

Effects Of 2019 Flood And Willingness Of Residents To Relocate In Parts Of Obio/Akpor Local Government Area, Rivers State, Nigeria

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Abstract

Throughout history, flood disasters have occurred, but recently, there is increase in their occurrence and intensity. At the moment, out of the two million people representing one-third of the world's population who have been subjected to the effect of natural disasters in the last decade, flood and drought accounts for 86% of all such catastrophes. The study set out to examine the effects of the 2019 flood incidence on residence of Obio/Akpor Local Government Area (LGA), Rivers state. The study leans on the mixed research paradigm as it combines both quantitative and qualitative approaches. Owing to the fact that data will be collected as one-time, the study adopted a cross-sectional survey research design. Data were collected from both primary and secondary sources. Primary data were gotten through the use of pre-coded questionnaire administered face-to-face to 389 respondents who were heads of households. Secondary data were sourced from documented information on flooding from government agencies in the area. Data analysis was achieved using univariate statistics such as percentages, measures of central tendency (mean, median and mode), and measures of dispersion (range, standard deviation and variance). To ascertain if there is any statistically significant relationship between our residents' personal characteristics (independent variables) such as sex, marital status, income, length of stay and age and the desire to relocate (dependent variable), the Multiple Classification Analysis (MCA) was used. The result of analysis showed that the combined explanation provided by all the factors (independent variable) to desire to relocate (dependent variable) was $R^2 = 4.059\%$. On factor by factor basis, sex of respondents (0.472063) was identified as most important factor that induces residents desire to relocate from flood prone areas. The monetary cost of the 2019 flood in the study area was arrived at the sum of two billion, five hundred and nine million, seven hundred and twenty nine thousand Naira (₦2,509,729,000). With the perennial nature of flooding in the study area and its attendant negative effects on the socio-economic status of residents, it is recommended that deliberate and conscious attempt by government and cooperate agencies is needed to stem the rising trend of flooding in the study area.

Keywords: flood impacts, socio-economic impact; wellbeing; willingness to relocate; flood prone area; forced Migration.

1. Introduction

Throughout history, natural disasters have occurred, but recently, there is increase in their occurrence and intensity (Obinna et.al. (2018). According to Balogun (2012), more than two million people representing one-third of the world's population have been subjected to the effect of natural disasters in the last decade, with flood and drought accounting for 86% of all such catastrophes. Although the courses of flooding are many, Ladan (1998) attributes the occurrence of flooding to the actions and inactions of individual developers, communities and nations. Flooding is simply "water where such water is not wanted". Ikiriko and Imegi (2014) see flooding as an event that result when an outrageous volume of water has overflowed from a source onto an area that was previously dry. Flood is one of the most frequent and widespread of all environmental hazards.

Flood impacts negatively to the socio-economic wellbeing of its victims. It also constitute one of the greatest natural risks to sustainable development; it reduces the asset base of households, communities and societies through the destruction of standing crops, dwellings, infrastructure, machinery buildings, and loss of life (Ejizu, Eri, Oyedirim & Malizu, 2014).

Obio/Akpor is one of the Local Governments Areas (LGA) in Rivers State that is prone to flooding. Due to the low nature of settlements in Obio/Akpor LGA the area is prone to urban flooding that is usually triggered by heavy rainfall. No wonder the phrase “You need a canoe in your streets” is very common in some settlements in the study area. The implication is that some streets are not accessible during flood months (July-October), some inhabitants even abandon their residential area; health facilities and educational facilities are not accessible and means of livelihood are disrupted.

Inspite of the flood prediction alert by Nigerian Meteorological Agency, residents in the study area have continued to suffer from the devastating effects of flood. The sad reality is that flooding has become an inevitable phenomenon in the study area that residents must learn to live with. Though the incidence of flooding is almost an annual event, the 2019 flooding was chosen for this study due to the need to quantitatively determine the actual impact on the residents of the study area.

Our surmise is that if a flood event is isolated, it makes the mechanism of its occurrence and quantification easily understood, while measures aimed at ameliorating flood impacts can be advanced before, during and after flood events.

In the absence of coordinated response to flooding, reactions to flood incidence either at the central or state level has been so much reactive in the form of provision of relief materials to victims in some cases. Again, is the fact that little is known on while residents of flood area will usually remain without a relocation plan. The concern here is why are flood victims in the area adamant of relocating to non-flood safe areas? Does the personal characteristics of one affects ones tendency to relocate from flood areas?

This is the crux of the present study is to objectively quantify the monetary cost of the 2019 flood with a view to highlighting the factors that influence residents’ choice of relocating from flood areas in the study area.

2. Study Area

Obio/Akpor is one of the 23 LGAs in Rivers State, Nigeria. It situates on Latitudes $4^{\circ}45'N$ and $4^{\circ}60'N$ and Longitudes $6^{\circ}50'E$ and $8^{\circ}00'E$ Obio/Akpor lies about 66km from the Atlantic Ocean (Wokocha , 2015) (figures 1). The location attribute of the study area as a lowland area predisposes it to constant flooding with attendant environmental and health consequences on the residents of the area. Geologically, Obio/Akpor LGA is made up of basically alluvial sedimentary basin and basement complex. Due to high rainfall, the soil in the area is usually sandy or sandy loamy. It is always leached, underlain by a layer of impervious pan (Eludoyin, Wokocha and Ayolagha, 2011).

There are basically three types of soil in the study area namely: (1) fluvial marine and marine sediments. (2) alluvial soils of the mangrove swamps and (3) sandy loams and fresh water brown loams (Ayo *et al*, 2017). According to Alamiokuma and Ofuyah

(2017), Obio/Akpor has a very thick vegetation cover which in a way enhances loss of water by evaporation, especially through the stomata. It is generally a low land area. Egwuogu et al (2016) describe the study area as having an average elevation between 20 metres and 30 metres above sea level.

. The climate of Obio/Akpor is under the influence of both the South-West and North-East winds. The South-West wind brings wetness to the study area. It starts from the month of February to November which we can term the region's rainy season. The North-East trade wind brings about dry season; it passes through Saharan desert from the month of November to February (Ayo et al, 2017). The study area has nine months of rainy season and three months of dry season. It has an average of 2500mm and 330 days of rain fall (Mamman, Oyeibanji and Peters, 2000 and Ayo et al, 2017).

