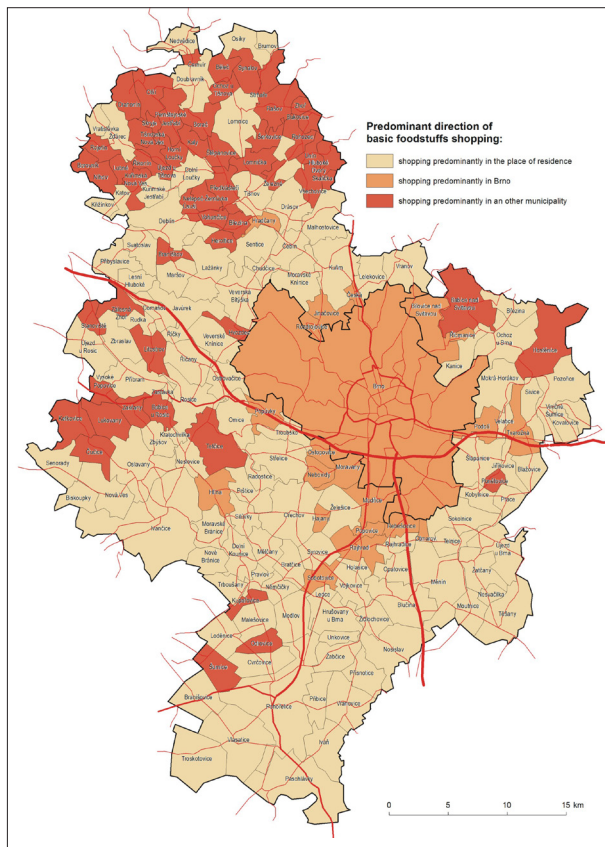


Fig. 6: Places of daily shopping in the Brno hinterland in 2011, according to the responses of municipality inhabitants. Source: authors' survey with the municipality inhabitants, 2011

municipalities with smaller populations and insufficient retailing infrastructure in the north-west hinterland of Brno (Tab. 4). The situation is rather different from the retailing network of the late 1970s, because the market environment has resulted in the disappearance of many unprofitable retailing units. On the other hand, the southern part of the Brno-Province district features a very different settlement structure with large municipalities, whose inhabitants take advantage of the possibility to do their basic shopping in local facilities.

## 5. Conclusions

A comparison between the current survey and results acquired at the end of the 1970s makes it possible to formulate certain conclusions and generalizations. Although we introduce results of the retail and services gravity survey

for the hinterlands of a single regional centre only, we believe that similar trends can be observed in the majority of other regional centres, both in the Czech Republic and in Slovakia. The transformation of retailing and changes in shopping behaviours proceeded similarly in both countries (possibly with an offset of 2–3 years in Slovakia), and affected all regions to a greater or smaller intensity: see Szczyrba, 2005; Spilková, 2012a and Kunc et al., 2013, for the Czech environment; and Mitríková (2008); Križan (2009) and Trembošová (2010), for the Slovak environment.

As compared with the situation 30–35 years ago, the following development trends can be observed, confirming our defined hypotheses at the outset:

- the relative growth in the importance of regional metropolises – resulting in the expansion of the regional extent of the Brno service hinterlands, especially beyond the Brno-Province district, at the expense of nearby district town hinterlands (see also Mašíček, 2007; Maryáš, 2010; Vepřek, 2012) and growth in the number of oscillating municipalities;
- an expansion of the service hinterland in the case of non-daily travels for shopping and services in some traditional centres located close to Brno, especially through the strengthening of their service facilities (for similar conclusions, see Szczyrba, 2005) with the prevalence of large-scale discount concepts such as Penny Market and Lidl and supermarkets such as Albert and Billa;
- the large growth in services resulting in the changing hierarchy of some service processes – travels for special services and travels for shopping medicines;
- growth in motor-vehicle use resulting in a decline of the hierarchical level of shopping processes related to motor vehicles (shopping for special goods);
- growth in reciprocal contacts between the regional centre and the nearest suburban hinterland (for similar conclusions see also Marjanen, 1995; Hampl, 2005) resulting in the establishment of new, previously absent local service centres supported by the presence of large-scale retailing concepts and shopping centres (Kunc et al., 2013); and
- a significant decline in the service functions of typical rural settlements – daily needs shopping (foodstuffs and small drugstore goods) is virtually impossible in settlements with less than 200 inhabitants.

