

# **Assessment of the effects of the core-periphery phenomena on life quality.**

## **A case study of Prague and Central Bohemian District**

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### **ABSTRACT**

This paper concerns with assessment of the effects of core-periphery phenomena on life qualities of the general public of Prague and Central Bohemian District. The scope of the paper is discussion with the embedded methods for transfer steering in regional policy; concerning both the aspect of territorial division and economic eligibility.

Relative equity in life quality of the general public is an underlining issue of most of the transfer programs of both the European and national regional policies. Easy to use, cheap to run and accurate methods of assessment of life quality of the public is therefore a necessary prerequisite for a successful transfer program. The challenge the regional planners are facing seems to be twofold. "Accurate" regional-level assessment of life quality is dependent on two types of more or less independent variables. The first type is the selection of datasets (or knowledge) that should serve as indicators of life quality; the second is delineation of the territory on which those datasets are analyzed.

There are two widely agreed sources of knowledge that might be used for life-quality assessment. Progressive social and rural geographers tend to use qualitative knowledge on perceived life quality, claiming that it is the perceived situation in the minds of the people what matters, rather than abstract statistical data on them (eg. Milbourne, 2004; Rye, 2006). The embedded method for "hard-data" analysis on life quality is the regional per capita GDP level, which has been criticized by many (e.g. Keller, 1995) but is still in power for it is easy to measure and traditional. Some other researchers call for more subtle methods for life-quality assessment than is GDP, admitting that qualitative face-to-face research is indeed interesting yet not very practical for daily use (Copus & Crabtree, 1996).

Although the discussion over the indicators of either the life-quality or a mere social sustainability just a little attention has been paid to the territorial aspect of the assessment (and eventual transfer) procedures. Administrative/ political territories

are taken for granted although some have proven that those regions exist nowhere but on paper (e.g. Soares et al., 2001)

The presented paper thus tries to address both of the above mentioned aspects of regional life quality assessment from hard data. The subject of the presented paper is the population of two adjacent (concentric) regions in the centre of Bohemia; the city of Prague and the Central Bohemian District, which surrounds it thoroughly. The per capita GDP level city of Prague is higher than the EU average, while Central Bohemian District does not reach it. For the authors of this paper believe that neither the Central Bohemian District nor Prague are homogenous territorial base of the research are municipalities. 2001 census data that reflect personal lifestyle were analyzed instead of data on "accessibility" or "density" of certain attributes of the regions as was suggested by Soares.

## **KEYWORDS**

Core-periphery relationships, social geography, regional geography.

## **INTRODUCTION**

Regional policy that attempts to mitigate regional disparities faces two key challenges if it thrives to do it fairly. The first challenge is proper territorial division for administration of the transfers; the second is selection of suitable indicators enabling fair measurement of the disparities that should be mitigated. The introduction will therefore be divided into these two aspects, beginning with territorial division and getting on with indicators of life quality.

The challenge on administrative territorial division for regional policy has become quite an important issue especially within the E.U. 25 for the transfers may play a substantive role in the creation of public budgets. Territorial division based on "objective" measures such as economic cohesion (prevailing intra-regional economic dependency) defined through analyses of integration of labor or consumer (Losh, 1954, Christaller, 1933) markets or structural (environmental) similarities seems to be on a retreat to research purposes only.

The evidence of recent reforms of spatial administration in different European countries illustrates that their territorial division is mostly a result of a compromise between "functional logic", "structural funds eligibility" and "political reality", when the second factor seems to be the decisive one (eg. Boyle, 2000). This is in a sense very rational indeed, and may be "in public interest" to have a country divided in that way, especially when having in mind cases where "structural funds eligibility" has not played very important role for extreme differences in economic development of a centre and its hinterland (see Soares et al., 2001 for reference).

The states that reshape their territorial organization so that they can effectively withdraw transfers<sup>1</sup> can be hardly blamed for what they are doing. As "everybody (who can) does it", European regional policy actually motivates its countries to create regions that have hardly any functional logic. Regions like that are extremely difficult

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<sup>1</sup> From the E.U. comission for instance.

to govern due to lack of control over extraterritorial processes that are crucial for effectiveness of allocated investments. On the other hand, when the regions consist of relatively developed centre and very underdeveloped periphery, so that eligibility for transfers is granted, most of the transfers are consumed by the centre that is not in need<sup>2</sup> (Soares, 2001).

