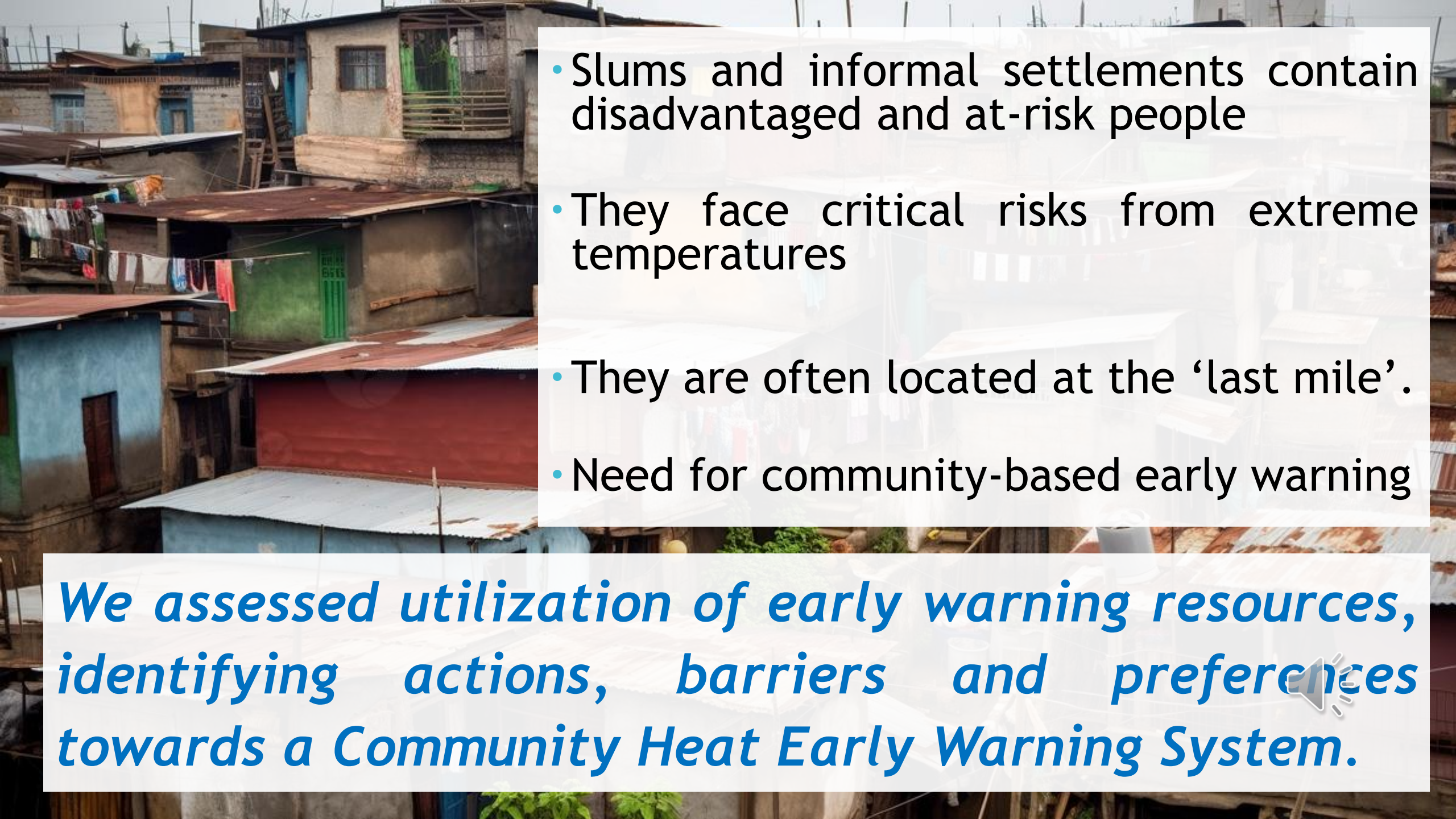


TOWARDS EFFECTIVE EARLY WARNING, EARLY ACTION FOR HEAT RESILIENCE WITHIN INFORMAL SETTLEMENTS

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- 
- Slums and informal settlements contain disadvantaged and at-risk people
 - They face critical risks from extreme temperatures
 - They are often located at the 'last mile'.
 - Need for community-based early warning

We assessed utilization of early warning resources, identifying actions, barriers and preferences towards a Community Heat Early Warning System.