The changes in the gravity of retail and services and the related changes in the shopping behaviours of inhabitants, cannot be evaluated simply as „positive“ or „negative“ within the time period for which data are available. The

Municipality number of inhabitants	Shopping at home (number of municipalities)	Shopping predominantly in an other municipality (number of municipalities)	Shopping predominantly in Brno (number of municipalities)	Share of „shopping in an other municipality“ (%)
0-99	0	11	0	100.0
200-199	1	18	0	94.7
200-499	26	18	0	40.9
500-999	36	12	5	22.6
1000 and more	52	5	4	8.2

Tab. 4: Daily needs shopping according to the shopping destination and municipality size in 2011  
Source: authors' survey with the municipality inhabitants 2011



transformation from a planned to a market economy has been beyond any evaluative criteria at hand, and some of its aspects cannot be objectively evaluated even today. On the one hand, the traditional local service centres have preserved and even expanded their hinterlands as to non-daily travels for retailing and services, and newly-emerging smaller suburban centres (super- and hyper-markets, discount stores and shopping centres) have been established. On the other hand, shopping for daily needs goods is practically impossible today in small settlements with less than 200 inhabitants. The situation is not critical yet (specific problems have to be faced namely with respect to retired people and women on maternal leave, see also Kunc et al., 2013c). It has been partially alleviated by a significant growth in motor vehicle use, which makes it possible to close down some service processes at ever-increasing distances.

Nevertheless, rural areas definitely lose their position in the service processes, as reported in studies from both the Czech Republic (Binek et al., 2007; Vaishar et al., 2011) and from other countries (Moseley et al., 2004; Cebollada, 2009; Głaz and Hasiński, 2011; Nørgaard, 2011). This situation is not only about changes in the service processes and shopping behaviours, but also about the future critical issue of the existence of virtually any services available in rural areas – services which are irreplaceable for the stability and social status of rural areas (Farrington and Farrington, 2005; Karlsson, 2012).

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## References:

