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Urban Crime Distribution in Isparta (Turkey): A Location Quotient Analysis

Abstract

Crime is an inseparable part of society and for the fact that place, time and society are inextricably interwoven implies that the conceptualization of the spatial aspect of crime is imperative. By adopting crime pattern and social disorganization theories, while using neighborhoods as the unit of analysis, we examined how crime behavior varies in an urban context. This was achieved by using Location Quotient of Crime (LQC) to identify and represent robbery, assault and threat agglomerations, as well as neighborhood in risk areas. The result of our analysis suggest that most neighborhoods had a relatively higher LQC for robbery, assault and threat crimes as compared to the city as a whole with quite a significant proportion of assault incidence in neighborhoods located near educational facilities. This paper also shows the usefulness of LQC in understanding crime behavior pattern at a micro level. A strong linkage between robbery, assault and threat crime incidents and key land use types were also established.

Key words: Assault; Crime; Robbery, Isparta; Location Quotient; Threat; Turkey

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Introduction

As technology has advanced, the application of geographic analysis principles specifically spatial analysis techniques in understanding the spatial aspect of crime has improved tremendously (McCarthy and Ratcliffe, 2005; Townsley 2009). A prerequisite for crime analysis and prevention according to Roman (2005) explicitly requires identification of the time and places where there exist a relatively high probability of the congregation of potential criminal offenders or victims. In other words, Place-based research has dominated the analysis of crime over the decade. This shies away from the epistemologies and concept of crime and concentrate solely on the relationship between geography and the analysis of crime. The fundamental of geography is the analysis of space (Thrift, 2003) and routine activities of people

in a physical setting (Place) can have important effects on when and where opportunities for crime occur. Differently approached geographical theory provides the foundation for research on journeys to crime (Groff and McEwen, 2005). During the past decades criminal geography has emerged as a branch of human geography that studies the relations between space, social groups and crime (Harries, 1980; Herbert, 1982). Stevenson (2013) pointed out that innovation in the area of geography, in particular geographic information systems, has truly helped to define the field of crime analysis and give it its present shape. Essentially, the uniqueness of GIS is its ability to integrate spatial information as well as other forms of data (Murray et al., 2001).

According to Eck and Weisburd (2015), crime events are not uniformly distributed. Brantingham and Brantingham (1982), further proved that some geographic areas have less crime than others, a fact that has been well established for over a century. Urban regions are undergoing rapid transformation and Isparta is no exception. Urbanization, depending upon its pace, nature and patterns, may create numerous problems (Keles, 2001) and crime is one of them. Concerns that the city might have a crime-causing effect have been widely researched (Burgess, 1925; Shaw and McKay, 1942). Rational choice (Homans, 1961); routine activity theory (Cohen and Felson 1979); and crime pattern theory (Brantingham and Brantingham 1981), provide perspectives explaining the spatio-temporal dynamics of crime in urban landscapes.

In relation to Turkey and specifically Isparta, the population living in cities since 1950 has grown sturdily. According to the Turkish Ministry of Environment and Urbanization (2014), urban population increased from 25% in 1950 to 44% in 1980, 65% in 2000 and 77% in 2012. Due to rapid urbanization, neighborhoods are in a continuous state of disintegration and the occurring spatial segregation is based on values and lifestyle. Essentially, the growing disparity in affluence evident in modern society has accounted for the increased rate of crime. In metropolitan areas there exist suburbs and gentrified neighborhoods of rich people and new middle classes while districts in the urban fringe accommodate mostly the poor (Turkish Ministry of Environment and Urbanization, 2014). For instance, the general unemployment rate in Turkey is 9.8%, while among the youth it is 18.2%. Youth unemployment in cities is estimated to be 21.8% in total, 19.9% among males, and 26.1% among females (Turkish Ministry of Environment and Urbanization, 2014). This spatial segregation has resulted in the increase in poverty evident in Peri-Urban regions (despite a relative fall in the percentage of people below the poverty line – from 28.1% in 2003 to 18.1% in 2009) (Karakas et al., 2014). These inequalities propel contention among various social groups and classes which eventually brings forth social problems and increase crime rates in cities (Turkish Ministry of Environment and Urbanization, 2014).

Compared to other urban areas in Turkey, Isparta records a relatively low crime rate; however there exist spatial variations in incidence rate. By using a spatial analytic approach, and controls such as socioeconomic and demographic variables, this paper seeks to examine criminal behavior pattern in the study area by using neighborhoods as a scale of measure. Various studies on urban crime patterns in Turkey and Isparta in particular (Yılmaz and Günay Ergün, 2006; Aliağaoğlu, 2007; Sargin and Temurçın, 2010) have already been conducted. However, most of these studies

have ignored, and few have applied, a spatial analysis approach – specifically location quotient and multiple regression method to identify and explore patterns of crime. Furthermore, a majority of these studies are restricted to simple patterns and distribution. It is important to note that crime distribution maps alone do not present an in-depth relationship between levels of crime and environmental variables (Hirschfield and Bowers 1997; Olligsclaeger 2003).

