Thanks to group members, collaborators, and friends for photo contributions.
WASH UP! INDIA
An education and infrastructure intervention in primary schools
Research Questions

• What is the impact of exposure to WASH Up! on the WASH-related knowledge, attitudes, perceptions and behaviors of students, teachers, and parents?

• To what extent are key messages from the WASH Up! program transmitted via students to their caregivers?

• What is the impact of enhanced school WASH infrastructure maintenance on WASH-related behaviors among students and infrastructure functionality?

• What is the relative exposure of children to diarrheal pathogens in the school versus the home environment? What are the individual and combined impacts of the WASH UP! Program and enhanced school WASH infrastructure maintenance on these relative exposures?
Motivation

- Lots of work on WASH in schools with limited sustainability / long-term impact

- Sizeable literature on habit formation—easier in young children, and works to shift behavioral norms over time

- Many health behavior programs claiming children are ‘change agents’ with scant theoretical underpinning or empirical evidence

- No existing studies on the combined impacts of educational and infrastructural interventions on behavior change

- Limited evidence on the transmission dynamics and sources of *Campylobacter* outside of its human and animal hosts
Data Collection Methods

• Structured interviews with parents, students, and teachers
• Observation of handwashing stations and latrines
• Announced and unannounced infrastructure assessments
• Environmental sampling (soils, surfaces, water, handrinses, feces)
Current Status

• Developing lab assays to detect *Campylobacter* from soils, surfaces, hand rinses, feces, and samples of drinking water

• Designing boundary object that to help foster communication between parents and children around WASH behavior

• Designing survey instruments for parents, teachers, and students, to help us understand the impact of WASH UP! and other possible drivers of WASH behavior

• Designing the infrastructure intervention and the monitoring and evaluation efforts
Want to get involved?

- Literature review/update
- Culture and molecular lab analysis
  - Assay development (Fall quarter)
  - Molecular analyses (Winter, Summer 2020)
- Infrastructure intervention design
- Opportunity for fieldwork in India (Winter and summer quarter)
Piped Water Evaluation
Kamwenge, Uganda

Marlene Wolfe, Jitka Hiscox
marlene.wolfe@stanford.edu
Motivation: What is the impact of piped water?

Sustainable Development Goal Target 6.1: Safely Managed Water

- New goal of universal piped water access by 2030
- Sub-Saharan Africa – 2% on-premises piped water
- Unimproved → improved water negligible impact
- Lack of data on transition to on-premises piped water
- May change water quality, quantity, and time use
- Previous evaluations focus on short-term impact
Research Questions

• What is the demand for piped water? What household characteristics are associated with demand?

• What is the impact of transitioning to shared unimproved sources to on-premises piped water on:
  • Water use
  • Time and money cost of water
  • Time use by female caregiver
  • Household economic activity

• Child development
• Water and environmental (hand) contamination
Data Collection Methods

• Quasi-experimental study
  • Piped water recipients and control communities

• Data sources:
  • Household surveys with household head
  • Water and hand rinse samples (FIB and pathogens)
  • Hair samples (maternal and child stress)
  • Child development assessment
  • System functionality assessment
  • Local enterprise interviews
Current Status

- Baseline survey and sample collection (Nov-Dec 2019)
- Developing molecular assays for sample analysis

Midline Survey:
Summer 2020

Baseline Survey:
Nov-Dec 2019

Endline Survey:
Summer 2021
Get Involved!

- **Data analysis:**
  - Checking and cleaning baseline survey data
  - Baseline data analysis
  - Fall 2019/Winter & Spring 2020

- **Lab analysis:**
  - Develop molecular assays
  - DNA extraction and PCR
  - Winter/Spring/Summer 2020

- **Field work Summer 2020**
Zambia Piped Water study
Research Questions

What is the impact of transitioning to household taps on water use, time cost of water supply, and household well-being?

How validly and reliably do we measure walking distance to water sources with self-reported metrics versus objective measurements by GPS transponders?
Data Collection Methods

Interviews with heads of households in both treatment and control villages

GPS transponders
16+ hour logs of location and velocity, reported every 5 seconds
We need you!

- Literature review/update
- Data analysis help in GIS and R!
- jcwinter@stanford.edu
Reliable handpumps at scale?
Evaluating demand for and impacts of handpump maintenance in rural Uganda

Daniel W. Smith
dsmith21@Stanford.edu
Motivation: Unreliable water supplies

Unreliable = Does not provide water when expected

Metric = ‘downtime’

Research questions

1. What is the willingness and ability to pay of water committees for increased handpump reliability provided by a professional maintenance service in rural Uganda?

2. What are the financial and economic impacts of the handpump maintenance service for households, communities, and local governments?
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<th>Marketing</th>
<th>Midline</th>
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<td>Water source mapping</td>
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<td>Estimate cost of repairs, rehabilitations, and replacements</td>
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Factoid: >1% of Uganda’s land area!
Current Status

- Baseline data collection nearly complete:
  - 143 of 153 villages complete
  - 143 water committees surveyed
  - 397 water sources mapped and tested
  - 1,319 households surveyed with DCEs
  - 54 of 153 sensors installed
  - 31 willingness to pay auctions completed
  - 1 payment for EverFlow maintenance service received

Formative research/piloting: March-April 2019
Baseline Survey: Aug-Oct 2019
Midline Survey:
Dry season (Jan-March 2020)
Endline Survey:
July-Sept 2020
One (1) Interesting finding, n=143 boreholes

• Mean reported water committee expenses: 376,400 UGX/year (341,434)
• Mean reported borehole ‘downtime’: 16.1 day/year (34.8)

• Effective cost per day of borehole ‘uptime’: 984 UGX/day (971)

• Compare to best-case scenario for preventive maintenance service cost:
  • 90,000 UGX/month
  • 99.9% ‘uptime’
  • Effective cost projection: 2,959 UGX/day

• Professional preventive maintenance → 3 times cost of status quo per day of borehole ‘uptime’
Get Involved!

• Water sensors
  • Manage installations
  • Analyze ‘big data’ (every 5 minutes for 1 year)

• Survey data analysis
  • Cleaning baseline survey data
  • Baseline data analysis
  • Water quality data
  • Midline and endline

• GIS mapping and analysis

• Field work
  • Spring Break 2020
  • Summer 2020
Come work with us!

• Complete the student interest form available at https://tinyurl.com/poopgroup2019

• We will review and connect you with senior student(s) or faculty member(s) that match your interests