Evaluation of Chicken Intensification and Nutrition-Sensitive Social and Behavior Change Interventions in Ethiopia: A Cluster-Randomized Controlled Trial

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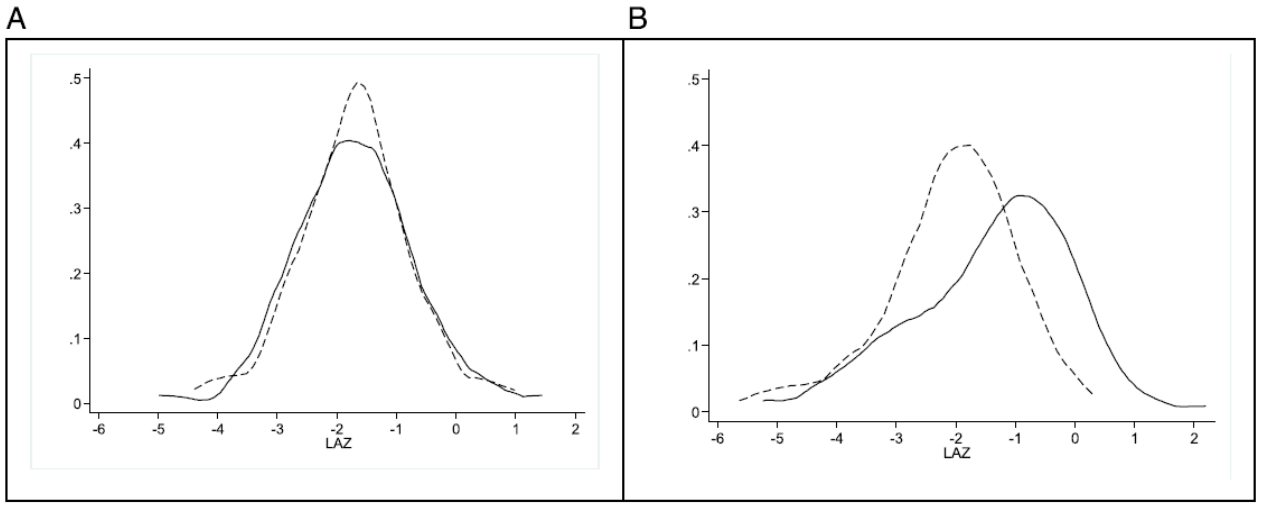
Evidence

- Limited evidence that increasing household chicken production improves dietary diversity or nutritional outcomes (Ruel et al. 2018)
- When included, chicken production has been integrated with home gardening, gender, and other packaged interventions (Olney et al. 2015, Olney et al. 2016, Osei et al. 2017)
- RCT in Ecuador randomly assigned children 6-9 months to receive 1 egg/day for 6 months or not. Length-for-age and weight-for-age increased substantially (Iannotti et al. 2017)



Change in LAZ distribution at baseline (dashed) and at end point (solid). A, Control group. B, Egg group.

Question

- Can intensification of chicken production improve diets of women and children?
- Should it be coupled with a nutrition-sensitive behavior change intervention?

➢Can agricultural interventions and programs alone improve nutrition, or do they need a nutrition strategy?

Intervention 1: Chickens

- African Chicken Genetics Gains (ACGG) Project
- Implemented by the International Livestock Research Institute (ILRI) and partners in Ethiopia and other African countries
- Distribution of high-yielding improved chicken strains (25 vaccinated birds/household)
- Promotion and technical support to encourage good poultry management practices

➢Leveraged an on-farm trial to simulate a poultry intensification intervention

Intervention 2: Nutrition

- Agriculture to Nutrition (ATONU) Project
- Coordinated by the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) and partners in Ethiopia and Tanzania
- Social and behavior change
  - Diets and nutrition
  - Water, sanitation, and hygiene (WASH)
  - Women's empowerment in household budgeting and use of income
  - Home gardening

