SOCIALLY RESPONSIBLE CITY PLANNING: A NEW STRATEGY FOR INCREASED SAFETY?

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Abstract

A city is a complex dynamic system that includes economic, social, cultural, environmental, political, engineering, etc. aspects. The ideas of new urbanism and smart growth have emphasized urban spatial structure as an important player in social interactions. Hence, it is not accidental that new trends of research focus on one of the most important prerequisites of high quality of life – our safety. Therefore, a truly smart city, beyond other elements, includes a socially-oriented spatial structure, i.e. socially-responsible city plan. The research on the topic has proliferated in a limited number of countries. Thus, the paper contributes to the recognition of the potential of urban spatial structure in inhibiting crime. For this purpose, an empirically-based case study of Kaunas city located in Lithuania is presented and discussed.

Keywords: Safety, social responsibility, urban planning, smart city, crime

Introduction

In a broad sense, a city is a complex dynamic system that includes economic, social, cultural, environmental, political, engineering, etc. aspects. These aspects are both dependent on and influencing each other and result in different dynamic interrelations that embody a city. But what is the purpose? From this point of view, a city could be perceived as a spatial structure shaped by society and for society. Spatial structure has traditionally been associated with engineering and environmental aspects. Nonetheless, the ideas of new urbanism and smart growth have emphasized urban spatial structure as an important player in social interactions as well. It is long ago when Lewis (1961), Newman (1972), etc. described the influence of urban structure on night life, street culture and alike, but it is only now when similar approaches become being based on empirical evidence (Kaya, Kubat 2007; Hillier, Sahbaz 2009; Friedrich et al. 2009; Monteiro 2012). Besides, it is not accidental that the informed new empirical studies of the relationship between social and spatial aspects of a city investigate crime, i.e. it is not accidental that new trends of research focus on one of the most important prerequisites of a high quality of life – our safety.

However, the lack of the empirically-based knowledge about the interrelation of urban spatial structure and crime remains being an important impediment of socially-oriented urban planning. The research on the topic has recently begun in the US, UK, Sweden, Australia, but there is still an incredible number of countries that are on their ways to recognizing the potential of urban spatial structure in inhibiting crime. The current paper is aimed at contributing to this awareness by providing an empirically-based case study of Kaunas city located in Lithuania.

Methodology

In Kaunas city, there are 1721 addresses where at least 1 incident occurred in open public spaces since 2010. The total number of registered incidents equals 3440. In order to

assess whether there is a relationship between spatial structure and crime, correlation analysis was employed: between incidents of different crime types and land use, between incidents of different crime types and morphological types of the city, between incidents of different crime types number if inhabitants, and between incidents of different crime types and density of population.

Land use and morphological type are nominal variables, whereas crime is an interval variable. Crime is measured in the number of incidents reported at a certain address in an open pubic space. Hence, the correlations between land use and crime, and between morphological type and crime were measured by means of Eta correlation (crime as dependent of land use and morphological type).

Further, because crime, number of inhabitants and population density are interval variables, Spearman correlation coefficient was used to measure the relationships between the variables. Both the number of inhabitants and density were assessed at locality level.

Interestingly, no strong correlations are observed when all sample addresses (N=1721) are considered, except the relationship between theft from cars with the number of inhabitants and with the density of population. However, as long as the concentration of different types of crime at one address increases, the correlation tends to increase as well. In this way, the number of incidents at an address was gradually increased from at least 1 incident to at least 6 incidents.

Results

Tables 1-4 demonstrate the strengths of relationships between *crime* and *land use* and between *crime* and *morphological type*, as well as Spearman correlations between *inhabitants number* and *crime* and between *density* and *crime*. The analysis of the findings is presented below the tables.

