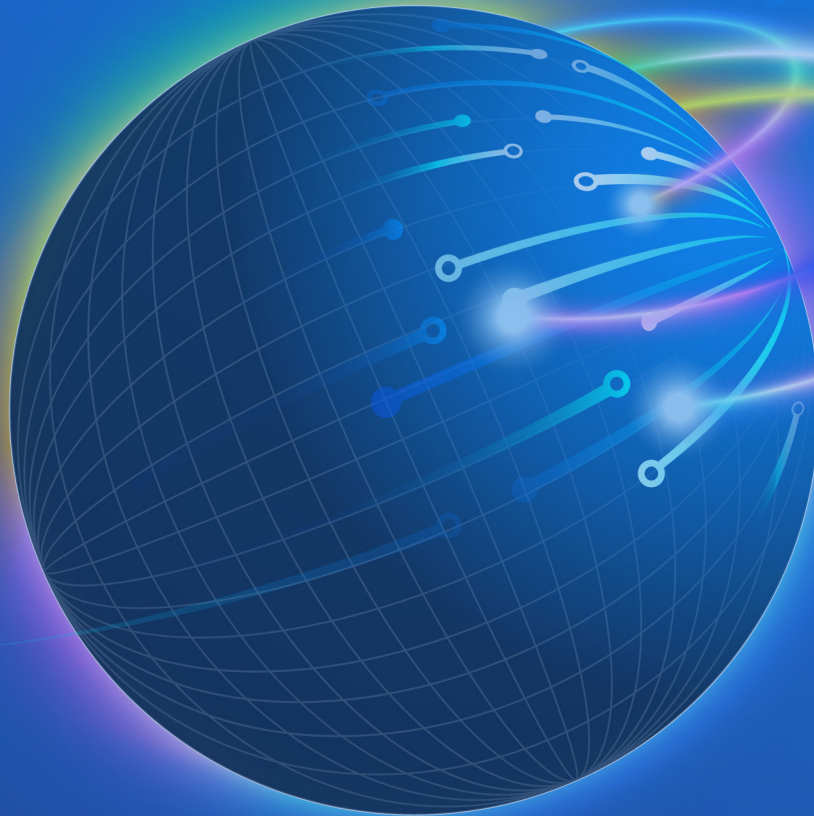




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Assessment of the Contribution of Geospatial Technology on Crime Prediction: A Case of Kinondoni, Dar es Salaam

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ABSTRACT

Using quantitative methods, this article evaluates the spatial distribution of crime, factors for crime occurrence and crime prediction for the Kinondoni district of Dar es Salaam. The study area and participants were selected using both probability and non-probability sampling techniques. Participatory mapping, remote sensing, document review, GPS survey, and observation were used to acquire data for this study, which examined two types of crimes: burglaries and robberies. Hot spot maps, Kernel density maps, crime patterns, and visualizations were made using ArcGIS software. Areas with a high risk of crime were identified by using kernel density, it was predicted that some areas would have high crime in the future, while other areas would experience low crime. It came clear that Occupation status, Income level and Family breakup are factors for robbery and burglary occurrence where by occupation status has coefficient level of .070, income level has coefficient level of .067 and coefficient level of .878 it remains constant. The spatial distribution of crimes in the Kinondoni district is therefore linked to both spatial and spatial elements that cause people to fail in their day-to-day endeavors.

INTRODUCTION

Various official documents and other figures based on police-recorded offenses revealed that homicide rates were high in America and that the rate of violent, property-related, and drug-related crimes had increased on all continents (UNODC, 2014). Just 5% of the over half a million homicides that took place worldwide in 2012 took place in Europe, whereas 31% took place in Africa, following the Americas with 36% (UNODC, 2013).

According to official and independent sources, the crime rate is high in African nations (UNODC, 2013). Six African nations were listed as having some of the highest rates of crime in the world (Numbeo, 2015). Nigeria, Kenya, South Africa, South Sudan, and Libya were among them. Robbery, corruption, consumer fraud, sexual assault, kidnapping, and property crimes like carjacking, livestock theft, and burglary were common, albeit to differing degrees, in other African nations like Ghana, Kenya, Nigeria, Egypt, Tanzania, and Uganda (UNODC, 2014). South Africa, cases of murder, specifically house robbery, and hijacking, have continued to rise in the country (South Sudan Monitor, 2011; Eye Witness News, 2014; Institute for Security Studies and Africa Check, 2014; South African Police Service, 2014).

