Dirençlilik Dergisi
7(1), 2023, (1-9)
ISSN: 2602-4667
DOI: 10.32569/resilience.1164047

Resilience Journal
7(1), 2023, (1-9)
ISSN: 2602-4667

-Araştırma Makalesi-

A Geographical Analysis of Emergency Incidents in Lagos State, Nigeria from 2010 to 2019

Adebola DARAMOLA[1], Oladimeji BELLO[1]

Abstract

Emergency management is a complex system that involves an intergovernmental, multi-phased effort. A lot of emergencies are largely unreported in developing nations due to perceived inadequacy of government infrastructure to address these challenges. More so, the population of Lagos is increasing significantly, and the rate of urbanization is reputed to be one of the fastest in the world. The study aimed at geographically analyzing reported emergency cases in Lagos State from 2010 to 2019. Specifically, it mapped the distribution of reported emergency incidents in Lagos state from 2010-2019; assessed the relationship between population, distribution of health centers, and the distribution of reported emergency incidents in the state during the study period. Secondary data from Lagos State Emergency Agency (LASEMA), Lagos state government, and GRID3 were used for the study. From these, data on reported emergency cases, population and distribution of health facilities were acquired respectively. The total number of reported emergency cases was 4,586 with a concentration around Ikeja LGA, the lowest from Epe and Badagry local government areas. A correlation of 0.056 between reported emergency cases and the population showed a weak or non-existent relationship. A correlation of 0.439 between reported emergency incidents and the number of available health care facilities however showed a strong relationship. Vigorous enlightenment campaign by LASEMA and other supporting agencies on the emergency reporting number 767/112 and improvement in emergency service delivery were recommended along with further studies to determine the awareness of residents about emergency reporting systems available to them in the state.

Keywords: Emergency, Population, Health centers.

1. Introduction

Globally, there has been significant increase in the number of man-made disasters in industrialised countries, largely due to a growth in fires and explosions, with only part of the increase due to new technologies such as chemicals and nuclear power (Coleman, 2006). Even in less industrialized countries, the rapid rate of urbanization is leading to higher vulnerability and exposure to both man-made and especially natural disasters. Indeed some of the most deadly climate-related disasters that have occurred recently include the great floods in Thailand in 2011, Hurricane Sandy in the United States (US) in 2012, and Typhoon Haiyan in the Philippines in 2013. January 2022 saw a volcanic eruption in the little island of Tonga, sending shock waves across the pacific with storm warnings issued as far as Japan, and the coast of the United States. It is hydrometeorological (floods, storms, heat waves) and climatological disasters (droughts, wildfires) rather than geophysical ones (earthquakes, volcanic eruptions) that are on the rise (Thomas and Lopez, 2015).

[1] Department of Geography, University of Lagos, Akoka, Lagos, Nigeria
*İlgili yazar / Corresponding author: adedaramola@unilag.edu.ng
Gönderim Tarihi / Received Date: 18.08.2023
Kabul Tarihi / Accepted Date: 06.06.2023

Bu makaleye atıf yapmak için- To cite this article
Daramola, A. O., Bello, O., (2023). A Geographical Analysis of Emergency Incidents in Lagos State, Nigeria from 2010 to 2019. Resilience, 1-9.

The significant number of wild fires rising from the heat waves across Europe were reported in July 2022 with record temperatures experienced in some parts. Despite this, there has been a marked reduction in the severity of accidents as measured by the average number of fatalities, the overall number of deaths due to disasters has not changed (Coleman, 2006). The recorded success in controlling the number of fatalities in these events is hinged on developments in disaster management, especially in developed nations where early warning systems are largely in place.

Nigeria continues to experience different types of natural and man-made hazards. Prevalent natural hazards in Nigeria include among others, flooding and droughts (Oladipo 1993; Etuonovbe 2011; Ibem 2011). Man-made hazards on the other hand peculiar to Nigeria include, but are not limited to, terrorism, pipeline explosions, road, and air transportation accidents, internal crises, and structural fires (Ogundiya and Amzat 2008; NEMA, 2010; Ibem 2011). The concern of the government has been in developing the personnel and infrastructure needed to effectively manage emergency (Orunoye *et al.,* 2021). Efforts have gone into strengthening the capacity of the National Emergency Management Agency (NEMA) and equipping it to manage national emergency situations. Therefore, it is imperative that agencies like National Emergency Management Agency (NEMA), the State Emergency Management Agencies (SEMAs) and Local Emergency Management Agencies (LEMAs), charged with the primary objective to coordinate other relevant stake-holders, wake up to their responsibility. Olaoye, (2004) noted that coordination involves attainment of organizational goals by galvanizing the organization's physical and human resources.