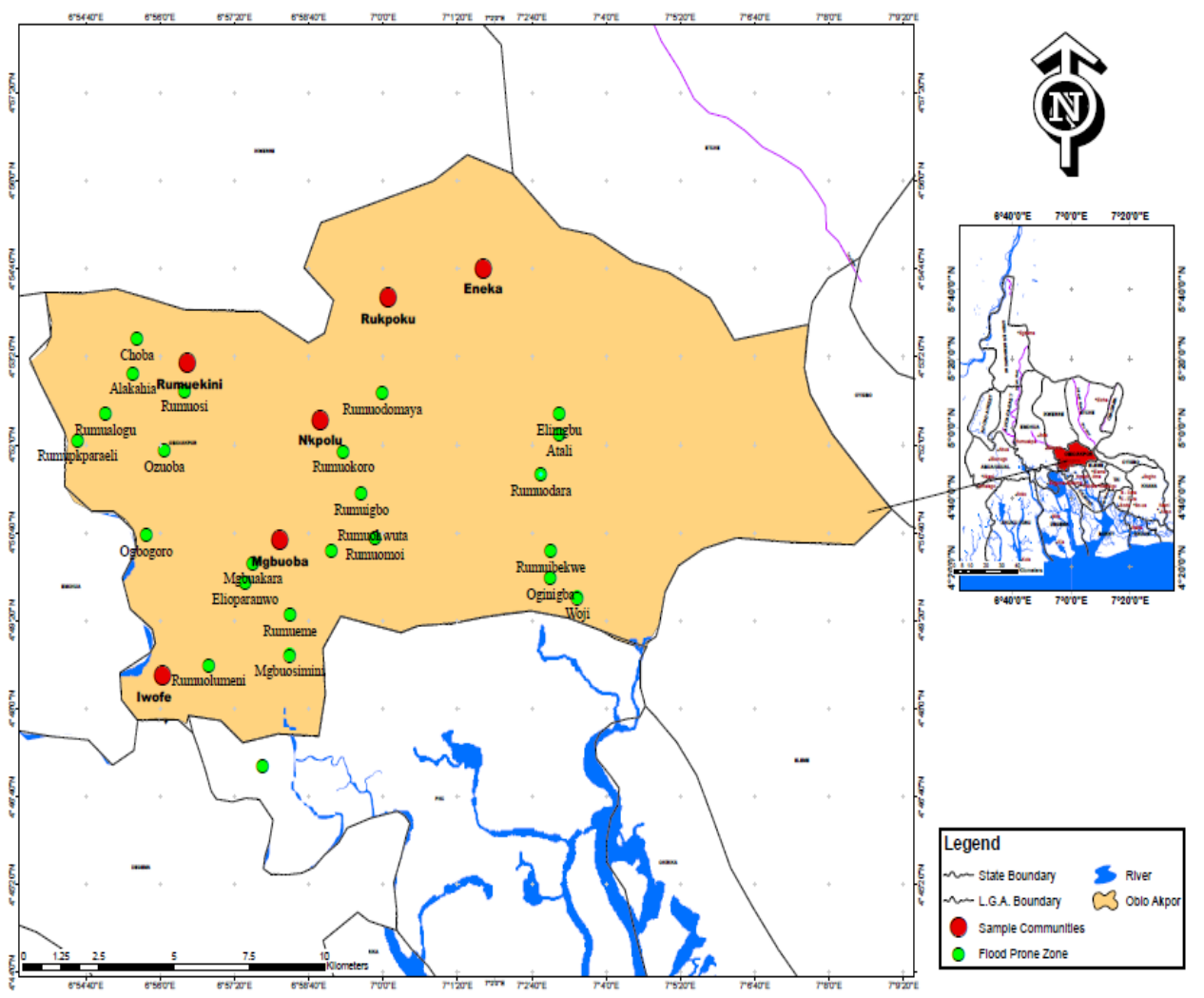


Fig 1: Rivers State showing Obio/Akpor Local Government Area and Flood Prone Settlements

Source: Egwuogu et al, (2016) ,GoogleEarth, (2019)

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3. Methods and materials

The study leans on the mixed research paradigm as it combines both quantitative and qualitative approaches. The quantitative aspects seeks to objectively determine the actual cost of the 2019 flood on residents of the study area while the qualitative aspect of the study sought to subjectively examine the impact of 2019 flooding and willingness of residents in flood prone area in Obio/Akpor LGA to relocate to safe areas.

Owing to the fact that data will be collected as one-time, the study will adopt a cross-sectional survey research design (Cook and Campbell, 1979). Data were collected from both primary and secondary sources. Primary data were gotten from via the use of pre-coded questionnaire administered face-to-face to 389 respondents who were heads of households. Secondary data were sourced from documented information on flooding from government agencies in the area.

The target population for this study consists of all households in the twenty nine (29) flood prone communities identified by Egwuogu, Okeke, Emenike and Abayomi(2016) in Obio/Akpor local LGA.

Multistage sampling technique was the basis for sample selection as each community served as primary sampling unit (PSU). The sampling stages are as follow:

Stage 1: The study area is made up of 29 communities and 20% of them were selected for intensive study, yielding six (6) communities for the survey.

Stage 2: identification of number of house hold in the six selected communities that came up to 13,571 households in the six sampled communities,

The selection of respondents was done using systematic random sampling; a probability sampling method (Kish, 1965). To achieve this, one elementary unit is taken as a starting point and subsequent samples was picked at every 44th term.

The population of each community was used to determine the number of respondents from each selected community as shown in table 1

Data analysis was achieved using univariate statistics such as percentages, measures of central tendency (mean, median and mode), and measures of dispersion (range, standard deviation and variance).

To ascertain if there is any statistically significant relationship between our residents' personal characteristics (independent variables) such as sex, marital status, income, length of stay and age and the desire to relocate (dependent variable), the multiple Classification analysis (MCA), a multiple regression technique was used (Andrews, Morgan, Sonquist and Klem, 1973).

Mathematically, MCA is given as:

$$Y_{ij, \dots, n} = Y + a_i + b_j + \dots + e_{ij, \dots, n}$$

Where $y_{ij} \dots n$ = The score (on the dependent variables) of individual n who falls in category i of prediction A, category j of prediction B etc.

Y = Grand mean of the dependent variable

a_i = The “effect” of membership in the i^{th} category of prediction A

b_j = the effect of membership in the j^{th} category of prediction B

$e_{ij} \dots n$ = error term for the individual.

