

QUANTITATIVE EVALUATION OF SOCIALLY EXCLUDED LOCALITIES. CASE STUDY OF OSTRAVA CITY.

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Abstract

Socially excluded localities represent a serious problem for both the society and the local administration. They require careful monitoring of their origin and development in order to take appropriate measures. This paper focuses on the quantitative evaluation of socially excluded localities in Ostrava. Different aspects were used for the evaluation: economic, societal, demographic, urban, health, environmental and spatial. Three categories of localities were distinguished on the basis of a joined expert evaluation of indicators and each socially excluded locality was classified. Subsequently, a characteristic set of indicators' values for each category is provided. The proposed set of indicators allows characterizing of problematic localities (and their searching) and also revealing of the symptoms' diversity which is useful in terms of monitoring localities, designing appropriate measures, and monitoring their impacts. The most important findings are related to the strong population growth in some localities with poor housing conditions and the likely health risks. The quantitative measurement of single aspects allows determining other problematic localities in the territory that have not yet been uncovered within the expert evaluation.

Keywords: social exclusion, quantitative evaluation, microanalysis, Ostrava, unemployment

INTRODUCTION

Social exclusion and social segregation are associated with various socio-economic, structural and institutional reasons discussed by many authors. They have identified two basic categories - external (structural) and internal (personal) causes.

External causes (effects) are identified as those that are out of reach and control of excluded people who are unable to influence (or only with difficulties) them by their own actions (Toušek, 2007). External causes originate from common societal conditions or arise from actions of people who are not excluded. Examples may include the labour market, housing policy, social policy, self-government policy concerning social sphere, ethnicity, racism, discrimination, etc. These structural reasons can also be classified into two groups - failures of civic integration and failures of economic integration (Bergman, 1998, in Mareš, Horáková, Rákoczyová, 2008).

Internal influences represent the results of immediate decisions of socially excluded people. They can directly stimulate the status of social exclusion and to control it. Such individuals experience loss of working habits during long-term unemployment, long-term inability to manage money and to meet their financial obligations or apathy and low motivation to deal with their own problems (Toušek, 2007).

The spatial concentration of these factors multiplies their final effect. One of the most important indicators of these localities is unemployment which influences the level of exclusion in various dimensions (Hammer,

2003). This is incorporated with the dependence of local residents on social benefits or income from illegal activities (Seddon, 2006; Hale, FitzGerald, 2008).

Different causes for formation and development of socially excluded localities are reflected in dimensions of social exclusion which document conditions and specific profile of each locality. Economic, social and political dimensions are usually used in various approaches of authors. Other aspects may be individual, group or spatial dimension (i.e. Percey-Smith, 2000); cultural dimension, the exclusion from safety and mobility and symbolic exclusion (i.e. Mares, Horáková, Rákoczyová, 2008).

The consequence of social exclusion is the growing trend of residential separation especially in metropolitan areas and large cities (Baum, 2009) which is caused by the process of spatial differentiation in society (Burjáněk, 1997; Sykora, Temelová, 2005). According to the spatial scale, it is possible to distinguish spatial segregation between core cities and their background in the metropolitan areas and urban regions, between districts within cities, between residential blocks (Musterd et al. 1999 in Sykora, Temelová, 2005) or an segregation into smaller units (but respecting the requirement of a minimum group size).

Socially excluded localities are featured and categorized by various authors according to local conditions. Usually their identification and description originate from thorough studies conducted by experts. This approach may suffer from insufficient regularity of evaluations (even worse if they are provided sporadically, influenced by limited financial sources) and time delays between carrying out the survey and delivering results to decision makers. The expert based evaluation cannot run continuously. The local policy prefers evaluations fitted to local conditions, but in such cases some criteria may lack transparency, ability to independent re-evaluation, universality or applicability in other cities or regions. If some categorisation of localities is provided the questions arise concerning utilizable number of classes, their homogeneity, temporal stability of the classification system and the stability of localities' memberships.

The aim of the research is to select appropriate quantitative indicators for continuous monitoring of socially excluded localities, quantify the state and development of localities and evaluate a classification of localities based on such indicators. This approach is demonstrated on evaluation of socially excluded localities in Ostrava identified by experts in previous years (GAC 2006, Kvasnička 2010).

SELECTION OF MONITORING INDICATORS

Due to the highly variable size of explored localities (ranging from 0.2 hectares for Zelezná Street to 14 ha for Liscina) and not corresponding boundaries it is difficult to use administrative or statistical units including the smallest enumeration districts. Possible adjustment of the boundaries of the standard territorial division would lead to the dilution and emanating of differences. It restricts the use of statistical census. In addition, localities are often subject of relatively dynamic development and therefore a ten-year census interval with roughly a two-year delay to the publication of the results may not be realistic for the purposes of monitoring localities. The preference is given to indicators based on data from registers of public sector (local authorities, labour offices, social authorities, police etc.) which offers a fine spatial and temporal resolution.

Utilisation of such registers requires to run processes of harmonisation and geocoding of data due to the common absence of direct georeferencing in any coordinate system. Harmonisation represents unification of structures and unification of address description, including identification and replacement of abnormal names (Horák, 2012). During geocoding, data is aggregated to address points which are the smallest spatial unit for further spatial processing. The point based location enables to individually geographically bound localities under the study. In this way it is possible to calculate accurate enumeration of quantitative indicators in selected area and even to study an internal spatial distribution.

Selection of indicators originates from following description of main symptoms of social exclusion in our environment:

Economic aspects include the lack of income, increased unemployment, higher debt, dependence on non-insurance social benefits, increased occurrence of usury, illegal employment and illegal income. In addition to these individual problems, it is possible to describe also group (external) aspects such as limited investment in housing and low operational funding from the owners.

Economic aspects are only monitored with the following indicators of unemployment due to data scarcity: share of unemployed to the number of people in the productive age (PUC_OPV) which is highly correlated to the rate of unemployment, share of registered unemployed with a low level of education (PCVABC), share of long-term unemployment (PCE12), share of health handicapped unemployed (PCZPS), specific rate of unemployment until 25 years, specific rate of unemployment over 50 years.

Social aspects are expressed by presence of separation symptoms based on ethnicity, culture, variations in crime and violence, higher rates of radicalism and extremism, low levels of education, higher rates of apathy and negative perceptions of their housing. Examples of group symptoms include lower levels of self-organization of the community, weaker external assistance, or stigmatization of places from the majority society.

Societal aspects are represented by evaluating education, crime and the level of self-organization. The educational level is estimated by the above indicator PCVABC. The intensity of crime is evaluated by an index of crime (Herbert, Evans, 1989) from 2009 (specifying places of incidents, not residence of offenders). The level of self-organization is evaluated by experts.

Demographic aspects of the problematic spatially segregated localities can be expressed by increased birth rate, lower life expectancy, high proportion of pre-productive population, the larger size of families, and sometimes even higher number of incomplete families. It is possible to assess age structure, expressed by age pyramid and its type, the average age and age index from the demographic aspects.

