Evaluating Hygiene Behaviour Change Within Community Health Clubs in the Rusizi District of Rwanda

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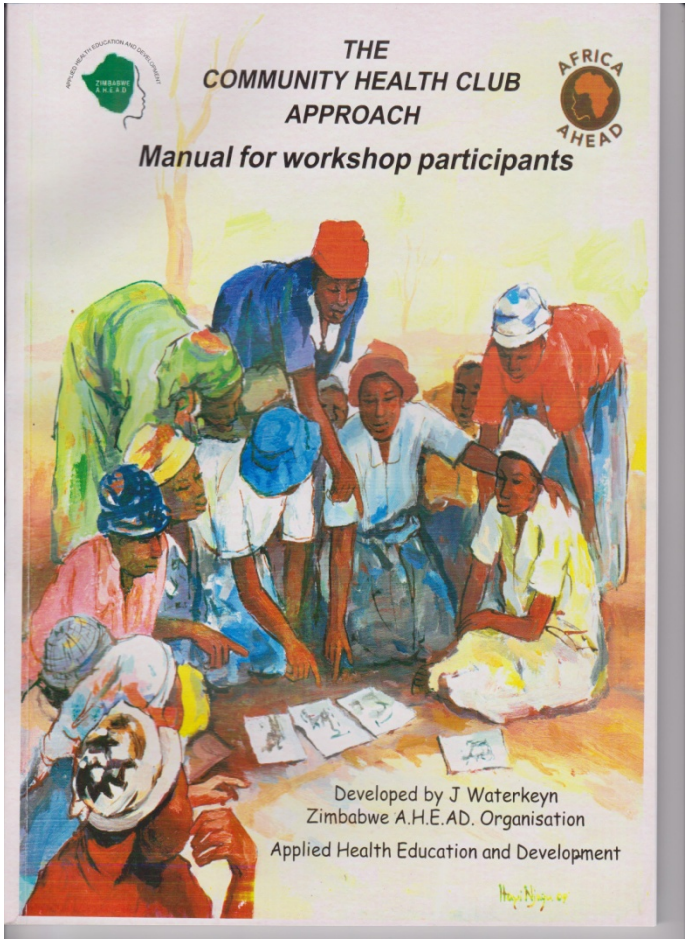
The Community Health Club Approach

- Developed in 1995 by Africa AHEAD in Zimbabwe.
  - Implemented in Africa, Asia, & the Caribbean
- **Aim:** Community-based health, hygiene and sanitation improvement through voluntary village level club formation.
- Participatory approach to health education and generating positive behaviour change.
- **End Goal:** Create a 'culture of health' within the community, reinforced through positive peer pressure.



(Africa AHEAD, 2010)

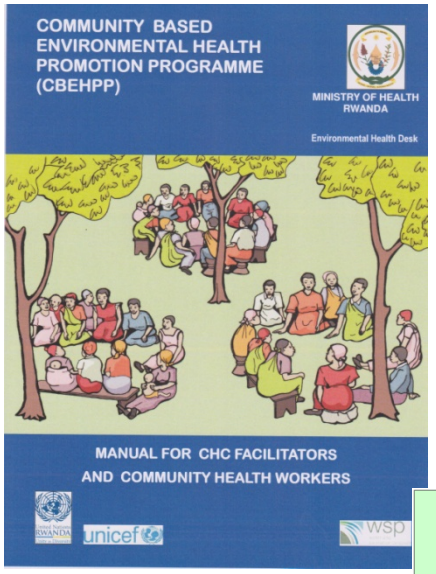
How do Community Health Clubs work?

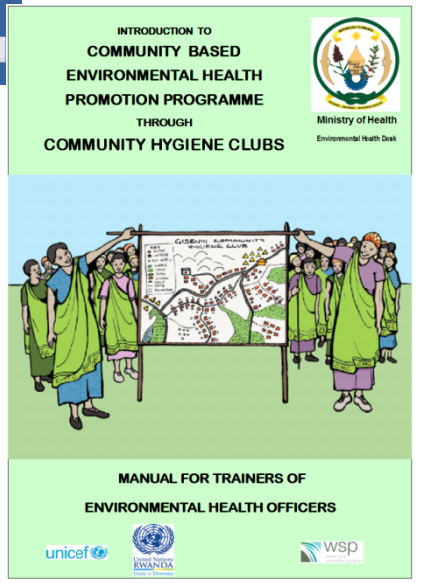
- Weekly meetings held by trained Community Health Workers.
- Knowledge and behaviour change is initiated through a 20 session syllabus and group sessions.
- Homework projects after each meeting.
- Attendance monitored through membership cards.
- Graduation ceremony for members that attend all sessions.
- Monitoring and Evaluation of behaviour change through the Household Inventory.

No.	Topic	Homework Topics
1	Introduction	Bring friends and family. Group mapping of the village.
2	Common Diseases	Demonstrate knowledge of causes.
3	Personal Hygiene	Construction of a family wash shelter.
4	Hand Washing	Construction of a hand washing facility, use of soap.
5	Skin Diseases	Check if children are afflicted by skin diseases.
6	Diarrhoea	Use of soap at home, Oral Rehydration Salts.
7	Infant Care	Correct child immunisation and weaning practices.
8	Intestinal Worms	De-worming of children.
9	Food Hygiene	Safe food storage.
10	Nutrition	Demonstrate knowledge of a balanced diet with 'Road to Health Chart.'
11	Food Security	Kitchen gardens and pest control.
12	Water Sources	Village Level Operation, Maintenance and Management of water resources.
13	Safe Drinking Water	Safe storage and usage, individual cups and plates.
14	Improved Sanitation	No open defecation. Latrine improvement & cleanliness.
15	The Model Home	Waste management and greening.
16	Good Parenting	Clean children, children going to school.
17	Respiratory Disease	Adequate household ventilation.
18	Malaria	Use of treated bed nets.
19	Bilharzia	Treatment for bilharzia.
20	HIV/AIDS	Voluntary counselling and testing.

CHC Implementation in Rwanda

- Realised through the Ministry of Health's Community Based Environmental Health Promotion Programme (CBEHPP) – Launched in 2009.
- **Mission:** Deliver behaviour change training to all villages across Rwanda's 30 districts.
- **Objectives:**
  - Increase the proportion of hygienic latrines in schools and homes.
  - Increase hand washing with soap at critical times.
  - Achieve zero open defecation in all villages
  - Achieve safe disposal of children's faeces in every household.
  - Increase the proportion of households with bath shelters, rubbish pits, pot drying racks, and clean yards.
- **Implementation:** CHC training delivered by a hierarchy of Community Health Workers operating from district to village level.



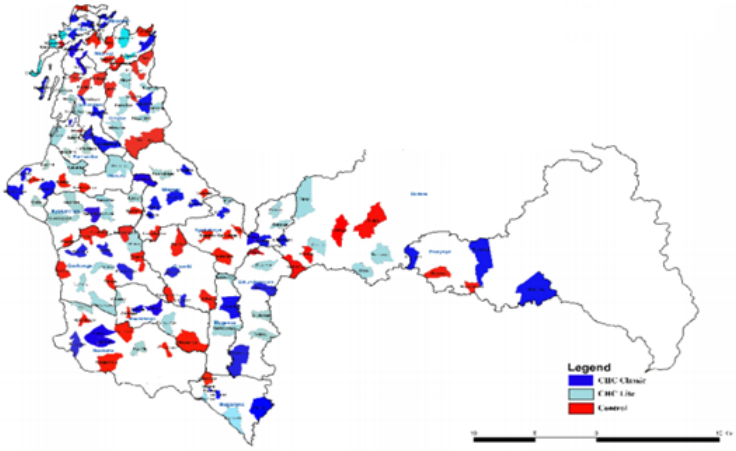


(Africa AHEAD, 2011)

CBEHPP Evaluation in Rusizi

- **2012:** Evaluation of the CBEHPP's effectiveness started by the NGO Innovations for Poverty Action (IPA).
- A cluster Randomised Control Trial was conducted in the Rusizi district.
- Africa AHEAD tasked with CHC implementation and training.
- Rusizi had a high burden of disease, and lack of previous CBEHPP implementations.
- 150 villages were randomly selected
  - 50 Classic (Blue)
  - 50 Lite (Light Blue)
  - 50 Control (Red)

(World Health Organisation, 2014)



(Africa AHEAD, 2015)

Randomised Control Trial Study

Factors Investigated:

- Primary Health Outcomes:
  - Caregiver- reported diarrhoea in children under 5
  - Child stunting and wasting

- Secondary Health Outcome:
  - Household water quality

- Intermediate Outcomes:
  - Improvements in drinking water sources
  - Household water treatment
  - Improved (structurally complete) sanitation facilities
  - Improved handwashing facilities
  - Sanitary disposal of children's faeces

Results: No effect on health outcomes, and only mixed results for intermediate outcomes found.