Spatial analysis of crime

A key component of crime analysis is the focus on spatial data (Boba, 2013). By spatial data, geographers explicitly refer to data collected in the form of points or dots, lines, areas or surfaces (O'Brien, 1992). Spatial data are often collected using maps, plans or charts (Unwin 1981). Accuracy of the spatial crime data according to McCarthy and Ratcliffe (2005) is critical for the effective and efficient analysis of crime across space and time. This paper would therefore account for the conceptual, positional and attribute accuracies of the data in order to legitimize the analysis. In order to understand the application of place in crime analysis, it is crucial to examine its historical and theoretical background. The early empirical development of place in crime research can be traced by the early work of Guerry (1833) and Quetelet (1842) in France followed by work in England (Plint 1851; Mayhew 1862) during the 19th century, through the sociological tradition emerging from the Chicago School in the early 20th century, and finally to the recent revival of this tradition in contemporary ecological studies of crime. In the late 1960s and through the 1980s, the focus of crime mapping shifted from the criminal offender towards the actual criminal event and its physical and social environments that helped create the opportunities for crime (Anselin et al, 2000). As a result, researchers began to include information about geography and environmental factors into their study of crime problems and other related issues, such as rape (Stevenson, 2013).

This paper adopts the crime pattern theory and social disorganization theory as theoretical foundations in order to empirically analyze crime across space and time in Isparta. The crime pattern theory proposed by Brantingham and Brantingham (1981 and 1984) applies the principles of environmental criminology to understanding the geometry of crime. As explained by Brantingham and Brantingham (1981), a crime occurs when four things are in concurrence –law, an offender, a target and a place. In this context, place is defined as a discrete location in time and space at which the other three dimensions come together for a criminal event to occur (Groff and McEwen, 2005). According to Eck and Weisburd (2015), Crime pattern theory provides a greater approach in the understanding of crime and place because it combines rational choice and routine activity theory to help explain the distribution of crime across space. Their model suggests that criminal acts are most likely to occur in those areas where the offender's awareness space intersects with an environment containing suitable targets at an acceptable level of risk (Rossmo et al., 2005). In order words crime occurs because offenders engage in routine activities (Eck and Weisburd, 2015).

The social disorganization theory on the other hand provides an insight into the socioeconomic and structural characteristics conducive for crime. The theory was

proposed by Shaw and McKay (1942) based on a study of the spatial distribution of juvenile delinquency in Chicago in the 1920s. Their study concluded that high crime areas were spatially concentrated in the inner city. Also, crime rates were high in the inner city and gradually decreased with distance from the city center (Kikuchi and Desmond, 2010). The proponents further stated that neighborhoods in the inner city were characterized by various social problems; key among them were low median rent, low rate of housing ownership and high unemployment. Other problems included high residential turnover rate and health problems such as infant mortality, tuberculosis and mental disorders. Social disorganization theorists argue that crime rates increase when neighborhoods lack effective informal social control and/or neighborhoods increase frustrated wants of neighborhood residents (Bursik 1988; Sampson and Groves, 1989). We applied these two theories principally based on the conviction that it provides a holistic approach of the interplay between environmental, social, economic and political structures inductive for crime, at the same time illuminating the importance of the concept of space in criminology.

Various lines of evidence from the above-mentioned theoretical frameworks suggest that urban neighborhoods with inherent socioeconomic segregations provide an approach for determining how the dimension of place interacts with other dimensions to produce criminal events. In relation to the selected neighborhoods in Isparta, poverty coupled with changes in residential mobility and population growth has resulted in the current trajectories in crime rate.

Methodology

Study area

Isparta is a province in Southwestern Turkey with a surface area of 8,933 sq. km. The province is located in the border zone of the Goller Subregion in the Antalya Region. The Isparta Province consists of 174 villages and 38 towns administrated by 13 districts (Temurçın, 2004). Isparta is bordered by Afyon Province to the north and west, the Konya Province to the north-east, east and south-east, the Antalya Province to the south, and the Burdur Province to the south-west and west. The study area (depicted in Fig. 1) comprises all neighborhoods (forty three) in the central business district of Isparta. The study area also doubles as the administrative, economic, industrial and educational powerhouse of the province. Byrne (1986) posited that the inherent characteristics of the city and population are responsible for criminal activities. The study area was chosen on the basis of socioeconomic and political demographic considerations. The map presented shows the outline of the selected neighborhoods in the study area.

Location quotient technique

As Tobler's (1970) first law of geography states, "everything is related to everything else, but near things are more related than distant things." Spatial data analysis is highly dependent on the geographical scale of measure, implying a distinctive

variation at local and global level analysis. Pfeiffer (1996) asserted that local level analysis examines specific non-random patterns, which when considered at a global level, identifies sheer random variations. Essentially local level analysis examines exceptions where global statistics deduce regularities. Based on this analogy, a location quotient (LQ) method was adopted as it quantitatively measures local activity intensity by comparing local attribute with global (normal area) level (Lu, 2000). The LQ procedure resolves the problem of incorrect tendency to map real values with thematic maps often resulting in ambiguous conception accrued by larger areas (Harries, 1999). Location quotient draws it roots from regional science and planning to evaluate economic structure and specialty (Klosterman et al., 1993). Earlier application of LQ in geography can be traced to the work of Isard et al. (1998) to measure employment and industrial specialization (Andresen et al., 2009). The integration of LQ into mainstream criminology is credited to Brantingham and Brantingham (1995) based on their empirical analysis of crime hotspots in Canadian cities. Subsequent applications were evident in the works of McCord and Ratcliffe (2007); Andresen et al. (2009). Location quotient of crime (LQC) is a measure of the relative frequency of a type of crime (eg. burglary or violent crime) in a small area in comparison to the ratio for the same type of crime in a big reference area of interest (Brantingham and Brantingham, 1995; Cahill, 2005). The LQ procedure is also critical in crime prevention strategies because it facilitates the understanding of how one area is different from another in relation to crime structure and agglomeration (Brantingham and Brantingham, 1995). Location quotient technique has been found to be very useful in studying variations and changes in local crime structures over time (Andresen et al., 2009; Brantingham and Brantingham, 1995). In essence, location quotient is quite significant in the analysis of crime at a micro- and small area level.