There has been an intensive discussion over what is (or should be) the role of cities - sometimes referred to as growth centers- in regional development. Many (e.g. Friedmann, 1969; Richardson, 1979; Gottmann, 1966) agree on that these growth centers are crucial for economic development of their surrounding regions both in developed and underdeveloped countries. This conclusion is indeed quite apparent.

More interesting discussion evolved around the definition of appropriate policies of integration of those growth centers into their relatively backward surroundings, especially concerning territorial division of self-governance that would prevent diverting resources of already depressed areas in favor of those already developed. Some assert integration of the primate city (the strongest growth centre) through making it a seat of self-governing region (Friedmann, 1969; Richardson 1979). When those centers are too distant, Richardson suggests promotion of a new strong centre. Others suggest territorial division of self-governance into core region AND hinterland, arguing that the previous form of territorial division leads to uneven development of the core city (eg. Soares et al, 2001). When self-governing, the weaker cities in the hinterland of a strong city are assumed to have more opportunities for growth. This all is a logical result of election arithmetic's- the core city always has more voters than the hinterland, so that the politicians that intend to please the majority focus on the core city which offers more political reward. The latter approach seems to be winning the game at least in European countries; according to the given evidence (e.g. Boyle, 2000 and others).

Once it is agreed that it is necessary to divide the region (of a centre) into the growth centre and a region surrounding it, as much as possible objective indicators for this division are needed. Generally used indicator used is per capita level of GDP (Campo et al., 2008). This indicator is much criticized in the literature, as it does not reflect true life quality of the inhabitants (eg. Keller, 1995) not even speaking about its value as indicator of sustainability of the regional growth (Soares, 2001; Copus and Crabtree, 1996; others).

According to the literature available for this topic (i.e. Soares et al., 2001; Copus & Crabtree, 1996) there are multiple dimensions of the quality of living conditions. When Copus and Crabtree suggest use of three groups of indicators (population, economic activity and the quality of community), each of them having three dimensions (structure, performance and dependence); Soares suggests use of six distinct groups of indicators (demography, economy, health care, education, culture and employment). When we disregard the formal differences of the above mentioned classifications (whether to use 3x3 or 1x6 groups of indicators) and focus on the indicators they agree on, we receive the following list.

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<sup>2</sup> This is partly due to populism of the political representation of the centre (more of the public lives in the centre) and partly due to lack of education of the periphery, where politicians are not capable of going through the grant process.

<b>indicator</b>	<b>Copus &amp; Crabtree</b>	<b>Soares</b>
population density	inh/ sq.km	inh/ sq.km
age structure	N.A.	population by cohorts (0-24; 25-64)
natural increase	Rate	birth and death rates
migration	trends	rate
economic structure	primary ind./ progressive sec.	firms per sector
employment	unemployment rate	unemployment rate
GDP	per capita	per capita
ec. independence	dependence on transfers	imports/ exports

**Tab. 1:** Indicators of Social Remoteness

Apart from the above mentioned indicators Soares includes indicators of provision of services in unit/ 1000 inhabitants (beds in hospitals, libraries, and medical doctors) and per capita energy consumption. Copus and Crabtree add indicators on strength of social belonging.

Based on the findings of Smailes (Smailes, 2002) use of population densities is best predicative for areas with high variation in population densities, when decisive are the local settlement and remoteness patterns. For population density of the non-metropolitan regions of the Czech Republic is relatively homogenous ranging between 100 and 300 inhabitants per sq. kilometer, explanatory value of population density cannot be expected to be very high.

Concluding the above mentioned discourse on indicators of local life quality and socio-economic sustainability, sole GDP does not seem to be an appropriate measure. Different authors use different indicators, but most agree that there are two aspects to socio-economic development/sustainability of a community. The first aspect concerns the life quality of the members of the local community (accessibility of employment and services and living standard), the latter with its potential for future development (i.e. the "quality" of the subject population- its age structure, education level and so on).

## **DATA**

The research uses data from the 2001 census run by the Czech Statistical Office. Data provided in the published version of the census are very detailed and relatively reliable<sup>3</sup>. In 2001 the society already passed through the 1990's transformation from socialist centrally planned economy into market economy. The data therefore describe effects of the transformation and start of the trends that continue since. Next census will happen in 2011. Spatial resolution of the data is less than municipal

<sup>3</sup> The information reliability relies on information provided by the respondents, return ratio was almost 100%.

level (so called "basic settlement unit"). We have used data on municipalities for describing the Central Bohemian District and data on urban district in Prague. This unfortunately corrupts data on commuting for Prague urban districts, because the Czech Statistical Office does not survey commuting within municipalities- and Prague is registered as a municipality.

