CRIME IN OPEN PUBLIC SPACES IN THE POST-SOVIET CITIES: LITHUANIAN CASE

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Abstract

From the spatial social point of view a city can be represented as a sequence of connected or disconnected open public spaces. Open public spaces (streets, squares, parks, yards etc.) can be treated as the social infrastructure of the city through which people move, where they meet, communicate and act. Even in ancient times open public spaces were used not only as people gathering places, fair or fiesta spaces, but also various shows and gambling took place on public spaces as well delinquent people were nailed to shame poles. The importance of public spaces for city dwellers and city guests is obvious.

Human behavior in open public spaces can be described though movement in the spaces. The intensity and character of movement, assessed by using the space syntax method, enable us to identify the most easy/hardly accessible spaces (integration values), spaces which are the most/least likely to be passed through (choice values), and the most deep/shallow spaces (depth values). These and other social spatial characteristics of urban space are applied for the research of behaviour of city dwellers and city guests. This stage of the research revealed that some public spaces were safer than others. The authors seek to identify how urban spatial structure correlates with and impacts urban crime. As a research object ten largest Lithuanian cities were selected. All of them represent a Post-Soviet case of urban development. The results allow us to understand the dependencies of particular types of crime and spatial social structure of cities.

Keywords: Urban crime, spatial social structure, open public space, space syntax, correlation analysis

Introduction

Post-soviet city could be seen as the specific or unique phenomenon in the contexts of occidental urbanism. What are the essential spatial and social features of the post-soviet city? To give an answer to the above mentioned question the main stages of formation of this phenomenon should be analyzed. According to the political, economic, social conditions and employed spatial urban models, two historical periods should be identified. The first one covers the time line from 1954 to 1990 and could be described as formation and prosperity of the soviet city. It started with the adoption of the ideas of modernistic urbanism after Stalin's death and ended with the collapse of Soviet political block. The second period starts at 1990 and is influenced by the shift from state controlled economy to free market economy in Eastern European countries.

As it was mentioned above, the soviet urbanism employed and realized the ideas of modernistic urbanism. The following aspects could be pointed out as the essential spatial features of soviet cities:

- Mono-functional zoning: historical city centers turned into specialized districts with dominant administrative and official cultural functions; industrial zones separated from

housing areas; recreational zones; autonomous zone of transportation; multi-flat housing districts.

- Dominant morphotype of free standing multi-flat buildings in land plot and "divorce" of building and street.
- Unification of housing areas all over the Soviet Union because of the single planning standards, schemes and usage of pre-fabricated elements of construction.
- Separation of car and pedestrian traffic in space.
- Prohibition of single family housing, etc.

It is important to point out that because of state land property and state controlled economy the above mentioned features of modernistic urbanism were applied at the huge scales and in essence transformed earlier urban fabric. Even historical urban cores, because of destroyed land property patterns and creation of semi-public spaces inside the historical quarters, were influenced by modernistic standards at a high degree (Zaleckis & Matijosaitiene, 2012).

Soviet regime used urban planning as one of the tools to create specific – "socialist" way of life. Real results of the applied urban models were not always the same as planned ones, but, from the point of view of spatial determinism, the influence on powerscape or socioscape (Jacobs, 2004) of the cities was huge. Few dominant peculiarities of the soviet city life could be mentioned:

- Pendulous migration between "sleeping" districts and working places in the industrial zones and city center. As a result we can see regularly depopulated areas inside the city within 24 hours cycle. At the same time it could be seen as regularly decreased number of accidental observers in specific areas.
- Deep public spaces as a result of "divorce" between buildings and streets as a result of new morphotypes. As space syntax investigation in Kaunas Downtown demonstrated it was true not only for new modernistic districts but for historical urban parts too (Zaleckis & Matijosaitiene, 2012). One of the results of this transformation could be named as decrease of street culture and disintegration of public social life.
- Replacement of streets by roads because of the separated flows of transport. Street culture was affected in this case again.
- Loss of urban identity of new urban areas because of typical planning schemes and architectural elements. Because of the huge amount of new housing (e.g. in Kaunas more than 50 percent of inhabitants is living in the modernistic housing blocks). As a result the three main features of preferred urban environment from four were lost or weakened at the level of the city, e.g. legibility, complexity, mysteriousness (Zaleckis, 2005).
- Homogenization of the housing areas in both spatial-architectural and social terms and weak processes of gentrification. If the analogy with natural eco-systems is applied, homogeneity and lack of diversity could be seen as the signs of less adoptable to various changes neighborhood.
- Decrease of the density of inhabitants in the city center and, as a result, its transformation into mainly to transit user oriented urban environment, etc.

