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## The Consumption Space Paradox: Over-Retailed Areas Next to Dead Malls<sup>1</sup>

**Abstract:** We are witnessing a paradox in the consumption space, in relation to retail activity within urban and suburban areas: One can observe over-retailed areas, featuring retail chains and shopping malls, oftentimes occurring close to other unoccupied, abandoned, dying shopping malls, called dead malls. The phenomenon of dead malls is widespread in the USA, is strongly visible in Canada and China, and is now starting to occur more often in Europe. This paradox can be partially explained using a series of concepts, and in this paper we introduce the main pillars in understanding the socio-economic reasons and the spatial patterns contributing to this phenomenon. The research method employed here is the ESDA (Exploratory Spatial Data Analysis).

**Keywords:** spatial analysis, retail location theory, shopping malls, retail chains expansion

**JEL:** C20, L81, R12, Z13

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## 1. Introduction

Consumer practices lead to consumption patterns that are disseminating all over the modern world at a rapid pace. They are rapidly growing and collecting new followers together with new economic consumer trends, such as e-commerce that enables global shopping anytime and anywhere. However, brick and mortar stores and all ‘traditional’ consumption infrastructure still constitute a significant part of retail companies’ profit. The concept of the big store is one of the phenomena that originated in ancient times, but the modern concept of the shopping mall (also called shopping centre) originated in the USA, and is still popular in the majority of developed countries.

There are several interdisciplinary monographs that focused exclusively on the concept of the shopping mall as an interesting phenomenon, starting with British research in Brent Cross (Miller, 1998), as well as numerous monographs on American shopping malls. A few studies on Polish shopping malls emphasise their growing popularity among customers, high frequency of visits, even going as far as comparing these visits to regularly attending church (Makowski, 2003: 61). They portray those places as quasi-public spaces which seem to be open to everyone, but actually have quite strict limitations. For that reason Rochmińska calls shopping malls a hybrid space (Rochmińska, 2014).

The scope of the paper goes beyond shopping malls, as it seeks to identify the consumption space paradox, which consists of the malls and big-box stores (free-standing super- and hypermarkets), as well as of dead malls. Where it is not possible to analyse the paradox (due to data limitations), a spatial pattern of the consumption space, as well as its relation to socio-economic conditions are investigated.

## 2. Research problem outline

The consumption space is a notion I would like to introduce here. It is a large area of the retail space where consumption is held. It is different from commercial space because it reveals the significance of the process of consumption taking place there. Consumption means not only purchasing, using, disposing of products, but it also concerns services, ideas, or experiences (Solomon et al., 2006: 27). Consumption space is defined as a retail Business-to-Consumer space, increasingly concentrated in enormous commercial and service areas, particularly shopping malls, discount stores, super- and hypermarkets. They may be single working stores – then they are called big-box stores (Nadis, 2011), or they may be situated in shopping malls – then they are called anchor stores (Bannock, 2003). Consumption space is most pronounced in the context of large space and therefore the paper focuses

on large consumption spaces, over 300 m<sup>2</sup>, as this is the minimum space of discount stores. That excludes itinerant trade, small format stores, shopping streets and online stores.

The described paradox concerns consumption space therefore it is called consumption space paradox. This paradox covers two contradictory yet highly related processes. On the one hand, many of the so-called “first generation shopping malls” are said to be dying, some of them have been closed permanently and they are called *dead malls*. On the other hand, there are over-retailed areas with new prosperous shopping malls and retail chain stores, which can be perceived as surprising in the era of online shopping and dead malls. New, even larger big-box stores and “fourth generation” regional-size shopping malls are being constructed, and are gaining in popularity. The key point is that they are in the same or nearby areas as the dead malls. Over-retailed areas, full of stores of retail chains, such as Walmart, Macy’s etc. that are usually concentrated in American suburbs, also host dead malls – shopping malls that used to be vital and prosperous, now are just left unused and abandoned.

Dead malls are only beginning to show in Europe, yet, it is well known in the United States and China, whereas over-retailed areas are known across the modern world. For example, in Buffalo and Niagara Falls in the USA, two neighbouring mid-size cities, directly interlinked with highways, there are twelve shopping malls and so-called strip malls within urban and suburban areas. As my fieldwork research in 2015 revealed, three of them were dead – one was demolished, and two were closed. In addition, two more are dying. What is perplexing here, is that a brand new shopping mall was opened in the same area just a few years ago, a larger and more modern one than the others in the area (Bednarowska, 2016).

The co-presence of over-retailed areas and dead malls influence each other because of their spatial proximity. They have impacted each other’s prosperity, therefore some of them died and other remained. How do new shopping malls spring up next to dead malls, proving prosperity and bankruptcy may coexist in proximity? Is there a linear relation between the condition of the region and consumption space expansion/decrease? Does oversaturation account for a broader explanation? Is there a relation between spatial location of consumption space, its increase and the development of the paradox? How does this paradoxical space affect the social and economic development of urban and suburban areas? Does the appropriation of the concept of the shopping mall all over the world, decades ago mean that it is time for the appropriation of dead malls now?

