THE GEORGE WASHINGTON UNIVERSITY
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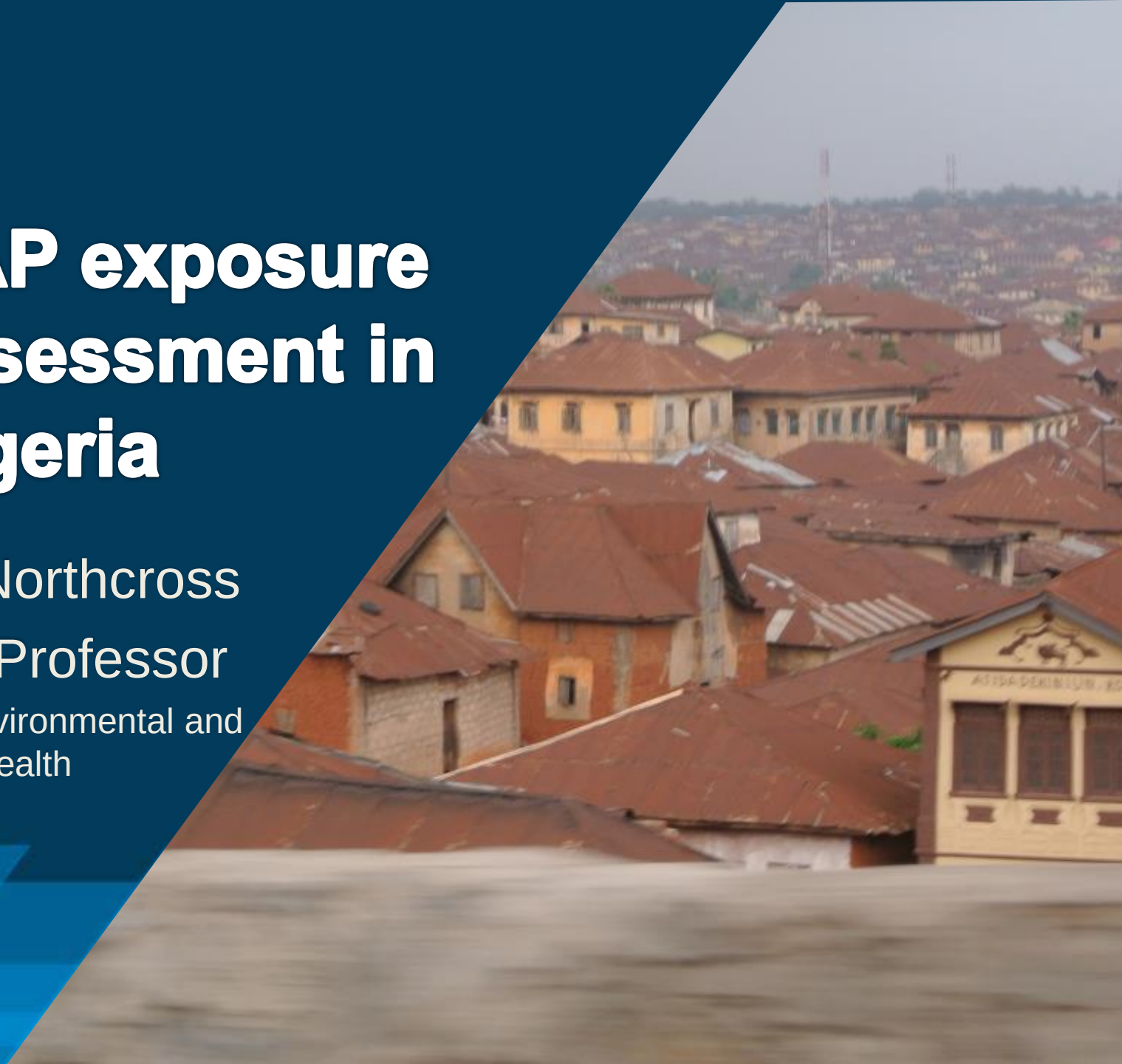
HAP exposure assessment in Nigeria

