Behaviour change and impact evidence for Covid-19 information

Report completed by Busara on behalf of Mercy Corps AgriFin

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Busara

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About Mercy Corps AgriFin

We work with over 9 million farmers and 130 partners across Africa

Mercy Corps' AgriFin Digital Farmer Program is funded by the Bill and Melinda Gates Foundation to help organizations design, test and scale digitally-enabled services for Africa's smallholder farmers.

- Objective to develop services that increase **farmer income, productivity and resilience**, with 50% outreach to women.
- Work with **private & public sector scale partners** such as banks, mobile network operators, agribusinesses, technology innovators and governments.
- We help our partners develop bundles of digitally-enabled services, including **smart farming, financial services, market access and logistics** supporting data-driven partnerships.



In response to the Desert Locust and COVID-19 crises in Africa, we developed a comprehensive response portfolio in a short period of time with a selection of our partners with the goal of reaching 8 million farmers.

Busara and Mercy Corps AgriFin worked together to conduct impact research of this response portfolio with selected farmers in Kenya and Nigeria.

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Executive Summary

Executive summary

This report presents the findings from the impact evaluation conducted on behalf of Mercy Corps AgriFin. We sought to evaluate the impact of current communication campaigns on knowledge, attitudes, and behavior regarding Covid-19 and safe farming practices among selected farmers in Kenya, Nigeria, and Ethiopia. These campaigns were designed to provide information to support agricultural households to adapt during Covid-19.

We evaluated 4 case studies in this engagement to understand behavior change:

Kenya	Kenya	Nigeria	Ethiopia
SMS + TV Delivered by iShamba and Mediae	**SMS +In-person** Delivered by Wefarm and Producers Direct	**IVR** Delivered by Viamo Nigeria	**IVR + Radio + Agent** Delivered by Agricultural Transformation Agency

We used a mixed method approach to assess Covid information delivery in 4 case studies

- Quantitative survey-We used a difference-in-difference approach to measure knowledge, attitude and behavior in the combined SMS+In-person and IVR case studies against a control group that did not receive the communication solutions. Then, we applied a narrative approach in all three case studies by asking respondents to tell us the impact of the Covid-19 communications campaigns, specifically how the messages changed their Covid-19 knowledge, attitude, and behaviors. We studied the post-intervention trends of the combined SMS+TV campaign to understand the changes in knowledge, attitudes, and behavior after the campaign ended.
- Qualitative interviews-We used in-depth interviews to understand farmer motivation and preferences for the combined SMS+ In-person, IVR, and the combined IVR+Radio+Agent case studies.
- Administrative data analysis-We analyzed partners administrative data to understand farmers' questions and concerns regarding Covid-19

Executive summary

Kenya

SMS + In-person

Delivered by Wefarm and Producers Direct

There were positive and significant effects on overall knowledge, attitude, and behavior compared to a control group. The Covid-19 campaign had a positive effect on farmer behavior. These positive effects were driven by farmers knowing more about social distancing, about livestock and Covid-19 transmission, and about tool sharing. Farmers in this cohort are washing their hands more, however there were poorer practices of social distancing and mask wearing.

Kenya

SMS + TV

Delivered by iShamba and Mediae

Farmers reported positive changes in knowledge, attitude, and behavior. A bulk of the campaign was implemented prior to the baseline survey, therefore a baseline was not easy to establish for this case. It's likely that this campaign could be more impactful if the full set of quantitative research tools could have been applied.

After the campaign ended, there was evidence that farmers were reverting to poorer behaviors. After the intervention ended, farmers in this case study were practicing social distancing less and there was a reduction in general mask-wearing. These behaviors may be influenced by current on-farm activities.

Nigeria

IVR

Delivered by Viamo Nigeria

The knowledge, attitude, and behavior changes in the group were small and insignificant. The decrease in behavior among farmers in this case study seems to come from poor handwashing practices. This evaluation was done at the very early stages of the IVR campaign implementation so it's likely that farmers had not fully accessed the new content. This promising IVR campaign is likely to have more impact if monitored over a longer period of time.

Ethiopia

IVR + Radio + Agent

Delivered by ATA

Farmers were positive in their narrative responses to the IVR-led Covid-19 campaign and how it influenced their knowledge attitude and behavior. They see the IVR line as providing critical and practical Covid-19 health information. In relation to locust information, farmers primarily rely on agents in their communities for information. They have learned preventive and control measures against possible invasions through the agents. Although the sample for this cohort was small, the qualitative insights provide rich context for future emergency response in Ethiopia.

Executive summary

There is a near universal preference for receiving information through the SMS channel in the four case studies.

In two of the three quantitatively-analysed case studies, over 95% of respondents stated a preference for SMSs, while in the third around 60% did so. Convenience and trust are the main drivers for this preference. Surveyed farmers trust the information that they receive through the SMS channel. This might be explained by the fact that the SMS channel has been around longer than other relatively newer channels like social media platforms. It takes time to build trust on newer digital channels. A mixed-channel messaging campaign, such as complementing the IVR channel with SMS reminders, can be used to build trust on channels that farmers are less familiar with.

Information can be optimized by providing tailored Covid-19 content that supports farmers in maintaining their livelihoods in face of Covid-19.

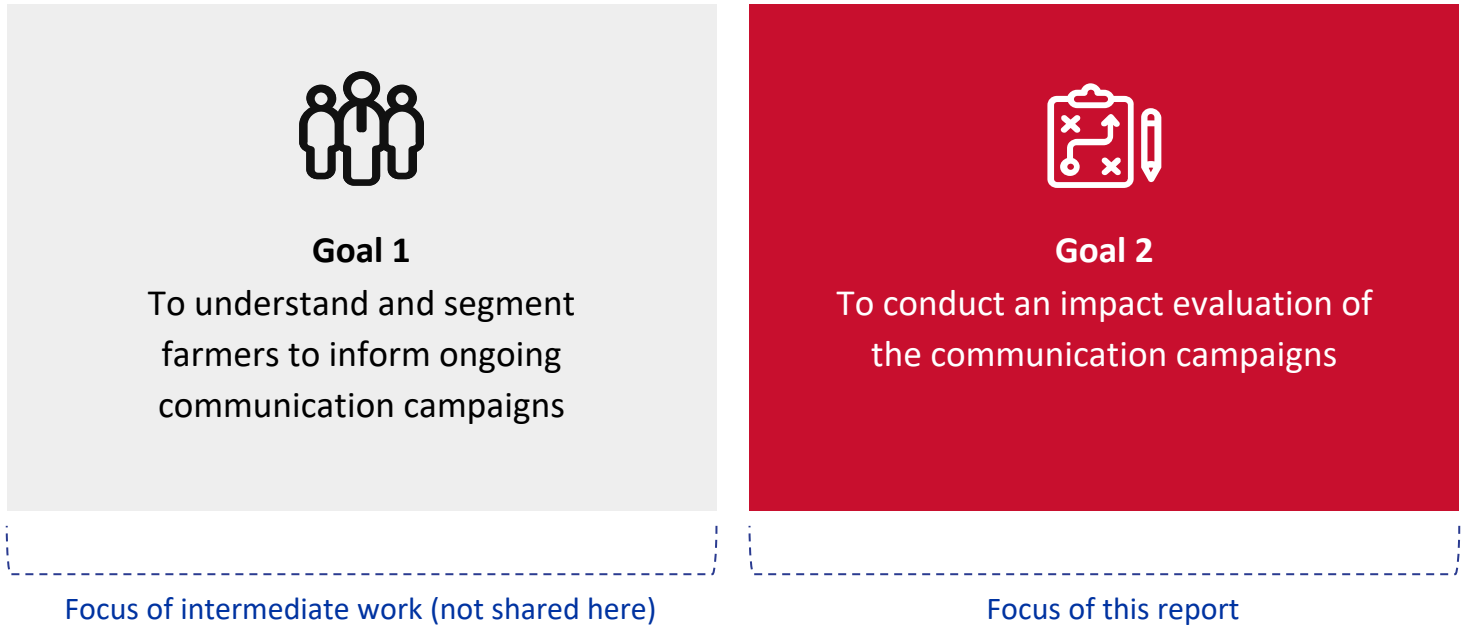
There is evidence that farmers are particularly concerned about livelihoods, with 30-50% of farmer questions to partners being on this topic. Providing Covid-specific content that takes farmers crop cycle into account such as providing information about working safely in the planting or traveling to markets post-harvest, would be relevant to farmers in each cohort.



Introduction

The overall objective of this engagement is to understand the types of information farmers need in relation to Covid-19, effective communication modalities, and the impact on farmer behavior

To gain an understanding of this, this research had two goals:



We evaluated 4 case studies in this engagement to understand behavior change

Kenya

SMS + TV

Delivered by iShamba and Mediae

Ishamba and Mediae launched their Covid-19 communications campaign in April 2020.

Kenya

SMS + In-person

Delivered by Wefarm and Producers Direct

Wefarm and Producers Direct implemented their Covid-19 information campaign in July 2020

Nigeria

IVR

Delivered by Viamo Nigeria

Viamo launched the Airtel 321 with Covid-19 information in August 2020

Ethiopia

IVR+Radio+Agent

Delivered by Agricultural Transformation Agency

ATA implemented the Covid-19 campaign through the 8028 IVR line. They delivered the locust public information campaign through the radio and agent channels.

Each case study sample has unique characteristics, therefore it is impossible to compare the effect across digital channels. However, we are able to compare the effects each of the case study campaign on farmer behavior change.

We used a mixed methods approach to evaluate each of these case studies

Kenya

SMS + TV

iShamba and Mediae

Quantitative Survey: iShamba conducted 198 complete baseline and endline surveys. A bulk of the messages were implemented prior to the baseline survey. As a consequence, we used a difference in difference analysis to look at post-intervention changes, and narrative analysis for impact.

Administrative data analysis: We tracked SMS Covid-19 message themes between April to July 2020.

Kenya

SMS + In-person

Wefarm and Producers Direct

Quantitative Survey: Producers Direct conducted baseline and endline surveys. We evaluated the impact of the communication campaigns through a difference in difference approach.

Administrative data analysis: We analyzed inbound SMS messages containing Covid-related mentions.

Qualitative Interviews: We conducted 14 in-depth interviews with Wefarm farmers in Kenya.

Nigeria

IVR

Viamo Nigeria

Quantitative Survey: Busara conducted 129 phone surveys among farmers that use Viamo's Airtel 321 service before and after the programme was implemented.. We evaluated the impact of the campaigns through a difference in difference (DiD) quantitative assessment using a separate control group..

Qualitative Interviews: Busara conducted 15 in-depth interviews with Airtel 321 farmers in Nigeria.

Ethiopia

IVR+Radio+Agent

Agricultural Transformation Agency

Qualitative Interviews: Busara interviewed 10 farmers from a convenience sample. The objective was to understand farmer's perspectives on how they think the Covid-19 information from the IVR campaign changed their knowledge, attitude, and behavior. We also sought to understand locust-related information needs.

Quantitative analysis

For 3 case studies, we used a qualitative approach to assess the impact of the information provided, utilizing several techniques.

Quantitative analysis

For 3 of the 4 case studies we also used a quantitative approach to compare information recipients against a control group that did not receive the solutions. We did this both before and after the information was given in difference in difference approach.

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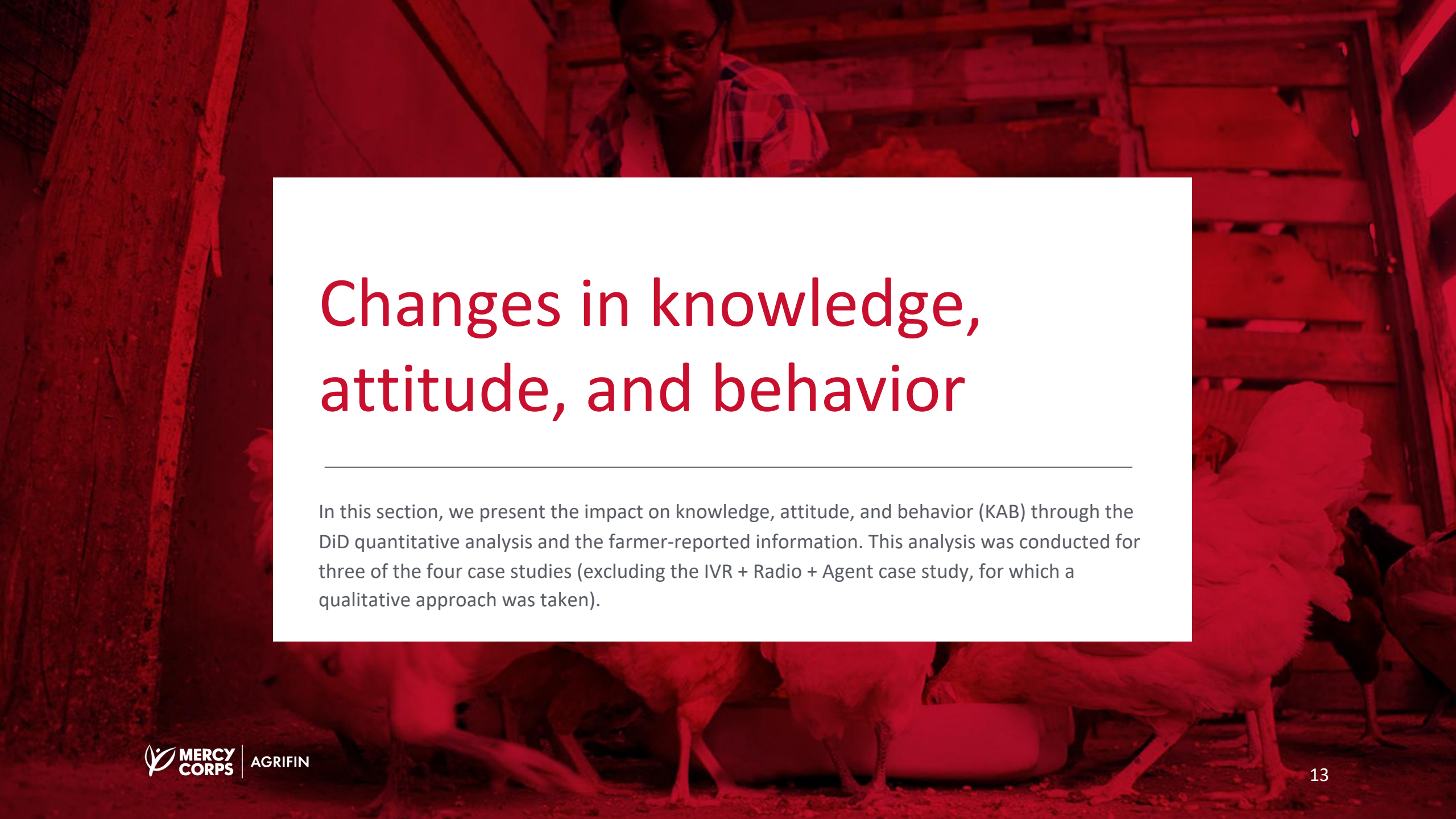
The impact of the communication campaigns on farmers’ knowledge, attitude and behavior

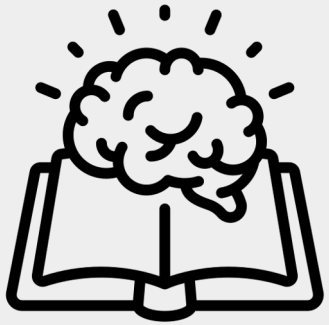


Changes in knowledge, attitude, and behavior

In this section, we present the impact on knowledge, attitude, and behavior (KAB) through the DiD quantitative analysis and the farmer-reported information. This analysis was conducted for three of the four case studies (excluding the IVR + Radio + Agent case study, for which a qualitative approach was taken).

Creating a knowledge, attitude, behavior score

We created an index measure that combines knowledge, attitude and behavior questions into one more powerful measure.



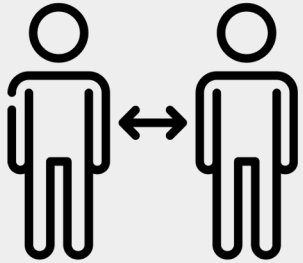
Knowledge

Do farmers know the symptoms and prevention methods of Covid-19?



Attitude

How are farmers responding to Covid-19 regulation, positively or negatively?



Behavior

Are farmers observing safe Covid-19 behaviors?

We used a set of questions to build the KAB score

Area	Questions used to building the KAB score
Knowledge *Average score calculated for knowledge questions to create the 'knowledge score'.*	Do you need to maintain social distance from workers on your farm?
	What is the distance you should maintain from workers on your farm, measured in meters (that don't live at your house)?
	During Covid can you share tools with other farmers?
	How should fresh food (ex. fruits and vegetables) be cleaned after they are purchased from the market to prevent Covid transmission?
	Can livestock transmit Covid?
Attitude *Average score calculated for attitude questions to create the 'attitude score'.*	What do you think: should people in your country not shake other people's hands because of Covid right now?
	Do you think the reaction of your country's government to the current Covid outbreak is appropriate, too extreme, or not sufficient?
Behavior *Average score calculated for behavior questions to create the 'behavior score'.*	Have you been able to keep a distance of one meter from other people in the last 7 days?
	Are you wearing a mask during normal daily activities?
	Do you wear a mask while you farm?
	To what extent do you agree: "I avoid taking mass transportation to the market"
	To what extent do you agree: "I use mobile money at the market."
	To what extent do you agree: "I wash my hands more frequently than before Covid"
The mean of the knowledge, attitude, and behavior components is taken to create a final KAB score.	