In Lagos state, the Lagos State Emergency Management Agency (LASEMA) is in charge of emergency coordination, working with several other agencies to achieve smooth operations when required. To facilitate this, the Command and Control center was established where residents can dial in with 112/767 and be patched through to the relevant agency in charge of such cases including the Nigerian Police Force, Lagos state traffic management agency, Fire Service, LASAMBUS, etc. Given the nature of urbanization in Lagos state and the prevailing socio-economic realities, this study geographically analyses reported emergency cases in the state from 2010 to 2019.

A lot of emergencies are largely unreported in developing nations due to the perception that government infrastructure to address these challenges are inadequate. Indeed Daramola and Ibrahim (2021) noted this with regards to fire incidents in some residential neighbourhoods where residents resorted to self-help while waiting for a long period of time before the arrival of fire trucks. Popoola *et al.,* (2016) also noted that weak documentation of disasters has resulted in poor monitoring as regards such disasters. It is therefore imperative to examine available data, explore the distribution over the local government areas, and identify areas that require interventions.

The population of Lagos is increasing significantly, and the rate of urbanization is reputed to be one of the fastest in the world. Like many cities in the developing world, Lagos is facing an increased risk of disasters, and the potential of economic and human losses from hazards is being exacerbated by the rate of unplanned urban expansion and low quality of urban management. A disaster management system that is dynamic and can cope with the pace of urbanization is vital. Unfortunately, that is not the current case with the state as subsequent attempts have only been able to react to incidents and not project to prevent such cases. More so, the level of infrastructural development via roads, electricity, etc is far below the needs of the growing population. The study thus evaluates the relationship between reported incidents, population, and the distribution of health centers in the 20 local government areas of the state.

2. Method

2.1. Data collection tools: data for the research was acquired from three main sources:

a. Lagos State Emergency Management Agency (LASEMA): data on the number of reported emergency incidents were acquired from LASEMA, the coordinating body for such issues in the state. This data covered the different types of incidents across all the local government areas of the state from 2010 to 2019.
b. Lagos State Government Abstract of Local Government Statistics**:** the population figures used for the study were gleaned from the Lagos state abstract of local government statistics. This was based on the census figures of 2006 projected to 2016 using a growth rate of 3.2.
c. Geo-referenced Infrastructure and Demographic Data for Development (GRID 3**):** data on the number and distribution of health centers across the twenty local government areas was acquired from the GRID3 portal. This portal provides the most up-to-date and robust data on infrastructure across different sectors. (https://grid3.gov.ng/dataset/lagos-health-care-facilities-primary-secondary-and-tertiary/resources)

2.2. Procedure

Data on reported emergency incidents acquired from LASEMA were summarized across the twenty (20) local government areas of Lagos state. These were imported into ArcGIS and building on the base data, maps of the distribution of the total number of incidents across the twenty local government areas were created. The data was also charted to observe it's trend. Classes of reported incidents, population, and health facilities were obtained using Jenks natural breaks. Data on reported incidents was correlated with the population and the number of health care facilities in each area to determine their relationship. Also, the map of reported incidents was overlaid with the population and the number of health care facilities in each area

3. Findings

The total number of reported emergency cases from 2010 to 2019 across the local government areas were summarized as presented in Figure 1. About 4,586 cases were recorded by the Lagos State Emergency Management Agency (LASEMA) over the period.