The consumption space paradox is complex and its origins are multicausal. There is a whole range of concepts that offer partial explanations. One can easily apply theories of market oversaturation and the basic economic model of supply and demand, or attribute the paradox development to the e-commerce outburst, the internationalization of retail chains and trade, or a retailer’s international market-

ing policy. Each local decision on opening a new site concerns decision-making theories, local politics and retail estate management – as it is part of the decision process and agreement between developers, investors, urban planners and local authorities. It is definitely a social multi-stakeholders decisional processes (Atanasiu et al., 2014: 10).

Existing theories explain the problem only to a limited extent, usually not focusing on dying retail venues, but concentrating on the explanation of the frequent visits in the new generation shopping malls. Is it really only about marketing strategies of the new shopping venues that are more successful than the older ones and can embrace current trends and attract consumers to the new stores due to their novelty and current fashion? Even if it is partially true, this does not seem to account for a holistic explanation. The theoretical explanation of the research problem draws upon several fields of science: retail studies and other branches of economics, urban sociology, consumer behaviour theory, urban planning and human geography. The most relevant concept for the explanation of the aforementioned paradox, which is a multidisciplinary problem, is retail location theory.

The decisions of retailers are usually considered on three levels: regional, areal and then a specific site (Brown, 1992: 16). Brown argued in the 1990s that many location decisions are arbitrary rather than evidence-based, even though decision makers started to provide access to market data at that time (Brown, 1992: 34). In the 2010s, when there is almost too much data to handle, and retailers have good access to big data and various kinds of market data to support their decisions, the problem of intuitive retail location might still be recognized, mostly because it is about decision makers' eagerness and openness to take any kind of evidence into consideration in their decision making process. The problem of access to data results is actually secondary, as it is more about the decision makers' competences to use them, than about data availability, at least, it is the case of the usage of market data by decision makers in Poland (Bednarowska, Chrzanowski, 2017).

One of the most popular data-driven location decisions is the analysis of the catchment area of the planned retail centre or shopping store. The catchment area may refer to the customers' location in terms of the distance, or the travel time (Murad, 2015). Another spatial approach useful in retail location strategy is geodemographic segmentation as a pointer of customer traffic, attraction level, or costs of the opening and maintenance of the new shopping venue, identification of prosperous market areas of specifically targeted clients (González-Benito, González-Benito, 2005).

There were many theories trying to optimize the retail location decision. Retail location theory is the main axis for understanding the consumption space paradox. It reveals the main mechanisms behind the location of new shopping malls or big box stores – retail chain stores.

The paradox and its spatial pattern could be researched from two perspectives: that of the *agents* (retailer planners and developers) and that of the *subjects* of the process (customers).

Brown mentions “practitioner” and “theoretical” schools of locational research, where the latter is interested in the spatial side of the retail system, its sub-system and overall approach, listing the main four theories: central place theory, bid rent theory, spatial interaction theory and the principle of minimum differentiation (Brown, 1992: 13).

The three classical location theories were confirmed empirically recently in the case of food retailers, proving the following relations:

- 1) a positive association between the size of the population density around the store and the distance to the city centre (referring to the Central Place Theory);
- 2) a positive association between store density of competing stores and their distance to each other, as well as a tendency to build new stores near the trade area central point (referring to the Principle of Minimum Differentiation);
- 3) a positive association between store location and the consumer’s proximity to the smaller stores, as well as between the store’s attractiveness to the consumer in the case of the larger stores – smaller stores’ main advantage is proximity, while the larger stores can be located more distantly because their attractiveness matters more (referring to the Spatial Interaction Theory) (Reigadinha, Godinho, Dias, 2017).

In order to answer the research question, a spatial pattern of consumption space needs to be discovered. As Bertazzon & Zaninotto admit, after completing a study on super- and hypermarkets: “Spatial pattern is in fact determined by a combination of factors, such as the location strategies of individual organizations, the goals of the shopping mall development industry, central and local government policies and dynamic dimensions” (Bertazzon, Zaninotto, 1996: 198). However, more important than drivers of location strategies are their outcomes.

In order to understand consumption space in Poland (not the paradox yet), I built a preliminary model, where the macro factors of the commercial potential and the socio-economic conditions of the cities where consumption space is taking place, were conceptualized by the following variables: *population size*, *net earnings*, *unemployment rate* (Bednarowska, 2015). The outcome variable was consumption space, measured by the total count of retail chains in a given city. The non-spatial OLS model was significant and had a strong explanation power. It shows that the larger the potential of the targeted consumers in economic terms, the larger the number of consumption space spots. The spatial regression equation included spatial lag: the proximity of consumption space to cities and the similarity between them. Here, the continuation of this research on consumption space is presented, based on data for the US and European malls.

### 3. Methods

The research design follows secondary data analysis, and an ESDA – Exploratory Spatial Data Analysis. ESDA may serve both, as a preliminary or as the main research stage. Spatial exploration of the research problem in this paper lies in the interest of New Economic Geography, which investigates spatial aspects and locations, also retail locations, as space shapes these phenomena to a great extent (Suchecki, 2010: 203).