Overall change in knowledge, attitude, behavior score

SMS + In-person Case Study

Positive effect

The SMS + In-person campaign had a positive effect on farmer behavior. The overall KAB score went up by **6.6 percentage points** on average for respondents in the SMS +In-person
Case Study.

IVR Case Study

Insignificant effect

The overall KAB score went up by an insignificant amount for respondents in the IVR Case Study.

Data source: Cisco Quantitative Survey

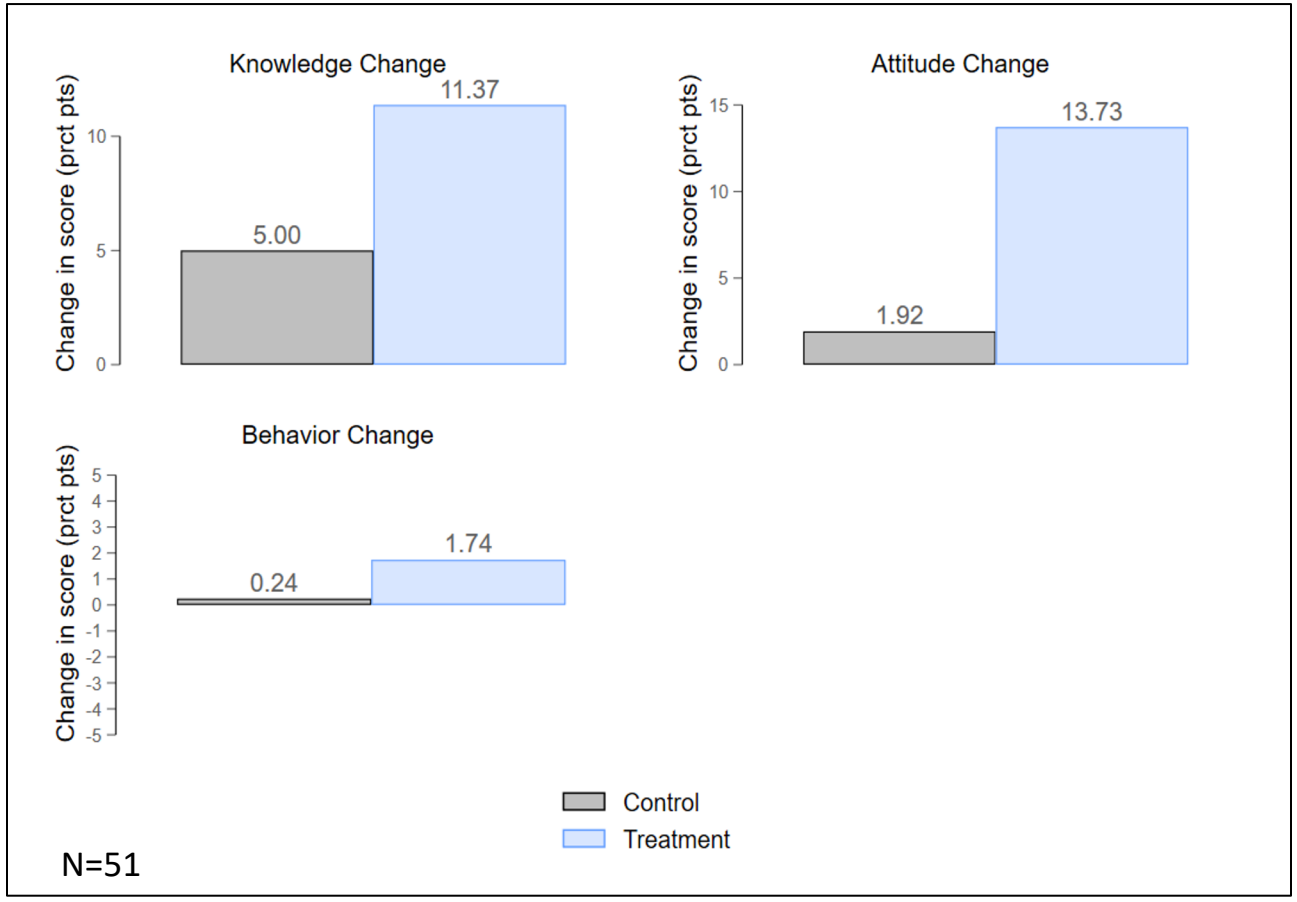
We determined the effect of each of the three case studies on farmer behavior using a control group

- The **control group did not receive any communication messages** from the partner organizations. The control group was geographically distinct from the treatment groups, minimizing the chance of spillovers.
- The control respondents were a set of farmers chosen by Busara in Kenya and Nigeria. By comparing how outcomes for the group of interest change between baseline and endline, and how this differs to changes in the control group, we can estimate the causal effect of the treatment, rather than just noting correlations.
- In other words, **this allows us to quantify the effect of receiving additional information about Covid-19 on farmers' knowledge, attitudes and behaviors relative to those that did not receive the designed communication solutions** (control).

The combined SMS + in-person case study saw positive effects on all KAB components

Combined SMS + In-person Case Study

Kenya



- We used a Difference-in-Difference quantitative approach.
- There was a positive, statistically significant increase found for knowledge, attitude and behavior score.
- The knowledge increase has come from a rise in people knowing about social distancing, about livestock and Covid transmission, and about tool sharing
- In behavior, people are staying away from each other less, and are wearing masks less, but are washing hands more.

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Data source: Cisco Quantitative Survey

The IVR case study had a positive, but not statistically significant, effect on knowledge

Case study: IVR Respondents

Nigeria



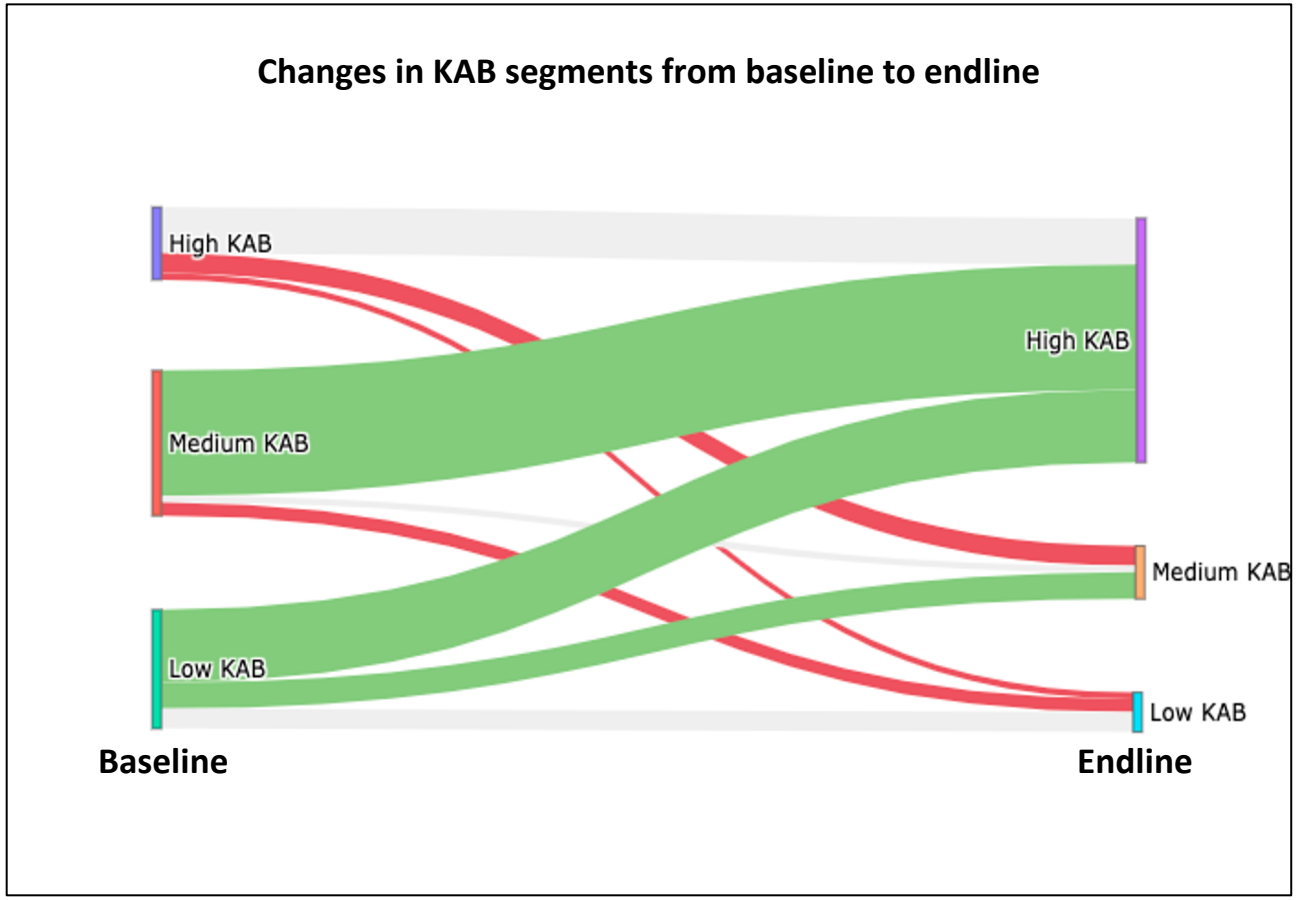
- We used a Difference-in-Difference quantitative approach.
- Positive, but **not statistically significant,** increase found for knowledge score. This means that we can't tell the effect we would see in larger sample.
- This decrease in behaviors comes from poorer hand washing practices.
- This trend is helpful for anticipating possible future effects of the intervention.

Data source: Cisco Quantitative Survey

The combined SMS + in-person case study recorded a bigger shifts in KAB scores

Combined SMS + In-person Case Study

Kenya



- This group of respondents had a large portion of respondents that moved to the high KAB segment at endline.
- This shift is driven by the Medium KAB group.
- We see fewer high KAB respondents dropping to the medium and low KAB segments.

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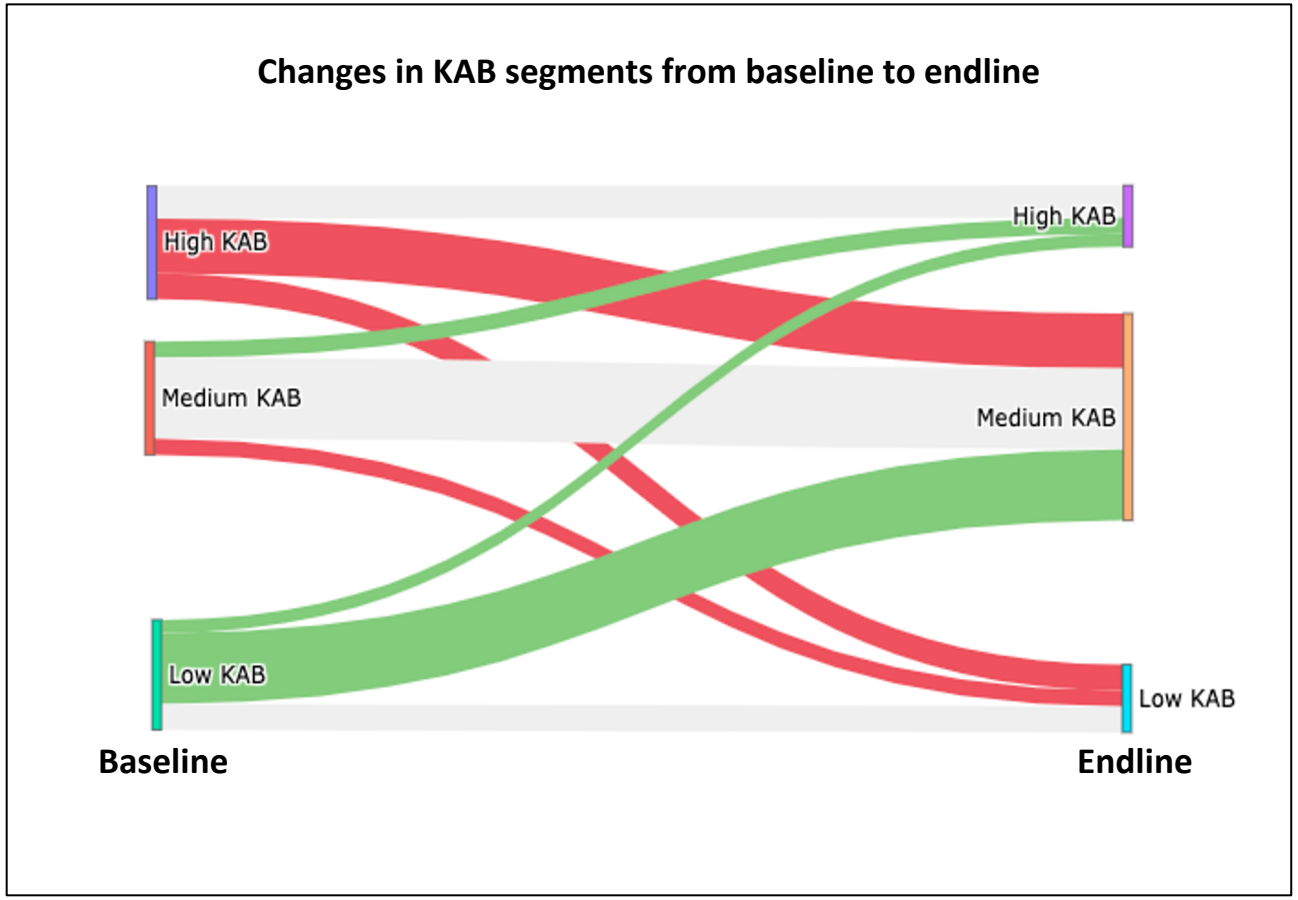
Data source: Cisco Quantitative Survey

In the IVR case study we see respondents shifting towards the medium KAB score segment

Case study: IVR Respondents

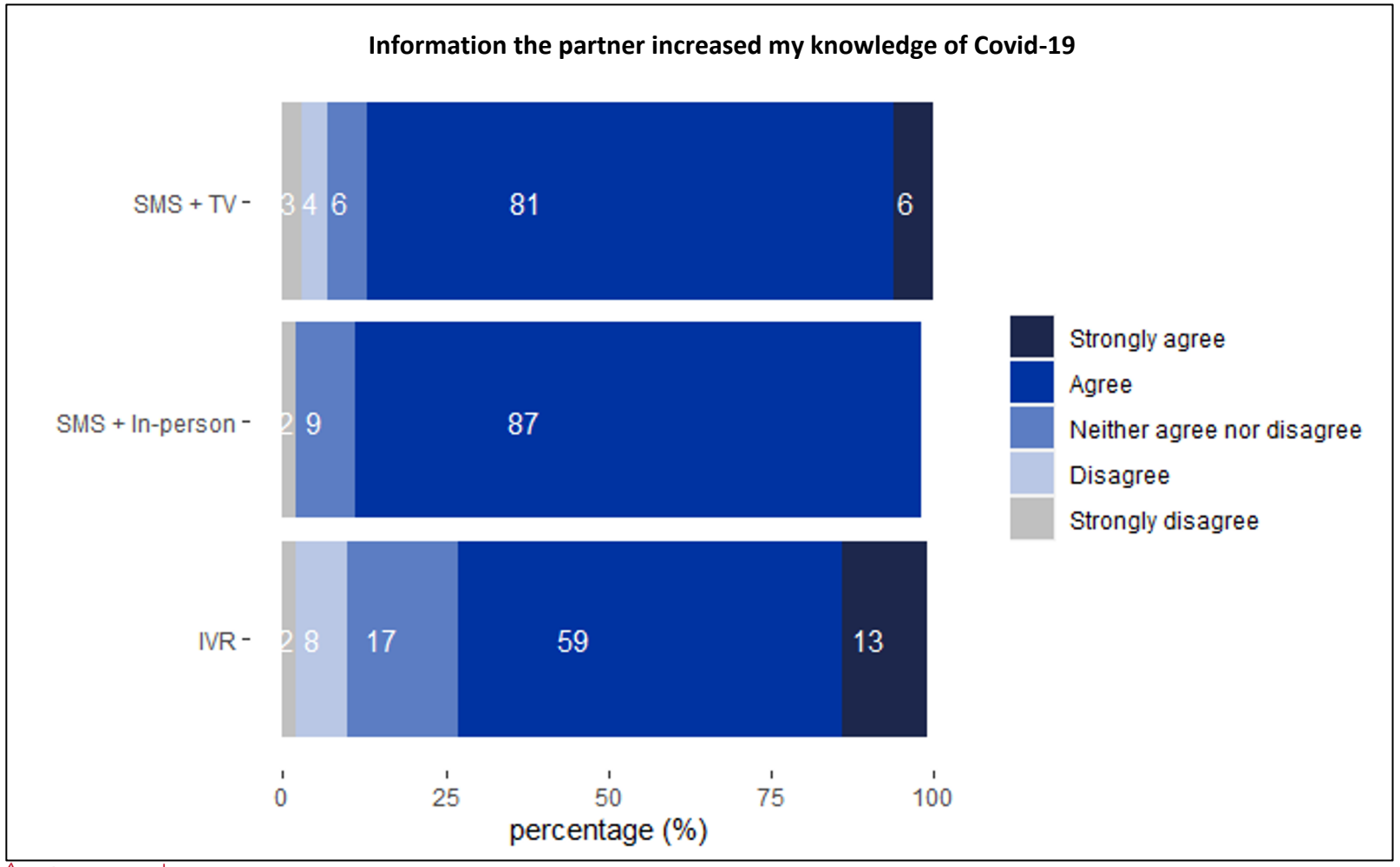
Nigeria



- The low KAB respondents moved towards the medium KAB scores at endline.
- Some high KAB respondents also moved towards the medium KAB scores at endline.
- The medium KAB pool mainly maintained its position at endline. As indicated by the grey flows.

