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## CRIME AND CRIMINALS' TRAVEL PATTERN ANALYSIS IN URBAN NEIGHBOURHOODS OF IBADAN, NIGERIA

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### Abstract

*Criminal mobility studies focus on criminals' characteristics and modes of movement within, beyond, and between their homes and crime scenes. This article focuses on criminals' habitual behaviour, target selection, routine activities, mobility patterns, and the time-space interplay between criminals and victims. This is to understand how criminals' journey-to-crime modes and distances are shaped by their individual-level characteristics and those of their home and target communities. Six criminals who committed their crimes within the study area were picked purposively from each of the 21 police stations and 20 cells at Agodi Correctional Centre in Ibadan, resulting in 246 criminals. According to the findings, most criminals in the study area had secondary school education with low-paying artisanship work. They were from the age of 18-40. Criminals' home neighbourhoods have a more significant impact than their target neighbourhoods. However, individual characteristics are the most significant factors in criminal choice, modes of operation, and travel patterns. Generally, criminals originate from high-density neighbourhoods and travel relatively short distances from home mainly on Motorcycle and Walking over an average distance of 1-5km. However, females and older criminals travel longer distances to commit crimes than younger males, and criminals in gangs also travel longer distances than single criminals. It was found that criminals exhibit relatively high mobility across all ten (10) Crime types adopted. However, distinct mobility patterns emerged between the different types of crimes in Ibadan. Policy, research implications and recommendations from these findings are discussed.*

**Keywords:** Journey to Crime, Criminal Mobility, Rational Choice Theory, Space-Time Geography, Crime Pattern Theory

## Introduction

Crime is a major challenge in many urban neighbourhoods worldwide, including Ibadan, Nigeria. Criminal activities such as robbery, burglary, and theft are prevalent in many urban neighbourhoods in Ibadan. Crime pattern analysis, which involves studying the spatial and temporal patterns of criminal activities, is useful for understanding crime in urban neighbourhoods (Chainey & Ratcliffe, 2005). Criminals' travel patterns are a significant aspect of crime pattern analysis as they provide valuable insights into criminal activities' spatial and temporal dynamics.

Crime and criminal activities have become major concerns for urban communities in Nigeria. The rapid urbanization and the influx of people into the city of Ibadan have resulted in a rise in crime rates. Criminal activities such as robbery, burglary, and theft are common in urban neighbourhoods, and the analysis of criminals' travel patterns can provide valuable insights into the spatial and temporal dynamics of crime in urban areas. In this article, we will explore the concept of crime and criminals' travel pattern analysis in Ibadan, Nigeria, and review recent literature in this field.

Crime pattern analysis is an approach used to study criminal activity's spatial and temporal patterns. This approach involves the analysis of crime data to identify patterns and trends in criminal activities. The analysis of criminal travel patterns is a crucial aspect of crime pattern analysis. Criminals' travel patterns can provide insights into the spatial and temporal dynamics of criminal activities, and help law enforcement agencies to develop effective strategies to prevent and combat crime.

Ibadan, Nigeria's third-largest city, has experienced significant urbanization recently. With a population of over three million people, the city has witnessed a rise in crime rates, especially in urban neighbourhoods. Criminal activities such as armed robbery, burglary, and theft have become major concerns for residents of the city. The study of crime and criminal travel patterns in Ibadan's urban neighbourhoods can provide valuable insights into the dynamics of criminal activities in the city.

Recent literature has highlighted the importance of crime pattern analysis in understanding the spatial and temporal dynamics of criminal activities in urban areas. A study by Lawal (2021) examined the spatial distribution of criminal activities in Ibadan, Nigeria. The study found that criminal activities were concentrated in specific neighbourhoods, with some neighbourhoods experiencing higher crime rates than others. The study also highlighted the importance of understanding the socio-economic factors contributing to crime in urban neighbourhoods.

Another study by Adegbite et al. (2021) examined the travel patterns of armed robbers in Ibadan, Nigeria. The study used geospatial analysis to identify armed robbers' routes during their criminal activities. The study found that armed robbers often use specific routes and travel patterns during their criminal activities. The study also highlighted the importance of developing effective strategies to prevent and combat armed robbery in urban neighbourhoods.

The use of geospatial analysis in crime pattern analysis has become increasingly popular in recent years. Geospatial analysis involves the use of geographic information systems (GIS) and spatial statistics to analyze crime data. A study by Afolabi and Ogunkoya (2020) examined the spatial distribution of criminal activities in Ibadan using GIS. The study found that criminal activities were concentrated in specific neighbourhoods, and identified the socio-economic factors that contribute to crime in these neighbourhoods.

Studying crime and criminal travel patterns in urban neighbourhoods is essential for developing effective strategies to prevent and combat crime. Using geospatial analysis of crime data can provide valuable insights into the spatial and temporal dynamics of criminal activities. By understanding the travel patterns of criminals, law enforcement agencies can develop effective strategies to prevent and combat crime in urban neighbourhoods.