Amanda Northcross
Assistant Professor
Department Environmental and Occupational Health



Acknowledgments

Study Participants

Sola Olopade- UC (PI)

Oladosu Ojengbede UI-UCH (local-PI)

Donee Alexander – GACC, formerly UC

Matthew Shupler GW (SUMS analysis)

Nina Hwang GW (GPS analysis)

John Olajumilo & Tope Ibigbami HLF (Data collection)

Acknowledgments

Field Team








Study Overview

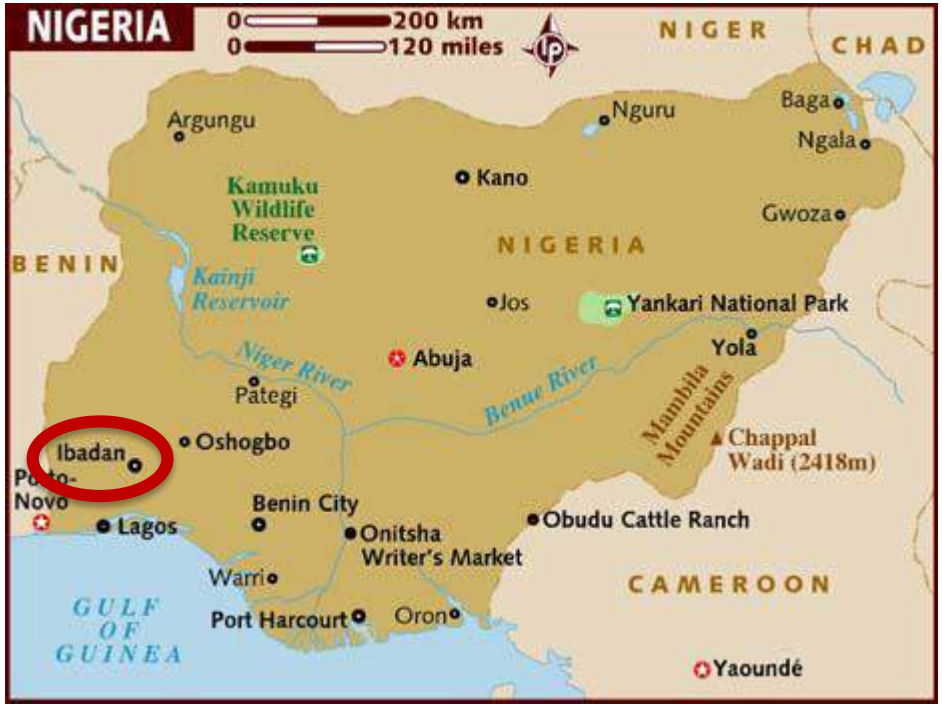
Randomized Control Trial

Ethanol Cookstove Intervention

<18 weeks gestation

Low birthweight

Study Location: Ibadan, Nigeria



Franklin Israel

Ambient Sources in Ibadan

Trash Burning

Generators

North of Lagos/Cara Titilayo Harshman

Traffic

Traditional Cooking sources

Firewood stove

Kerosene stove

Intervention Stove

Ethanol Stove

Exposure Assessment Plan

- 72 hour monitoring
  - 2nd and 3rd trimesters
  - $PM_{2.5}$, CO
- 12-48 hour GPS
- Stove use monitoring