Africa AHEAD: Monitoring and Evaluation

• M&E data was collected in parallel by Africa AHEAD using the Household Inventory.

– Observational surveys centred on 10 primary hygiene indicators, made up of approximately 5 proxy-indicators each.

• 5 independent surveys were carried out before, during and after the intervention by Africa AHEAD.

Period of data collection	Survey type	Team
May – Aug 2013	IPA Baseline	IPA
Oct – Nov 2013	Baseline	AA
Apr – May 2014	Midline	AA
Dec 2014	Endline	AA
Sep – Dec 2015	IPA Endline	IPA
Apr – May 2016	Post Intervention I	AA
Feb – Mar 2017	Post Intervention II	AA

Initial Results: Preliminary analysis of Midline and Endline data indicated an increase in uptake of positive hygiene behaviours by the 50 Classic CHCs.

Thesis Research Question Development

- Contrasting results between IPA and Africa AHEAD.
- Implication that behaviour change was not significant or lacking consistency across CHCs.
- 5 M&E datasets available for evaluating behaviour change over time.
- **Idea:** Investigate the degree and consistency of behaviour change over time for the 50 Classic CHCs.
  - Does the data show problems with the programme?

Primary Research Questions

1. Did significant hygiene behaviour change take place within Rusizi district CHCs? If so, to what extent, and with how much consistency did these changes take place across observed CHCs?

2. Do common traits exist among high and low performing CHCs with respect to hygiene behaviour change? If so, can these be linked to elements of the CBEHPP training and M&E programme implementations?

Methodology

1. Data preparation and cleaning
2. Survey alignment
3. Numerical scoring system development
4. Primary Statistical Analyses
5. Secondary Analyses
   - To shed further light on primary results.
   - Comparison of results with external sources.

Available Datasets

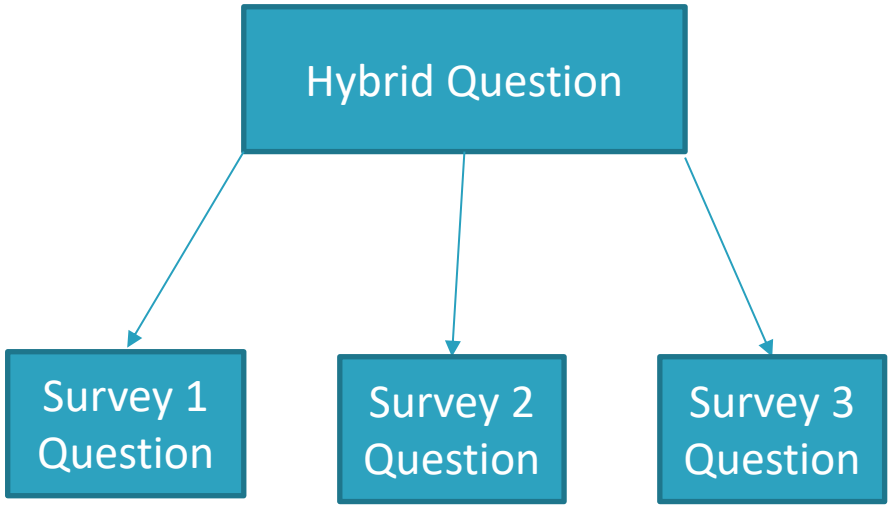
Dataset	Survey Version	Sample Size (n)	Total CHCs surveyed	Average HHs surveyed per CHC
Baseline	V1 - Paper Based	5745	47	122
Midline	V2 - Mobenzi	772	30	25.7
Endline	V2 - Mobenzi	475	24	19.8
Post Intervention I	V3 - ODK	502	51	9.84
Post Intervention II	V3 - ODK	677	25	27.1

Survey Alignment

Indicator Selection Requirements

- Must exist across all 5 surveys.
- Convertible to polar question format.
- Representable by a single hybrid question.

Final Selection: 29 sub-indicators



	Number of sub - indicators			
Main Indicators	Baseline	Midline/ Endline	PI – I/II	Thesis
Housing	-	-	4	-
Compound	8	7	5	4
Water Source	6	5	5	4
Drinking Water Storage	5	5	5	3
Handwashing	6	5	5	3
Sanitation	5	5	6	6
Body Hygiene	6	5	5	2
Malaria	-	-	5	-
Nutrition	-	-	5	-
Cooking/ Kitchen	5	5	6	5
Child Care	8	7	5	2
Total	**49**	**44**	**55**	**29**

Final Thesis Indicators

Indicator 1: Compound	Indicator 2: Water Source	Indicator 3: Drinking Water Storage	Indicator 4: Handwashing
1a: Is there sufficient drainage?	**2a:** Does the household use a safe primary water source?	**3a:** Is drinking water stored in a sealed container?	**4a:** Is there a handwashing facility available?
1b: Is the compound swept clean?	**2b:** Is the walking distance to the water source 30 minutes or less?	**3b:** Is the drinking water storage container clean?	**4b:** Is there a handwashing facility of good enough design?
1c: Is there no waste seen around the house?	**2c:** Is the waiting time at the water source 30 minutes or less?	**3c:** Is drinking water treated?	**4c:** Is there soap at the handwashing facility?
1d: Is there solid waste management?	**2d:** Are there 15 litres or more of water available per household member each day?		

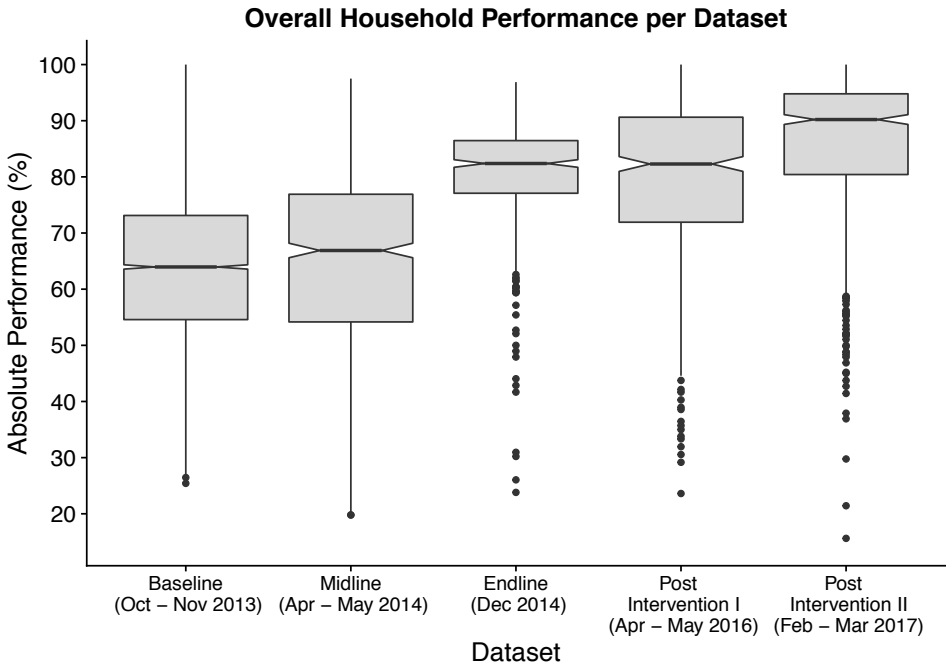
Indicator 5: Sanitation	Indicator 6: Body Hygiene	Indicator 7: Cooking	Indicator 8: Child Care
5a: Does the household have access to a latrine?	**6a:** Is there a designated area for bathing?	**7a:** Is cooked food stored safely?	**8a:** Are the children wearing clean clothes?
5b: Does the household not share a latrine with other households?	**6b:** Is soap available for bathing?	**7b:** Is the cooking done in a designated kitchen area?	**8b:** Do the children have clean faces?
5c: Does the household have an improved latrine?		**7c:** Is safe fuel used for cooking?	
5d: Is zero open defecation practised?		**7d:** Is the cooking area not contaminated from livestock?	
5e: Is the latrine well covered?		**7e:** Is the kitchen clean?	
5f: Is the latrine clean?			