The equation for LQC is represented below

$$LQC_{i_n} = \frac{C_{i_n} \Big/ C_{t_n}}{\sum_{n=1}^{N} C_{i_n} \Big/ \sum_{n=1}^{N} C_{t_n}}$$

Where:
n represents the number of neighborhoods under study
N is the total number of neighborhoods in the city
Ci is the count of crime ***i*** in each neighborhood
Ct is the total count of all crimes in each neighborhood.

A LQC value equal to 1.00 indicates that a neighborhood has a proportional share of a particular crime *i* in comparison to the whole city. If LQC value is larger than 1.00 it means the neighborhood has a relatively higher incident of crime *i* compared to the city as a whole. When the location quotient is less than one, it implies the neighborhood has a disproportionately smaller share of a particular crime *i*.

Crime data

To construct the spatial and temporal dynamics of crime in Isparta this paper adopted two sets of data: official crime reports from the Police Service and socioeconomic and demographic data of the selected neighborhoods obtained from the municipal directorate. Crime data relating to three major crime categories in the study area: assault (deliberate, accidental, and reckless assaults), robbery (snatching, home burglary, theft from construction sites, vehicle break-ins, auto theft, livestock theft) and threat (domestic violence, kidnaping, threat and defamation) cases were obtained from the Police Service Directorate for 2011 and 2012 to account for crime rate in the selected neighborhoods. Crime rates are usually expressed as the number of crime per 100,000 residents in the population (Nolan, 2004). However, for this paper, we follow Andresen et al. (2009) and accounted for the crime rate per 1000 residents mainly due to the size of the neighborhood population. The demographic characteristics of the neighborhoods were also used for the analysis. Demographic characteristics include the number of people in each neighborhood. Existing literature substantively analyzed the aggregate role of population density in explaining opportunities for crime.