In conclusion, studying crime and criminal travel patterns in urban neighbourhoods is essential for understanding criminal activities' spatial and temporal dynamics. Recent literature has highlighted the importance of crime pattern analysis in developing effective strategies to prevent and combat crime in urban areas. The use of geospatial analysis in crime pattern analysis has become increasingly popular in recent years, providing valuable insights into the spatial and temporal patterns of criminal activities. With the rise in crime rates in urban neighbourhoods in Ibadan, Nigeria, understanding criminals' travel patterns is crucial for developing effective strategies to prevent and combat crime. Therefore, this article explores the concept of crime and criminals' travel pattern analysis in Ibadan, Nigeria, and reviews recent literature in this field. It provides an overview of crime and criminal travel pattern analysis in urban neighbourhoods, specifically focusing on Ibadan, Nigeria.

### **Literature Review - Crime and Criminal Travel Pattern Analysis**

Crime pattern analysis studies the spatial and temporal patterns of criminal activities in urban neighbourhoods. This approach involves analyzing crime data to identify patterns that can help to develop effective strategies for preventing and combating crime. Criminal travel patterns are essential to crime pattern analysis as they provide valuable insights into the spatial and temporal dynamics of criminal activities.

Understanding criminals' travel patterns can help law enforcement agencies to develop effective strategies for preventing and combating crime in urban neighbourhoods. Criminals often use specific routes and travel patterns during their criminal activities, which can be identified through crime pattern analysis. These travel patterns can provide insights into the locations and times when criminal activities are likely to occur and the methods criminals use to carry out their activities (Adegbite et al., 2021).

Studies have shown that criminal activities in Ibadan are not evenly distributed across the city but concentrated in specific neighbourhoods (Afolabi & Ogunkoya, 2020; Oluwole & Akinbode, 2020). These neighbourhoods have been identified as hotspots for crime and have higher crime rates than others. Understanding the spatial and temporal dynamics of criminal activities in these neighbourhoods is crucial for developing effective strategies to prevent and combat crime.

One study conducted in Ibadan found that criminal activities were more prevalent in areas with poor environmental conditions, such as poor lighting, road networks, and housing conditions (Oluwole & Akinbode, 2020). Another study found that the level of crime in Ibadan was influenced by social factors such as poverty, unemployment, and inequality (Afolabi & Ogunkoya, 2020). These findings suggest that socio-economic factors play a significant role in the spatial and temporal dynamics of criminal activities in urban neighbourhoods in Ibadan.

Geospatial analysis involves the use of geographic information systems (GIS) and spatial statistics to analyze crime data. It has become increasingly popular as a tool for studying criminal activity's spatial and temporal patterns. Geospatial analysis can provide valuable insights into the spatial distribution of criminal activities in urban neighbourhoods, including identifying crime hotspots (Oluwole & Akinbode, 2020).

Geospatial analysis can also help identify the factors contributing to the spatial and temporal dynamics of criminal activities in urban neighbourhoods. For example, one study conducted in Ibadan used geospatial analysis to identify the factors that influenced the spatial distribution of crime in the city. The study found that the distance from the city center, population density, and road networks significantly influenced the spatial distribution of criminal activities (Adegbite et al., 2021). Geospatial analysis can also be used to develop predictive models that can help law enforcement agencies to anticipate where and when criminal activities are likely to occur.

Criminals' travel patterns in Ibadan can provide valuable insights into criminal activities' spatial and temporal dynamics. Criminals often use specific routes and travel patterns during their criminal activities, which can be identified through crime pattern analysis. For example, one study conducted in Ibadan found that criminals often use secondary roads and alleys to carry out their activities, as these areas are less crowded and provide better cover (Oluwole & Akinbode, 2020). Criminals also tend to target areas with high pedestrian traffic, such as marketplaces and bus stops.

Studying criminals' travel patterns can help law enforcement agencies to develop effective strategies for preventing and combating crime in urban neighbourhoods. For example, law enforcement agencies can increase surveillance in areas with high pedestrian traffic or deploy more officers on secondary roads and alleys. Law enforcement agencies can also use predictive models developed through geospatial analysis to anticipate where and when criminal activities are likely to occur, allowing them to deploy resources more effectively.

Studies have shown that socio-economic factors play a significant role in the spatial and temporal dynamics of criminal activities in urban neighbourhoods. In Ibadan, poverty, unemployment, and inequality have been identified as significant factors that contribute to crime (Afolabi & Ogunkoya, 2020). Areas with poor environmental conditions, such as poor lighting, road networks, and housing conditions, have also been identified as hotspots for crime (Oluwole & Akinbode, 2020).