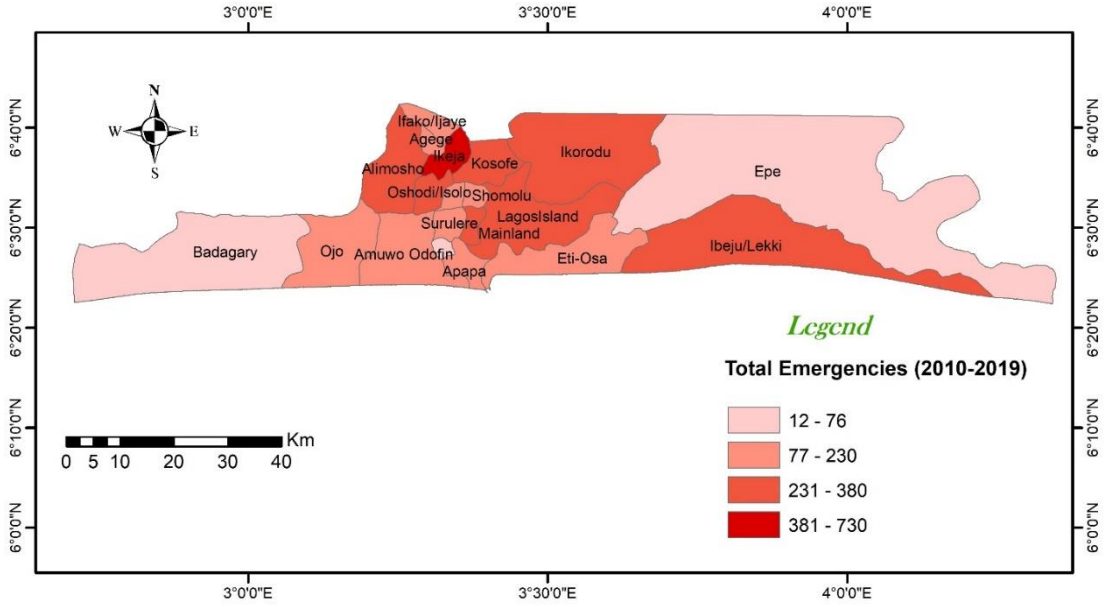

Figure 1: Total reported emergency cases in Lagos State (2010-2019).

There was a concentration of cases around Ikeja LGA which had the highest number of cases being, the capital of the state and also the location of the LASEMA command center. The outlier is Ibeju-lekki LGA across the Lagos lagoon. Other LGAs like Alimosho, Kosofe, and Lagos Island turned in high numbers too. It was noticed that the lowest reported cases were from Epe and Badagry which were literally the farthest LGAs from the center of the state.
The proportion of cases from each LGA was also investigated and shows Ikeja LGA with the largest chunk of about 16% of all the cases (Figure 2.)

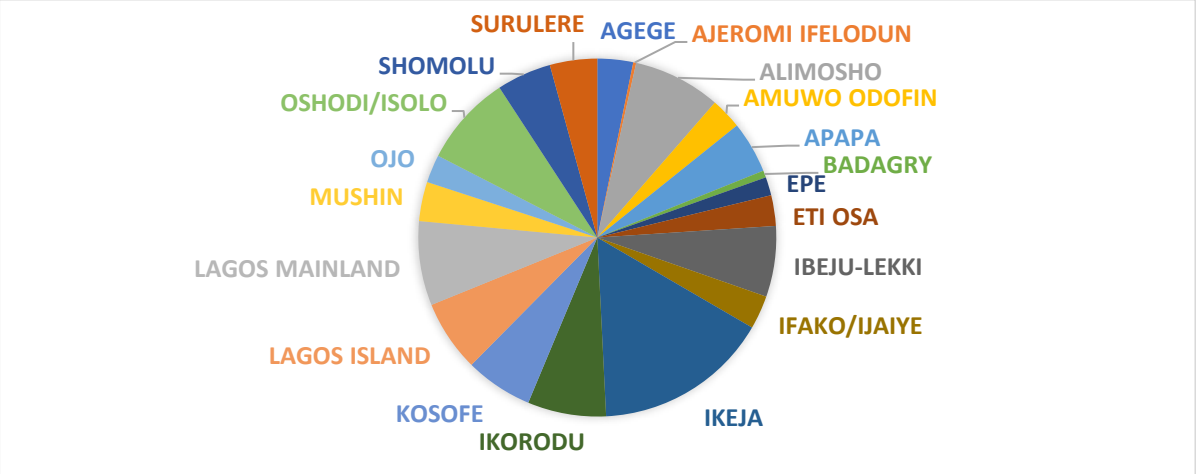

Figure. 2. Proportion of Reported Emergency Incidents across LGAs in Lagos State (2010-2019)

Oshodi/Isolo LGA has the second highest cases, about 9% followed by Alimosho LGA (8%). The lowest cases were recorded at Ajeromi/Ifelodun (0.26%) and Badagry (0.63%).