- ANDĚL, J., BIČÍK, I. (1980): K některým problémům geografické mobility obyvatelstva. *Acta Universitatis Carolinae, Geographica, Supplementum*, Vol. 15, p. 149–159.
- BERRY, B. J. L. (1967): *Geography of Market Centres and Retail Distribution*. New Jersey: Prentice Hall, Englewood Cliffs, 146 pp.
- BINEK, J. et al. (2007): *Venkovský prostor a jeho oživení*. Brno: Georgetown, 137 pp.
- CEBOLLADA, A. (2009): Mobility and labour market exclusion in the Barcelona Metropolitan Region. *Journal of Transport Geography*, Vol. 17, p. 226–233.
- COSHALL, J. T. (1985): Urban Consumers' Cognitions of Distance. *Geografiska Annaler, Series B, Human Geography*, Vol. 67, No. 2, p. 107–119.
- CROSBY, N., HUGHES, C., LIZIERI, C., OUGHTON, M. (2005): A Message from the Oracle: The Land Use Impact of a Major In-town Shopping Centre on Local Retailing. *Journal of Property Research*, Vol. 22, No. 2–3, p. 245–265.
- DUDEK-MAŃKOWSKA, S., KRIŽAN, F. (2012): Shopping Centres in Warsaw and Bratislava: A Comparative Analysis. *Miscelanea Geographica*, Vol. 14, p. 215–226.
- FARRINGTON, J., FARRINGTON, C. (2005): Rural Accessibility, Social Inclusion and Social Justice: Towards conceptualisation. *Journal of Transport Geography*, Vol. 13, No. 1, p. 1–12.
- FOTHERINGHAM, A. S., BRUNSDON, C., CHARLTON, M. (2000): *Quantitative Geography: Perspectives on Spatial Data Analysis*. London: Sage, 288 pp.
- GŁAZ, M., HASIŃSKI, W. (2011): Działalność gospodarcza na obszarach wiejskich jako wyznacznik peryferyjności. *Barometr regionalny*, Vol. 25, No. 3, p. 13–19.
- HAGGET, P. (1965): *Locational Analysis in Human Geography*. London: Edward Arnold.
- HALÁS, M., KLAPKA, P. (2010): Regionalizace Česka z hlediska modelování prostorových interakcí. *Geografie*, Vol. 115, No. 2, p. 144–160.
- HALÁS, M., KLAPKA, P. (2012): Contribution to regional division of Slovakia based on the application of the Reilly's model. *Hungarian Geographical Bulletin*, Vol. 61, No. 3, p. 237–255.
- HAMPL, M. (2005): *Geografická organizace společnosti v České republice: transformační procesy a jejich obecný kontext*. Praha: Univerzita Karlova, 147 pp.
- HAMPL, M., KÜHNEL, K., JEŽEK, J. (1978): *Sociálně geografická regionalizace ČSR. Acta Demographica II*. Praha, VÚSEI a ČSDS, 304 pp.
- HEBÁK, P., NOVÁK, I., KROC, S. (1972): *Možnosti využití gravitačních modelů pro kvantifikaci nákupního spádu*. [Výzkumná zpráva] Praha: Výzkumný ústav obchodu.
- HUBÁČKOVÁ, V., KREJČÍ, T. (2007): Regionální vliv Slováků pohledem Reillyho modelu. In: *X. mezinárodní kolokvium o regionálních vědách*. Brno: Masarykova univerzita, p. 220–227.
- HUFF, D. L. (1964): Defining and Estimating a Trade Area. *Journal of Marketing*, Vol. 28, No. 3, p. 34–38.
- ISARD, W. et al. (1998): *Methods of Interregional and Regional Analysis*. Aldershot, Ashgate, 490 pp.
- JACKSON, V., STOEL, L., BRANTLEY, A. (2011): Mall Attributes and Shopping Value: Differences by Gender and Generation Cohort. *Journal of Retailing and Consumer Services*, Vol. 18, No. 1, p. 1–9.
- KARLSSON, E. B. (2012): Retail in Rural Regions. Exploring ways to support rural shops. Bifrost, Center for Retail Studies, Bifrost University, 38 pp.
- KRAFT, S., BLAŽEK, J. (2012): Spatial interactions and regionalisation of the Vysočina Region using the gravity models. *Acta Universitatis Palackianae Olomucensis Facultas Rerum Naturalium, Geographica*, Vol. 43, No. 2, p. 65–82.
- KRIŽAN, F. (2009): Globalizácia maloobchodu: definícia základných procesov a ich analýza v slovenskej geografii maloobchodu. *Geografický časopis*, Vol. 61, No. 1, p. 49–68.
- KRIŽAN, F., TOLMÁČI, L., LAUKO, V. (2009): Identifikácia ‚potravínových púští‘ na území mesta Bratislava aplikáciou mier dostupnosti. *Ekonomický časopis*, Vol. 53, No. 10, p. 959–972.
- KUNC, J., FRANTÁL, B., SZCZYRBA, Z., TONEV, P., TOUŠEK, V. (2011): Shopping Centres and Shopping Behaviour: Selected Relations and Socio-Geographical Implications (The Vaňkovka Gallery Brno, Czech Republic Example). *Acta Universitatis Palackianae Olomucensis, Geographica*, Vol. 42, No. 1, p. 5–17.
- KUNC, J., TONEV, P., SZCZYRBA, Z., FRANTÁL, B. (2012a): Commuting for Retail Shopping as a Part of the Daily Urban System (Brno, the Czech Republic). *Geographia Technica*, Vol. 7, No. 1, p. 36–45.