Table 1. *Eta* correlations between *land use* and *crime*

	Crime type					
	Crime against life	Rape, etc.	Theft from a car	Other theft	Robbery	Body injury
All (N=1721)	0,050	0,153	0,219	0,304	0,264	0,280
Total crime >1 (N=481)	0,093	0,269	0,347	0,526	0,424	0,480
Total crime > 2 (N=212)	-	0,398	0,390	0,600	0,476	0,518
Total crime > 3 (N=113)	-	0,612	0,404	0,635	0,489	0,564
Total crime > 4 (N=73)	-	0,625	0,402	0,616	0,508	0,550
Total crime > 5 (N=51)	-	0,685	0,490	0,706	0,570	0,539
Total crime > 6 (N=36)	-	0,684	0,488	0,688	0,531	0,532
	Damage to property	Damage to streets, installations	Small hooliganism	Juvenile hooliganism	Alcohol consumption	Total
All (N=1721)	0,185	0,198	0,137	0,099	0,122	0,294
Total crime >1 (N=481)	0,196	0,480	0,266	0,163	0,156	0,507
Total crime > 2 (N=212)	0,257	0,705	0,319	0,210	0,219	0,575
Total crime > 3 (N=113)	0,232	0,704	0,340	0,288	0,303	0,609
Total crime > 4 (N=73)	0,283	-	0,311	0,336	0,336	0,591
Total crime > 5 (N=51)	0,429	-	0,357	0,421	0,355	0,686
Total crime > 6 (N=39)	0,326	-	0,294	0,480	0,378	0,673

Table 2. *Eta* correlations between *morphological type* and *crime*

	Crime type					
	Crime against life	Rape, etc.	Theft from a car	Other theft	Robbery	Body injury
All (N=1721)	0,076	0,507	0,347	0,258	0,276	0,279
Total crime >1 (N=481)	0,156	0,631	0,568	0,477	0,490	0,508
Total crime > 2 (N=212)	-	0,664	0,742	0,652	0,651	0,673
Total crime > 3 (N=113)	-	0,682	0,872	0,676	0,716	0,807
Total crime > 4 (N=73)	-	0,657	0,868	0,658	0,712	0,804
Total crime > 5 (N=51)	-	0,699	0,861	0,637	0,730	0,813
Total crime > 6 (N=36)	-	0,691	0,854	0,601	0,739	0,796
	Damage to property	Damage to streets, installations	Small hooliganism	Juvenile hooliganism	Alcohol consumption	Total
All (N=1721)	0,276	0,183	0,297	0,249	0,083	0,296
Total crime >1 (N=481)	0,291	0,355	0,442	0,330	0,054	0,557
Total crime > 2 (N=212)	0,318	0,309	0,549	0,390	0,083	0,754
Total crime > 3 (N=113)	0,298	0,368	0,671	0,493	0,128	0,850
Total crime > 4 (N=73)	0,344	-	0,664	0,536	0,174	0,839
Total crime > 5 (N=51)	0,417	-	0,646	0,464	0,219	0,825
Total crime > 6 (N=39)	0,436	-	0,621	0,577	0,293	0,799

Table 3. Spearman correlations between *inhabitant number* and *crime*

	Crime type					
	Crime against life	Rape, etc.	Theft from a car	Other theft	Robbery	Body injury
All (N=1721)	-0,010	-0,386**	0,388**	-0,183**	-0,044	-0,246**
Total crime >1 (N=481)	-0,034	-0,440**	0,303**	-0,265**	-0,137**	-0,336**
Total crime > 2 (N=212)	-	-0,449**	0,167*	-0,283**	-0,190**	-0,407**
Total crime > 3 (N=113)	-	-0,552**	0,106	-0,339**	-0,200*	-0,422**
Total crime > 4 (N=73)	-	-0,503**	0,056	-0,369**	-0,160	-0,446**
Total crime > 5 (N=51)	-	-0,465**	-0,060	-0,392**	-0,209	-0,352*
Total crime > 6 (N=36)	-	-0,425**	-0,054	-0,294	-0,210	-0,208
	Damage to property	Damage to streets, installations	Small hooliganism	Juvenile hooliganism	Alcohol consumption	Total
All (N=1721)	0,253**	-0,110**	0,140**	0,142**	0,005	0,184**
Total crime >1 (N=481)	0,316**	-0,128**	0,057	0,109*	0,026	0,002
Total crime > 2 (N=212)	0,352**	-0,096	0,019	0,112	0,038	-0,155*
Total crime > 3 (N=113)	0,309**	-0,132	0,068	0,243**	0,075	-0,222*
Total crime > 4 (N=73)	0,347**	-	-0,112	0,227	0,107	-0,231*
Total crime > 5 (N=51)	0,409**	-	-0,080	0,191	0,140	-0,310*
Total crime > 6 (N=39)	0,293	-	-0,004	0,258	0,204	-0,270

