DOES NEIGHBORHOOD'S PHYSICAL FACILITIES INFLUENCE CRIME COMMISSION? EMPIRICAL ASSESSMENT FROM KIAMBU COUNTY, KENYA

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ABSTRACT
The purpose of this study was to examine the influence of physical facilities on crime commission in Kiambu County, Kenya. The study specifically looked at the influence of built environment and natural environment on crime commission. The target population for this study was 245,820 subjects comprising of the business owners, security agents and area residents within the 3 locations of Thika West Sub-county, Kiambu County. The study adopted descriptive research design. Data was analyzed using categorical regression model. Stratified random sampling was used to classify the population into 3 locations. Simple random sampling was used to select 27 business owners and 97 area residents from each of the 3 locations. Also 12 police officers were randomly sampled from each of the two police stations within the Sub-county. The 3 chiefs from the three locations and Deputy County Commander (DCC) were also included in the study sample. Primary data was collected using structured questionnaires administered to the study sample. The validity of research instruments was tested using content validity and reliability using Cronbach Alpha. The findings of this study were that increase in physical facilities measured in terms of unregulated number of bars, abandoned buildings, commercial areas etc. leads to rise of crime rates. The conclusion was that; physical facilities that exist in a neighborhood are related to crime commission. Different facilities attract different crimes. Some facilities attract more crimes than others. Facilities have a significant effect on crime at nearby places even controlling for socio-demographic variables. The study recommends a comparative research that focuses on the influence of one type of physical facility on crime commission in different types of neighborhood.
Keywords: Crime, Commission, Neighborhood and Physical facilities.

INTRODUCTION

In a study of hotspots of crime and criminal careers, Sherman (1995) argue that, the commencement of crime in a neighborhood can start any time after its initial human occupation, or its "birth" as a societal space. Aksoy (2017) opines that, presence of social inconsistencies and incompatibilities in a community increases the probability of crime occurring. Sherman (1995) posed the question: "Why would a neighborhood in which there had not ever been a burglary in seven years abruptly have one?" Moreover, Schmalleger (2012, p.157) considered the question, "How is it that neighborhoods can remain the site of high crime and deviance rates despite a complete turnover in their population?" These questions imply that there are features about a place that initiates or sustains crime. For instance, Amissah, Wemegah and Okyere (2014) found that Mamprobi district in Ghana which is $3.37km^2$ in size had 54 crime incidents as compared to Dansoman district with 67 crime incidents which is $17.165km^2$ in size.

Mamprobi district is considered to have high crime rates. According to Amisah *et al* (2014), Mamprobi district has a high population around its northern section and major roads and a crescent on the south. Additionally, the district is characterized by market lanes that are densely populated. Mccord and Ratcliffe (2005) in a study of a micro-spatial analysis of the demographic and criminogenic environments of drug markets in Philadephia, found that more drug arrests were made about 400 feet from the pubs establishments, check-cashing centers, transport stations and money lending shops. Features of the urban settings are therefore fundamental in explaining the onset of crime in specific neighborhood (Eck and Weisburd, 1995). According to South Africa Crime and Safety Report (2017), visitors are advised to avoid the densely populated locations often considered as township neighborhoods and normally located on the edges of most urban centers and central business district. Security Research and Information Centre (SRIC) (2014), conducted a study on crime in selected urban slums in Kenya. The study found that poor settlement planning that manifests in single entry and exit points and narrow lanes render it almost impossible for the police to pursue crime suspects. The study also singled out some of the crime hotspots as most dreaded zones due to their physical features such dark alleys, abandoned buildings and bushy environment. These findings are evidence of a correlation between neighborhood characteristics and incidences of crime. These results provided the rationale to carry out a study to determine the influence of neighborhood characteristics on crime prevalence in Kenyan neighborhoods. Kiambu County, which ranked top in crime prevalence in 2015 and 2016 in a row and second overall in 2017 and 2018 in the country (KPS Annual Crime Report) was selected as the suitable location for the study.

LITERATURE REVIEW

Physical environment is taken to be both built and natural facilities that exist in a particular place. The built environment may include malls, go-downs, taverns, market centers, roads, parks and building(s) that house a variety of functions. Vegetation covers, bushes and forests are considered to be the natural features that can be found in specific locations. Their presence or absence in a particular geographical space may function as a way of encouraging or discouraging crime. According to Groff (2011), a facility is a lone structure that may only serve a particular purpose or may incorporate a cluster of functions. The facilities then may represent particular subtypes of businesses or activities that exist in generic land use.

Locations and certain types of structures as well as land use patterns play a key role in influencing human behavior including the possibility of committing crime (Groff, 2011). For example, empirical evidence indicates that facilities such pubs (Roncek & Bell, 1981), restaurants (Brantingham & Brantingham, 1982), bus stops (Gerell, 2018), smaller and view obstructing trees (Donovan & Prestemon, 2018) and densely forested places (Schroeder & Anderson, 1984) increase crime rates in the nearby surroundings. Despite these findings showing crime clustering at certain locations as a result of presence of specific physical features, there is still a need to demonstrate how such facilities attract crime.

