HYGIENE AND SANITATION ASSESSMENT OF PUBLIC SITES

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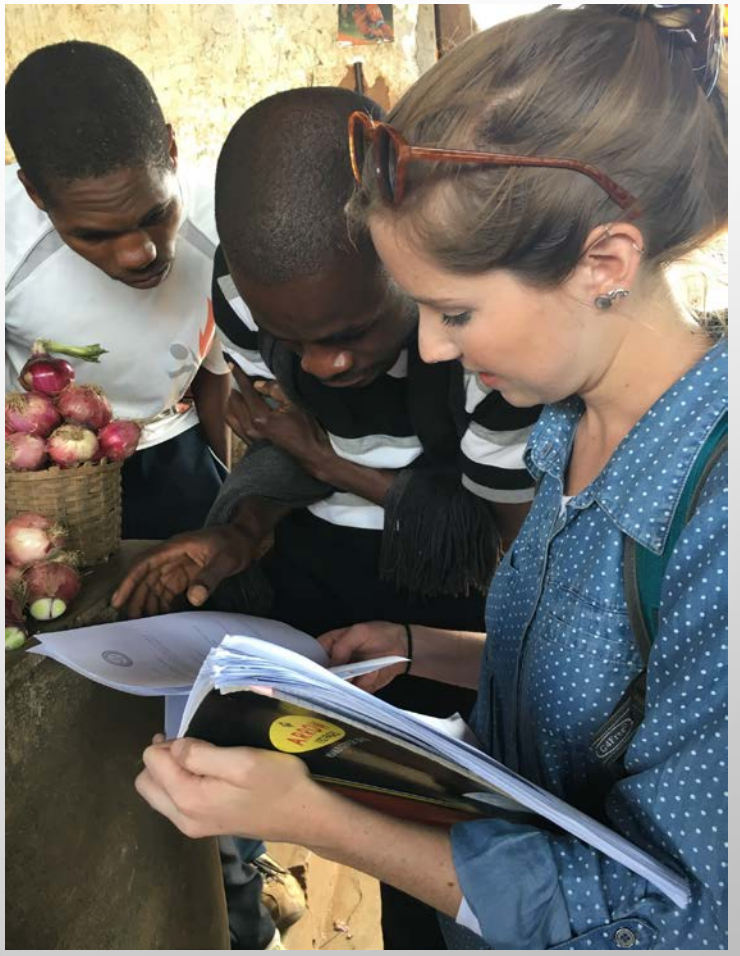
RESEARCH QUESTIONS

- What is the hygiene and cleanliness quality of public sanitation facilities?
- How do people manage their sanitation and hygiene needs in the absence of these facilities?
- How are public sanitation facilities managed?

MAIN OBJECTIVES

- Goal: to understand sanitation practices at public sites
  - Strategically test public spaces
  - Identify *E. coli* and total coliform contamination
  - Administer interviews
  - Pinpoint service gaps at public sites



MATERIALS AND METHODS

- **Study site**
  - Mzuzu city
  - 10 public sites with highly visited toilets by the general public.
  - Included medical facilities, schools, markets, and other sites

MATERIALS AND METHODS

- **Study Design**
  - Quantitative data involved determination of *E. coli* and total coliforms in the samples
  - Qualitative data was derived from the administered questionnaires and observation checklists

SAMPLING PROCEDURE AND SAMPLE SIZE

- A total of 150 samples were collected by swabbing hands and suspected surfaces of fecal contamination
- 15 blank samples were performed as controls
- Swabs were placed into 15ml test tubes containing 3ml Ringer solution
- Samples were transported to the laboratory for analysis within 6 hours of sampling

DATA COLLECTION AND PROCEDURE

- Samples were analyzed for total coliforms and *E. coli* using Petri film
- 1 ml of sample was pipetted into Petri film-two tests were performed per sample
- Samples incubated for 24 hours at 35.0 degrees Celsius
- Total coliforms and *E. coli were* manually counted after 24 hours of incubation
- Questionnaires and checklist observational forms used to collect field data

PUBLIC SITES

- 70% of sites had standing water
- 20% had open sewage
- 50% had animals
- 100% had handwashing stations
- 20% had soap

"There is no soap. **Ever.**"- Male, School

"…There is no soap. **We have to improvise.**"- Female, School

"There is a tap in the bathroom. **I have never found soap** in there."- Male, Transportation Center