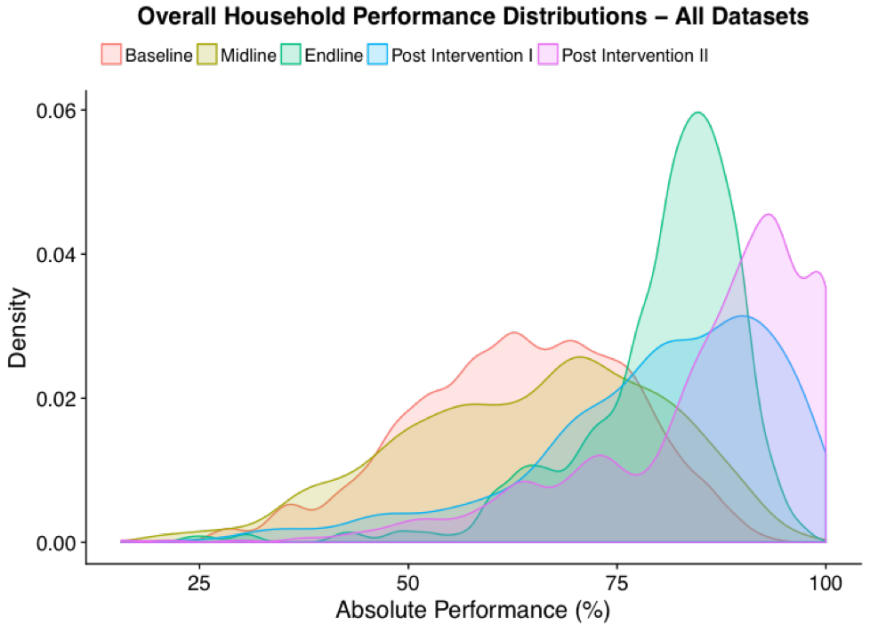
Numerical Scoring System

- 29 polar sub-indicator questions with ‘Yes’ and ‘No’ answers.
  - ‘Yes’ always represented the positive hygiene practice.
- Binary scoring system: Yes = 1, No = 0

Dataset	Household	CHC	Indicator 1a	Indicator 1b	…	Indicator 1 Mean	…	Indicator 8c	Indicator 8d	Indicator 8 Mean	Overall Performance
Baseline	HH1	Kabeza	1	0	…		…	1	1		0.75
Baseline	HH2	Kabeza	1	1	…		….	0	0		0.93
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
Baseline	HH23	Munini	0	1	…		…	1	0		
Baseline	HH24	Munini	1	1							
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
Midline	HH 5746	Kabeza	0	0							
⋮	⋮	⋮	⋮	⋮							
PI – I	HH 7071	Kabeza	1	1							

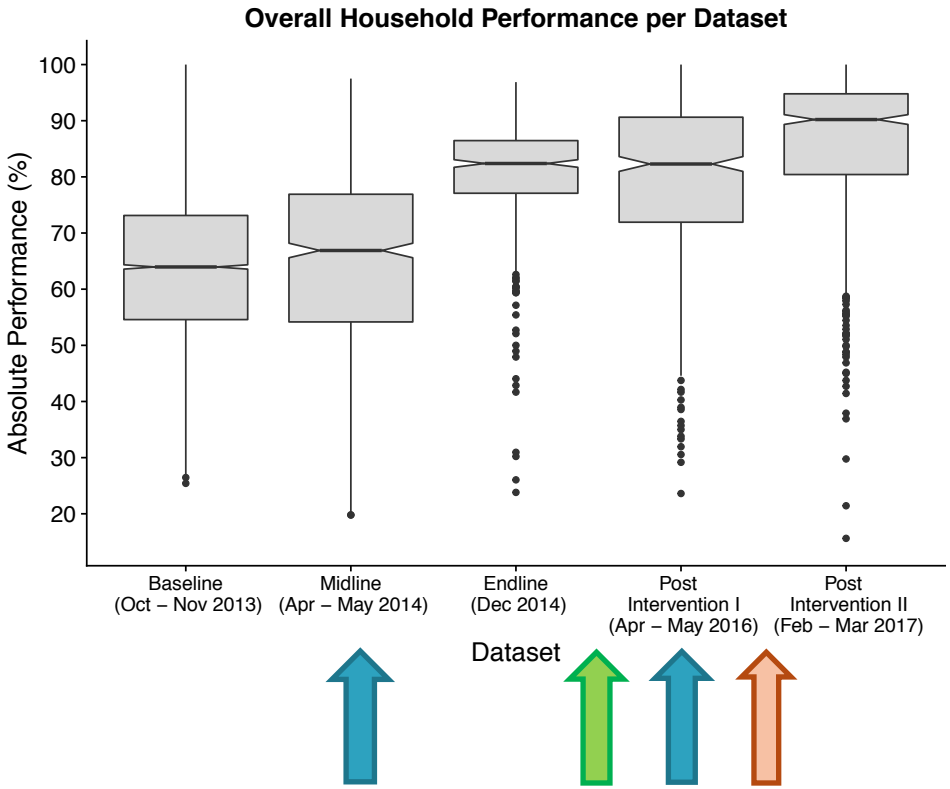
Overall Household Performance – Dataset Level

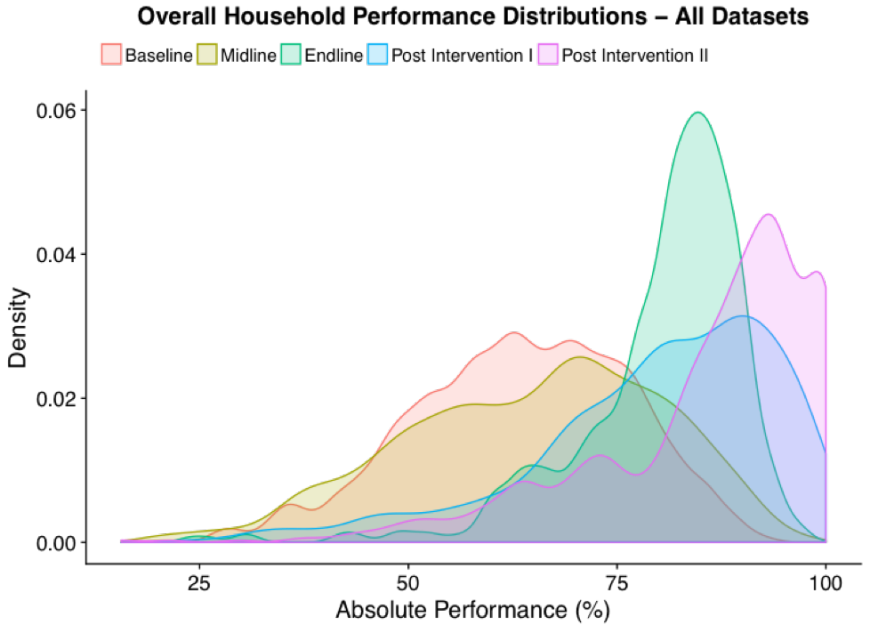




Dataset Comparison	Difference in Means (%)	Std. Error of the Difference	t-value	p-value
Baseline – Midline	1.46	0.582	2.52	0.0120
Baseline – Endline	16.8	0.505	33.2	p<<0
Baseline – Post Intervention I	16.3	0.681	23.9	p<<0
Baseline – Post Intervention II	22.3	0.528	42.2	p<<0
Midline – Endline	15.3	0.731	20.9	p<<0
Endline – Post Intervention I	- 0.484	0.813	-0.596	0.552
Post Intervention I – Post Intervention II	6.04	0.836	7.22	p<<0