UTILIZATION OF EXISITNG HEAT WEATHER INFORMATION

i) Focus Group Discussion

ii) Community Survey

- 364 and 273 responses (total = 637) in Akure & Lagos respectively
- Survey helped develop phone contact database of volunteer residents for heat information dissemination



DEVELOPING & DEPLOYING HEAT WARNING INFORMATION

i) Weather Data Processing

- next-day Maximum Temperature and Relative Humidity data is inputted into Humidex model to derive the corresponding Heat Index (HI) value.

ii) Dissemination of Heat Index Information

- Sent SMS alerts advising on daily predicted heat index and preventative actions.
- Bulk SMS sent for 39days in English + local language.
- 175 residents in Lagos, 151 in Akure went sent SMS.



Classification of Humidex and heat risk conditions

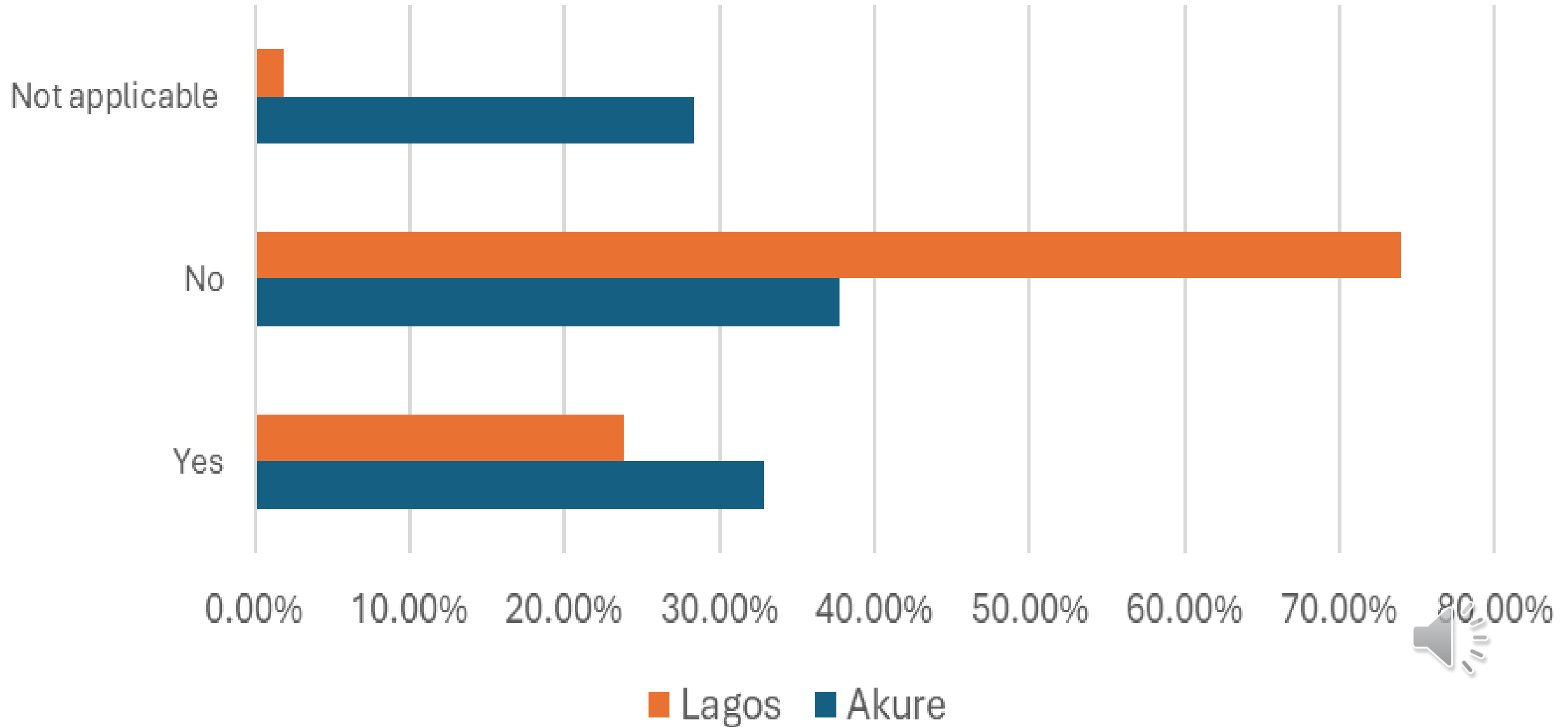
Classification	Humidex (HI °C)	General effect on people
No Risk	≤ 29	No risk to population groups
Very warm	30- 38	Fatigue is possible with prolonged exposure and/or physical activity
Hot	39- 41	Sunstroke, heat cramps, or heat exhaustion is likely and heat stroke is possible with prolonged exposure and/or physical activity
Very hot	42-44	Sunstroke, heat cramps, or heat exhaustion is possible with prolonged exposure and/or physical activity
Extremely hot	≥ 45	Heat/Sunstroke highly likely with continued exposure

AWARENESS OF HEAT EARLY WARNING RESOURCES

- Knowledge of heat early warning systems is low - at 38.1%
- Factors influencing awareness about heat warning information.
 - “understanding” ranked first,
 - followed by “language”,
 - “availability” ranked third,
 - "mode of technology"
 - "frequency"



Have you ever taken specific actions based on a heat warning?