According to the Crime and Traffic Incidents Statistics Report of January to December 2016, crime was more common in Tanzania's larger cities, especially Dar es Salaam, with the Kinondoni district being the main focus of concern. There were many different types of crime in Tanzania, but the most common ones were theft, murder, crime against women, and the unlawful sale

and consumption of alcohol and drugs in public. The fact that cities serve as a breeding ground and favorable environment for organized and specialized crime is also no longer a secret; statistics show that Kinondoni has the greatest number of recorded crimes in the nation (Tanzania Crime Statistics Report, 2016). Various social factors such as growing unemployment, increasing income inequality between the have and the have-nots have accelerated the level of urban crimes in Kinondoni district. Despite their best effort the law enforcement agencies rate of criminal cases is still growing fast. As a result, citizens live with fear insecurity of their life and property. The rate of crime has been caused by several factors which included political factors such as state fragility and state failure, and historical factors such as the history of inter-ethnic and interracial injustices including apartheid. Others were economic factors such as unemployment and corruption, and the balloon effect resulting from the improved successes of anti-drug law enforcement in Europe and the Caribbean, which are said to be responsible for increased drug trafficking in West Africa (UNODC, 2007; The Economist, 2009; Wylar & Cook, 2009; UNODC, 2015). Tanzania's public and private sectors both use the geospatial technology system. The utilization of location data with care is what makes geospatial technology indispensable for day-to-day tasks. For thirty years, the Tanzania Forest Agency (TFS) and Tanzania National Parks (TANAPA) have used technology to preserve endangered animals, such as elephants and rhinoceros (TANAPA&TFS, 2018; Tomkiewicz 1996; TCP 1998).

Tanzania's 2050 national blueprint predicted that the

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Ukwamani. The following is the Cochran's formula:

$$n = \frac{z^2 pq}{e^2}$$

Where,

e is the desired level of precision (margin of error) p is the estimated proportion of the population q is 1-p since e can take a value up to 8% n is sample size of reminded persons

A 95% confidence level gives us z-value of 1.96 per the normal table, so we get

$$n = \frac{(1.96)^2(0.25)(0.75)}{(0.08)^2}$$

$$\approx 112.55$$

$$\approx 112 \text{ Remanded persons}$$

The Sample size of reminded persons, n= 112, doing this all member of the reminded people population had equal chance to be included as sample.

Data Collection

The research made use of both primary and secondary sources of information. Remote sensing, satellites, and Rasta data are secondary sources of information, while community mapping and field observation are primary sources. Pre-fieldwork and fieldwork were the two phases of the study. The image, which has a 4 cm spatial resolution, was taken from Google Earth during pre-field in 2019. The basis map for the participants' mapping of crime occurrences at the scene was made using the photograph. The image was projected to the plane coordinate system, WGS_1984_Zone_36S, after being geometrically adjusted using the world geodetic system (WGS 1984). Transect mapping, observation, and a participatory mapping exercise were carried out during

fieldwork. In order to demonstrate patterns of criminal episodes, a Georeferenced satellite picture that was downloaded and covered the research region was used as the foundation map for participatory mapping. People were able to identify crime hotspots using participatory maps, and they also utilized them to designate regions for various land use activities, including businesses, schools, clubs, and hospitals. People were asked to identify crime hotspots on this participatory map of Kawe ward, which was scanned in A0 format and printed off. It was then Georeferenced and eventually transformed into digital GIS software for hotspot analysis. Stakeholder identification to take part in the mapping exercise and the actual mapping session were the two steps of the study's methodology. "Participants in every police cell were identified using police officers during the stakeholder identification process. The study sample size was the basis for the selection criteria utilized in the questionnaire. Participants in the participatory mapping process included reminded individuals in police cells at the Kawe police station as well as police personnel. An experiment in participatory mapping was part of the second stage. In the form of brief formal inquiry guidelines, a moderator provided a list of themes. Spatial data was gathered using printed UAV imagery. Physical locations where crimes were likely to occur were evacuated, and groups determined each point based on participants' experiences there. The participants were oriented using features such as the river and the school buildings on the printed images. Following their familiarization with the map, participants use pencils to mark the locations of crime episodes.



Figure 2: GPS surveying and observation

GPS surveying and observation were used in this study to confirm data collected through participatory mapping. GPS surveying and observation were utilized to confirm the locations of criminal incidents and land use areas, including schools, clubs, and commercial districts. In order to confirm the validity of the data gathered from key informant interviews and participatory mapping, the study combined observation techniques with transect walks, which entail GPS surveying. Both public structures and crime-scene locations were subjected to GPS surveying and observation techniques. Additionally, GPS was used to pinpoint the locations of these roadways

(Bagamoyo Road and Kawe Road), which are likewise regarded as significant contributors to crime incidence areas. A handheld GPS with an accuracy of 0–1 m was employed. Satellite imagery was superimposed on the point data gathered in order to verify the location of criminal episodes and analyze their spatial distribution.