To appreciate the results of this study, data were presented in pictorial formats through the use of tables and graphs

4. Table 1: Determination of sample size for the study

S/No	Sampled Communities	1991 Population	**2020 Population	**Number of Households	**Number of H/H selected per community
1	Rumuekini	5,080	16,750	3,350	96
2	Rukpoku	4,689	15,461	3,092	89
3	Eneka	6,229	20,539	4,108	118
4	Nkpolu	1,660	5,474	1,095	31
5	Mgbuoba	2,308	7,610	1,522	44
6	Iwofe	613	2,021	404	11
	Total	20,579	67,855	13,571	389

Source: Rivers State Ministry of Budget & Economic Planning(2003)

** Researcher’s computation (2020)

5 Conceptual Orientation/Review of literature

5.1 The Concept of Flood

Flood is an old phenomenon; it is the overflow of water on land that is not normally covered by water. However, mere overflow of water on land that is not normally covered by water cannot be termed a significant flood unless such overflow endangers land areas used by wildlife or man for habitation, socio-economic infrastructure, agriculture, livestock maintenance, mineral exploitation and exploration facilities (Fubara, 2014). Flood is the result of excessive quantity of water from either run off or underground sources which spread beyond the banks of stream channel (Gobo & Abam, 2014). Flooding is one of the major natural disasters that have

become something of serious concern in recent decades. It is estimated that 75% of the world's population lived in settlements threatened by flood and other natural disasters (Gobo & Abam, 2014).

5.1.2 Causes of Flood

There are various causes of flooding. Kakulu and Brisibe (2014) made it clear that low lying areas are prone to inundation. Imegi *et al* (2014) grouped the causes into two, namely: natural causes and man-made causes. Man-made causes of flood include blockage of drainage or absence of drainage, burning of fossil fuels, lack of town planning, subsidence, river dumping, poor road network and construction of dams. The natural causes of flood include the greenhouse effect, climate change, river overflow, hurricane, tornadoes, monsoon rains and moon phases (Imegi *et al*, 2014)

5.1.3 Impact of Flooding

The mention of flooding gives many people the impression that the impacts are always negative. In fact, flooding has both negative and positive impacts. Some authors have discussed the negative impacts while some have discussed the positive ones.

Barinweni *et al* (2002) categorically stated that flooding causes lots of damages to property, public health and local biodiversity. Flooding is associated with rapid runoff which causes soil erosion and destruction of spawning grounds for aquatic life. When flood is intense and lasts for a very long time, it causes traffic congestion in areas with low elevated road ways, it also affects agricultural activities thereby threatening national food security. Floods can interfere with the drainage system and various land uses. Flood causes damage to urban and rural infrastructure such as public buildings and hydroelectric/thermal power stations which in turn leads to huge financial losses and chaos, thereby aggravating the existing security challenge. Ekenem *et al* (2014) made it clear that flooding can result in loss of livelihood, production and other prolonged economic impacts which can force the affected populace to migrate or be displaced.

According to Obinna *et al* (2014), flood damage can be categorized firstly as direct and indirect; secondly as tangible and intangible. Direct flood damage involves harm caused as a result of immediate physical contact of flood water with humans, property and the environment, while indirect flood damage involves loss of production of businesses as a result of the flood (Obinna *et al*, 2014). Tangible damages are those damages that can be specified in monetary terms while intangible damages are those damages that cannot be specified in monetary terms (Obinna, *et al*, 2014).

Writing on impact of flooding among residents located along the Taylor Creek in Orashi region, Rivers state, Nigeria, Obinna *et al*. (2018) observed that constant flooding of the area affects social and economic environment of people of the area as it destroys agricultural farmland as well as seeds stored for replanting; that eventually culminate into a decline in food production; loss of income for many in the affected communities.

There appears to be some positive impacts of flooding. Backinsal (1966) and Chisolm (1979) asserted that flooding can lead to development of settlement, and in most cases the settlements originate by the riverside. Robinson (1979) supports such assertion by saying that flooding has enhanced the existence and development of agricultural settlements and development of cities right from ancient times. Further remark by Robinson (1979) is that the earliest towns appear to have grown up in the great river low lands of the near and middle east and that the idea of city life spread from ancient Egypt and Mesopotamia through the Mediterranean Sea of which the flooding of associated rivers were very helpful. Faniran and Jeje (1983) hold the view that even in non-deltaic environment, observable morphological features like those found between Aboh and Samabiri in the lower Niger and those along river Amazon and its tributaries can equally occur as a result of flooding to develop settlements and support their inhabitants. . Oyebande (2014) agrees that flood is not just negative natural phenomenon that we should do our utmost to control, flood waters are very important for many ecosystems if they are well contained and managed, floods are natural phenomenon which form part of the natural regime of the river.

5.2 The Concept of Forced Migration

The International Organization for Migration (2017) defined forced migrants as any person migrating to escape persecution, conflict, repression, natural and human-made disasters, ecological degradation, or other situations that endanger their lives, freedom or livelihood. Forced migration can be termed movement of people displaced by conflicts, environmental disasters, chemical or nuclear disasters, famine or development projects. Castles(2005) includes refugees, asylum seekers, internally displaced persons, protracted refugee situations, returnees, those displaced as a result of Development, environmental issues, disasters andtrafficked people as forced migrants.

A theory of forced migration would encompass a multiplicity of factors at various scales in the region of origin, along itineraries of flight, in the region of destination as well as global level. Worthy of note is the fact that all migrations involve choices and constraints. Even those fleeing for a reason are in need of protection and have degree of knowledge about where they go and how they travel (Piguet, 2017). Forced migration is an important aspect of social change. It is inevitably related to change which is often acute and disruptive (Eastmond, 2015). Displacement or forced migration affects core issues such as livelihood, kinship, social, political and cultural factors, which gives coherence and predictability to everyday life.

Causes of forced migration can be grouped into three categories, namely:

- ❖ Conflict-induced migration which occurs when people are forced to flee their homes as a result of armed conflict.
- ❖ Development – induced migration which occurs when people are compelled to move as a result of policies and projects implemented to advance development effort.

- ❖ Disaster – induced migration which occurs when are displaced as a result of natural events such as floods, volcanoes, landslides, earthquakes; environmental change such as deforestation, desertification, land degradation, global warming; and human – made disasters such as industrial accidents, radioactivity etc (Easmond, 2015).

7. Results and Discussion

7.1: Socio-economic Characteristics of Respondents

Figure 3 shows the percentage distribution of respondents’ gender. Male accounted for 61.7% of respondents, while female accounted for 38.3%. in terms of age The modal age brackets were 31 – 40 years and 20 – 30 years, accounting for 39.9% and 38.3%, respectively. (Figure 4.)

Most respondents in the study locations were married (54.4%). Single respondents accounted for 41.8% of the distribution (Fig.5). The modal age category was “5-9 years”, accounting for 11% of the entire distribution. For the female, the modal age category was “5-9 years”, accounting for 6% of males, while for the female it was “25-29 years”, accounting for 5.5% of males. Those aged less than 15 years accounted for 26.5% of the distribution. Those of retirement age “60 years and above” accounted for 12.9%. The active working population accounted for 60.6% of the distribution.(Figure 6)

Household members who have “Completed Secondary School” accounted for 31.6% and those who have “Completed Tertiary School” accounted for 20.2%. This implies that over 50% of household members in the study locations had minimum of Secondary education (Table 2).