## **METHOD**

In the presented research the authors attempt to describe the effects of core-periphery relationship on socio-economic living conditions of communities of both the core and peripheral regions. Prague and Central Bohemian Districts were chosen as the case study for the research<sup>4</sup>. Instead on focusing on "soft data" describing social coherence that are very uneasy to measure, the authors focused on analyses of well being of families that built up the local communities.

Basic spatial unit on which the data are analyzed is "municipality" in the Central Bohemian District and "urban district" in the Prague District. This division has been chosen firstly for the micro-level is in scope of this research and secondly for the conditions of a community may vary very intensively depending on its geographic position within one region. Extreme values of the data than disappear when coarser scale is chosen (Pokorna and Novotny, 2007). The analysis therefore covers 1205 spatial units, from which 25 are urban districts of the municipality/district of Prague.

The 1205 spatial units were analyzed for similarities using hierarchical cluster analysis. Within-group linkage with Pearson's correlation was used. Each of the two aspects<sup>5</sup> of socio-economic sustainability of the communities was analyzed separately. For there are many cases surveyed in the analysis, as few indicators as possible was the prerequisite of transparent results. The sectors from which we have chosen the indicators used in the analysis are the following ones; quality of built environment and intensity of its use, assets of the families, and commuting behavior for assessment of living standard of the communities. We have used information on composition of the individual communities concerning age, education and economic activity of their populations for description of their prospective development potential. The indicators of life standard used for this analysis are listed in [appendix 1], indicators of what we call "development potential of the population" are listed in [appendix 2].

## **RESULTS AND DISCUSSION**

The surveyed sample displays relatively very high variation especially in aspects concerning ownership of consumer goods (telephones, cellular phones, PC's and internet connection as well as cars). Best average scores and least variations are reached by relatively traditional consumer goods as are cars and telephone lines (48 and 40 percent respectively). Highest variations and lowest average scores pay for relatively progressive equipment, as are cellulars and internet (11 and 5 percent

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<sup>4</sup> Prague and Central Bohemian Districts are the only example of a core region and surrounding region that each have an autonomous regional self-government in the Czech Republic.

<sup>5</sup> i.e. "living standard" and "development potential".

respectively). All variations are generally higher for families living in shared flats, which seems to be resulting from the fact that besides shared flat renting for economical reasons, there is still a substantive share of relatively comfortable stock built for two-generation living. Variation in number of inhabitants per flat is relatively very small (1,8-3,8 people per flat) indicating either overall relatively low use of built stock or high local variation. Data on footage per person, varying between 15 and 31 sq. meters, and on flat footage, varying between 58 and 138 sq. meters, indicate<sup>6</sup> that the latter explanation is more likely.

There are also relatively very high overall variations in age of the built stock, which is most likely the effect of Prague, where whole urban districts were built up in certain time periods (e.g. the urban districts of Dejvice or Barrandov almost completely built up in 1930's and 1980's respectively).

Very high overall variations in inter-municipality commuting times are also most likely caused by the influence of Prague, that is regarded as one municipality although its scale refers more to a whole region (Besides each urban district of Prague has an elected self government with almost municipal rights, including independent budget.).

Concerning prospective development potential of the local populations, especially high variations were observed in education levels. Most problematic seem to be the share of uneducated population (maximal value 22 percent, overall average being 0.5 percent) and population with basic education (maximal value 42 percent with overall average of 27 percent). Overall share of population with tertiary education is relatively very low (5 percent) with extremes of 0 and 36 percent.

These findings correspond quite nicely with economic activity of the individual populations in regressive sectors as agriculture and industry, where the observed local variations were also relatively very high (0 percent to 58 and 59 percent respectively). Overall orientation of the economic structure of the populations reflects the trend of the republic, i.e. relatively high importance of industry and services and low importance of agriculture.

Very striking variation can be found in rate of unemployment, where overall unemployment rate is 3.5 percent, but may go up to 29 (!) percent locally. High unemployment rate always goes along with low education level<sup>7</sup>.

