

# Measuring the Impact of School Water, Sanitation and Hygiene: SWASH+ Experience

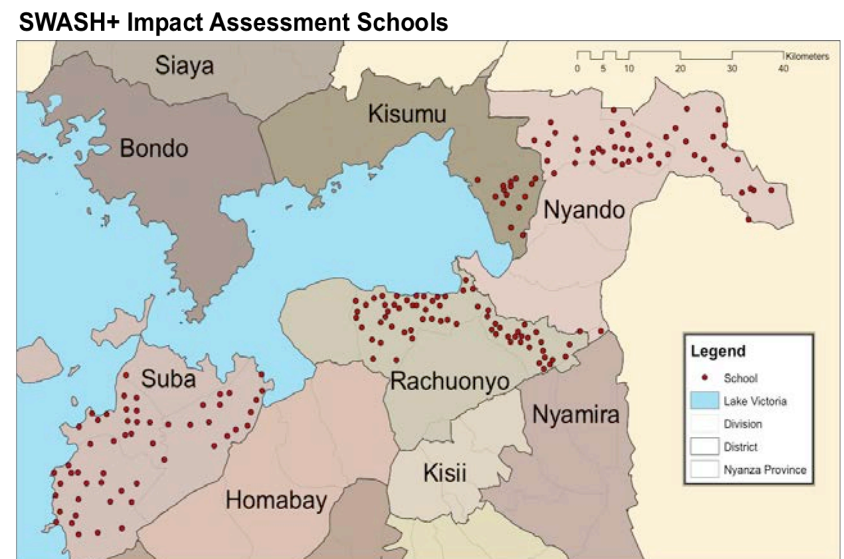


Sustaining and Scaling School Water, Sanitation,  
and Hygiene Plus Community Impact

SWASH+  
Research Team

# Sustaining and Scaling School Water, Sanitation and Hygiene (SWASH+)

- Collaboration between
  - CARE, Water.org, Kenya Water and Health Organization (KWAHO, Great Lakes University of Kisumu, Ministry of Education, Ministry of Public Health and Sanitation, Emory University, University of Florida
- Funded by Bill and Melinda Gates Foundation and Global Water Challenge
- Nyanza Province, Kenya

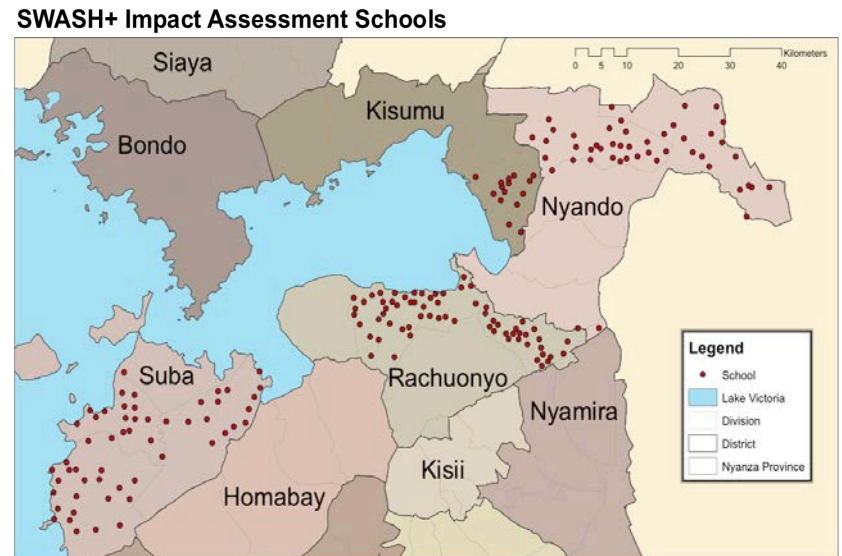


# Purpose: Key Questions

- What is the impact of improved school water, sanitation and hygiene on health and educational outcomes?
- What factors affect this impact?
- What is necessary to sustain and scale effective improvements?

# Methods: Design

- Cluster randomized trial
- Before and after measurements in intervention and control schools
- Analysis based on difference in difference
  - Did outcomes improve more in intervention schools than in controls?