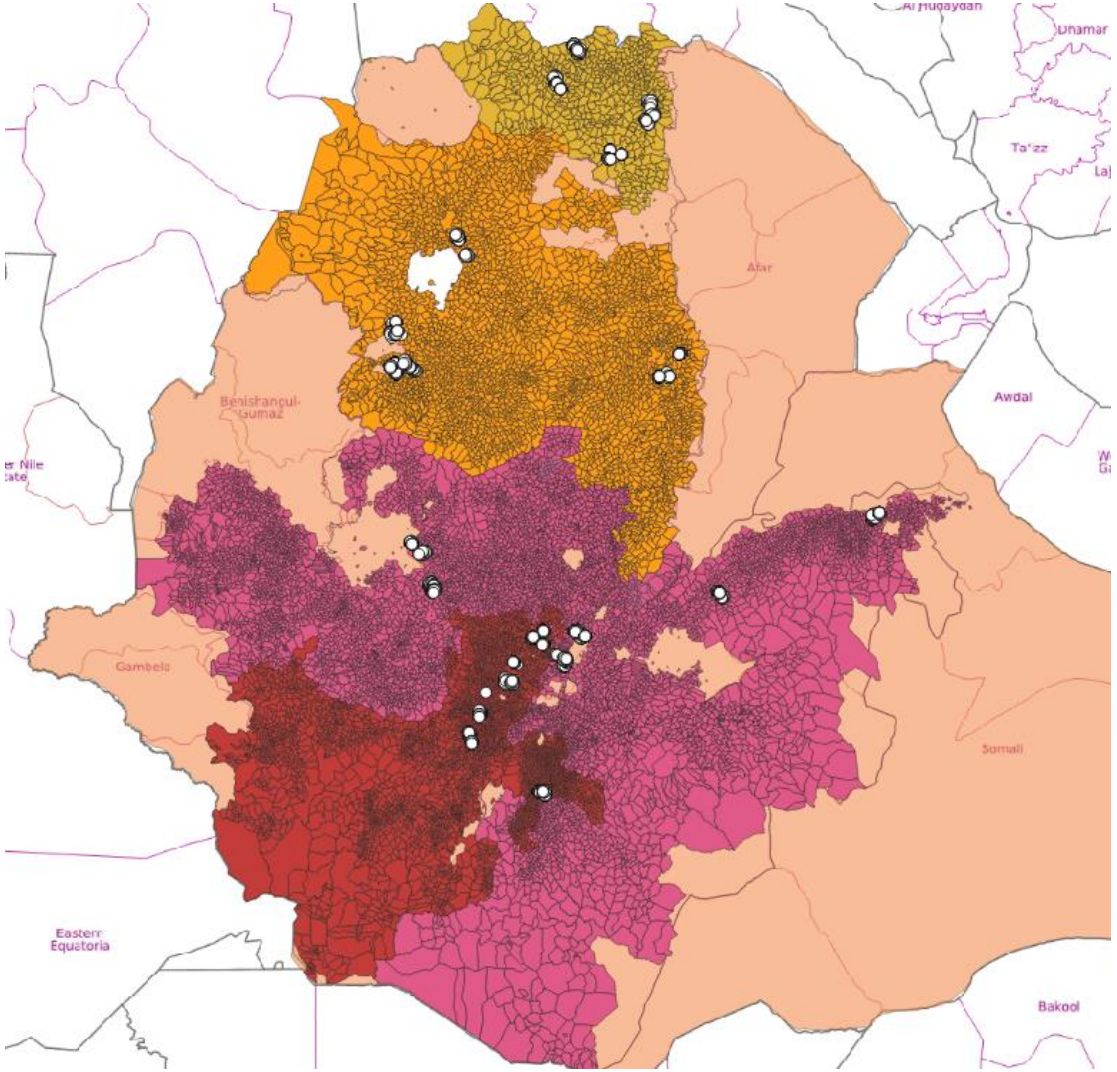
Intervention 2: Nutrition

- Implemented through the Ethiopian Institute of Agricultural Research (EIAR)
- Group and individual meetings in communities
  - Family nutrition
  - Dietary diversity
  - Maternal, infant, and young child feeding
  - Women's empowerment and male engagement
  - Vegetable production
- Provision of vegetable seed

Pregnant woman being supported by husband to eat a well balance meal. The husband has a role to play in ensuring that his pregnant wife is well nourished and healthy.

- Carrot
- Tomato
- Onion
- Lettuce
- Cabbage
- Swiss Chard
- Beetroot
- Hot pepper
- Watermelon

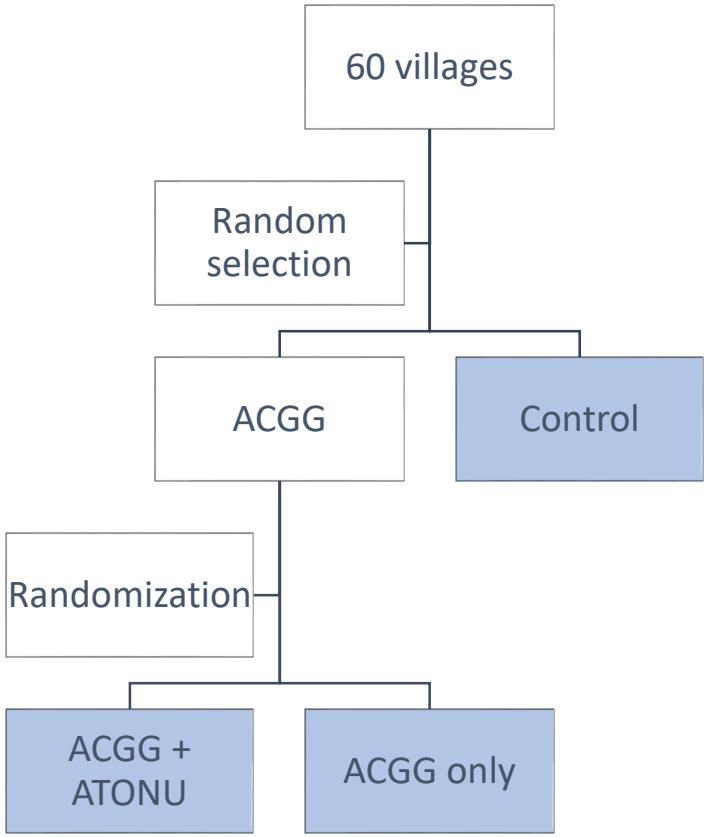
Study Regions



- 20 districts selected by ACGG
- Districts served as strata from which villages were sampled and randomized

Design

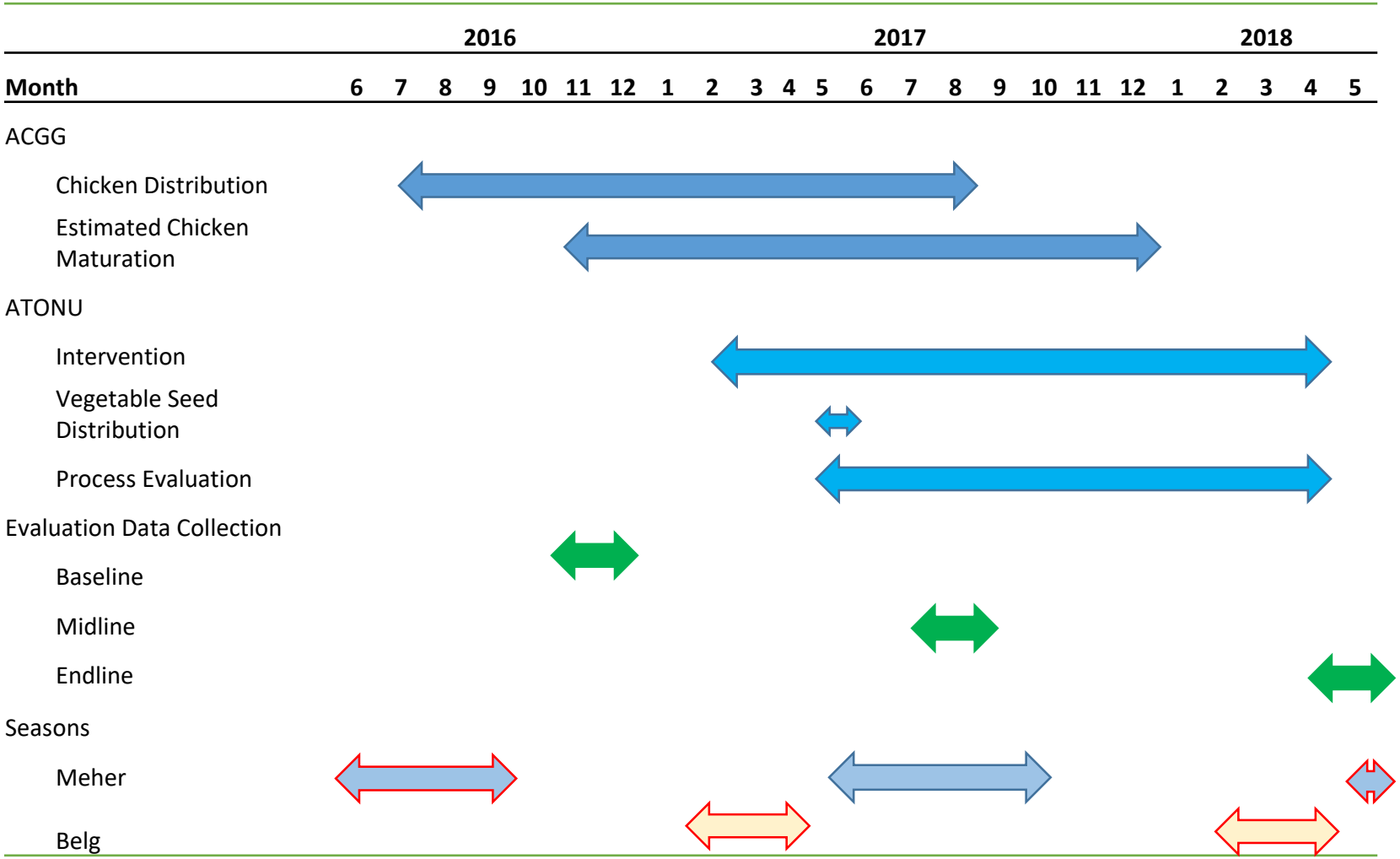
- Cluster randomized design in which villages are allocated to one of three treatment groups:



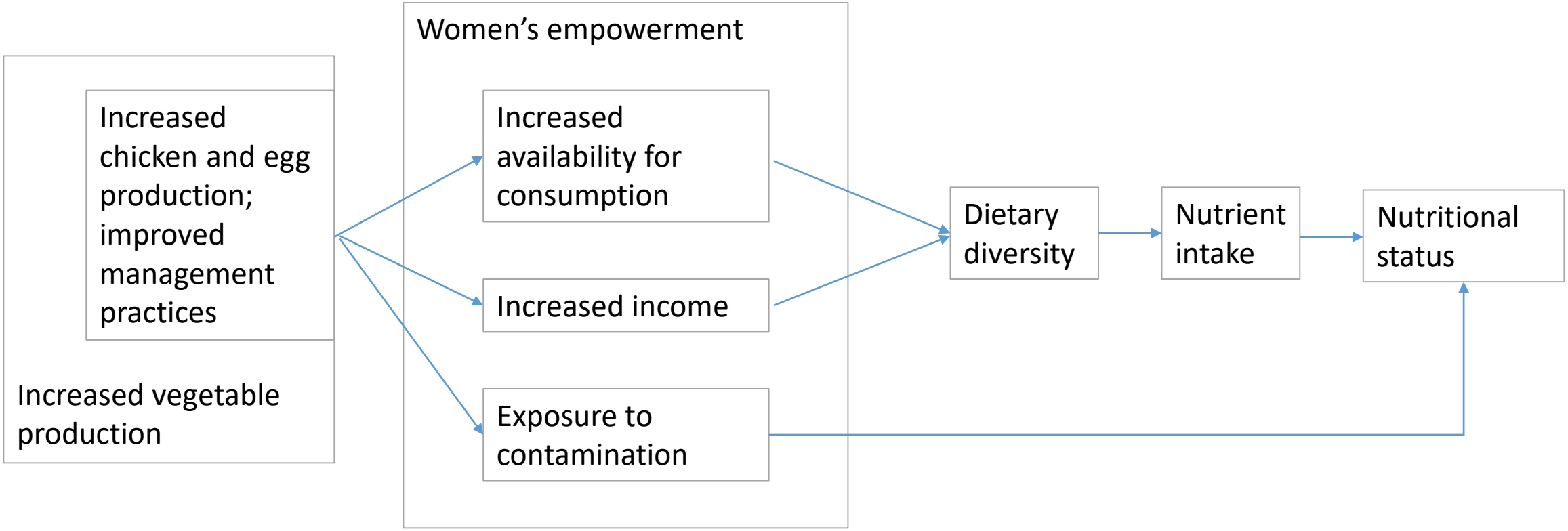
Household inclusion criteria:

- Produced chickens in the last 2 years and currently have <50 chickens
- Have at least one woman of reproductive age (15-49 years at enrollment)
- Plan to remain in the study area for the study duration
- Provide informed consent
- In intervention arms: Participating in ACGG