NOT TAKING MEANINGFUL ACTION(S) TO HEAT WARNING

Inactions/ill-actions linked to uncertainty about accuracy of forecasts

“we are not working with it [heat information]. God decides everything. Everything they are forecasting [about the weather] is not certain because it's not man that decides but God” (barrowpusher FGD, Akure, Nov 2023).

Making ends meet trump concerns/compliance with precautionary actions

“what to eat is very important. the heat of the pocket [financial lack] is more than that of the weather... People don't wait to listen, not to even talk of understanding what they are talking about” (FGD Akure, October 2023).

“only people that believe [the forecasts] listens ... you are thinking of what to eat tomorrow, how will you think of the heat of the weather” (general FGD, Akure, October 2023).

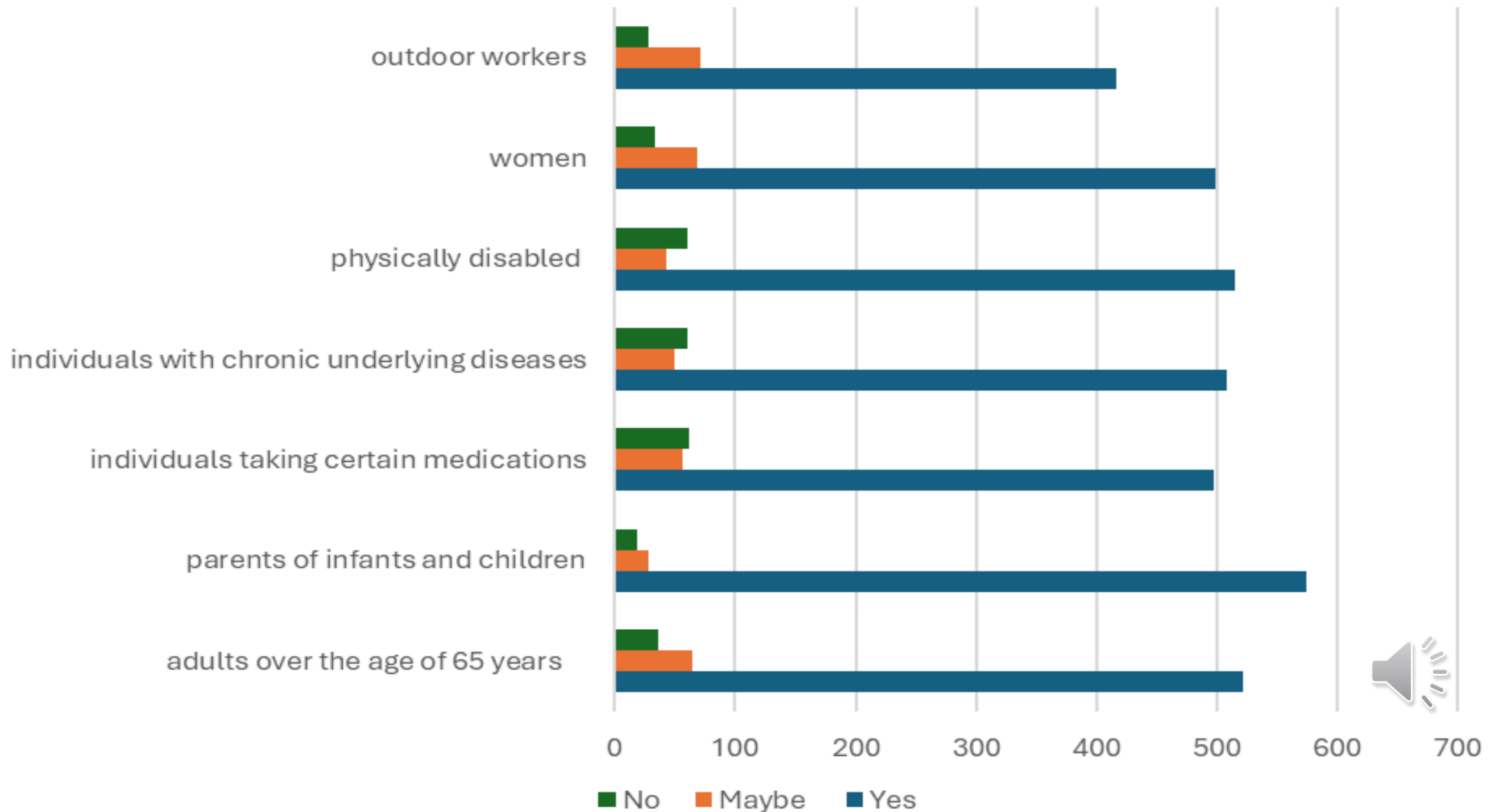
Dissemination Preferences on Heat Early Warning Information