Urban aspects are determined especially by overcrowded housing, deprived housing stock and low facilities of household and locality. Urban aspects were only evaluated by experts (condition and equipment of flats).

Health aspects of segregated localities mainly include symptoms of the drug problem, higher epidemiological risk and a higher incidence of health handicapped children. Evaluation of the occurrence of health handicapped children and the higher occurrence of collected syringes was accomplished.

Environmental aspects include worsened ecological status of the locality due to e.g. proximity of dumps, landfills or polluted industrial areas, but also deteriorated internal conditions of community such as unwholesome common places.

The environmental aspects were not included in the monitoring due to the fact of longer stability environmental conditions (not needed to monitor them frequently).

Spatial aspects usually point out the appearance of some of the above mentioned aspects in the geographical space. The poorer classes have been found to be dispersed over the spatially segregated pockets of streets formed by the interruption of the city grid due to railway lines and large industrial buildings (Blanchard, Volchenkov 2009). Physical barriers can be also formed by surrounding abandoned land (desolate areas or green areas). Similarly, social barriers exist in terms of the difference of socio-economic status between groups living inside and outside the locality.

Spatial aspects include assessment of physical and economic segregation of localities. Economic segregation was evaluated only on the basis of the distance-decay profile of PUC_OPV to the distance of 300 m. Physical segregation was primarily assessed by evaluating the street accessibility from the surroundings. Additionally the local transport accessibility was evaluated using the ratio of selected targets in the city accessible in 30 minutes. They are represented by the transport stops in residential, transport, commercial and health centres. The number of selected targets in each category is limited to three stops and therefore the maximum number is twelve targets.

CLASSIFICATION OF LOCALITIES

The status, profile and development of localities in the city are obviously not equal (for many internal and external reasons) and (instead of individual profiling and customisation) high number of localities requires classifying them into the limited number of categories where the type of interventions can be better customised and more efficient.

Expert evaluation of localities was based especially on the above explained quantitative indicators. Demographical and unemployment data was studied in one month intervals for two years (i.e. fig. 1) using status and annual changes. Other indicators use one year aggregation (crime intensity and structure) or even a total aggregation for the whole period (occurrence of health handicapped children) due to the low occurrence of events. The street accessibility was stable in the explored time period.

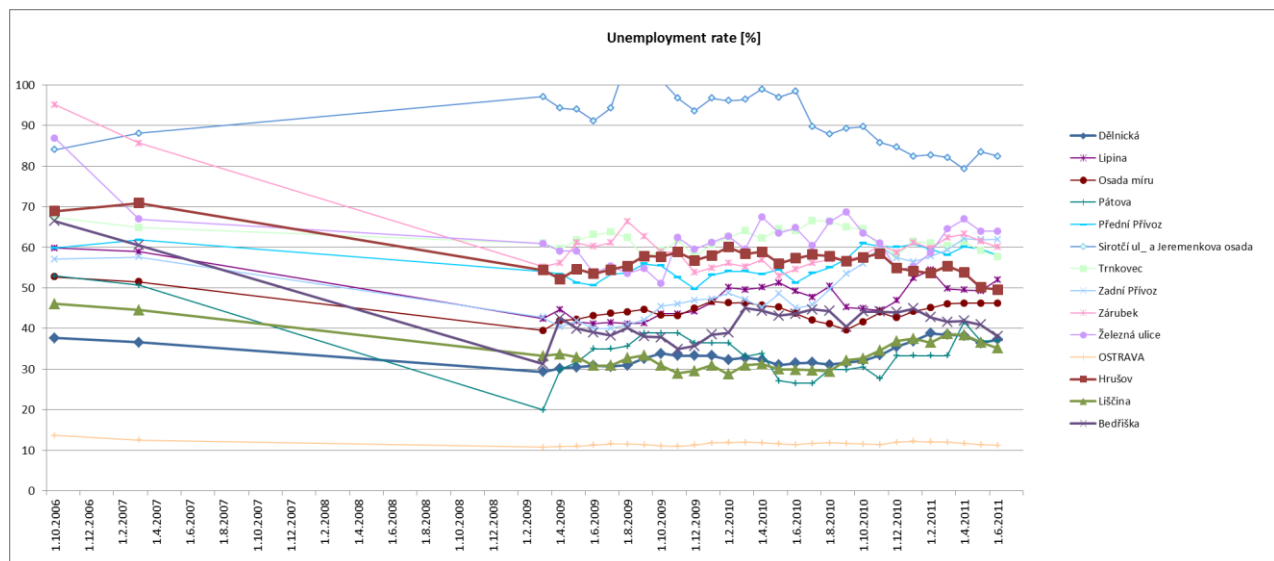


Fig. 1. Estimation of unemployment rate in socially excluded localities

Initial evaluation of the situation, exploratory data analysis and expert evaluation lead to the suggestion of three categories which are practical for taking specific measures in localities. The first category offers relatively better conditions and promising development. The second transition category covers localities which may easily change the trajectory both towards the first or the third category and where the interventions are strongly required to influence the development in a positive way. Subsequently the third, depressed category represents extremely bad conditions, where standard interventions seem to be useless and only radical tools may help.

All socially excluded localities were initially divided to these categories by experts. Consequently the characteristic set of indicating values for each category is provided. The temporal evolution of selected indicators was monitored in order to explore the stability of classification, homogeneity of categories and their usability for customisation of intervention measures.

The evaluation is organised into 2 parts:

- a basic description of categories using selected indicators accompanied with discussion of homogeneity of these groups and individual deviations (profiling) of localities,
- monitoring temporal development of selected indicators and exploring the stability of classification.

