What Women Want:
A Data-driven Approach

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RUWES NIGERIA

NEXLEAF ANALYTICS

CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

Introduction

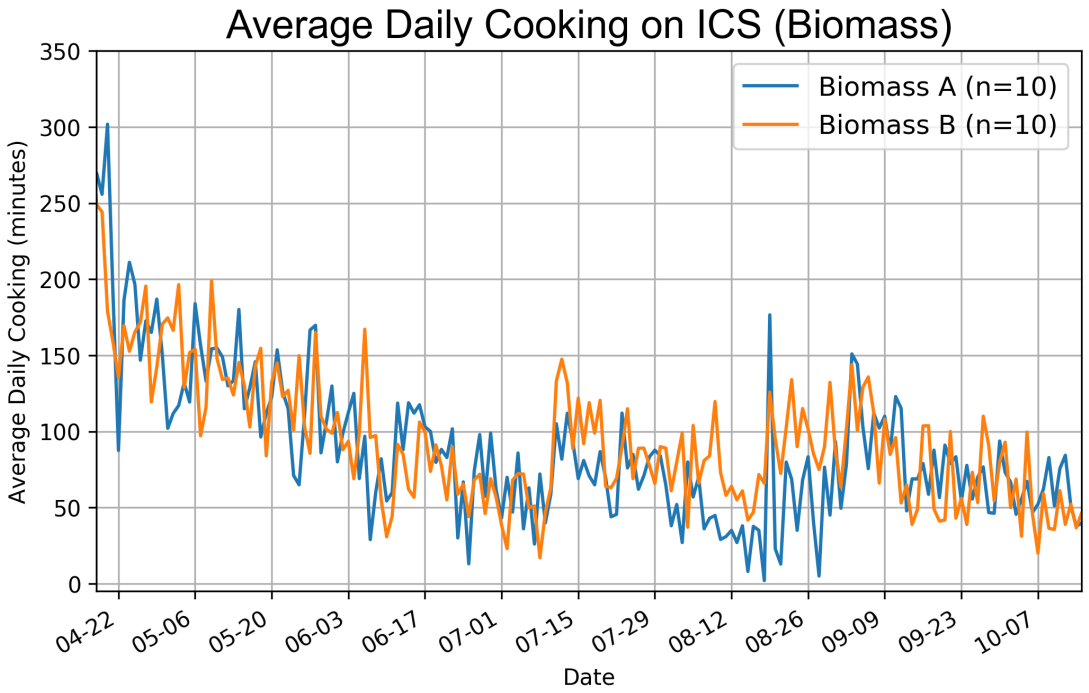
- Nexleaf is a nonprofit technology company that takes a data-driven approach to solving global challenges
- April 2019 Nigeria pilot begins with RUWES (Rural Women for Energy Security) and CCAC (Climate and Clean Air Coalition) involving 50 households
- StoveTrace is a cloud-based remote monitoring system for cookstoves
- Stairway to Scale Model
- Research objective is to identify clean cooking solutions that women want

