

Presented at the FIG e-Working Week 2021,
21-25 June 2021 in Virtually in the Netherlands

SMART SURVEYORS FOR LAND AND WATER MANAGEMENT CHALLENGES IN A NEW REALITY



e WORKING WEEK 2021
20-25 JUNE

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Paper ID-11091

Assessing Social Vulnerability to Floods and Coping Strategies in Adamawa Catchment, Nigeria.

22 June, 2021; time: 08:00 – 09:30

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INTRODUCTION

- **Flooding** is a well-known seasonal problem in Adamawa catchment which usually exposes the people to different risks. More communities are becoming more vulnerable in recent times.
- **Destructive impacts of flooding**
 - Disruption of Farming activities
 - Loss of lives and properties
 - Displacement of residents
- The concept of vulnerability is very important when it comes to issues of flooding and quantification of their impact on man and the environment.



- This study assesses social vulnerability to flooding and coping strategies adopted by the human dwellers in the Adamawa catchment.
- Participatory Vulnerability Approach (PVA) is used to assess the human dimensions involved in investigating flood vulnerability and coping strategies; data from emergency records





STUDY AREA

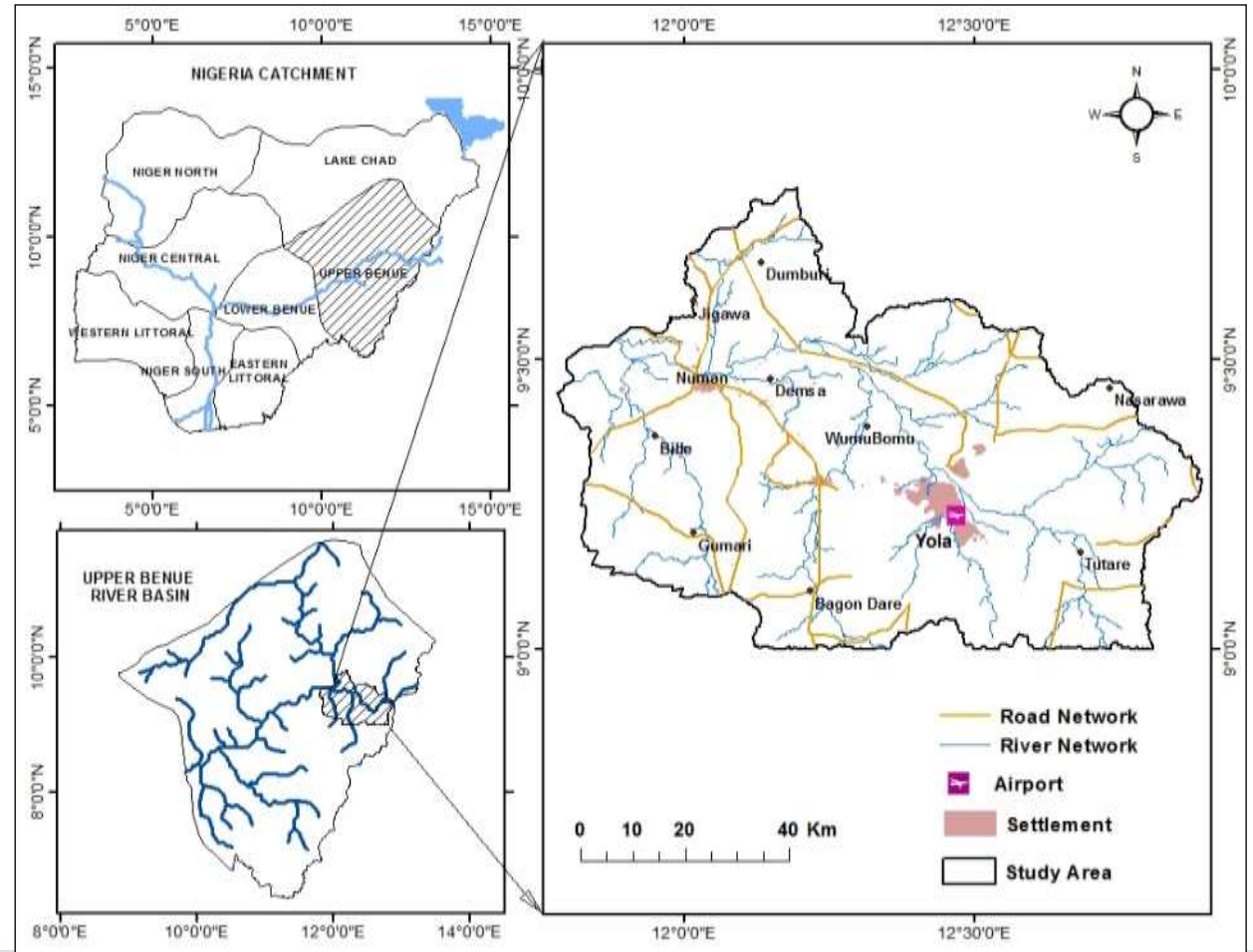
Location

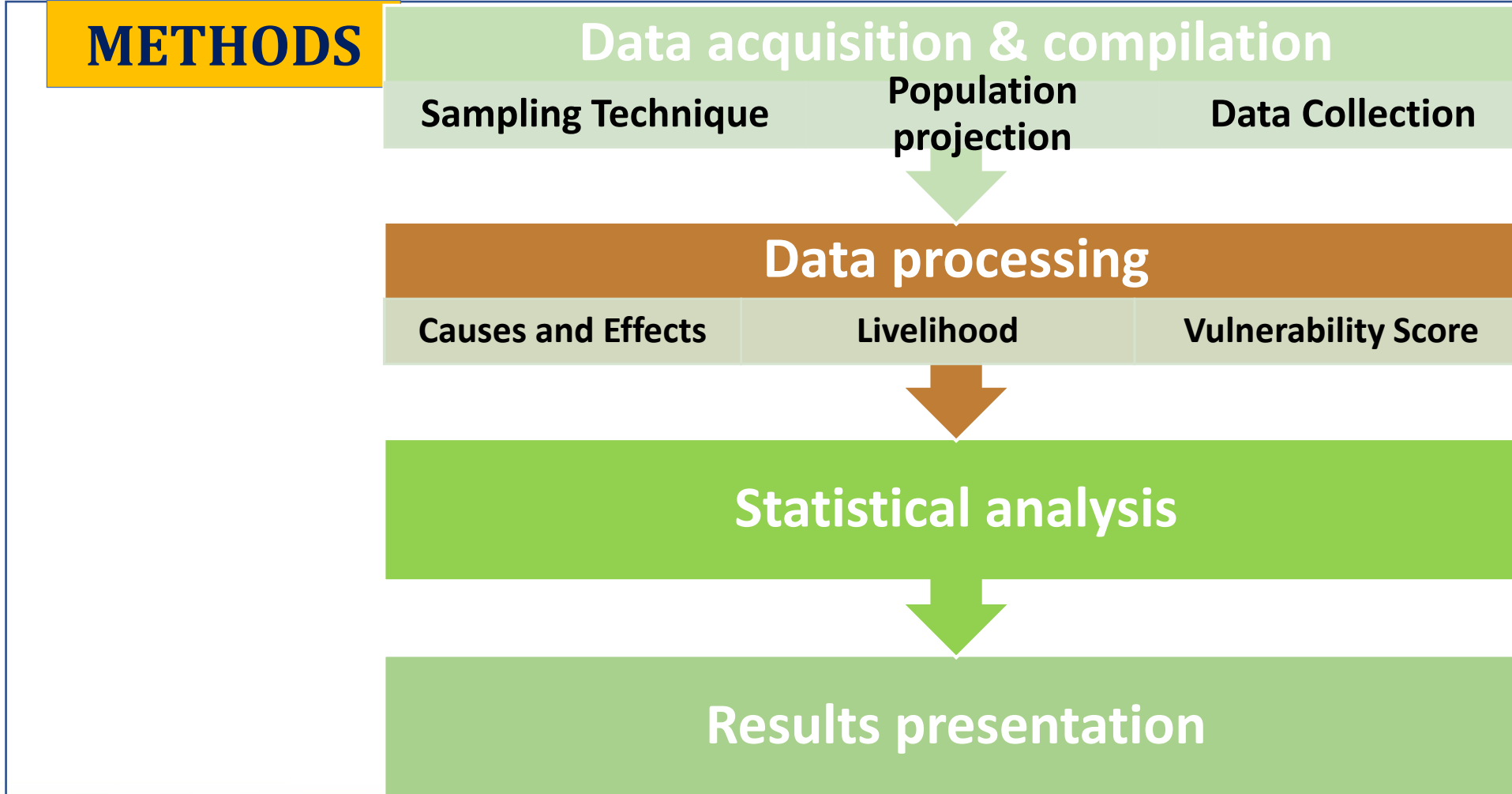
Along Upper Benue Drainage Basin

Extent

Longitude:- $11^{\circ} 46' E - 14^{\circ} 14' E$

Latitude:- $8^{\circ} 37' N - 9^{\circ} 41' N$

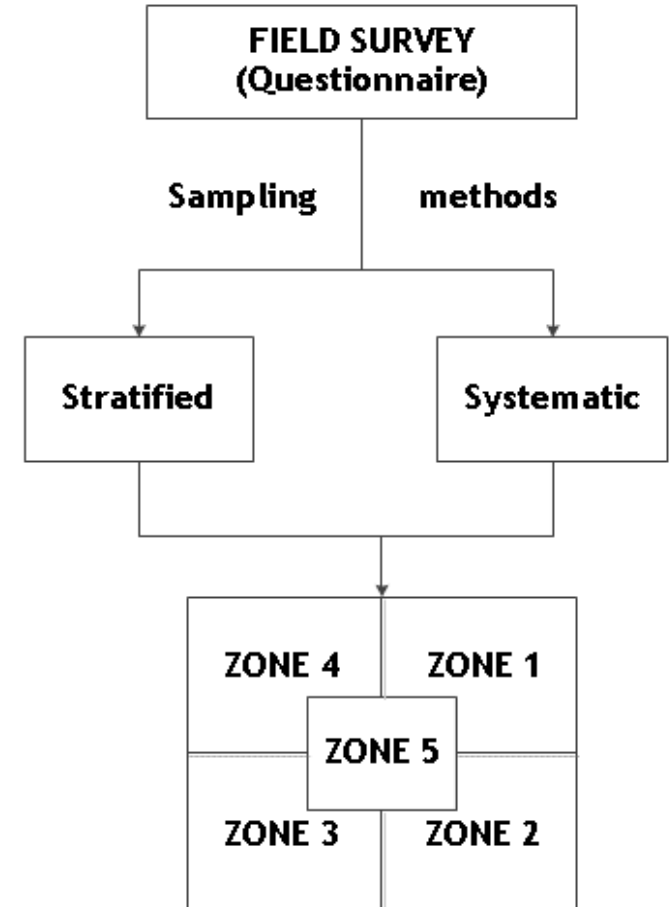






SAMPLING TECHNIQUE

- A structured questionnaire was used as the instrument for data collection using a stratified and systematic sampling technique.
- The investigated area was stratified into seven areas
- Quadrants was imposed to give five zones for good spatial spread with 237,457 households



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| S/N | Area | Number of Households | No. of Questionnaires | Percentage (%) |
|--------------|------------|----------------------|-----------------------|----------------|
| 1 | Demsa | 37,498 | 67 | 15.8 |
| 2 | Fufore | 44,025 | 79 | 18.6 |
| 3 | Gombi | 29,062 | 52 | 12.2 |
| 4 | Lamurde | 19,604 | 35 | 8.2 |
| 5 | Numan | 24,062 | 43 | 10.1 |
| 6 | Yola North | 41,968 | 75 | 17.7 |
| 7 | Yola South | 41,238 | 74 | 17.4 |
| Total | | 237,457 | 425 | 100 |