Data source: Cisco Quantitative Survey

Survey respondents agree that their knowledge of Covid-19 increased



- Respondents from the IVR case study were the least likely to agree that their knowledge improved.
- Respondents overwhelmingly report positive gains in knowledge.

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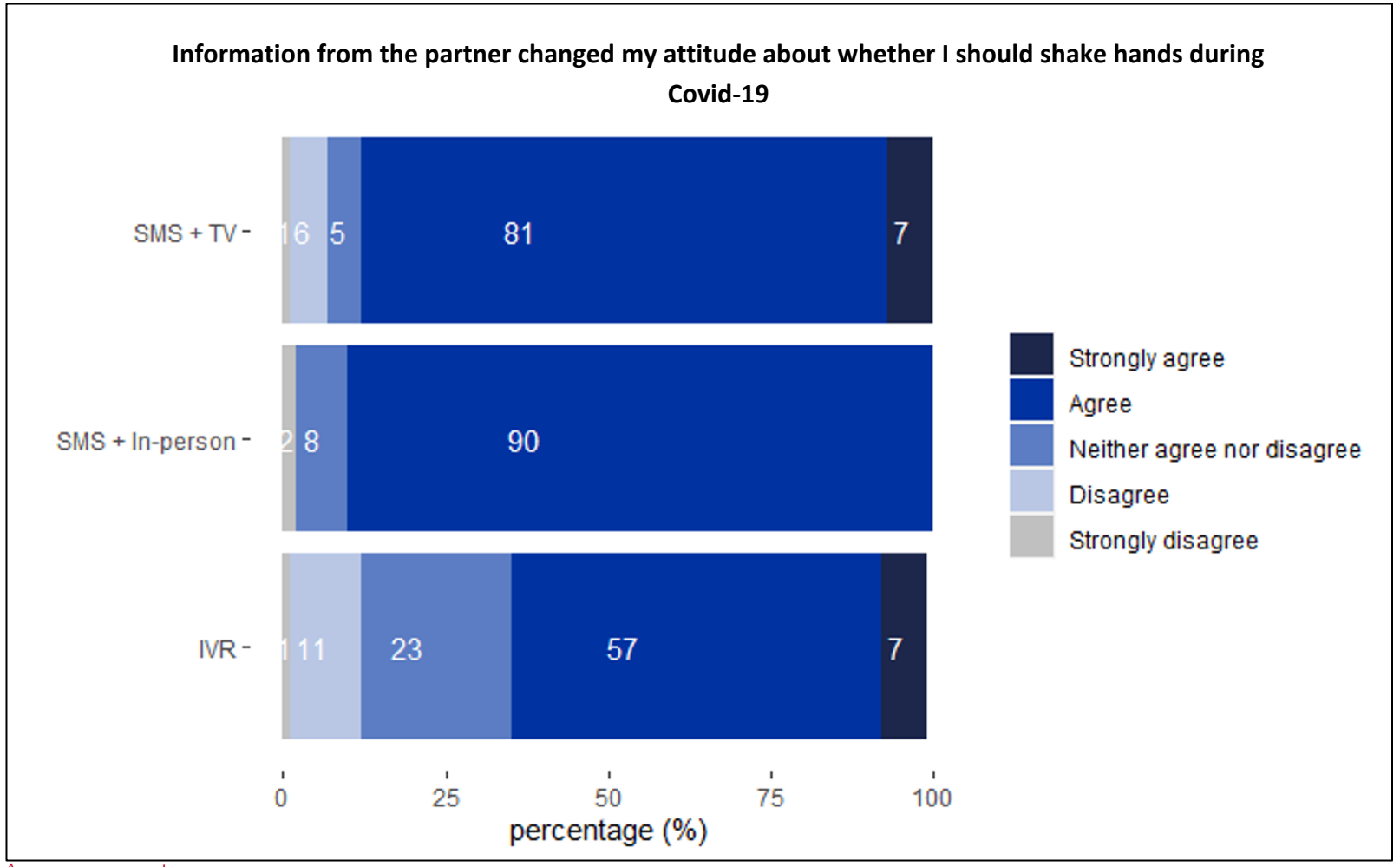
Data source: Cisco Quantitative Survey

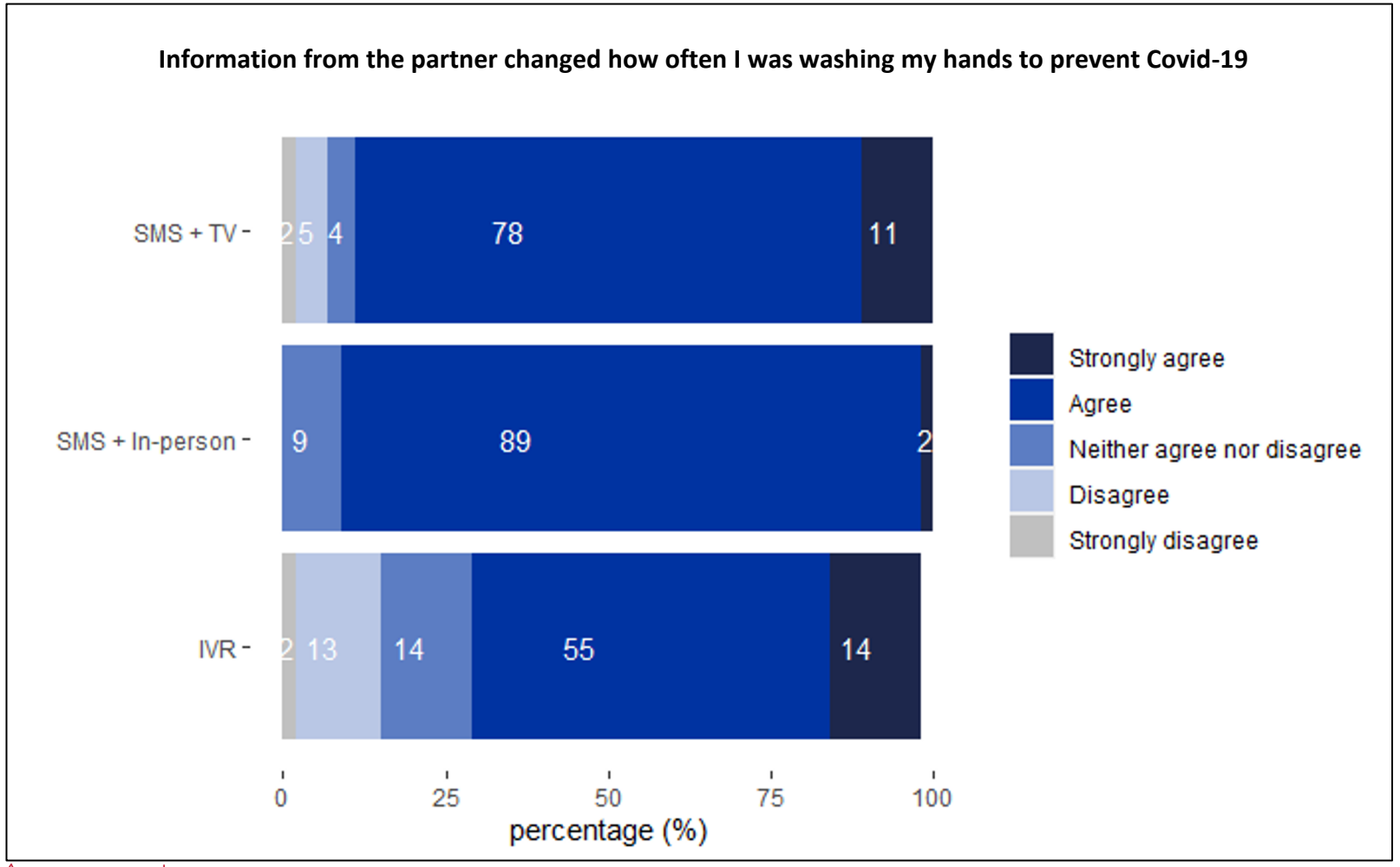
Survey respondents agree that their attitude towards Covid-19 improved



- Respondents from the IVR case study were the least likely to agree that their attitude improved
- Respondents overwhelmingly report positive gains in attitude

Data source: Cisco Quantitative Survey

Survey respondents agree that they're are exhibiting preventative Covid-19 behaviors



- Respondents from the IVR case study were the least likely to agree that their behavior improved
- Respondents overwhelmingly report positive gains in behavior
- Across all three case studies, behavior was the KAB component most likely to decrease, so **farmers may not be aware their Covid-19 prevention behaviors declined**

Data source: Cisco Quantitative Survey

Farmers interviewed in Ethiopia had positive responses to the Covid-19 information on the IVR line

Knowledge

"It advises us to avoid crowded places, to ventilate rooms by keeping windows open, to keep distances in transportation vehicles and that we need to walk on foot if necessary. We can access all such info from 8028 hotline."

-Teff and Bean Farmer, Ethiopia

Attitude

"I think it is very good though the fact that people are not implementing the measures is disappointing."

-Maize and wheat Farmer, Ethiopia

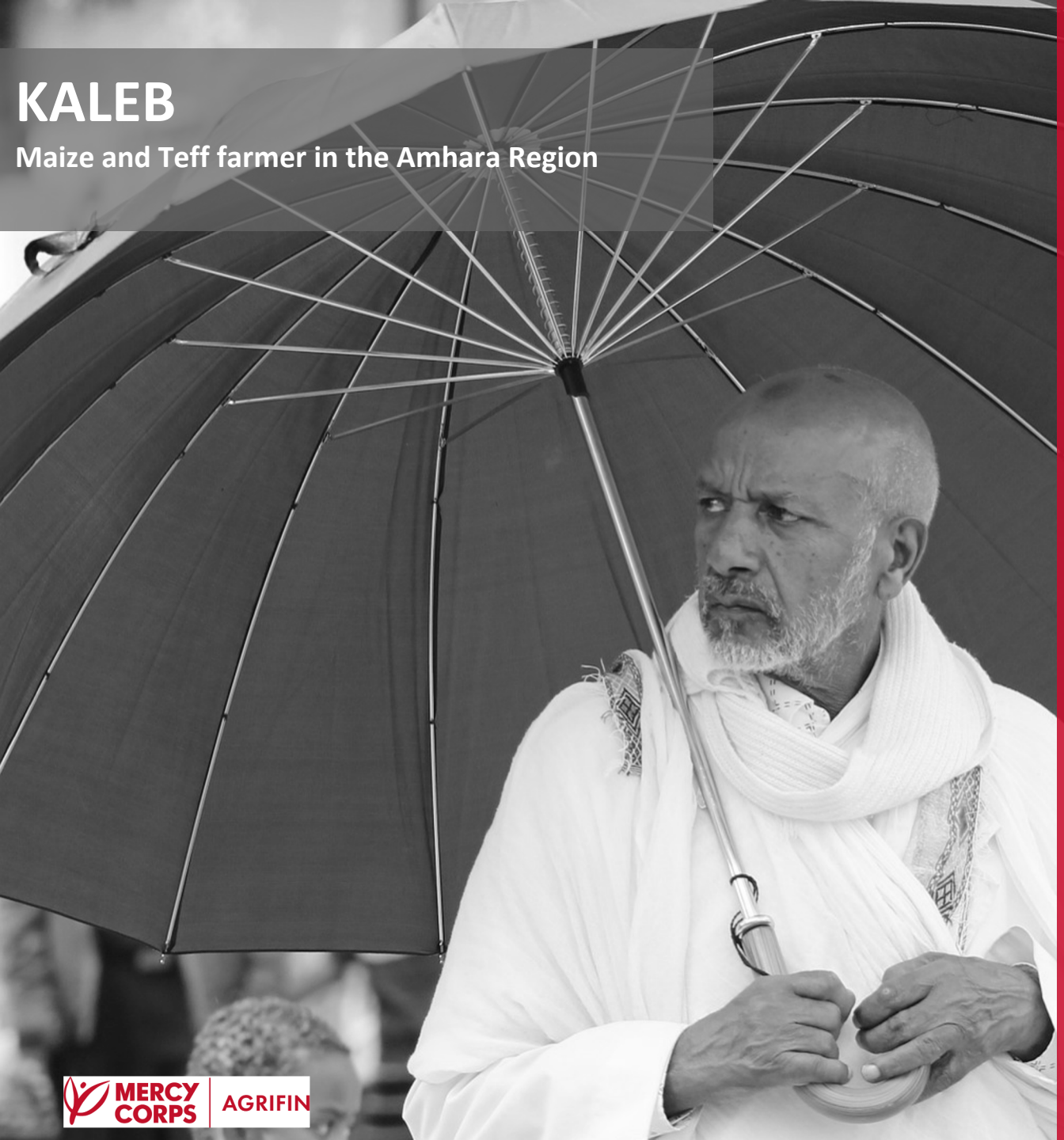
Behavior

"Washing our hands with soap frequently; wearing a mask; keeping hygiene and washing more often. It is being helpful to me. First, it made me to keep my hygiene. I thank the hotline as it is trying to keep us safe from the pandemic and as it is helping us maintain our hygiene"

-Maize and Teff Farmer, Ethiopia

- In Ethiopia, we took a qualitative approach to understand farmer's perspectives on how they think the Covid-19 information from the campaign changed their knowledge, attitude, and behavior. This information was delivered through the 8028 IVR line.
- Farmers were overwhelmingly positive in their response to the IVR-led campaign and how it influenced their Covid-19 knowledge, attitude and behavior. They see the IVR line as providing critical and practical information.

Data source: Cisco Qualitative Interviews



KALEB

Maize and Teff farmer in the Amhara Region

Kaleb lives on his farm with his wife and children. His children have not been attending school because of the Coronavirus movement restrictions. It has become increasingly difficult to provide for his family. Now more than ever he is motivated to expand his farming business so he can continue to support his family.

Kaleb learned about the 8028 IVR hotline through an agricultural worker. He uses the 8028 IVR hotline to keep up to date with Covid-19 and farming information. He doesn't know who provides the information but trusts that it comes from an expert source, "We think that an educated human power is providing such information."

He has found the 8028 IVR line very useful and he has learned a lot of about Covid-19. Now he is extra cautious when he has to go to the market. "I keep my distance in the market and when I make transactions and then I come back home when I am done in the market. When I come back home I wash my hands and I wash again before eating something."

Since Ethiopia eased its movement restrictions Kaleb has noticed that people have become more relaxed. "There is less control on the number of passengers per vehicle, so we are anxious about getting infected by the Coronavirus."

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Change in knowledge, attitude, and behavior after the intervention

We used a quantitative assessment to understand the trends in KAB after the SMS + TV case study stopped sending out Covid-19 messages in August. We conducted the same assessment with a control group to serve as a comparison group. This control did not receive any communication messages any partners in this engagement.