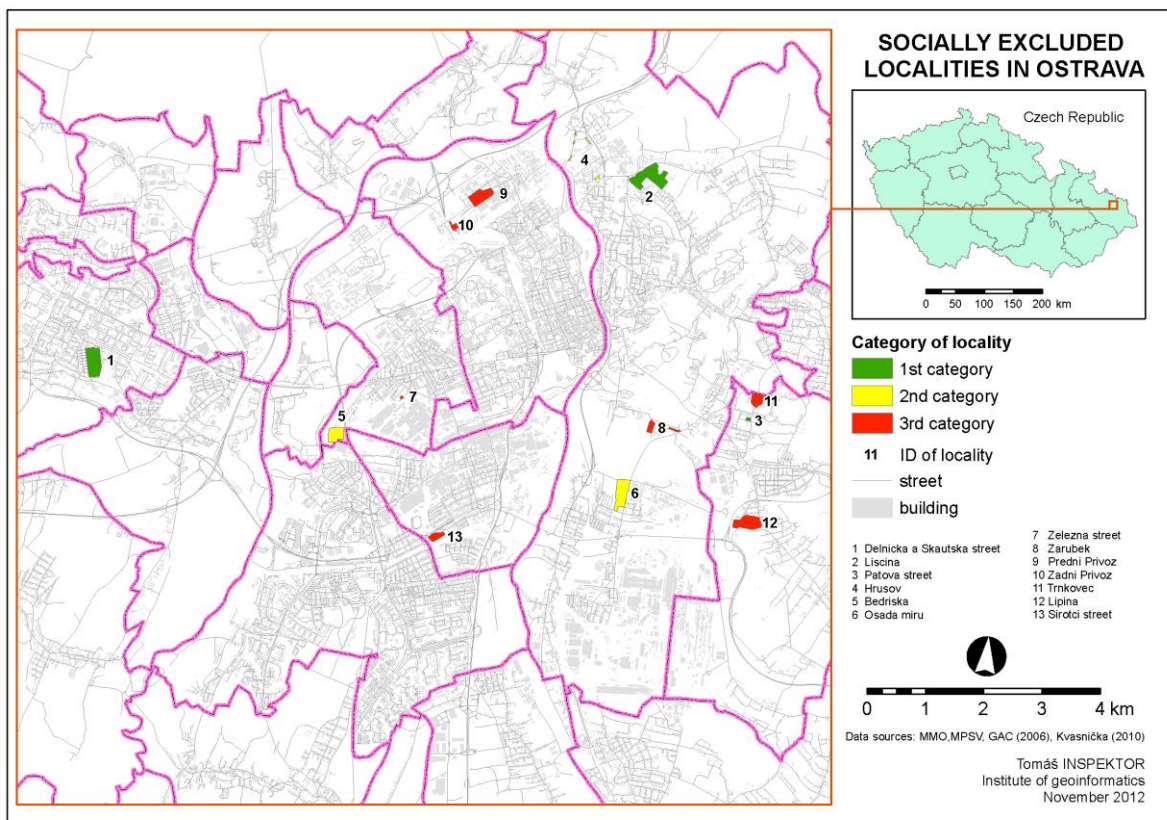


Fig. 2. Initial classification of socially excluded localities

Category I. (promising category)

The first category integrates localities with improved conditions and good prospects. Based on the joined evaluation of indicators' status and development, following main characteristics can be depicted – regressive or stagnant age pyramid, improved situation in unemployment (both intensity and structure), low to medium local crime, low degree of spatial segregation and relatively good housing conditions. Specification of typical values and limits of indicators for explored localities is provided bellow including description of individual deviations from the common profile.

Three localities were initially assigned to this category: Delnicka, Liscina and Patova Street.

The demographic profile of the category is typical by a shifted age distribution which is reflected by the low age index (67), considerably less than the average of Ostrava (148). One fifth of the population are bellow age of 15. Nevertheless the average age (34) does not significantly differ from the average of Ostrava. The average age pyramid for the whole category (Fig. 3) is a stagnant type. This trend is different for Delnicka which has a strong regressive type of age distribution.

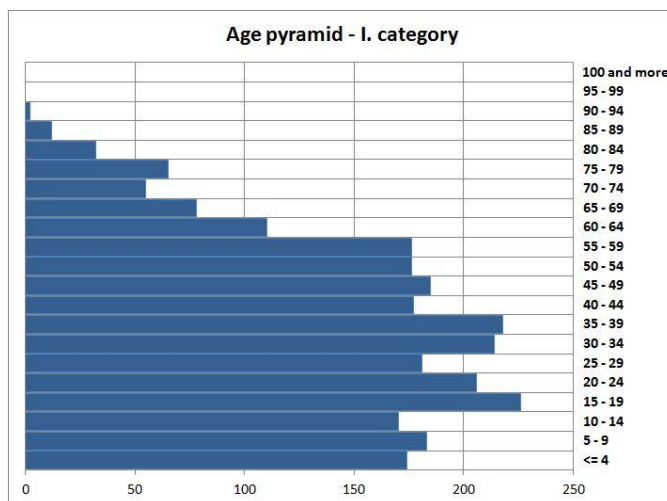


Fig. 3. Age pyramid in the 1st category

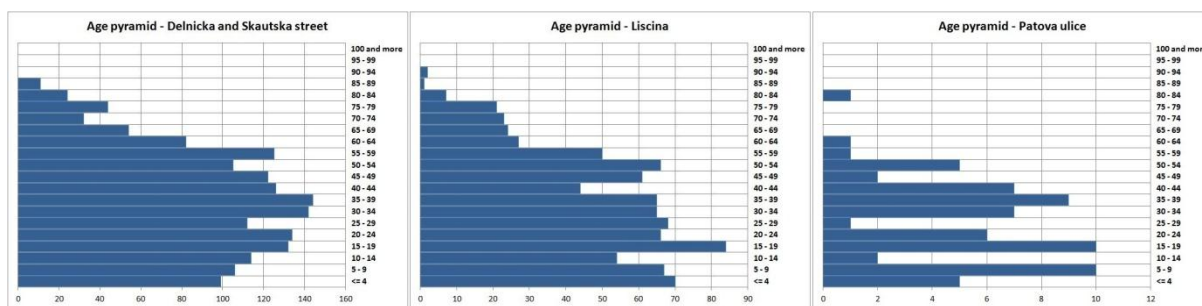


Fig. 4. Age pyramids for localities classified in the 1st category

The crime monitoring does not show significant changes in intensity and structure of local crime. The intensity varies on average between 45-60% in Ostrava. The average structure of crime in these localities shows a significantly smaller proportion of thefts (26% instead of the average 40% in 2009), more sexually motivated incidents and also higher number of crimes against youth.

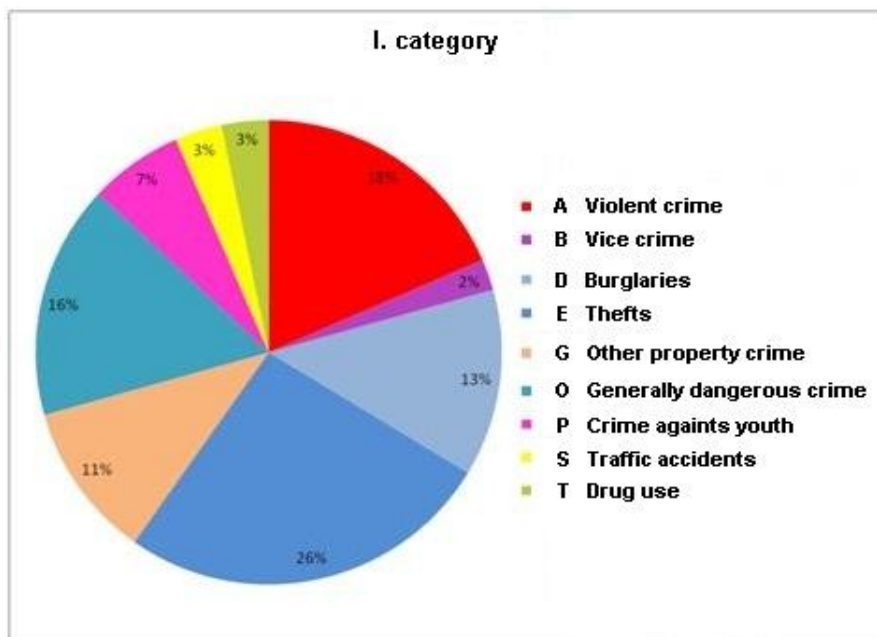


Fig. 5. Structure of the crime in 2009 in the first category

The unemployment rate was estimated on average between 30-40% in the period 2007-2011, while individual localities possessed values between 33 and 38% during last year. The share of people with low education is on average between 60 and 70%, which is roughly 25-30% above the average of Ostrava, which is still significantly less than in the other two types of localities. The deviation is in the case of Patova (100%). The long-term unemployment has reflected the positive trend in this category since the end of 2010 and no significant differences among categories were discovered.