Ranking according to number of households



DATA COLLECTION

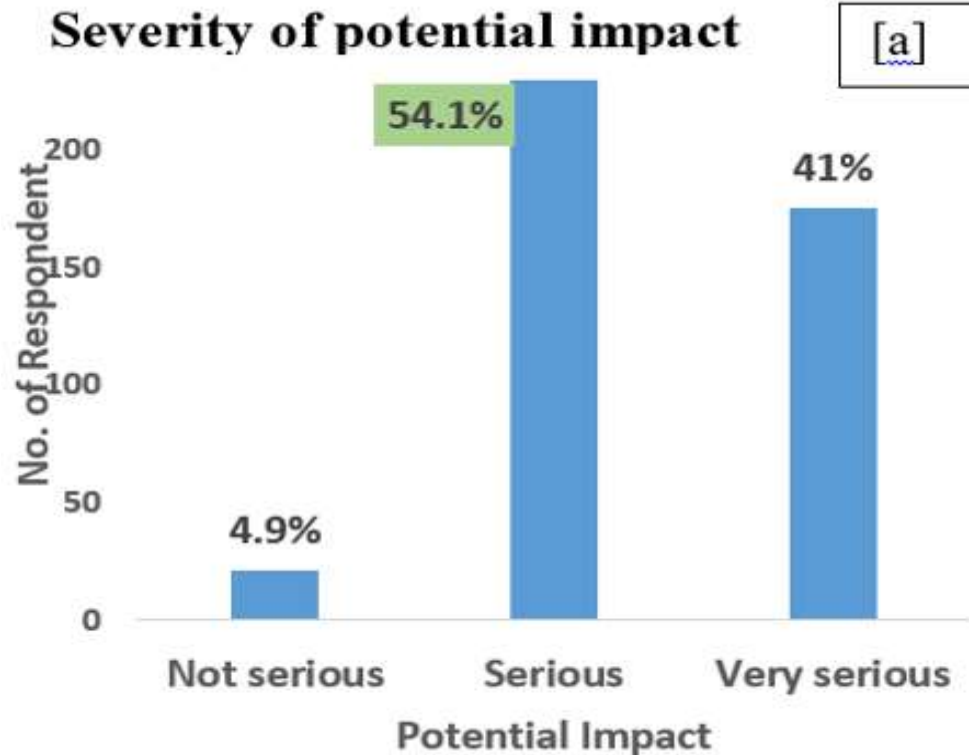
- A total of 425 questionnaires were administered to members of the communities.
- The questionnaire was designed to retrieve:
 - Demographic,
 - socio-economic, and
 - livelihood data