Project Timeline

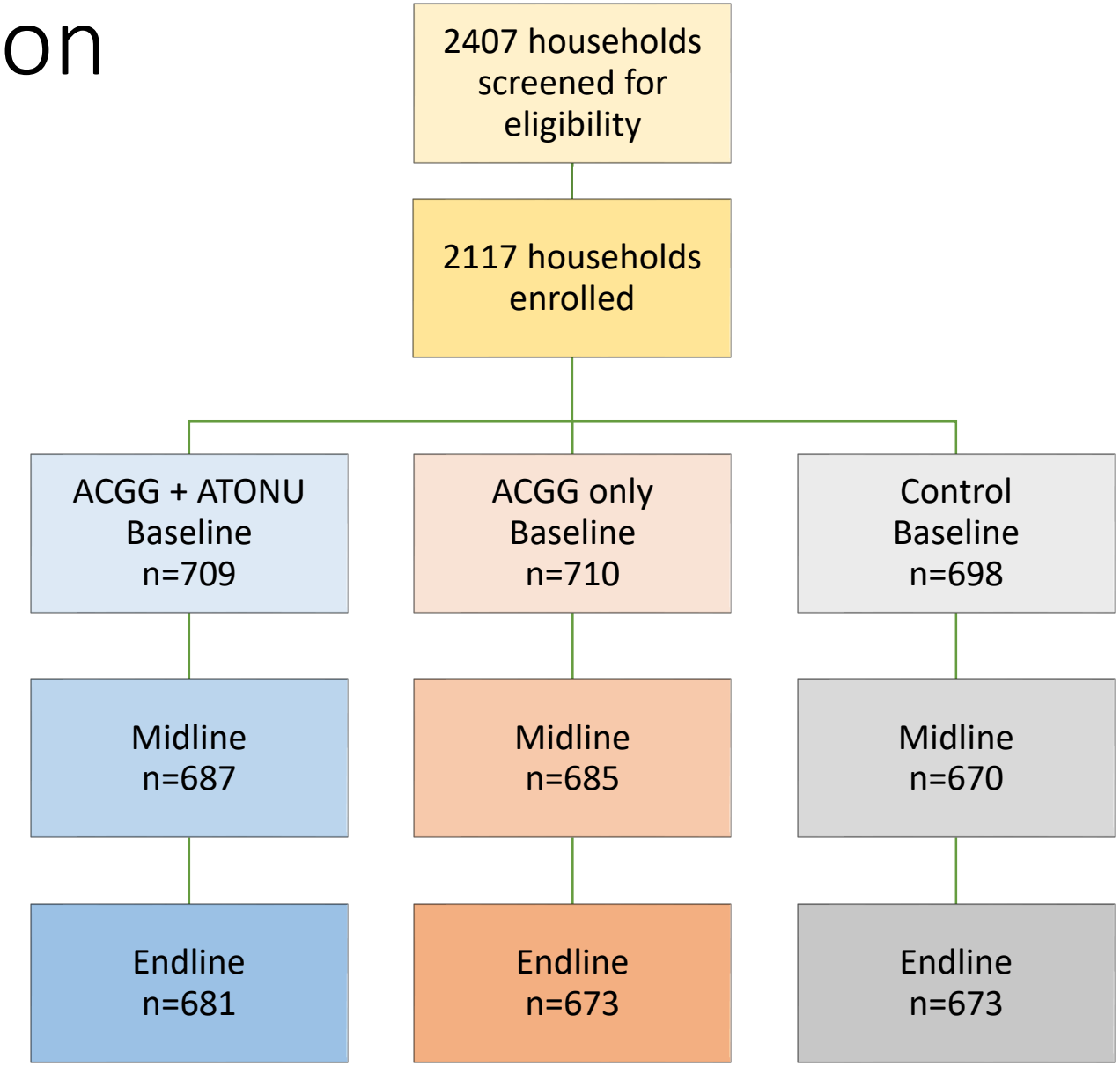


Maternal and Child Dietary Diversity



Study Participation

- Cluster randomization: 20 villages/arm
- 4.3% loss to follow-up at endline

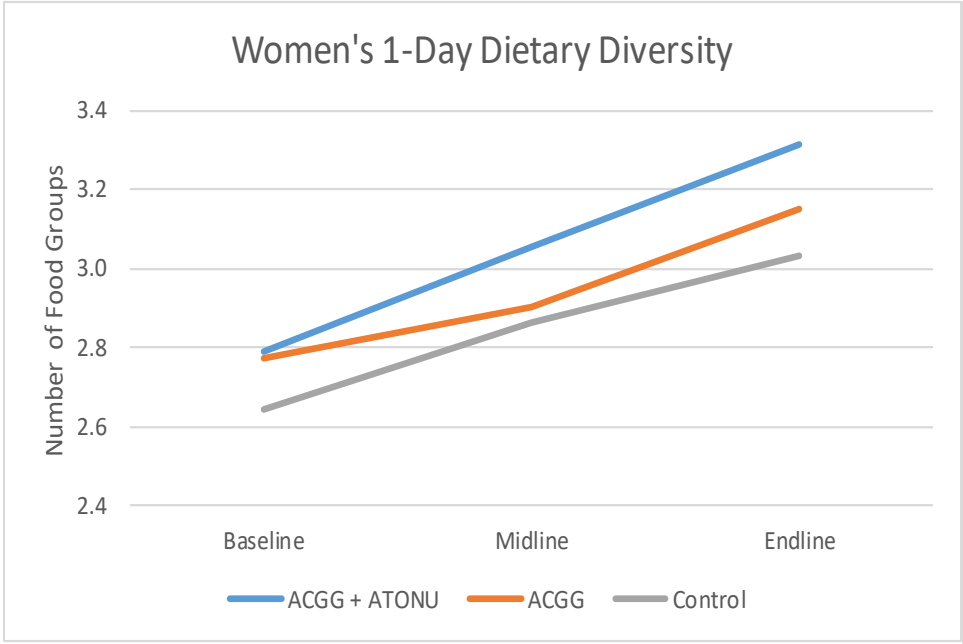


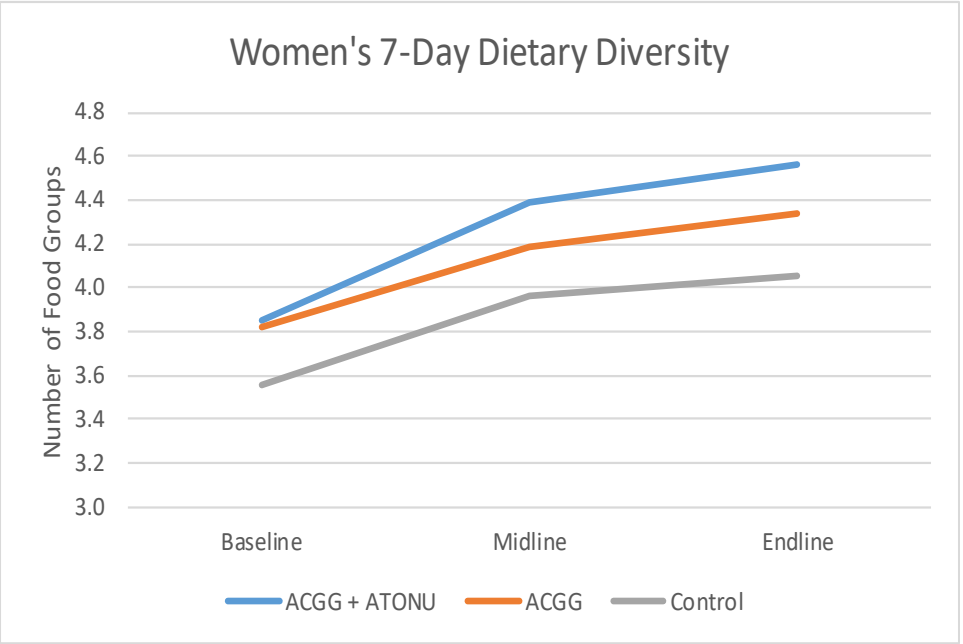
Participant Characteristics

	ACGG + ATONU	ACGG	Control
Woman's age (years)	35 (29,40)	35 (30,40)	32 (27,38)
Household size (members)	6 (5,8)	6 (5,8)	6 (4,7)
Land owned (timad)	3 (2,6)	3 (2,6)	2 (2,4)
Improved roof	77	79	72
Improved walls	6	3	5
Improved floor	9	6	6
Improved water	87	85	79
Improved sanitation	34	30	27