TYPES OF TOILETS

Flush Toilet
N=20

Flush Latrine
N=11

Pit Latrine
N=10

Toilet Type	Paying Toilets	Free Toilets
Pit Latrine	2	8
Flush Latrine	8	3
Flush Toilet	3	17

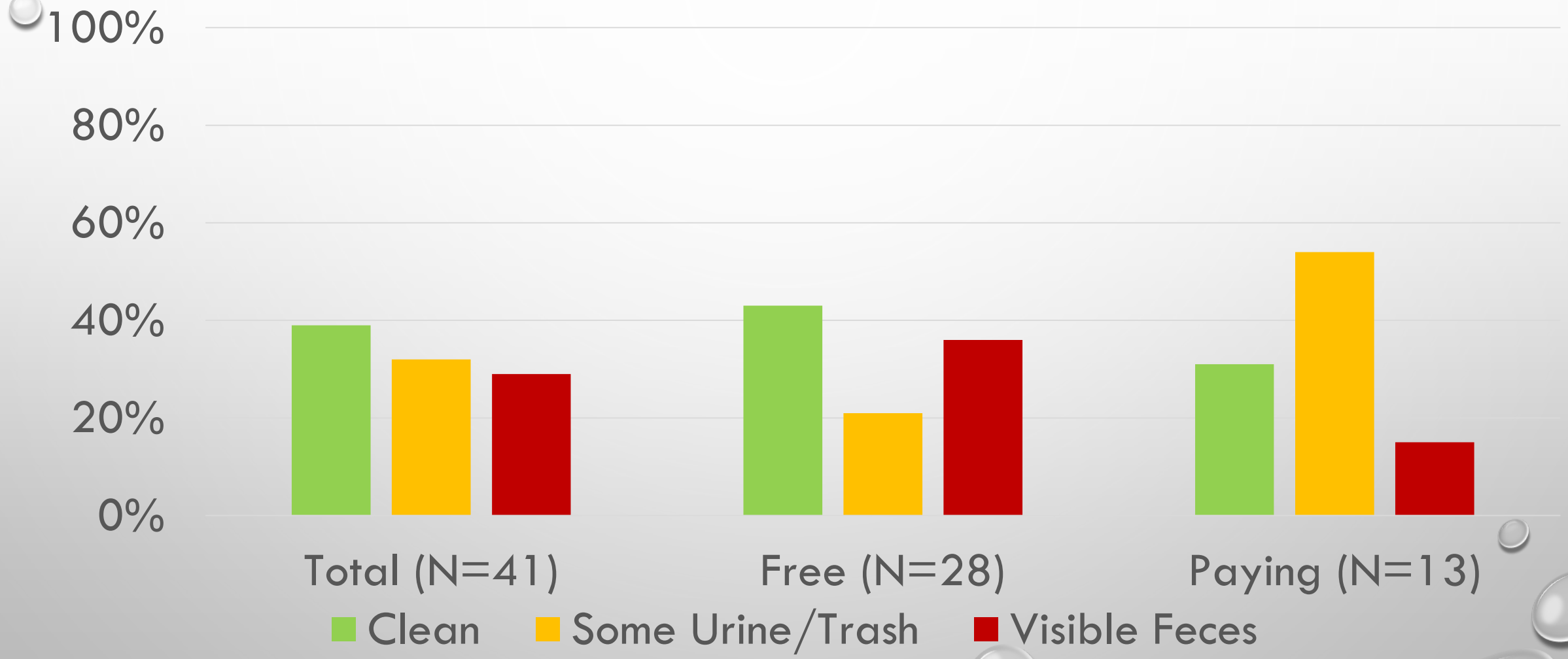
CLEANLINESS SCALE

Clean

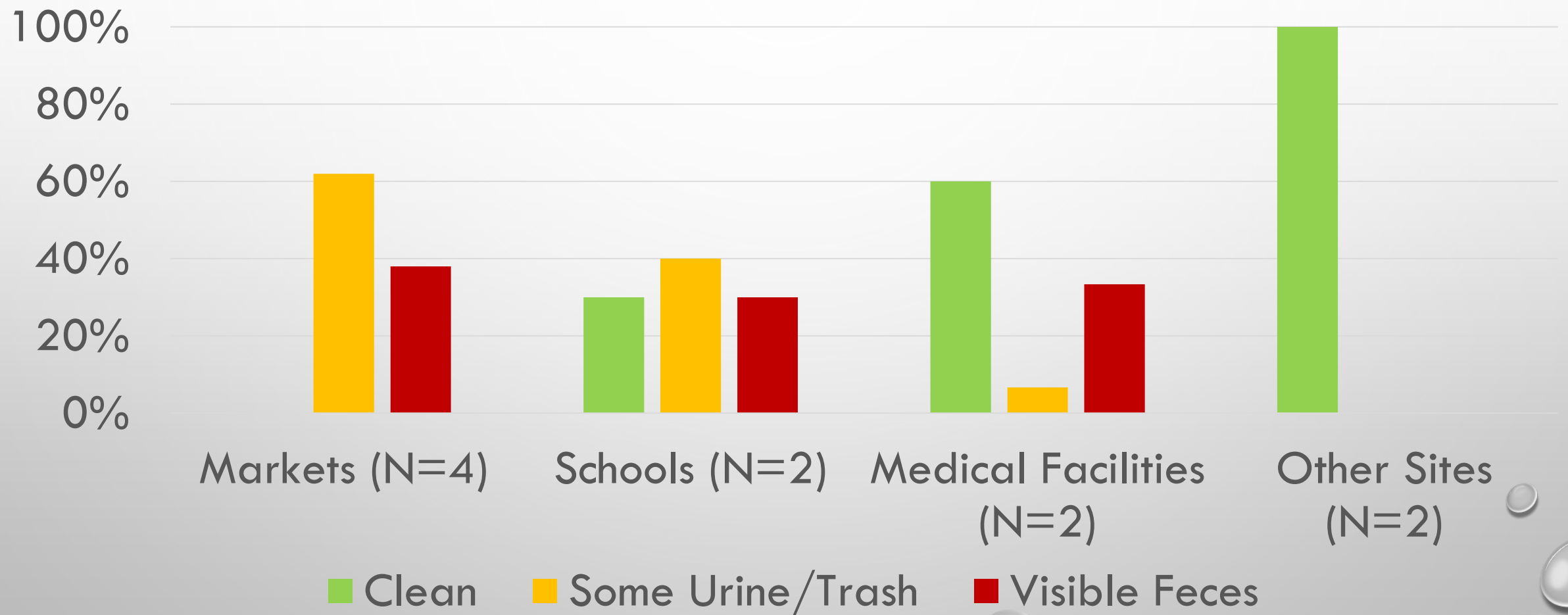
Some Urine/Trash

Visible Feces

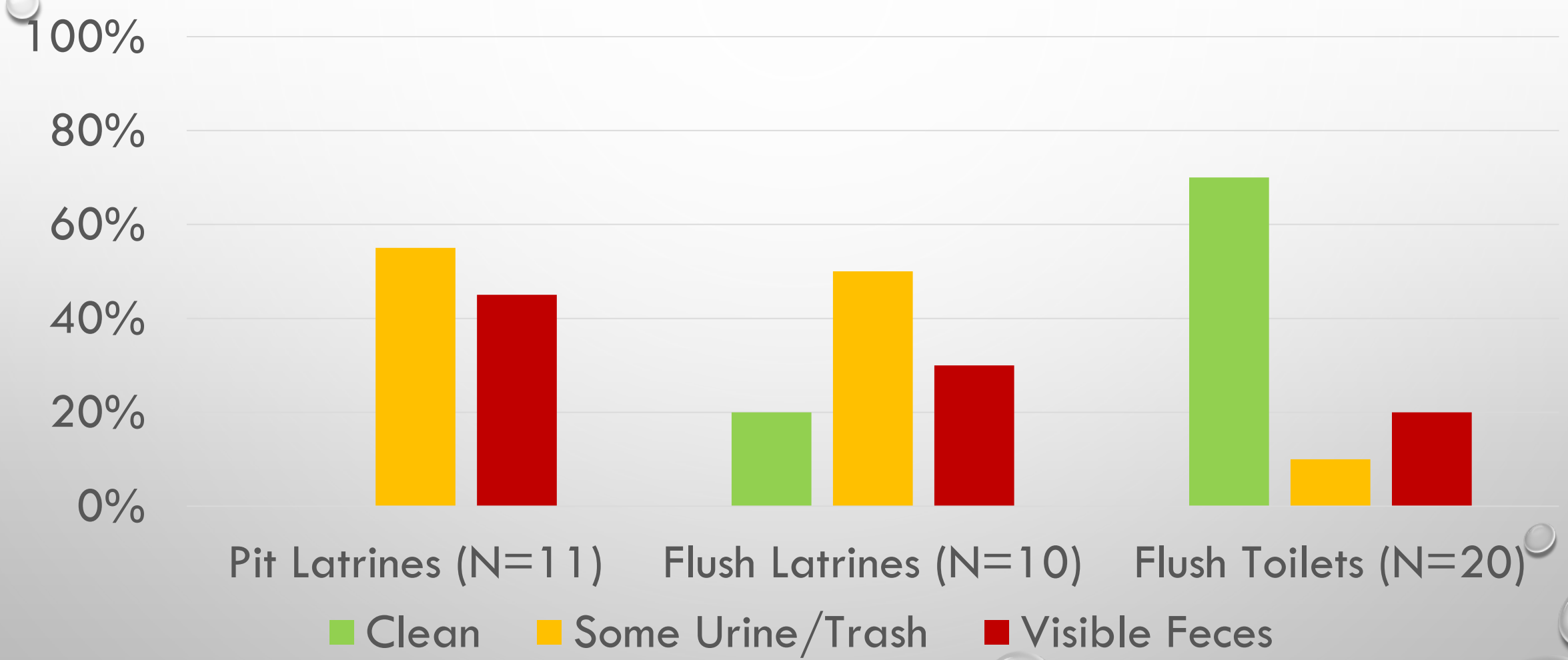
LATRINE BLOC CLEANLINESS



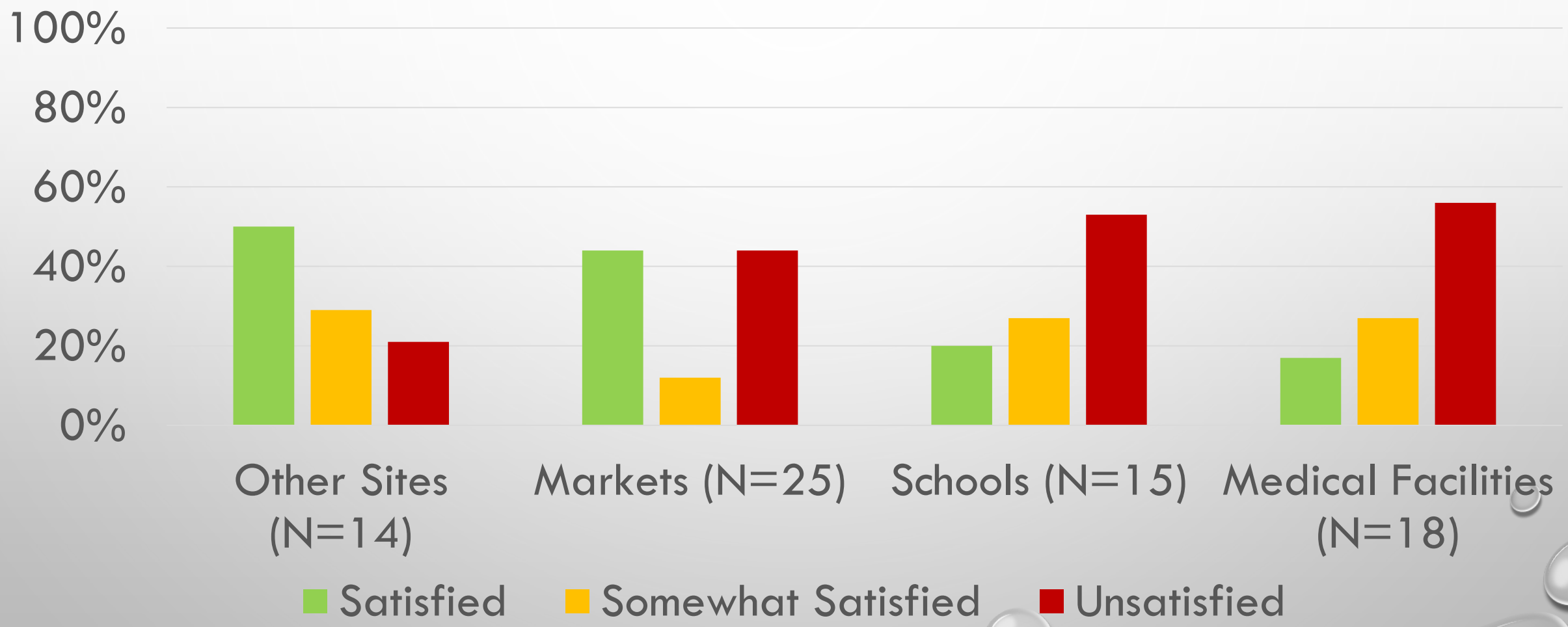
CLEANLINESS OF SITE TYPES



CLEANLINESS OF TOILET TYPES



INTERVIEWEES' SANITATION FACILITY SATISFACTION



E. COLI AND TOTAL COLIFORMS

- Out of a total 165 samples, 12 had *E. coli*.
  - Predominantly found in latrine blocs and on hands
  - Markets, transportation centers, and medical facilities had the highest concentrations