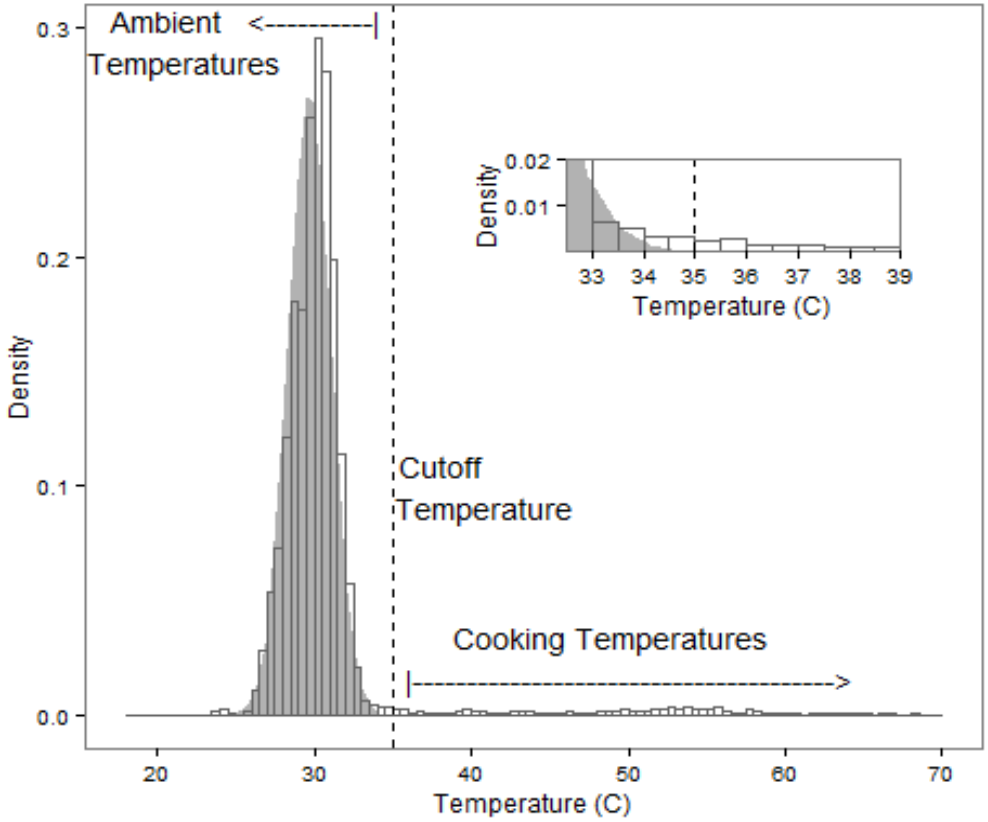
Exposure Assessment Goals

1. Do the study participants use the intervention stove?
2. Does the intervention group have lower exposures to PM and CO than the control group?
3. How do ambient exposures impact daily exposures?

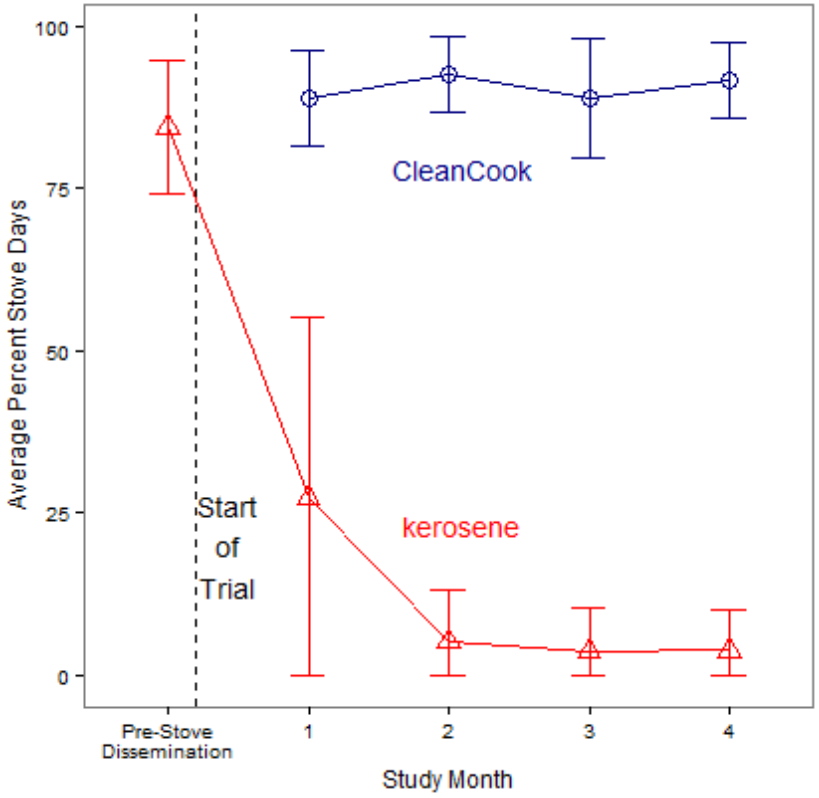
Did the participants use the stove?