Studying post-interventions trends for the combined SMS+TV case study

Timeline:

- The combined SMS +TV intervention was rolled out from April 27 until August 17th
- The baseline data collection was concluded August 14th

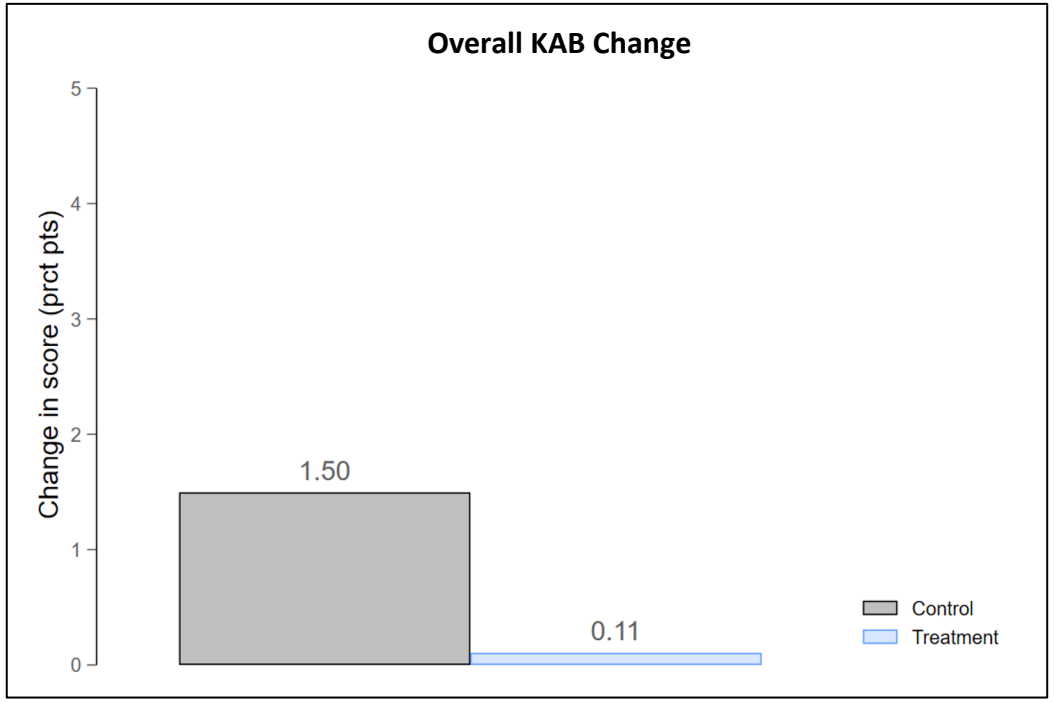
Due to the timing of the intervention and data collection we effectively see post-intervention changes.

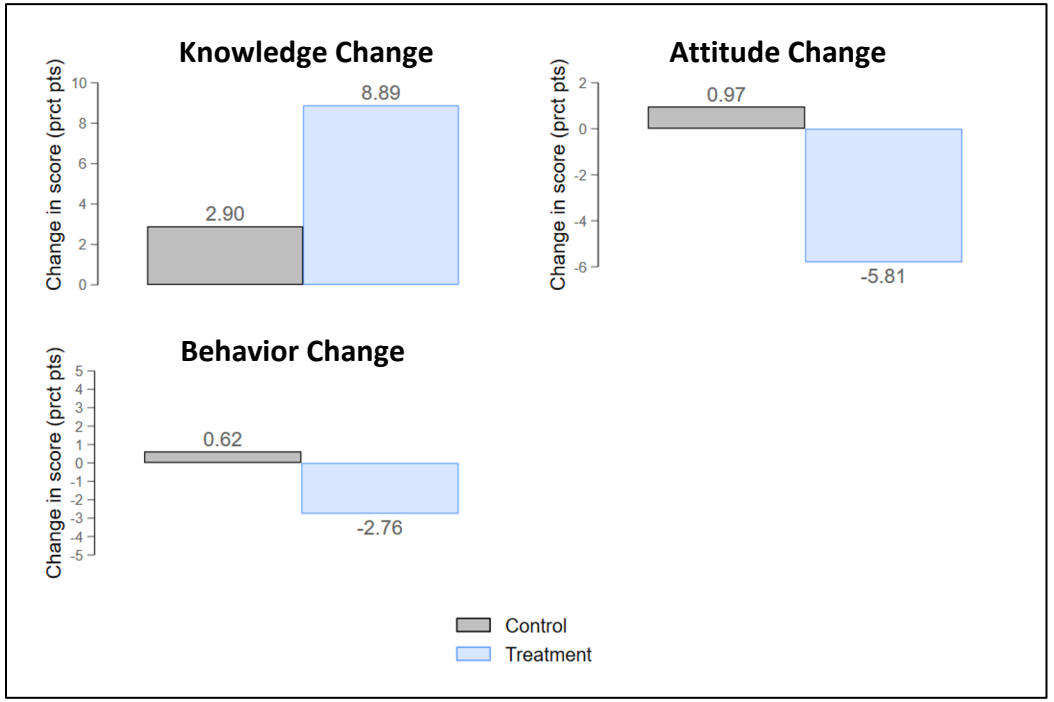
- The baseline values for the combined SMS + TV case study represent their KAB scores as the intervention was concluding
- The endline values represent the respondents KAB scores, four weeks after the intervention

Understanding declines in behavior:

- The decrease in behavior seems to come from handwashing

There was little change in KAB scores after the combined SMS + TV campaign ended





- The overall measure of knowledge, attitude and behavior saw little change for iShamba respondents from baseline to endline.
- Looking at individual KAB components, there was a large positive shift in knowledge, and decrease in attitude and behavior.
- In other words, attitude and behavior decreased after the campaign ended.
- 34 percentage point increase in farmers knowing livestock does not transmit Covid-19.

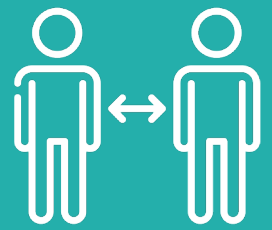
Data source: Cisco Quantitative Survey

Drivers of the KAB in the SMS +TV case study after the intervention ended



Knowledge

The **knowledge increase** is driven mainly by a big increase in people answering correctly for whether livestock spread Covid-19, and a smaller increase in people knowing about the need to socially distance



Behavior

The **behavioral decrease** comes from a **reduction in people staying 1m away from each other** on the farm, and from a reduction in general mask-wearing. The first might be explained by more on-farm activities, but the second is a clear example of behaviors getting worse. People have slowly stopped wearing masks.



Changes in what farmers need to know

In this section, we analyzed partners' administrative data and categorized the inbound inquiries into message themes.

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We explored changes in farmers inbound messages tracked in partners' administrative data

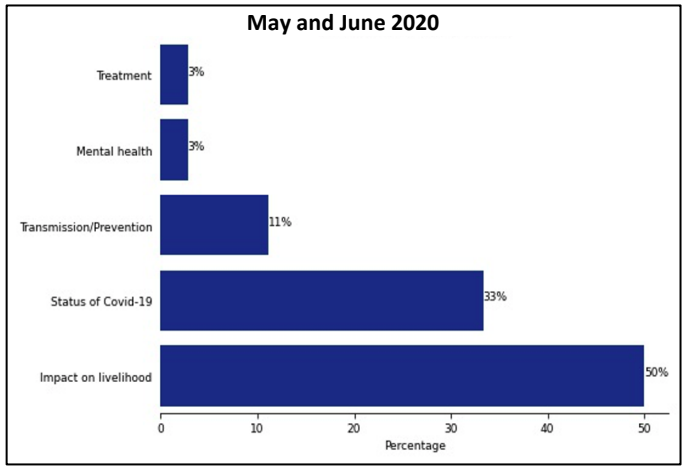
Thematic approach to analyzing the administrative data during the campaign period: Prior to coming up with the themes, we proofread a randomly selected subset of the administrative data shared with us. This was to help in generating high level insights and patterns of what farmers are asking or talking about in the messages. Then we defined themes based on these findings. For context, we have provided the Covid-19 timeline in Kenya in the Appendix.

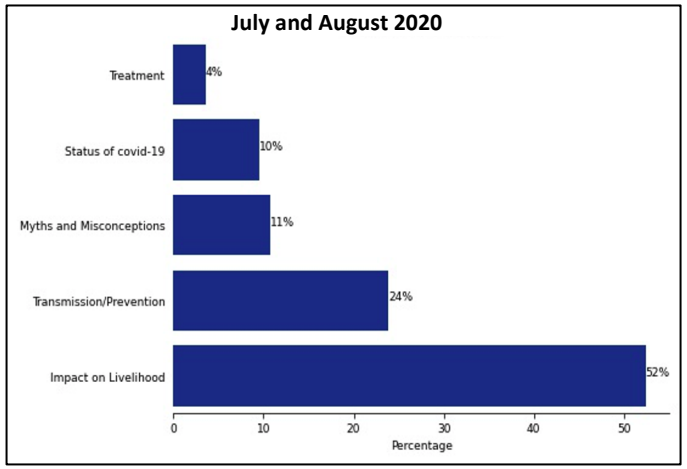
Theme	Definition	Sample messages
Status of Covid-19 in Kenya	Focuses on general questions around Covid-19.	"Is there any confirmed Covid-19 case in Nandi county so far?"
Transmission & prevention	Questions and discussions around prevention and how the virus is transmitted.	"Do i need to wash hands that regular and mostly am in the shamba alone and rarely get out of the compound?"
Treatment	Questions asking if there is a cure/vaccine for Covid-19.	"Is there Corona vaccine that has been developed Globally?"
Misinformation & misconceptions	Misinformed statements/questions around Coronavirus.	"Is Covid-19 19 really in kenya coz i really doubt it"
Impact on livelihood	Farmers questions and mentions of being adversely affected by the virus. This involves reduced market demand and financial difficulty	"Please I request you to assist my community with inputs…."
Fear	People who are afraid of contracting the virus and are warning others about it and encouraging prayer.	"…Also the personnel to work on the farms who fear contracting the virus.."

The impact of Covid-19 on livelihoods is a key theme among inbound messages

Combined SMS + TV Case Study

Kenya





Number of Covid-19 Messages Received (May-June 2020)
Treatment: 1
Mental health: 1
Transmission/Prevention: 4
Status of Covid-19: 12
Impact on livelihood: 18
Total: 35

Number of Covid-19 Messages Received (July-August 2020)
Treatment: 3
Status of Covid-19: 8
Myths and Misconceptions: 9
Transmission/Prevention: 20
Impact on livelihood: 44
Total: 84

- Impact on livelihood has been the topmost concern. The lockdown has led to disruptions in transportation and labor force. The messages are mainly around access to market options as their perishable produce is rotting, lack of customers, ways to diversify their crops among others.
- .In July and August, there were fewer inquires about the status of Covid-19, and more questions about transmission/prevention.

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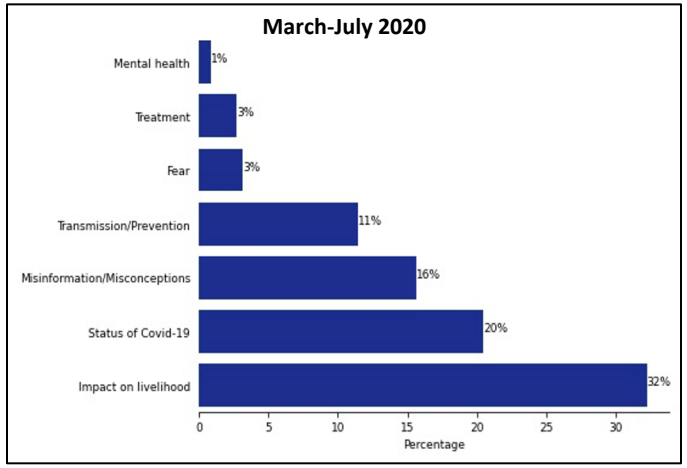
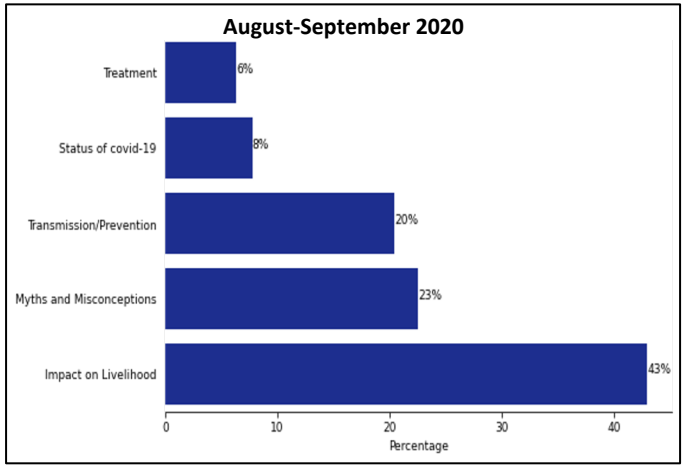
Data source: Administrative Data

Similarly, impact on livelihood is a key concern in the combined SMS + In-person case study

Combined SMS + In-person Case Study

Kenya





Number of Covid-19 Messages Received (March-July 2020)

Mental health: 5
Treatment: 19
Fear: 20
Transmission/Prevention: 80
Misinformation: 93
Status of Covid-19: 126
Impact on livelihood: 228
Total: 238

Number of Covid-19 Messages Received (August-September 2020)

Treatment: 9
Status of Covid-19: 11
Transmission/Prevention: 29
Myths and Misconceptions: 32
Impact on livelihood: 61
Total: 142

- There are fewer SMS inquires about the status of Covid in Kenya in the August-September data. Farmers have moved away from general questions (8%) to specific questions about livelihood (43%).

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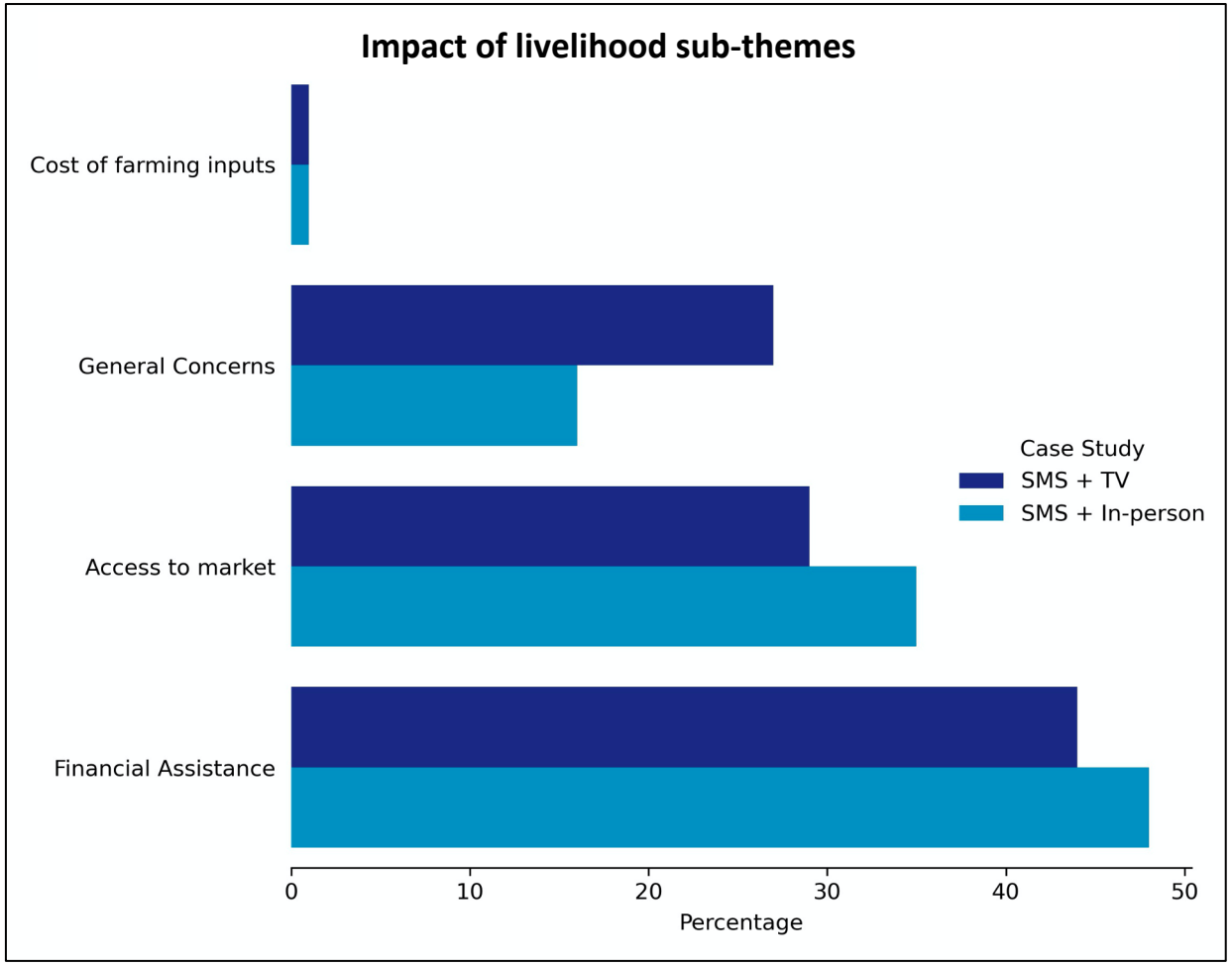
Data source: Administrative Data

Farmers are mainly asking for financial assistance



- Breaking down impact of livelihood into sub-themes, it indicates that farmers are requesting for financial assistance.
- Some examples of farmers requesting for financial assistance include:
  - *"I was depending on you for a loan for farming could you still assist?"*
  - *"Hi , need some loan to start poultry farming, a boost of 15k"*