- Out of the total samples, 74 had coliforms
  - Mostly found in latrine blocs and on surfaces
  - Markets, medical facilities, and transportation centers had the highest concentrations

E. COLI PRESENCE IN SAMPLES

- Low presence of *E. coli*
- Our data was not conclusive
- Evidence of fecal matter, but no *E. coli*

CITY VS. PRIVATELY MANAGED SANITATION FACILITIES

- Interviewee satisfaction was significantly higher at privately managed facilities ($p=0.045$)
- Public satisfaction is higher on privately managed facilities
  - Some city managed facilities can't reserve the right of admission
  - Pride in ownership – accountability

CITY VS. PRIVATELY MANAGED SANITATION FACILITIES

City Managed

Privately Managed

- “Since the city has taken over, the sanitation has gotten **worse.**”- Female, Market

“The situation is bad at the toilets because the users which include **patients, vendors, and passersby improperly use it** even if the cleaner does their job.”- Male, Medical Facility

PAYING TOILETS

- Price as a deterrent to use the facilities
  - Open defecation
  - Abuse of free of charge facilities

"K100 is a lot of money that **we cannot afford to pay every time** we need to answer the call of nature."- Male, Market

"Since you have to pay to use the toilets, **people urinate anywhere**, especially during the night."-Male, Transportation Center