- KUNC, J., TONEV, P., SZCZYRBA, Z., FRANTÁL, B. (2012b): Shopping Centres and Selected Aspects of Shopping Behaviour (Brno, the Czech Republic). *Geographia Technica*, Vol. 7, No. 2, p. 39–51.
- KUNC, J., TONEV, P., FRANTÁL, B., SZCZYRBA, Z. (2012c): Nákupní spád, nákupní chování a nákupní centra: příklad brněnské aglomerace (příspěvek ke studiu denních urbánních systémů). *Sociologický časopis*, Vol. 48, No. 5, p. 879–910.
- KUNC, J., FRANTÁL, B., TONEV, P., SZCZYRBA, Z. (2012d): Spatial Patterns of Daily and Non-daily Commuting for Retail Shopping: Case of the Brno City, Czech Republic. *Moravian Geographical Reports*, Vol. 20, No. 4, p. 39–54.
- KUNC, J. et al. (2013): Časoprostorové modely nákupního chování české populace. Brno, MuniPress.
- LÖFFLER, G. (1998): Market Areas – a Methodological Reflection on Their Boundaries. *GeoJournal*, Vol. 45, No. 4, p. 265–272.
- LOUVIERE, J. J., SEVERIN, V., FINN, A. (2001): The Stability of Retail Choices over Time and Across Countries. *Journal of Retailing*, Vol. 77, No. 2, p. 185–202.
- MARYÁŠ, J. (1983): K metodám výběru středisek maloobchodu a sféry. *Zprávy GgÚ ČSAV*, Vol. 20, No. 3, p. 61–81.
- MARYÁŠ, J. (1988): Nadmístní střediska maloobchodu a služeb v ČSSR a jejich sféry vlivu. [Kandidátská disertační práce]. Brno: Geografický ústav ČSAV. 96 pp.
- MARYÁŠ, J. (1992a): Vybrané aspekty hodnocení oblužných středisek v ČSFR. *Zprávy Geografického ústavu ČSAV*, Vol. 29, No. 3–4, p. 85–126.
- MARYÁŠ, J. (1992b): Higher-than-local level retail and service centres in CSFR and their spheres of influence. In: *Analysis and synthesis of geographic systems*. Brno, Institute of Geography of the Czechoslovak Academy of Sciences, p. 89–96.
- MARYÁŠ, J. (2010): Attraction Zones of Services in Hinterland of Brno. In: *Alternatívi za razvítiye na svremenija turizm. Sbornik dokladi ot naučna konferencija*. Varna, Ikonomičeskij Universitet, p. 612–616.
- MARJANEN, H. (1995): Longitudinal Study on Consumer Spatial Shopping Behaviour with Special Reference to Out-of-Town. Experiences from Turku, Finland. *Journal of Retailing and Consumer Services*, Vol. 2, No. 3, p. 163–174.
- MAŠÍČEK, P. (2007): Střediska regionu Jihovýchod a jejich vybavenost v obchodu a ve službách. [Diplomová práce]. Brno: Masarykova univerzita. 64 pp.
- McEACHERN, M. G., WARNABY, G. (2006): Food Shopping Behaviour in Scotland: The Influence of Relative Rurality. *International Journal of Consumer Studies*, Vol. 30, No. 2, p. 198–201.
- MITRÍKOVÁ, J. (2008): Geografické aspekty transformácie maloobchodu a nákupného správania sa na Slovensku (prípádové štúdie z miest Prešov a Košice). Prešov, Prešovská univerzita, 213 pp.
- MOSELEY, M. J., PARKER, G., WRAGG, A. (2004): Multi-Service Outlets in Rural England: The Co-location of Disparate Services. *Planning, Practise & Research*, Vol. 19, No. 4, p. 375–391.
- NAMYŠLAK B. (2006): Rozwoj wielkopowierzchniowych obiektów handlowych we Wrocławiu. In: *Jazdzewska, I. [ed]: XIX Konwersatorium Wiedzy o Mieście: Nowe przestrzenie w miastach, ich organizacja i funkcje*. Łódź, Wydawnictwo Uniwersytetu Łódzkiego, p. 265–276.
- NØRGAARD, H. (2011): Futures of Rural and Peripheral Areas – Challenges, Strategies and Policies. *Danish Journal of Geoinformatics and Land Management*, Vol. 46, No. 1, p. 81–95.
- REILLY, W. J. (1929): *Methods for the Study of Retail Relationships*. Austin: University of Texas (University of Texas Bulletin No. 2944), 50 pp.
- REYNOLDS, J. (1992): Generic Models of European Shopping Centre Development. *European Journal of Marketing*, Vol. 26, No. 8–9, p. 48–60.
- ŘEHÁK, S., HALÁS, M., KLAPKA, P. (2009): Několik poznámek k možnostem aplikace Reillyho modelu. *Geographia Moravica*, Vol. 1, p. 47–58.
- SCOTT, P. (1973): *Geography and Retailing*. London: Hutchinson. 192 pp.
- SMAILES, A. E. (1967/1944): Hierarchia miast w Anglii i Walii. *Przegląd z zagranicznej literatury geograficznej*. In: *Geography. The Quarterly Journal of the Geographical Association*. Translated by Krystyna Pudło-Palotka, p. 47–64.
- SMITH, A., SPARKS, L. (2000): The Role and Function of the Independent Small Shop: The Situation in Scotland. *The International Review of Retail, Distribution and Consumer Research*, Vol. 10, No. 2, p. 205–226.
- SPILKOVÁ, J. (2012a): *Geografie maloobchodu a spotřeby*. Praha: Karolinum, 246 pp.
- SPILKOVÁ, J. (2012b): The Birth of the Czech Mall Enthusiast: The Transition of Shopping Habits from Utilitarian to Leisure Shopping. *Geografie*, Vol. 117, No. 1, p. 21–32.
- SZCZYRBA, Z. (2002): Shopping Gravity of Large-scale Stores – Example of Terno Olomouc Hypermarket (Contribution to the Study of the Problematic). *Acta Universitatis Palackianae Olomucensis, Geographica*, Vol. 37, p. 91–96.
- SZCZYRBA, Z. (2005): *Maloobchod v ČR po roce 1989 – vývoj a trendy se zaměřením na geografickou organizaci*. Olomouc: Univerzita Palackého, 126 pp.
- SZCZYRBA, Z. et al. (2005): Procesy transformacyjne w handlu detalicznym w układzie regionalnym Republiki Czeskiej (modelowa sytuacja w regionie Morawy Środkowej). In: *Kosiedowski, W. [ed.]: Regiony Europy Środkowej i Wschodniej wobec globalizacji i integracji międzynarodowej*. Włocławek: Uniwersytet Mikołaja Kopernika w Toruniu – Włocławskie Towarzystwo Naukowe, p. 409–412.
- ŠVEDA, M., KRIŽAN, F. (2010): Prejavy komerčnej suburbanizácie vo vybraných odvetviach hospodárstva v zázemí Bratislavy. *Ekonomický časopis*, Vol. 60, No. 5, p. 460–481.
- TELLER, C. (2008): Shopping Streets versus Shopping Malls – Determination of Agglomeration Format Attractiveness from the Consumers' Point of View. *International Review of Retail, Distribution and Consumer Research*, Vol. 18, No. 4, p. 381–403.
- THOMAS, C. J., BROMLEY, R. D. F. (2003): Retail Revitalization and Small Town Centres: the Contribution of Shopping Linkages. *Applied Geography*, Vol. 23, p. 47–71.
- TIMMERMANS, H., Van Der HEIJDEN, R., WESTERVELD, H. (1982): Perception of Urban Retailing Environments: An Empirical Analysis of Consumer Information and Usage Fields. *Geoforum*, Vol. 13, No. 1, p. 27–37.