Annual mean values of cases were established across the local government areas of the state (Figure 3). Ikeja LGA had the highest with an average of 73 reported incidents per year, this was followed by Oshodi/Isolo with 38 and Alimosho with 36.

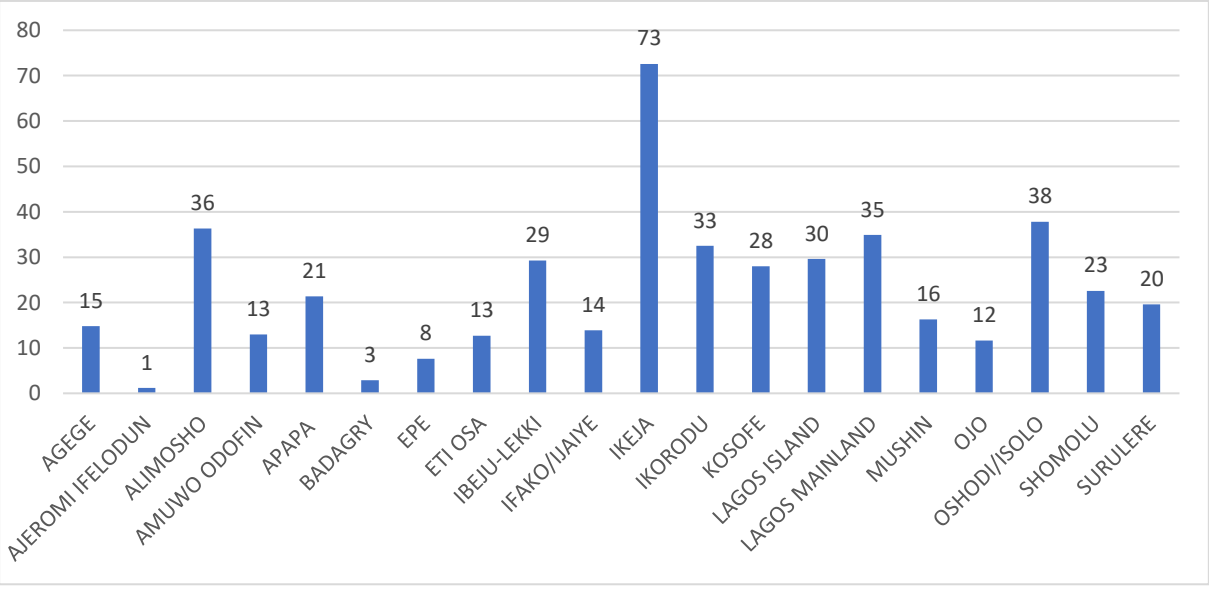

Figure 3. The annual mean number of reported emergency cases in Lagos state (2010-2019)

The trend of cases from 2010 to 2019 is shown in Figure 4, where a steady rise in the number of cases was observed. It peaked in 2018 with cases rising over 1,600 to dip a bit in 2019. It should however be noted that the data for 2019 terminated in September 2019. This means there would have been more cases to go by.