DATA ANALYSIS

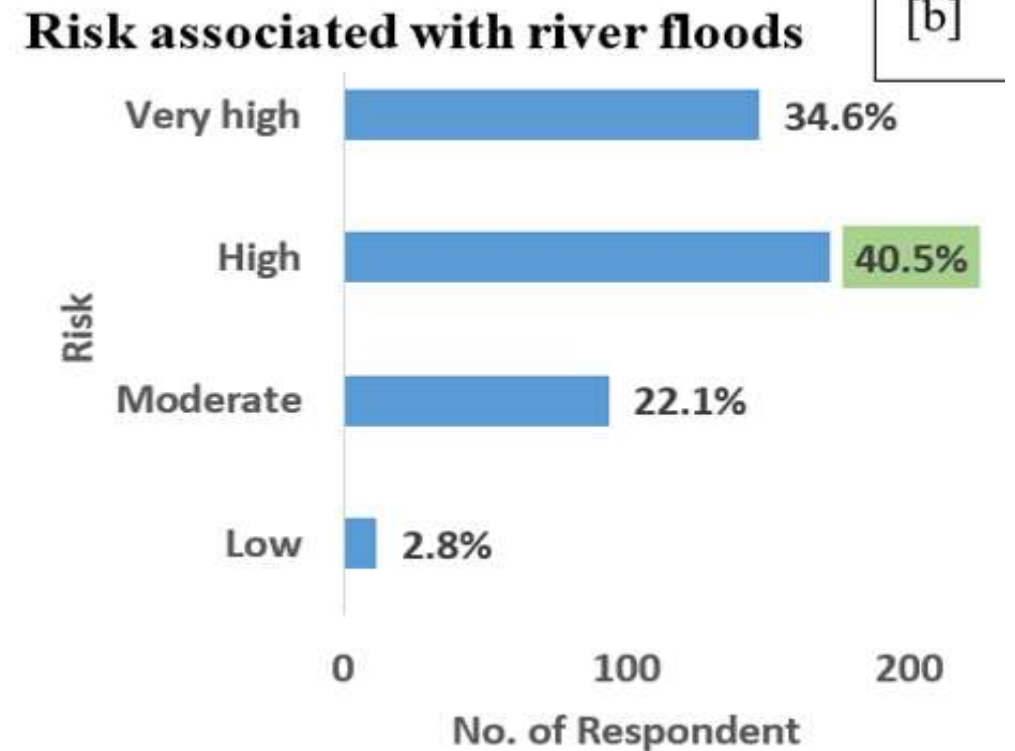
- This study makes use of descriptive statistical tools of frequency counts and percentages
- The final vulnerability scores (VS) were computed using
- $VS = (Frequency + Area\ of\ Impact) \times Magnitude$



RESULTS



(a) Severity of potential impact



(b) Risk associated with river floods in the basin



| Group | Frequency | Percentage (%) | Cumulative Percentage (%) |
|----------------|------------|----------------|---------------------------|
| Rural dwellers | 217 | 51.10 | 51.10 |
| Urban dwellers | 15 | 3.50 | 54.60 |
| Farmers | 102 | 24.00 | 78.60 |
| Traders | 18 | 4.20 | 82.80 |
| Fishermen | 73 | 17.20 | 100.00 |
| Total | 425 | 100.00 | |