Overall Household Performance – Dataset Level





Legend:

- Rainy Season
- Genocide Memorial Month
- IPA Endline (Hawthorne Effect)
- CHC Competitions (Hawthorne Effect)

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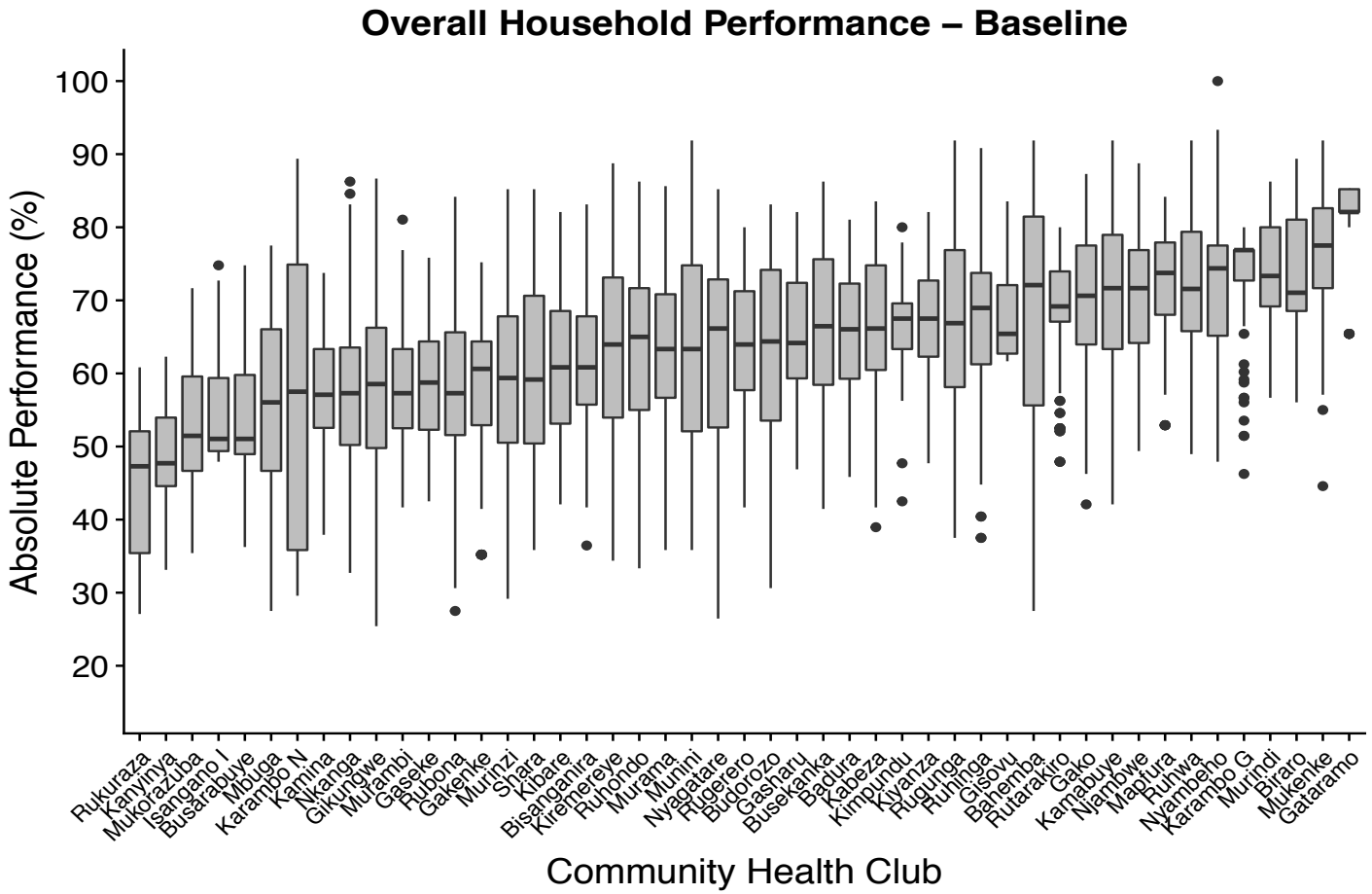