Quality of housing and living spaces indicate relatively good conditions assuring standard flat equipment.

Physical segregation occurs less in this category (except of Liscina). On the other hand, economic segregation is evident. Significant economic segregation is not evident only at Liscina because it is located close to another locality with similar parameters.

Local transport accessibility ranges from very low level (Patova street only 42%) to maximal level (Delnicka 100%).

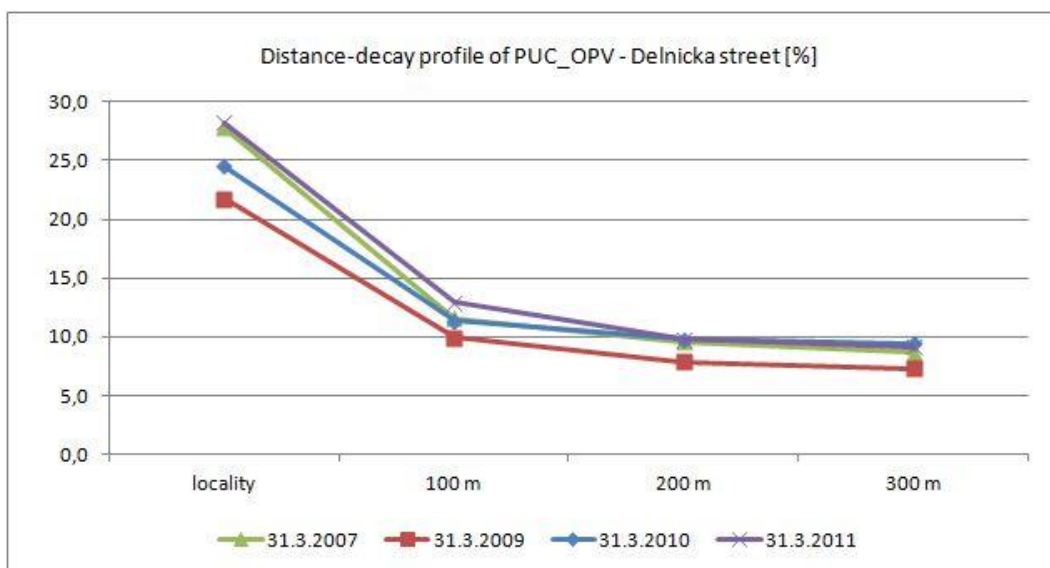


Fig. 6. Distance-decay profile of PUCOPV of Delnicka locality

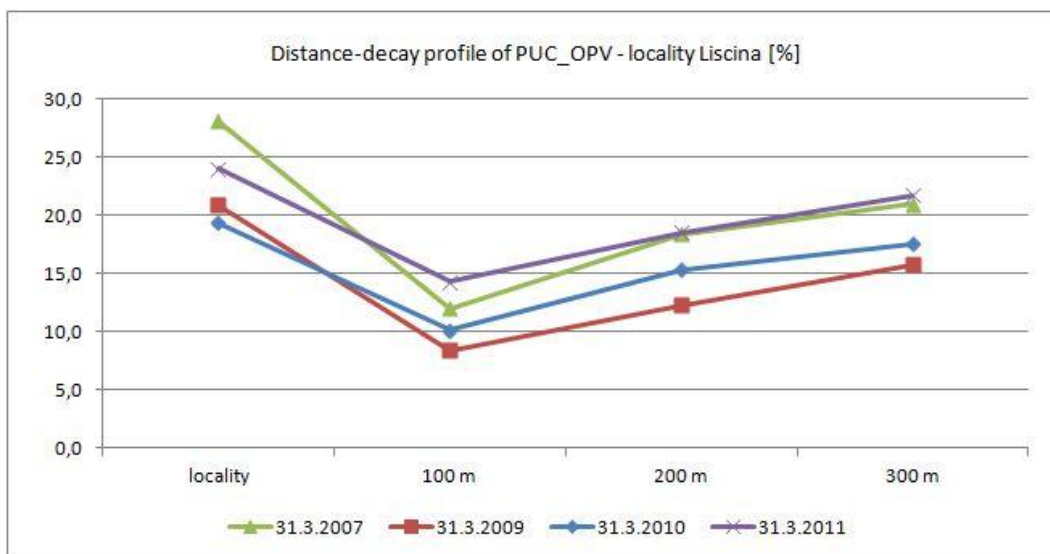


Fig. 7. Distance-decay profile of PUCOPV of Liscina locality

Category II. (middle category)

The second, transition category represents intermediate situation which may be easily converted into 1st or 3rd category. This category includes localities with middle situations of unemployment, lower or middle levels of spatial segregation, low local crime, the variable quality of housing and progressive age pyramid. We can include Hrusov, Bedriska and Osada miru to this category. The medium-sized localities are placed here (from 250 to 850 inhabitants). In total, there are about 2350 people, of which around 1/3 are under the age of 15.

The demographic profile of this category demonstrates a large share of young population and a very low share of retired. The average age is 28, which is 11 years less than the average of Ostrava. Age index is 26, which is 5.5 times less than the average of Ostrava. The average age pyramid for whole category (Fig. 8) is strongly progressive (only Bedriska shows slightly stagnant type - see Figure 9).