		N	Minimum	Maximum	Mean	Std. Deviation	Ranking
1	Radio	548	1.00	5.00	4.3285	1.28333	1 st
2	In_person	590	1.00	5.00	4.0407	1.55435	2 nd
3	SMS	596	1.00	5.00	3.8742	1.62830	3 rd
4	Printed_Visual	538	1.00	5.00	3.6283	1.70750	4 th
5	Telephone	599	1.00	5.00	3.4591	1.81813	5 th
6	Media_release	642	.00	5.00	2.9174	2.05563	6 th
7	Leaflet	529	1.00	5.00	2.7656	1.65313	7 th
8	Social_Media	642	.00	5.00	2.3769	1.95055	8 th
9	Newspaper	642	.00	5.00	2.2508	1.90025	9 th
10	Email	510	1.00	5.00	1.9804	1.46324	10 th
11	Website	642	.00	5.00	1.8302	1.70000	11 th
	Valid N (listwise)	486					



- **Age** significantly predicted the preference for printed visual, SMS, Email, telephone, and radio.
 - *Specifically, older respondents prefer printed visual, telephone, radio whereas younger one prefer SMS and Email.*
- **Education level** also influenced the residents' preferences.
 - *Respondents with higher level of education prefer SMS, Email whereas those with lower education prefer telephone, in-person and media release.*
 - *Higher education prefer digital communication channels, while those levels of education prefer interpersonal communication.*

Groups to be targeted in dissemination of the heat early warning information



FEEDBACK ON THE HEAT WARNING INFORMATION DEPLOYED

i) Confirming receipt of heat warning information

- Residents confirmed receipt of the HEATALERT SMS and saw the posters

“I got the messages... at a point, I was thinking of blocking the messages but later thought through on what was sent because it was helpful. I thought it was too much and didn’t want to receive notification again” (Mr M, Akure).

- Those who don’t understand seek clarification

“If I don't understand, I have people I can share with to put me through. Some of our community leaders were approached to explain the areas we found difficult, and they explained” (discussant 3, Lagos FGD 9).

- **ALERT FATIGUE**

ii) Early actioning based on the heat information

- Testimonies change in hydration, dressing, bathing, diet, and activities.
- Some noted improvements in their health.

“my work is quite strenuous, and it makes me stay under the sun for long hours... but since I started using guidelines provided through the messages, like taking shower and drinking plenty water, I realized there have been tremendous changes” (discussant 5, Lagos FGD 11).

“before now, I can go out anytime particularly when the sun is at its peak but I have recently adjusted my movements and now understand the disadvantages of heat to the body. I also understand that drinking water helps to hydrate the body” (discussant 3, Lagos FGD 10).



iii) Suggestions for improved dissemination

- using other channels - Radio was severally mentioned.
- Community sensitization event.
- Expanding languages used in the messaging.
- The need to reach more people beyond their communities.



LESSONS LEARNED

- Heat early warning well received in the communities.
- Bottom-up innovation for heat warning forecasting and dissemination needed.
- Beyond information dissemination, providing basic services and infrastructure to build resilience.
- Leveraging technology (automation/digitisation) e.g. IoT sensors.
- Language factor in communication.

More info in our publication <https://www.sciencedirect.com/science/article/pii/S2212095526000246>

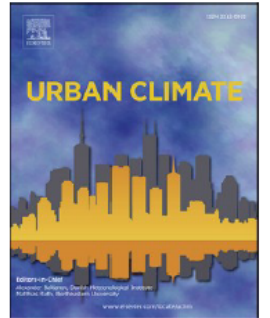
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Designing and evaluating a Community-Centred Heat Early Warning System (CHEWS) for Nigerian slum communities

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