Even the simplest ESDA, a basic distribution of the variables with the use of spatial dimension, presented on the map or graph, may show interesting spatial patterns and new discoveries. ESDA covers not only simple spatial distribution with mapping and choropleth visualizations. As an exploratory technique it recognizes spatial heterogeneity or indicates spatial autocorrelation in data, prior to spatial modeling. Advanced ESDA covers spatial statistics, yet spatial statistics work as an independent method as well. There are ‘three acknowledged areas of spatial statistics – point processes, geostatistics, and areal data’ (Bivand, Pebesma, Gómez-Rubio, 2008: 12). They may serve as a preliminary procedure before modeling in these three areas or as independent analyses.

In retail and location research, if spatial analysis refers to points, then we analyse retail locations. If it refers to surface (areal data) – then we analyse catchment area. As this paper initializes research on consumption space paradox, here ESDA as an auxiliary method is sufficient for the exploration of the paradox.

### 4. Results

Due to the fact that the paradox is mostly observable in the USA, the results of the research will focus on analysing it in the USA, while focusing on consumption spaces in Europe, as there is no official statistics regarding number of dead malls in Europe that I am aware of. Dead malls are still a marginal phenomenon in Europe and therefore, the paradox could not be researched. However, an exploratory analysis of the consumption space condition is presented below, to see if there are any insights showing that the paradox could occur in Europe.

#### 4.1. The consumption space paradox in the USA

The total count of malls in the USA differs, depending on the definition. Table 1 reveals data from official statistics, which also include power centres. Without them, a total count of malls is 2191.

There is no official statistics of dead malls that I am aware of, therefore, I had to refer to grey literature – the popular website about dead malls: Deadmalls.com, run by retail historians, which lists 480 dead malls in the USA and a few in Canada, China and New Zealand (Blackbird, Florence, 2015).

Dead malls take up a huge part of the urban and suburban space that could be developed in a different, more productive way, for instance as public space. And since they remain unoccupied, they deteriorate and destroy the urbanscape, leading to urban decay. The table below combines two separate sources of data, listing the number of shopping malls in the USA in 2015 in comparison to the estimated number of dead malls.

Table 1. Shopping mall count in the USA, 2015

Type of shopping mall	2015	%
Factory Outlets	349	8
Lifestyle	446	10
Power Centre	2253	51
Regional Mall	602	14
Super Regional Mall	629	14
Theme/Festival	165	4
Total	4444	100
Dead malls (rough estimation)	480	11
Dead malls among malls without Power Centres (estimation)	480	22

Source: Shopping mall count in the USA (ICSC, 2015) and an estimated number of dead malls by Blackbird, Florence (2015)

Roughly 11%, or 22% if power centres are not included, are dead malls, based on data from International Council of Shopping Centers (ICSC) and retail historians (Blackbird, Florence, 2015) (it should be noted that it is not certain if all types of shopping malls were taken into consideration by the authors of the estimation). It can be concluded that this phenomenon is not limited to regional problems with declining stores – it is a national American problem. The problem of dead malls is of larger significance due to the role that shopping malls play in the USA: “Strange as it may now seem, during the 1960s many American planners argued that shopping malls could provide solutions to suburban sprawl and urban anomie” (Smelser, Swedberg, 2005: 331). Oftentimes they were designed to substitute a common space within suburbs that was thought of as a prompt to build a local community.

Historic data shows a clear indication of the problem of dead malls. The occupancy rate of shopping malls in the USA has fluctuated over the last 30 years, from 94.25% in 1986 to 86.89% on average in 2010. However, looking back, there are visible fluctuations, presumably reflecting economic downturns. Therefore,

dead malls are definitely not a problem of recent years only, as some might have attributed it mainly to the economic crisis of 2008, when there was a significant decrease of the occupancy rate.



Figure 1. Occupancy rate in all shopping malls in the USA

Source: ICSC, 2015

As the homeland of shopping centres, the USA held an outstanding number of shopping malls in 2015. There is a visible increasing trend since 1970s, regardless of the occupancy rate that dropped significantly. A similar trend of increasing numbers of shopping malls can be observed, for example, in the UK, however showing a slower but stable increase.

The mall related employment rate in the US indicates that the shopping mall segment is less prone to changes. The trend has been ascending until the 2008 crisis, with a rebound around 2010. There has been a triple increase within 44 years, whereas malls related employment has only increased by 2141.1, which accounts for 19% of the value in 1991.

Shopping mall related employment also shows a high dependence on the general condition of the economics and consumer spending.

Data on big-box stores would supplement the picture of the CSP, yet the ICSC does not collect them. Other resources show dynamic changes in the retail market in the USA. Retail chains noted a drop in sales and foot traffic starting in 2000s, and this was attributed to the malls being over-retailed; there is 26 sq. feet of retail space per capita in the USA compared to 2.5 in Europe (Sanburn, 2017).