In 1990, together with the collapse of the Soviet block the third wave of globalization started according to Zygmunt Bauman (Bauman, 1998). Because of the wide cultural influences of globalization, it is convenient to identify the transformations of matterscapes and powerscapes of soviet cities after 1990 on the base of widely acknowledged, multidimensional phenomenon's of the globalization.

The first phenomenon is called "landlord living in the capital" (Bauman, 1998). In the 16th century it was expressed in the movement of the rich land lords to the capital while losing social ties with local communities and increasing social differentiation in the cities. At

the end of the 20th century the same processes are repeated with the new power: gated communities, gentrification, second house phenomenon in the city center or suburban area, decrease of social integrity of local historical urban neighborhoods, etc.

Principle of panopticon as the basic model of society by Michel Foucault (Foucault, 1991). In the cities it could be observed as an increased amount of asymmetry in the cityscape. It is used as a tool to separate different social groups, e.g.: shopping malls as "black urban holes", glass hills in the cityscape, etc. (Zaleckis, 2011). At the same time it is important to point out, that soviet multi-flat housing districts are in essence asymmetrical structures: huge houses with a lot of windows create the atmosphere of being "permanently" watched in the recreational areas between them. From another side, huge amount of observers and observed people transform the classical model of panopticon into assymetric structure where everyone is a guard and a prisoner at the same time instead of structure with many prisoners and just few guards. Such spatial transformation creates more alienated local community then classical panopticon. In a result of globalization after 1990 the alienation of society was even more strengthened in post-soviet cities by the return of classical model of panopticon.

Death of social man is named as phenomenon of globalization by Richard Sennet (Sennet, 1977). At the cultural level it means the transformation of the city from the safe place in social terms into unsafe place. There is interesting coincidence between idea of Sennet and radical transformation of city culture at the magalopolitan stage of its development by Lewis Mumford (Mumford, 1961). At the spatial urban level death of social man means decreased role of public spaces as the catalyst of social interactions. Deep convex spaces of the soviet cities were quite favorable for above mentioned tendency before 1990 and are not changed after 1990. Big areas of suburban sprawl and development of the model of peripheral city (American, 2006) catalyzes social integration of the city even at the level of metropolitan region. Unpopularity and non-use of the concepts of New Urbanism in Lithuania creates situation when there are no urban spatial countermeasures against alienation of urban society used in city planning.

"End of geography" (Bauman, 1998) is understood as appearance of society where different social groups live at the different "speed". At the same time it means different needs, possibilities and resources. As a result we can expect different mental city images or mindscapes for the different social groups, physical segregation, etc.

Hiperconsumation is the peculiarity of contemporary western society. The third wave of globalization brought it into post-soviet space. As a result we have commoditized urban and suburban areas, shopping spaces instead of public spaces, gated shopping areas, etc. Interesting phenomenon of gated shopping mall could be observed in Kaunas: brown field was developed into huge shopping mall in the city center, but the closed complex do not interacts with surrounding urban fabric in a positive way. It even destroys the social and cultural life in the main pedestrian axe of the downtown area – Laisves avenue.

Unification of space (Bauman, 1998) is one of the essential features of globalization since the beginning of Renaissance. New possibilities of construction technologies, World Wide Web and fast information, global trade network unify not only space itself, but a way of life and culture too. Thus unified soviet cities become even more unified in a result of the third wave of globalization.

Finally it could be concluded, that in post-soviet cities alienation of the society is continued and all three types of the cityscapes (mindscape, matterscape and power(socio)scape) are even more fragmented then before. Of course, city as organism cannot lose its integrity totally and is adapting itself to new conditions. Despite self-organizing potential of urban complex systems, the cultural, political, economic, social changes after the fall of the Iron Curtain happened much quicker than in Western Europe and

the possibility of society to react to those changes was too slow, e.g.: historical neighborhoods were destroyed but there was not enough time for new urban local communities to appear (except few cases of gentrification); urban sprawls outrun development of public infrastructure; commercial priorities in urban planning took over the social ones, etc.

The final question is: do the peculiarities of the post-soviet cities create the specific regularities of crime appearance in public spaces?