"… Where people go to the bathroom is not safe, but the toilets are too expensive and **they have no choice**."- Male, Market

COST AND QUALITY OF SANITATION FACILITIES

- Had no significant effect on interviewee satisfaction
- Compares urban market toilets to medical facilities
- Price varies from urban to peri-urban areas

MISUSE OF FLUSH TOILETS

- A main factor affecting cleanliness
- Flush toilets are not being properly used, they are constantly “broken”

"I wish water toilets were used so the students **would learn how to use them** and better manage them."- Male, School

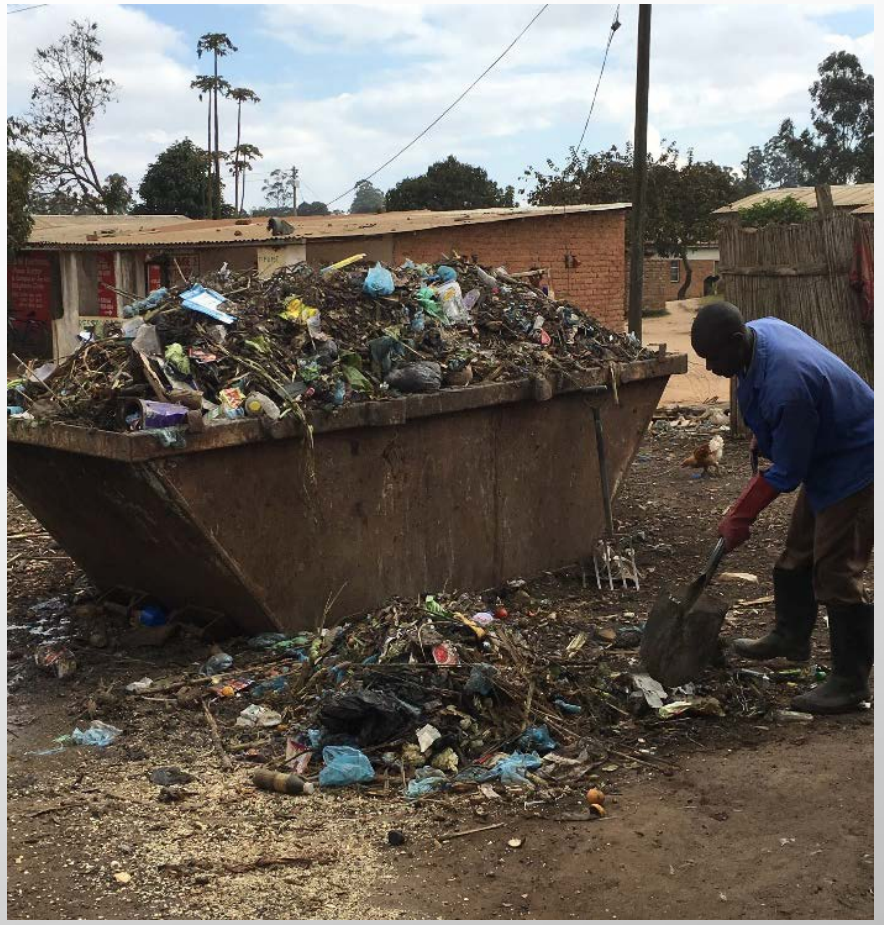
"… [toilets] are often dirty. Sometimes you find people have **defecated on the ground** around the toilet and you cannot use."- Female, Market