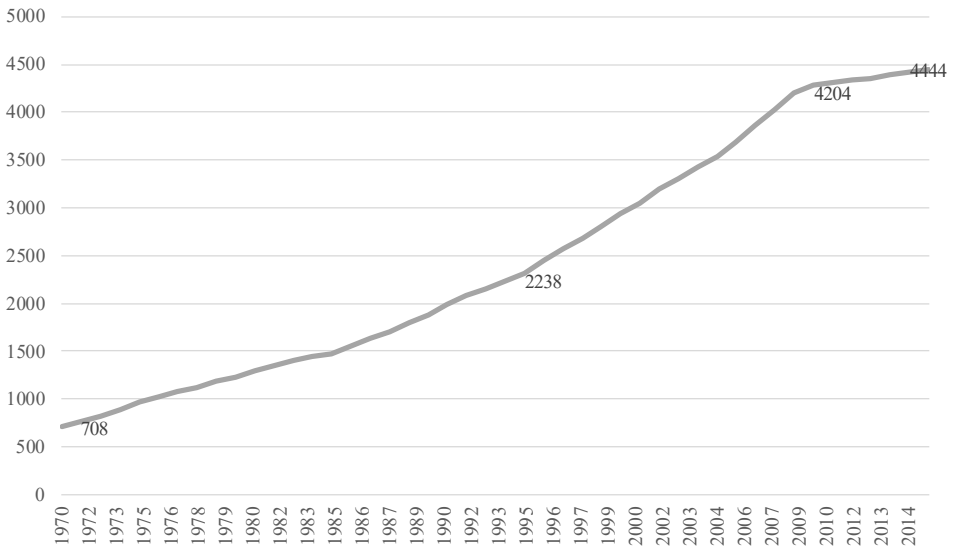


Figure 2. Total shopping mall count in the USA including only categories mentioned in the Table 1  
Source: ICSC, 2015

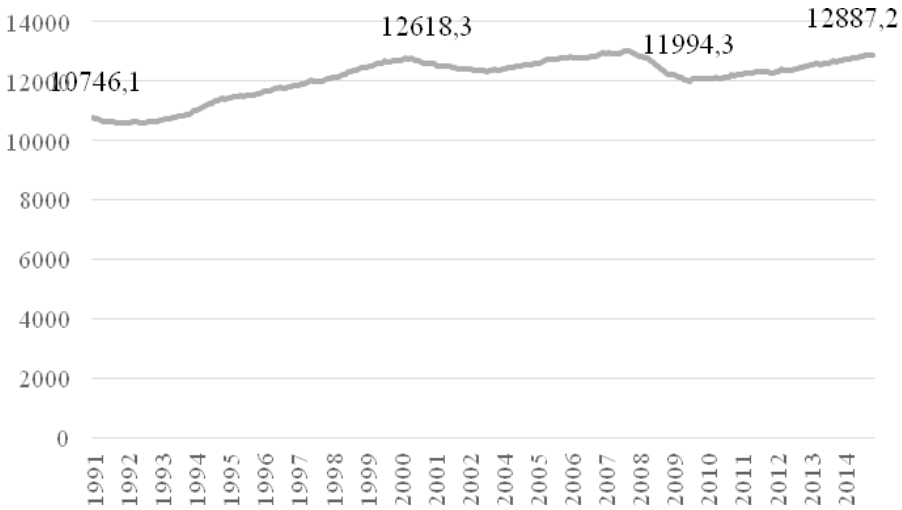


Figure 3. Shopping mall related employment in the USA  
Source: ICSC, 2015

The results above show that the paradox is visible not only in the statistics regarding particular malls that died but also in the general retail industry condition. Even though a decent number of malls is closed, paradoxically it does not slow down opening the new ones. In addition, more and more new retail chain stores have been opened in the recent years to the level of saturation. “Most chains saturated the markets near their first store locations. [...] The diffusion of retail

chains across space is a dynamic process” (Joseph, Kuby, 2013: 158). Many American regional chains are now national or even present outside of the USA, such as Wal-Mart which is also present in Canada or Mexico. This proves also how complex the paradox is and that its spatial spillover is more than possible.

#### 4.2. The condition of the consumption space in Europe

A shopping mall plays a larger role in the USA, which is also due to higher autodependency than in Europe. The mall was supposed to serve as a social place in the USA (Bednarowska, 2016). This is directly related to the ‘problem of place in America’, where a third place, where people living nearby could gather and socialize with their neighbours, is less common (Oldenburg, 1999: 5). Even though dead malls are very prominent in the USA, the phenomenon is starting to become visible in Europe and also in Poland, which will serve as an example to illustrate the origins of the paradox.

The numbers could be a summary of the consumption space trending the EU28 and Norway: “Today, there is more than 112 million m<sup>2</sup> of mall gross leasable area in the EU28, including Norway, of malls larger than 5.000 m<sup>2</sup>. The average gross leasable area per 1000 capita in EU–28 + Norway and Switzerland is 224 m<sup>2</sup> [...] More than 6 million companies are acting in the retail sector while around 30 million Europeans work in commerce” (Atanasiu et al., 2014: 6–10). The consumption space is enormous in Europe as well as in the USA.