Data Analysis

In order to create maps of crime occurrence, hotspot analysis was used throughout the study region to identify areas that were likely to experience criminal activity. Both spatial and social-economic aspects were evaluated. The

main purpose of hotspot mapping analysis was to locate criminal incidents in the research area. The hotspots were designed to display trends in crime episodes, as well as the spatial position and amount of criminal incidents that tend to focus on the research area. Using QGIS and Arc map software, hotspot mapping was carried out to identify trends in the occurrence of infractions. Making a polygon grid with a cell size of 215 meters that covered the research region was the first step in the hotspot analysis process. Arc GIS was launched, and the points data layers were joined into the polygon grid according to spatial location. After that, crime hotspot locations were determined using the spatial statistic tool, and the analysis's findings were shown so that the hotspots formed from the randomly assigned areas could be seen using a 99% confidence level (z-score). A major hotspot is indicated by a crime incidence with a high Z score and a small P value. A substantial cold area is indicated by a small P value and a low negative Z score. The intensity of the clustering increases or decreases with the Z score. No geographical grouping is implied when the "Z" score is zero. You can compare the "z" score with the range of values for a particular confidence level to see if it is statistically significant. In other words, a "z" score of less than -1.96 would have been classified as statistically not significant at a significance level of 0.05 (95 percent

confidence level), and a z value of 1.96 or higher is considered factually significant. The remaining phases in this investigation were completed using the Arc map and Qgis software. Geographic positioning systems data point was overlaid with wards shape file, then placed into an excel worked in a comma-delaminate text file inform , then uploaded into Arc to validate the response presented by participants from community mapping.

RESULTS AND DISCUSSION

Factors Influencing Crime Occurrence

Occupation of Respondents

At the 95% (P value 0.05) level of significance, occupation status was found to have an impact on crime occurrence, with a P-value of 0.03 in the chi square representation table. Additionally, the results indicated that 36 respondents, or the bulk of those who committed burglary crimes, were unemployed, 10 were employed, 7 were businessmen, and 0 were retired. Additionally, 41 respondents—the majority of those who committed robbery crimes—were jobless, 10 were employed, 6 were retired, and 2 were businessmen. According to the findings, the majority of respondents who committed robbery and burglary were unemployed and turned to criminal activity because they were having a hard time making ends meet.

Table 1: Occupation status of respondents

Variable	Category	Crime committed		P-value	Chisquare
		Burglary	Robbery		
Occupation status	Unemployed	36	41	0.003	8.81
	Employed	10	10		
	Retired	0	6		
	Business men	7	2		

Income of Respondents

According to the study's chi square representation table, income level had a P-value of 0.04 and was found to have an impact on the incidence of crime at the 95% (P value 0.05) level of significance. Additionally, according to the table's chi square representation, the majority of respondents (31 respondents) who committed burglary had low incomes from 0 to 250000 Tshs, 19 had incomes between 250000 and 500000, 2 had incomes between 500000 and 750000, 1 had incomes between 750000 and

1,000,000, and 0 had incomes above 1000000. Additionally, the majority of respondents (44 respondents) who committed robbery had incomes between 0 and 250000 Tshs, 7 had incomes between 250000 and 500000 Tshs, 5 had incomes between 500000 and 750000 Tshs, 2 had incomes between 750000 and 1000000 Tshs, and 1 had incomes over 1000000 Tshs. Accordingly, the findings showed that both of the respondents who committed robbery and burglary had low incomes and hence turned to illegal activity in order to survive.

Table 2: Income level of respondents

Variable	Category (Tshs)	Crime committed		Chisquare	P-value
		Burglary	Robbery		
Income level	0 – 250000	31	44	10.12	0.04
	250000 – 500000	19	7		
	500000- 750000	2	5		
	750000 – 1,000,000	1	2		
	Above 1050000	0	1		

Family Breakup

The study's chi square representation table revealed that,

at the 95% (P value 0.05) level of significance, family dissolution had a P-value of 0.04 and was found to have

an impact on the incidence of crime. Additionally, the chi square representation table revealed that the majority of respondents (27 respondents) who committed burglary crimes were from married households with both parents present, 14 respondents were from separated or divorced families, and 12 respondents were from widowed families. Additionally, the majority of respondents (27 respondents) who committed robbery crimes were from bereaved

families, followed by separated families (21 respondents) and married families (11 respondents). According to the findings, both of the respondents who committed robbery and burglary were brought up in a single-parent household with inadequate parental supervision, which led to their involvement in criminal activity and deviant behaviors (Kubende, 2008).

Table 3: Family breakup of respondents

Variable	Category	Crime committed		hisquare	-value
		Burglary	Robbery		
Family breakup	Married family	4	11	6.58	0.04
	Separated family	27	21		
	Widowed family	12	27		

Extent (Ranks) of Factors for Crime Occurrence

This section demonstrates how socioeconomic factors contributed to the incidence of crime in Kawe. To demonstrate the magnitude of the factors influencing

the occurrence of crime, the binary logistic regression technique was used. These factors include income, occupation, and family structure breakdown Level.