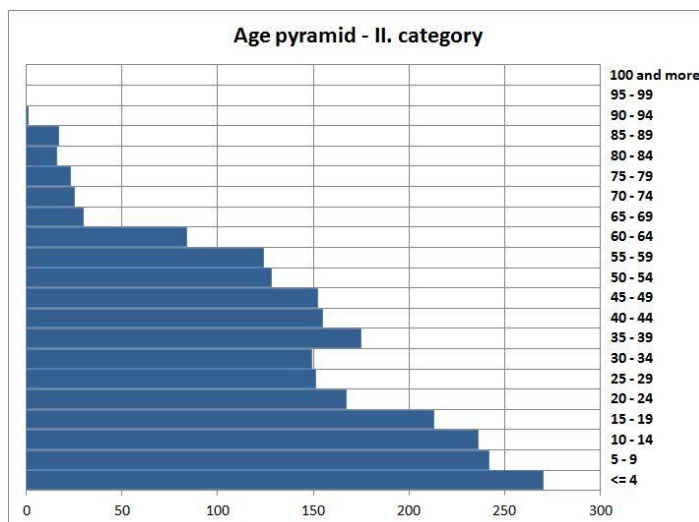


Fig. 8. Age pyramid in the 2nd category

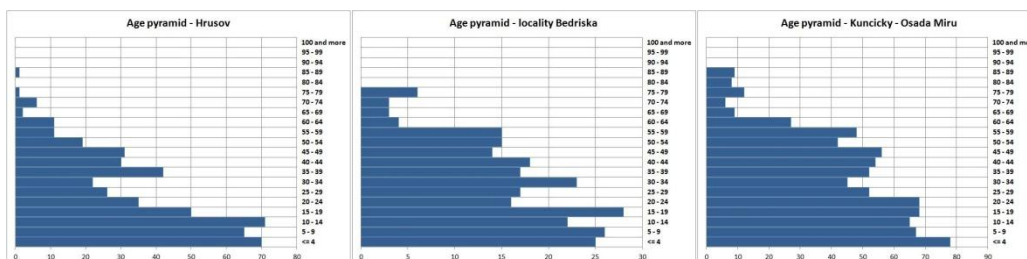


Fig. 9. Age pyramids for localities classified in the 2nd category

The average crime index in 2009 was 57 per 1000 inhabitants which is around 83% of the average of Ostrava (684), but significantly more than in category 1. The intensity of local crime significantly decline in 2010 and 2011 and the difference between first and second category is currently low. The average structure of crime in these locations showed significantly higher proportion of crime against youth (9% instead of 2% in 2009), more burglaries and more sexually motivated incidents. The crime index in individual localities differs in time.

The unemployment rate estimated in the period 2007-2011 consists on average of 47-52%. The share of unemployed with a low education is on average around 80%, which is 40% above the average of Ostrava. The long-term unemployment situation in the 2nd and 3rd category is the same (15-20% above the average Ostrava).

Housing conditions are rather poor. The basic social equipment is available, but in certain locations occurrence of mould is very common, as are the problems with common areas or isolation.

Physical segregation is generally very significant in this category. Extreme separation occurs in Bedriska locality, but other localities have also significant barriers. On the other hand, the front part of locality Hrusov is easily accessible and without physical barriers. Economic segregation is also clearly expressed.

Local transport accessibility is above average for all the localities, even in case of Bedriska, showing that the physical separation does not limit the public transport accessibility.

This category can be described as transitional, mixed. Especially people with low income are moved into these localities. However, the localities are not intended as a residence for the non-payers, or for people who are unable to obtain conventional rental housing.

Some localities have a chance for an improvement; however segregation in others would gradually lead to deeper crisis (3rd category). Localities need a greater intervention to help them recover. Therefore it is recommended to undertake strong interventions and target them to (achieve) the first category.

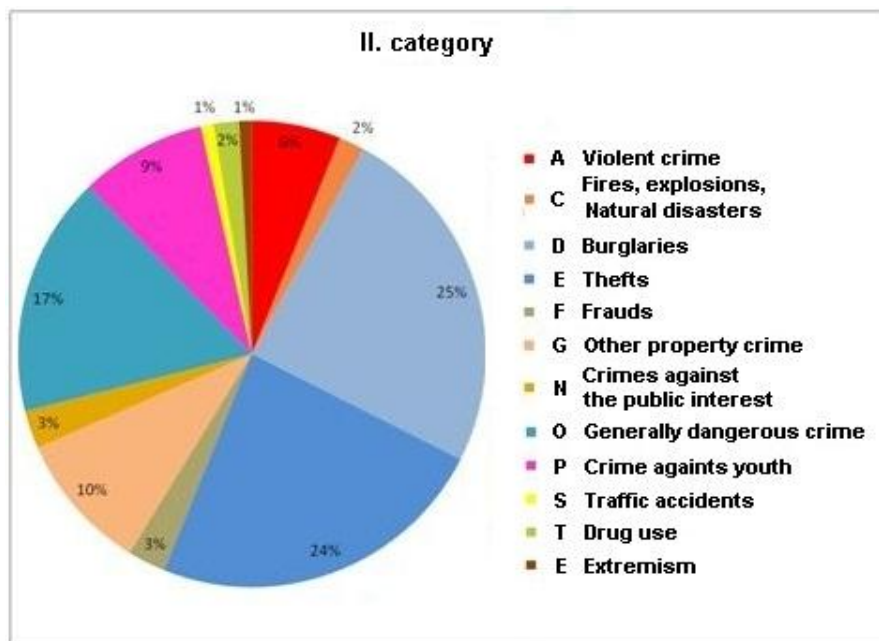


Fig. 10. Structure of the crime in 2009 in the second category

Category III. (depressed category)

The third category represents highly depressed localities with extremely bad conditions where the standard interventions seem to be useless.

Typical symptoms of his category include critical situation of unemployment, strong spatial segregation, and generally poor quality of housing, medium to high local crime. Paradoxically, the group of inhabitants shows a very low age index and a progressive age pyramid.

In this category we can include Zelezna street, Zarubek, Predni a Zadni Privoz, Trnkovec, Lipina, Sirotci street and Jeremenkova osada. In terms of the size, it is from small to medium sites (from 170 to 400 inhabitants). In total, there are about 1950 people, of which around 1/3 under the age of 15.

The average age is 27, which is 12 years less than the average of Ostrava and very close to the second category. Age index for the whole category is 20, which is 7.5 times less than the average of Ostrava. The average age pyramid for the whole category (Fig. 11) is a strongly progressive type (but some locations such as Lipina or Trnkovec do not have as strong growth in the youth population - see Figure 12). Some of the localities show highly variable age distribution inside the locality (Fig. 13).