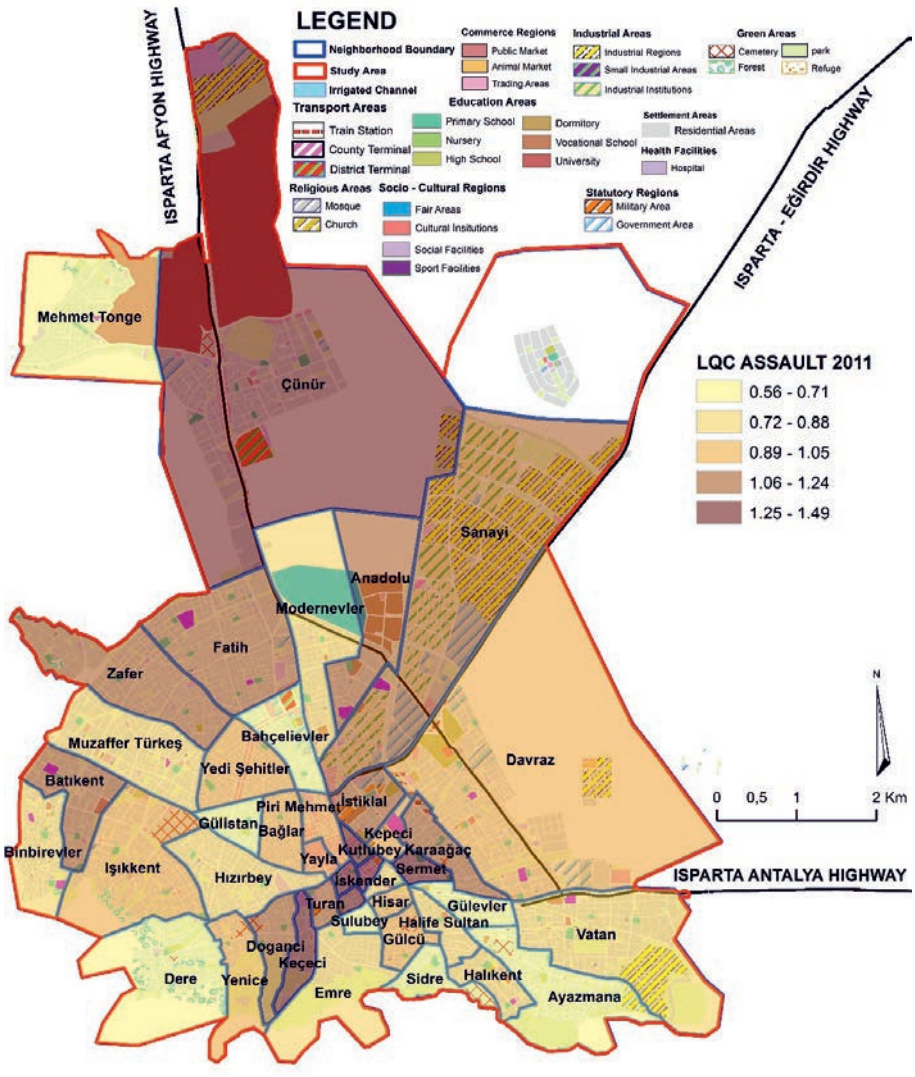
Results

As evident from the maps presented in the article, there exist clear spatial and temporal variations in robbery, assault and threat crime incidents across neighborhoods during the years under review. Variations also exist based on various land use characteristics. For instance in Map 1, the LQC value for assault incidents in 2011 was relatively higher in neighborhoods in the central business district (CBD) of Sermet, Kutlubey, Celebiler and a neighborhood (Cunur) in the northern part of the city. The significantly high cluster of assault cases in the CBD might be due to the concentration of economic activities particularly cafes, restaurants and shops that attract students and residents from other neighborhoods. Brantingham and Brantingham (1995) argued that commercial centers invariably experience a considerably high number of property offenses than surrounding areas without a commercial entity. The Cunur neighborhood on the other hand is home to a university with a population of over 70,000 students and a considerable number of student dormitories. This implies that victimization of students is invariably high in that neighbourhood although this assertion must be empirically verified on case to case bases. A study by Andresen et al. (2009) based on their application of location quotient found higher volume of violent crime incidents in the central business district of Vancouver. The result implies that assault incidents were highly concentrated in those areas and over-represented in comparison to the city as a whole. Examining Map 4 however, shows a relatively different dynamic in cluster incidents in 2012. Assault incidents were highly concentrated in neighborhoods in the northern (Cunur) and southern side (Dere, Emre, Sulubey, and Turan) representing a relative shift from the core CBD of the city. Assault incident also varies based on their type. Exploring composite assault crime count by type shows the dominance of deliberate assault representing 77.8% in 2012 of total assault count as against 74.9% in 2011. The Neighborhoods

of Gulistan, Piri-Mehment, Kutlubey, Davraz, Fatih and Yedişehitler for instance recorded the highest incidents of deliberate assault during the years under review. Reckless assault represented the least dominant assault crime type in the entire neighborhood accounting for 3.8% in 2011 and 5.3% in 2012. Furthermore, neighborhoods (table 1) with previously low concentration of assault incidents in 2011 experienced a relatively high agglomerations in 2012 and vice versa. Brantingham and Brantingham (1995) expressly suggested that the temporal variations in the changes of the value of LQC must be taken into account because they represent a significant change in the local dominance of that particular crime. In essence a sort of assault crime displacement was evident in most of the neighborhoods.

The LQC map for robbery (see Map 2 and 5) shows a different dimension in the pattern and distribution of incident agglomerations. Robbery incidents in a majority of the neighborhoods (N=20) in 2011 and (N=20) in 2012 were proportionately higher when compared to the city as a whole. In 2011, concentrations of robbery incidents appear to be relatively higher in the CBD with auto theft, workplace theft and home burglaries accounting for the majority of robbery incidents in those neighborhoods. For instance, the neighborhoods of Bahcelievler recorded a high workplace theft (N=38) followed by Piri-Mehmet (N=25), and the exclusive industrial neighborhood of Sanayi had a relatively high incident of workplace theft (N=23) and motor vehicle theft (N=11). Robbery cluster in 2012 on the other hand showed a uniform distribution, however neighborhoods in the Southwestern side, i.e. Ayazmana, Sidre, Davraz, Vatan had a relatively higher robbery concentrations. Interestingly, some neighborhoods (Piri-Mehmet, Kutlubey, and Sulubey) in the core CBD had a relatively low LQC as compared to the whole city. Despite the fact that the LQC values in some neighborhoods are disproportionately low, the risk of victimization is relatively high (table 1). The whole of Isparta city has a relatively low LQC implying that robbery constitutes a substantive crime variable in the region.

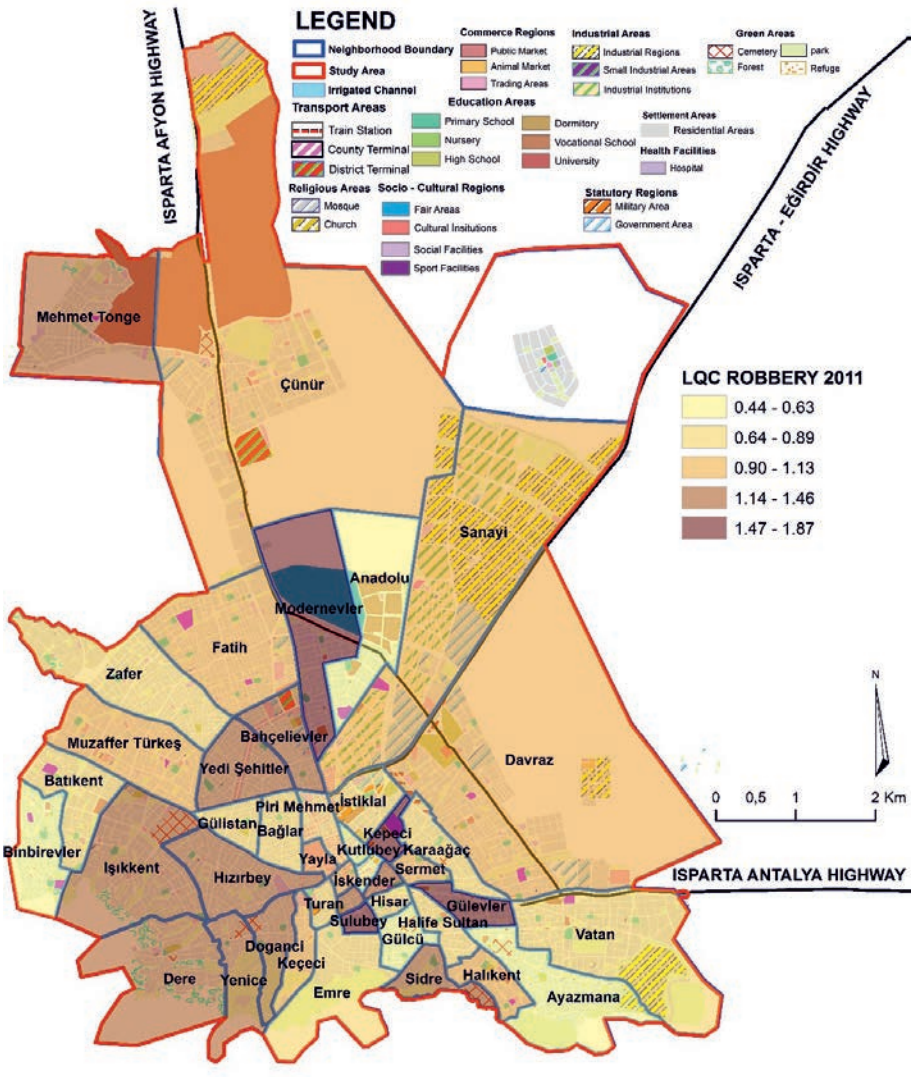
In the same vein, threat incidents (see Map 3 and 6) exhibit a particularly interesting concentration. The neighborhoods of Halikent, Binbirevler and Vatan (despite a slight decline in 2012 as compared to the previous year) in particular, over-represented in the localization of incidence agglomerations evident in their relatively higher location quotient values (table 1) with domestic violence and threats forming the majority of threatening crime count during the years under review. In general, a majority of the neighborhoods (N=24) in 2011 and (N=26) in 2012 experienced a relatively higher number of threat incidents as compared to the city as a whole and other crime categories. It might be an oversimplification to suggest the reasons and causes of the relatively over-representative concentration of threatening incidents in the above-mentioned neighborhoods without dissecting their respective characteristics. In this analysis obvious demographic variables such as population did not shed light on such possible outcomes (Table 1). We therefore suggest a further case study analysis in those neighborhoods by incorporating detailed variables imperative for investigating the core determinants of threat incidents. The neighborhoods of Kutlubey, Yayla and Piri-Mehmet and Kececi and Dere experienced a relatively low concentration of threatening incidents in spite of them being located in the core CBD with mixed land use variables. Furthermore, it is apparent from the threatening maps that neighbourhoods with higher concentration of commercial and residential land use invariably experienced higher intimidation incidents particularly the