Table 4. Spearman correlations between *density* and *crime*

	Crime type					
	Crime against life	Rape, etc.	Theft from a car	Other theft	Robbery	Body injury
All (N=1721)	-0,012	-0,342**	0,422**	-0,250**	-0,050*	-0,266**
Total crime >1 (N=481)	-0,039	-0,424**	0,334**	-0,258**	-0,141**	-0,316**
Total crime > 2 (N=212)	-	-0,441**	0,222**	-0,212**	-0,176*	-0,353**
Total crime > 3 (N=113)	-	-0,557**	0,190*	-0,229*	-0,182	-0,312**
Total crime > 4 (N=73)	-	-0,505**	0,169	-0,246*	-0,139	-0,331**
Total crime > 5 (N=51)	-	-0,498**	0,103	-0,223	-0,183	-0,203
Total crime > 6 (N=36)	-	-0,518**	0,172	-0,077	-0,187	-0,019
	Crime type					
	Damage to property	Damage to streets, installations	Small hooliganism	Juvenile hooliganism	Alcohol consumption	Total
All (N=1721)	0,249**	-0,105**	0,153**	0,143**	0,008	0,187**
Total crime >1 (N=481)	0,313**	-0,101**	0,095*	0,121**	0,024	0,028
Total crime > 2 (N=212)	0,346**	-0,081	0,060	0,119	0,033	-0,100
Total crime > 3 (N=113)	0,298**	-0,115	0,124	0,264**	0,066	-0,131
Total crime > 4 (N=73)	0,333**	-	0,047	0,250*	0,090	-0,118
Total crime > 5 (N=51)	0,390**	-	-0,018	0,224	0,111	-0,143
Total crime > 6 (N=39)	0,270	-	0,038	0,296	0,155	-0,049

Concerning ***crimes against human life***, only 2 such incidents were registered. Consequently, the relationships with the number of inhabitants and density are weak. Both occurred on commercial territories (land use) that, in terms or morphological types, are defined as perimeter-type area divided into small possessions as well as perimeter-type area with separately standing buildings.

The total number of ***crimes against human sexual freedom and immunity*** equals 280. 83 incidents of the given crime occurred in commercial territories, 81 in low rise dwellings, and 67 in high rise dwellings. In terms of morphological type, as many as 109 incidents happened in perimeter-type areas divided into small possessions. There is a medium strong relationship between the given crime type with land use and morphological type, especially at 51 addresses where total number of crime exceeds 5. Then, the correlation with the number of inhabitants and density is negative and significant statistically, i.e. rapes and alike are typical of remote places. The correlation exceeds the average one at 113 addresses where the total number of crime exceeds 3.

On the contrary, ***theft from a car*** is positively related with the number of inhabitants and density, but the correlations are weaker than moderate. In general, out of 1374 incidents 788 were conducted in the lands of high rise dwellings. Moderate correlation links the given crime type with land use in the sample of 51 addresses with total crime rate over 5. A very strong relationship can be observed with morphological type at 73 addresses with total crime rate exceeding 4. In general, out of 1374 incidents, 499 occurred in modernistic blocks, while others were mostly conducted in single family housing, as well as modernistic blocks mixed with single family housing and/or perimeter-type areas with separately standing buildings.

Interestingly, ***other theft*** is negatively related with the number of inhabitants and density, and the correlations are even weaker. However, strong correlations are observed with

land use (at the 51 addresses) and morphological type (at the 113 addresses). In general, out of 478 incidents of other theft, 178 were conducted in the areas of single family housing, or areas of modernistic plan, or perimeter-type areas, or their mix. At the 51 addresses, 65 out of 119 thefts were conducted in the areas of high rise dwellings.