# Background and Methods



- Cluster randomized trial: 2007-2009
- Base package (45 schools):
  - Hygiene promotion + Water Treatment
- Base package + Sanitation (45 schools):
  - HP+ WT + Sanitation
- Water package (25 schools):
  - HP+ WT + Sanitation+ Water
- Control (70 schools) – to receive improvements in third year of project



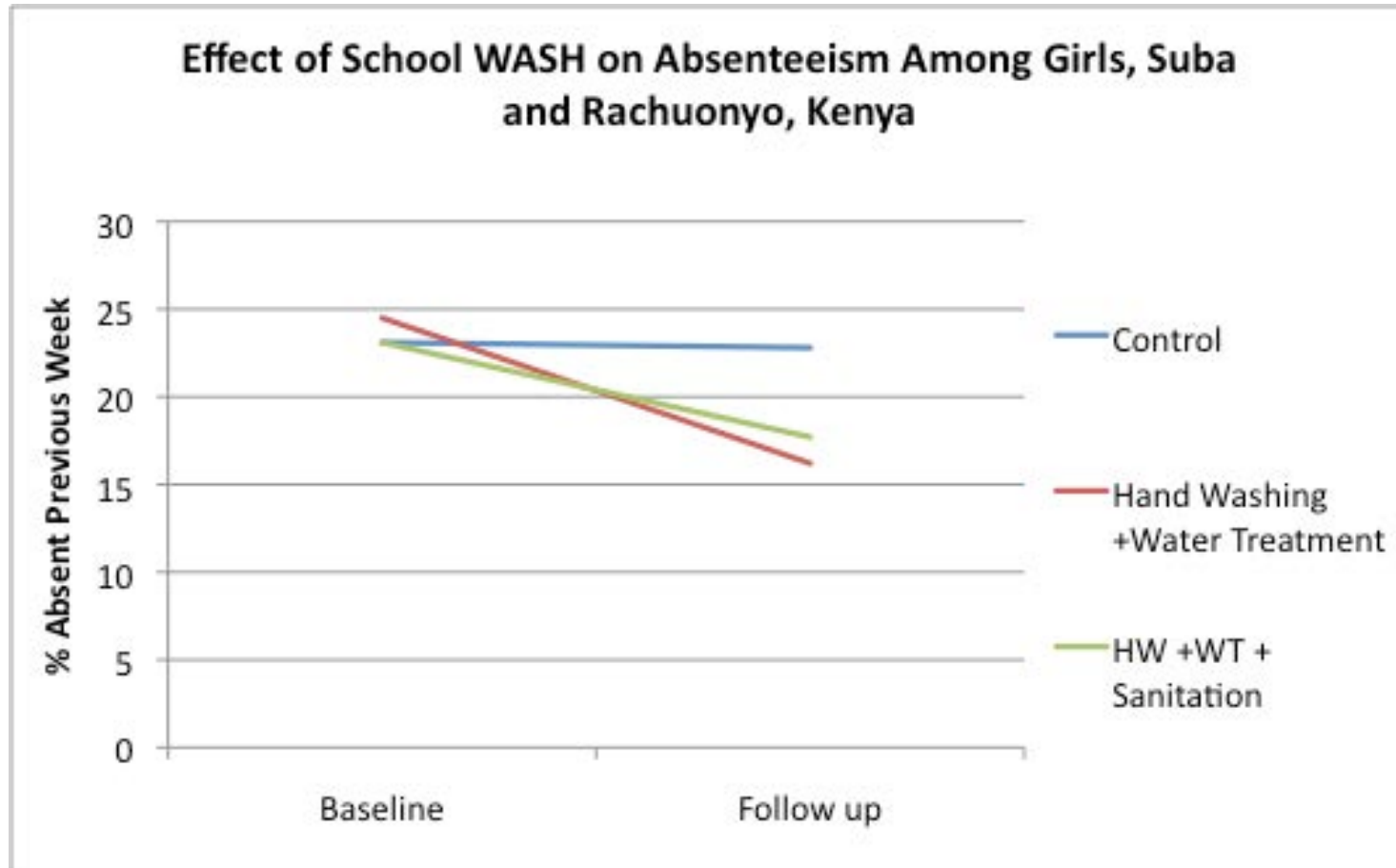


# Methods: Outcomes

- Educational
  - Absenteeism (self-report, roll call, parental recall)
  - Standardized tests
  - Enrollment
- Health
  - Helminthes infections
  - Diarrhea
  - Anemia
- Household
  - Hygiene behaviors
  - Illness in children <5