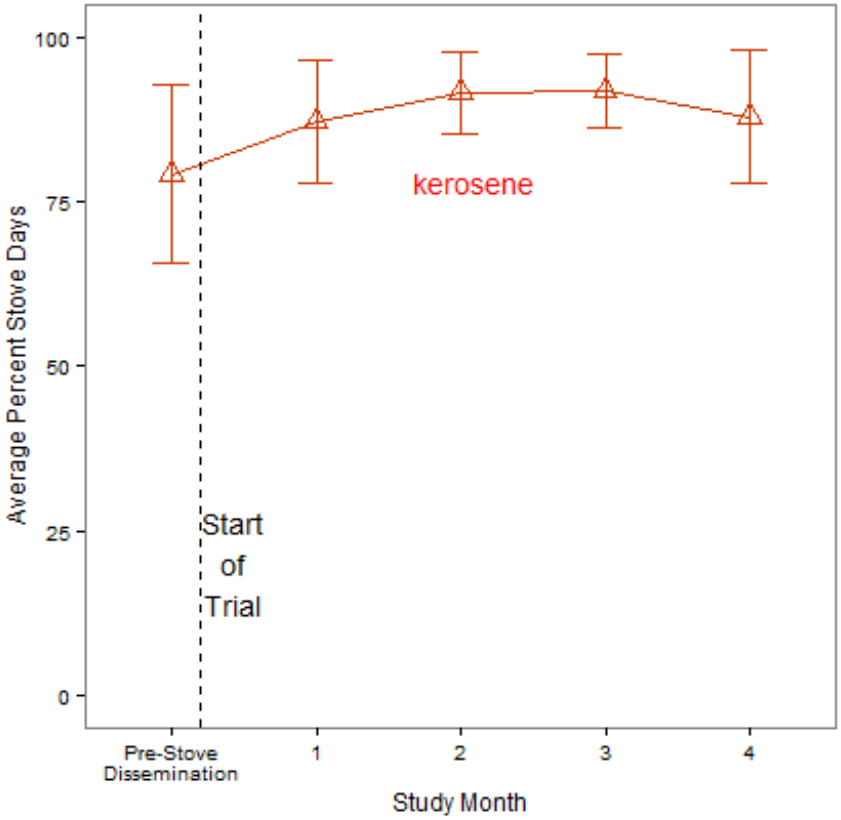
Yes

Stove Use Analysis



Consistent Stove Usage





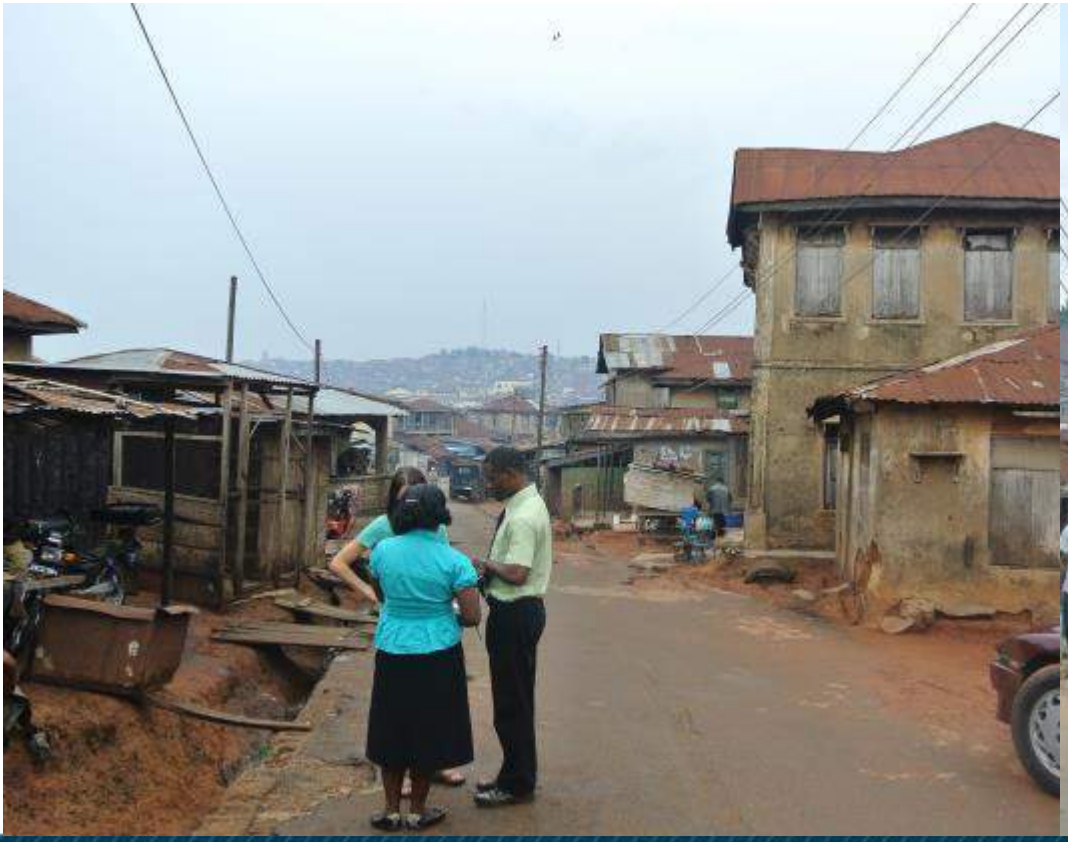