Robbery can also be associated with remote places, but the correlations with the number of inhabitants and density are very weak. However, the relationship with land use could be observed, and at 36 addresses with crime rate over 6 in particular. Similarly, the relationship with land use is strongest in the sample of 51 addresses where the total crime rate exceeds 5. Here, 32 out of 84 robberies happened in the lands of high rise dwellings, and 22 in commercial areas. In terms of morphological type, 46 robberies occurred in the areas of single family housing, often mixed with the areas of modernistic plan, or perimeter-type areas, or their mix.

Similarly, ***crime against human health*** can also be related with remote places, especially when 73 addresses with crime rate over 4 are considered (i.e., weaker than moderate relationships with the number of inhabitants and density). Nonetheless, the relationship with land use at 113 addresses where at least 3 crime were registered is strong. Concerning morphological type, 41 out of 89 incidents of the informed crime happened in the areas of single family housing, or areas of modernistic plan, or perimeter-type areas, or their mix; 21 incident occurred in lands of high rise dwellings.

Then, ***intentional damage to property*** is positively correlated with the number of inhabitants and density, especially at 51 most dangerous addresses (crime rate at an address exceeds 5 there). At these addresses, the relationship with land use and morphological type (39 addresses, crime rate at an address exceeds 6 there) could be stressed, but it is weaker than moderate. At the 51 addresses, 18 addresses adhere to high rise dwellings, 14 to commercial areas, or, in terms of morphological type, mostly areas of modern building-type, sometimes mixed with single family housing.

The correlations of ***damage to streets, their installations and alike*** with the number of inhabitants and density are, again, negative, but weak. The relationship with land use in the sample of 212 most dangerous addresses (crime rate at an address exceeds 2 there) could be stressed as it is strong. Hence, damage to streets tends to be done in recreational territories.

Both ***small and juvenile hooliganism*** correlate with the number of inhabitants and density also weakly, though positively. Small hooliganism can most clearly be related with lands of high rise dwellings (the 73 addresses with crime rate over 4), while juvenile hooligans are most active in modernistic neighborhoods (at the 39 most dangerous addresses, i.e. those with crime rate over 6).

The ***consumption of alcohol in public places and the apparition there while being drunk*** seems to be rather commonplace to all the types of land use, city morphology, both remote and densely inhabited territories. However, it is important to note that the relationship between the given crime with land use and morphological type is strongest at the 39 most dangerous addresses. The informed crime is mostly related with the territories for the society's needs (e.g. hospitals, parks) because it is there where this type of crime is least desirable and, thus, most reported.

Conclusion

It is interesting to note that when the concentration of crime at one and same address increases, the correlation between crime and spatial structural city characteristics tends to increase as well. This leads to a conclusion that even though most of the crime is independent of urban structure, there are some especially dangerous places where urban space plays a significant role. Precisely these places are those that need the greatest attention of city planners in order to triumph over crime.

In general, the relationship between crime rate with the number of inhabitants and density is positive, but it becomes negative when more dangerous addresses are considered. In other words, more dangerous places and crimes could be associated with more remote places, while other crimes are attracted by greater numbers of people. Thus, most crime occurs in lands of high and, to a lesser extent, low rise dwellings, and commercial territories. In terms of morphological type, this would mostly correspond to modernistic neighborhoods (blocks), and, to a lesser extent, single family housing as well as its mix with modern blocks, and sometimes to perimeter-type areas (blocks) divided into small possessions.

Typically, relationships of crime are stronger with morphological types in comparison to land uses. This could be explained by the greater variety of morphological city types. However, subject to sample size and crime type, the two variables may change places. Concerning the differences in the relationships with the number of inhabitants and with density, no clear pattern could be observed. The two variables are interrelated, and subject to different types of crime and sample sizes, the correlation of the crime rate with the number of inhabitants was estimated to be both stronger and weaker than that with the population density.

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