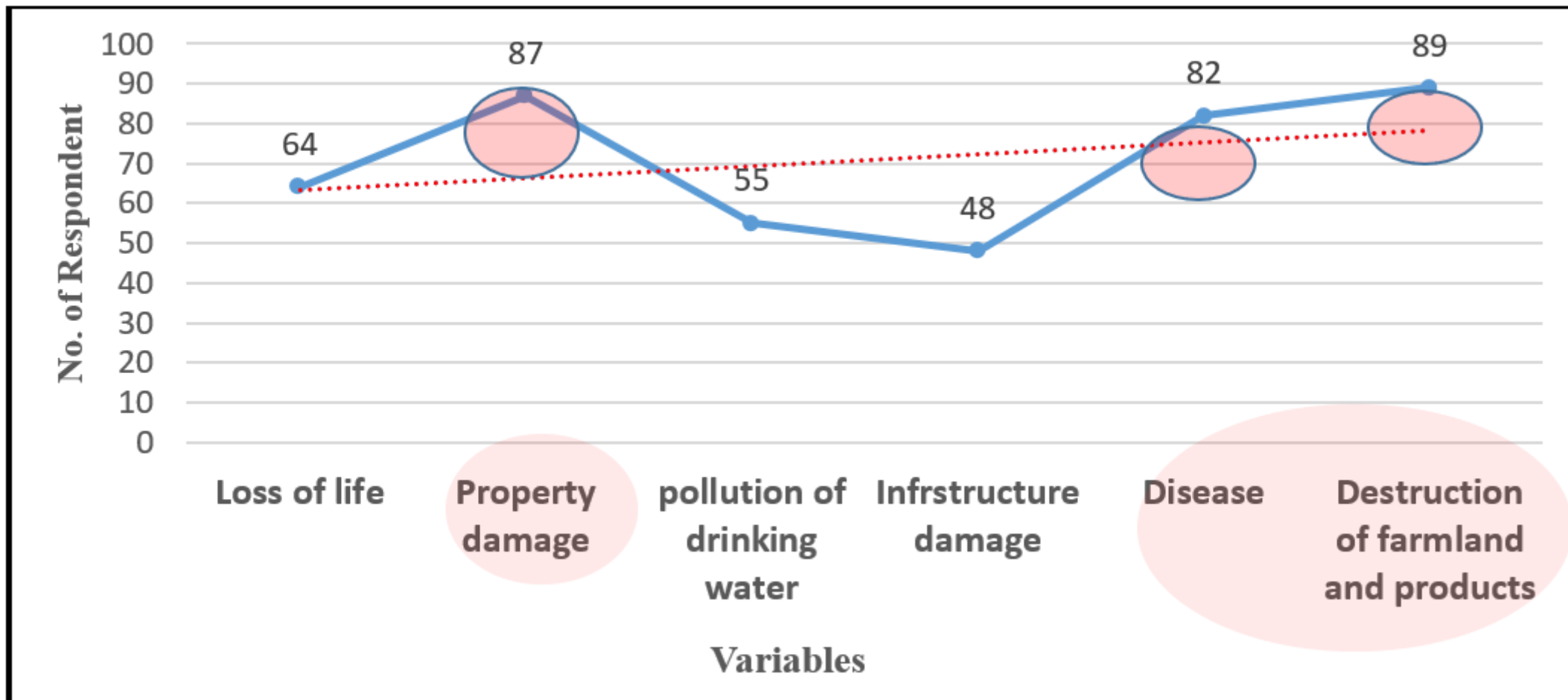
People mostly at risk of flood hazards



| Causes of flood problem in Adamawa | No. of Respondents | Percentage (%) |
|------------------------------------|--------------------|----------------|
| Heavy rain | 109 | 25.60 |
| Release of water from dam | 171 | 40.20 |
| Impervious surfaces | 64 | 15.10 |
| Channel blockage | 81 | 19.10 |
| Total | 425 | 100.00 |