Table 4: Ranks of factors for crime occurrence

Variables	Coefficients	S.E.	Wald	df	Pvalues	Oddsratio	Rank
Occupation status	.070	.215	.106	1	.02	1.072	1
Income level	.067	.242	.076	1	.02	1.069	2
Family breakup	-	-	-	-	-	-	-
Constant	.878	.770	1.301	1	.254	2.406	-

Family breakup was selected as the reference category from the above table. Since it seems to have a 1.072-fold higher likelihood of influencing the crimes committed by the remanded individuals when compared to family breakup as a reference group, occupation status was selected as the most significant factor. Because unemployment made it difficult for people to subsist, more people turned to illegal activity. Additionally, the

income level of the remanded individuals was classified as the second factor in the table because, when compared to family separation as a reference category, it seemed to have a 1.069-fold higher likelihood of influencing the crimes committed by the remanded individuals.

Mapping Participatory Crime

Using geographic information technology to solve spatial

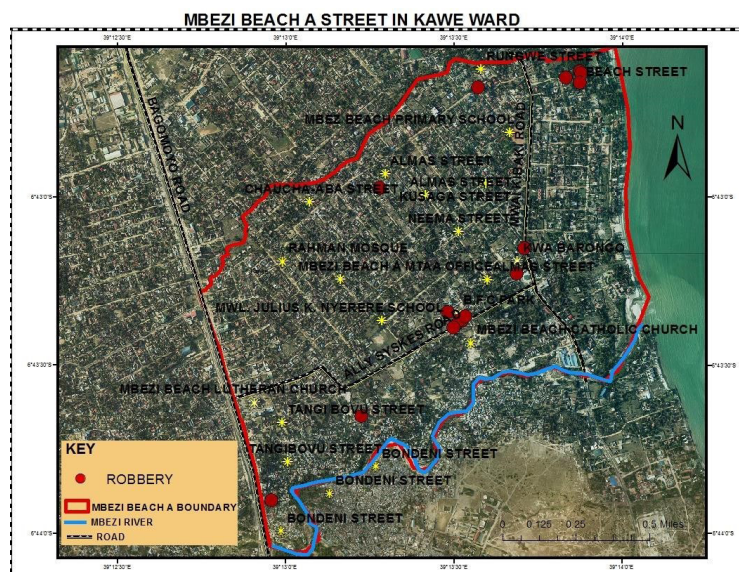


Figure 3: Robbery crime incidents at Mbezi Beach Street in Kawe

Kawe Road had an impact on robbery incidents. For instance, robberies were seen at bus stops like Myfair and Ukwamani. Additionally, robberies took place near

the well-known market area known as “Soko la Zamani” due to the late closing hours, which make it easier for criminals to target customers (Levi, 2018).

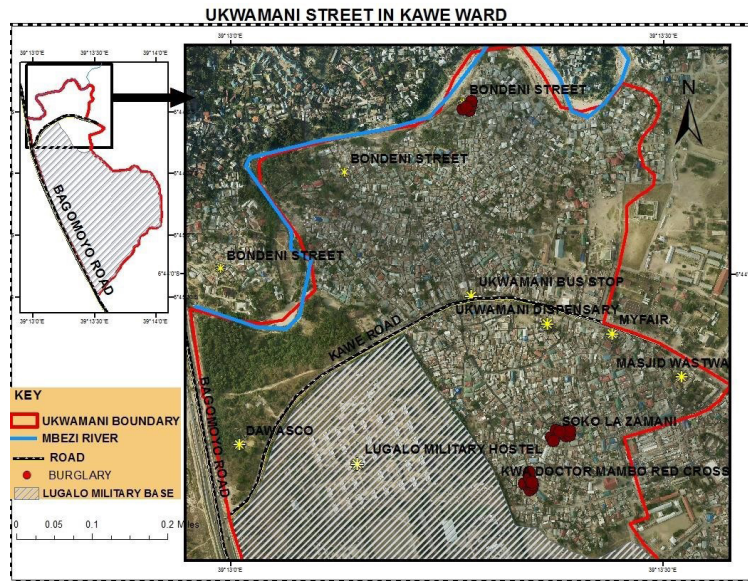


Figure 6: Showing burglary incidents at Ukwamani Street, in Kawe ward

Incidents of burglaries were shown in red spots in the above figure. Due to the existence of slums and disorganized housing that encourage criminal activity, burglary crime

occurrences happened near Bondeni Street and the “Kwa doctor mambo” Red Cross, as well as near the well-known “Soko la zamani” market place (Masese, 2007).