The cluster analysis run on that sample resulted in what follows. Concerning living quality, typical population belonging to the first cluster would be well equipped by means of telecommunication. Its members would have slightly less cars than is the sample's average. If they travel out of the municipality for employment and education, it takes them more time than on average. They share flats little bit more often than is usual. Flats are smaller than average and inhabited by as many people as is usual. This cluster occurs mainly in wider centre of Prague and bigger cities in the Central Bohemian District.

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<sup>6</sup> Along with the authors' qualitative field experiences, which are not included into this analysis.

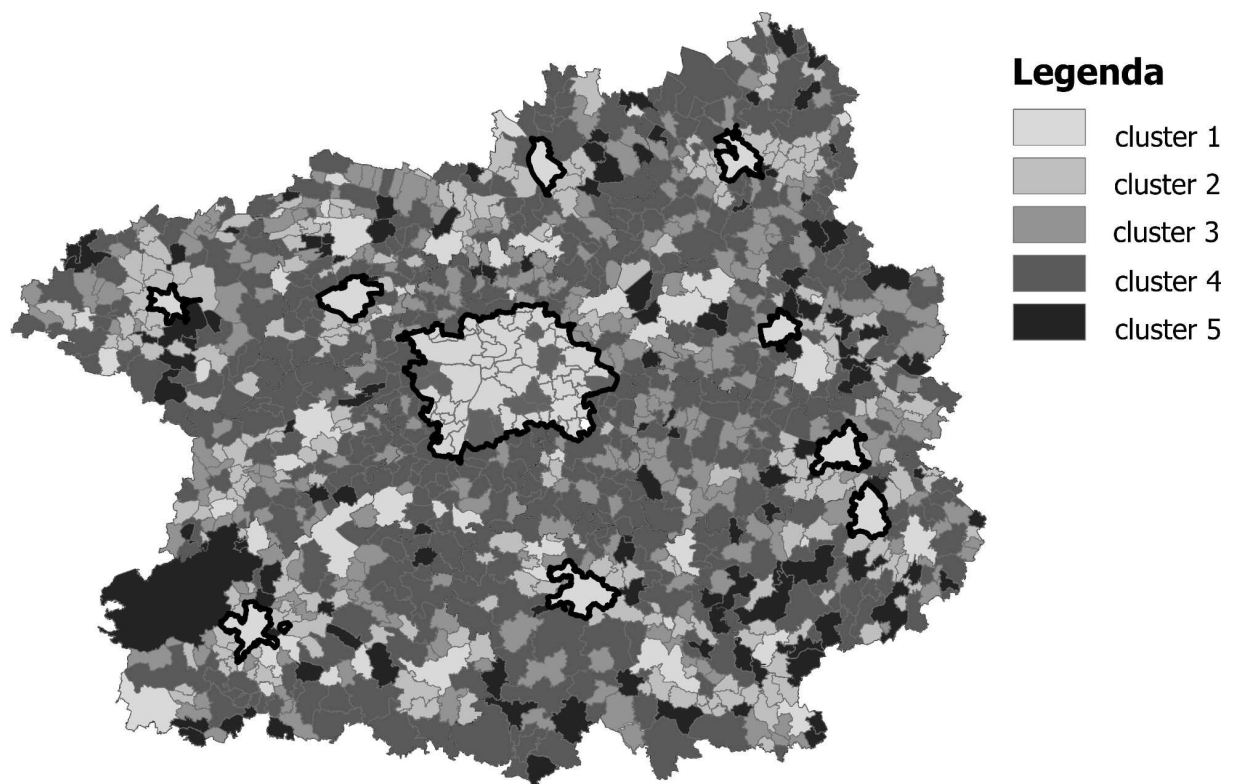
<sup>7</sup> More than a half of the population with lower education than primary school in the population with 29 percent unemployment rate. This though quite surprisingly does not go hand in hand with very low footage (21 square meters/ person). The situation is though represented in age of built stock- just 14 percent of buildings are younger than 1970).

Typical population of the second cluster would be relatively better equipped by cars than is the average, following the range for the entire sample (0-100 percent share in each category). They would commute for less long distances for both employment and education, when commuting between municipalities takes mostly up to 44 minutes. Flats used by those populations would be of average size, but less shared than is usual. Second cluster population might be called "the above average doing population".

Typical population of the third cluster would have abnormal share of buildings built before 1919 and between 1945 and 1970. Its members would commute more often between 14 and 45 minutes than is average. They would be worse equipped by means of telecommunication than is usual. Its members would be more automotive than is average and there would be less variation in car ownership as well.

Typical population of the fourth cluster could be called the very average doing population.