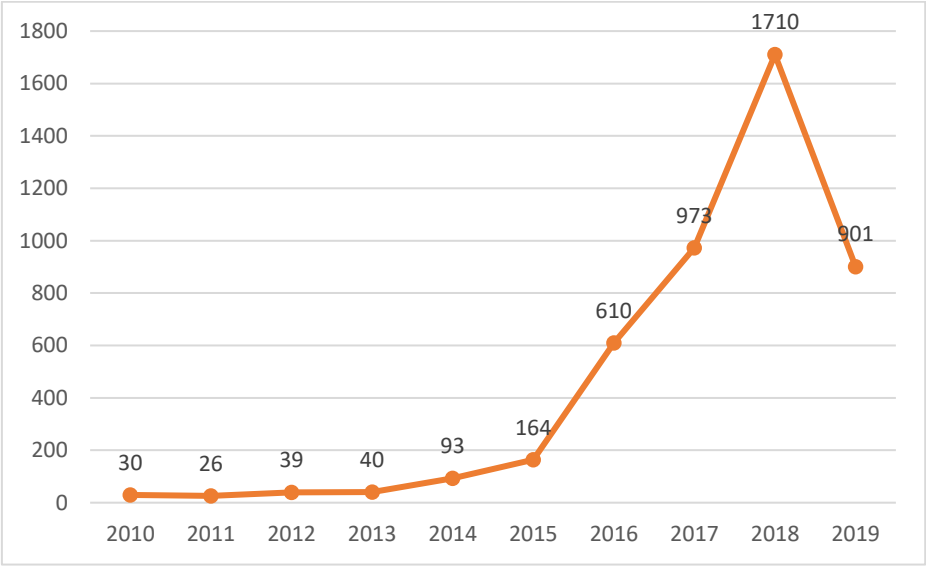

Figure 4. The trend of the total number of reported emergency incidents in Lagos state from 2010 to 2019

The relationship between the reported emergency incidents and the population of each local government area. An overlay of population data on the total reported cases showed that Ikeja with the highest number of cases had one of the lowest population figures (Figure 5). This was the case for Ibeju-Lekki local government area too. However, high population figures were observed in Alimosho LGA which had the third highest number of cases while low population figures were reported for low-case LGAs like Epe and Badagry.

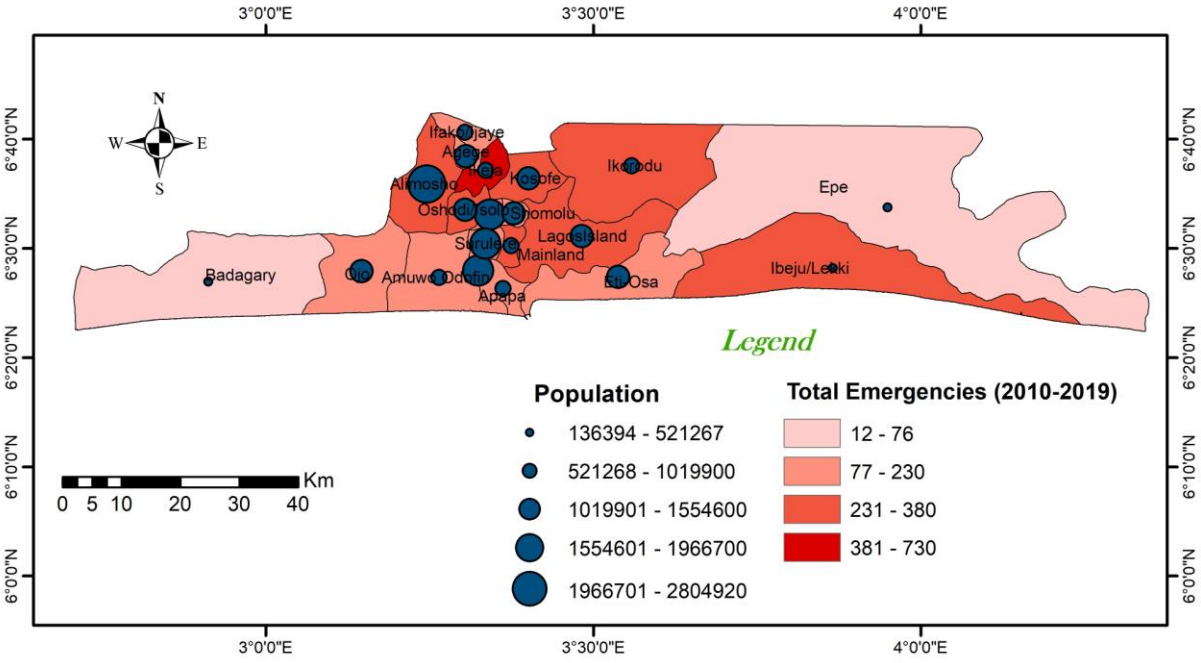

Figure. 5. Overlay of population on total reported emergency incidents in Lagos State (2010-2019)

A correlation analysis of the relationship between the population and the total reported incidents in each of the local government areas was performed. This turned out a result of 0.056 indicating a very weak or non-existent relationship between the two variables.

Table 1: Correlation of population and total reported emergency incidents in Lagos State (2010-2019)

			Emergencies	Population
Spearman's rho	Emergencies	Correlation Coefficient	1.000	.056
		Sig. (2-tailed)	.	.816
		N	20	20
	Population	Correlation Coefficient	.056	1.000
		Sig. (2-tailed)	.816	.
		N	20	20

The relationship between the reported emergency incidents and the distribution of health care facilities in each local government area of Lagos state was assessed. The number of health care facilities was overlaid on the distribution of reported emergency incidents (Figure 6).