Table 5: Showing Summary of Distribution of Crime Incidents around Kawe

		Crime distribution	Predominant area	
Mbezi beach	Robbery	B.F.C park Kwa barongo bar along Allysyeskesroad, MwaikibakiroadandBagamoyo road and Beach street	Along Ally syskes road, MwaikibakiroadandBagamoyo road	Robbery
	Burglary	Tangibovu, Bondeni Rungwe, Almas, Chaucha-aba and Beach streets	Bondeni street	
Ukwamani (Kawe)	Robbery	Bondeni street, Lugalo hostel “Kwa doctor mambo” red cross, Ukwamani bus stop, myfair bus stop and alongside Kawe road.	“Kwa doctor mambo” red cross, bondeni street and Ukwamani bus stop.	Burglary
	Burglary	Bondeni street, “Kwa doctor mambo” red cross and “Soko la zamani”	“Kwa doctor mambo” red cross and “Soko la zamani”	

Crime Hotspots Mapping Around Kawe Ward

Hotspot maps were divided into two streets by the study; the first one displayed the spatial patterns of crime occurrences in Mbezi Beach Street, while the second one displayed the spatial patterns of crimes in Ukwamani Street.

Medium hotspots were displayed in yellow, while robbery hotspots were displayed in red. The B.F.C. Park bar, Barongo bar, and Beach Street were found to be the hotspot spots. The vicinity of Bondeni Street, Tangibovu Street, Almas Street, and Rungwe Street were covered by medium hotspots. Based on observations made at Mbezi Beach A, the study found that hotspots were mostly found around upscale locations like beaches and bars and pubs that were close to the road, such as Barongo Bar and B.F.C. Park Bar on Ally Syskes Road.

Medium hotspots were displayed in yellow, and burglary hotspots in red. The regions surrounding Rungwe Street, Bondeni Street, and Almas Street were designated as hotspots, while Tangi Bovu Street, Chaucha-aba Street, parts of Mwaikibaki Road, and Beach Street were recognized as medium hotspots. It was noted that slums with inadequate infrastructure bordered Rungwe and Bondeni Street, according to the Mbezi Beach crime hotspot map.

Hotspots were displayed in red for robbery and yellow for medium hotspots. Bus stops such Ukwamani bus stop, Bondeni street, the well-known Soko la Zamani market, and Kwa doctor Mambo Red Cross were identified as robbery hotspots. The Myfair bus station, the vicinity of the Ukwamani dispensary, and the Lugalo hostels were identified as medium hotspots.