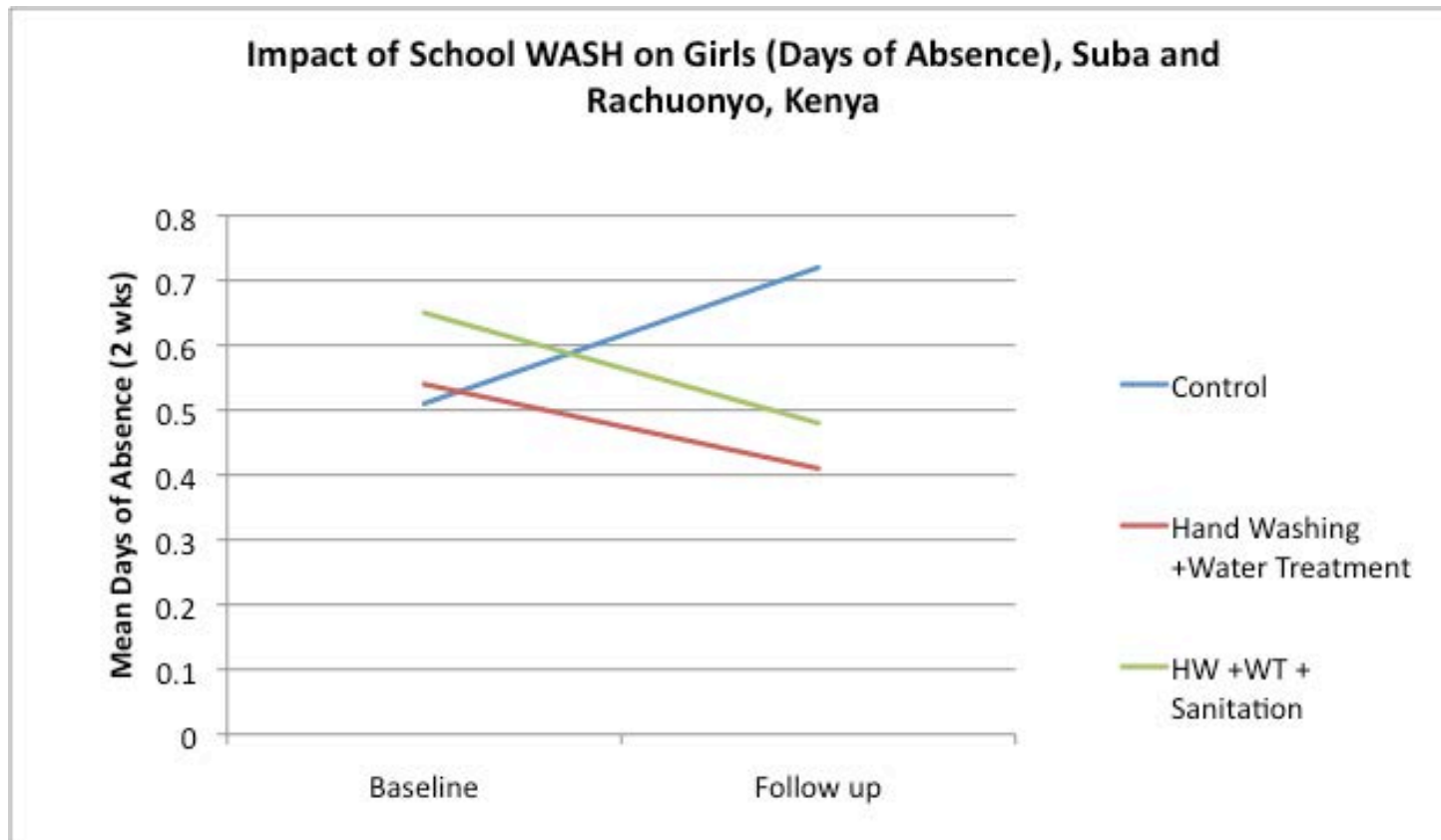
# Results: Reduced Absenteeism in Girls



- Up to 50% reduction in absence among girls, controlling for other factors
- No measured absenteeism reduction in boys
- Effects differed across regions