Addressing the socio-economic factors contributing to crime in urban neighbourhoods is crucial for developing effective strategies to prevent and combat crime. Strategies such as improving housing conditions, creating job opportunities, and providing basic amenities such as electricity and water can help to reduce crime rates in urban neighbourhoods. Law enforcement agencies can also work with community organizations and local government officials to address these socio-economic factors and develop a more holistic approach to preventing and combating crime.

Crime pattern analysis is essential for studying the spatial and temporal patterns of criminal activities in urban neighbourhoods. Criminals' travel patterns provide valuable insights into the spatial and temporal dynamics of criminal activities and can help law enforcement agencies to develop effective strategies for preventing and combating crime. In Ibadan, Nigeria, crime is a significant challenge in many urban neighbourhoods, with socio-economic factors such as poverty, unemployment, and inequality playing a significant role in the spatial and temporal dynamics of criminal activities. Geospatial analysis can help to identify the factors that contribute to crime and develop predictive models that can help law enforcement agencies to anticipate where and when criminal activities are likely to occur. Addressing the socio-economic factors contributing to crime is crucial for developing effective strategies to prevent and combat crime in urban neighbourhoods.

## **Methodology:**

This study aimed to investigate the dynamics of transportation modes to and from crime scenes in urban areas of Ibadan, Nigeria. A non-probability or purposive sampling method was adopted to select 246 suspected/convicted criminals in Agodi Correctional centre and police custody who were arrested within the 5 urban local government area of Ibadan. Out of the 246 questionnaires administered, 243 were effectively returned for analysis with 180 male and 63 female criminals.

The study focused solely on data concerning modes of transportation to and from crime scenes. The survey questionnaire was designed to collect information on the type of transportation mode used, the frequency of use, the distance traveled, and the purpose of transportation. The questionnaire also gathered demographic data including age, gender, educational level, and occupation.

The collected data was analyzed using cross-tabulation, Chi Square and Phi and Crammer's V statistical methods. These techniques were used to examine the relationship between the transportation modes used and the demographic characteristics of the respondents. Chi Square was used to determine the statistical significance of the observed differences in the transportation modes used, while Phi and Crammer's V were used to measure the strength of the association between the variables.

The findings of this study will contribute to a better understanding of the transportation patterns to and from crime scenes in urban areas of Ibadan. Furthermore, the study provides valuable insight into the dynamics of criminal activities in urban areas, which could be useful for policymakers and law enforcement agencies in developing strategies to combat crime in the region.

## **DISCUSSION AND FINDINGS**

### **Characteristics of criminals**

The research region has both male and female criminals. 74.1 percent of men and 25.9% of women commit crimes. Most men commit property and violent crimes such burglary, assault, rape, robbery, theft, and arson. In contrast, most women commit theft/stealing and assault. Property and violent crime rates were highest for 31–40-year-olds and 18–30-year-olds, respectively. Secondary school graduates (54.7%) are most likely to commit crimes, followed by university/polytechnic and primary school graduates. Most are suspected of burglary, theft, and shoplifting, as well as armed robbery, assault, and rape.

Craftsmen (44.9%) and jobless (20.0%) commit property and violent crimes. 14% of study region students commit burglary, theft, armed robbery, and rape. Government employees conduct just arson/vandalism at 0.8%. Yoruba offenders commit property and violent crimes, save for arson/vandalism. The bulk of Igbo, Hausa, and other tribe criminals commit assault/battery, armed robbery, and rape/indecent assault. Most perpetrators were married. Theft and burglary dominated their property offenses, while assault and battery dominated their violent crimes.

60.9% of research region crimes involve property. Shoplifting, burglary, and arson/vandalism are examples. Most violent offenses are assault/battery (39%). High-density areas have more criminals than medium-density and low-density areas. In densely populated places, theft and burglary/housebreaking dominate property offenses. Violence includes armed robbery, assault/battery, and rape. Shoplifting, theft, and burglary dominate property crimes in medium-density locations. Assault and battery are the most violent offenses. 7.5% theft and 32.7% assault/battery are the lowest.



Nearby residential, non-gated communities had more offenders. They work weekdays from 6am to 12pm and 1am to 6am. Criminals rarely know where they committed crimes. 39% of previous knowledge perpetrators committed burglary, robbery/shoplifting, theft, rape, etc. Only 22% of the criminals were there accidentally. Shopping, seeing friends, and relaxing are other reasons to be in the crime-ridden neighborhood. Criminals commit crimes for several reasons, including seeing easy targets and good opportunities, being influenced by others, being desperate for money, being unemployed, and not having a well-paying job. Most study area criminals committed crimes because they saw easy targets and attractive opportunities. 26% are unemployed, 22% are underemployed, and 11% were persuaded to commit crimes by peers.