Main Text

As research objects open public spaces (streets, pedestrian paths, squares, parks, passings and other public spaces which are not inside a building and in which pedestrians move) in ten biggest Lithuanian cities were chosen:

- Vilnius the capital of Lithuania with the population of 535,091 inhabitants and the area of 401 sq. km (density 1334 inh/sq.km),
- Kaunas with the population of 355,586 inhabitants and the area of 157 sq. km (density 2264 inh/sq.km),
- Klaipeda with the population of 161,300 inhabitants and the area of 110 sq. km (density 1466 inh/sq.km),
- Panevezys with the population of 113,653 inhabitants and the area of 50 sq. km (density 2273 inh/sq.km),
- Siauliai with the population of 107,875 inhabitants and the area of 81 sq. km (density 1331 inh/sq.km),
- Alytus with the population of 68,304 inhabitants and the area of 40 sq. km (density 1707 inh/sq.km),
- Marijampole with the population of 47,244 inhabitants and the area of 20.5 sq. km (density 2304 inh/sq.km),
- Utena with the population of 32,483 inhabitants and the area of 15.1 sq. km (density 2151 inh/sq.km),
- Telsiai with the population of 30,000 inhabitants and the area of 16.4 sq. km (density 1829 inh/sq.km),
- Taurage with the population of 26,444 inhabitants and the area of 15.7 sq. km (density 1684 inh/sq.km).

Data. For all the research objects the data from registers of criminal acts according to the Code of Criminal (CC) was selected. For Kaunas city also the data about criminal acts according to the Code of Administrative Rights Violations (ARVC) was selected. Amongst a big number of crime types only crimes which happen in open public spaces more often were selected to be used for this research:

- Profanation of the national symbols;
- Crimes against human life;
- Crimes against human health;
- Crimes against human sexual freedom and immunity;
- Theft of motor vehicles;
- Theft from cars;
- Other thefts;
- Robbery.

The data on these criminal acts represent the offenses committed during 2010-2011 years in the researched cities.

The criminogenic situation in Lithuanian cities is not very good. Even the amount of registered crime is low in comparison with other European countries, the amount of latent

crime is very high. This is due to the fact that not all the victims of urban crime report the police about the committed offence especially if it is an offence under the Code of Administrative Rights Violations. In Lithuania the investigation of urban crime and its prevention is being conducted by the Institute of Law and some Lithuanian universities. However, in most cases they define just statistical situation and tendencies, without taking into account territorial coherences on a level of the whole city or its spatial properties.

Methods. Space syntax method was applied for the syntactic analysis of urban structure of researched cities. According to the method open public spaces are crossed by axial lines, thus, the axial maps were prepared. For all the research objects connectivity, control, global depth, fast choice, global integration and local integrations R2 and R3 maps were drawn and these syntactic characteristics were calculated. The axial maps consist of the "longest and fewest straight lines that go throught all convex spaces and make all axial links" (Hillier et al., 1987; Topcu & Kubat 2007). The axial structure is one-dimensional and it "describes the degree to which any space extends linearly" (Topcu & Kubat, 2007). Axial structure propose us the information about where passengers might go in the system, hereby it is related to movement. The prepared axial maps are over-layered by the maps with various types of committed crimes.

The previous analysis of axial maps (Zaleckis & Matijosaitiene, 2013; Zaleckis et al., 2012) demonstrates some specific problems:

- A modern city in which pedestrian and vehicle flows are separated quite clearly and strongly functions as an integer of half-autonomic transport systems;
- The most part of streets which functions and are perceived by city dwellers as one spatial formation can not be presented as one axis due to the peculiarities of space syntax method;
- Administrative borders of cities often do not match the borders of the real urban system.

Due to the mentioned problems and the objective to model the environment as exactly as possible three corrections were applied to the traditional space syntax method:

- The axial map is drawn without axes which are unapproachable to pedestrians, also the map is added by axes which are used only by pedestrians and bicyclists and are unapproachable to vehicles;
- The borders of axial maps reflex the real integration of surrounding territories into the city, not only the administrative borders;

The conception of conituinty lines by Figueiredo is used in this research (Figueiredo & Amorim, 2004, 2007). This concept allows us to link several axes into one formation.

Results. Correlation analysis revealed relations and strength of relations between various types of crimes and syntactic characteristics in all the cities. Pearson (it assesses the strength of the linear relationship between variables) and Spearman's rho (it describes the strength of relation from point of view of monotony) correlation coefficients are calculated. Though, the values of Spearman's rho are quite low – only weak and very weak relations. Therefore, only the values of Pearson correlation coefficient are analyzed in further research.