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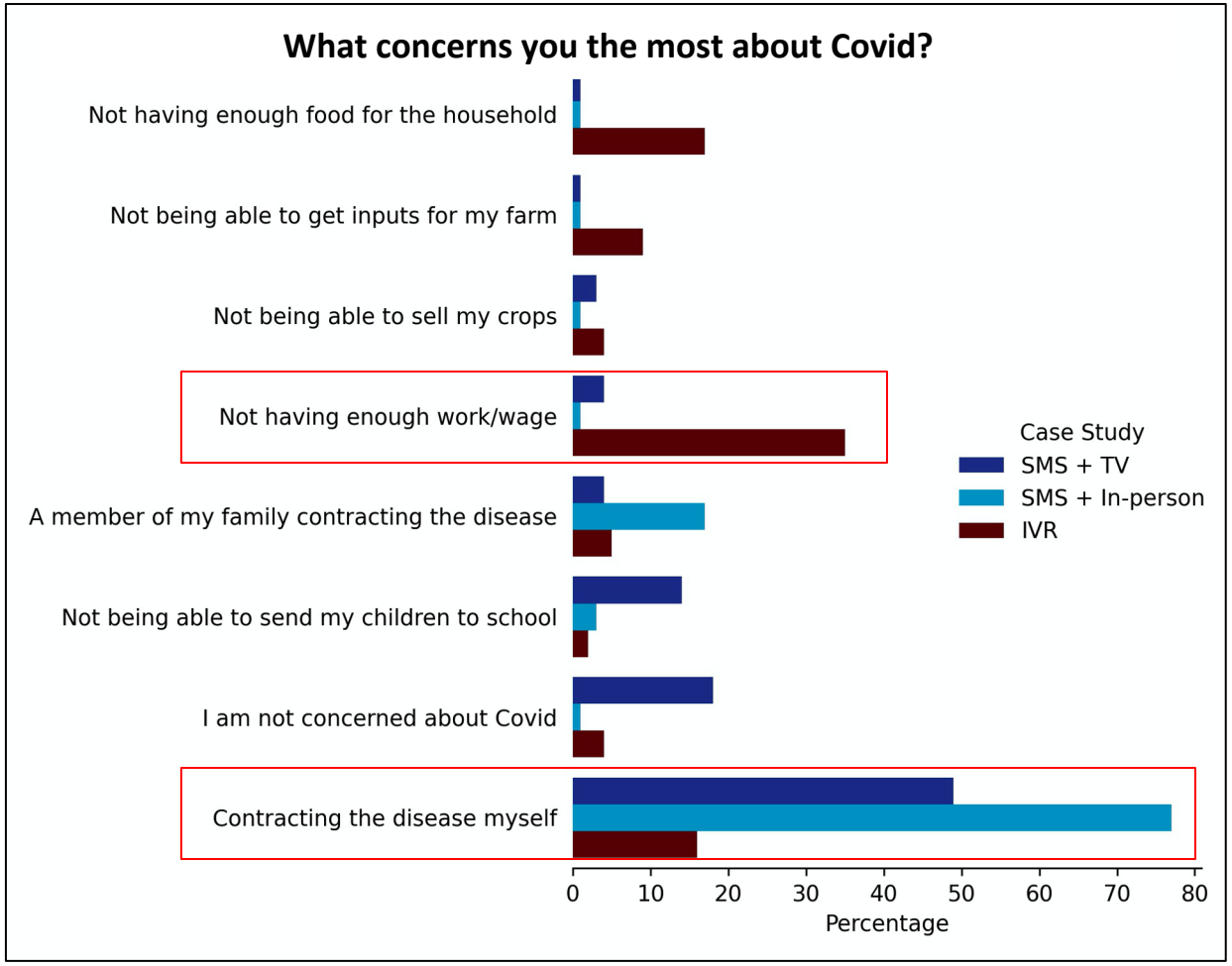
Data source: Administrative Data

Primary concerns differ across case studies



SMS +TV:

- 18% of people not concerned about Covid
- Most worried about contracting the disease themselves (49%)

SMS+ In-person:

- Most worried about contracting the disease themselves (77%)

IVR:

- 52% of people worried about either food and income

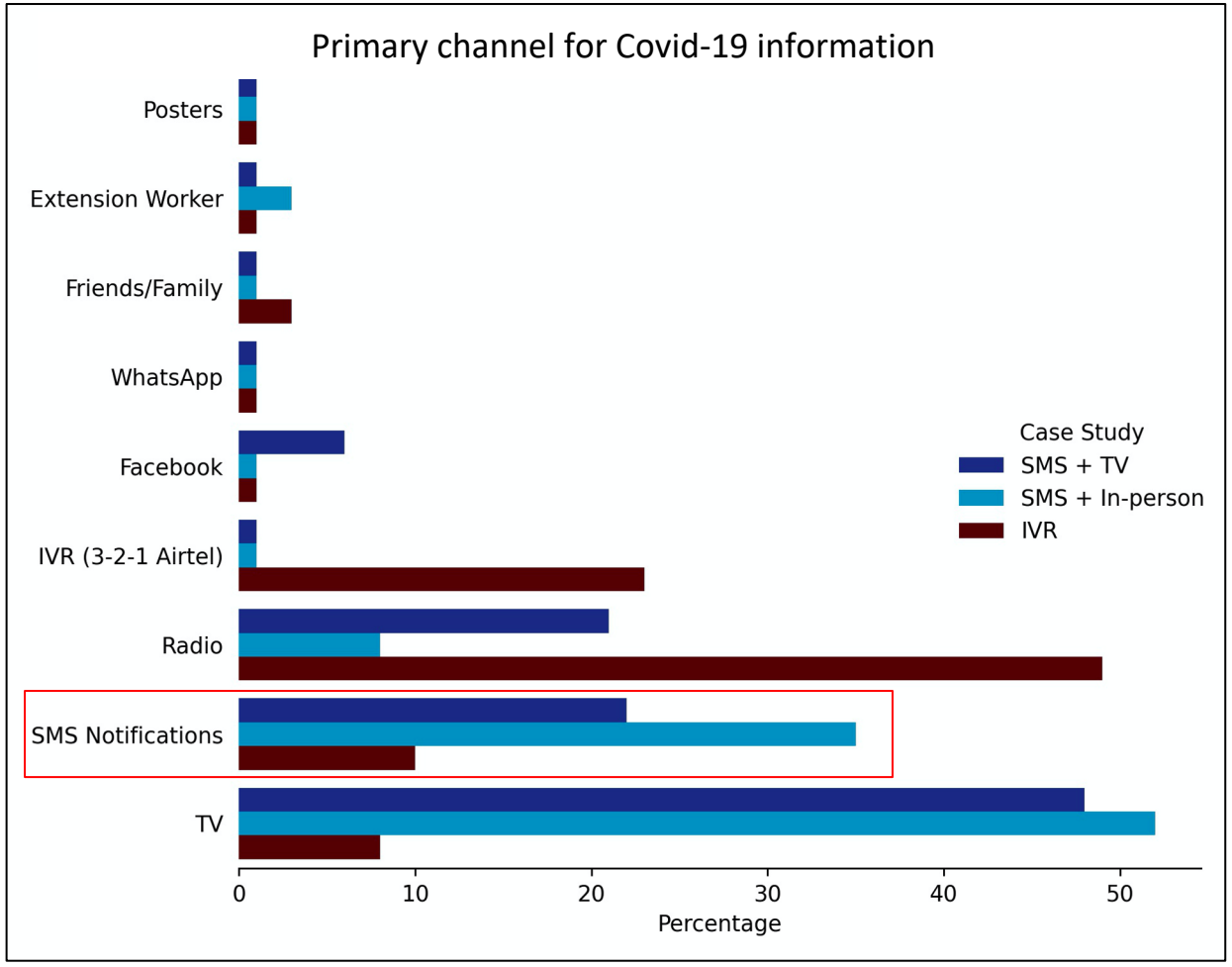
Data source: Cisco Quantitative Survey

How to reach farmers on digital channels effectively

In this section, we assess suitable channels to deliver health and agriculture information. Then, we present ways to optimize the digital channels.

How suitable are the digital channels for Covid-19 health information?

Digital channels are the second most used channel for Covid-19 information



- In all 3 case studies, surveyed farmers use above the line channels for Covid-19 information.
- Partners' digital channels, specifically SMS and IVR, were the second most used channel.

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Data source: Cisco Quantitative Survey

Face to face relationships led by agents are important in Ethiopia

"Some agricultural worker visited us and told us about 8028 hotline for agricultural info."
-Teff and millet farmer, Ethiopia

"I learnt about it when my fellow farmers talk about it and that they get information from the hotline; I heard about it from the agricultural workers/office too."
-Teff, millet/sorghum, vegetables farmer, Ethiopia

- Farmers in Ethiopia live in close, rural communities. Agricultural extension workers[1] in the community have successfully built trust by providing accessible communication touchpoints to support farmers.
- Future emergency response might require partnering with this known communication channel to gain farmers trust and when sharing health or agricultural information.

[1]Agricultural extention workers are exployed by the district to disseminate agriculture extension information and provide training.

How suitable are the digital channels for farming information?

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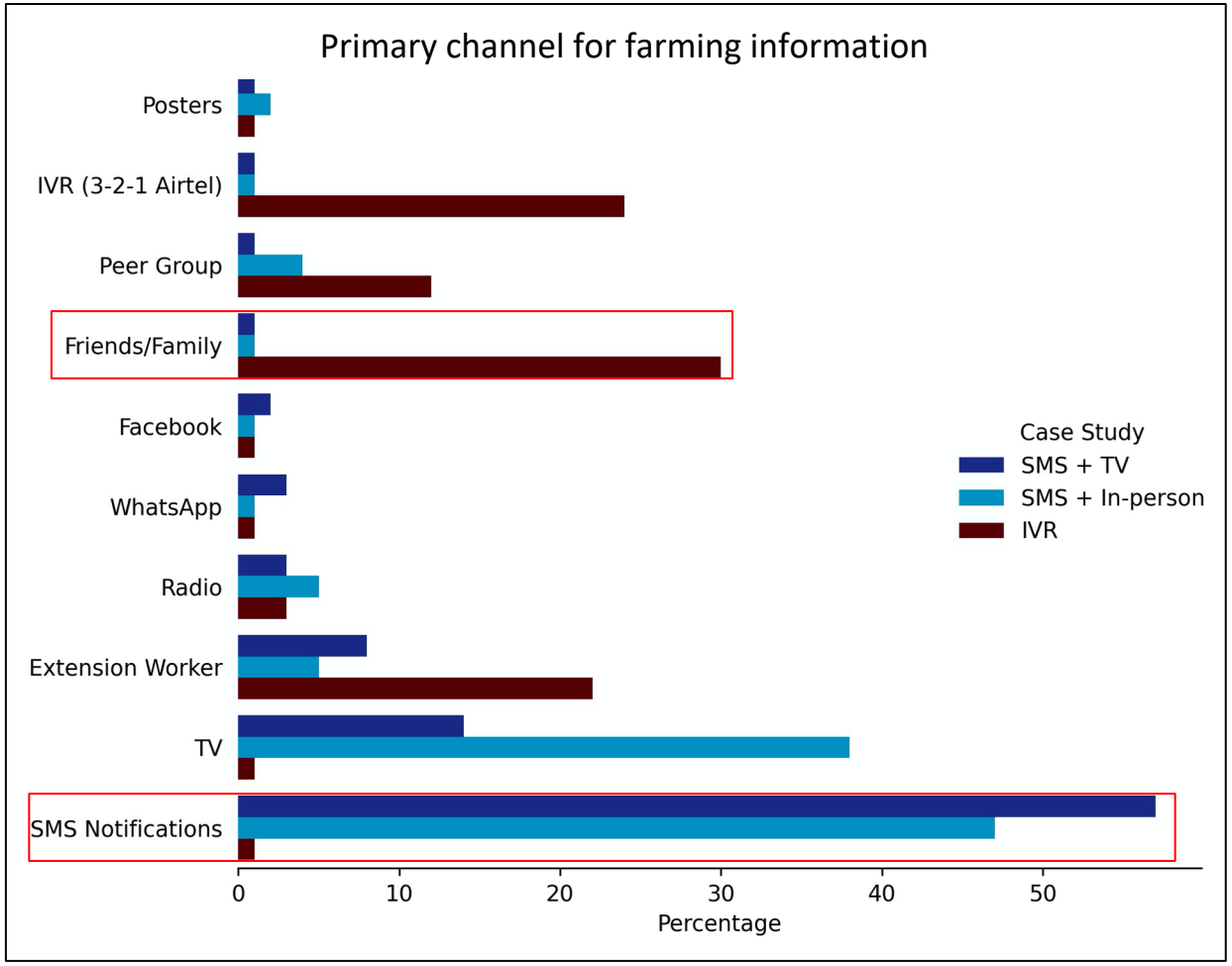
Surveyed farmers in Kenya use SMS notifications for farming information



- In Kenya, surveyed farmers use SMS channels for farming information. This is how partners in this engagement currently share farming information with their farmers, therefore this aligns with surveyed farmers communication channel usage.
- In Nigeria, surveyed farmers rely on friends/family for farming information.

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Data source: Cisco Quantitative Survey

How suitable are the digital channels for locust information?

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Interviewed farmers in Ethiopia use their mobile phones, radio, and agents for locust information

"Not all people are literate and there are many people who cannot easily operate mobile phones. Our locality is rural area and many people are illiterate. So people listen to radio mostly for information. Once they hear some info from such radio then they will cascade the info among themselves."

-Teff and millet farmer, Ethiopia

"Actually most reliable mode is to go through agricultural workers but they may not be able to cover all the areas and vicinities quickly. So we can access information from the 8028 hotline."

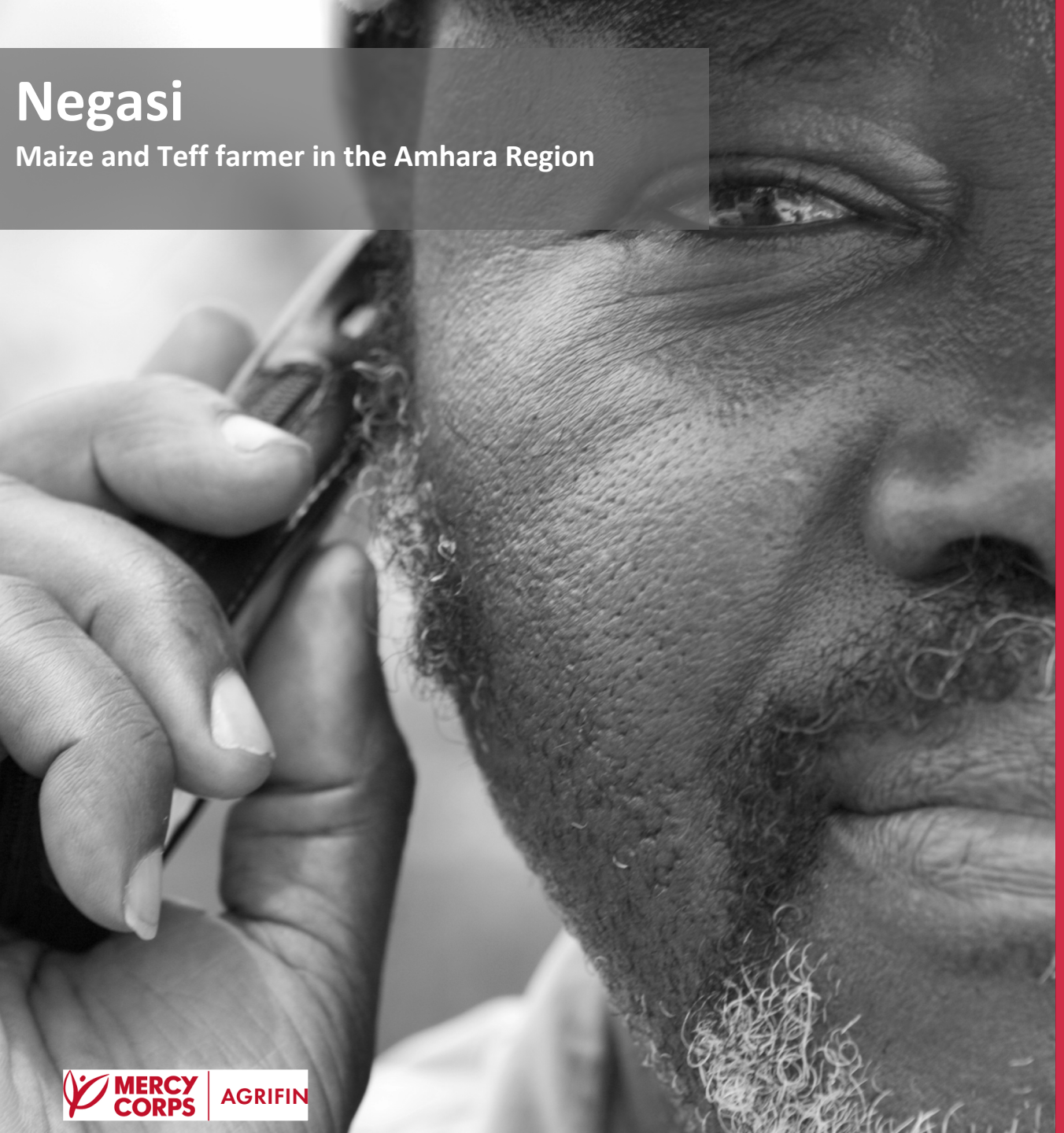
-Teff and millet farmer, Ethiopia

"If my mobile phone receives text messages while I am busy working on the farm then I can open the message and read it at the time of my choice when I rest after work."