In Poland, for instance, 19 new shopping malls have been constructed in the first quarter of 2016, five existing shopping malls were enlarged, whereas the percentage of unrented commercial area is growing within old and new shopping malls (JLL, 2016). Some of the tenants are slowly leaving less attractive shopping malls, and the number of unrented space is growing. One can observe the first struggling shopping malls, where tenants are slowly leaving, and the number of unrented space is growing. One of them is in Warsaw (Molga, 2016) and another is being repurposed for the outlet centre in Kraków (ACH, 2017). Poland is starting to struggle with over-retailed areas, also concerning big-box stores. One particular example is Biedronka retail chain that is said to be taking up more and more space all over Poland, producing a very dense spatial distribution of this retail chain store (Bolanowski, 2016).

It is hard to compare the US shopping malls market sizes within European countries, due to the high level of regional economic, social and historical differences. Bearing these differences in mind, a brief comparison between UK and Poland is included. The two figures below present the total count of shopping malls in the UK and Poland to give a general overview.

Below there is a general overview of mall count and GLA in Poland.

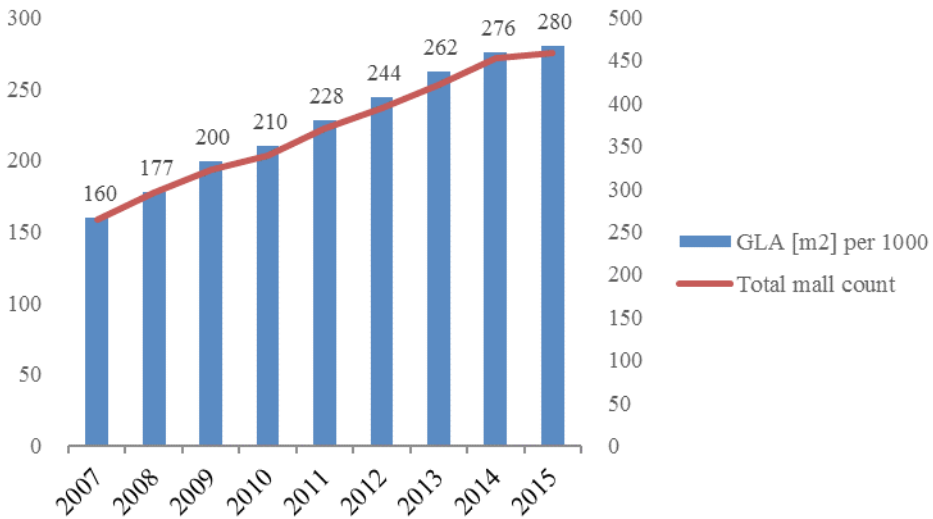


Figure 4. Total shopping mall count and Gross Leasable Area (GLA) in Poland

Source: ICSC, 2015

The first shopping malls in Poland were established in the 1990s, when they were already omnipresent in the USA and Western Europe. The number of shopping malls has been growing rapidly in Poland for the last ten years. In 2015 the total shopping mall GLA was almost double the size of the one in 2007. A similar situation to the Polish retail market challenge is faced by much smaller Latvia – already in 2012 it was clear that the number of large-scale malls (over 360 000 m<sup>2</sup> of GLA) would double in Latvia by 2015 (Staube and Geipele, 2012).

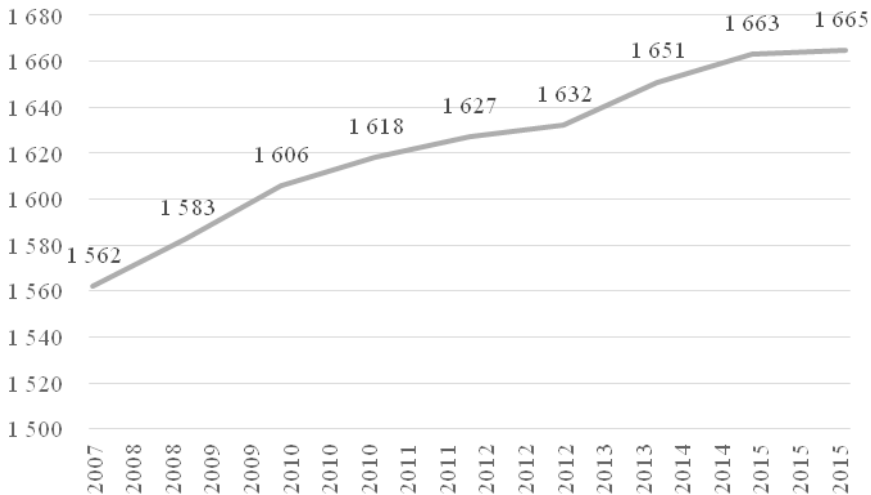


Figure 5. Total shopping mall count in the United Kingdom

Source: ICSC, 2015

There have been new openings of shopping malls in the UK as well, but it is a much slower trend when compared to the same time period in Poland. The absolute number is much higher in the UK than in Poland, which is easy to explain due to the difference in population size. Another important reason is the shorter history of shopping malls in Poland, as they started to be constructed only after the political transformation of 1989.

A general overview of malls in Europe brings a conclusion about significant differences in consumption space between European countries. The chart below presents the total number of shopping malls in Europe, as well as an indicator of total GLA space [in m<sup>2</sup>] per 1000 capita.