With respect to employment status of household members 49.7% of house hold members are under various forms of employment while 47.5% are unemployed. Furthermore, there were more unemployed females (52.1%) than males (43.6%). Those who are retired and full-time housewives accounted for 1.4% respectively. (table 3)

Table 2: Percentage Distribution of Education of Household Members

S/N	Level	Male		Female		Total	
		N	%	N	%	N	%
1	No formal education	36	5.2	35	5.2	71	5.2
2	Pre-primary education	41	5.9	56	8.3	97	7.1
3	Primary school (uncompleted)	78	11.2	60	9.0	138	10.1

4	Primary school (completed)	28	4.0	19	2.8	47	3.4
5	Secondary school (uncompleted)	84	12.1	86	12.7	170	12.4
6	Secondary school (completed)	210	30.2	224	33.1	434	31.6
7	Tertiary School (Uncompleted)	61	8.8	76	11.2	137	10.0
8	Tertiary School (Completed)	157	22.6	120	17.7	277	20.2
Total		695	100	676	100	1,371	100

(Source: Author’s Field Survey, June 2020)

Table 3: Percentage Distribution of Employment Status of Household Members

S/N	Status	Male		Female		Total	
		N	%	N	%	N	%
1	Employed	367	54.2	258	44.4	625	49.7
2	Unemployed	295	43.6	303	52.1	598	47.5
3	Retired	15	2.2	3	0.5	18	1.4
4	Full-time House Wife	0	0	17	3.0	17	1.4
Total		677	100	581	100	1,258	100

Source: Author’s Field Survey, (2020)

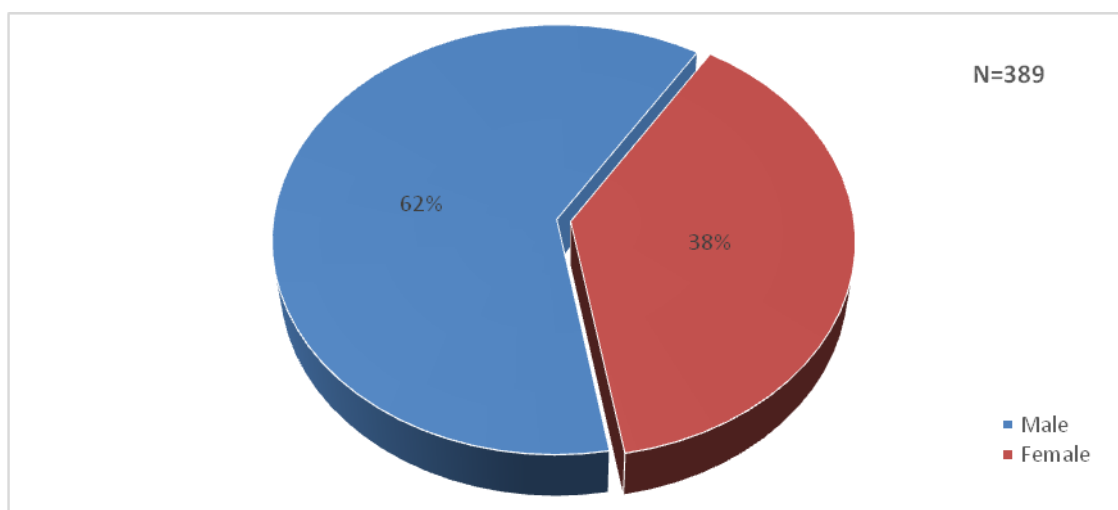


Fig.3: Percentage Distribution of Respondents' Gender

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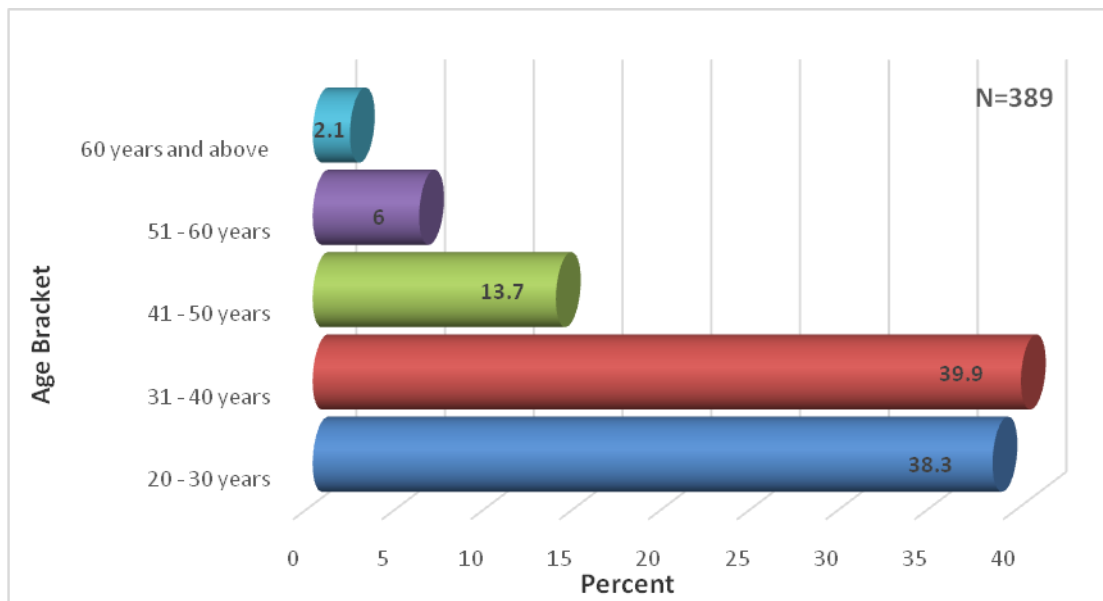


Figure 4: Percentage Distribution of Age Brackets of Respondents

Source: Author's Field Survey, (2020)