### **Travel Pattern of Criminals**

Two findings have typically been constant throughout the literature about criminal mobility and journey-to-crime. First, the average criminal commute is relatively short, with mean and median travel distances often within the two to three Kilometre range (Potchak et al., 2002; Wiles & Costello, 2000) (Potchak et al., 2002; Wiles & Costello, 2000). Second, the distance decay function stated by Brantingham and Brantingham (1981) has been routinely reinforced as criminal activity has become skewed toward the culprit's residence (Bernasco & Nieuwebeerta, 2005; Snook, 2004). In total, 243 criminal excursions were successfully geocoded and serve as the foundation for the future analysis. Each crime trip reflects either a property crime or a violent crime for which a criminal was arrested.

### **Day of the Week and Time of the day Crime Committed**

The study indicated the day of the week and the time of day when crimes were committed. It was discovered that the majority of criminals operate on weekdays between 6 a.m. and 12 p.m. and 1 a.m. and 6 a.m., both within and beyond their residential neighborhoods (table 1). The bulk of criminals (72%) in the research area were active during the weekdays, whereas only 28% were active on weekends. On weekdays, rape/indecent assault, arson/vandalism, theft/stealing, burglary/house breaking, robbery/shoplifting, armed robbery, and assault/battery are the most prevalent crimes. Crimes such as assault/battery, armed robbery, and robbery/shoplifting are prevalent on weekends. The findings were further characterized using Chi-square ( $X^2 = 24,705$ ,  $P = 0.000$ ), which indicated a substantial correlation between the days of the week and crime in the studied area. The value ( $V = 0.319$ ,  $P = 0.00$ ) for the Phi and Crammer test of association strength suggested a moderate amount of linkage between the two variables.

Crime is more widespread in the morning to noon between 6am–12noon (35.8%) and in the evening to midnight between 6pm–12am (26.3%). Assault/battery, robbery/shoplifting, theft/stealing, and burglary/housebreaking are the most prevalent crimes between 6am and noon, whereas armed robbery, rape/indecent assault, and arson/vandalism are the most prevalent crimes between 6pm and midnight. The Pearson chi-square test ( $X^2 = 181.122$ ,  $P = 0.000$ ) revealed a substantial correlation between time of day and crime in the research area. The Phi and Cramer test of strong association ( $V = 0.863$ ,  $P = 0.00$ ) similarly demonstrated a high level of relationship between the variables.

Property Crimes such as theft/stealing, burglary/housebreaking, and robbery/shoplifting are prevalent between 6am and noon on weekdays, but Violent Crimes such as armed robbery and rape/indecent assault are prevalent between 6pm and midnight. Crimes were at a high from 6am–12noon in the study area.

**Table 1: Day of the Week and Time of the day Crime Committed**

	Property Crime				Violent Crime			
	<i>Burglary</i>	<i>Robbery</i>	<i>Arson</i>		<i>Armed Robbery</i>	<i>Assault / Battery</i>	<i>Rape / Indecent Assault</i>	
	<i>Theft / Stealing</i>	<i>House Breaking</i>	<i>Shoplifting</i>	<i>Vandalism</i>				<i>Total</i>
<b>Day of the Week Crime Committed</b>								
Pearson Chi-Square $\chi^2_1 = 24.705$ P= (.000) Phi = .319= <.000; Crammer's V = .319 = <.000								
Weekdays	41	35	23	9	8	29	30	175
	77.4%	70.0%	63.9%	100.0%	61.5%	55.8%	100.0%	72.0%
Weekend	12	15	13	0	5	23	0	68
	22.6%	30.0%	36.1%	0.0%	38.5%	44.2%	0.0%	28.0%
<b>Total</b>	<b>53</b>	<b>50</b>	<b>36</b>	<b>9</b>	<b>13</b>	<b>52</b>	<b>30</b>	<b>243</b>
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

#### Time of the Day Crime Committed

Pearson Chi-Square  $\chi^2_1 = 181.122$ , P= (.000); Phi = .863 = <.000 and Crammer's V = .863 = <.000

Night-time	14	11	16	0	0	10	0	51
(1am-6am)	26.4%	22.0%	44.5%	0.0%	0.0%	19.2%	0.0%	21.0%
Morning	18	17	17	0	3	32	0	87
(6am-12pm)	34.0%	34.0%	47.2%	0.0%	23.1%	61.5%	0.0%	35.8%
Afternoon	11	0	3	0	0	0	8	22
(12noon-6pm)	20.8%	0.0%	8.3%	0.0%	0.0%	0.0%	26.7%	9.1%
Evening	2	11	0	9	10	10	22	64
(6pm-12am)	3.8%	22.0%	0.0%	100.0%	76.9%	19.2%	73.3%	26.3%
Not Stated	8	11	0	0	0	0	0	19
	15.1%	22.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%
<b>Total</b>	<b>53</b>	<b>50</b>	<b>36</b>	<b>9</b>	<b>13</b>	<b>52</b>	<b>30</b>	<b>243</b>
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

*Source: Author's field work, 2017*

## Discussions and Findings

### Crime Travel Distance Analysis

This study explored the relationship between the place of origin and the location of the crime, as well as the extent to which proximity might explain spatial patterns of crime. The distance traveled to crime scenes varied from less than 1 kilometer to over 15 km, as discovered. The time it takes offenders to reach a crime scene ranges from less than 10 minutes to more than 30 minutes. The journey time to a crime site depends on the means of transportation used by criminals to reach crime scenes.