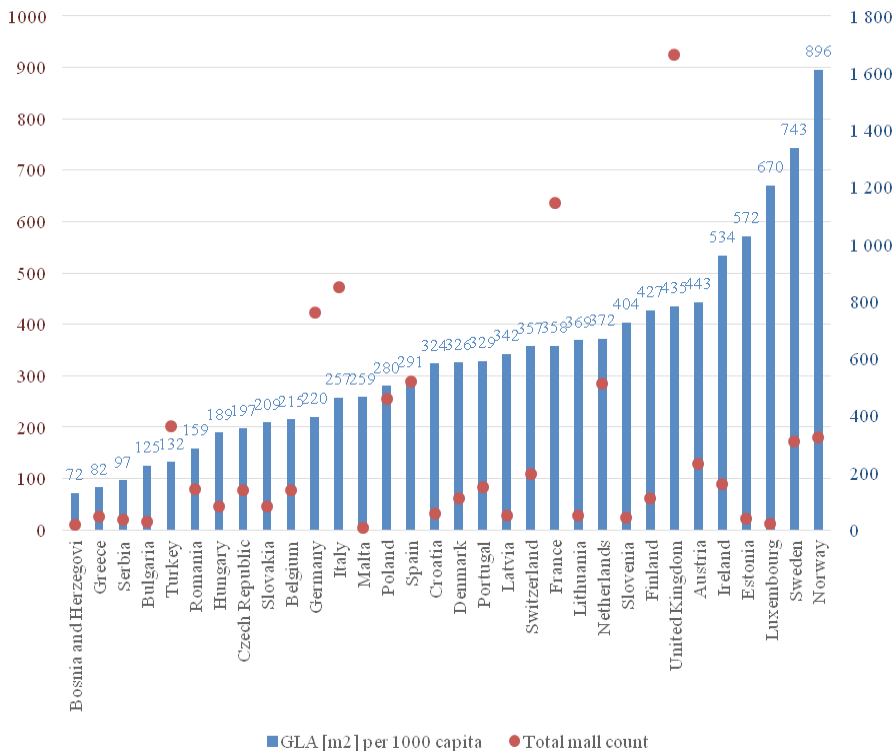


Figure 6. Total shopping malls count and an indicator of total GLA space [in m<sup>2</sup>] per 1000 capita in Europe

Source: ICSC, 2015

The biggest numbers of malls are concentrated in Norway (896 m<sup>2</sup> per 1000 capita), Sweden (743) and Luxembourg (670). There is a drop in numbers after the top 5 most *malled up* countries in Europe, i.e. Norway, Sweden, Luxembourg, Estonia and Ireland, which have more than 500 m<sup>2</sup> of malls per 1000 capita. The spatial distribution of malls into categories helps to visualize European consumption space.

When comparing Europe's paradox spatially, some experts admit that Europe's retail market recovered after the 2008 economic crisis, yet there is a visible under-supply in CEE – Central and Eastern Europe (Atanasiu et al., 2014). Given that it is reported that, for instance, the Polish market is still immature, it is paradoxical how it can be perceived as oversaturated locally. Interestingly, the under-supply does not exclude the beginning of dead malls, and as a consequence – the consumption space paradox. The problem of shopping mall oversaturation on a national level was researched in monographic works, such as: *Is there enough space for the shopping malls in Latvia* by Staube, Geipele (2012), or papers on malls in the Czech Republic (Záboj, 2009), Istanbul (Ertekin et al., 2008) or Ankara (Ozuduru, Varol, 2011).

Naturally, Europe as a whole is much more diverse than Northern America, with substantial differences among countries, starting with retail market oversaturation and the role of shopping malls. Spatial distribution of the whole consumption space in a given country (including retail chain stores) would support the understanding of the paradox. However, in order to complete such analysis, reliable data on dead malls would be necessary. Thus far, spatial distribution of shopping malls in Europe should be satisfactory.

Norway and Sweden are marked with the darkest colour (choropleth on the map), as they have the highest level of GLA per 1000 capita (the first category). The second category covers much smaller countries like Luxembourg, Estonia, or Ireland yet with a very high GLA. Spatial proximity and similarity have a clear significance for consumption space. There are also some spatial clusters visible on the map. The states within clusters share a similar number of malls in terms of GLA. The first cluster is in Germany and Eastern Europe, the large spatial belt that stretches from Turkey, to Poland. The second is in the region of Austria, Slovenia, Croatia and Switzerland. The first cluster consists of large states with moderately high GLA. The second one consists of small countries with high GLA. There are also definitely over-retailed areas in some countries. This necessitates further investigation of consumption space in Europe.

On top of that, there are other potential dependencies between the spatial expansion of malls and explanatory variables: demographics and regional economic differences. When considering Europe's paradox spatially, one needs to remember the shorter history of shopping malls in Central and Eastern Europe, and South-Eastern European countries, due to them being released from a centrally controlled economy only at the beginning of the 1990s, which affected their retail history significantly. Interestingly, this does not exclude the beginning of the paradox in these parts of Europe. Therefore, we can already see the first struggling shopping malls, even if they were not opened until the 1990s.