Typical population of the fifth cluster is "the miserable one". Its members would be the worst equipped by means of individual transportation (except of shared flats that are less often) and telecommunication. Share of long commutes for both students and employees (more than 30 minutes) would be abnormally high.



**Fig. 1:** Map of cluster membership of "Life standard". Note that some of the miserable clusters are within inner Prague, which is rather unexpected. . Areas outlined by black color are the regional centers (Prague in the center and seat cities of the former counties).

Concerning the development potential of the populations the character of the clusters would be following. All of the clusters display very low average unemployment around 3 percent.

Populations of the first cluster are the best educated, share of tertiary and fully secondary educated inhabitants exceed the average of the entire sample by 5 percent each (maximal share of tertiary educated being 36 percent). Share of economically active population is slightly higher than in populations of other clusters, which is most likely due to positive balance of migration.

Populations of the second cluster display higher share of population with lower education than those of the first cluster. Populations of this cluster have higher share of people employed in agriculture than is the average of the sample and the least share in industry.

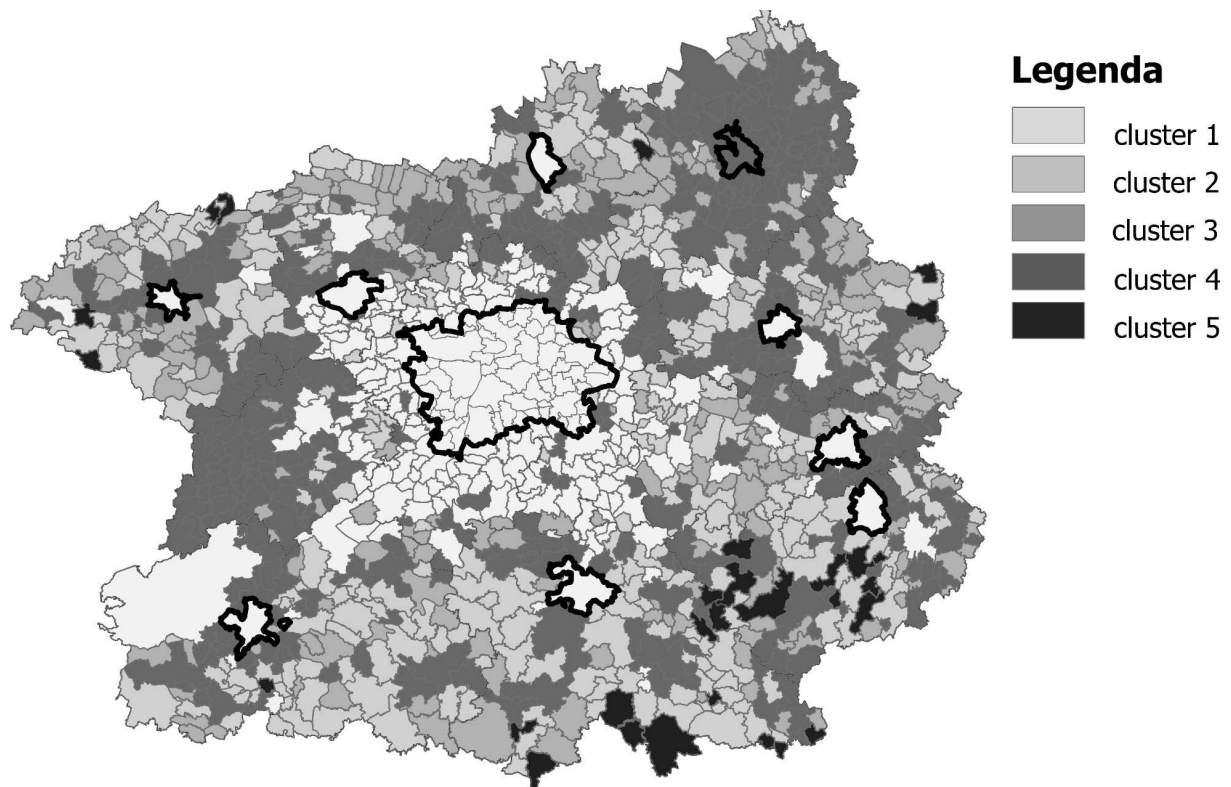
Populations of the third cluster are less educated than those of second cluster. There is relatively lower share of economically active population. Share of agriculture on employment is some 5 percent higher than is average, which is equally compensated by lower share of industry.