The findings revealed that the distance traveled to commit various types of crime decreases with increasing distance: 43.6% for trips less than 1 km; 36.2% for 1-5 km; 14.5% for 6-10 km; and 4.5% for 11-15 km. 1.2% of criminal trips exceed 15 km (Figure 2). Most property and violent crimes are perpetrated within one kilometer of the crime scene. The majority of journeys to violent crimes such as armed robbery, assault/battery, and rape/indecent assault are between 1 and 10 kilometers.

**Table 2: Distance Travelled to Crime Scene**

	Crime Committed				Violent Crime			
	Property Crime							
	Theft / Stealing	Burglary / House Breaking	Robbery / Shop lifting	Arson / Vandalism	Armed Robbery	Assault / Battery	Rape / Indecent Assault	Total
Less than 1km	29 54.7%	21 42.0%	11 30.6%	0 0.0%	3 23.1%	32 61.5%	10 33.3%	106 43.6%
1-5km	10 18.9%	27 54.0%	6 16.7%	0 0.0%	10 76.9%	19 36.5%	16 53.3%	88 36.2%
6 - 10km	14 26.4%	0 0.0%	19 52.8%	0 0.0%	0 0.0%	1 1.9%	1 3.3%	35 14.5%
11 - 15km	0 0.0%	2 4.0%	0 0.0%	8 88.9%	0 0.0%	0 0.0%	1 3.3%	11 4.5%
Above 15km	0 0.0%	0 0.0%	0 0.0%	1 11.1%	0 0.0%	0 0.0%	2 6.7%	3 1.2%
<b>Total</b>	<b>53 100.0%</b>	<b>50 100.0%</b>	<b>36 100.0%</b>	<b>9 100.0%</b>	<b>13 100.0%</b>	<b>52 100.0%</b>	<b>30 100.0%</b>	<b>243 100.0%</b>

Pearson Chi-Square  $X^2_1 = 262.937$ ,  $P = (.000)$ ; Phi = 1.040 < .000 and Crammer's  $V = .520$  < .000

*Source: Author's field work, 2017*

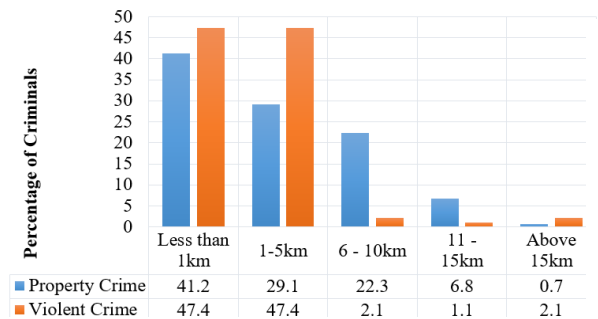
The lowest distance the majority of criminals had to travel from their residences to the crime scene was between 1 and 5 kilometers, while the highest distance was between 11 and 15 kilometers. An investigation of the distance traveled by criminals from their residence to the scene of the crime reveals that 38.4% (106 offenders) travel less than one (1) kilometer, while 27.5% of criminals interviewed claimed to walk between 1 and 2 kilometers. 5 km to 10 km has an 18.3% crime rate compared to 4.7% for distances beyond 15 km (Fig. 1). The survey indicated that the distance traveled by criminals grew with age until the age of 40, at which point it began to decrease. There is a gradual decrease in the distance traveled to commit different forms of crime, from 41.2% for journeys less than 1 kilometer, to 29.1% for 1-5 km, to 22.3% for 6-10 km, to 6.8% for 11-15 km. Only 0.7% of property crime journeys exceed 15 kilometers. The majority of travels to violent crimes are shorter than 5 kilometers (47.4% less than 1 kilometer and 1-5 kilometers, respectively) (Fig 1). While thieves can travel up to 15 kilometers to conduct property crimes, violent crimes typically occur in close proximity. Those who travelled less than 1km were predominantly involved in theft, burglary, shoplifting, assault/battery, and rape/indecent assault, whereas those who travelled more than 15km were primarily involved in arson/vandalism and rape/indecent assault (Table 2).

This study's findings are consistent with those of Rattner and Portnov (2005), who saw a drop in the incidence of crime when the distance between crime zones and criminals' homes grew. In their analysis of Israel's major cities, they found that property crime is conducted by criminals who reside within them, with criminal presence reducing as distance from crime scenes increases.