1 timad = 0.25 hectares

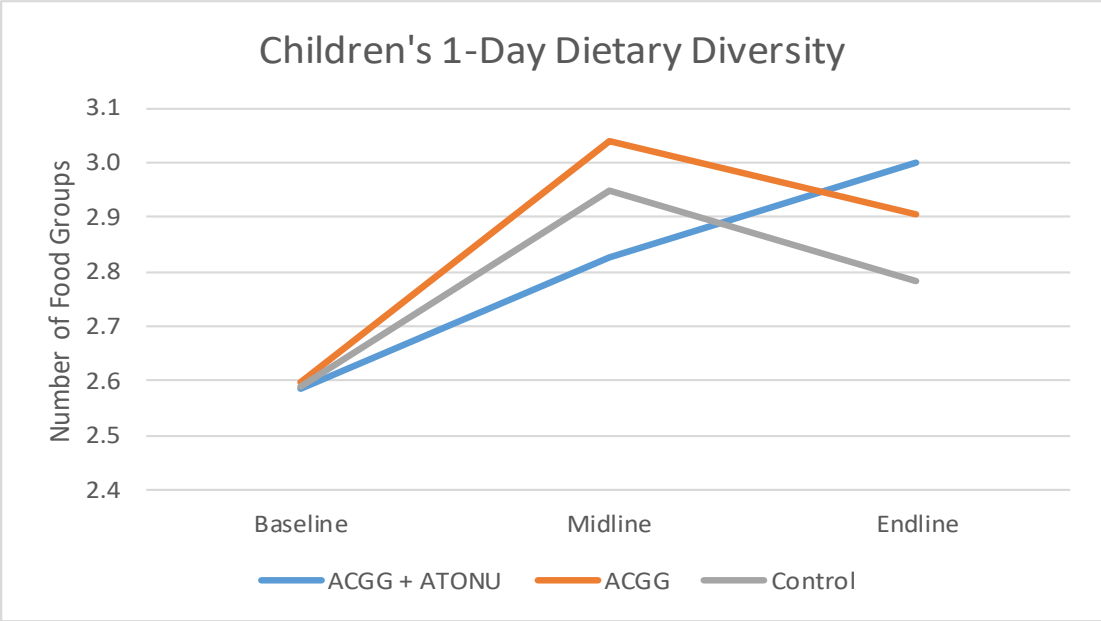
Women's Dietary Diversity

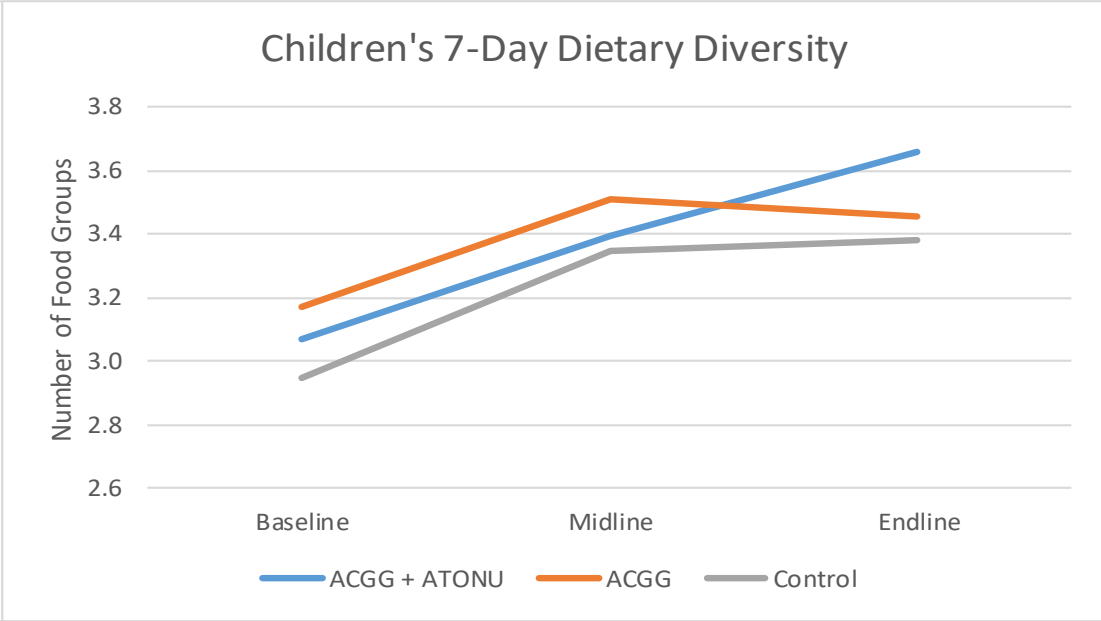




- Women's diets were poor but improved over time
- Baseline differences were marginal but not significant
- Change over time is greater in the joint intervention arm than in the ACGG only arm ($p<0.10$) and the control arm ($p<0.05$)
- Small effects: 0.2 food groups/week