- TREMBOŠOVÁ, M. (2010): Vybrané aspekty transformácie maloobchodu v meste Nitra v rokoch 1992–2008. Geografický časopis, Vol. 62, No. 1, p. 49–73.
- UNDERHILL, P. (2004): Call of the Mall. The Geography of Shopping by the Author and Why We Buy. New York: Simon & Schuster, 240 pp.
- VAISHAR, A. et al. (2011): Současný stav a vývojové tendence Jihomoravského venkova. Brno: Mendelova univerzita v Brně, 166 pp.
- VEPŘEK, J. (2012): Regionotvorné procesy a jejich hierarchie na příkladě města Brna. [Diplomová práce]. Brno: Masarykova univerzita, 87 pp.
- WAGNER, T., RUDOLPH, T. (2010): Towards a Hierarchical Theory of Shopping Motivation. Journal of Retailing and Consumer Services, Vol. 17, No. 5, p. 415–429.
- WEE, C. H., PEARCE, M. R. (1985): Patronage Behavior Toward Shopping Areas – A Proposed Model Based on Huffs Model of Retail Gravitation. Advances in Consumer Research, Vol. 12, p. 592–597.
- WILK, W. (2005): Miesjce miast w sieciach handlowych – przykład Polski. Prace a Studia Geograficzne, Vol. 35, p. 129–153.
- WILSON, A. (2010): Entropy in Urban and Regional Modelling: Retrospect and Prospect. Geographical Analysis, Vol. 42, No. 4, p. 364–394.
- WILSON, A. G. (1974): Urban and Regional Models in Geography and Planning. London, Wiley, 418 pp.
- WOKOUN, R. (1983): Regionálně geografická analýza spádu do obchodního centra města Brna (na příkladu obchodního domu PRIOR). [Kandidátská disertační práce]. Brno: UJEP, 126 pp.

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**: CHANGES FROM THE SOCIALIST PERIOD TO THE PRESENT**

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