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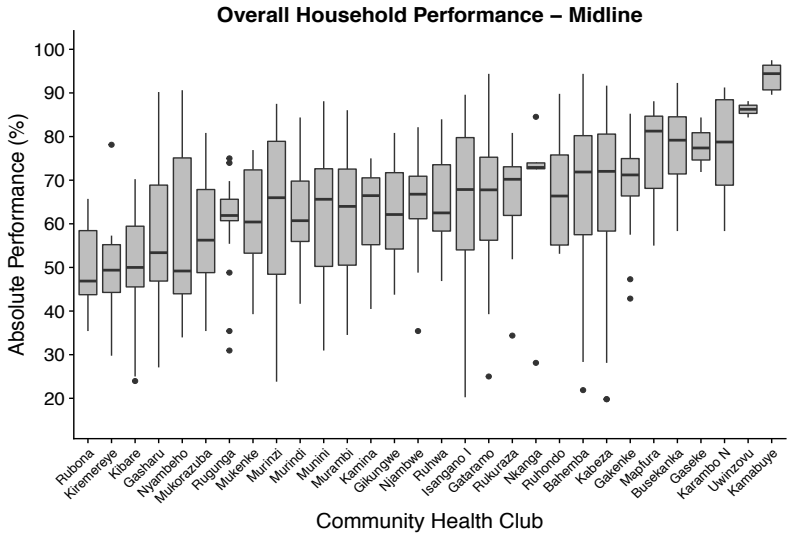
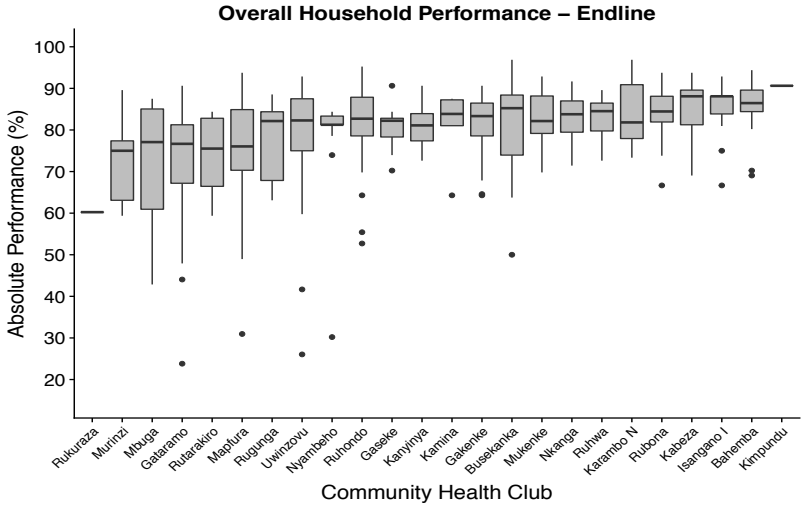
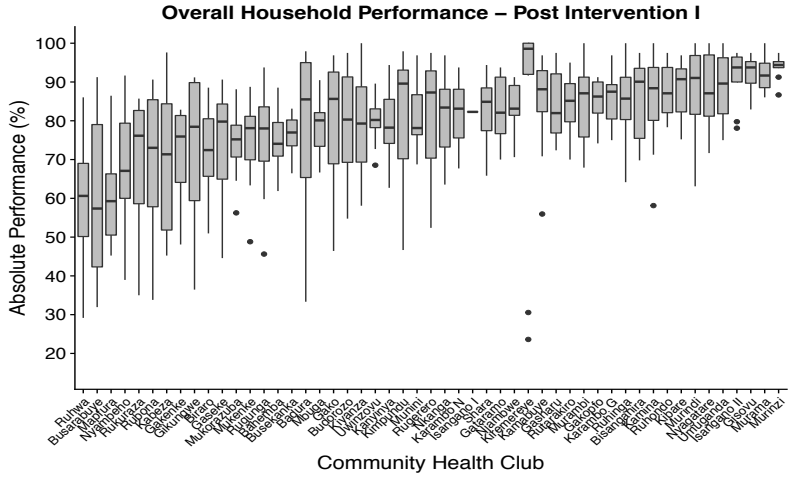
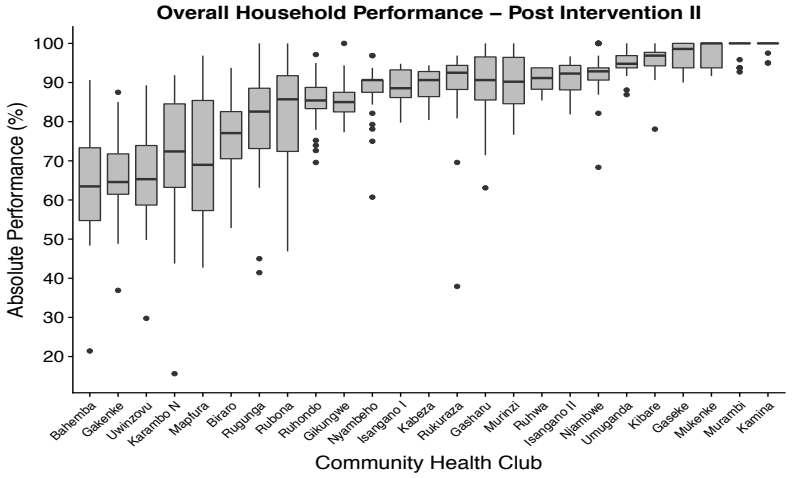
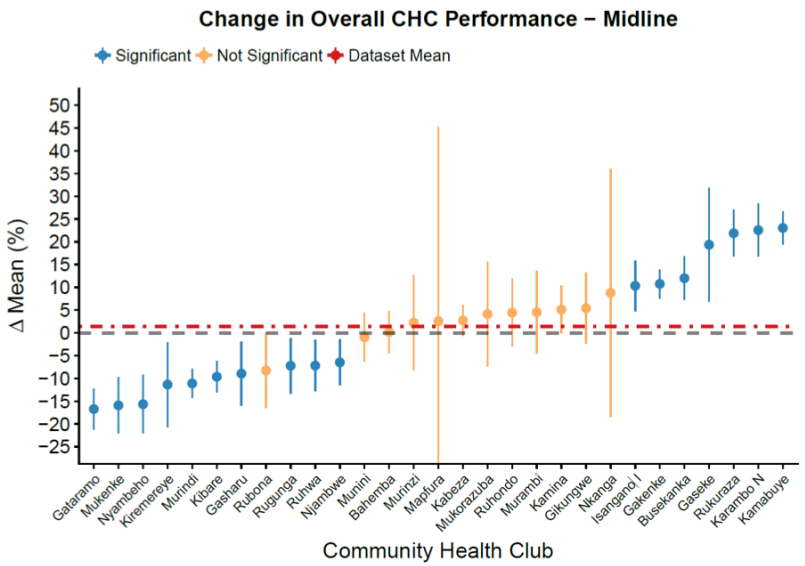