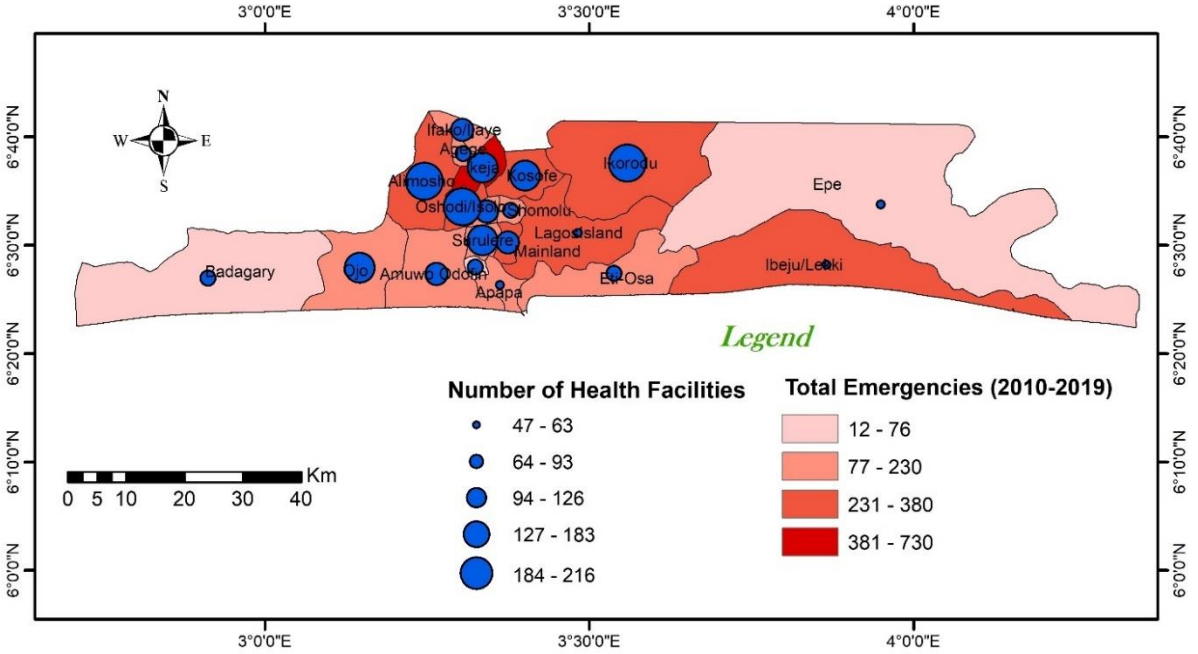

Figure. 6. Overlay of number of health facilities on total reported emergency incidents in Lagos State (2010-2019)

A total of 2,387 health care facilities were recorded in Lagos state, out of which Alimosho LGA had the highest proportion with about 216 facilities. Incidentally, this is the LGA with the highest population in Lagos state. This was followed by Oshodi/Isolo LGA with 206 and Ikorodu LGA with 191. Ikeja LGA which had the highest number of reported cases had only 166 health care facilities. A correlation analysis of the population and the number of health facilities in the LGA showed a moderately strong relationship between them at 0.491 (Table .2)

Table 2. Correlation of Population and Number of health facilities in Lagos State

			Population	No of Health Facilities
Spearman's rho	Population	Correlation Coefficient	1.000	.491*
		Sig. (2-tailed)	.	.028
		N	20	20
	No of Health Facilities	Correlation Coefficient	.491*	1.000
		Sig. (2-tailed)	.028	.
		N	20	20
*. Correlation is significant at the 0.05 level (2-tailed).				

A correlation analysis of the number of reported emergency incidents and the number of available health care facilities also showed a moderate relationship at 0.439.