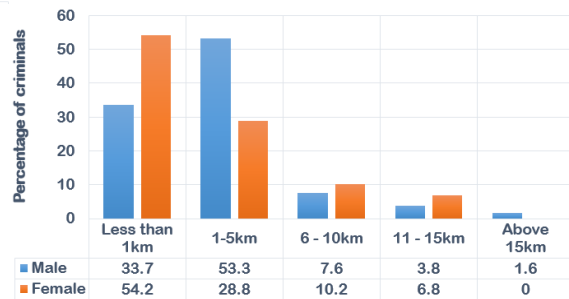
Even though the majority of crimes occur near to the criminal's dwelling, this is not always the case. There may be a variety of motives for a potential criminal to go farther to commit a crime. To avoid operating near their residences or along active patrol routes, criminals are more likely to seek targets at a "medium" distance. Additionally, the potential for a better return from illicit actions may draw criminals to a somewhat distant neighbourhood with a higher socioeconomic class indication, such as the quantity of fancy automobiles and large, spectacular homes that may contain expensive products. In addition, there may be



neighbourhoods that are not close to a criminal's dwelling but are close to their place of employment or amusement, or even the homes of family or friends, or that a criminal may pass through en route to these destinations. These are the locations where a criminal is somewhat familiar due to their daily or weekly routines.

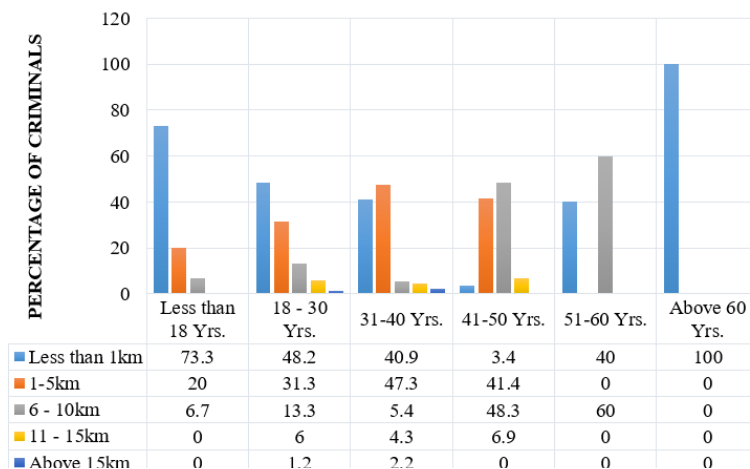


**Fig. 1: Distance travelled by type of Crime Criminals**



**Fig. 2: Distance Travelled by Gender of Criminals**

More males travel between 1 and 5 kilometers to commit a crime (55.3%), closely followed by 33.7 kilometers for journeys of less than 1 kilometer, 7.6% for 6 – 10 kilometers, 3.8% for 11 – 15 kilometers, and 1.6% for distances greater than 15 kilometers. For women, 54.2% travel within 1km to crime scenes, but this number decreases to 28.8% for distances between 1 and 5km, 10.2% for distances between 6 and 10km, and 6.8% for distances between 11 and 15km. No female offender sampled traveled over 15 kilometres to commit a crime (figure 3). Therefore, it is reasonable to conclude that women typically go less than 1 kilometer to the crime scene, but men travel up to 5 km (Figure 2).



**Fig. 3: Distance Travelled by Ages of Criminals**

On average, criminals under the age of 18 travel up to 3 kilometers, those between the ages of 18 and 30 kilometers, and those between the ages of 31 and 40 kilometers to commit a crime (Fig. 3). The distance traveled to commit a crime diminishes with age; criminals older than 60 travel less than 1 km to commit a crime.

By time of day, Figs. 4 and 5 indicate that night-time crimes account for a somewhat larger fraction of crimes within the first five kilometres of the criminal's residence; nevertheless, there is no significant difference between the distance decay patterns of daytime and nighttime crimes. The majority of nighttime journeys between 1am and 6am (Figure 5) are less than 52.9%. This is comparable to early morning journeys (6am-12pm) where the majority of trips are similarly under 1 km (56.5%). 63.6% of afternoon journeys (12 p.m. - 6

p.m.) involve a distance between 6 and 10 kilometers. Typically, evening excursions are within 5 miles. Therefore, we can conclude that night time and early morning criminal excursions are typically less than 1 km in length, whereas afternoon and evening excursions are typically larger.