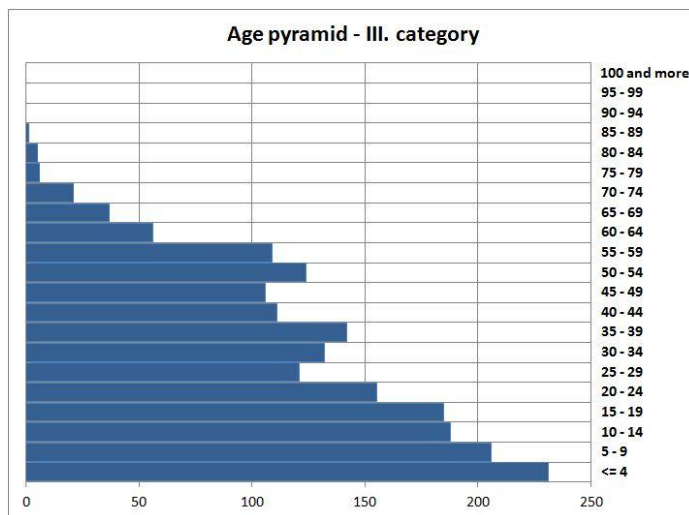


Fig. 11. Age pyramid in the 3rd category

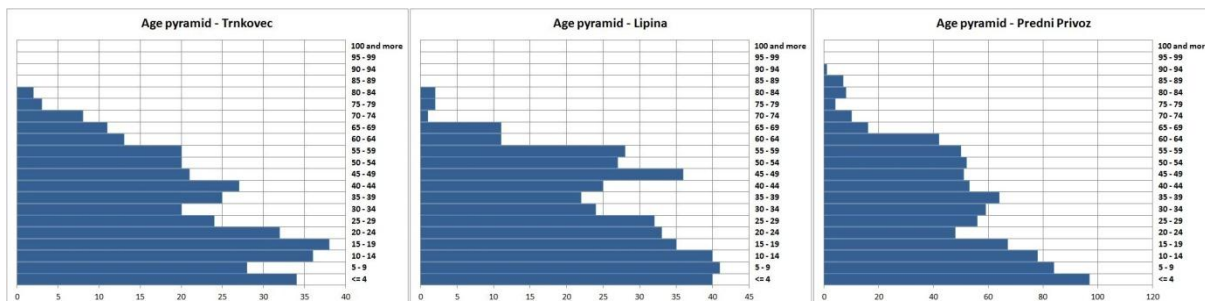


Fig. 12. Age pyramids for selected localities classified in the 3rd category

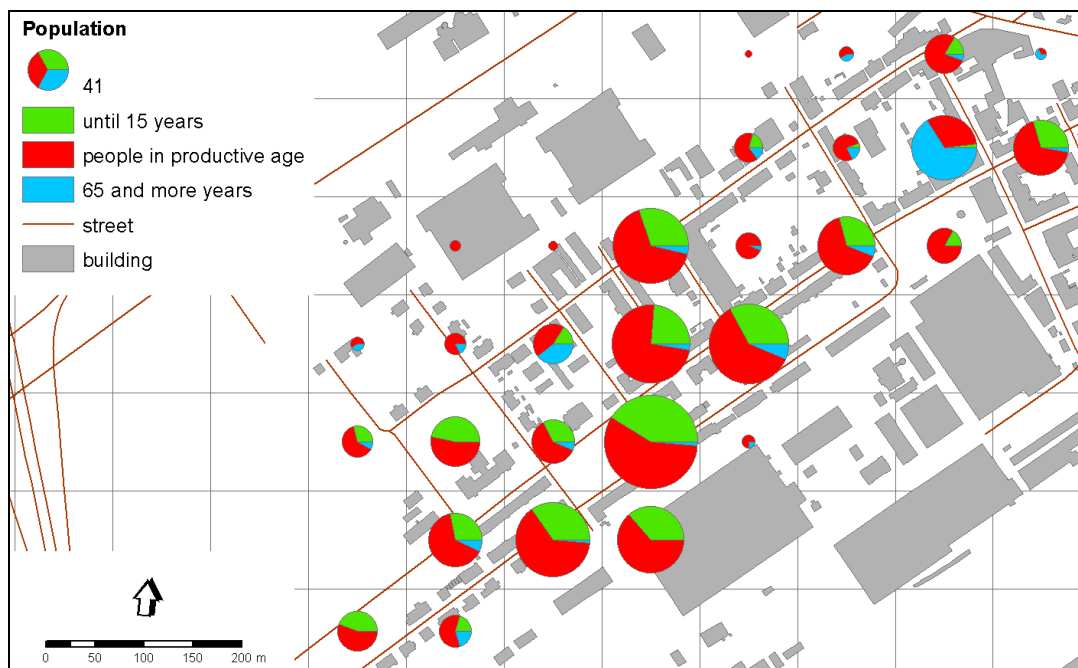


Fig. 13. Variable age distribution in Predni Privoz locality (30. 9. 2009)

The average crime index in 2009 was 526, which is similar to the second category. However, both in 2010 and 2011 excessive local crime was recorded (1.5 times more than average of Ostrava). The average

structure of the crime of these sites has shown a shift to the extreme in comparison to the second category, particularly the high proportion of crime against youth (11% instead of 2%) or greater intensity of burglary (30% instead of 15%). In comparison to the second category, it is represented by more violent crime (13% instead of the average 5%). However, each locality shows a different type of crime. The worst situation according to the intensity and structure is showed in Sirotsi street and Privoz.

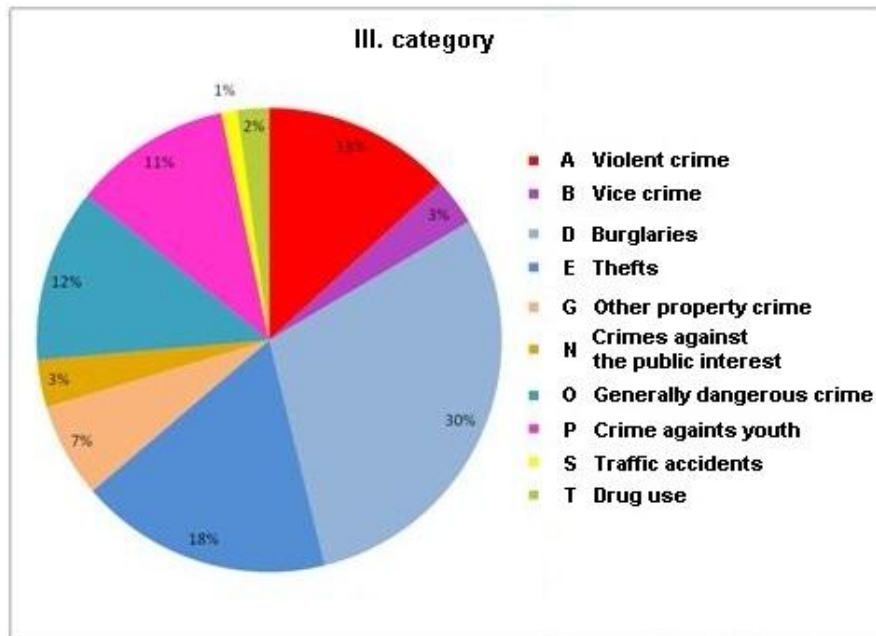


Fig. 14. Structure of the crime in 2009 in the third category

The unemployment rate ranges between 50 and 100% for the period 2007-2011. The worst situation is in Sirotsi and Jeremenkova street (between 80 and 100%, it decreased in the first half of 2011), while the best figures are in Lipina (usually around 50%). The ratio of people with a low education is between 83 and 87% on average, which is approximately 50% above the average of Ostrava. The long-term unemployment situation in the 2nd and 3rd category is the same.

Typical housing conditions include many issues and overall poor situation. Following problems usually occur: common areas are destroyed or flooded, sanitary facilities are shared and non-functional, front doors and windows are missing, flats are occasionally affected by mould, parts of buildings are uninhabitable (e.g. impaired statics of structures), etc. The only exception is Predni Privoz with satisfactory housing conditions.

Physical segregation is usually very strong; with occurrence of physical barriers, heaps, dumps, fences or other barriers of communication. Better situation is only in Predni Privoz which is easily accessible from two sides. Very strong economic segregation occurs in most localities, with exception of Predni Privoz and Zarubek where it is slightly better.