Source: Freeman et al 2011

# Impact on Absenteeism: Gender Differences



- Over 6 days of absence per girl annually
- Cost-effectiveness comparable to other interventions



# Results: Helminth Re-infection

- Followed re-infection rates for *Ascaris*, *Trichuris* and Hookworm
- **Ascaris**
  - 45% reduction in odds overall
  - Even greater among poorest girls
- **Trichuris**
  - No effects
- **Hookworm**
  - Significant reduction in intensity of infection for boys
  - Especially among poorer boys without shoes

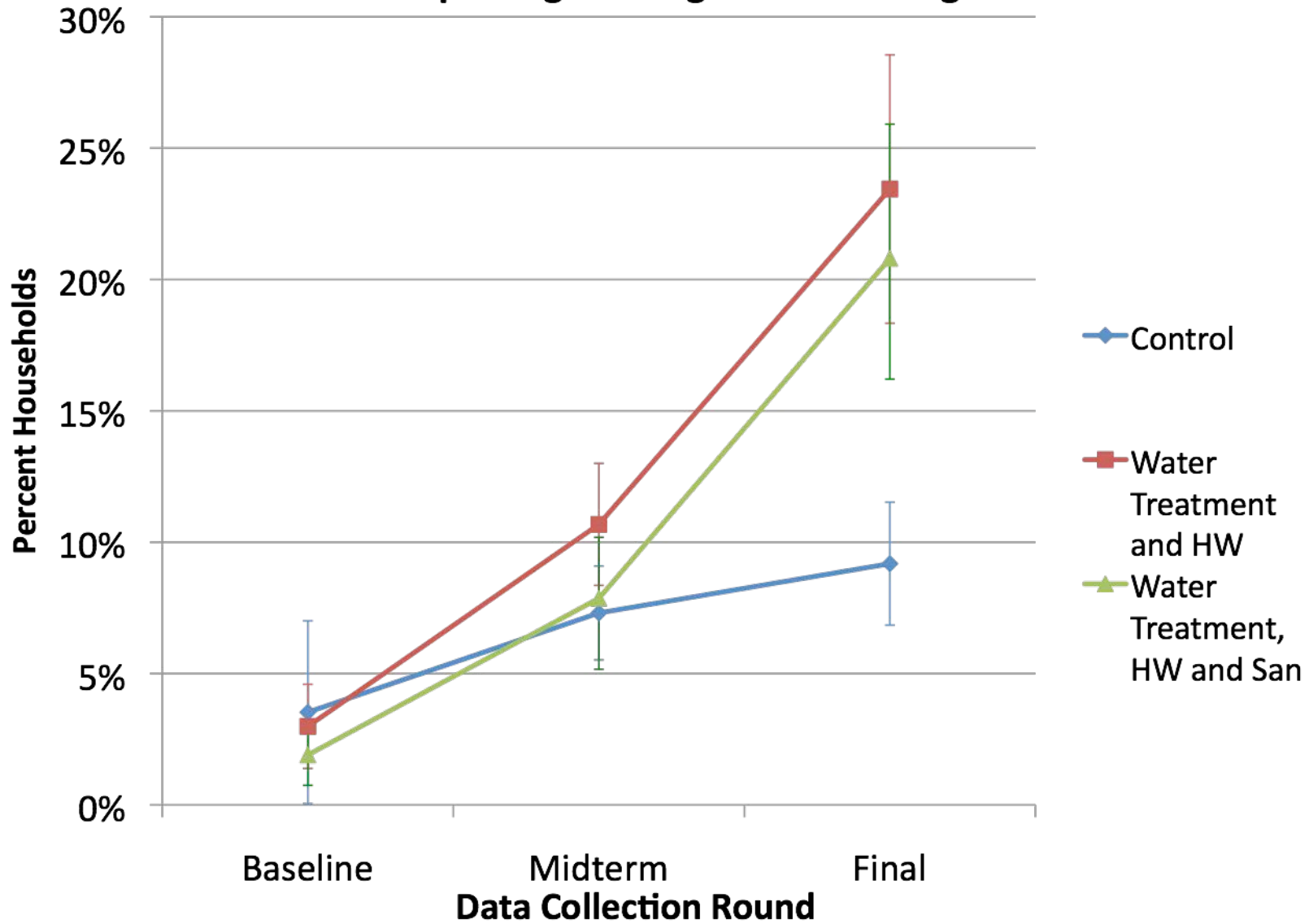


Source: Freeman et al 2011

# Results: Behavior Change at Home

- School children may serve as change agents
- Focused on changes in household water treatment (presence of chlorine in drinking water)
- Controlled for regional trends in chlorine use

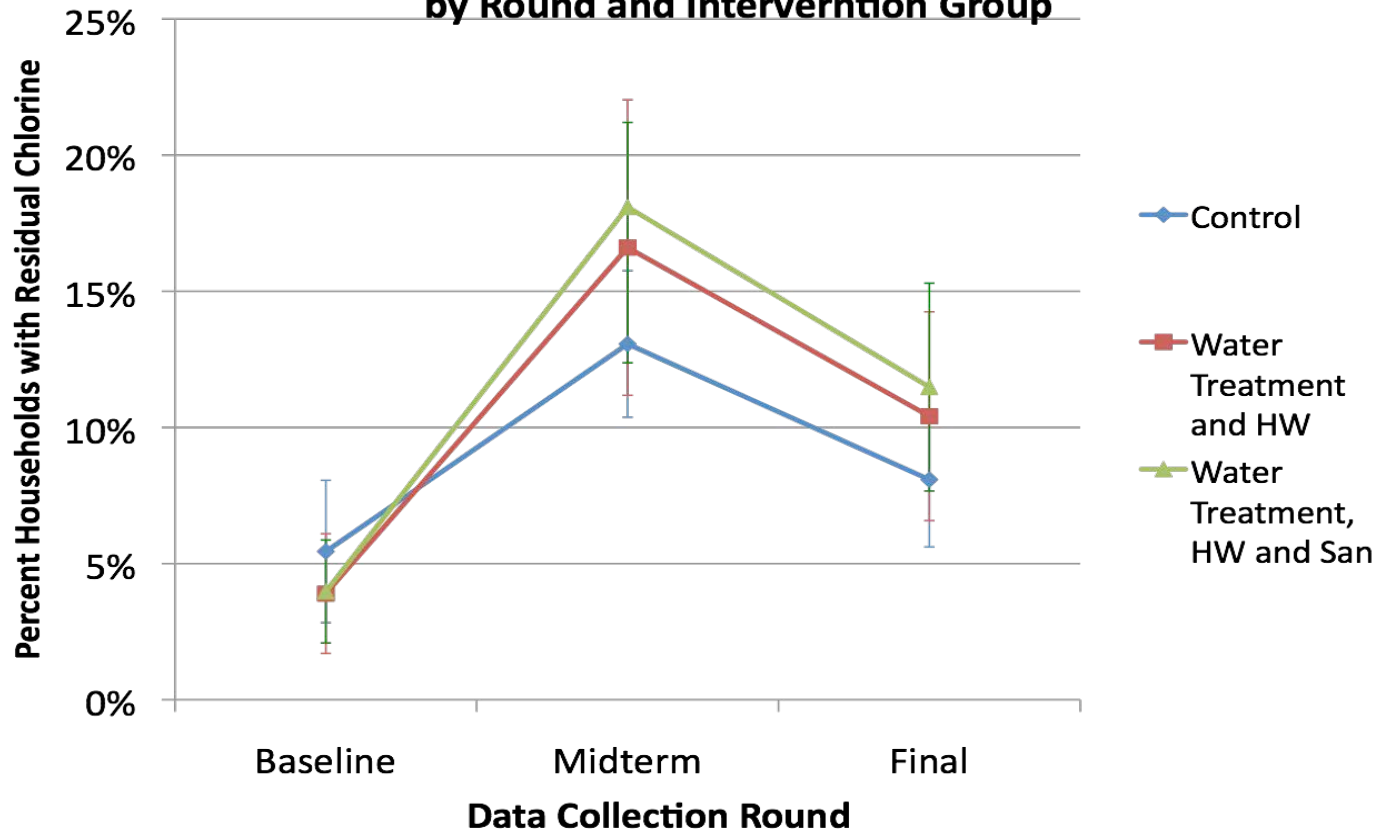
## Effect of School WASH on Household Water Treatment: Households Reporting Hearing WASH Messages from Children