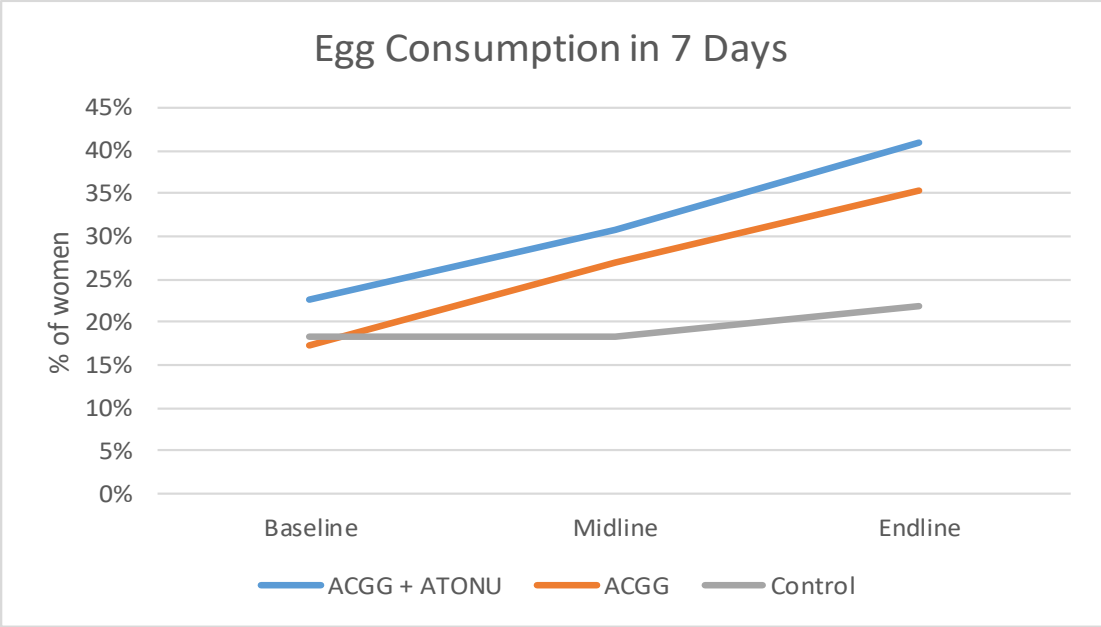
Children's Dietary Diversity

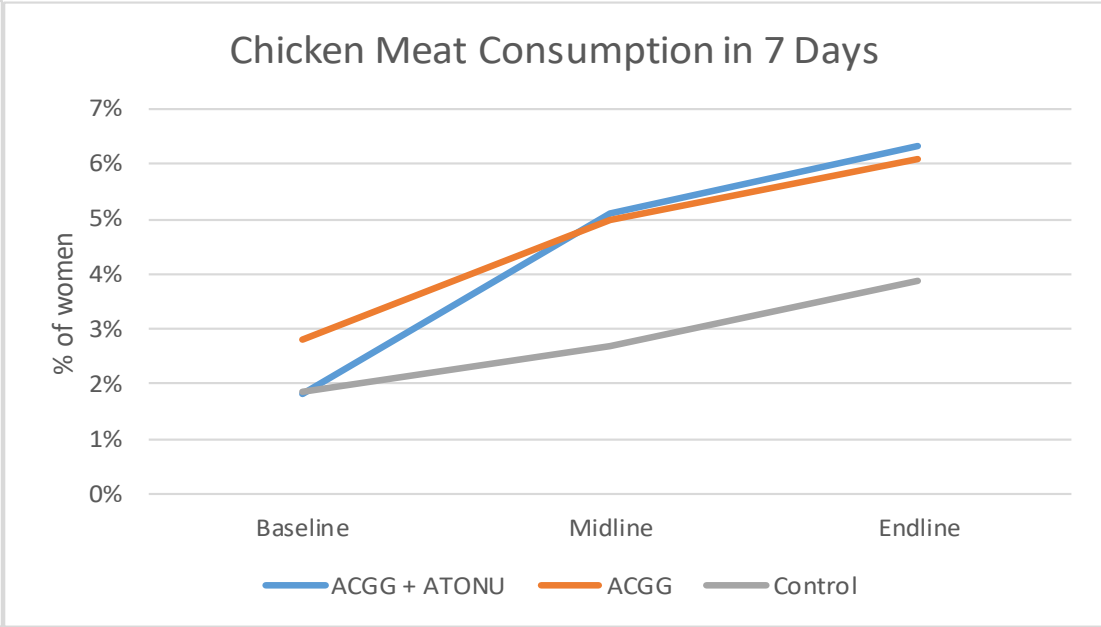




- While there are changes in children's dietary diversity over time, there are no significant differences among the intervention arms