Typical population of the fourth cluster almost perfectly represents the average of the entire sample.

Populations of the fifth cluster have the highest share of population with primary education only (if any). They are the most dependent on agriculture (20 percent above average, i.e. 33 percent in average with minimal value exceeding the sample average by 10 percent). The populations have the highest dependency level, which is most likely due to outmigration of productive and well educated individuals.

The trends that can be derived from the results of the analysis were expected. For the data available on quality of built stock are only quantitative –they do not describe the physical state of the buildings- they talk in favor of the peripheral areas. They indeed differentiate between new suburban houses and old built stock, but cannot make a difference between inhabited old ruin and inhabited refurnished old farm as well as between 20yrs old and brand new car and so on. The most important indicator for the classification of the living standard clusters was commuting time, only followed by the other indicators (as is possession of telecommunication means or cars).

Data on development potential of the communities are better indicative than those of assets of families. The picture given by the geography of development potential of populations of local communities clearly shows expansion of Prague labor market. The fingers that stretch out of the city follow linear transport infrastructure (railway towards Plzen, Ceske Budejovice, Dresden and Kutna Hora, and highways to Plzen, Strakonice and Brno). As the connection to The populations that display least education levels are located at the very periphery of the studied region, which was expected.



**Fig 2:** Map of cluster membership of development potential of populations. Note that the “metropolitan population cluster” spatially exceeds the boundaries of Prague, interlocking with second, third and fourth cluster in worse accessible locations. Areas outlined by black color are the regional centers (Prague in the center and seat cities of the former counties).

The effects of the expansion of residences of Prague labor force to the surrounding region on life quality are problematic. Due to the lack of basic public goods and employment possibilities nearby the residence it is necessary for both the economically active population and their children to commute for very long distances. Better life quality is therefore observed in places that are adjacent to stronger regional centers behind the external border of the wider Prague region, which was expected.

## CONCLUSIONS

We would argue that extremely strong central position of Prague within the territory of Prague and Central Bohemian District does not add to life quality of populations of neither the Central Bohemian District nor Prague. Intensive concentration of economic activity within Prague that goes along with intensive de-concentration of population over vast areas in Central Bohemian District extends commuting distances of the migrants and congestions of transportation infrastructure.

On the basis of the evidence given by this analysis there is a need for more independent regional policy which would support its own centers of employment. Reliance solely on Prague leads to decline of quality of life of inhabitants of Central

Bohemian District. Successfulness of plans for development of rural areas at the periphery of the Central Bohemian District depends on match or mismatch between the requirements have on education level of labor force and local environment. Knowledge-based economic development promoted by central government does not seem to be the most appropriate short and medium term solution for peripheral rural areas for it would need to drain labor from distant areas therefore having almost no direct influence on the depressed areas.

The decision of creating two concentric self-governing districts can therefore be regarded as positive, as long as the policies of the regions are independent and addressing local issues. Unfortunately enough, as the seat of the Central Bohemian District is in Prague, its politics are so far rather "Pragocentric", following more the needs of Prague than those of the populations living in the surrounding countryside.

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## APPENDIXES

[pomer2]	Represents share of households that are inhabited by more than one census family. It indicates economic situation of the subject population, when higher share of households inhabited by multiple families indicates lower overall economic strength of the subject community.
[footage1]	Represents inhabitable footage per inhabitant. This indicator supports/clarifies the [pomer2] indicator.
[footage2]	Represents average flat footage. This indicator describes initial quality of the built stock.
[bldage]	Indicator representing share of age groups of built stock. This indicator again indicates on development of economic strength of the community. (shares of age groups)
[telecommunication]	Indicator representing telecommunication equipment, i.e. phone line and cellular phone. (shares of equipped households)
[PC]	Indicator representing equipment of households by IT's and internet. (shares of households)
[commuting]	Indicator that represents remoteness of the community indicated by time required for commuting to schools and employment. (shares of commuting groups)
[automotive]	Indicator represents mobility of members of the population. (shares of households)

### App. 1: indicators of living standard of the local populations

[education]	Indicator representing formal education level of community. (shares of population by education)
[age]	Indicator representing demographic structure of community. It indicates on wider characteristics of the communities as are migration patterns. (shares of population by age)
[sector]	Indicator representing economic orientation of the community, i.e. its ability to make use of (newly emerged) market potential. (shares of population by sectors)

### App. 2: indicators of the "development potential" of the local populations