Local public transport accessibility is low in Trnkovec and Lipina localities, while others are in a better condition, especially Zelezna and Sirotsi localities.

The situation in this category is generally the worst. They are significant problematic localities with a poor development and generally a very little perspective. This is confirmed by empirical findings in these localities. Mostly defaulters and people with low incomes move to these localities. Individuals and families living there are unable to obtain conventional rental housing for different social reasons.

Typically in most of these localities, the house-owners do not invest in maintenance and repairs of the buildings and flats. Residents are not identified with the place where they live (they do not consider their

residence as a good address for housing). The goal of most residents of these localities is to move away, i.e. obtain housing in other parts of Ostrava.

Temporal development of selected indicators in categories

The development of selected indicators was monitored throughout the explored time period for the three categories. The localities did not change their class membership for this evaluation which is not practical but motivated our aim to evaluate the separability of classes and to understand global trends of indicators. In practice we envisage that the definition of category will not change (fixing the measures/interventions to be taken), but the probability of locality membership is a subject of temporal changes which leads to switching locality membership among categories.

The graphs demonstrate how large gaps exist among mean characteristics of categories (and also the average of the city) or if they overlap (see fig.15). Also the trends in categories can be easily detected.

The examples are provided for several indicators of intensity and structure of unemployment.

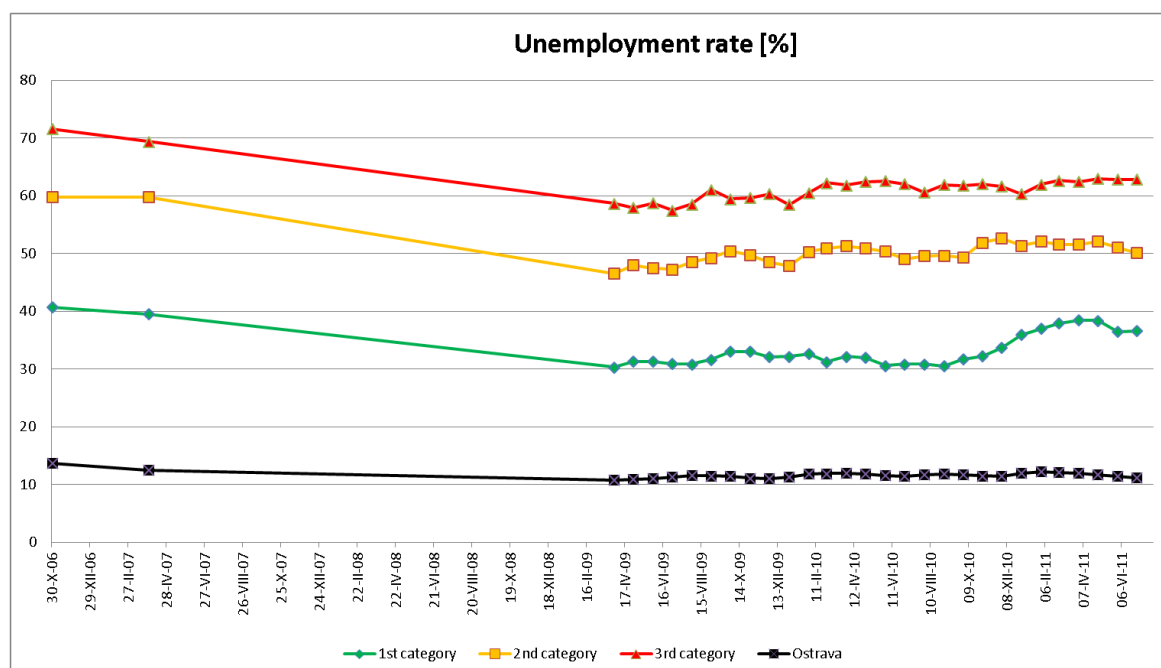


Fig. 15. Estimation of unemployment rate for each category of localities and Ostrava in the period from 2006 to 2011

While the unemployment rate for Ostrava in the period 2009 - 2011 ranges between 10 and 12%, the values for the first category are between 30 and 40%, 2nd category has an average unemployment rate of between 45 and 54% (2009-2011) and 3rd category, on average, 58 to 63% (2009-2011). The first category is more sensitive to changes in labour market which can be seen in the different progress in the first half of 2011, where the unemployment rate was increased by almost 9% while the increase in Ostrava was just 1%.

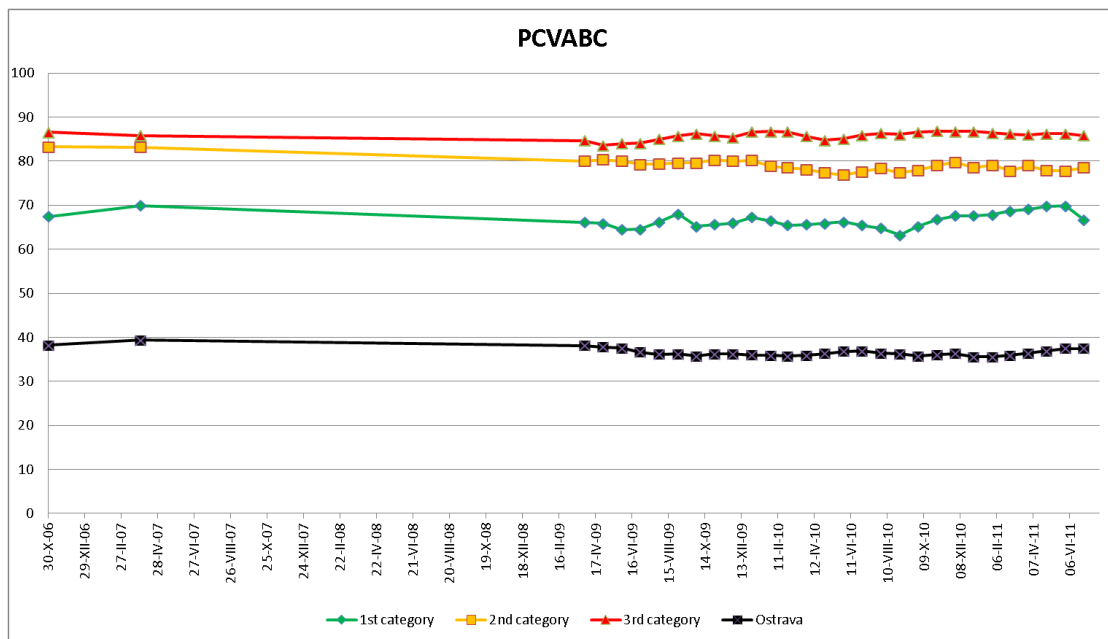


Fig. 16. Share of unemployed with low education for each category of localities and Ostrava in the period from 2006 to 2011

The ratio of unemployed with low education demonstrates a stable situation. More oscillations occur in the first category which is connected to the temporary seasonal employment. Fig. 16 shows a clear distinction between three defined categories (at least in terms of the average value). The smaller difference between the 2nd and 3rd categories is given by approaching the maximum possible limit.