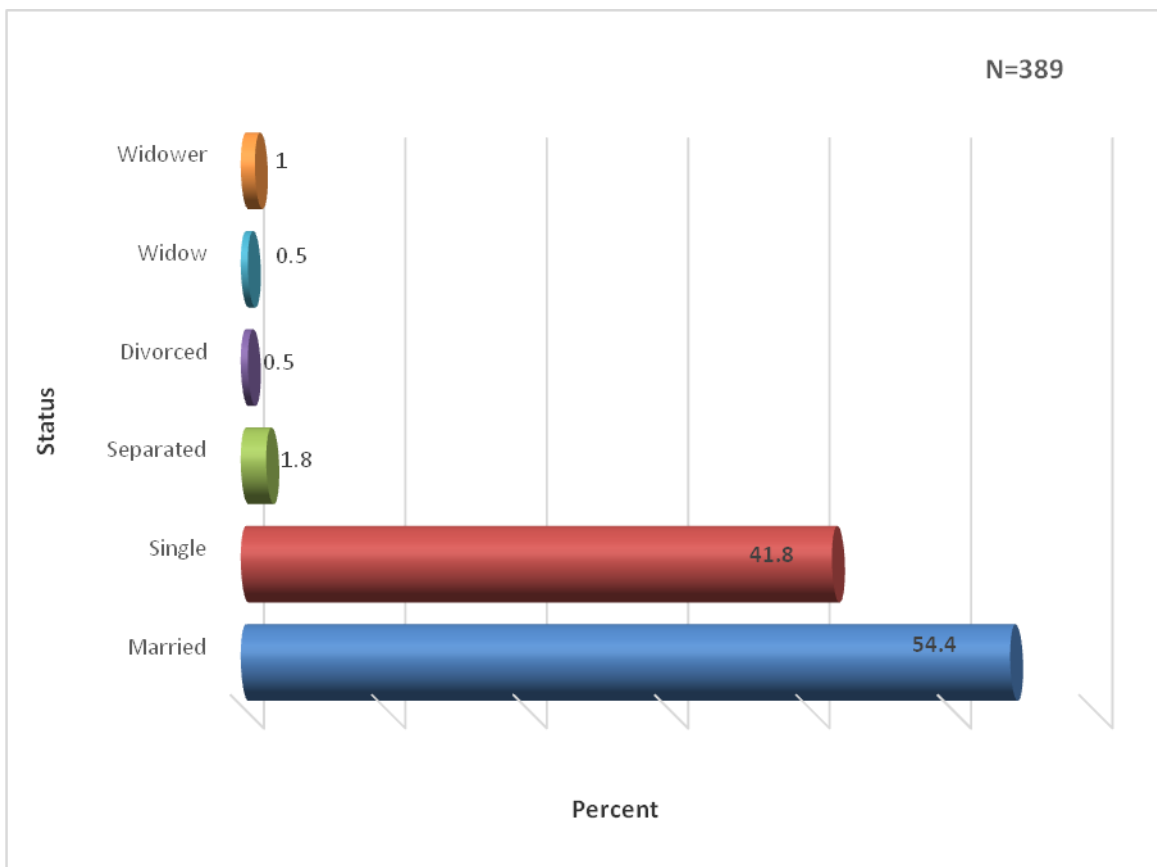


Figure 5: Percentage Distribution of Marital Status of Respondents

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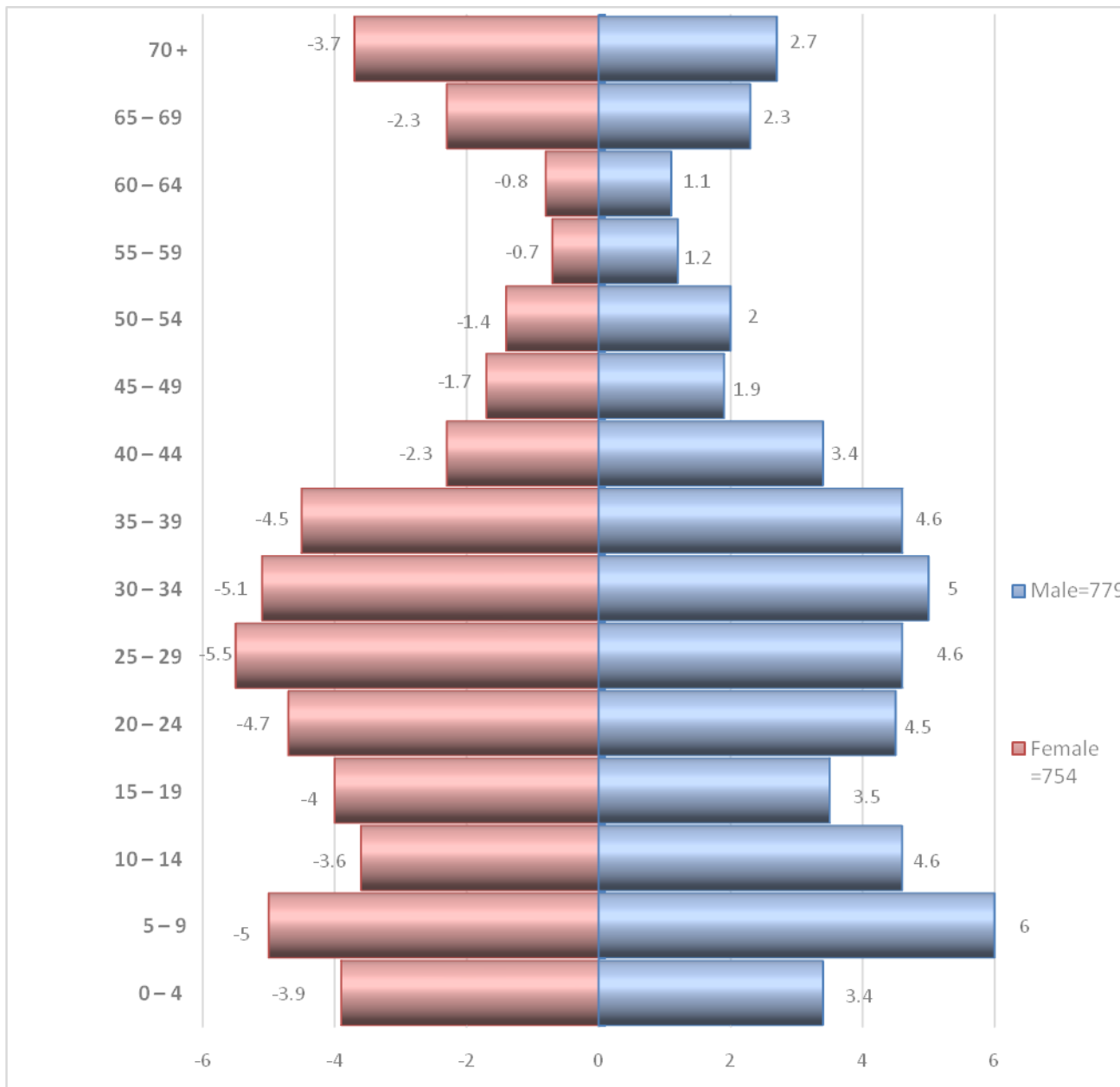


Figure 6: Percentage Distribution of Age/Sex of Respondents

Source: Author's Field Survey, (2020)

7.2: Causes of Flooding in Obio/Akpor LGA

Table 4 shows the likely causes of flooding in the study areas. Respondents were asked to state the most likely cause of flooding in their settlements. The modal cause opined by respondents was “No drainage facility”, accounting for 44.2% of the distribution. The next most likely cause was “Blockage of waterways”, accounting for 25.8%. Other likely causes of flooding stated by respondents were “rise in sea levels” and “absence of large canals”.