Methods

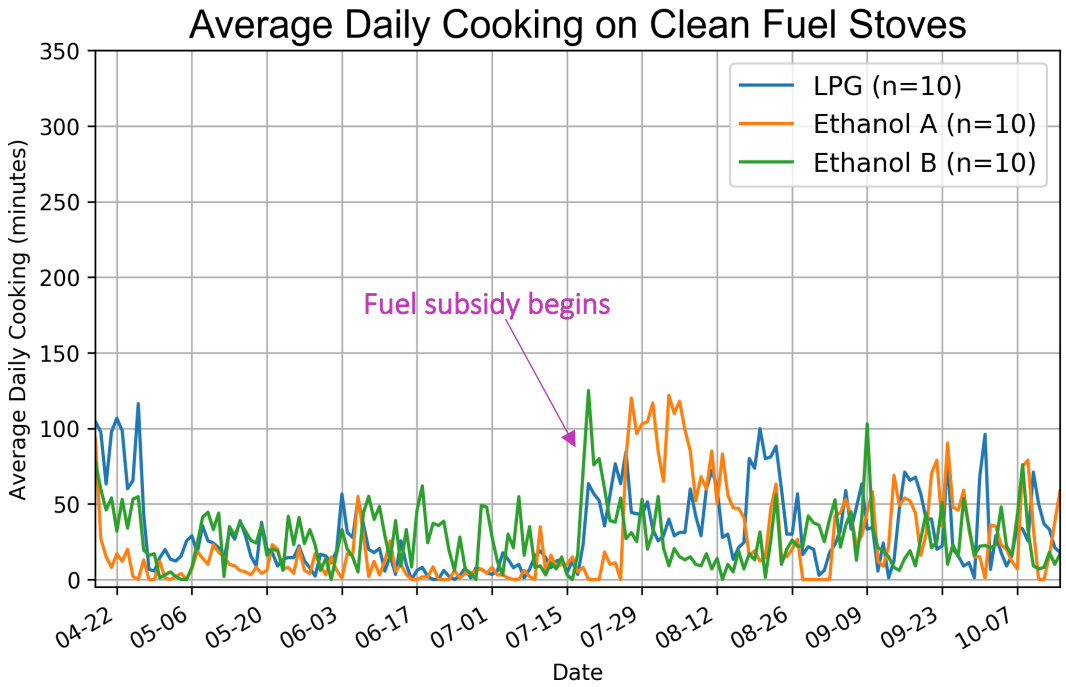
- Five cooking solutions are investigated (two biomass stoves and three clean fuel stoves)
- 10 of each stove model is deployed among the 50 households
- 100 StoveTrace devices installed to monitor both ICS and TCS

- ICS monitoring follows Nexleaf's Stairway to Scale model
- Cooking events are recorded and monitored using Nexleaf's stovetrace.org dashboard
- Quantitative sensor data and qualitative survey data are collected

Average Daily Cooking



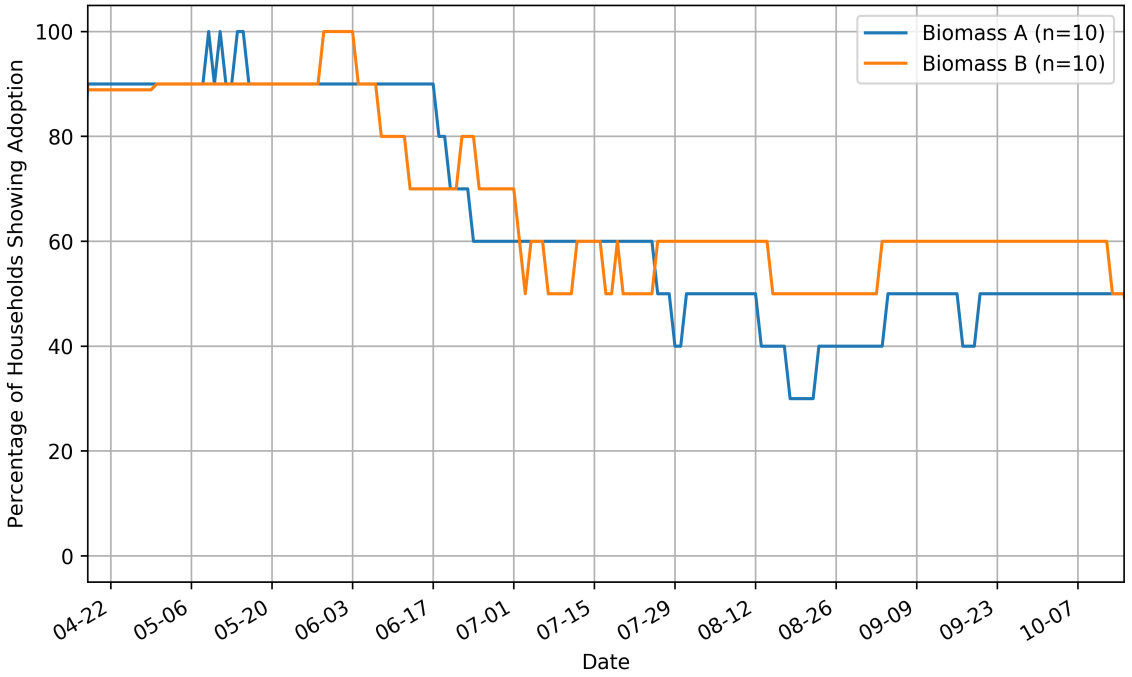
- Biomass stoves had higher use that gradually dropped over the course of the pilot