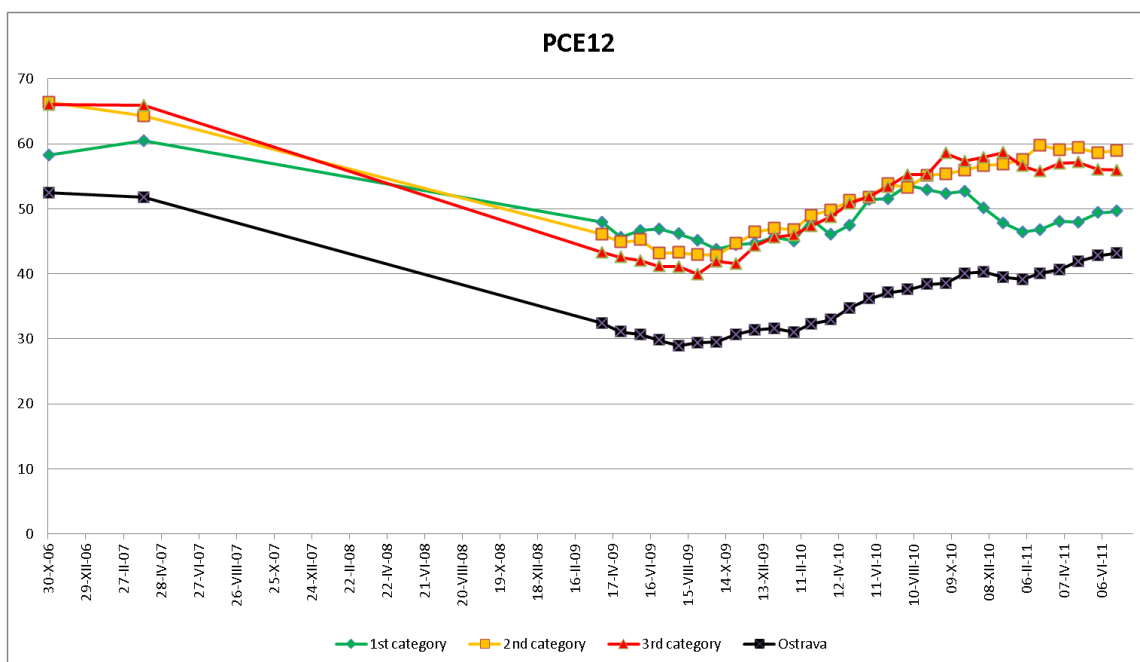


Fig. 17. Share of long-term unemployment for each category of localities and Ostrava in the period from 2006 to 2011

The development of long-term unemployment was affected by the economic crisis in 2008. The long-term unemployment is generally about 15% above the average of the city. It is impossible to find significant differences among categories with the exception of the first half of 2011 where the 1st category follows a different, lower trajectory. This change is caused by the corresponding increase of unemployment rate (short

evidence of new unemployed people). In our case, the indicator does not provide any useful information for characterization of categories and localities.

DISCUSSION AND CONCLUSION

Our aim was to deliver a set of suitable quantitative indicators for detailed spatial and temporal monitoring of socially excluded localities using the example of Ostrava city. Requirements for high spatiotemporal resolution prioritize data which originates in information systems of the public sector (registers). Data sets originating in both local and national registers seem to be suitable for calculating indicators which are appropriate for detail characterization of socially excluded localities. In this way three new localities in Ostrava were identified and proposed for further monitoring and the increased focus of local authorities (Horák et al., 2010).

Main symptoms of social exclusion in our environment were described and potentially corresponding indicators (based on public registers) were proposed.

Selection of data sets, their harmonisation, integration and geocoding enable the enumeration of selected quantitative indicators inside geographical boundaries of localities.

Three categories of exclusion criticality were established on the base of initial expert evaluation using exploratory data analysis of a full set of quantitative indicators. This classification is intended to differentiate intervention tools applied in localities by local authorities.

Proposed set of indicators allows characterizing of problematic localities. They show considerable diversity of characteristics of the localities which is useful in terms of monitoring localities, designing appropriate measures, and monitoring their impacts.

The most useful indicators for classification of localities are physical segregation, unemployment rate, proportion of people with low education, type of pyramid age and housing conditions. In our case, these indicators show stable behaviour for the whole time period and good association to the evaluation of criticality. They are also proposed (considered) for searching and identification of new problematic localities which may arise in the territory and which are not recognised yet.

Almost all other evaluated indicators are suitable for monitoring of individual features and specific evolution of localities. They demonstrate higher temporal instability and a low discrimination capability. The intensity of local crime oscillates namely after the overall decreasing of criminality since 2010. The age index provides a high temporal stability and supplements the evaluation of the age pyramid. Share of health handicapped unemployed (PCZPS) as well as indicators of health handicapped young children incidence provide other specific features uncorrelated with categories of criticality. Similarly, the local transport accessibility describes a specific important feature which seems to be independent of our classification of localities in the case of Ostrava.

Monitoring of long-term unemployment did not provide a satisfactory contribution to the evaluation.

The balance of the proposed evaluation (based only on quantitative measures) will be improved by adding selected qualitative criteria like organization of community activities, the existence (availability) of investment and development plans.

Monitoring of localities and categories brings also significant empirical findings, i.e. the occurrence of high natality and the high ratio of children in locations with very poor housing conditions and significant health risks, the relatively good local transport accessibility in most of localities. These outputs are important for design and planning of appropriate interventions.

Using data from public registers provides three main advantages:

- independent, objective and repeatability measurements with low costs,
- ability to measure and evaluate feedback of applied interventions very soon and consequently ability to further customise applied tools

- possibility to discover new localities with symptoms of social exclusion which are currently not recognised by experts.

Unfortunately quantitative evaluation and utilisation of such data source are not simple and encounter many problems.

Concerning data sources and its processing of following issues must be taken into account. Used data sources are “live” registers where the process of data editing is continuous and influencing not only new data records, but also some older records (thus a repeated export may provide slightly different results). Primary location uncertainty may occur in registers when more than one address per object exists and it is necessary to select the most appropriate address. Data are geo-referenced using address matching and the success is always less than 100%. Data are integrated from several sources which causes higher risk of inconsistencies (i.e. number of registered unemployed might be higher than the number of residents) due to the methodical differences (i.e. kind of address), time shifting, etc. It is important to mention that data coming from the information systems of public authorities require the security of personal data protection and therefore special attention has to be applied to assure confidentiality.

One of the most difficult issues comes from the scarcity of data sources. The existing list of indicators is not complex enough and describes only several aspects (dimensions) of social exclusion. Some socially excluded localities may stay hidden and not distinguishable, or some significant processes in localities may be uncovered (i.e. currently we are not able to monitor changes in health conditions, income, ethnicity, cultural, personal activity, perception of own identity and other significant personal attributes). The scarcity of existing data sources may be eliminated by integrating other data sources from local authorities and by utilising of monitoring of social networks to address personal attitudes.

These issues should motivate further research.

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