Map 1. Location Quotient for assault agglomerations in 2011
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

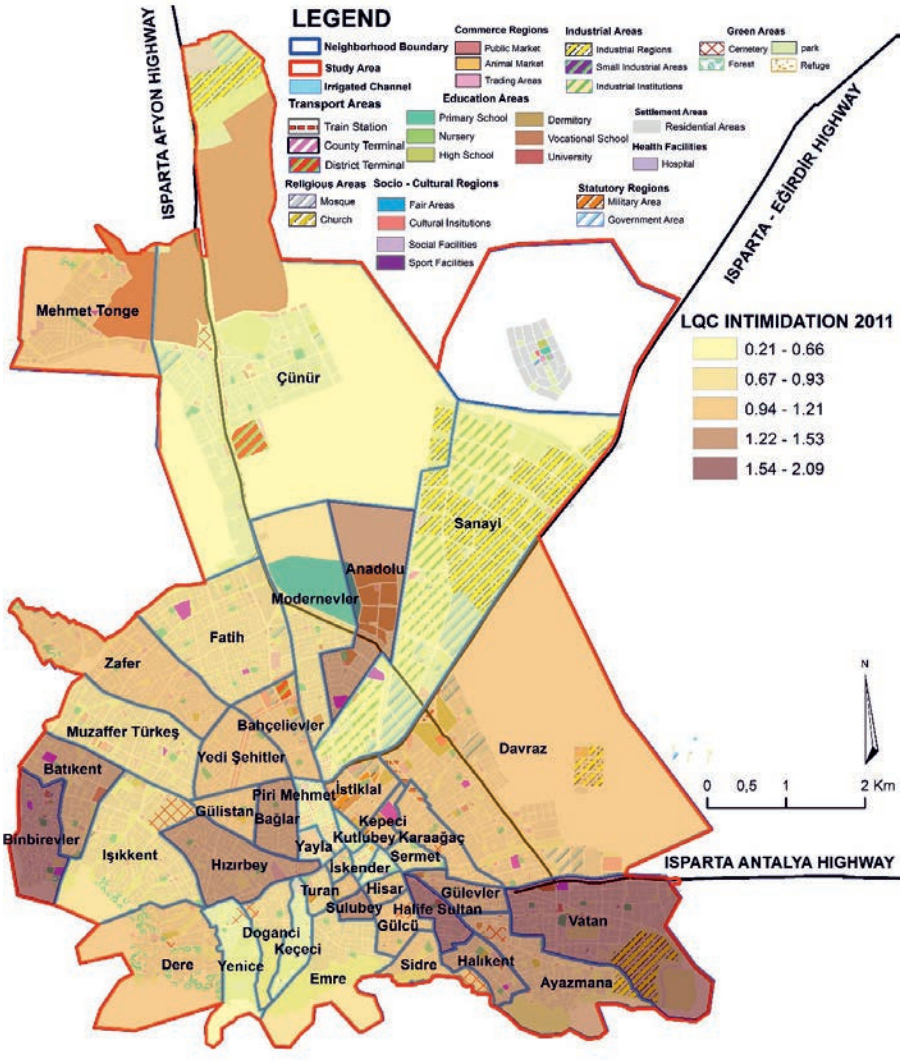
neighbourhoods surrounding the core CBD and small concentrations in the southern neighbourhoods. Certain neighbourhoods such as Doganci, Iskender, Yenice and Muzaffer Turkes with quite low LQC values for threat incidents in 2011 experienced a correspondingly high LQC values in 2012 implying a high localization of incidents. Similarly, in 2011, the neighbourhoods of Bahcelievler, Istiklal, Dere and Halikent with high LQC values for threate incidents detected low values for 2012.