LACK OF SOAP

- Soap was only found in 2/5 paying toilets
- Not found in any of the free toilets
- Soap often reported stolen

PUBLIC SATISFACTION

- Public's main concerns
  - Latrine misuse and management
  - Inadequate numbers of latrines
  - Waste management



"The population is high and the cleaners are very little. There's no rubbish bins inside the market. **How I wish they would clean more.**"- Male, Market

"The facilities are not adequate. Some cannot afford. **We need to have more options.**"-Male, Market

"The cleaners do their work, but the problem is with the people. **They just throw trash anywhere.**"- Male, Transportation Center

RESEARCH LIMITATIONS

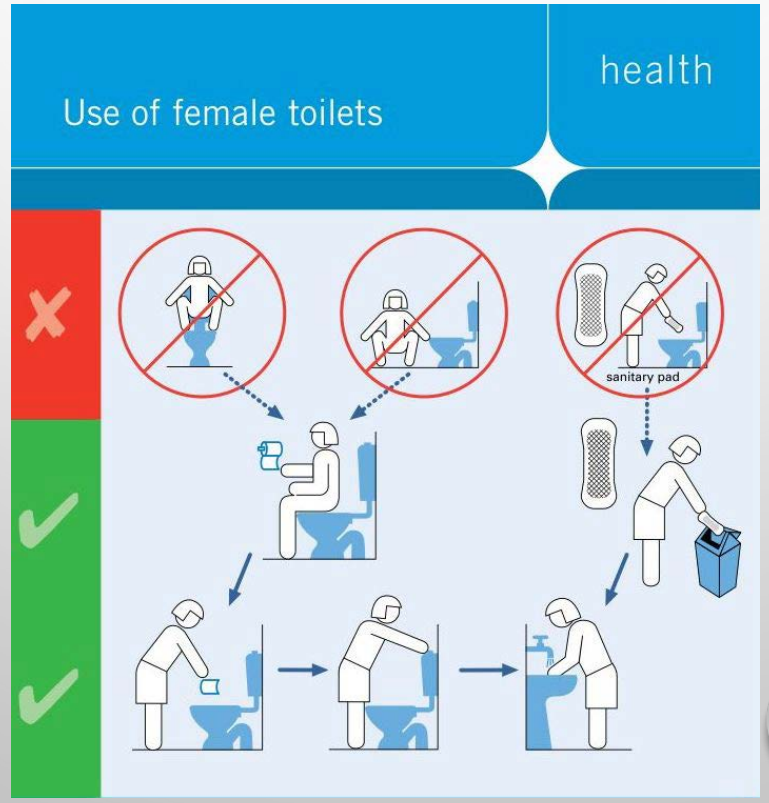
- Timing; visiting specific sites during “off” hours results in less representative data
- Limited number of interviewees at schools and health facilities
- People skeptical of being swabbed
- Being denied access to swabbing & interviews at particular sites
- Language used in interviews