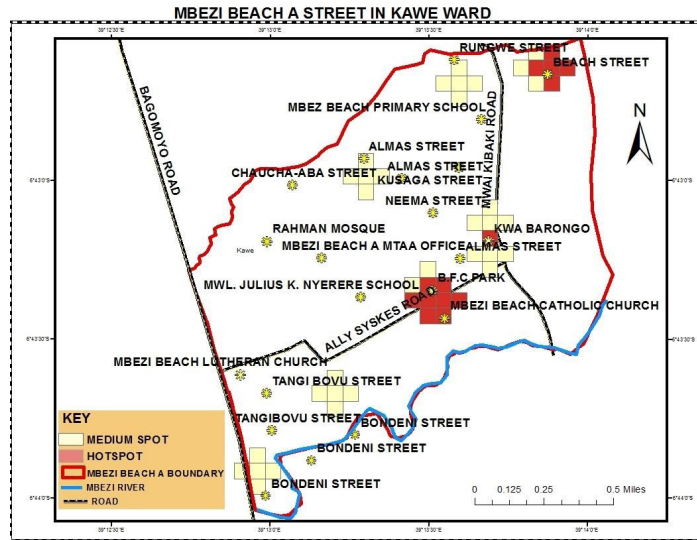


Figure 7: Robbery crime hotspot map at Mbezi Beach

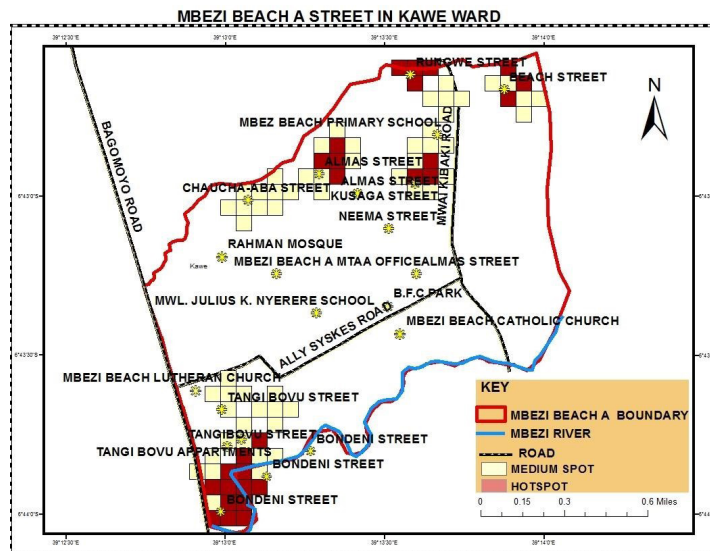


Figure 8: Burglary crime hotspot map of Mbezi Beach A in Kawe ward

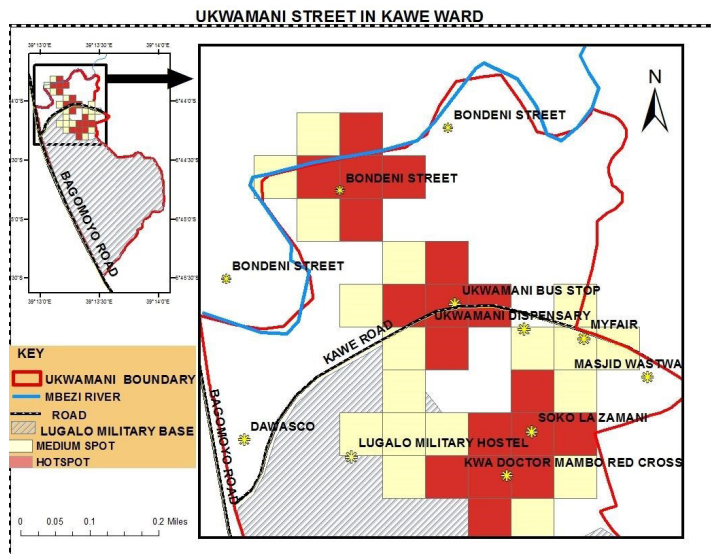


Figure 9: Robbery crime hotspot map of Ukwamani street Kawe ward

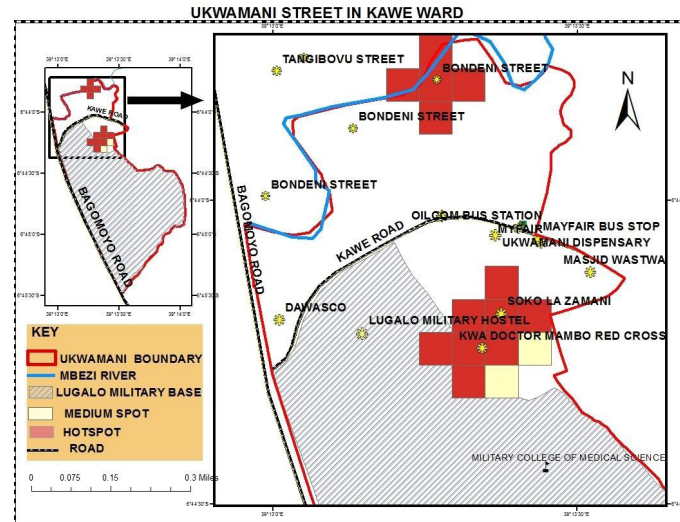


Figure 10: Burglary crime hotspot map of Ukwamani street in Kawe

Burglary Crime Hotspot Map of Ukwamani Street in Kawe

Locations with medium hotspots were colored yellow, while locations with burglaries were colored red. The

Kwa doctor Mambo Red Cross, Bondeni Street, and “Soko la zamani” market center have all been designated as burglary hotspots. Areas close to Kwa Doctor Mambo Red Cross were identified as medium hotspots.

Table 6: Showing summary of hotspot distribution around Kinondoni district

Boundary	Crime type	Hotspot areas	Medium spot
Mbezi beach	Robbery	B.F.C Park bar, Barongo bar and Beach street	Bondeni street, Almas street, Rungwe street and Tangibovu street.
	Burglary	Rungwe street, Bondeni street and Almas street	Tangi bovu street, Chaucha-aba street, Beach street and areas along Mwaikibaki road.
Ukwamani	Robbery	Bondeni street, Soko la zamani, Ukwamani bus stop and Kwa doctor Mambo red cross	Myfair bus station, areas around Ukwamani dispensary and Lugalo hostels
	Burglary	Bondeni street, Kwa doctor Mambo red cross and “Soko la zamani” market place	Areas around to Kwa doctor mambo red cross.

Prediction for Crime Occurrence

The study calculated the unknown distance of crime spots in this section using interpolation techniques. One GIS method employed in the study to forecast cell values from a sample of current data points is called spatial interpolation. Unknown values for any geographic point were ascertained by using the available data points. In order to forecast the incidence of crime over the surface, the study used a spatial interpolation approach called IDW (Inverse Distance Weight). To find the absolute

difference over the surface between current and expected crime patterns, the continuous surface from IDW interpolation was compared to the crime density map produced by the kernel density approach.

Additionally, the study’s crime spots were divided into five classes, as the table above illustrates. These classes represent the interpolated size of the impact that crime occurrences have on victims in each area. Then, to create thematic maps that displayed predictable crime hotspots in the Kinondoni district, interpolated maps were classed and shown into three groups: high, medium, and low crime regions.