While it appears that some neighbourhoods tend to over represent the whole city in LQ for the crime categories used, Brantingham and Brantingham (1997), and



Map 2. Location Quotient for robbery agglomerations in 2011
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

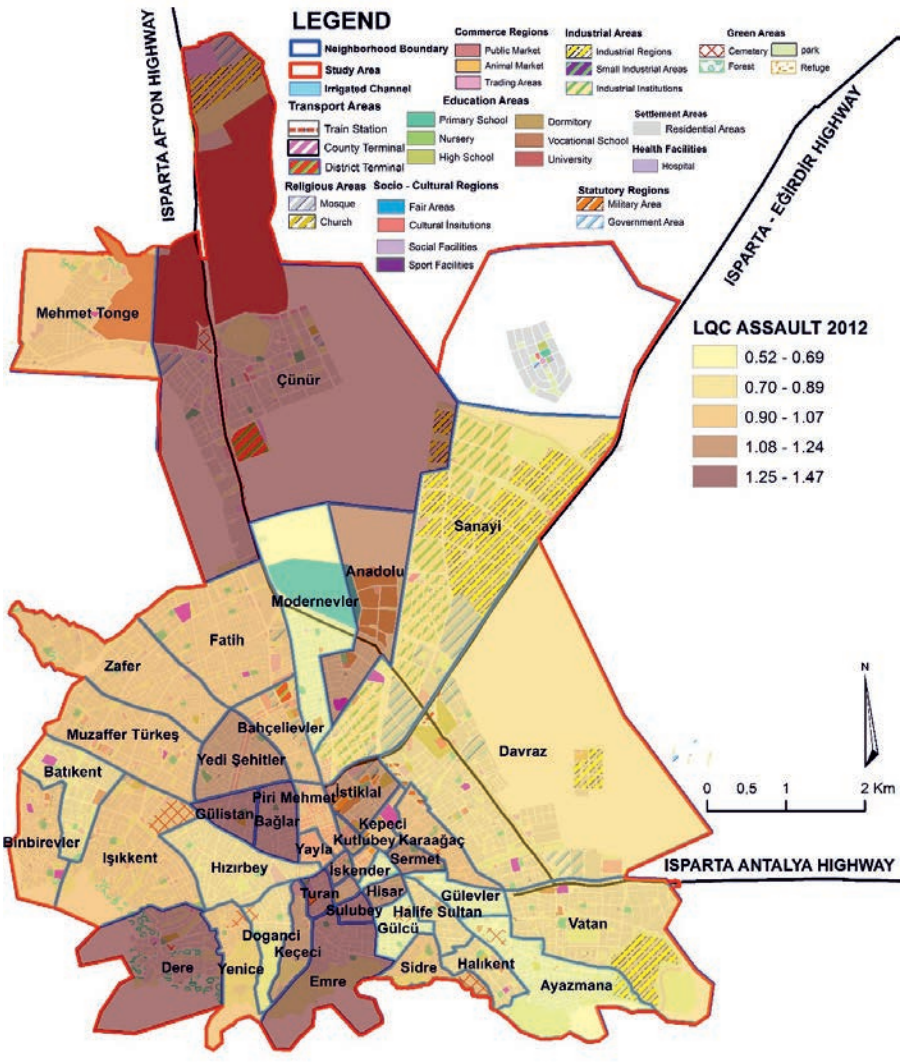
Zhang and Peterson (2007) emphasized that LQC might be misleading in providing a precise overview of crime pattern. Evidently, LQC cannot be considered as absolute in providing a definitive picture of crime behavior patterns. For instance neighborhoods such as Cunur, Hizirbey and Davraz exhibited a relatively low LQC for assault in 2011; however a retrospective considerations of the crime count in the same neighborhoods were relatively high. The same situation applies to other categories of crime used in this analysis.



Map 3. Location Quotient for threat agglomerations in 2011
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