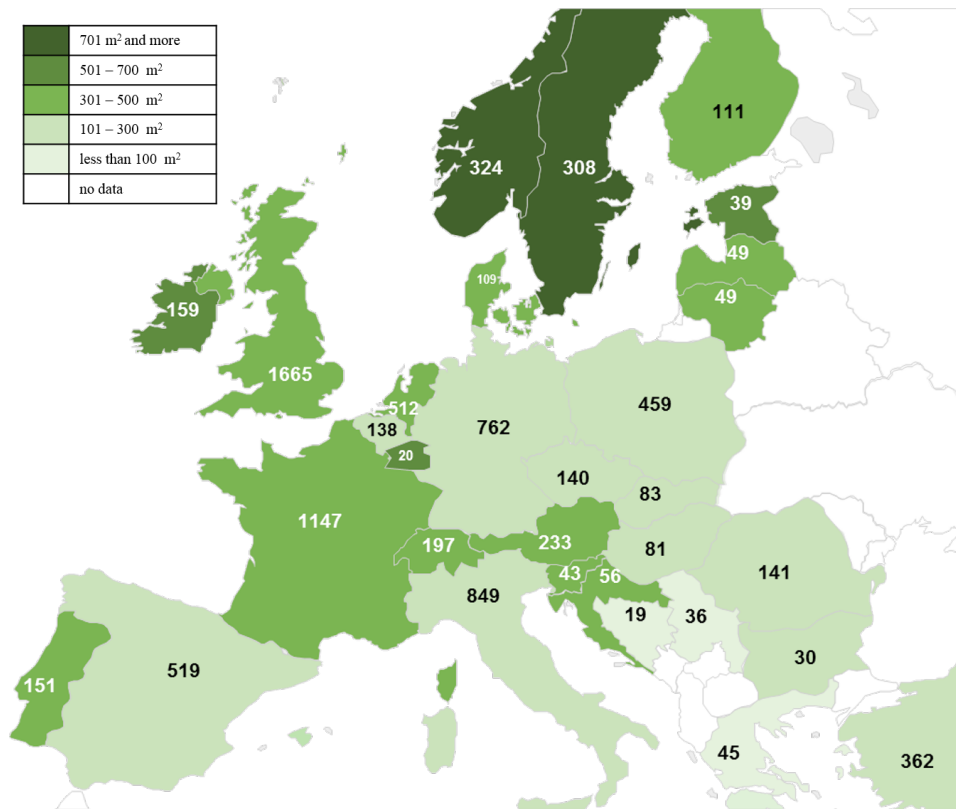


Figure 7. Map presenting the total count of shopping malls in European states (numbers printed on each country shape) as well as the number of GLA [m<sup>2</sup>] of malls per 1000 capita (choropleth map). No colour means lack of data. For Malta total malls count is 9

Source: maps drawn by the author based on the ICSC data (ICSC, 2015)

Focusing on the available data on shopping malls in Europe, a non-spatial OLS regression model was built. The model followed a previously performed analysis, which aimed at accounting for the spatial explanation of over-retailed areas in Poland (Bednarowska, 2015). The goal was to determine the relationship between the economic development of Polish cities and consumption spatial expansion – is it parallel, opposite or random in the context of socio-economic development of Polish regions? A non-spatial OLS was significant, yet a spatially lagged dependent model (SLDV) needs to be estimated again in order to check any other ways of spatial correlation.

Here, a similar procedure concerning a non-spatial OLS for Europe was performed, based on the annual data of ICSC for 2015 (ICSC, 2015). The dataset was complemented with other data sources (Bureau, 2016; Eurostat, 2016; Statista, 2016; The World Bank, 2016).

The unit of observation was a European state. The dataset included all European Union member states and other European countries, altogether a total of

35 states. The final inclusion in the model dependent on the availability of data for all variables, since a casewise method of missing data cure was introduced.

The model aimed at verifying if there is a relation between the socio-economic potential of the inhabitants and shopping malls development. As in my previous model for Poland, the same predictors were included, indicating socio-economic situation in a given country: population size, unemployment rate and net earnings. There were a few dependent variables to be chosen from: total count of the shopping malls or total shopping mall Gross Leased Area (GLA). Several models have been estimated, using different variables. All of them had high R statistics, yet some of the variables included in the models were insignificant or there was an overlapping explanation of the variance. The dependent variable chosen for the final model was the total count of the shopping malls.

The correlation of total shopping malls count and population is positive and very strong ( $R^2 = 0,651$ ; Model1) in Europe. It proves that there is a strong correlation between the size of the country and retail activity. An even stronger correlation is between shopping mall Gross Leased Area (GLA) and population size ( $R^2 = 0,791$ ; Model2). A few attempts to improve the estimation and the prediction power of the model were completed. In most cases, standardized unemployment was insignificant, therefore it was excluded from the model. A short overview of a few models is presented in the table below.

Table 2. Non-spatial OLS model statistics.