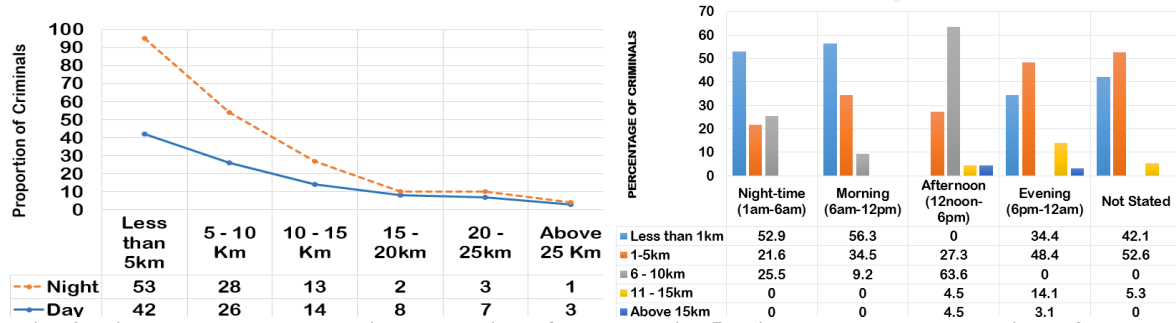


Fig. 4: Distance Travelled to crime by period of the day. Fig. 5: Distance Travelled by Time of the Day  
Source: Author's field work, 2022

### Crime Travel Time Analysis

The time it takes offenders to arrive at a crime scene ranges from about 10 minutes to over 30 minutes. 87 out of 243 sampled criminals traveled to a crime site within 10 minutes, 59 during 11-20minutes, 63 within 21-30minutes, and 34 traveled over 30 minutes to the crime scene (Figure 3). The journey time to a crime site depends on the means of transportation criminals use to reach crime scenes.

Table 3: Travelled Time to Crime Scene

	Crime Committed					Violent Crime		
	Property Crime							
	Theft	Burglary	Robbery	Arson		Armed	Assault	Rape
	Stealing	House	Shop	Vandalis		Robbery	Battery	Indecent
		Breaking	lifting	m				Assault
								Total
Less than 10 minutes	14	17	11	0	3	32	10	87
	26.4%	34.0%	30.6%	0.0%	23.1%	61.5%	33.3%	35.8%
11-20 minutes	21	6	3	0	10	19	0	59
	39.6%	12.0%	8.3%	0.0%	76.9%	36.5%	0.0%	24.3%
21-30 Minutes	15	25	5	0	0	1	17	63
	28.3%	50.0%	13.9%	0.0%	0.0%	1.9%	56.7%	25.9%
Over 30 Minutes	3	2	17	9	0	0	3	34
	5.7%	4.0%	47.2%	100.0%	0.0%	0.0%	10.0%	14.0%
<b>Total</b>	<b>53</b>	<b>50</b>	<b>36</b>	<b>9</b>	<b>13</b>	<b>52</b>	<b>30</b>	<b>243</b>
	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Pearson Chi-Square  $X^2_1 = 187.775$ ,  $P = (.000)$ ; Phi  $= .879 < .000$  and Crammer's  $V = .508 < .000$

Source: Author's field work, 2022

Table 3 provides information on the time offenders reach the crime scene in different types of property and violent crimes. The table shows that 35.8% of offenders in property crimes and 61.5% in violent crimes reached the crime scene in less than 10 minutes. In contrast, only 14.0% of offenders took over 30 minutes to reach the crime scene.

Looking at specific crime types, 47.2% of offenders in robbery/shoplifting took over 30 minutes to reach the crime scene, significantly higher than other crime types. On the other

hand, 76.9% of offenders in armed robbery reached the crime scene within 11-20 minutes, which is significantly higher than other crime types.

The Pearson Chi-Square test shows a significant association between the time offenders take to reach the crime scene and the type of crime committed, as indicated by the p-value of 0.000. The Phi coefficient of 0.879 and Crammer's V of 0.508 also suggest a strong association between the variables.

Compared with the literature, some studies have found that the time taken to commit a crime is an important factor in predicting criminal behavior. For example, a study by Eck and Weisburd (1995) found that the time it takes to commit a burglary is related to the level of planning and the risk involved in the crime. Other studies have also suggested that the time taken to commit a crime is related to the offender's knowledge of the area, security measures, and the perceived risk of detection (Miethe and Meier, 1994; Clarke and Felson, 1993).

Overall, the findings from this study support the notion that the time taken to commit a crime is an important factor in understanding criminal behavior. The results suggest that offenders in violent crimes tend to act more quickly than those in property crimes, and the time taken to reach the crime scene varies significantly depending on the type of crime committed. These findings have implications for law enforcement agencies and can inform the development of crime prevention strategies.

### **Summary of Findings**

The text discusses the characteristics of criminals in a particular research region. The data shows that most criminals are male (74.1%) and commit property and violent crimes, such as burglary, assault, robbery, and theft. Female criminals (25.9%) tend to commit theft/stealing and assault. The age group with the highest property crime rates is 31-40 years old, while those in the 18-30-year-old age group have the highest violent crime rates. The level of education of criminals shows that secondary school graduates (54.7%) are most likely to commit crimes, followed by university/polytechnic graduates and primary school graduates. Most criminals in the research area are suspected of burglary, theft, and shoplifting, as well as armed robbery, assault, and rape.