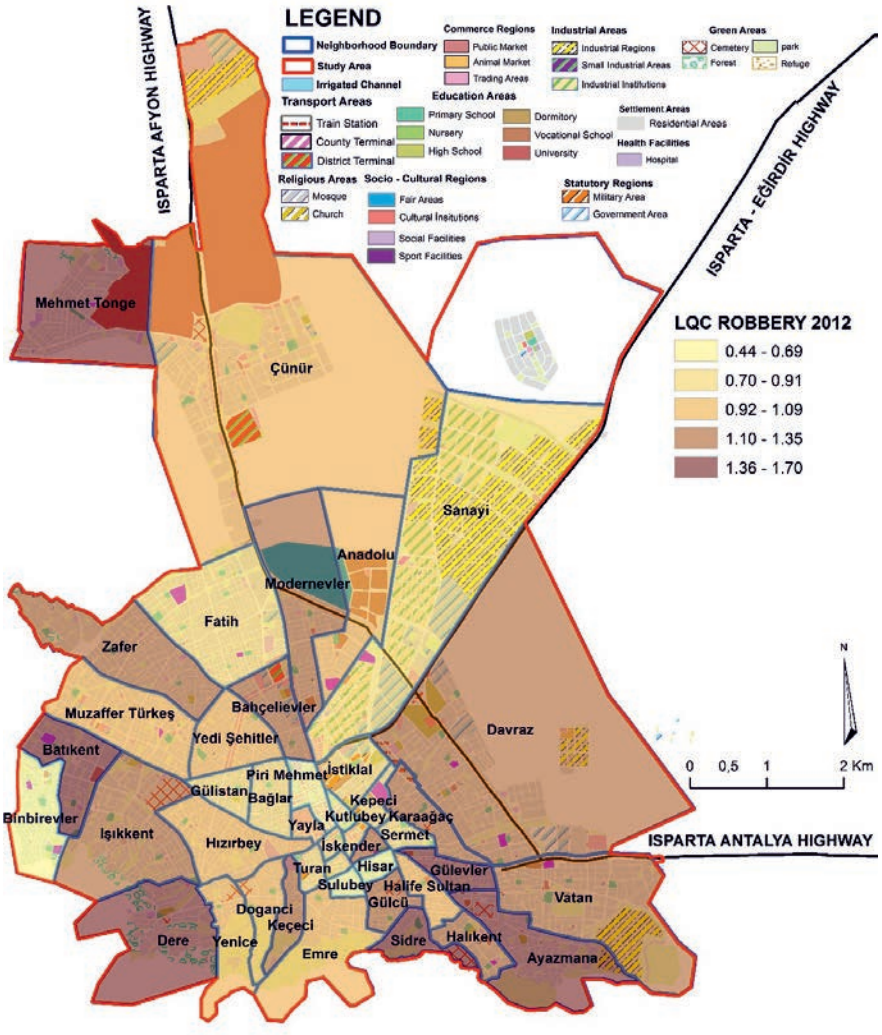
Conclusion

Logic dictates that as far as opportunity structures in urban areas expand, the probability of crime committed also increases. However, realizing the need for improved security has made the adoption of spatial analysis techniques and environmental criminology theories essential in ordedto understand these structures and, more importantly, draw up effective prevention strategies. This paper adds to the spectrum of literature on the applicability of LQ in understanding the dynamics of crime in an urban landscape. This paper highlights how certain crime types vary at the



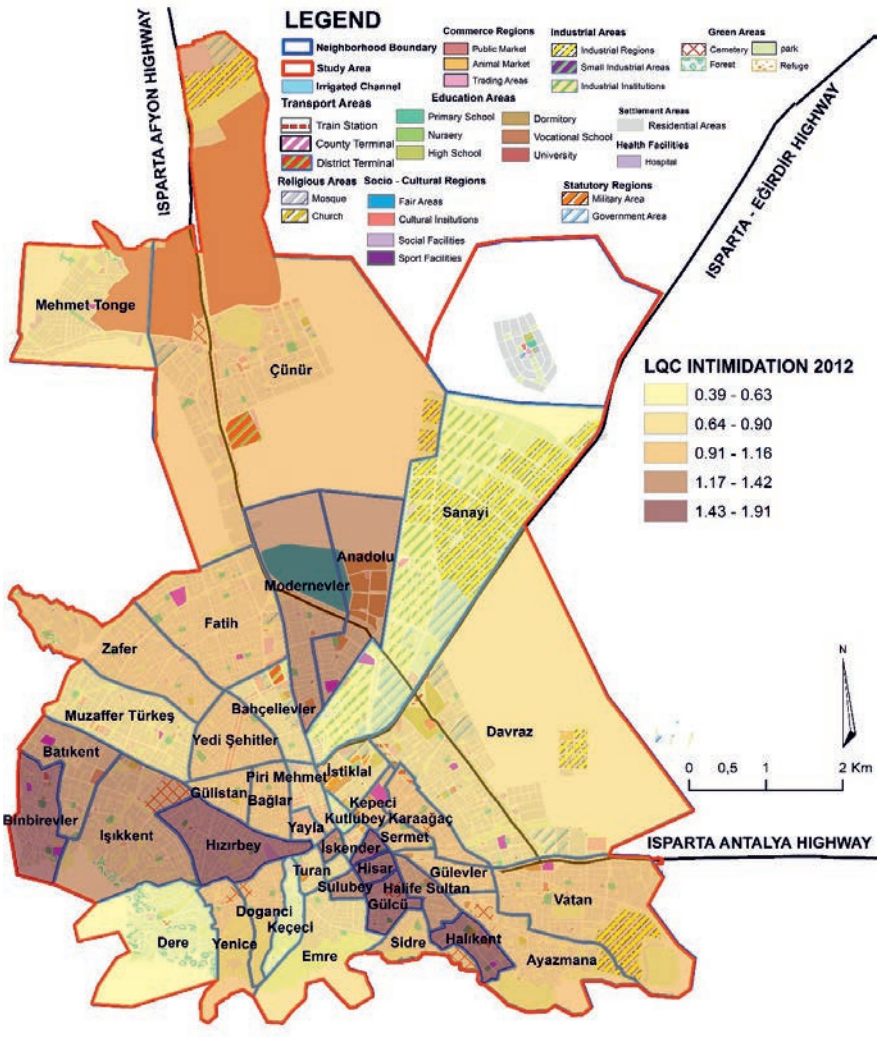
Map 4. Location Quotient for assault agglomerations in 2012
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

neighborhood level. As stated earlier, Isparta is a relatively small city, thus making the application of LQC convenient. The neighborhoods under study had varied socioeconomic and land use characteristics and based on the outcome of the analysis, the crime types used were highly clustered along certain land use covariates. For instance, assault incidences were highly concentrated in school districts and industrial areas and threat and robbery incidence in residential and commercial areas. With regards to the general crime pattern, neighborhoods in the core central business district in the city showed high concentration of crime incidence for all crime types analyzed. The reasons for such a pattern are partly due to obvious concentration