Table 7: Showing magnitude of crime prediction

Class	Crime Magnitude
1	very low
2	low
3	medium
4	high
5	very high

The absolute surface difference between the current and anticipated crime patterns at Mbezi Beach is depicted in the above figure8. The current crime trends were shown on the Kernel Density Map (KDE), with blue denoting criminal risk patterns. Bondeni Street, B.F.C. Park Bar, Rungwe Street, and Beach Street were identified as places with a high crime density. Almas Street, Kusaga Street, Tangibovu Street, Barongo Bar, and Chaucha-aba Street

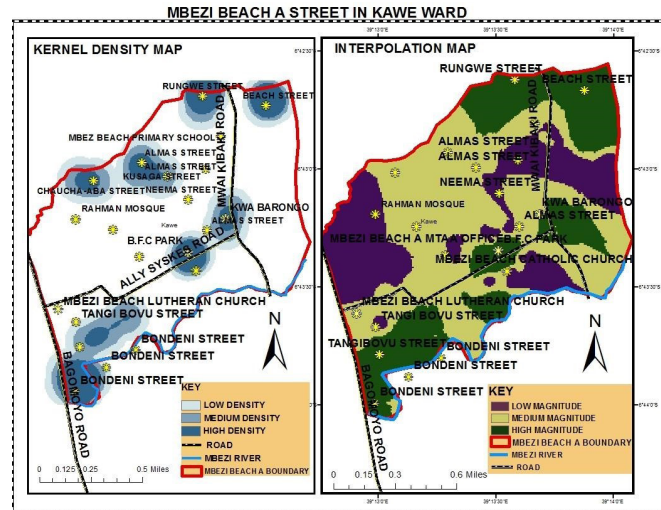


Figure 11: Crime prediction over surface at Mbezi Beach A in Kawe

were among the areas having a medium crime density. Neema Street in the vicinity of Mbezi Beach are among the locations with no criminal cases. A primary school and the vicinity of Mbezi Beach Rahman mosques and a Lutheran church. The predictive continuous smooth crime surface, which was divided into three classes using the quantile classification approach, was shown on the IDW interpolation map.

Bondeni Street, Tangibovu Street, B.F.C. Park Bar, Rungwe Street, Beach Street, and Kwa Barongo Bar were among the high-crime-risk zones indicated by green. Almas Street, Neema Street, the vicinity of the Lutheran church on Mbezi Beach, Chaucha-Aba Street, and the region surrounding Mbezi Beach were all highlighted in yellow as places with medium risk of crime. An office of the local government (Mbezi Beach A MTA Office). Additionally, areas indicated in purple that were thought to have a low crime risk included the area surrounding Mbezi Beach. Kusaga Street, a primary school, and a few locations near Tangi Bovu Street and Neema Street.

The picture above illustrates the disparity in crime intensity coverage surrounding Mbezi Beach between the Kernel density (KDE) crime map and the IDW interpolation crime map. The IDW interpolation map showed more extensive coverage of crime patterns in terms of intensity than the KDE map, such as the areas surrounding Rungwe Street, Bondeni Street, and Beach Street. Additionally, areas with no crime incidents on the KDE map were predicted to have high crime rates on the IDW interpolation map. For instance, the interpolation map showed low crime intensity in the vicinity of Neema Street, Mbezi Beach A Primary School, and Mbezi Beach A Local Government Office (Mbezi Beach A mtaa Office).

Also areas which had low crime intensity on KDE map were predicted as medium crime intensity (yellow color) on the IDW interpolation map for example Kusaga street and also location such as Tangibovu street which had medium crime intensity on KDE were predicted having high crime intensity on the IDW interpolation map.

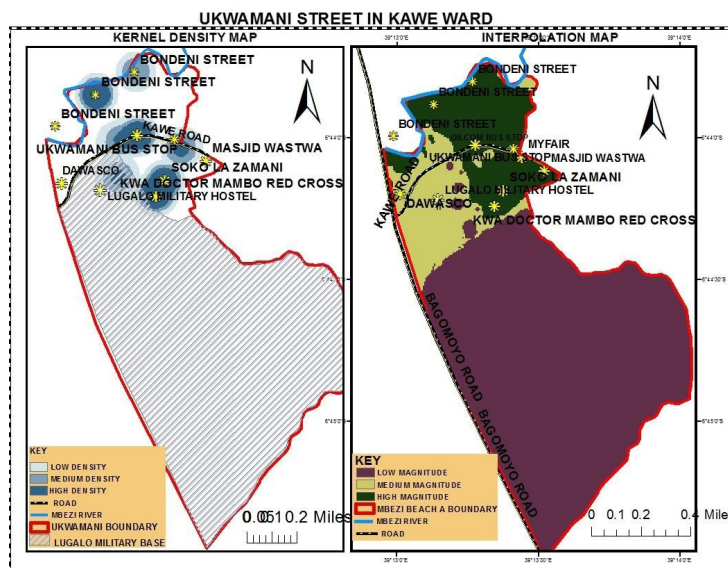


Figure 12: Crime prediction over surface at Ukwamani street within Kawe

The absolute surface difference between the current and anticipated crime trends at Ukwamani Street was depicted in Figure 10. The current crime trends were shown on the Kernel Density Map (KDE), with blue denoting criminal risk patterns. According to the KDE map, Bondeni Street, Kwa Doctor Mambo Red Cross, Soko La Zamani Market, and Ukwamani Bus Station were among the places with the highest crime densities. Areas surrounding Masjid Watsa are among the locations having a medium crime density. Lugalo Hostel and a few locations along Kawe Road were areas with low crime rates. Areas surrounding Dawasco and Lugalo are among the locations with no crime cases.