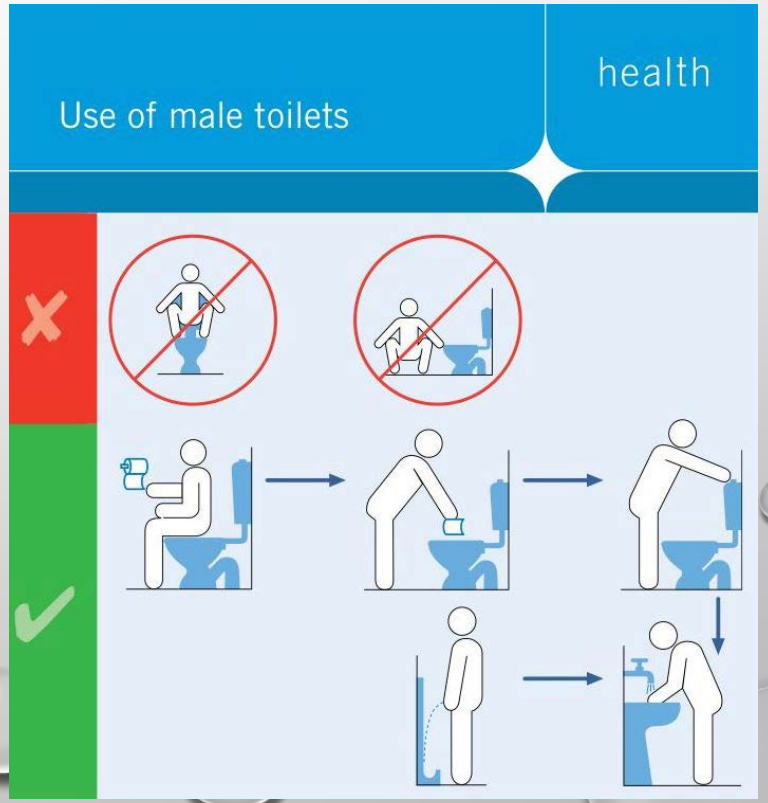
SUGGESTIONS FOR FURTHER RESEARCH

- City management vs. Private management
  - Cost/benefit analysis
  - Which type of facilities are cleaner, better cared for, and used most?
- Collection of samples and interviews
  - Pilot study potential
  - Timing: how does it affect the data collected?