Sherman (1995) examined high crime areas by analyzing 323,000 calls made to the police. Sherman realized that a small proportion of places accounted for most of the crimes in the city and that merely 3% of the areas was responsible for 50% of the number of calls made to the police. Sherman further found out that the concentration was even higher for offences of burglary, illegal sexual behaviors and automobile theft. Out of the 115,000 street locations and junctures in the city, only 5% of the number of the calls accounted for 100% of the crimes committed by strangers. Sherman's study was limited to the number of calls received by the police and their geographical origin. This study did not, however, consider facilities existing at those places which accounted for the highest number of calls and those that recorded the lowest number of calls, an item that this paper seeks to examine.

In studying crime and place in Seattle, USA, Weisburd (2018) observed that offenses were strongly attached to certain places. For example, Weisburd found out that half (50.4%) of the offenses in large cities were from certain segments of the streets. Also, Mburu and Helbich (2016) established that presence of amenities such as train stations, unoccupied houses and payday lenders in a given in urban area were associated with crimes such as bicycle theft and mugging. Hence, a place and its associated facilities may be a predictor of crime. On the contrary, Mburu and Helbich (2016) did not find any evidence that links crime rates to police stations.

According to Block and Block (1995) 3,364 incidences of crime occurred in alcohol consumption locations. Therefore, the probability of offending behavior in a geographical space depends on the environmental structure and the dominant activity in that place (Capone & Nicholas, 1976). The aforementioned studies offer useful clues as to why certain places might experience more criminal activities or people may likely get victimized at certain locations. However, literature is scant in relation to the manner in which hotspots facilities contribute to crime. Moreover, literature has not clarified whether hotspot facilities at one location will be the same type of facilities at other crime hotspots.

Geographical space associated with facilities such as restaurants, youth clubs and sports clubs, are the most commonly burglarized as compared to hardware shops, doctors' offices and tailor shops (Sypion-Dutkowska, 2017). According to Sohn (2016), environs with more shopping areas would be more likely to experience escalated rates of burglary. This is corroborated by Davison and Smith (2003) who acknowledge that crime is more common in nearby areas of commercial centres. This is an indication that the way in which a facility functions, the type of clients that are encouraged in such a facility and the number of people that congregate at a particular time in space acts in a way to make crime more likely. Youth and sports clubs attracts a crowd of people at a particular time as compared to hardware and tailor shops and doctors' offices. According to Bernasco and Block (2011), presence of large number of people creates a likelihood of crime occurrence. This is supported by Kinney, Brantingham, Weschke, Kirke and Brantingham (2008), who found a correlation between multiple family apartment buildings, shopping malls and learning institutions and assaults and motor vehicle thefts. A multitude of persons at a particular place sparked by a specific facility, increases the chances of offenders and targets to coincide at a particular time. Such convergence makes crime more probable in the absence of capable guardian(s).

Roman (2005) found that, schools, youth social places, retail shops, and neighborhood disorganization had a stronger influence on violent crimes. Roman schools and youth social places attract violent crimes more strongly. These findings provide possible insights as to how some facilities and places attract more crime than others.

Using focus group discussions, Security Research and Information Centre – SRIC (2014) conducted a study on the incidence of crime and violence in Nairobi to identify high risk areas. Although the focus group participants were of the view that crime was everywhere, they were nonetheless able to identify areas that are hotspots of crime. The study also found out that offenders disguised themselves as street/homeless children. The study further revealed ways in which physical facilities influence crime. For example, lodgings and alcohol joints act as hideouts for potential and actual offenders. Offenders also disguise themselves as bystanders at ordinary street events such as gambling from where they monitor the movements of their targets before attacking. Densely populated urban communities also provide the opportunity for exchange of contraband, such as guns and drugs. They also create an enabling environment for illegal immigrants to thrive. Other types of crime that are influence by high population density include daylight purse-snatching, assault, pickpocketing, and burglary. From the literature it is evident that neighborhood physical facilities influence crime. It is also evident that some facilities attract more crime than others. This creates the need to establish any correlation between the physical facilities within the identified area of study and the incidence of crime.