In all the cities except Vilnius and Kaunas significant moderate and strong relations were identified between some syntactic characteristics and some types of crime (Table 1). In Vilnius and Kaunas only weak and very weak relations appeared. Weak and very weak relations were eliminated from the further analysis of urban crime. As we can see from the Table 1 other thefts and connectivity are related almost in all the researched cities. Strong relations are identified between fast choice and other thefts in Marijampole and Utena, as well as between fast choice and robbery in Marijampole. It is also seen from the Table 1 that connectivity is responsible for the biggest part of crimes - 26.7% of all the possible cases of correlations, fast choice is responsible for 16.7% of all the possible cases of correlations, and

control is responsible for 5% of all the possible cases of correlations. Though, it would be wrong to state that these syntactic characteristics are responsible for crime in all the researched cities.

It is also worth to mention that the correlation values between all types of crimes and depth are negative. That means the higher is the value of global depth the lower is the value of crime types, and vice versa. For the other syntactic characteristics the higher is the characteristic the more crime is committed there. Other thefts and connectivity have moderate relations in 6 cities of 10 (60% of researched cities), other thefts and fast choice have strong and moderate relations in 40% of researched cities, robberies and connectivity have moderate relations in 40% of researched cities, crimes against human health and connectivity have moderate relations in 30% of researched cities. Though, these relations between syntactic characteristics and some types of crime are not a regularity for all the cities. In each city various types of crime are related to and dependent on different syntactic characteristics. Therefore, a certain crime type can be analyzed according to a certain syntactic characteristic in each city. For instance, thefts from cars in Klaipeda can be researched and predicted by the analysis of connectivity, thefts of motor vehicles in Siauliai can be researched and predicted by the analysis of connectivity and fast choice, etc.

In the case of Klaipeda city the most connected streets consist of major streets with high flows of transport and pedestrians, as well as some minor streets in Soviet-built districts with regularly located multi-flats houses. In Panevezys and Siauliai the most connected streets consist of major streets with high flows of transport and pedestrians, as well as the minor streets of a regular grid which are built up with low-rise housing. In Panevezys and Siauliai the most chosen streets consist of major streets. In Alytus and Marijampole the most connected streets consist of major streets with high flows of transport and pedestrians. In Utena and Taurage the most connected, controlled and chosen streets consist of the major streets with higher flows of transport and pedestrians. In Telsiai the most connected and fast chosen streets consist of major streets.

	Theft from cars	**Theft of motor vehicles**	**Other thefts**	**Robbery**	**Crimes against human health**	**Crimes against human life**
Connectivity	**.545**** in Klaipeda	**.560**** in Siauliai	**.510**** in Panevezys **.515**** in Siauliai **.514**** in Alytus **.610**** in Utena **.578**** in Telsiai **.552**** in Marijampole	**.537**** in Klaipeda **.507**** in Siauliai **.565**** in Taurage **.527**** in Marijampole	**.540**** in Siauliai **.636**** in Taurage **.523**** in Marijampole	
Control			**.524**** in Utena	**.510**** in Taurage	**.558**** in Taurage	
Fast choice		**.553**** in Siauliai	**.529**** in Panevezys **.631**** in Telsiai **.789**** in Utena **.709**** in Marijampole	**.625**** in Taurage **.715**** in Marijampole	**.630**** in Taurage **.642**** in Marijampole	**.556**** in Marijampole

**. Correlation is significant at the .01 level (2-tailed).

Table 1. Relations between syntactic characteristics of spaces and crime types - Pearson correlation coefficient values (strong relations are marked by grey colour)

The visual analysis of open public spaces which are the most vulnerable to the researched crime types in all ten cities reveals some generic features of these spaces (Fig. 1):

- The most of crimes happen on the main wide streets with mixed land use which are mostly surrounded by residential areas;
- Residential buildings face blind walls to open public spaces;
- There are no direct entrances from buildings to open public spaces;
- The systems of the most vulnerable to crime spaces are quite deep – the main streets are connected to buildings through at least 2-3 spaces.