Causes of floods

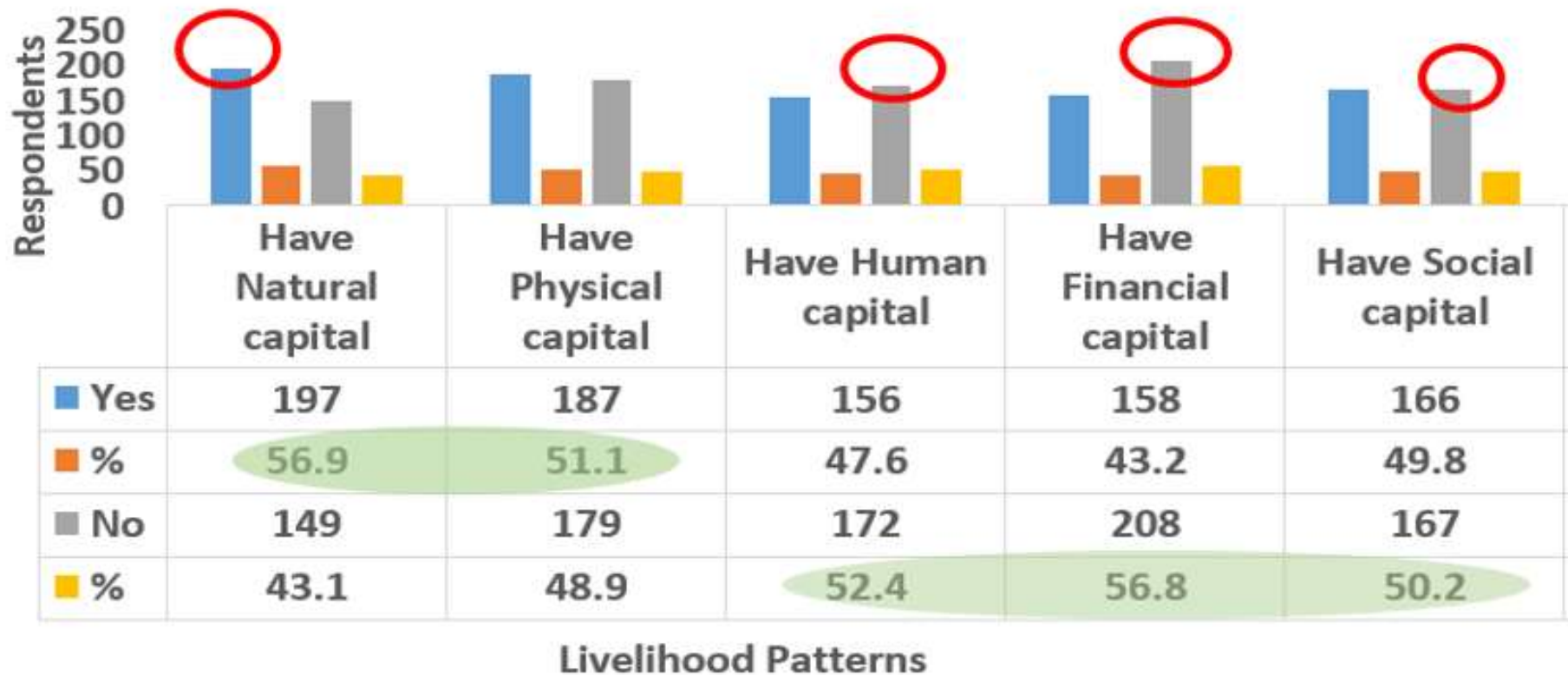
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Effects of flood in livelihood of victims



Livelihood pattern of people living with floods



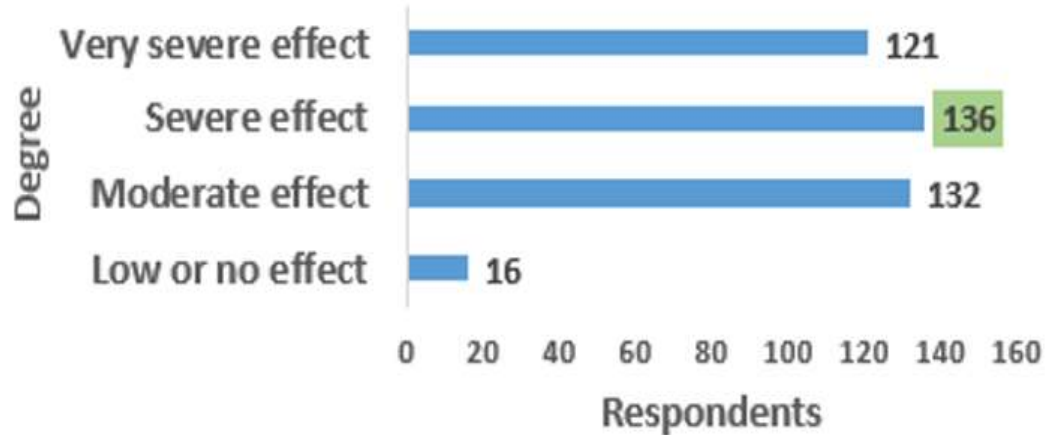
Livelihood pattern of people living with floods