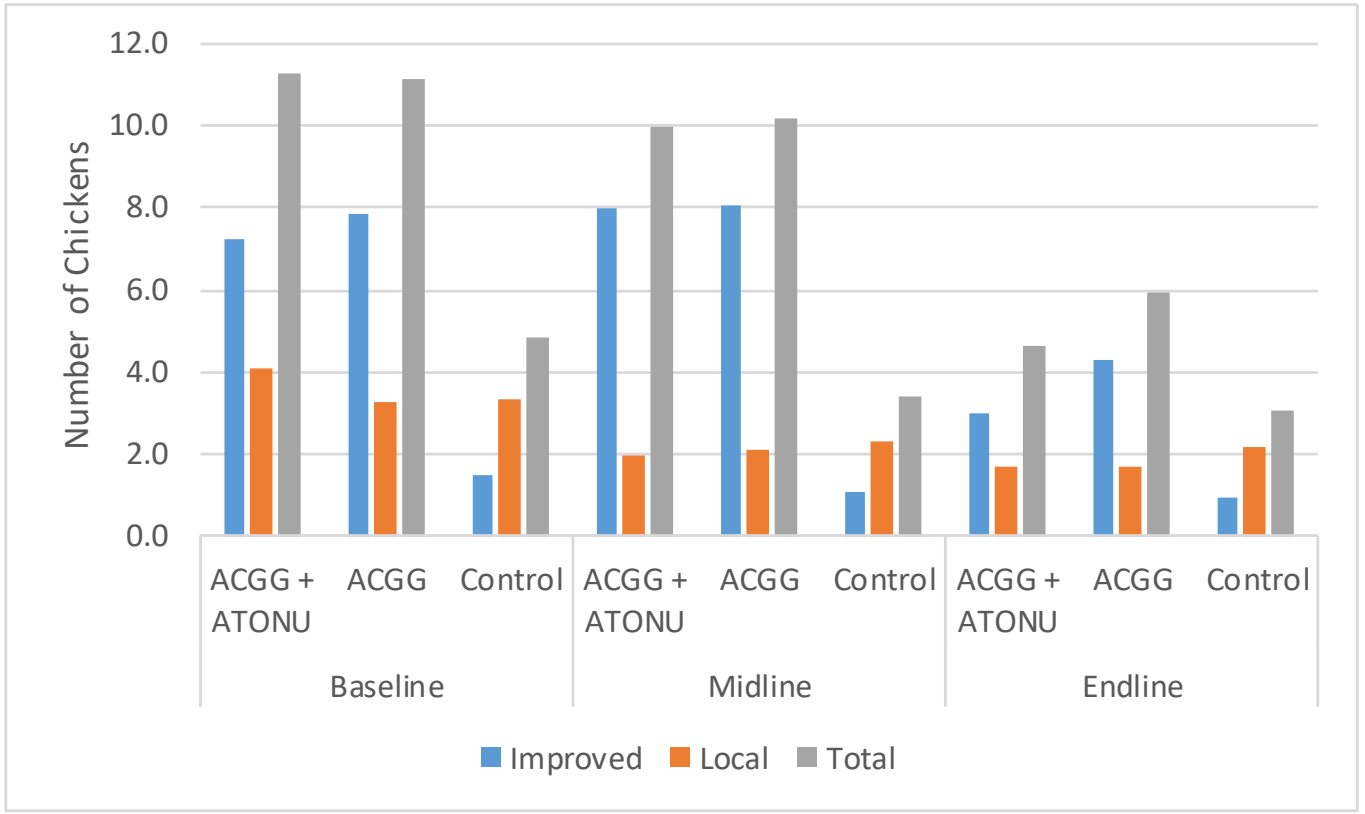
Women's Chicken and Egg Consumption





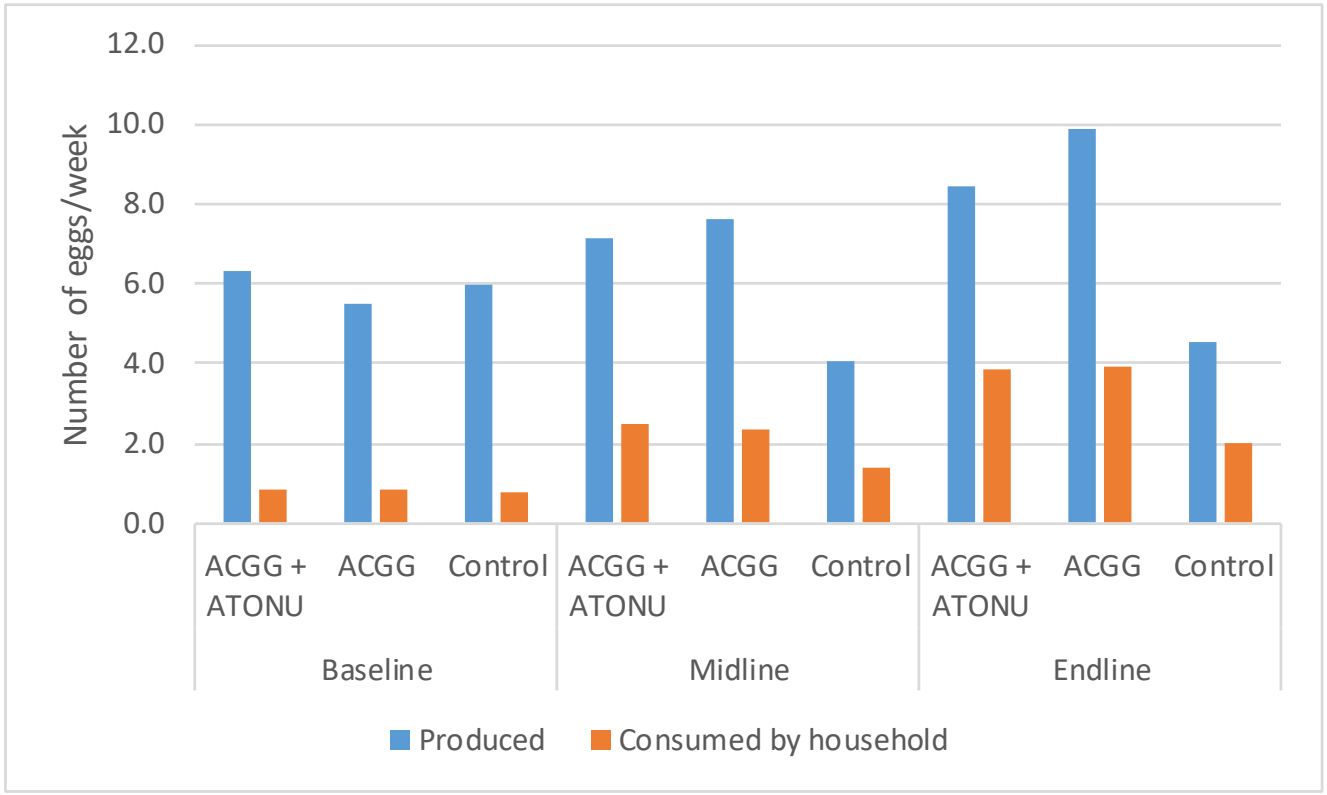
- Women receiving the chicken intervention had greater odds of consuming eggs in a 7-day period
- Meat consumption is low overall, and differences were not statistically significant