Matt Shupler

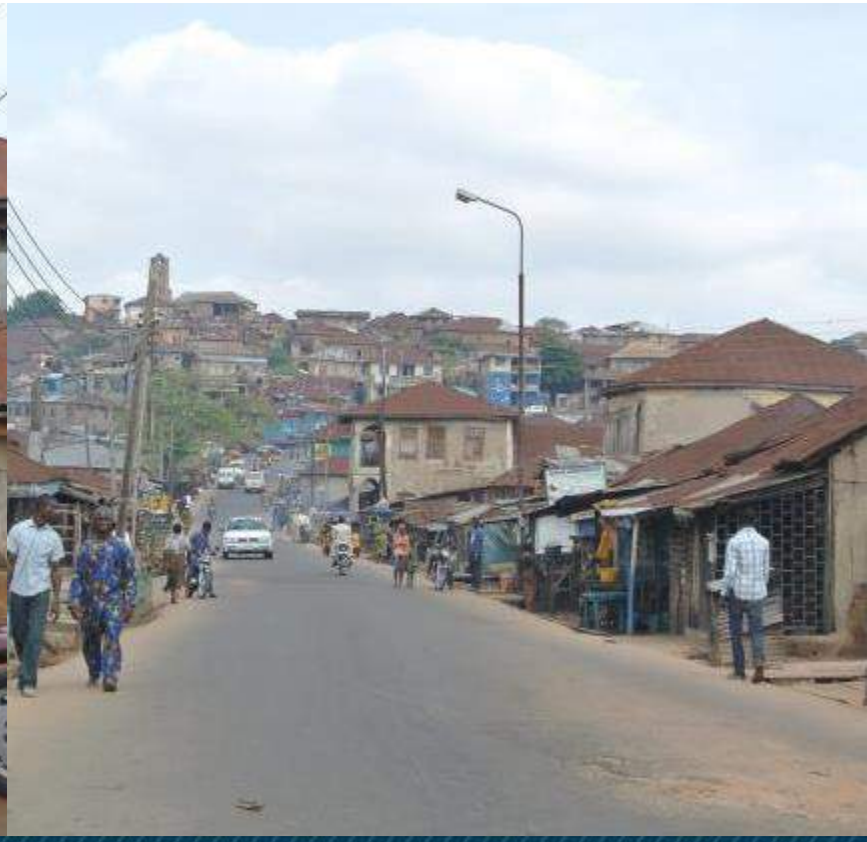
Does the intervention group have lower exposures to $PM_{2.5}$ and CO than the control group?