-Teff, millet, wheat, barley farmer, Ethiopia

- There were mixed responses around channel preferences for locust information.
- Farmers listen to the radio frequently but pointed out that they want additional communication touchpoints. Agents in the communities are seen as reliable and trusted sources, while mobile phones are useful because of their accessibility.
- A mixed channel campaign such as the current combined IVR+radio+agent campaign is appropriate for these farmers.

Data source: Cisco Qualitative Interviews



Negasi

Maize and Teff farmer in the Amhara Region

Negasi has not experienced a locust invasion this year but he is worried about it. He has heard of invasions in other localities through radio. “We are worried that it may devour our farms. We are worried about what will happen to us next and what we will consume throughout the year if it devours our crops that we have been working on.”

He has received information on locusts through his mobile phone (text messages) but he is not sure of who the provider is. He thinks it might be the agricultural office. Negasi has also received locust information through agricultural agents. “They advised us about how to keep invasions of locusts’ swarm away, how to apply the insecticide and when to apply the thing.”

If his farm is invaded by a swarm of locusts, he will report the invasion to the agricultural office. He knows that applying pesticides during the day will not be effective. He will instead use smoke and make sounds during the day to chase the locusts. In the evening, he knows that the locusts rest on wood and that is when he will use the opportunity to spray the pesticide.

Negasi would like to receive more information on preventive and control measures against possible invasions. The most preferred source of information is mobile phone platforms such as text messages or toll free numbers due to ease of access.“I would like get the information beforehand when it shows up. Messages of warning telling us that it is about to show up to help us get ready to prevent it. We would like to learn about the pesticide/medicine and how to apply it to stop the locusts.”

Overall, the SMS channel is the most suitable channel.

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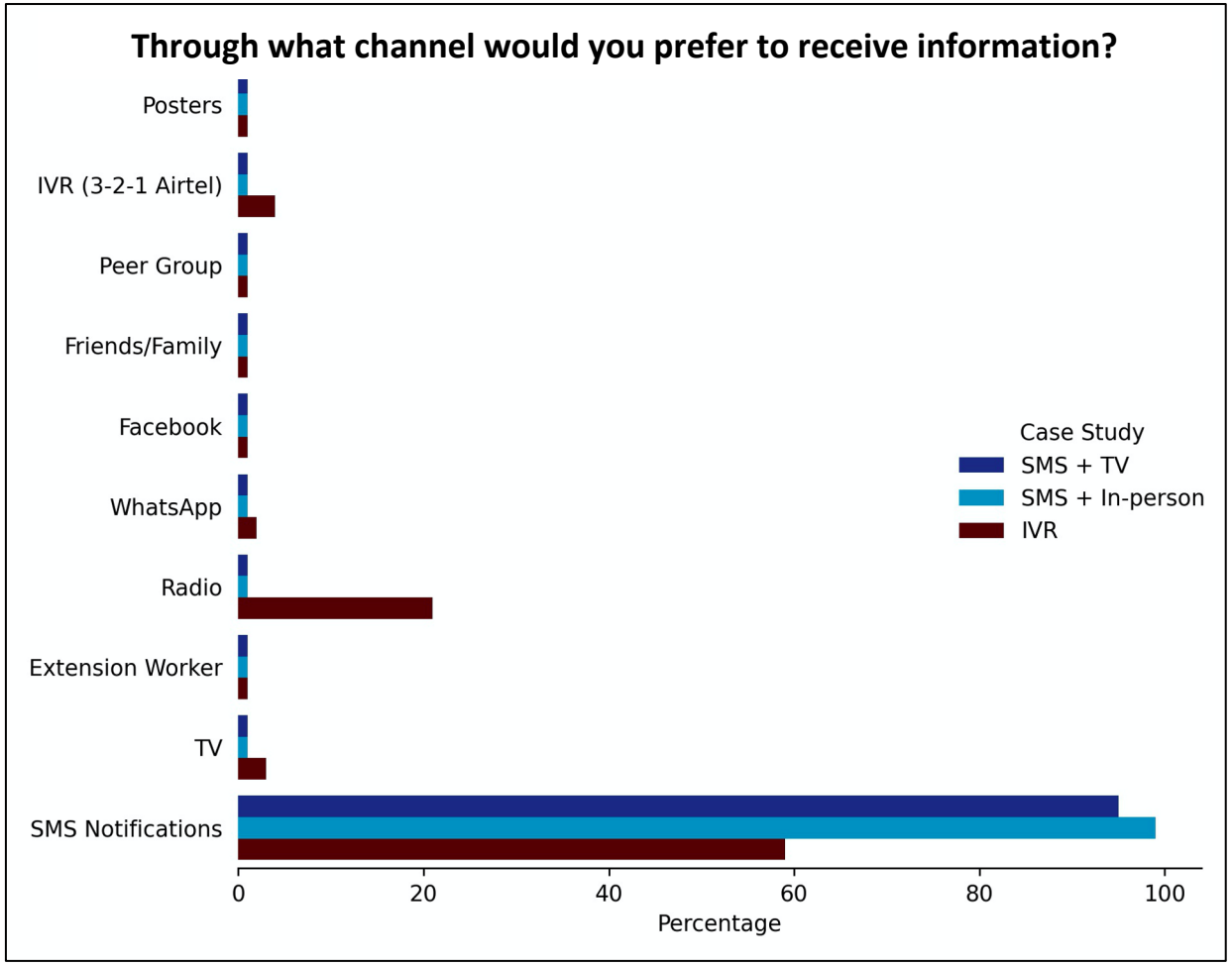
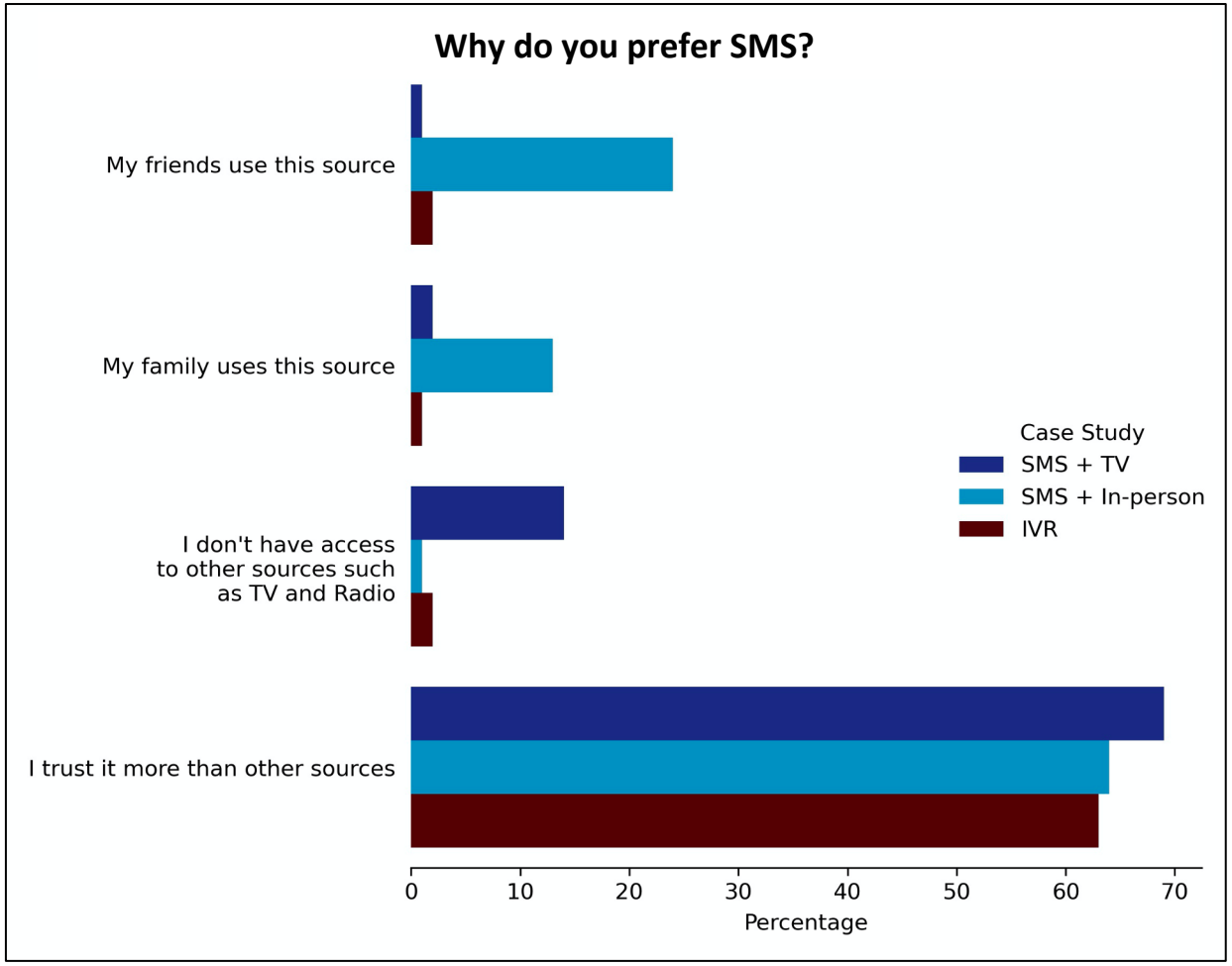
Near universal preference of receiving information through SMS notifications



- Looking at digital options, surveyed farmers prefer to receive information from partners via SMS.
- Although all Nigerian survey respondents were IVR users, the majority of farmers had a preference for SMS notifications. This raises the question of whether IVR can be complemented with SMS interventions.

Data source: Cisco Quantitative Survey

Trust and convenience are drivers for SMS preferences



- Surveyed farmers reported that they like the SMS channel because they can also trust the information that comes through this channel. Those that selected “other” were likely to cite convenience and ease of use.
- For years, SMS has been used as a learning tool. The preference for SMS for receiving farming information can be linked to the fact that it serves as a point of reference for the farmers at a later time.

Data source: Cisco Quantitative Survey

Internet access is not driving channel preferences for surveyed farmers

Kenya

Case study	Internet Access
SMS + TV Respondents	75%
SMS + In-person Respondents	76%

Kenya[1]
National Average Access to Internet

24%

Nigeria

Case study	Internet Access
IVR Respondents	58%

Nigeria[2]
National Average Access to Internet

33%

Data source: Cisco Quantitative Survey

- Survey respondents have higher internet access compared to national averages.
- In each case study, although surveyed farmers have access to the internet, they still have a preference for the SMS channel. This insight is useful as organizations plan for future emergency response.
- Note that the high internet penetration might be due to the limitation of phone surveys and selection bias.

1. GSMA, Mobile Internet Connectivity, 2019
2. GSMA, Digital inclusion and the role of mobile in Nigeria, 2015

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“Because when they send it through SMS and I am not around, it will remain in my phone and when I come back, I open it to see what it says.”

-Soybean and Maize Farmer, Nigeria

“SMS is convenient as one can read it any time”

-Maize Farmer, Kenya

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Data source: Cisco Qualitative Interviews

How might we optimize the digital channels?

Customer information needs are constantly evolving. A successful communications strategy requires updating the strategy to meet these needs. Farmer information needs may change based on their farming cycle, the consequences of Covid-19, and communication preferences. This section presents how digital channels can be optimized to suit the farmers' Covid-specific needs.

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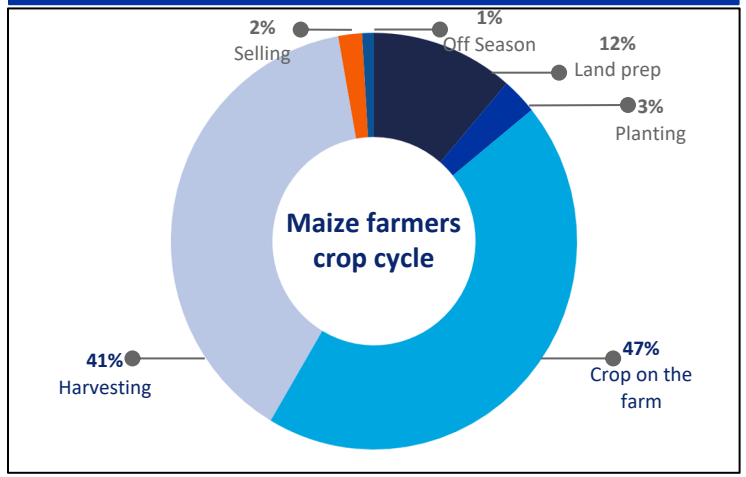
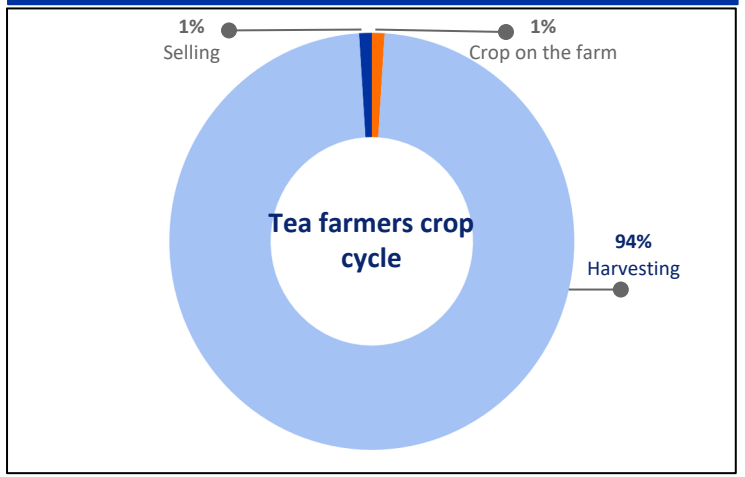
Covid-specific content should take farmers crop cycle into account