Table 3. Correlation of Number of health facilities in Lagos State and number of reported emergency incidents (2010-2019)

			Emergencies	No of Health Facilities
Spearman's rho	Emergencies	Correlation Coefficient	1.000	.439
		Sig. (2-tailed)	.	.053
		N	20	20
	No of Health Facilities	Correlation Coefficient	.439	1.000
		Sig. (2-tailed)	.053	.
		N	20	20

4. Discussion

The Lagos state emergency agency (LASEMA) was established as the coordinating body for all emergency incidents in the state. This implies that other agencies such as the Fire service, Police, and Health services would be able to work with improved synergy. The steady rise in the number of reported cases from 30 in 2010 to over 1,700 in 2018 is reflective of the eventual acceptance of the agency. The agency's headquarters is in Ikeja LGA hence its activities resonate with the residents of that area, which might explain the highest number of reported cases coming from there and the lowest from Badagry LGA.

The weak correlation between number of reported incidents and population indicates that a large population does not necessarily translate to high number of emergencies nor the reporting of the few. In fact, Ikeja LGA had the 14th largest population yet with the highest number of reported incidents.

A moderate relationship was established between population and health care facilities revealing that some LGAs like Alimosho which has the highest population also had the highest number of facilities. This is however not the case entirely which means further investigation is required to establish population as a significant pull factor for health care facilities. The moderate relationship between number of health facilities and reported emergency incidents also should be accepted with caution even though the 3 LGAs, Alimosho, Oshodi and Ikorodu with the highest number of facilites also had high figures of reported incidents. The outlier however was Ibeju-Lekki LGA which had limited health facilities but with a high number of incidents.

5. Conclusion and Recommendations

The steady rise of reported emergency incidents in Lagos state is reflective of both development in reporting systems and an apparent increase in emergency incidents. Seeing the concentration of incidents is around the central area of the state, there is a need to further evaluate with independent agencies in local government areas with limited cases the accuracy of data transmitted to LASEMA. Even though health facilities and reported cases across LGAs showed a strong relationship, there is also a need to investigate the perception, attitude, and behavior of residents on emergency reporting.

The following recommendations were identified from this study:

1. Further study to determine the awareness of residents about emergency reporting systems available to them in the state.
2. Vigorous enlightenment campaign by LASEMA and other supporting agencies on the emergency reporting number 767/112.
3. Improvement in emergency service delivery across all LGAs to give residents a sense of response to reported cases rather than trying to address the cases unprofessionally.
4. Improved coordination between LASEMA and health care facilities for emergency response especially as reported cases are proportional to the available number of facilities.

References

Coleman, L. (2006) Frequency of man-made disasters in the 20th century. Journal of Contingencies and Crisis Management. 14(1), 3-11.

Daramola, A.O., and Ibrahim, L. (2021). Analysis of fire safety measures in residential buildings in Yaba LCDA, Lagos State, Nigeria. Journal of Disaster and Risk, 4(2), 135-144 DOI: 10.35341/afet.949030

Etounovbe, A. K. (2011). “The Devastating Effect of Flooding in Nigeria.” <http://www.fig.net/pub/fig2011/papers/ts06j/ts06j_etuonovbe_5002.pdf

Ibem, E. O. (2011). “Challenges of Disaster Vulnerability Reduction in Lagos Megacity Area, Nigeria.” Disaster Prevention and Management. 20 (1), 27-40.

National Emergency Management Agency (NEMA). (2010). “National Disaster Management Framework (NDMF).” http://www.preventionweb.net/files/21708_nigherianational disaster managementf.pdf>.

Ogundiya, S. and Amzat, J. (2008). “Nigeria and the Threat of Terrorism: Myth of Reality.” Journal of Sustainable Development in Africa. 10 (2), 1-25.

Oladipo, E.O. (1993). “Comprehensive Approach to Drought and Desertification in Northern Nigeria.” Natural Hazards. 8 (3), 235-261.

Olaoye, E. O. (2004). Public Management in Nigeria. 2nd edition edn: Adeyemo Publishing House: Akure.

Orunoye, E.D., Dimas, A., and Ahmed, Y.M. (2021) Challenges of emergency management in Nigeria: A case study of Federal Capital Territory (FCT) (FEMA). International Journal of World Policy and Development Studies. 7(3), 35-44. https://doi.org/10.32 861/ijwpds.73.35.44

Popoola, A.A., Adekalu, O.B., Audu, A.A., Adeleye, B.M., and Jiyah, F. (2016) Analysis of causes and characteristics of market fires in Lagos state, Nigeria. International Journal of Agriculture and Rural Development, 19(1), 2407-2421.

Thomas V., and Lopez, R. (2015) Global increase in climate-related disasters. ADB Economics Working Paper Series, 466, Pp 44.