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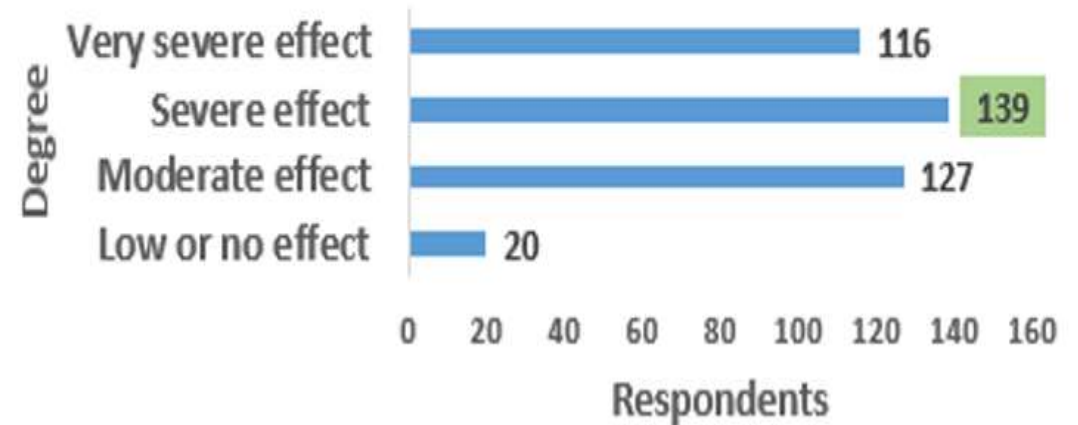
Degree to which natural resources are affected by flood

[a]



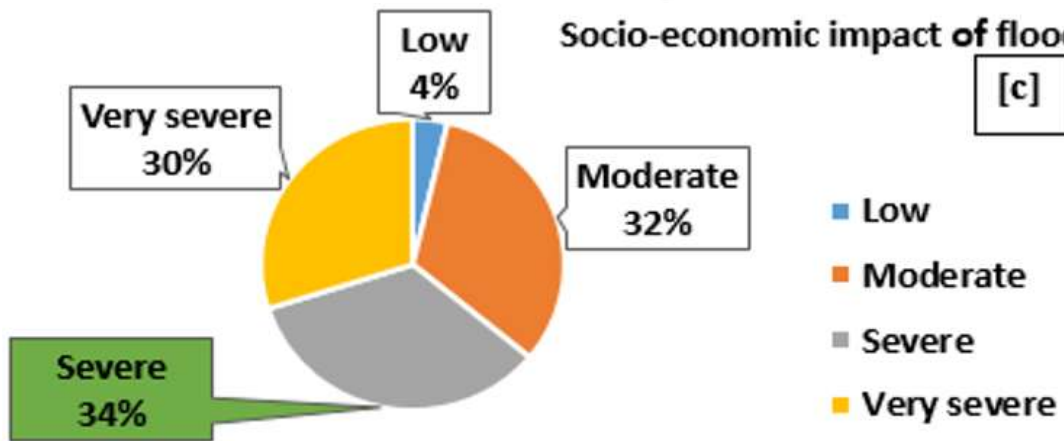
Degree to which physical resources are affected by flood

[b]



Socio-economic impact of flood

[c]



- (a) Degree to which natural resource;
- (b) physical resources are affected by flood and
- (c) Percentage response on socio-economic impact of flood



- The results show that rural dwellers are mostly at risk of flood hazard.
- The vulnerability score revealed that the agricultural sector is the most vulnerable with 32.8% for both cultivated and irrigated land.
- Biodiversity and forests are the least vulnerable sectors with 3.3% each.
- Analysis of livelihood patterns of people living with flood shows evidence of the presence of natural capital (56.9%).



- Findings on the socio-economic impact of flood based on degree of physical and natural resources affected show severe effect (34%).
- The capacity to cope with floods were mainly between self-support and government support.
- Analysis of livelihood resources available to cope with flood impact shows that all the resources were of medium availability;
 - Economic (39.5%)
 - Human capital (38.1%),
 - Social and institutional capacity (33.2%).



CONCLUSION

These findings contribute to the body of knowledge on flood vulnerability in Nigeria and provides crucial insights to government and stakeholders in adopting a holistic strategy to tackle the flood hazard.

An additional recommendation is for the government to adopt citizen-centred and public participatory approaches in the planning and implementation of disaster management projects to ensure their continued sustainability.

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