Kenya

Case study: SMS + TV Respondents

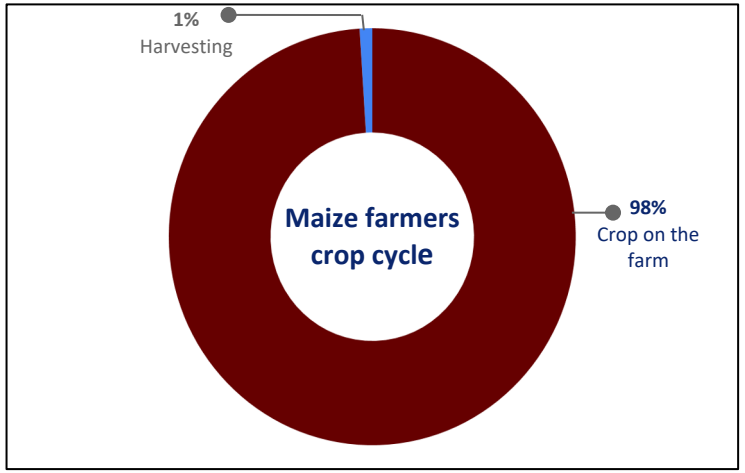


Case study: SMS + In-person Respondents



Nigeria

Case study: IVR Respondents



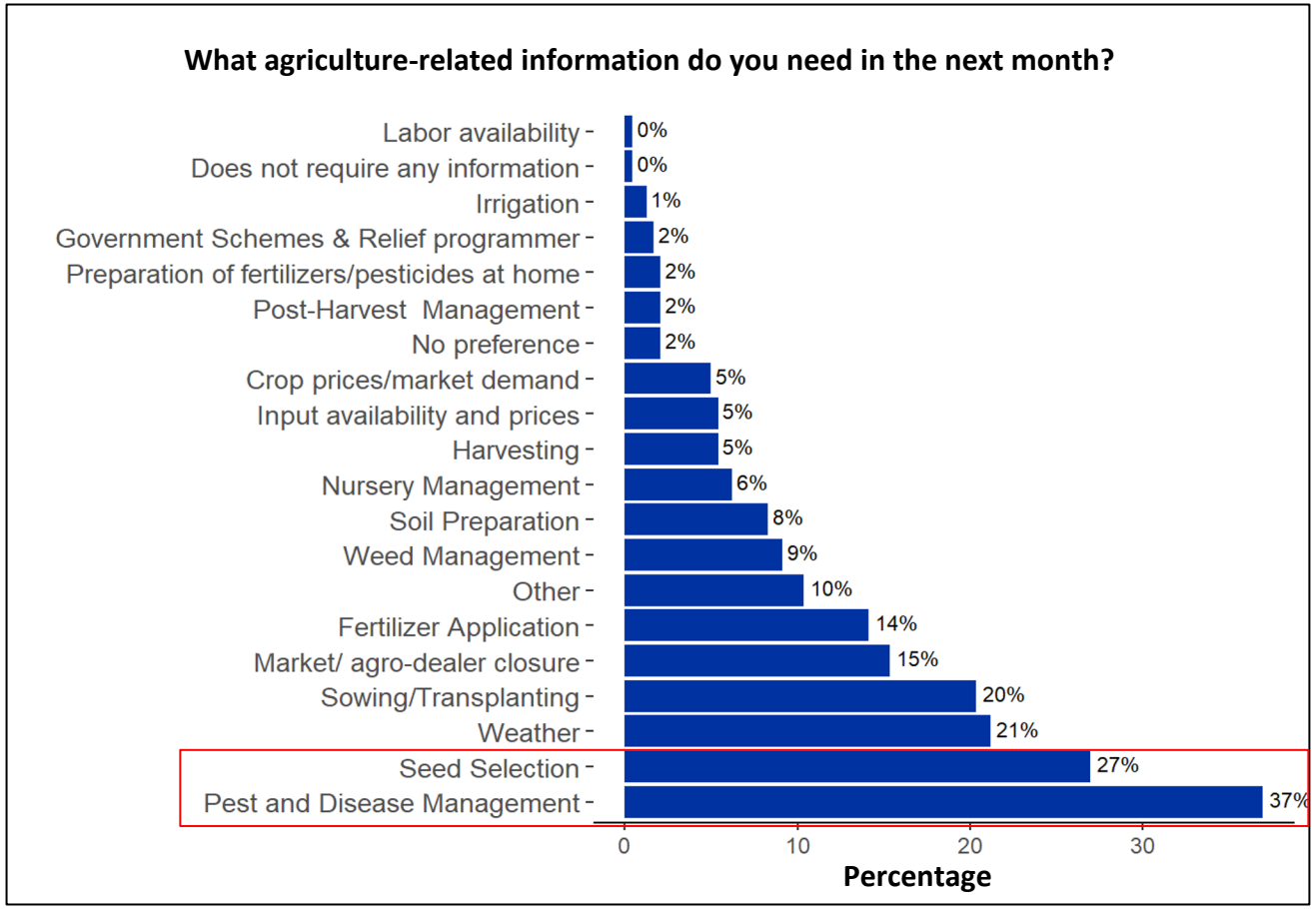
Data source: Cisco Quantitative Survey

- Each graph represents the crop cycle of the main crop grown among surveyed farmers.
- Farmers are particularly concerned about livelihoods, therefore the content needs to be tailored throughout the year to help farmers know how to maintain livelihoods in face of Covid (ie. working with people safely in the planting season, traveling safely to markets post-harvest).

Information needed for maize farmers, with crops on the farm

Kenya

Combined SMS + TV Case Study



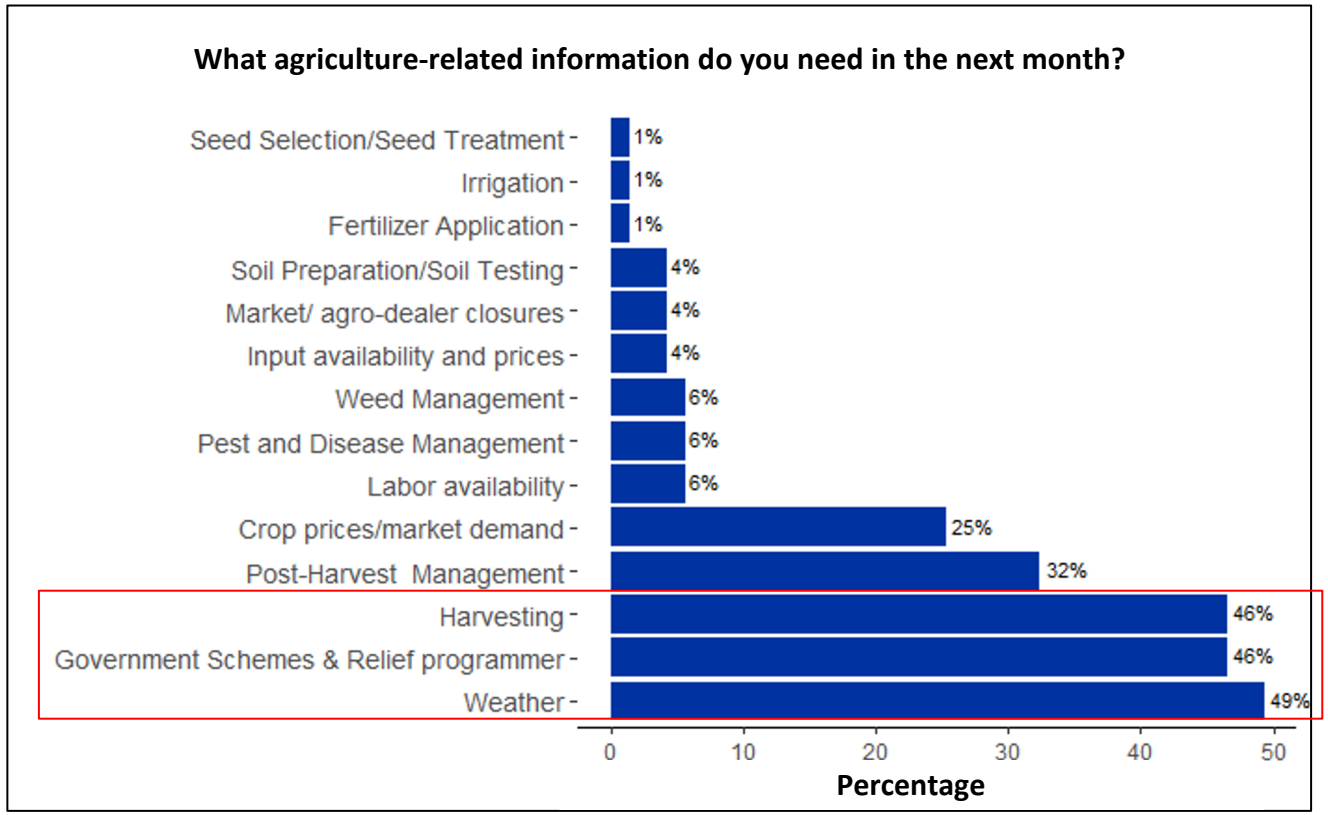
- Information needs are likely to change based on what phase of the crop-cycle farmers are in
- SMS + TV survey respondents are largely maize farmers with either crops on the farm or they are harvesting
  - They primarily need seed selection and pest and disease management information

Data source: Cisco Quantitative Survey

Information needed for tea farmers during harvesting

Combined SMS + In-person Case Study

Kenya



- Information needs are likely to change based on what phase of the crop-cycle farmers are in
- SMS + In-person survey respondents are largely tea farmers that are currently harvesting
  - They primarily need information about harvesting, government relief programmes and weather

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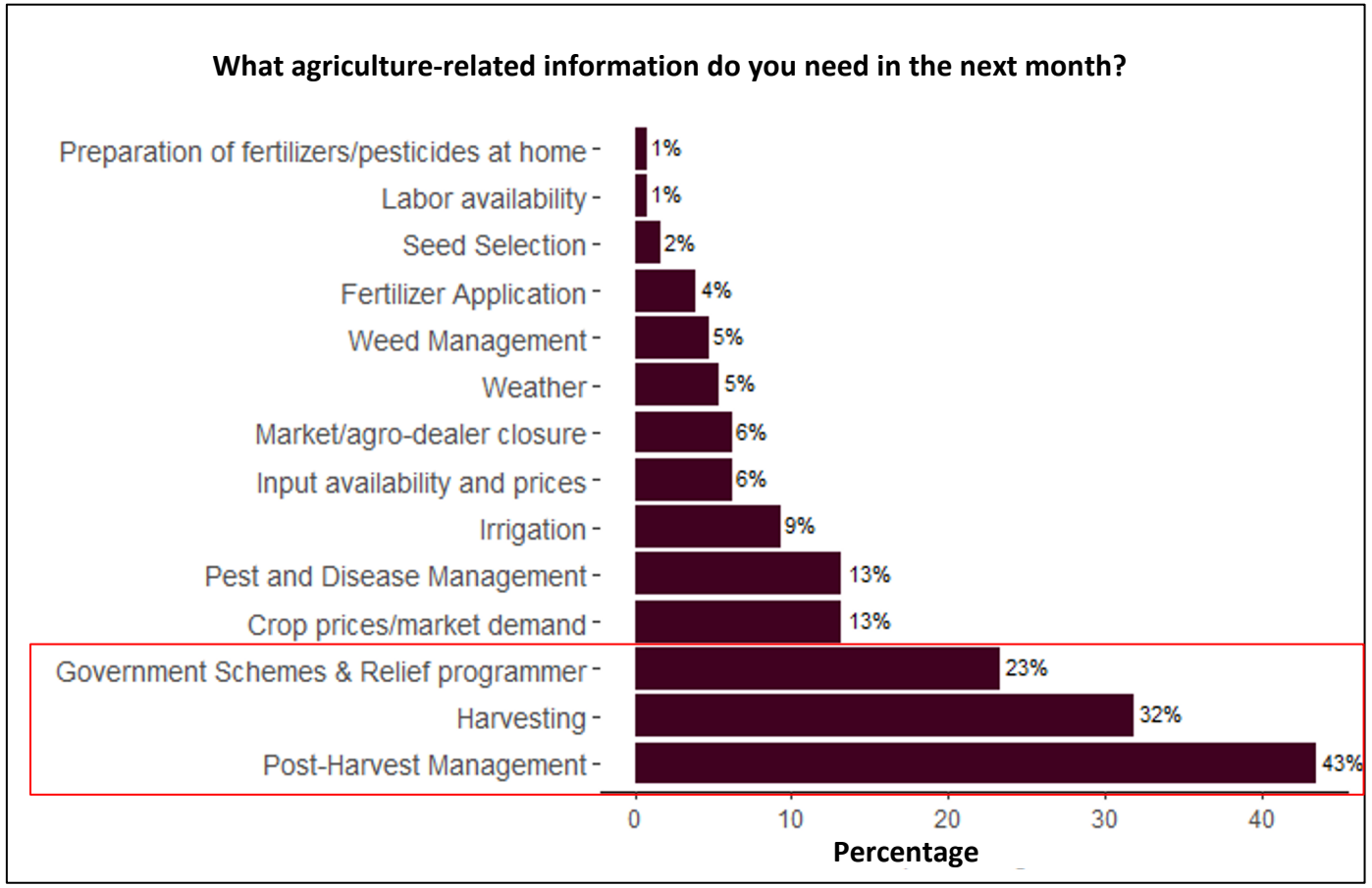
Data source: Cisco Quantitative Survey

Information needed for maize farmers during harvesting

Nigeria

IVR Case Study



- Information needs are likely to change based on what phase of the crop-cycle farmers are in
- IVR survey respondents are largely maize farmers that are currently harvesting
  - They primarily need information about harvesting, government relief programmes and post-harvest management

Data source: Cisco Quantitative Survey

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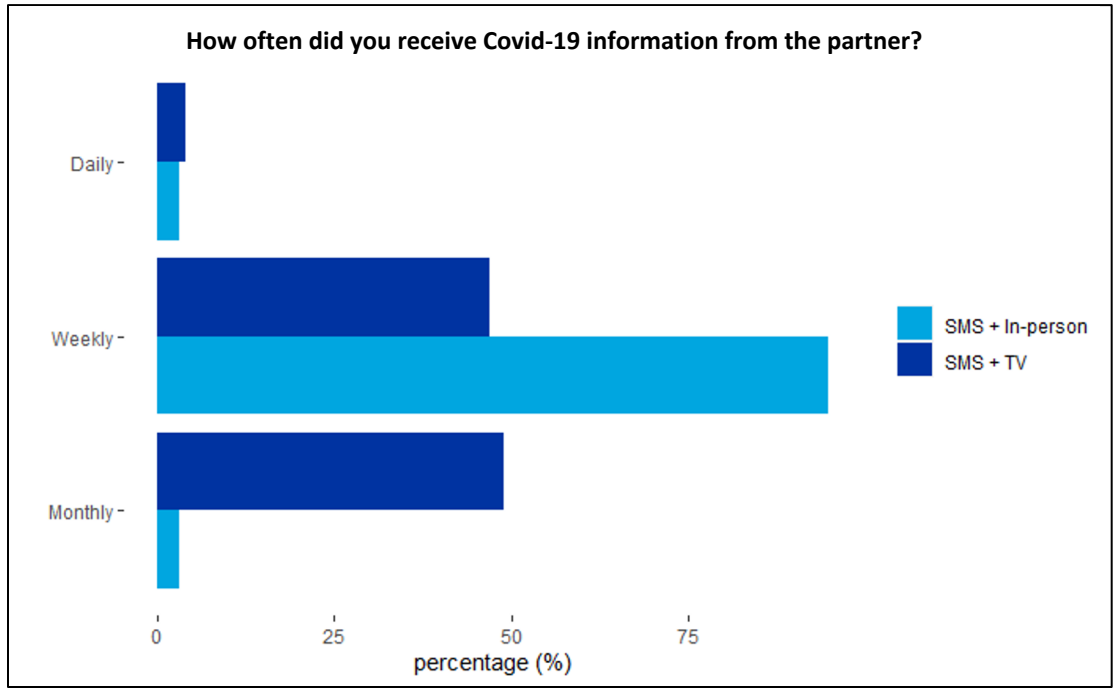
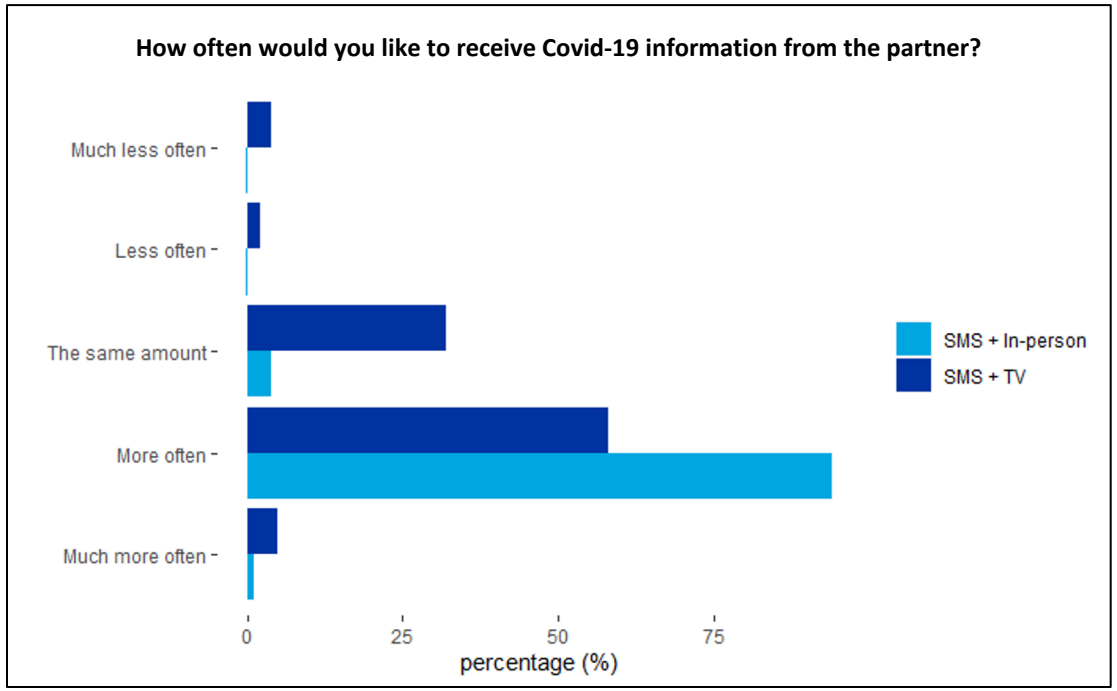
Very few farmers want to receive Covid-19 information less often and most want it more often





- People from the SMS + In-person case study largely report that they receive Covid information weekly, but want to receive it more often
  - Partners should consider daily information for this cohort

Data source: Cisco Quantitative Survey

Open channels and registered users:
A multi-channel approach can be used to build trust

Multi-channel communication campaigns seem to be more effective in reaching farmers because they generally have a wider reach. **The multi-channel approach can be leveraged further to build trust among farmers.** Given that farmers prefer and trust the SMS channel, this can be used as a primary channel in combination with other digital channels (WhatsApp or IVR) that might not be familiar to farmers.

The combined SMS+TV case study in this engagement provide evidence that support this:

- In the combined SMS +TV case study, the partner organization combined the SMS channel with an open communication channel (TV). The organization primarily communicates with its farmers through the SMS channel. Farmers also have the option of registering to receive more information from the partner organization. Together these strategies establish trust among farmer in this cohort. Farmers are used to the SMS channel and trust the information that the organization shares on this channel.
- Registered farmers can be targeted for future emergency response and are more likely to responsive to similar information that comes through other channels associated with the partner organization.