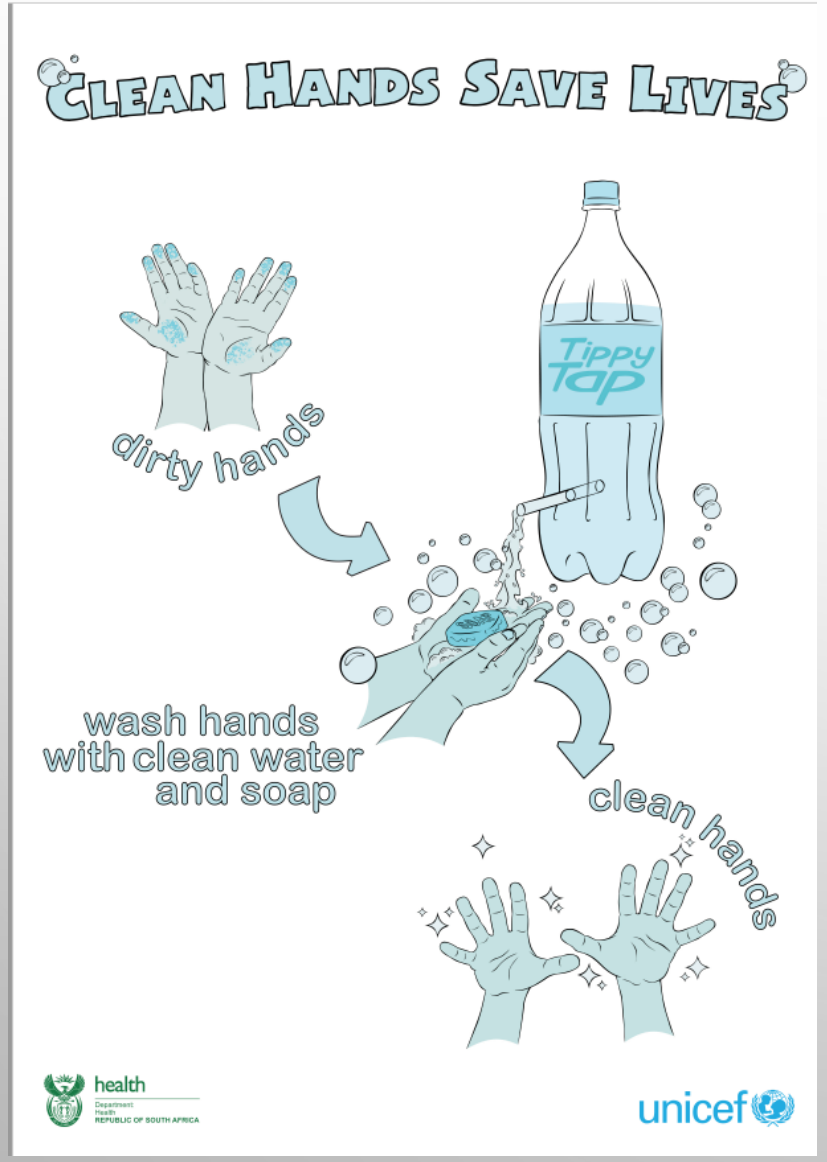
POLICY RECOMMENDATIONS

- Offer information on proper use of different latrine technologies this can be done through
  - Posters
  - Handouts
  - Info sessions





POLICY RECOMMENDATIONS



- Encourage soap use
  - Awareness campaigns
  - Increase the capacity of organizations
  - Increased supervision of public toilets

POLICY RECOMMENDATIONS

- If possible, for future toilet construction projects, offer more than one type of toilet
  - Discourage pit latrines
- Discounts for frequent users of public toilets
  - Tax paying vendors

"The presence of feces on hospital toilets **defeats the whole purpose** under which hospitals are found as health, hygiene, and sanitation service providers."- Male, Medical Facility

THANK YOU!

Hygiene and Sanitation Assessment of Public Sites

All of the sites visited had handwashing facilities
Only 2 out of 10 sites had soap available

***E. coli* and other diarrhea and disease causing bacteria from faeces were found in:**

- Markets
- Transportation centers
- Medical facilities

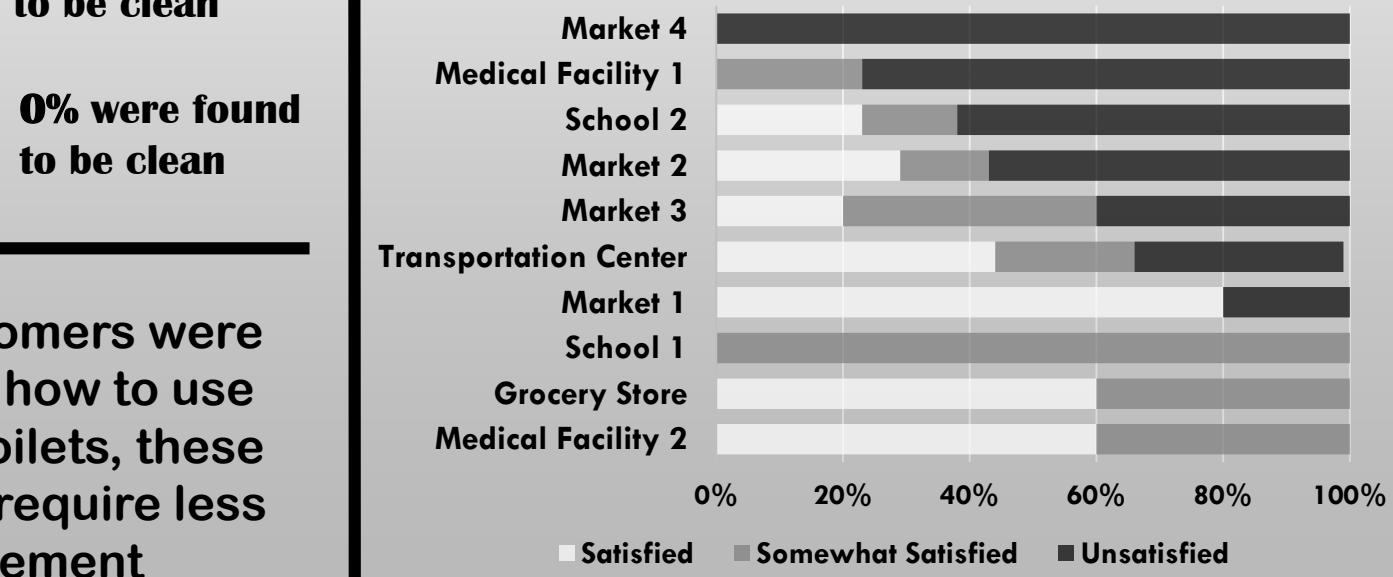
These bacteria can be killed with soap!

Flush toilets — **70% were found to be clean**

Pit latrines — **0% were found to be clean**

If customers were taught how to use flush toilets, these would require less management

USER SATISFACTION



Pictures sourced from www.thenounproject.com