Note: Means and 95% CI are for each data collection round separately and account for clustering.  
Analysis accounting for baseline differences shows a significant increase in intervention school communities

# Diffusion of uptake

**Effect of School WASH intervention on Household Water Treatment: Residual Chlorine in Household Drinking Water by Round and Intervention Group**



- Fifty percent increase in household water treatment, compared to controls
- Increase especially among poor households
- Limited overall impact – more intensive efforts needed

*Source: Rheingans et al 2009*

# What Determines Impact?

- Reducing exposure is essential for impact
- Sustainability drives impact

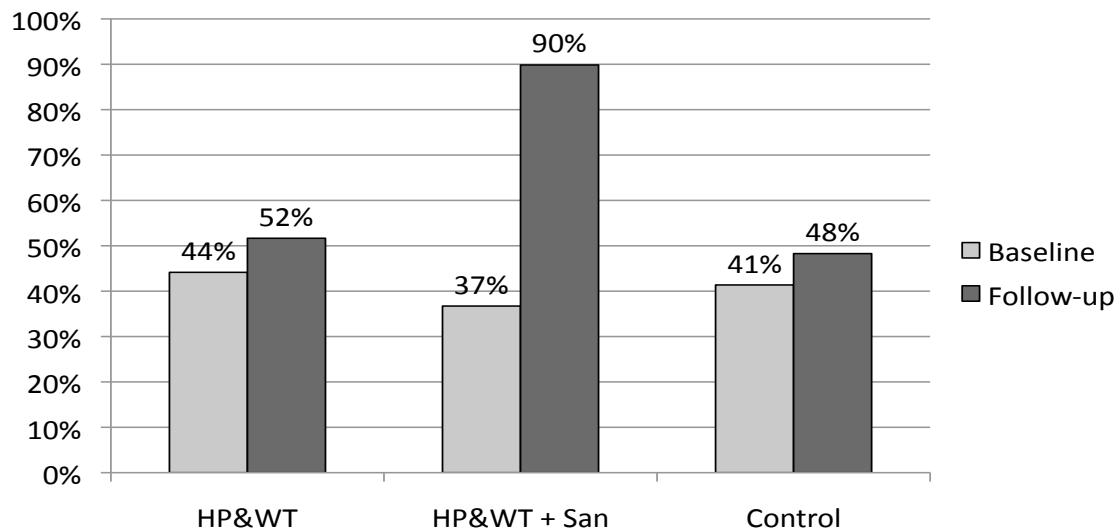


Reducing Exposure is Essential for Impact

# Reducing Exposure is Essential for Impact

- In schools receiving new latrines, children had *increased* in fecal hand contamination
- Suggests
  - Importance of latrine cleanliness
  - Interdependence of hand-washing and sanitation
  - Need for anal cleansing materials

**Figure 1.** Percentage of pupils with presence of *E.coli* on their hands at schools receiving hygiene promotion and water treatment (HP&WT), additional sanitation (HP&WT + San), and control schools at baseline and follow-up