Table 4: Causes of Flooding

S/N	Cause	N	%
1	No drainage facility	171	44.2
2	Blockage of waterways	100	25.8
3	The area is low-lying	47	12.1
4	Excessive rainfall	59	15.2
5	Inadequate drains	8	2.1
6	Wrong channelling of water	2	0.5
Total		387	100

Source: Author’s Field Survey, (2020)

Respondents were asked if they suffered losses during flooding. The modal answer was “No” accounting for 59.1%. Those who said they suffered loss accounted for 40.9% of the distribution.

Furthermore, respondents were asked to state what kind of losses they suffered. Table 5 presents their responses. The modal response for the first, second and third mentions were, “Household Items” (47.9%), “Car Damage” (25.8%) and “Business Decline” (22.6%).

Table 5: Percentage Distribution of Type of Losses Suffered in the Settlement

S/N	Type	First Mentions		Second Mentions		Third Mentions	
		N	%	N	%	N	%
1	Household Items	70	47.9	8	12.9	1	3.2

2	Car damage	15	10.3	16	25.8	2	6.5
3	Electronics	11	7.5	8	12.9	5	16.1
4	Personal Effects	16	11.0	13	21.0	6	19.4
5	Money	15	10.3	4	6.5	1	3.2
6	Tenants relocating	0	0	4	6.5	3	9.7
7	Business decline	7	4.8	5	8.1	7	22.6
8	Building	2	1.4	1	1.6	3	9.7
9	Clothes damaged due to dampness	1	0.7	0	0	2	6.5
10	Crops	1	0.7	0	0	0	0
11	Livestock	1	0.7	0	0	0	0
12	Food Items	1	0.7	1	1.6	1	3.2
13	Agricultural loss	3	2.1	2	3.2	0	0
14	Documents/stationaries	2	1.4	0	0	0	0
15	Furniture	1	0.7	0	0	0	0
Total		146	100	62	100	31	100

Source: Author’s Field Survey, (2020)

7.3: Assistance received During Flooding Events

Respondents were asked if they received any assistance from any agency during flooding. The modal response was “Churches” and “NGOs”, representing 56% and 19.3%, respectively. Table 6 shows the distribution.

Table 6: Agency that Assisted During Flooding

S/N	Agency	N	%
1	Federal Government	5	4.6
2	State Government	10	9.2
3	Local Government	3	2.8

4	Multinational Companies	1	0.9
5	NGOs	21	19.3
6	Private Firms	8	7.3
7	Churches	61	56.0
Total		243	100

Source: Author’s Field Survey, (2020)

7.4: Monetary cost of 2019 flood Damage

Attempt was made to quantify the actual damages suffered by respondents in monetary terms in the six communities studied. The inventory of items lost during the 2019 flood in all the communities in the study area was made. Attempt was made to estimate their cost price of each using current price for each item (appendix 1). From the calculations, the cost of damages suffered by residents in the 2019 flood amounted to two billion, five hundred and nine million, seven hundred and twenty nine thousand Naira (₦2,509,729,000) during 2019 flood.

7.5: Flood Impact and Desire to Relocate

To statistically determine there is significant relationship between individual personal characteristics such as Sex of Respondents, marital status, income, age bracket and length of stay (independent variable) and desire to relocate (dependent variable), the Multiple Classification Analysis (MCA) was carried out and the results is as shown in table 7. From the table, the combined explanation provided by all the factors to desire to relocate is $R^2 = 4.059\%$. On a factor by factor basis, sex of respondents (0.472063) was identified as most important factor that induces residents desire to relocate from flood prone areas.

What can be gleaned from the result of our analysis made above is the fact that the presence of more males (65%) and married population (married 54.4%) in the study make movement by way of relocation a difficult task. Decision to move among the male gender with families is not usually made in a hurry as it involves more logistics to effect compared to the single households.

**Table 7: Predicting Desire to Relocate Using Perception of Flood Effects
 (Multiple Classification Analysis, N=389)**

Predictors	Eta	Beta

Sex of Respondents	0.371880	0.472063*
Marital Status	0.150254	0.194098
Income	0.140131	0.180070
Length of Stay	0.165482	0.159187
Age Bracket	0.114584	0.145100
Variance Explained (R^2) = 4.059%		

* Most important predictor

Source: Author's Field Survey, (2020)

8. Conclusion and Recommendations

Flooding in urban areas constitutes a major public health emergency. Rapid urbanization and pressure on land in the study area has led to extension of development even in areas that are flood prone. The matter is made worse given the uncoordinated nature of these development that further heightens the problem of flooding with attendant negative consequences. In the absence of coordinated response to flooding, reactions to flood incidence either at the central or state level has been so much reactive in the form of provision of relief materials to victims in some cases. The research found that the 2019 flood impacted on residents' sources of livelihood leading to impoverishment and relocation for some. The estimated monetary cost of the 2019 flood for communities studied was over Two Billion Naira. Lack of drainage facilities, blockage of water ways and heavy rains are the primary causes of flooding incidences in the study area.

Given the negative impacts of flooding on residents, it was observed that victims of flood are unwilling to relocate to safe areas. The reason may not be unconnected to the very high cost of land and harsh economic realities in the area. All these make relocation to non-flood areas difficult.

The study recommends both structural and non-structural methods of flood management to deal with annual flooding in the area. There should be construction of concrete drainage channels in Obio/Akpor so as to channel waters into the natural drains such as New Calabar River and the Bight of Bonny.

Further study is required to identify all buildings in core flood plains by relevant government agencies with a view to carrying out demolition exercise after property owners have been duly compensated. Strict enforcement of development control measures is also needed to ensure that buildings, once demolished are not re-erected in the flood plains. This will reduce the impact of flood incidence and usher a new lease of life for residents in the area.