Chicken Production



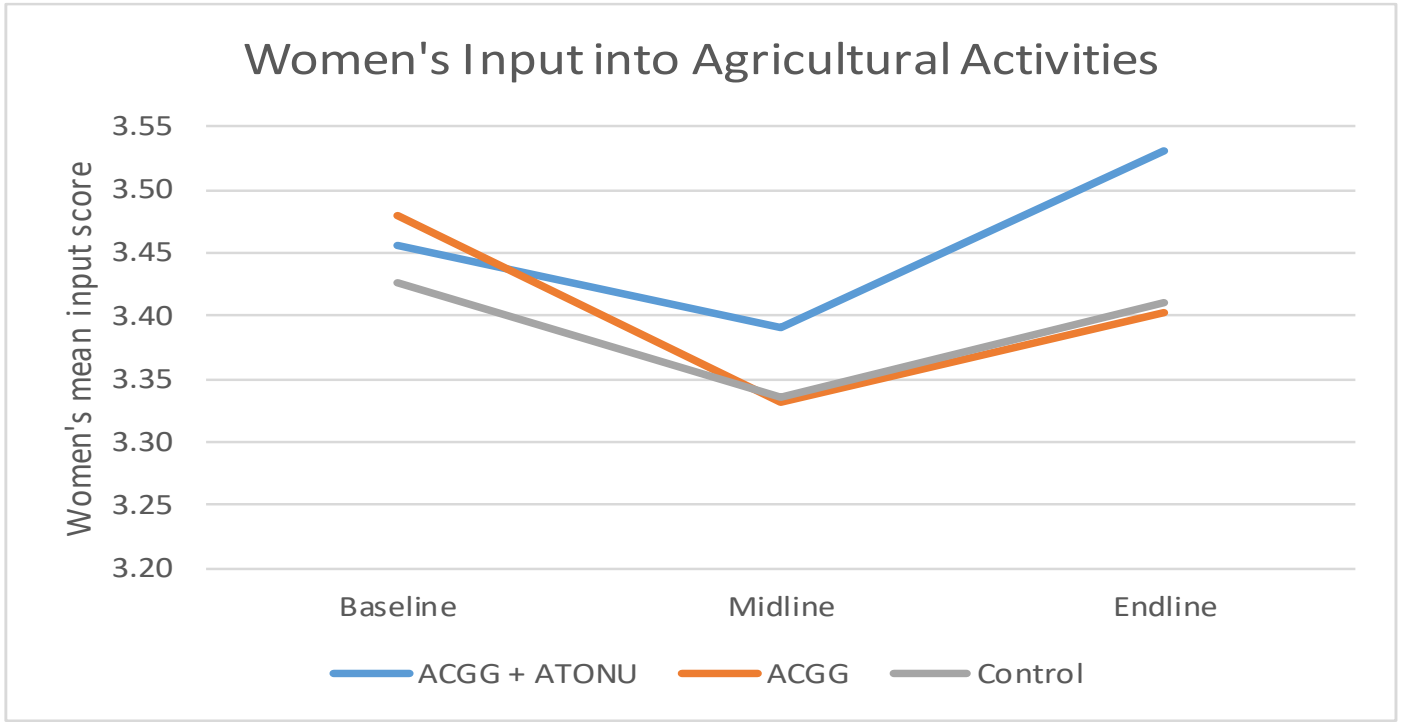
- Chicken distribution began before baseline data collection
- By endline, intervention arms no longer had most of the chickens received
- Supply chain for chicks was still under development

Household Egg Production and Consumption



- How much dietary change can be expected for an individual?

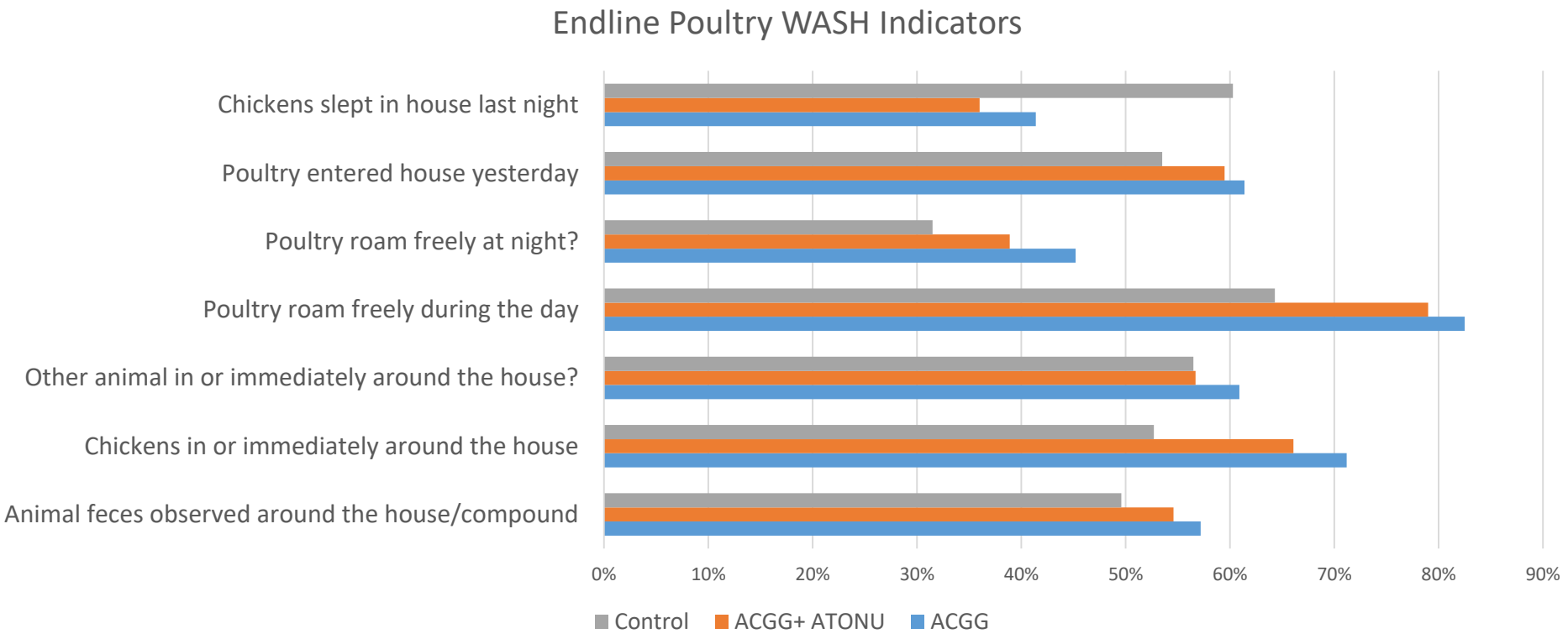
Women's Empowerment



- Small positive effect from the ATONU intervention on women's empowerment; however, differences are small in magnitude

Sanitation and Hygiene

- Even after intervention, there is a high degree of animal-human contact



Conclusions

- At best, we see small effects on women's diets
- A longer-term intervention is likely needed for behavior change
- For meaningful impact on diets while meeting household's desire for income, greater chicken production may be needed, moving households towards a semi-commercial model
- Sustainability is a challenge
    - Farmers lack access to inputs (chicks, vegetable seed)