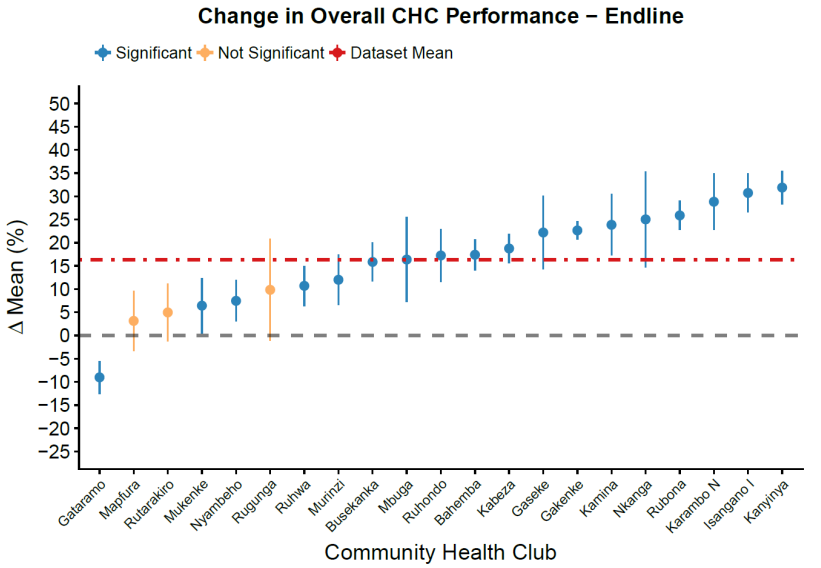


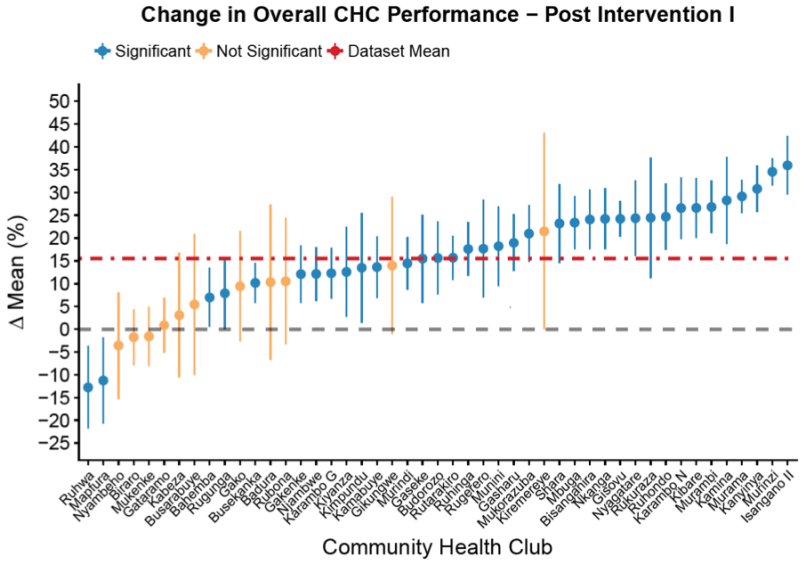


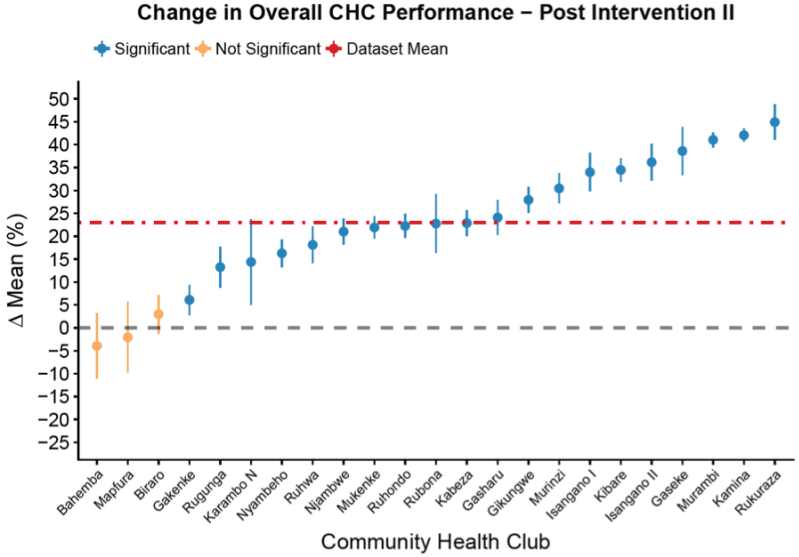


Change Relative to Baseline

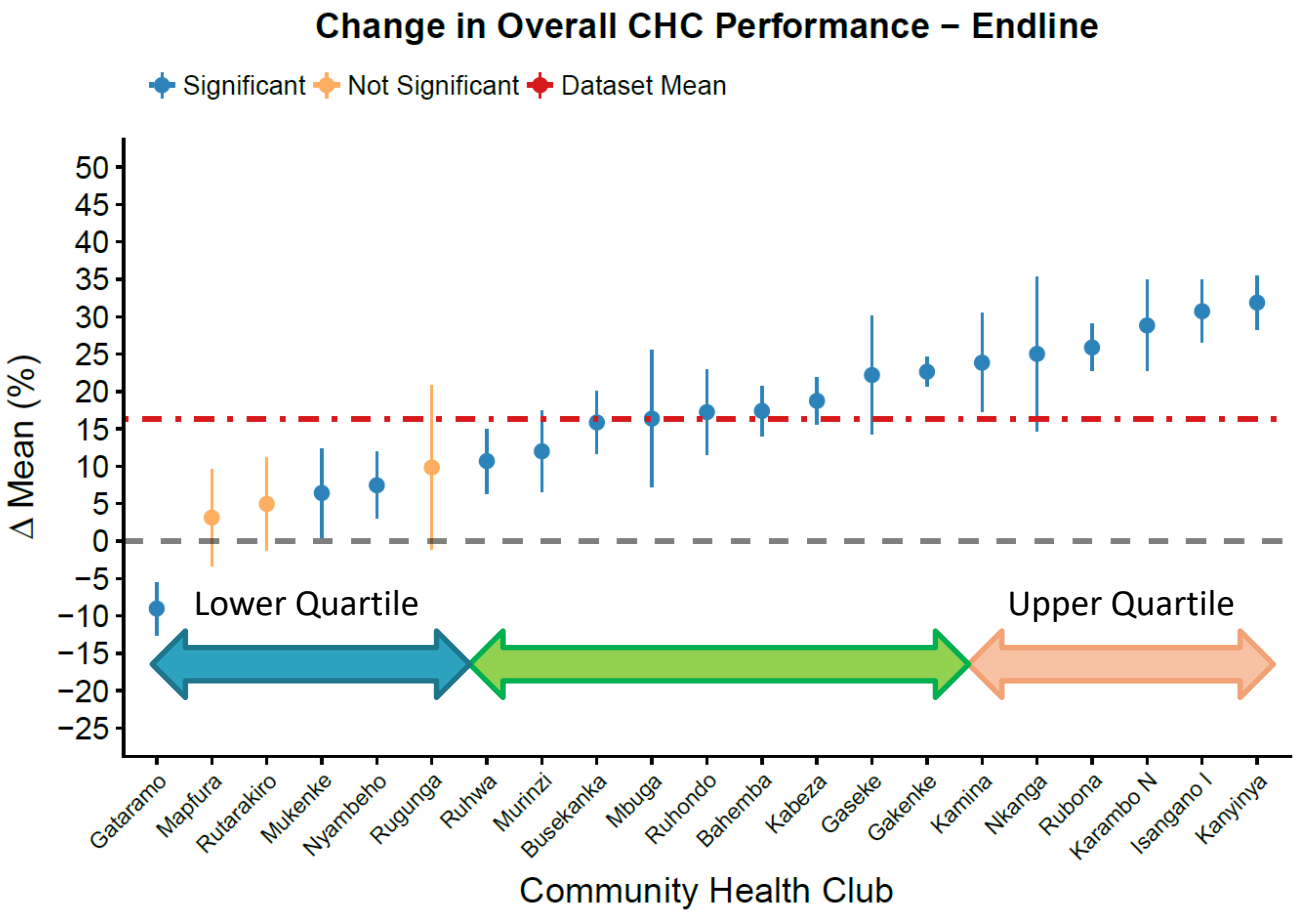




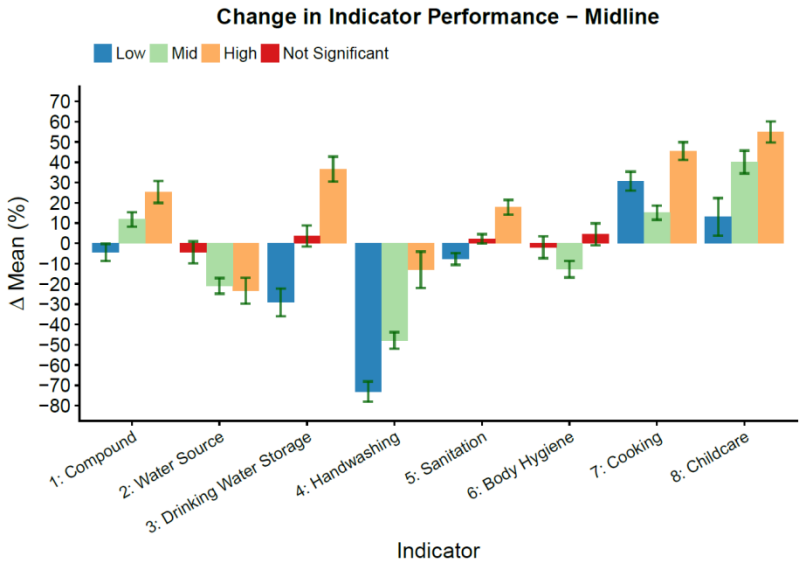


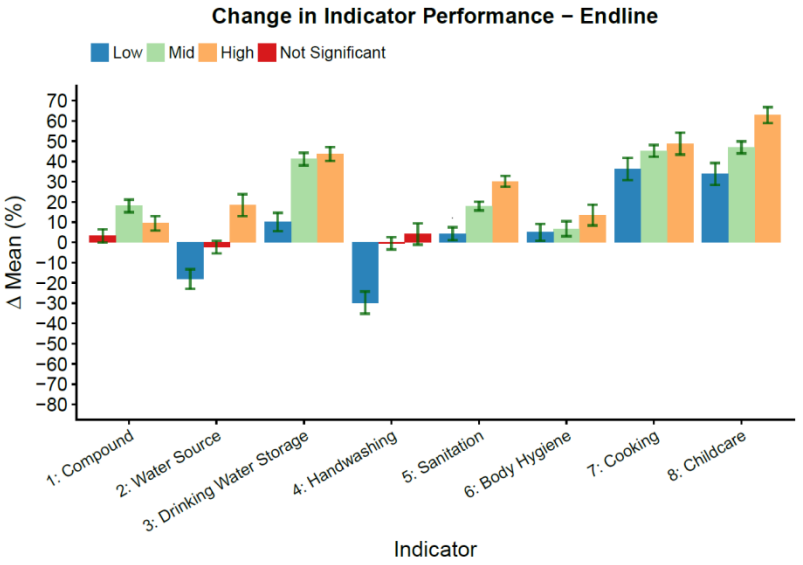


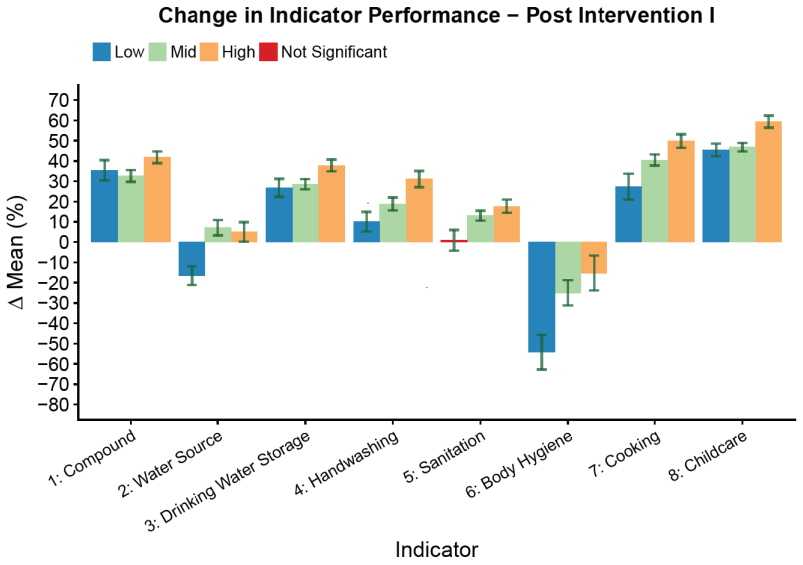
Performance Group Selection

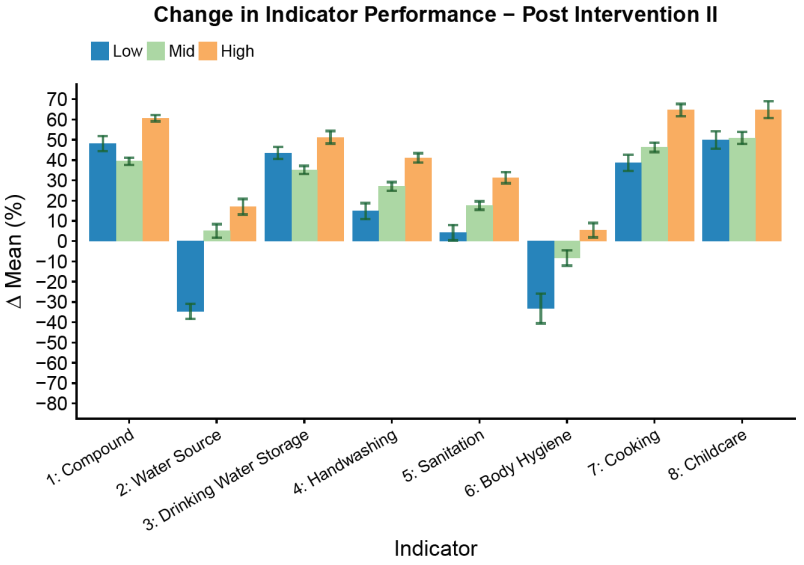


Indicator Level Results









Indicator Level Patterns

General Patterns:

- Cooking and Childcare - Consistent positive change with stepwise pattern across groups.
- Water Source and Body Hygiene – All groups struggle.
  - Show little or negative change over time.