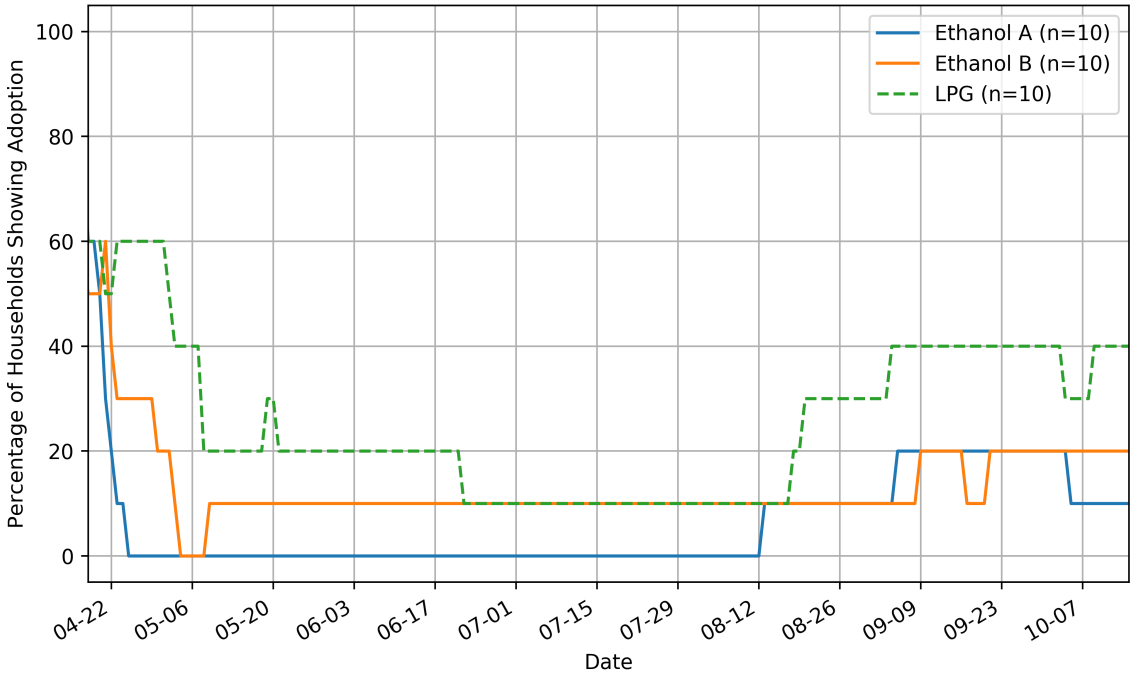
- A fuel subsidy program was introduced in July to address abandoned stoves