Intervention

Control

How do ambient exposures impact daily exposures?





Methods

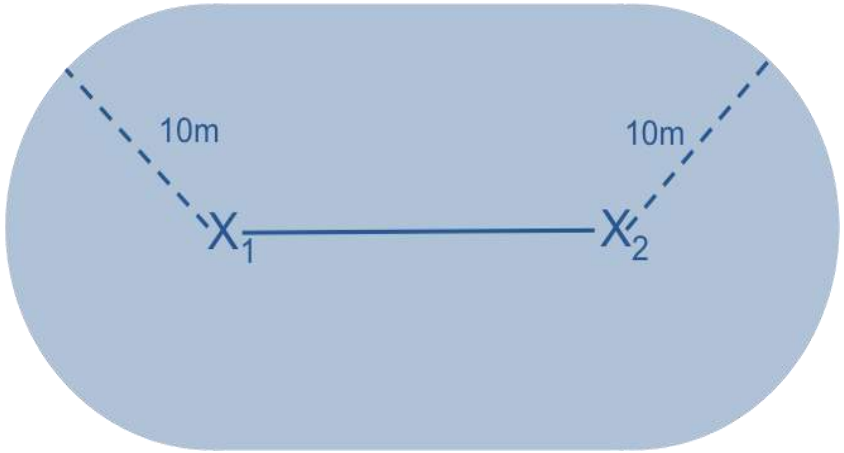
$PM_{2.5}$ ($\mu g/m^3$)

72h monitoring

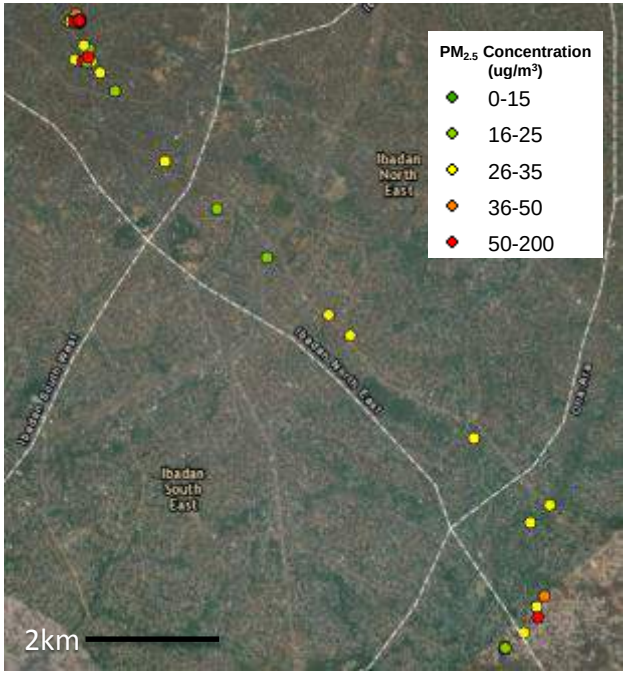
GPS (longitude, latitude)