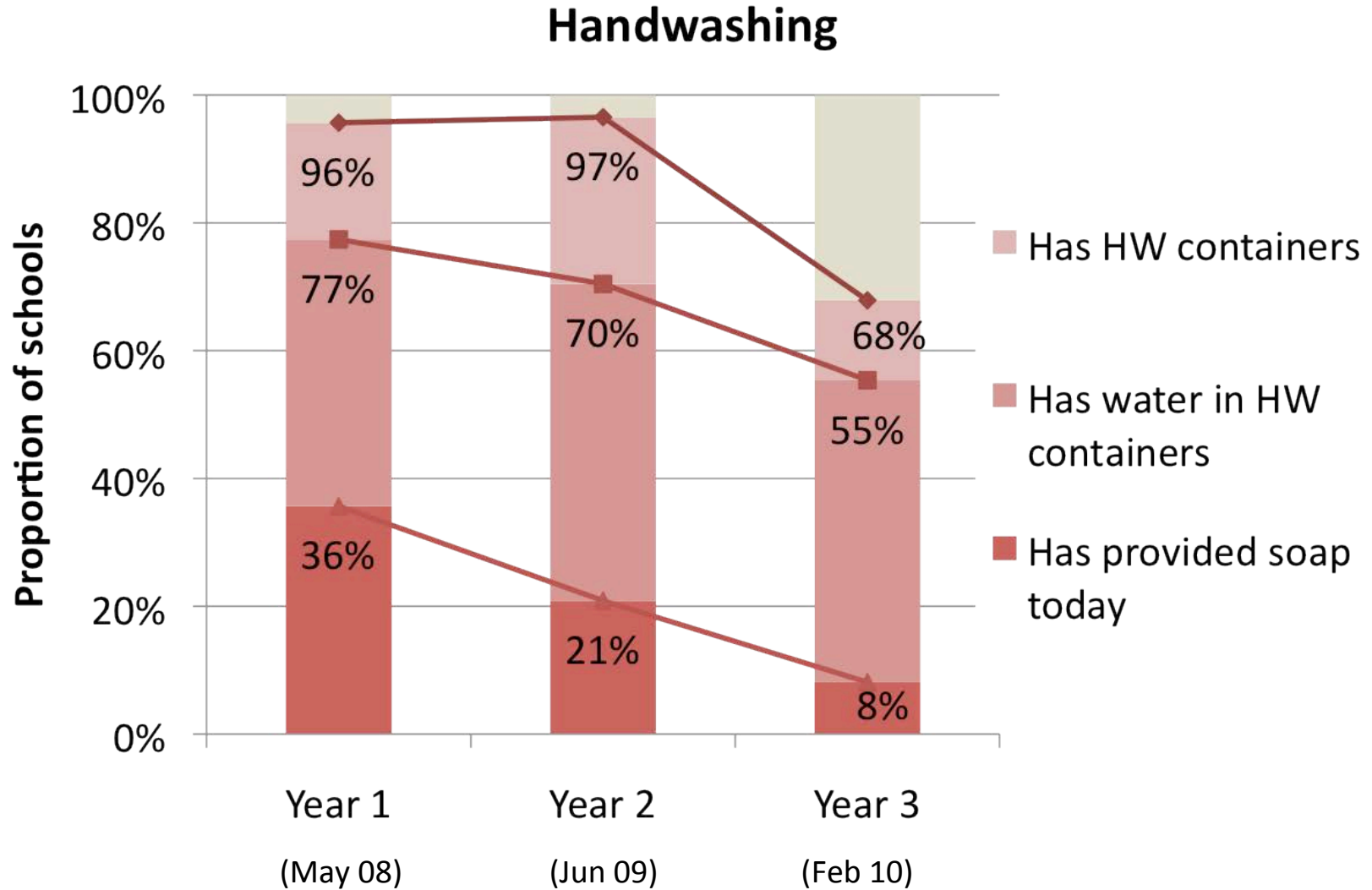
Source: Greene et al

# Sustainability: Sweating the Small Stuff

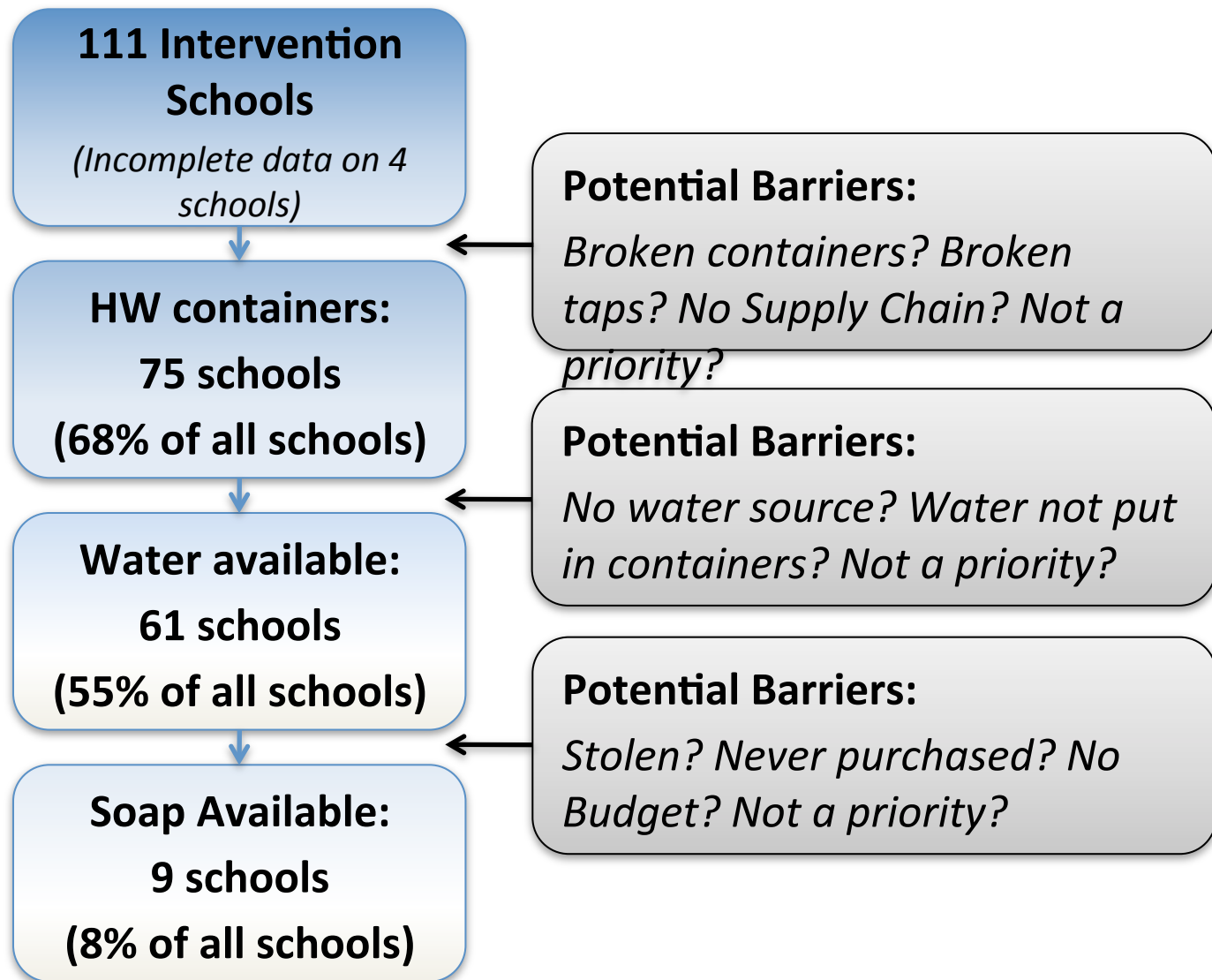
- Infrastructure alone was less influential
- Impact was determined more by whether schools kept the soap in place and kept water treated
- Why do some schools fail?



# Sustainability Drives Impact



# Sustaining School WASH: Identifying Barriers





# What Have We Learned?

- School WASH can
  - Reduce absenteeism
  - Reduce helminth infection
  - Change household hygiene behaviors
- Impacts depend:
  - Differences based on who and where you are
  - How well the intervention is executed
  - Intensity of behavior change efforts
  - How well it is sustained