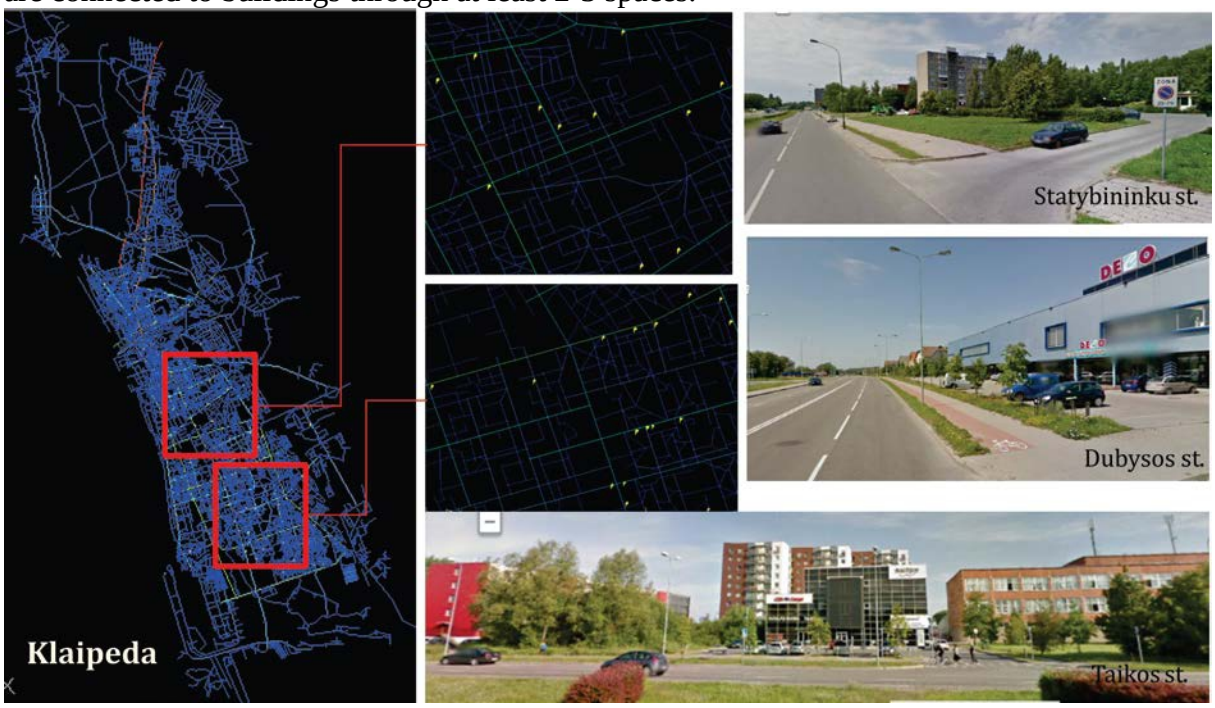

Fig. 1. Connectivity map with marked thefts from cars, and the most vulnerable to thefts from cars spaces in Klaipeda city

The comparative analysis of all the researched cities shows that according to the number of crimes per 100,000 inhabitants Kaunas is the most unsafe city according to the crimes against human sexual freedom and immunity, and also thefts from cars, Klaipeda is the most unsafe city according to the other thefts and robberies, Marijampole is the most unsafe city according to the crimes against human life and crimes against human health, Utena is the most unsafe city according to the thefts of motor vehicles. Siauliai is the most safe city according to almost all the crime types except thefts of motor vehicles, and Kaunas city is the most safe having in mind thefts of motor vehicles.

The analysis also reveals that the biggest number of crimes for one axis according to the crimes against human life is in Marijampole, according to the crimes against human health is again in Marijampole, according to the crimes against human sexual freedom and immunity Kaunas is the most unsafe city, according to the thefts of motor vehicles Siauliai is the most unsafe, according to the thefts from cars Kaunas is the most unsafe, according to the other thefts Panevezys is the most unsafe, and according to the robberies Klaipeda is the most unsafe. And the safest cities are: considering the crimes against human life – Vilnius and Taurage, considering the crimes against human health – Vilnius, considering the crimes against human sexual freedom and immunity – Klaipeda, considering the thefts of motor vehicles – Kaunas, considering the thefts from cars – Siauliai, considering other thefts – Vilnius, and considering robberies – again Vilnius.