METHODOLOGY
The study adopted descriptive survey research design. The sample size was determined by Slovin's formulae at 95% confidence level and 0.05 population variable.

$$n = \frac{N}{(1 + Ne^2)}$$

Where,

n= sample size
N= total population
e= error balance

$$n = \frac{245{,}820}{(1 + 245{,}820 \times 0.05^2)}$$

$= \frac{245{,}820}{615.55} = 399.35017$

$n = 400$

Stratified random sampling was used to classify the population of respondents into 3 locations
Simple random sampling was used to select 27 business owners and 97 area residents from each of the 3 locations. Twelve police officers were randomly selected from each of the two police stations within the County. The 27 business owners, 97 area residents from each of the locations and the 24 police officers selected were requested to fill out the questionnaires. The 3 administrative chiefs from each of the three locations were each given a copy of the questionnaire as well. The area Deputy County Commander was also interviewed. This resulted in a sample of 81 business owners, 291 area residents, 24 police officers, 3 administrative chiefs and 1 Deputy County Commander. The distribution of the sample is shown in Table 1.

Three types of questionnaires were developed respectively for the business owners, public security officials (chiefs, police officers and the Deputy County Commander) and the area residents. The collected data were entered into SPSS data editor and edited for completeness prior to the analysis.
Further editing was conducted to ascertain completeness and to check for consistency.

Table 1: Sample size

Locations	Business owners	Area Residents	Police Officers	Chiefs	Deputy county commander	Total
Biashara	27	97	12	1	-	137
Makongeni	27	97	12	1	-	137
Kariminu	27	97	-	1	-	125
Total	81	291	24	3	1	400

A questionnaire was dropped if it was defective by way of having multiple entries in a single question, being incomplete, or having inconsistencies in any of the structured questions. A total of 322 questionnaires (80.5%) were found to be complete and consistent, and data from those questionnaires were therefore coded and entered for the analysis. Descriptive statistics were used as well as the inferential linear regression analysis.

Regression Analysis of the Influence of Physical Facilities on crime commission

Regression analysis was conducted on the relationship between crime commission and various physical facilities variables. The predictor variables for physical facilities were, unregulated pub establishments, abandoned buildings, public parks, facility brings together large number of people, facilities that involve a lot of cash transactions, neighborhood forests and bushy neighborhoods. The findings are presented in Table 2.

Table 2: Categorical Regression Coefficients for Indicators of Physical Facilities on Crime Commission

Physical Facilities	Beta	Std. Error	Df	F	Sig.
Existence of unregulated number of bars at a place attract crime.	0.27	0.05	1	18.75	0.00**
Existence of abandoned buildings in a town attract crime.	0.17	0.04	1	4.91	0.01*
Areas surrounding public parks experience high number of crime rates.	0.01	0.04	1	0.01	0.93
High number of people who are aware of the facility at a place attract crime	0.08	0.04	1	0.39	0.53
Places whose facility brings together large number of people attracts crime	0.14	0.04	1	1.54	0.20
Facilities that involve a lot of cash transactions attracts crime	*0.22*	*0.09*	*1*	*5.54*	*0.02**
Areas neighboring forests are at high risk of experiencing crime	0.11	0.12	1	0.80	0.37
Bushy neighborhood are at high risk of experiencing crime	0.17	0.07	1	5.39	0.00**

The results on Table 2 indicate that only four of the independent variables had a statistically significant effect on crime commission (unregulated number of bars, abandoned buildings, facilities that involve a lot of cash transactions and bushy neighborhood). From the results, it was revealed that the strongest predictor of crime commission was existence of unregulated number of bars and bushy neighborhood. The findings are consistence with Roncek and Bell, (1981) and Block and Block (1995) who established that, incidences of crime occurred in alcohol consumption locations. This is corroborated by Langley, Chalmers and Fanslow, (1996) who established that 10 percent of aggravated assaults occurred in or around liquor outlets. Briscoe and Donnelly (2001) observed that alcohol drinking facilities were ranked third as the most often premises at which assault cases were recorded. Similarly, ten percent of assault incidents were documented by the police as happening on alcohol consumption buildings (Fitzgerald, Mason & Boryzcki, 2010).

CONCLUSION

The study affirms that the existence of a significant relationship between physical facilities and the incidence of crime. It is evidentially demonstrated that physical facilities not only increase crime levels but also spread crime risks to the nearby surroundings. Moreover, certain physical facilities attract more crime than others and while some facilities encourage specific crimes, others attract multiple crimes.

RECOMMENDATIONS

i. The security officers (police officers) should enhance collaborative programs with members of the public. This would promote more interactions amongst the residents and between members of the public and police officers. This would enable the area residents to know one another and take necessary security measures to safeguard themselves and their property against crime.

ii. Urban city planners and architect should undertake mandatory course on the planning/designing the built environments which allows the occupants of that built environment to have a clear view of their surrounding both from outside and inside. This creates opportunity for natural surveillance of the environment.

iii. Business and property owners should consider altering their built environment by embracing the installation of modern safety security measures on their premises to curb crime. Such measures should include the situational preventive measures.

iv. Government should enhance strict policy implementations that enables property owners to take full responsibility of activities that occurs within and without their premises. This will turn promote responsible usage of a geographical space.

v. Finally, further studies are recommended on neighborhood characteristics in other counties that have different cultural and demographic characteristics.

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