Model	Dependent variable	Predictors	R	R <sup>2</sup> (R square)	Adjusted R square	Mean Square	F	Sig.
Model1	malls count	population	0.807	0.651	0.639	20.184	55.986	0.000
Model2	GLA	population	0.889	0.791	0.784	24.512	113.341	0.000
Model4a	malls count	logged earnings, population	0.839	0.704	0.676	9.474	25.017	0.000

Source: own calculations

Eventually, Model4a was chosen, where a dependent variable was a total count of shopping malls, and the independent variables were net earnings and population size. Earnings were logged, and malls count and population were standardized.

The highest possible values of the predicted value are in Turkey, Germany, Spain, Italy, France and United Kingdom, due to the fact that they are the largest states in Europe. Interpretation of the regression coefficients showed that both net earnings and population size have a positive impact on the number of shopping malls.

In addition, a few statistical remarks should be introduced here. The simplest models included the variables with the highest responses in all observations, which impacted the statistics of the model. The high level of model fit statistics is also

due to the small sample. As some of the data were collected from different sources, there is a possibility that it impacted the general model outcome.

Even though the above European model was based on a similar one for Poland, where a spatial OLS was built, here a spatial model cannot be introduced. The above analysis showed a high correlation between the size of the country and its malls, which explains a lot of the variability. The map shows a few potential spatial clusters, yet the level of aggregation (countries) is very high in the case of this topic and not suitable for a spatial model. A search for spatial correlation on the level of countries was performed before, e.g. a spatial relation between democracy level and GDP (Ward, Gleditsch, 2008). However, consumption space is a regional rather than national phenomenon, such as, economic growth measured with GDP. The retail location theories refer to the regional and national level in their explanations. Similarities are observed between countries in this aspect but they do not prove international relations of the consumption space, which could cause, for example, similar values for neighbouring countries and would justify using spatial analysis on a national level.

Spatial models, which use a country as a unit of observation, need to be supported by spatial international dependencies that could justify using this kind of modeling. In this case the potential spatial spillover of dead malls across Europe might be one of such dependencies that would occur among the countries. Presumably, when a retail chain has financial problems in any given country, it may affect its performance in the neighbouring country. Even if there are not that many shopping mall chains, a similar situation may occur with malls. This is not yet particularly observable in Europe on a scale large enough to be researched thoroughly.

## 5. Conclusions and discussion

This paper introduced the notion of the consumption space, which is understood as an enormous retail complex with trade areas over 300 m<sup>2</sup>, where big-box stores (free-standing discount stores, super- and hypermarkets) and shopping malls are constructed, thus occupying a significant part of the urban and suburban areas. A great variety of different kinds of consumption occurs there. The second notion introduced here was the consumption space paradox, which happens when unexpectedly prosperous over-retailed areas are neighbours of *dying* malls. The research problem outlined earlier referred to the growing frequency of this paradox.

The consumption space paradox was identified in the USA, where new big-box stores and shopping malls are opened, regardless of the large number of dead malls. The paradox is much harder to notice in European countries, as malls are not dying that often. However, the condition of the consumption space was analysed.



The general trend and relationship between economic development and consumption space was analysed by a non-spatial OLS model. The spatial pattern was explored using Exploratory Spatial Data Analysis. The results show that differences can be found across Europe, whereas the USA serves as an *outlier* case, showing the most prominent evidence of the consumption space paradox. In Europe the spatial distribution of GLA per 1000 capita revealed a few clusters showing similarities across countries, one in the Eastern Europe, the second one in the region of Austria and Switzerland. In the USA the paradox is visible due to the scale – country size. In Poland however, both instances can be observed – the increase of the number of shopping malls as well as problem with occupancy in the existing malls.

In the future, an extended analysis must be performed in order to observe the development of the consumption space paradox, in particular in the USA and Europe, and to gain more insight into the causes and outcomes of it.

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## Paradoks przestrzeni konsumpcji, czyli obszarów przesyconych handlem obok upadłych centrów handlowych

**Streszczenie:** Jesteśmy świadkami paradoksu obecnego w przestrzeni konsumpcji, która rozumiana jest jako obszar aktywności handlu detalicznego w dużych sklepach, zarówno w miastach, jak i na przedmieściach. Paradoks obejmuje z jednej strony przestrzeń przesyconą handlem detalicznym, pełną centrów handlowych i sklepów wielkopowierzchniowych należących do sieci handlu detalicznego, z drugiej zaś niezagospodarowane, porzucone centra handlowe nazywane umarłymi (*dead malls*). Umarłe centra są powszechne w USA, zauważalne w Kanadzie i Chinach, dopiero zaczynają „obumierać” w Europie. Paradoks może być po części wyjaśniony za pomocą wielu pojedynczych koncepcji lub teorii, ale tutaj akcent położony jest na zrozumienie przyczyn ekonomiczno-społecznych i przestrzennych powiązań. Zastosowana metoda empiryczna to eksploracyjna analiza danych przestrzennych.

**Słowa kluczowe:** analiza przestrzenna, teoria lokalizacji handlu, centra handlowe, ekspansja sieci handlu detalicznego

**JEL:** C20, L81, R12, Z13

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