		Crimes against human life	Crimes against human health	Crimes against human sexual freedom and immunity	Theft of motor vehicles	Theft from cars	Other thefts	Robbery
Vilnius								
Number of crimes per 100,000 inhabitants		2.80	49.90	8.41	16.07	72.14	60.92	27.66
Number of crimes for one axis		0.001	0.018	0.003	0.006	0.026	0.022	0.010
Kaunas								
Number of crimes per 100,000 inhabitants		0.56	69.74	79.87	0.84	280.94	134.14	102.93
Number of crimes for one axis		0.0002	0.024	0.028	0.000	0.097	0.046	0.036
Klaipeda								
Number of crimes per 100,000 inhabitants		5.58	101.67	3.72	16.12	83.69	713.58	363.30
Number of crimes for one axis		0.002	0.030	0.001	0.005	0.024	0.208	0.106
Panevezys								
Number of crimes per 100,000 inhabitants		9.68	81.83	7.92	54.55	91.51	424.09	94.15
Number of crimes for one axis		0.008	0.072	0.007	0.048	0.081	0.375	0.083
Siauliai								
Number of crimes per 100,000 inhabitants		0.46	17.61	0.46	35.97	1.21	4.63	14.37
Number of crimes for one axis		0.002	0.092	0.002	0.188	0.006	0.024	0.075
Alytus								
Number of crimes per 100,000 inhabitants		4.39	124.44	7.32	20.50	26.35	284.02	81.99
Number of crimes for one axis		0.002	0.063	0.004	0.010	0.013	0.143	0.041
Marijampole								
Number of crimes per 100,000 inhabitants		29.63	245.53	14.82	61.38	42.33	298.45	95.25
Number of crimes for one axis		0.012	0.101	0.006	0.025	0.017	0.123	0.039
Utena								
Number of crimes per 100,000 inhabitants		9.24	92.36	3.08	76.96	52.34	514.12	95.43
Number of crimes for one axis		0.005	0.047	0.002	0.039	0.027	0.261	0.048
Telsiai								
Number of crimes per 100,000 inhabitants		10	96.67	3.33	33.33	30.00	326.67	66.67
Number of crimes for one axis		0.005	0.045	0.002	0.016	0.014	0.153	0.031
Taurage								
Number of crimes per 100,000 inhabitants		3.78	204.21	11.34	60.51	60.51	548.33	71.85
Number of crimes for one axis		0.001	0.080	0.004	0.024	0.024	0.214	0.028

Table 2. Comparative analysis of the cities (black colour – the highest rates, grey colour – the lowest rates)

Conclusion

The research results reveal that the peculiarities of the post-Soviet cities do create the specific regularities of crime appearance in open public spaces. In all the researched cities except Vilnius and Kaunas significant moderate and strong correlations were found between connectivity, control, fast choice and such crimes as theft from cars, theft of motor vehicles, other thefts, robberies, crimes against human health and crimes against human life. Though, in each city various types of crime are related to and dependent on different syntactic characteristics.

The analysis of urban pattern in the researched cities let us conclude that in all the cases major streets with high flows of transport and pedestrians contribute to a higher crime. And minor streets create higher hazard for crime only in three cases: in Klaipeda in some Soviet-built districts with regularly located multi-flats houses, as well as in Panevezys and Siauliai where some minor streets of a regular grid are built up with low-rise housing. Peculiarities of these three cases have to be revealed in the further research.

The analysis of ten biggest Lithuanian cities reveals that the social spatial configuration in all the cities except Vilnius and Kaunas generates the hazard of some types of criminal offences:

- in Klaipeda connected spaces generate more thefts from cars and robberies,
- in Panevezys connected spaces and fast chosen spaces generate other thefts,
- in Siauliai connected spaces generate thefts of motor vehicles, other thefts, robberies and crimes against human health, and fast chosen spaces generate thefts of motor vehicles,
- in Alytus connected spaces generate other thefts,
- in Marijampole connected and fast chosen spaces generate other thefts, robberies and crimes against human health, and fast chosen spaces generate also crimes against human life,
- in Utena connected, controlled and fast chosen spaces generate other thefts,
- in Telsiai connected and fast chosen spaces generate other thefts,
- in Taurage connected, controlled and fast chosen spaces generate robberies and crimes against human health.

The comparison of the number of crimes committed in each city per 100,000 inhabitants and per one axis shows that the most unsafe cities are:

- from the point of view of crimes against human life and crimes against human health – Marijampole,
- from the point of view of crimes against human sexual freedom and immunity and theft from cars – Kaunas,
- from the point of view of theft of motor vehicles – Utena and Siauliai,
- from the point of view of other thefts – Klaipeda and Panevezys,
- from the point of view of robberies – Klaipeda.

▪ According to the visual analysis of the most crimed spaces the main proposals for creating safer cities are formulated:

- more buildings located along a street should have entrances directly connected with the street (not trough other spaces),
- streets should be made more visible from surronding buildings,
- from the point of view of safety the greater attention should be paid to major streets with high flows of transport and pedestrians.

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