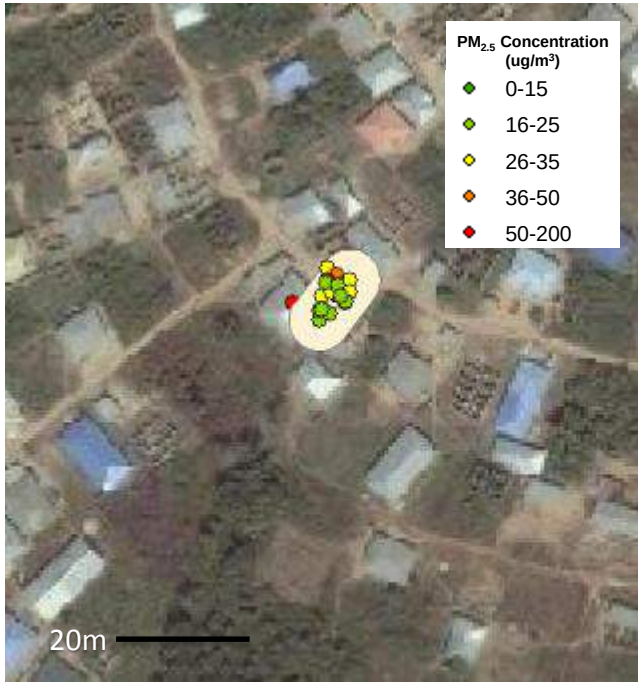
12h monitoring

+ household coordinates

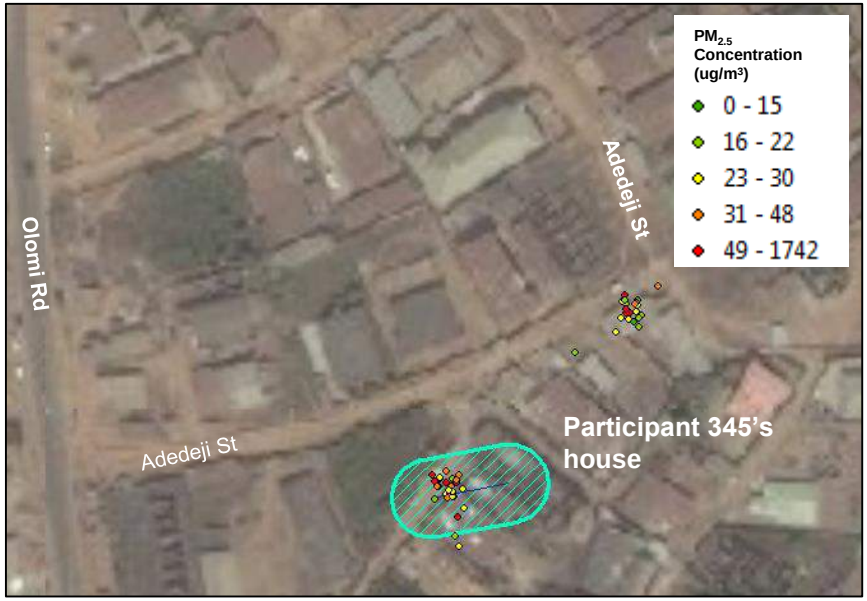


Sample Participant Exposure Map





Non-Household vs Household



Conclusions

- Cleancook stove is used continuously and preferentially
- Cleancook reduces exposures to $PM_{2.5}$ and CO
- Reducing household level exposures results in greater reductions of personal exposures

Next Steps

- PAH and Black Carbon exposures
- Expanding GPS analysis
- Combining exposure, GPS and SUMS
- Comparing exposures for primary and other adults in the home
- Developing ambient monitoring network in Ibadan

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Thank You

northcross@gwu.edu