- High Group always better than low group across indicators.
- Sanitation and Handwashing – Biggest differences between high and low groups.

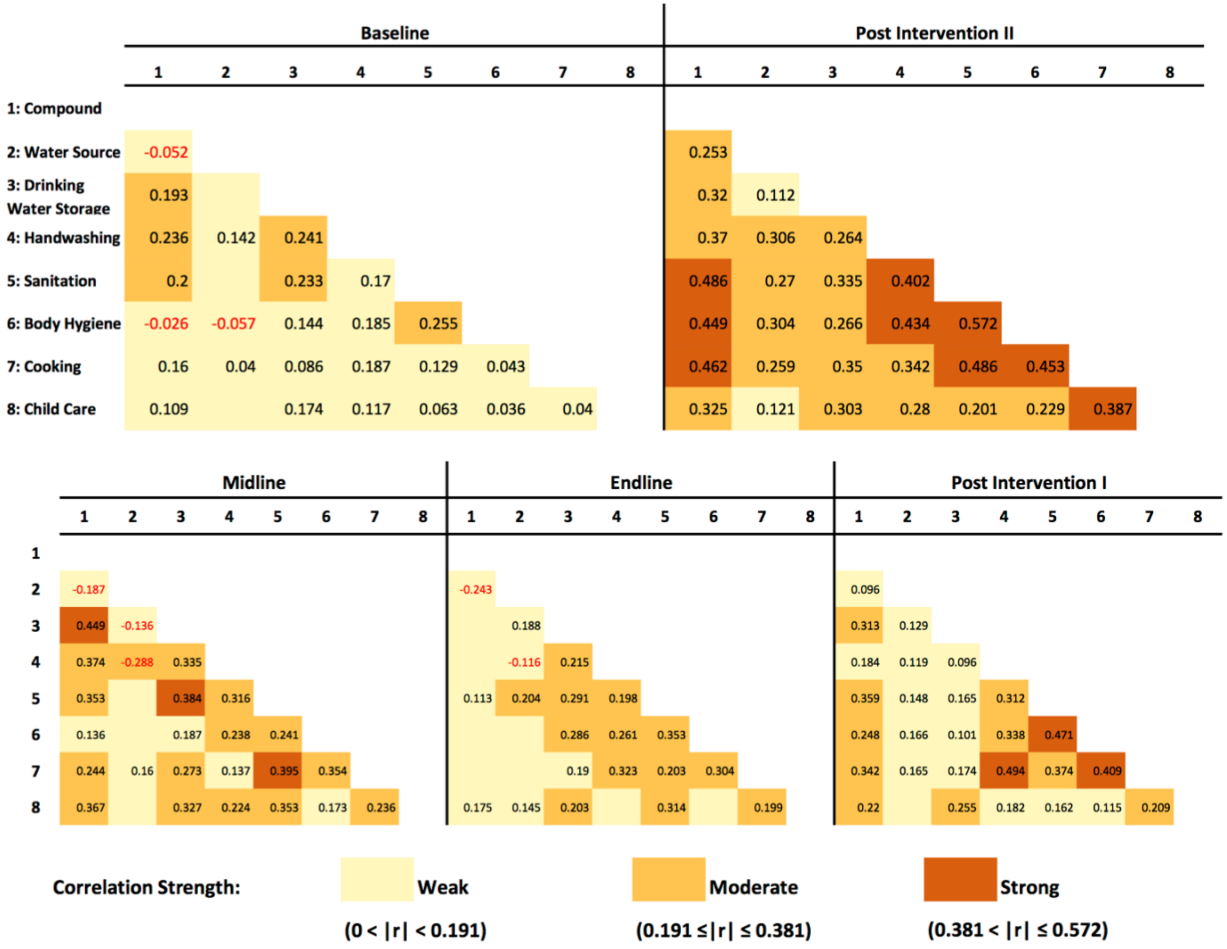
High Group Patterns:

- Show early and consistent improvement, remaining high or improving over time.

Low Group Patterns:

- Slower and less consistent improvement over time.
  - Tend to eventually 'catch-up.'
- Water Source – Worsening negative change over time.
- Drinking Water Storage and Handwashing – Biggest improvement over time.

Indicator Correlations



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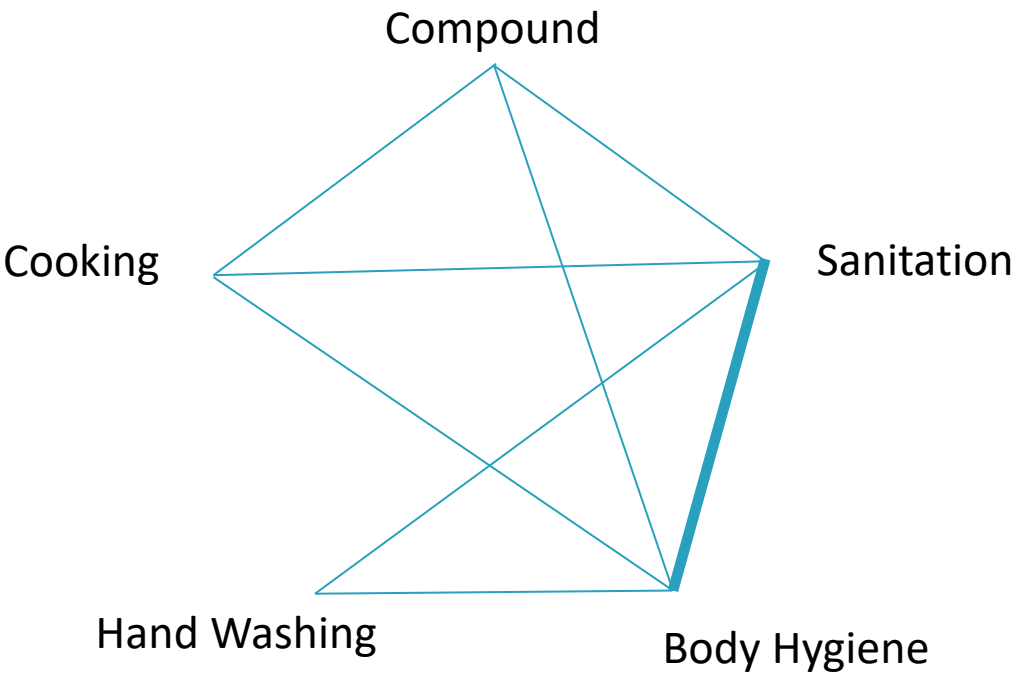