Adoption

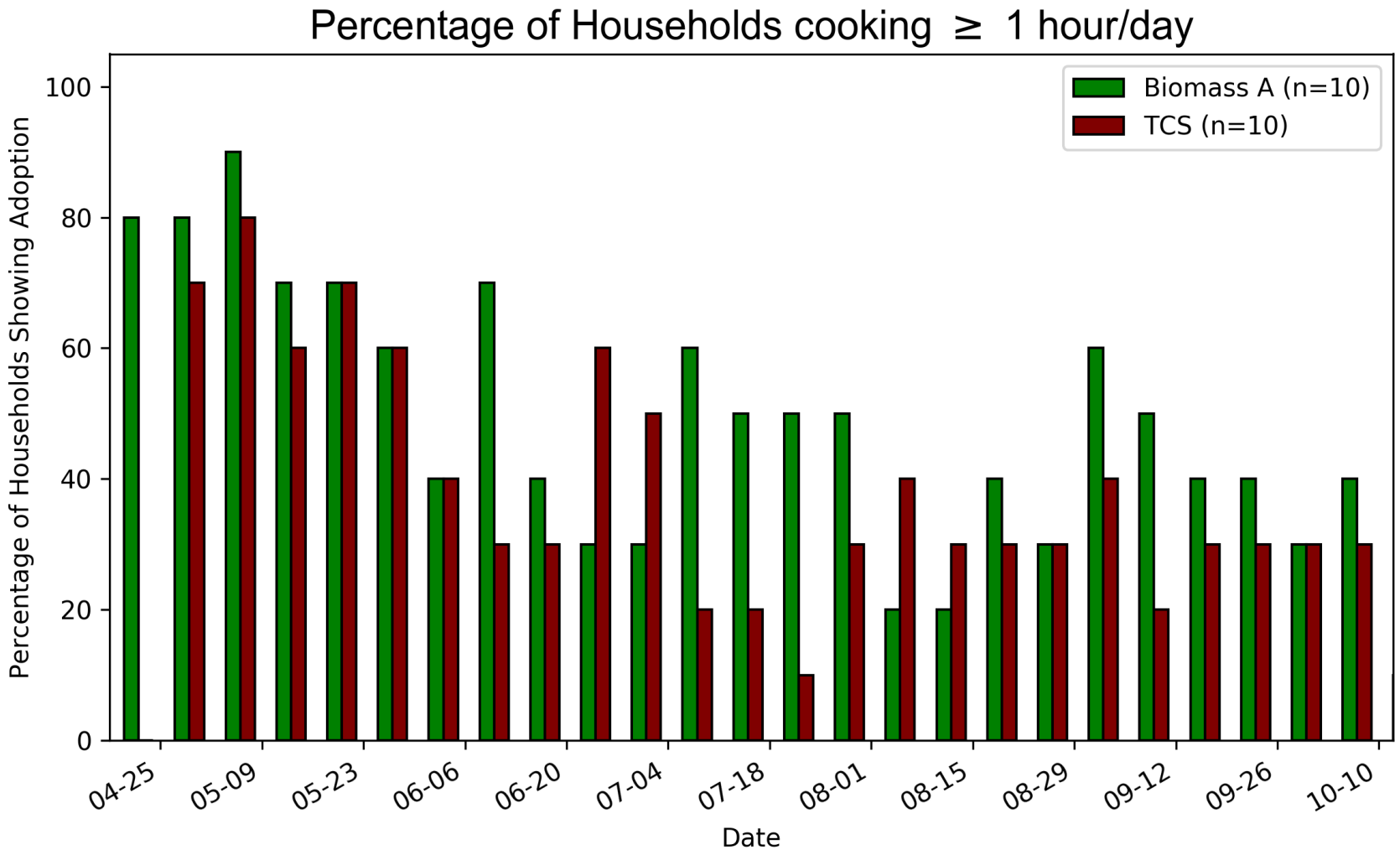
Biomass



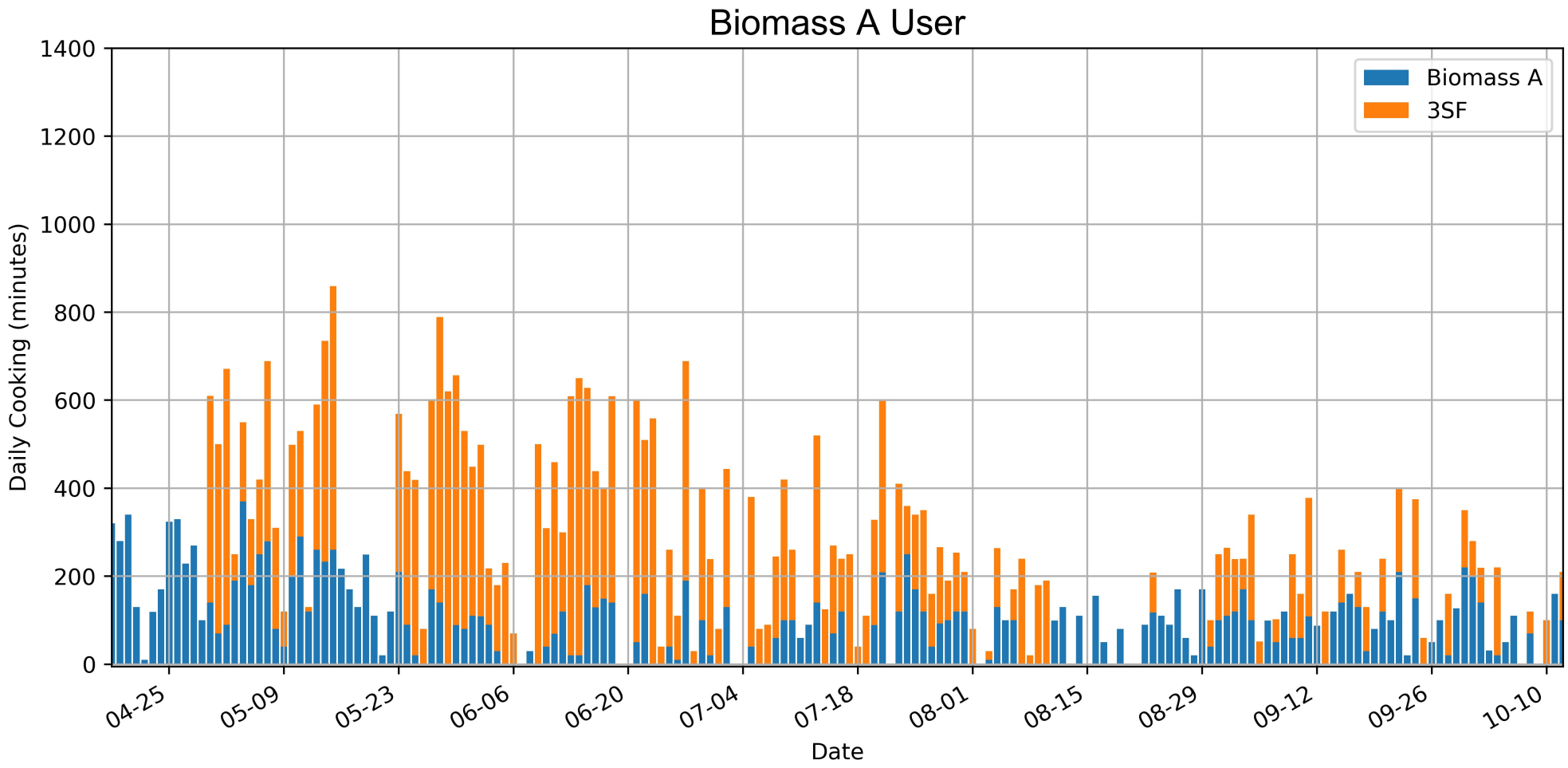
Clean fuels



Stacking


Percentage of Households cooking ≥ 1 hour/day
Biomass A (n=10)
TCS (n=10)
Percentage of Households Showing Adoption
100
80
60
40
20
0
04-25
05-09
05-23
06-06
06-20
07-04
07-18
08-01
08-15
08-29
09-12
09-26
10-10
Date

Stacking (individual household)



Qualitative Survey

- Following the pilot, a survey was conducted
- A variety of topics were addressed in the survey
  - General stove feedback/pros and cons
  - Willingness to take out a loan to buy stove
  - Fuel cost and availability
  - Food preparation and preferences
  - Households economic activities/income
  - Family size and household structure
  - Peer group and community influence

Qualitative Survey Results

- Usage does not translate to willingness to pay
- Fuel cost was a barrier toward adoption
- Lowest adoption ICS models were unable to accommodate larger pots
- Households using Ethanol A and Ethanol B reported less variety in food items cooked
- Households reported that they cook on 3SF and ICS at the same time

Stove Model	% of HH that would take out loan (Survey)	Average adoption rate (Sensor data)
Biomass A	50%	62%
Biomass B	50%	66%
Ethanol A	30%	7%
Ethanol B	0%	14%
LPG	90%	27%

Conclusions and Future Work

- Women want to cook without having to worry about fuel cost and availability
- Women want to be able to cook as efficiently as possible
- Women want stoves that are designed to accommodate cooking needs
- Stairway to Scale model proved useful
- Should consider solutions that encourage a “clean stack”
- Stoves should be designed for women and should reflect what they want