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APPENDIX 1

COST OF DAMAGES SUFFERED BY RESPONDENTS IN MONETARY TERMS (ESTIMATED)

H/H No	Type of Damage	Extent of Damage	Unit Cost(₦)
1	Cracked walls	12sqm	24,000
	Painting/wall papers	12sqm	12,000

2	Cracked walls	9sqm	18,000
	Personal belongings (Clothes etc.)	5 shirts	15,000
3	Cracked walls	16sqm	32,000
	Painting/wall papers	16sqm	16,000
4	Cracked walls	32sqm	64,000
	Painting/wall papers	32sqm	32,000
5	Vehicle damage	Exhaust pipe	20,000
6	Cracked walls	24sqm	48,000
	Personal belongings (Clothes etc.)	6 dresses	24,000
	Painting/wall papers	24sqm	24,000
	Cleaning	120sqm	36,000
7	Vehicle damage	4 tyres	60,000
8	Cracked walls	24sqm	48,000
	Road Damage	1 km	400,000,000
9	Cracked walls	36sqm	72,000
	Painting/wall papers	36sqm	36,000
10	Vehicle damage	Shaft	20,000
11	Livestock	30 birds	90,000
12	Cracked walls	30sqm	60,000
	Painting/wall papers	30sqm	30,000
13	Cracked walls	42sqm	82,000
	Road Damage	1 km	400,000,000
14	Cracked walls	26sqm	52,000
	Personal belongings (Clothes etc.)	3 pairs of shoes	12,000
15	Cracked walls	42sqm	84,000
16	Cracked walls	30sqm	60,000
	Painting/wall papers	30sqm	30,000
17	Vehicle damage	2 tyre	30,000
18	Cracked walls	40sqm	80,000
19	Cracked walls	32sqm	64,000
	Painting/wall papers	32sqm	32,000
20	Cracked walls	56sqm	112,000

	Personal belongings (Clothes etc.)	3 trousers	9,000
21	Livestock	20 birds	60,000
	Road Damage	1.5 km	600,000,000
22	Cracked walls	36sqm	72,000
23	Vehicle damage	Exhaust pipe	20,000
24	Livestock	35 birds	105,000
25	Cracked walls	62sqm	124,000
26	Painting/wall papers	52sqm	104,000
27	Cracked walls	48sqm	96,000
28	Cracked walls	52sqm	104,000
	Personal belongings (Clothes etc.)	2 shirts 4 trousers	6,000 12,000
29	Painting/wall papers	82sqm	82,000
30	Cracked walls	42sqm	84,000
31	Personal belongings (Clothes etc.)	15 children clothes	30,000
	Painting/wall papers	46sqm	46,000
32	Cracked walls	102sqm	204,000
33	Cracked walls	82sqm	164,000
34	Vehicle damage	½ engine	200,000
	Road Damage	2 km	800,000
35	Cracked walls	60sqm	120,000
	Painting/wall papers	60sqm	60,000
36	Livestock	52 birds	156,000
	Painting/wall papers	46sqm	46,000
38	Personal belongings (Clothes etc.)	2 shoes 5 dresses	6,000 20,000
	Livestock	18 birds	54,000
39	Painting/wall papers	56sqm	56,000
	Personal belongings (Clothes etc.)	6 dresses	18,000
40	Painting/wall papers	78sqm	78,000
	Vehicle damage	Exhaust pipe 4 tyres	20,000 60,000
41			

42	Floor tiles/floor damage	52sqm	208,000
43	Livestock	52 birds	156,000
44	Floor tiles/floor damage	68sqm	272,000
45	Personal belongings (Clothes etc.)	6 shirts	18,000
		2 trousers	6,000
		2 shoes	8,000
	Farm/Crops	Crops on 900sqm	450,000
46	Electronics	32" LG TV	70,000
	Septic tank collapse	18m ³	180,000
47	Personal belongings (Clothes etc.)	4 shirts	12,000
		6 dresses	18,000
	Floor tiles/floor damage	42sqm	168,000
48	Electronics	LG sound system	80,000
49	Electronics	Samsung sound system	80,000
50	Personal belongings (Clothes etc.)	3 shirts	9,000
		2 shoes	8,000
	Floor tiles/floor damage	32sqm	128,000
51	Electronics	43" Hisense TV	120,000
52	Cracked walls	62sqm	124,000
	Farm/Crops	Crops on 450sqm	225,000
53	Vehicle damage	4 tyre	60,000
54	Electronics	32" LG TV	70,000
	Floor tiles/floor damage	62sqm	248,000
55	Electronics	32" LG TV	70,000
		LG sound system	80,000
56	Electronics	HP laptop	120,000
57	Electronics	Samsung TV 32"	70,000
	Floor tiles/floor damage	46sqm	184,000
58	Electronics	32" TV	70,000
59	Personal belongings (Clothes etc.)	2 shoes	8,000
		3 dresses	9,000
60	Electronics	43" TV	120,000

61	Electronics	32" TV	70,000
		Sound system	80,000
62	Floor tiles/floor damage	68sqm	272,000
	Septic tank collapse	36m ³	360,000
63	Electronics	43" TV	120,000
64	Floor tiles/floor damage	56sqm	124,000
65	Cracked walls	102sqm	204,000
66	Electronics	32" TV	70,000
67	Cracked walls	82sqm	164,000
	Floor tiles/floor damage	46sqm	184,000
68	Electronics	32" TV	70,000
69	Electronics	43" TV	120,000
70	Electronics	32" TV	70,000
		Sound system	80,000
72	Cracked walls	74sqm	148,000
73	Electronics	32" TV	70,000
74	Floor tiles/floor damage	68sqm	272,000
75	Cracked walls	108sqm	216,000
	Road Damage	1.8km	720,000,000
76	Electronics	Infinix8 S5 phone	60,000
79	Cracked walls	42sqm	84,000
	Farm/Crops	Crops on 450sqmOf land	225,000
80	Personal belongings (Clothes etc.)	8 children clothes	16,000
	Farm/Crops	Crops on 900sqm land	450,000
81	Cracked walls	48sqm	96,000
	Floor tiles/floor damage	26sqm	104,000
	Farm/Crops	Crops on 450sqm land	225,000
82	Personal belongings (Clothes etc.)	3 dresses	9,000
		2 shoes	8,000
83	Cracked walls	72sqm	144,000
	Farm/Crops	Crops on 900sqm land	450,000
84	Electronics	32" TV	70,000