In addition, the IDW interpolation map showed the degree of criminal risk, which was shown in green. Bondeni Street, Kwa Doctor Mambo Red Cross, Soko la Zamani Market, Ukwamani Bus Station, and the vicinity of Masjid Watsa were identified as high-crime risk zones. Yellow-colored areas with medium-risk crime included the Lugalo Hostel, the roadsides, such as Bagamoyo Road and Kawe Road, and the vicinity of Dawasco. Additionally, the purple-colored areas surrounding Lugalo Military Base were those that were thought to have a low crime risk. The crime intensity coverage surrounding Ukwamani Street showed a difference between the Kernel density (KDE) crime map and the IDW interpolation crime map. IDW interpolation maps showed more coverage of crime patterns than KDE maps, such as those at Bondeni Street, Kwa Doctor Mambo Red Cross, Soko La Zamani Market, Ukwamani Bus Station, and the vicinity of Masjid Watsa. Additionally, areas with low crime rates on the KDE map were predicted to have high crime rates on the IDW interpolation map. For instance, the areas surrounding Dawasco and Lugalo were predicted to have high crime rates on the interpolation map, while areas with medium crime rates on the KDE map were predicted to have high crime rates, such as the areas surrounding Masjid Watsa. Due to military security that prevents criminal activity, the IDW interpolation crime map forecasted low crime intensity around military bases (Lugalo Military Base). Additionally, high crime projections were discovered in the vicinity of bus stations, such as Ukwamani and May Fair, as criminals frequently target travelers traveling by bus, car, or private transportation. Poor police patrol frequency, particularly during late hours, was cited as the reason for the crime prediction in the “Soko la Zamani” market area. Furthermore, it was predicted that crime would be more common near streets like Bondeni Street, Kwa Doctor Mambo Street, and the vicinity of Masjid Watsa because these areas are primarily made up of large impoverished communities living in densely populated squatter and unstructured settlements that make it easier for criminals to commit crimes. For instance, most homes have broken windows, roofs, and doors that let burglars pass through.

CONCLUSION

Locations of crimes and predictions were traced on the

research area, which included hotspots like the Lugalo Hostel, businesses, bus stations, the road zone, and some locations along Kawe Road. and the vicinity of Soko la Zamani Market, Ukwamani Bus Station, Masjid Watsa Kwa Doctor Mambo Red Cross, Furthermore, it became evident that some places will experience high crime rates throughout time, while others will experience low crime rates as time goes on. So far The study experienced some shortcomings and different conditions that could not be swayed by the researcher. Like Delays in issuing the approval permits from the Council (Kinondoni district) all led to further delays in the commencement of data collection process. The problem was solved by compensating wasted time during field work, whereby the data collection process during field work was done on time. Unwillingness of respondents especially project administrators during data collection was highly experienced though The problem was solved by ensuring the confidentiality of the information to the respondents. Also, Delays and bureaucracy of key respondents was a challenge in implementing the study due to busy schedules of the officials during the time of data collection process. The problem was solved by keeping the conversation with respondent shortly and focused on key issues to compensate the wasted time.

From the study researcher recommends: there is a need for the government to recruit new intake of polices and adequately trained as well as building of new police stations and their residence in areas more prone to crimes occurrence in line with population growth, there should be provision of employment to the youth in formal or informal sector so as they can sustain their basic needs this will reduce the rate of crime occurrence in various spots hence the problem of unemployment will be resolved as a motive towards crime occurrence. iii. Furthermore, there is a need for police department to develop and apply software in detecting areas where there is high risk of crime occurrence as well as ensuring that there is improving training to police officers in line with advancement in science and technology. Furthermore, there is a need to provide civic education to the community so as citizen to follow placed laws and by laws without coercion. Furthermore, there is a need to involve community in security planning and in crime resolution as well as investigation. Moreover, provision of equipment's such as car, motorcycle and other modern investigative tools for the police officers is needed. And lastly, the government should ensure proper and normal distribution of police stations and police officers in all areas with the introduction of mobile stations. Hence, Further Research can be developed based on the presented findings since the study only focus on the two types of crimes robbery and burglary while there are more numbers of different crimes such as murder, rape, theft, child abuse, assault, domestic abuse, cybercrime and so more. Also, it is more important for other studies to base on the trend of crime occurrence of which the study was unable to identify due to lack of sufficient data.

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