The study also reveals that craftsmen (44.9%) and jobless individuals (20.0%) are more likely to commit property and violent crimes, while students (14%) tend to commit burglary, theft, armed robbery, and rape. Government employees commit only arson/vandalism (0.8%). Criminals from the Yoruba tribe tend to commit property and violent crimes, except for arson/vandalism, while criminals from the Igbo, Hausa, and other tribes tend to commit assault/battery, armed robbery, and rape/indecent assault. Most of the perpetrators were married. Theft and burglary dominated their property offenses, while assault and battery dominated their violent crimes.

Regarding crime location, 60.9% of the crimes involve property, such as shoplifting, burglary, and arson/vandalism. Assault/battery (39%) is the most common violent offense. High-density areas have more criminals than medium-density and low-density areas, with theft and burglary/housebreaking dominating property offenses in densely populated areas. Criminals rarely know where they committed crimes, with only 22% of criminals being there accidentally. The study also indicates that criminals commit crimes for various reasons, including seeing easy targets and attractive opportunities, being influenced by others, being desperate for money, being unemployed, and not having a well-paying job.

The research also examines the travel pattern of criminals in terms of travel distance, travel time, and travel mode. The data show that the average criminal commute is relatively short, with mean and median travel distances often within the two to three-kilometer range. The distance decay function stated by Brantingham and Brantingham (1981) has been routinely reinforced as criminal activity has become skewed toward the culprit's residence. The study indicates that most criminals operate on weekdays between 6 a.m. and 12 p.m. and 1 a.m. and 6 a.m. within and beyond their residential neighborhoods. Crime is more widespread in the morning to noon between 6 am to 12 noon (35.8%) and in the evening to midnight between 6 pm to 12 am (26.3%). The Pearson chi-square test revealed a substantial correlation between time of day and crime in the research area.

In conclusion, the study provides valuable insights into the characteristics of criminals in a particular research region. The findings can be useful for law enforcement agencies to develop strategies to prevent and combat crime effectively. The study shows that criminals tend to operate within short distances of their residence, and the majority of crimes are committed during weekdays between 6 a.m. and 12 p.m. and 1 a.m. and 6 a.m.

### **Conclusion**

In conclusion, the analysis of crime and criminals' travel pattern in urban neighborhoods in Ibadan, Nigeria, provides useful insights into the dynamics of crime in the city. The study reveals that criminal activities tend to concentrate in certain areas of the city, particularly those with a high density of commercial and residential properties. The findings also suggest that the criminal elements often travel long distances to perpetrate crimes, which underscores the need for a comprehensive and integrated approach to law enforcement in the city.

To effectively combat crime in Ibadan, policymakers and law enforcement agencies must prioritize deploying resources to high-crime areas while addressing the underlying factors driving criminal behavior. This may involve improving street lighting, promoting community policing, enhancing public transportation, and providing economic opportunities to the residents of crime-prone areas. Ultimately, a holistic and sustainable approach to crime prevention is needed to create a safer and more secure urban environment for all residents of Ibadan.

## References:

1. Adegbite, A. A., Fatudimu, I. B., & Oyelade, O. J. (2021). Application of geospatial analysis in crime pattern mapping in Ibadan metropolis, Nigeria. *Journal of Geospatial Information Science*, 24(1), 24-34.
2. Adegbite, S. A., Adekola, F. A., & Adekunle, A. A. (2021). Geospatial analysis of armed robbers' travel patterns in Ibadan, Nigeria. *Journal of Criminology and Criminal Justice Research*, 2(1), 1-10.
3. Afolabi, A. O., & Ogunkoya, O. O. (2020). The effect of socio-economic factors on crime rate in Ibadan, Nigeria. *Nigerian Journal of Social Sciences*, 4(1), 1-7.
4. Afolabi, O., & Ogunkoya, O. (2020). Spatial distribution of criminal activities in Ibadan metropolis using GIS. *GeoJournal of Tourism and Geosites*, 30(2), 697-704.
5. Chainey, S., & Ratcliffe, J. H. (2005). *GIS and crime mapping*. John Wiley & Sons.
6. Clarke, R. V., & Felson, M. (1993). Routine activity and rational choice: Advances in criminological theory, 5, 1-22.
7. Eck, J. E., & Weisburd, D. (1995). Crime places in crime theory. In *Crime and place* (pp. 1-33). Springer, New York, NY.
8. Miethe, T. D., & Meier, R. F. (1994). *Crime and its social context: Toward an integrated theory of offenders, victims, and situations*. SUNY Press.
9. Oluwole, O. O., & Akinbode, G. A. (2020). Geospatial analysis of the spatial pattern of crime in Ibadan, Nigeria. *Journal of Social Sciences and Public Policy*, 12(1), 1-10.
10. Oluwole, O., & Akinbode, A. (2020). Spatial distribution of criminal activities in Ibadan, Nigeria. *Journal of Geography and Regional Planning*, 13(3), 49-57.