Map 5. Location Quotient for robbery agglomerations in 2012
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

of business and commercial activities implying that the opportunity structures and criminogenic factors are proportionately high. Interestingly, certain neighborhoods distant from the core business district experienced relatively high concentrations of crime incidents, even though there are relatively few commercial and social activities. This pattern warrants further empirical study in those neighborhoods to ascertain the reasons for the inherent structure. To put the analysis into perspective, three levels of crime agglomerations can be observed from the location quotient analysis. The first observable pattern is the relative concentration of assault incidence in commercial areas of the core central business district of the city and school district in the northern part of the city. The second pattern shows a relatively high



Map 6. Location Quotient for threat agglomerations in 2012
Source: Isparta Municipality Zoning Directorate and Police Service Directorate

concentration of robbery incidence in core central business district and the outskirt neighborhoods such as Ayazmana, Dere, Batikent, Mehmet Tonge, Zafer and Dere. The third observable pattern shows the high agglomeration of threatening incidents in residential neighborhoods and the core central business district. What are the implications for crime prevention in Isparta? The result of the analysis implies that neighborhoods with high concentration of incidents of various crime categories require frequent monitoring and patrolling. Law enforcement officials in Isparta can capitalize on location quotient to assess the crime behavior patterns in the city and implement, as well as deploy, the necessary logistics and personnel to evaluate and manage crime in the city.

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Appendix

Tab. 1. Location Quotient of crime by type and neighborhood

Neighborhoods	LQROB 2011	LQROB 2012	LQASS 2011	LQASS 2012	LQTH 2011	LQTH 2012
Anadolu	0.54	0.96	**1.08**	**1.16**	**1.35**	**1.20**
Ayazmana	0.63	**1.47**	0.71	0.69	**1.47**	**1.12**
Bağlar	0.81	0.91	**1.00**	**1.26**	**1.36**	**1.15**
Bahçelievler	**1.40**	**1.23**	0.66	**1.02**	**1.14**	0.80
Batikent	0.79	**1.39**	**1.18**	0.73	**1.52**	**1.42**
Binbirevler	0.63	0.57	0.82	0.98	**1.79**	**1.60**
Çelebiler	**1.09**	0.77	**1.37**	**1.17**	0.91	1.27
Çünür	0.98	0.98	**1.32**	**1.29**	0.65	0.96
Davraz	0.95	**1.18**	0.91	0.85	**1.00**	0.90
Dere	**1.31**	**1.56**	0.68	**1.47**	**1.19**	0.43
Doğanci	**1.31**	**1.09**	**1.22**	0.81	0.70	**1.01**
Emre	0.80	**1.01**	0.84	**1.32**	0.87	0.89
Fatih	0.97	0.91	**1.11**	0.97	0.80	**1.08**
Gazikemal	0.49	0.81	**1.29**	**1.01**	0.57	0.75
Gülcü	0.44	**1.23**	**1.04**	0.52	**1.01**	**1.91**
Gülevler	**1.86**	**1.70**	0.71	0.62	**1.29**	1.05
Gülistan	0.71	0.91	0.71	1.46	**1.07**	**1.14**
H.Sultan	**1.13**	**1.12**	0.88	0.83	**1.50**	**1.53**
Halikent	0.84	**1.00**	0.74	0.85	2.09	1.23
Hizirbey	**1.35**	0.94	0.78	0.87	**1.36**	**1.70**
Hisar	0.73	0.62	0.92	**1.13**	**1.02**	**1.89**
Işikkent	1.41	1.35	1.05	0.94	0.93	**1.25**
İskender	**1.22**	**1.19**	0.78	0.56	0.54	**1.60**
İstiklal	0.89	0.85	**1.24**	**1.10**	**1.15**	0.86
Karaağaç	0.87	**1.15**	**1.10**	0.92	**1.21**	**1.16**
Keçeci	**1.10**	**1.21**	**1.34**	**1.16**	0.66	0.63
Kepeci	**1.76**	0.87	0.94	0.99	**1.03**	0.95
Kurtuluş	1.30	0.73	**1.49**	**1.24**	**1.04**	0.84
Kutlubey	0.48	0.44	**1.41**	**1.12**	0.21	0.39
M.Tönge	**1.30**	**1.50**	0.70	**1.06**	**1.15**	0.81
M.Türkeş	**1.87**	**1.34**	0.77	0.55	0.74	**1.29**
Modernevler	0.98	0.97	0.75	**1.07**	0.92	0.74
Pirimehmet	0.83	0.69	**1.01**	0.96	0.59	0.70
Sanayi	**1.10**	0.90	**1.17**	0.89	0.41	0.61
Sermet	**1.09**	0.85	**1.46**	**1.20**	0.82	**1.05**
Sidre	**1.46**	**1.50**	0.56	**1.06**	**1.12**	1.04
Sülübey	**1.71**	0.50	0.68	**1.29**	**1.53**	**1.25**
Turan	0.74	0.87	**1.14**	**1.29**	0.85	0.74
Vatan	0.68	**1.22**	0.80	0.80	2.01	1.10
Yayla	0.94	0.90	**1.01**	0.94	0.54	0.68
Yedişehitler	**1.21**	**1.02**	0.93	**1.14**	**1.17**	**1.15**
Yenice	**1.30**	0.99	0.93	**1.02**	0.52	**1.11**
Zafer	0.83	**1.15**	**1.09**	0.98	**1.18**	**1.14**
Isparta City	1	1	1	1	1	1

Source: Calculated from Data derived from the Police Service Directorate