Child care —— Cooking

CHC Meeting Attendance

	Attendance of CHC sessions					
	High Group		Middle Group		Low Group	
Dataset	**Mean**	**Std. Deviation**	**Mean**	**Std. Deviation**	**Mean**	**Std. Deviation**
Midline	1.40	0.49	1.15	0.431	2.21	1.98
Endline	19.6	1.52	19.3	2.39	18.7	3.48
Post Intervention I	18.8	3.70	16.1	8.33	14.6	8.23
Post Intervention II	20.7	3.96	19.2	4.58	16.8	7.36

Key Observations:

- High groups attended more CHC sessions than Low groups (up to 4 more sessions).
- High groups attended meetings more consistently than Low groups (twice as consistent).

Conclusions

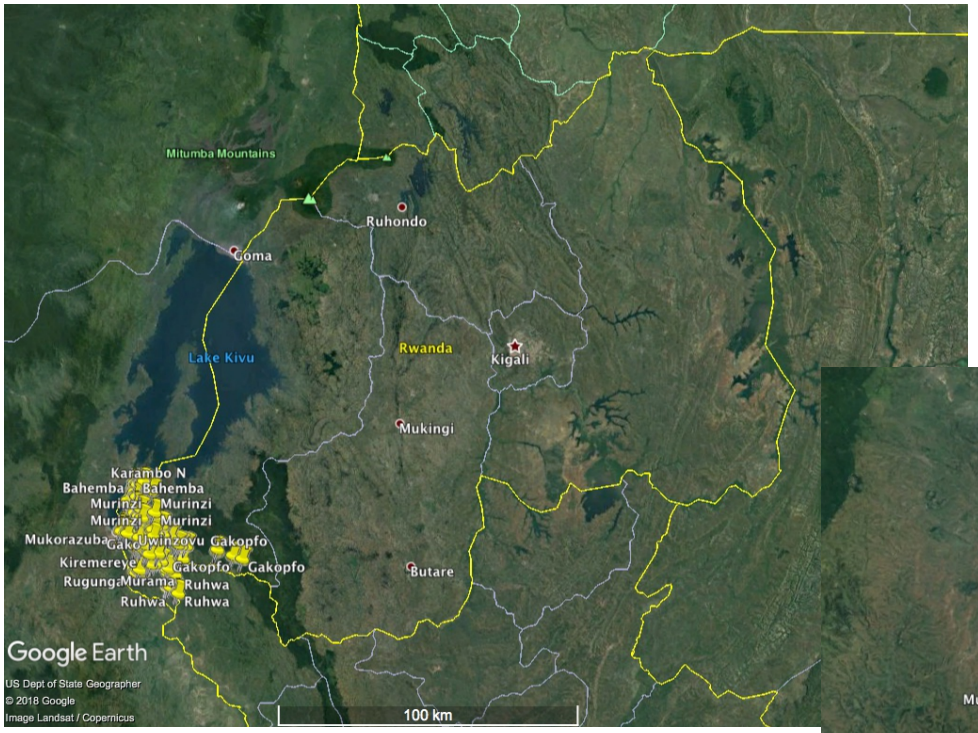
- **Evaluating Hygiene Behaviour Change**
  - Statistically significant positive behaviour change took place for the majority of sampled CHC households over time.
  - A wide range of behaviour change across all CHCs in post-Baseline datasets.
    - Indicating a lack of consistent change.
  - Performance possibly affected by seasonal factors.
  - Positive change sustained well after the end of the training programme.
  - Dataset level results likely to be representative of all Classic CHCs.

- **Common traits among High and Low Performing CHCs**
  - All groups showed consistent positive change for the indicators for compound, cooking and childcare over time.
  - Low performing groups consistently struggled with indicators for body hygiene, water source, sanitation and handwashing.
  - Differences between Low and High groups could be due to socioeconomic and geographic factors.

Recommendations for Improvements

- **CBEHPP Training Programme**
  - Efforts should be made to start in the dry season.
  - More focus on problem indicators early on.
    - Particularly to identify and support low performing households.
  - Use Compound indicator as a ‘super proxy’ indicator.
    - To estimate performance quickly at an early stage.
- **M&E Programme**
  - Track CHCs over time.
  - Ideal sample sizes per CHC should be calculated and used.
  - Develop a similar numerical system and analytical methodology for operational use.

Further Research



Geographic Factors

- Availability of health related infrastructure
- Proximity to water sources

Socioeconomic Factors

- Ability to pay for resources
- Ability to construct sanitation facilities

Appendix

Average Amount of Rainfall in Rusizi

Rusizi	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Prec. (mm)	135	135	170	150	90	30	10	45	105	160	165	125	1320
Days	19	16	20	20	15	5	2	6	14	22	22	21	182

(World Climate Guide, 2012)

Dataset Summary Statistics

Dataset	Sample Size (n)	Mean (%)	Median (%)	Std. Deviation (%)	Std. Error of the Mean
Baseline	5745	63.5	64.0	12.9	0.170
Midline	772	64.9	66.9	15.5	0.556
Endline	475	80.2	82.4	10.3	0.475
Post Intervention I	502	79.8	82.3	14.8	0.659
Post Intervention II	677	85.8	90.2	13.8	0.529

		Households surveyed per CHC		
Dataset	Total CHCs surveyed	Mean	Median	Std. Deviation
Baseline	47	122	123	57.4
Midline	30	25.7	16.5	25.0
Endline	24	19.8	18.5	14.7
Post Intervention I	51	9.84	10.0	1.29
Post Intervention II	25	27.1	25.0	6.49

Supplementary Results for CHC Tracking

Midline			Endline			Post Intervention I			Post Intervention II		
CHC	Ranking (%)	Group Ranking	CHC	Ranking (%)	Group Ranking	CHC	Ranking (%)	Group Ranking	CHC	Ranking (%)	Group Ranking
Karambo N	94%	High	Karambo N	89%	Middle						
Gaseke	82%	Low				Karambo N	81%	Low	Gaseke	85%	Low
Gakenke	71%	High	Gakenke	67%	High						
Ruhwa	53%	Middle	Gaseke	61%	High	Gaseke	36%	Low			
			Ruhwa	22%	High				Ruhwa	25%	High
						Gakenke	17%	Middle	Karambo N	15%	Middle
						Ruhwa	3%	Low	Gakenke	5%	Low

Independent T-Test Results for Overall Household Performance

Dataset Comparison	Difference in Means (%)	Std. Error of the Difference	t-value	p-value	95% Confidence Interval of the Difference (%)	
					Lower Limit	Upper Limit
Baseline – Midline	1.46	0.582	2.52	0.0120	0.323	2.61
Baseline – Endline	16.8	0.505	33.2	p<<0	15.8	17.8
Baseline – Post Intervention I	16.3	0.681	23.9	p<<0	14.9	17.6
Baseline – Post Intervention II	22.3	0.528	42.2	p<<0	21.3	23.4
Midline – Endline	15.3	0.731	20.9	p<<0	13.9	16.7
Endline – Post Intervention I	- 0.484	0.813	-0.596	0.552	-2.08	1.11
Post Intervention I – Post Intervention II	6.04	0.836	7.22	p<<0	4.40	7.68