

## Using quantitative methods to evaluate mobile phone technology based nutrition and agriculture advisory services in Tanzania

This brief focuses on the quantitative impact evaluation in Tanzania, led by IFPRI. In Tanzania, new nutrition focused mobile content has been combined with an existing SMS-based intervention operated by the mHealth Tanzania Public-Private Partnership called “Healthy Pregnancy, Healthy Baby”. The combined content (which we will refer to as mNutrition) will provide approximately 270 nutrition and health related messages to pregnant women and mothers of young children. The evaluation will test whether the combined content improves nutrition outcomes for woman and young children.

### Research questions

The quantitative evaluation in Tanzania will address the following questions:

1. How effective is the Farmer Club at increasing the knowledge and changing the behaviour of farmers?
2. What is the impact of mNutrition on women’s dietary diversity?
3. What is the effect of mNutrition on Infant and Young Child Feeding (IYCF) practices?
4. What is the impact of mNutrition on height-for-age Z-scores (HAZ) for children in utero or under 12 months of age at baseline?
5. What is the effect of mNutrition on nutrition knowledge among pregnant women and caregivers of young children?
6. Does sending the mNutrition content to the mobile phones of both women and their spouses have any additional impact on the other outcomes?

### Evaluation design

To answer the research questions, we designed a randomized controlled trial (RCT) with two rounds of data collection through household surveys. The RCT takes advantage of region-level differences in marketing and participation in the “Healthy Pregnancy, Healthy Baby” program resulting from mHealth Tanzania’s pre-existing relationships with in country partner organizations. We selected a study region (Iringa) where mHealth Tanzania had no existing partner. This should help guarantee that household exposure to the mNutrition content in the absence of the evaluation-related activities will be minimal in study communities.

mNutrition is a global initiative that uses mobile phone technology and mobile phone based behaviour change messages to improve the health and nutritional status of children and adults in the developing world. mNutrition is supported by DFID, organised by GSMA, and implemented by in-country mobile network operators (MNOs) in many countries in Sub-Saharan Africa and South East Asia. The evaluation of the mNutrition initiative is being led by the Institute of Development Studies (IDS) together with GAMOS and the International Food Policy Research Institute (IFPRI) as part of the e-Pact consortium led by Oxford Policy Management (OPM), co-managed with Itad. The consortium is using a mixed-methods approach, which includes qualitative, quantitative and business analysis components to evaluate two programmes, Ghana mAgri and Tanzania mHealth. The aim of the impact evaluation is to estimate the impact of mNutrition on children and adults and to understand how the context and the components of the intervention shape its impact.

The RCT randomly assigns all sampled rural communities in Iringa region to one of two groups:

1. **Treatment group**- surveyed households receive a door-to-door offer of mNutrition messages.
2. **Control group**- surveyed households are not offered access to the mNutrition content.

The random assignment of communities to treatment arms ensures that observable and unobservable characteristics are balanced across groups. We also use a pre-baseline community listing exercise (CLE) to identify households that were eligible to participate in the study<sup>1</sup> and use data from the CLE to balance the number of households with pregnant women across the two treatment groups.

In order to answer research question 5, we conducted a household-level randomization among sampled households in treatment communities where the primary female and primary male respondents own distinct mobile phones. Half of the eligible households were randomly assigned to receive the mNutrition content on the mobile phone of both the primary female respondent and the mobile phone of the primary male, while the other half will receive the mNutrition content on the mobile phone of just the primary female respondent.

Because both the community-level and household-level treatments are randomly assigned, estimating the unbiased effects of each treatment and sub-treatment on the outcomes can be done by calculating the simple difference-in-means between the relevant treatment arms. However, to increase statistical power, when possible we will use ANCOVA methods when estimating treatment effects to flexibly control for baseline levels of the outcome<sup>2</sup>.

## Data collection and sampling strategy

In both the baseline and endline survey, we will measure all outcomes, as well as a variety of demographic and mobile phone related characteristics for each sampled household. To have sufficient statistical power for the child HAZ outcome, the study required 11 households per cluster with a child under the age of 12 months and another six households per cluster with a pregnant woman. In total, this yields a total desired sample of 3,060 households across 180 clusters. During CLE fieldwork it became clear that we would struggle to identify a sufficient number of pregnant women in many study clusters. Thus, the IFPRI team adjusted the sampling strategy to over sample households in communities where there were an excess number of eligible households in order to make up for the expected shortfall in other communities. The baseline included completed interviews with 2,833 households out of a targeted 3,060 households (92.6%). In treatment communities, only five households did not agree to receive the mNutrition content on their mobile phones, so we expect the evaluation to have the targeted level of statistical power for estimating treatment effects for the outcomes.

<sup>1</sup> To be eligible for the study, households had to include either a pregnant woman or the mother of a child under 12 months of age, they had to own a mobile phone and they had to include at least one member who is literate in Swahili—the language in which the mNutrition messages are written.

<sup>2</sup> See David McKenzie. 2012. "Beyond baseline and follow-up: The case for more t in experiments". *Journal of Development Economics*, 99(2): 210-221.

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## Find out more

Follow the project here –  
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This project is being led by the Institute of Development Studies (IDS) as part of the e-Pact consortium led by Oxford Policy Management (OPM) co-managed with Itad. The IDS Project Manager is Jessica Gordon [j.gordon@ids.ac.uk]. For further information about the project please contact mnutrition@ids.ac.uk. The contact point for the client is Louise Horner [l-horner@dfid.gov.uk]. The client reference number for the project is PO6420.

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