85	Electronics	Itel P6 phone	35,000
86	Cracked walls	46sqm	92,000
	Shop and goods	2 bags of rice	36,000
		1 bag of beans	50,000
6 basins of garri		30,000	
87	Electronics	HP laptop	120,000
	Floor tiles/floor damage	42sqm	168,000
88	Cracked walls	54sqm	108,000
	Farm/Crops	Crops on 120sqm land	600,000
89	Personal belongings (Clothes etc.)	Rolex watch	6,000
		2 shirts	6,000
		1 trousers	3,000
	Floor tiles/floor damage	62sqm	248,000
	Farm/Crops	Crops 450sqm land	225,000
	Evacuation	To and Fro	40,000
90	Electronics	32" TV	70,000
91	Cracked walls	96sqm	192,000
	Farm/Crops	Crops on 900sqm land	450,000
92	Electronics	32" TV	70,000
93	Cracked walls	42sqm	84,000
	Floor tiles/floor damage	28sqm	112,000
	Furniture	Set of upholstery chairs	300,000
94	Electronics	43" TV	120,000
95	Electronics	32" TV	70,000
	Furniture	Waldrope	50,000
96	Cracked walls	64sqm	128,000
	Floor tiles/floor damage	42sqm	168,000
	Road Damage	1.2km	480,000,000
97	Cracked walls	68sqm	136,000
	Farm/Crops	Crops on 450sqm land	225,000
98	Electronics	32" TV	70,000
99	Electronics	43" TV	120,000

100	Cracked walls	96sqm	192,000
	Farm/Crops	Crops on 600sqm land	300,000
101	Electronics	32" TV	70,000
	Evacuation	To and Fro	40,000
102	Electronics	To and Fro	40,000
	Shop and goods	Biscuit & Indomie (Cartons)	10,000
103	Cracked walls	94sqm	188,000
	Floor tiles/floor damage	54sqm	216,000
104	Cracked walls	78sqm	156,000
	Floor tiles/floor damage	42sqm	164,000
105	Electronics	32" TV	70,000
106	Electronics	43" TV	120,000
	Fence	36sqm	72,000
107	Cracked walls	64sqm	128,000
	Floor tiles/floor damage	36sqm	144,000
	Evacuation	To and fro	40,000
108	Electronics	43" TV	120,000
109	Shop and goods	4 bags of rice	144,000
		1 bag of beans	50,000
		5 basins of garri	25,000
110	Cracked walls	52sqm	104,000
	Farm/Crops	Crops on 750sqm of land	360,000
111	Electronics	43" TV	120,000
112	Floor tiles/floor damage	24sqm	96,000
113	Farm/Crops	Crops on 900sqm of land	450,000
114	Electronics	32" TV	70,000
115	Floor tiles/floor damage	54sqm	216,000
116	Cracked walls	68sqm	136,000
	Shop and goods	30 shirts	90,000
		20 trousers	60,000
	Evacuation	To and fro	40,000
Cleaning	2 bedroom flat	10,000	

117	Electronics	32" TV	70,000
	Books	5 textbooks	10,000
118	Cracked walls	45sqm	90,000
	Shop and goods	2 bags of rice 1 bag of beans	72,000 50,000
119	Electronics	32" TV	70,000
120	Cracked walls	32sqm	64,000
121	Floor tiles/floor damage	34sqm	128,000
	Shop and goods	Goods worth 100,000	100,000
122	Cracked walls	36sqm	72,000
	Food stuff	½ bag of rice 1 basin of garri	18,000 5,000
123	Vehicle damage	4 tyres	60,000
124	Floor tiles/floor damage	46sqm	184,000
125	Cracked walls	62sqm	124,000
126	Floor tiles/floor damage	42sqm	168,000
127	Cracked walls	54sqm	108,000
	Shop and goods	Goods worth 80,000	80,000
128	Borehole System damage	1.5HP sumo	40,000
129	Cracked walls	42sqm	84,000
	Painting/wall papers	42sqm	42,000
	Shop and goods	Goods worth 75,000	75,000
	Evacuation	To and Fro	40,000
130	Cracked walls	46sqm	92,000
	Farm/Crops	Crops on 450sqm	225,000
131	Borehole System damage	2HP sumo	50,000
132	Vehicle damage	4 tyres	60,000
		Exhaust pipe	20,000
133	Cracked walls	46sqm	92,000
	Furniture	Waldrope	50,000
134	Cracked walls	82sqm	164,000
	Painting/wall papers	82sqm	82,000

135	Borehole System damage	1.5 HP sumo	40,000
136	Cracked walls	64sqm	108,000
	Books	8 textbooks	16,000
137	Cracked walls	62sqm	124,000
	Farm/Crops	Crops on 600sqm land	300,000
138	Cracked walls	58sqm	116,000
	Painting/wall papers	58sqm	58,000
139	Road Damage	1.2km	560,000
140	Cracked walls	54sqm	108,000
141	Electronics	32" TV	70,000
142	Cracked walls	58sqm	116,000
143	Vehicle damage	4 tyres	60,000
	Furniture	Upholstery set	250,000
144	Cracked walls	72sqm	144,000
	Farm/Crops	Crops on 900sqm land	450,000
145	Cracked walls	62sqm	124,000
	Painting/wall papers	62sqm	62,000
	Food stuff	1 bag of rice	36,000
		4 rubbers of rice	4,000
		1 basin of garri	5,000
Evacuation	To and Fro	40,000	
146	Personal belongings (Clothes etc.)	2 shirts	6,000
	Electronics	32" TV	70,000
147	Cracked walls	92sqm	184,000
	Farm/Crops	Crops on 600sqm land	300,000
148	Cracked walls	74sqm	148,000
	Electronics	32" TV	70,000
149	Borehole System damage	1HP sumo	35,000
150	Cracked walls	48sqm	96,000
	Electronics	32"TV	70,000
151	Borehole System damage	1HP sumo	35,000
152	Cracked walls	54sqm	108,000

	Painting/wall papers	54sqm	54,000
	Food stuff	2 rubbers of rice	4,000
		2 rubbers of beans	2,000
		1 basin of garri	5,000
	Furniture	Upholstery set	250,000
153	Cracked walls	62sqm	124,000
	Painting/wall papers	62sqm	62,000
	Farm/Crops	Crops on 450sqm land	225,000
154	Cracked walls	94sqm	188,000
	Painting/wall papers	94sqm	94,000
155	Vehicle damage	Crown shaft (Toyota corolla)	40,000
	Furniture	Set of upholstery chair	250,000
156	Cracked walls	82sqm	164,000
	Electronics	32" TV	70,000
157	Vehicle damage	4 tyres	60,000
	Painting/wall papers	72sqm	72,000
158	Cracked walls	86sqm	172,000
	Painting/wall papers	86sqm	86,000
	Food stuff	2 rubbers of rice	4,000
1 rubber of beans		1,000	
1 basin of garri		5,000	
159	Road Damage	1.6km	640,000,000
	Total		2,509,729,000

(Source: Author's Field Survey, June 2020)