Tie Covid-specific communication to farming cycles and leverage networks

- **Emergency response communication should take the farmer's farming cycle into consideration**: The farmer's agricultural context is constantly changing depending on where they are in the farming cycle (planting, weeding, harvesting etc). New influences such as Covid-19 and locusts create additional challenges for farmers. Farmer's inherited farming knowledge and practices will have to be updated, so they will be looking information and advice. Digital solutions that provide access to meaningful, relevant information will be valued by farmers.

- **Community groups and leaders can be leveraged to build a trusting relationship:** The farming communities often have formal and informal groups. These groups can be utilized by the communication partners to disseminate information and recruit farmers into using their platforms to access valuable and trusted information. Insights from the combined IVR+SMS+agent Ethiopian case study support this. In this case study, interviewed farmers shared that they look to their church leaders for relevant and up to date information. Future emergency response should consider leveraging these community ties when sharing health or agricultural information.

Appendix



Detailed research approach for each case study

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This study uses administrative data and quantitative surveys to generate evidence to meet the research goals

1. **iShamba Quantitative Survey**

A bulk of the SMS+TV messages were implemented prior to the baseline survey, therefore this initial approach of establishing a baseline became impossible. So, we modified our research approach to a narrative approach. Using this narrative approach, we asked respondents to tell us the impact iShamba had on them, specifically how iShamba's messages changed their Covid-19 knowledge, attitude and behaviors. We also asked farmers what their communication channels preferences are.

We were then able to use the baseline and endline comparison to look at the changes post-intervention. This allows us to see if iShamba's content drove longer term change. We conducted a baseline and endline survey to understand the trends in knowledge, attitude and behavior after the SMS+TV case study stopped sending out Covid-19 messages.

iShamba conducted quantitative phone surveys among their farmer base. iShamba conducted these baseline phone surveys in August 2020 and endline surveys in September 2020. They achieved 198 complete surveys.

Busara conducted the same baseline and endline survey among manufactured control group using farmers from Busara's lab. The control group served as a comparison group. We completed 227 surveys. This group did not receive any communication messages from the iShamba or any of the partner organizations.

1. **Administrative data**

We received SMS data containing Covid-19 mentions from iShamba farmers. We tracked the message themes between April 2020 to July 2020. These themes provide insights into any changes in the types of information famers want to know.

This study uses primary and administrative data to generate evidence to meet the research goals

1. Producers Direct Quantitative Baseline-Endline Survey

We evaluated the impact of the communication campaigns through a difference in difference (DiD) quantitative assessment. DiD measures outcomes before (baseline) and after (endline) a treatment (in this case communications) for both the group of interest/treatment group (Producers Direct farmers) and a control group that doesn't receive the treatment (in our case a set of farmers chosen by Busara in Kenya). By comparing how outcomes for the group of interest change between baseline and endline, and how this differs to changes in the control group, we can estimate the causal effect of the treatment, rather than just noting correlations. In other words, **this allows us to quantify the effect of receiving additional information about Covid on farmers' knowledge, attitudes and behaviors relative to those that did not receive the designed solutions** (control).

We also asked Producers Direct respondents to directly report how Producers Direct's messages changed their behaviors, what their communication channels preferences are, and how they currently receiving Covid and farming messages.

Producers Direct conducted quantitative phone surveys among tea farmers in their network. They conducted 150 baseline phone surveys in August 2020 and 53 endline surveys in September 2020. There were some operational challenges locating some respondents at endline.

We conducted the same baseline and endline survey among manufactured control group using farmers from Busara's lab. This group did not receive any communication messages from Producers Direct or any of the partner organizations. The control group served as the comparison group.

This study uses primary and administrative data to generate evidence to meet the research goals

2. Qualitative interviews

The objective of the interviews was to delve deeper into behavior change and their communication preferences. Wefarm provided a list of 15 farmers and we conducted 14 in-depth interviews with Wefarm farmers in Kenya. 1 farmer's phone number was unresponsive.

3. Administrative data

We received SMS data containing Covid-related inbound messages from Wefarm farmers. We tracked the message themes between April 2020 to July 2020. These themes provide insights into any changes in the types of information famers want to know.

This study uses primary data to generate evidence to meet the research goals

1. Viamo Airtel 321[1] Quantitative Baseline-Endline Survey

We evaluated the impact of the communication campaigns through a difference in difference (DiD) quantitative assessment. DiD measures outcomes before (baseline) and after (endline) a treatment (in this case communications) for both the group of interest/treatment group (Viamo farmers) and a control group that doesn't receive the treatment (in our case a set of farmers chosen by Busara in Nigeria). By comparing how outcomes for the group of interest change between baseline and endline, and how this differs to changes in the control group, we can estimate the causal effect of the treatment, rather than just noting correlations. In other words, **this allows us to quantify the effect of receiving additional information about Covid-19 on farmers' knowledge, attitudes and behaviors relative to those that did not receive the designed solutions** (control). We also asked Viamo respondents to directly report how the content changed their behaviors, what their communication channels preferences are, and how they currently receiving Covid-19 and farming messages.

Busara conducted quantitative phone surveys among farmers that use Viamo's Airtel 321 service. We screened for users that are farmers. We conducted 150 baseline phone surveys in August 2020 and 129 endline surveys in September 2020. 21 farmers phone numbers were unresponsive. We conducted the same baseline and endline survey among manufactured control group using farmers from Busara's lab. This group were all non-Airtel customers, therefore had no access to the Viamo Airtel 321 service. The control group served as the comparison group.

2. Qualitative interviews

The objective of the interviews was to delve deeper into behavior change and their communication preferences. Busara conducted 15 in-depth interviews with Airtel 321 farmers in Nigeria.

[1]Viamo distributes its IVR content through Airtel Nigeria. The Airtel 321 service is available to all Airtel customers.

This study uses qualitative research to generate insights from farmer narratives

1. Qualitative research using in-depth interviews

This study uses a qualitative approach through in-depth interviews to understand farmer's perspectives on how they think the Covid-19 information from the IVR campaign changed their knowledge, attitude, and behavior. We also sought to understand locust-related information needs and to understand drivers to reporting locust sightings. Three main channels were assessed:

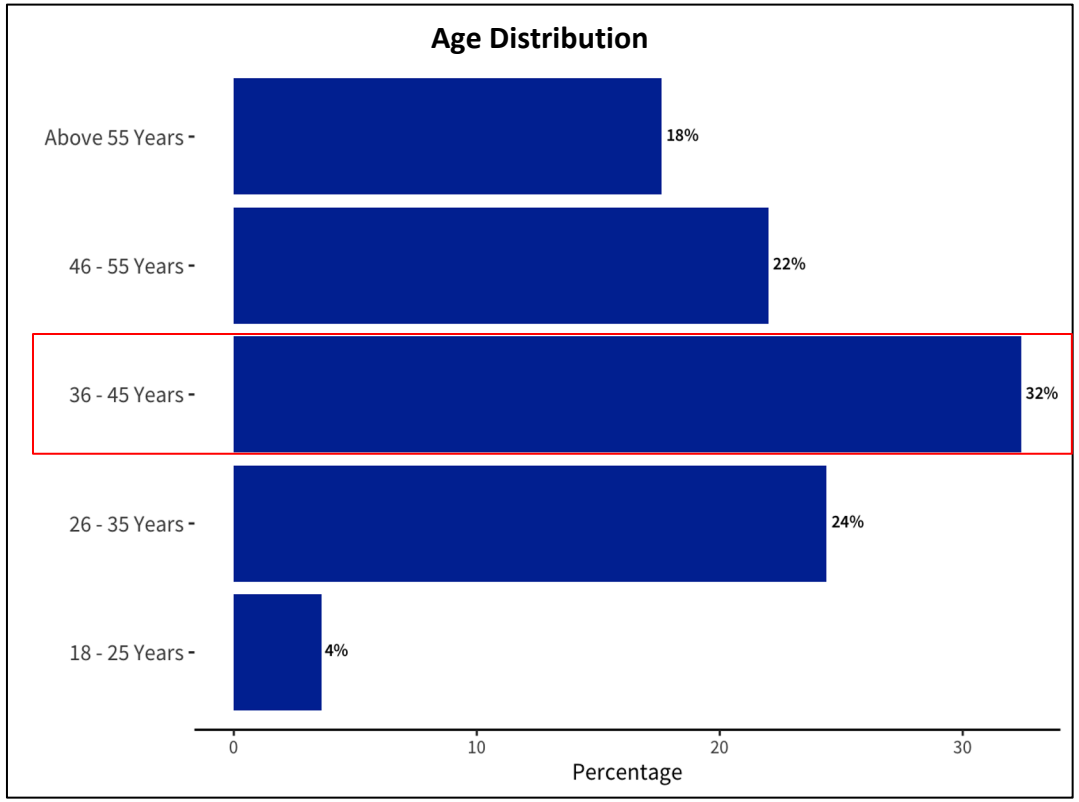
a. Interactive Voice Response (IVR) through ATA's 8028 where respondents interacted with this platform to access Covid-19 information.
b. Radio campaigns that ATA used to share locust information
c. Agricultural agents that shared locust-related information to farmers. Farmers also reported sighting to agents.

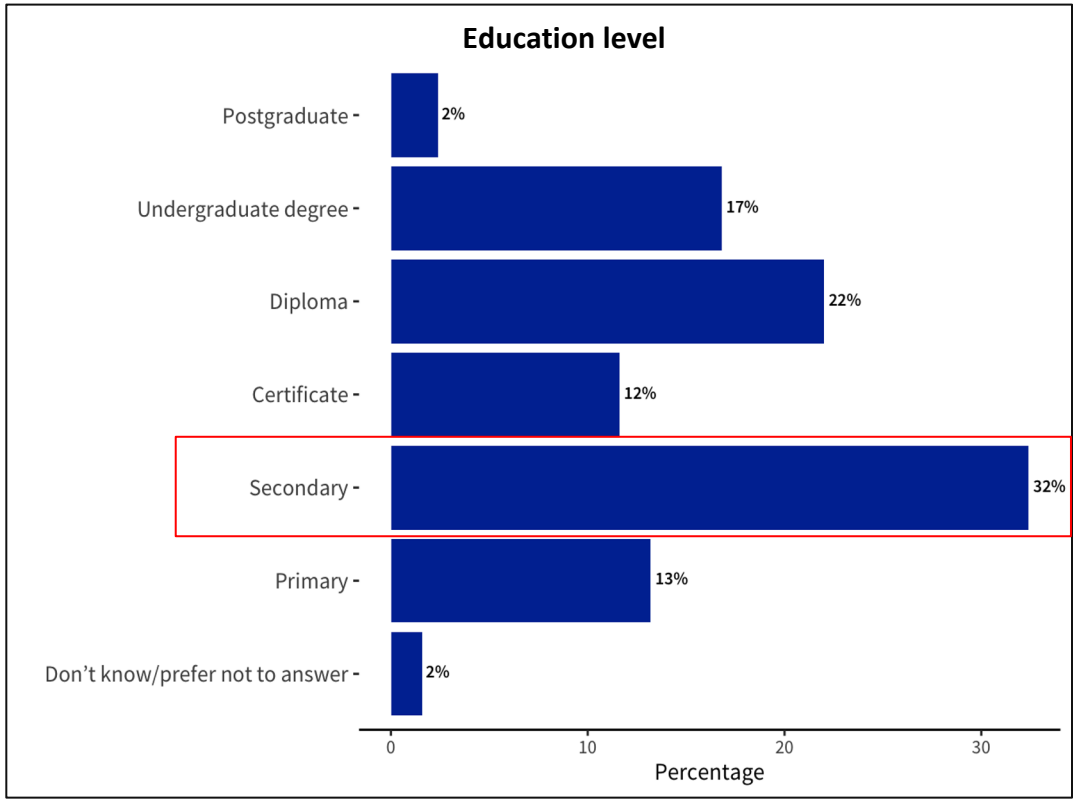
The study sampled from a pool of 10 farmers provided by ATA. This pool was specific to farmers who have accessed and used ATA's 8028 hotline. The farmers interviewed from this study were from Amhara and Oromia regions.

Profile of Survey Respondents

In this section, we present the demographics of the overall survey respondents

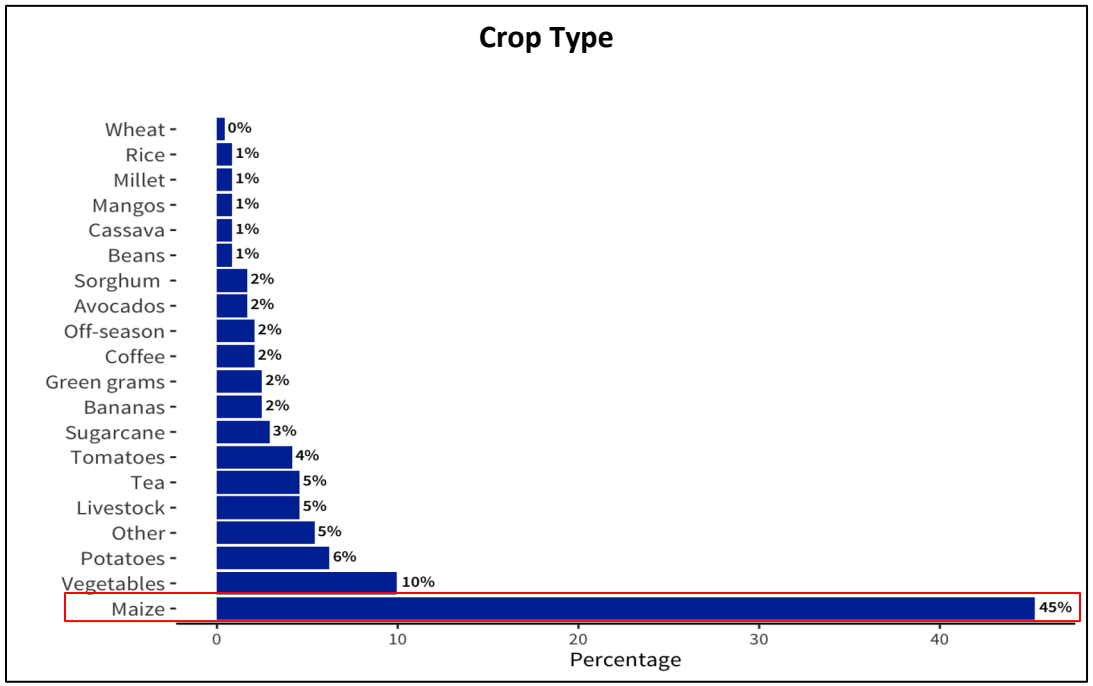
Surveyed farmers are on average older than the average Kenyan and have at least a secondary education



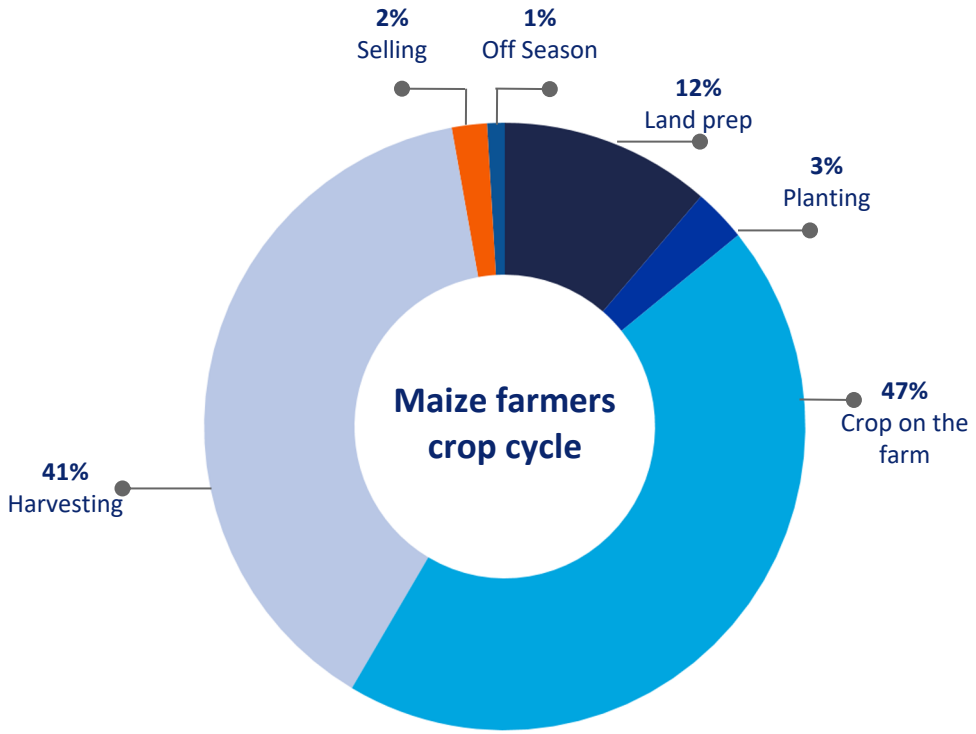


Data source: Quantitative Survey

The main crop grown is maize and the majority of maize farmers are tending to their crops and harvesting

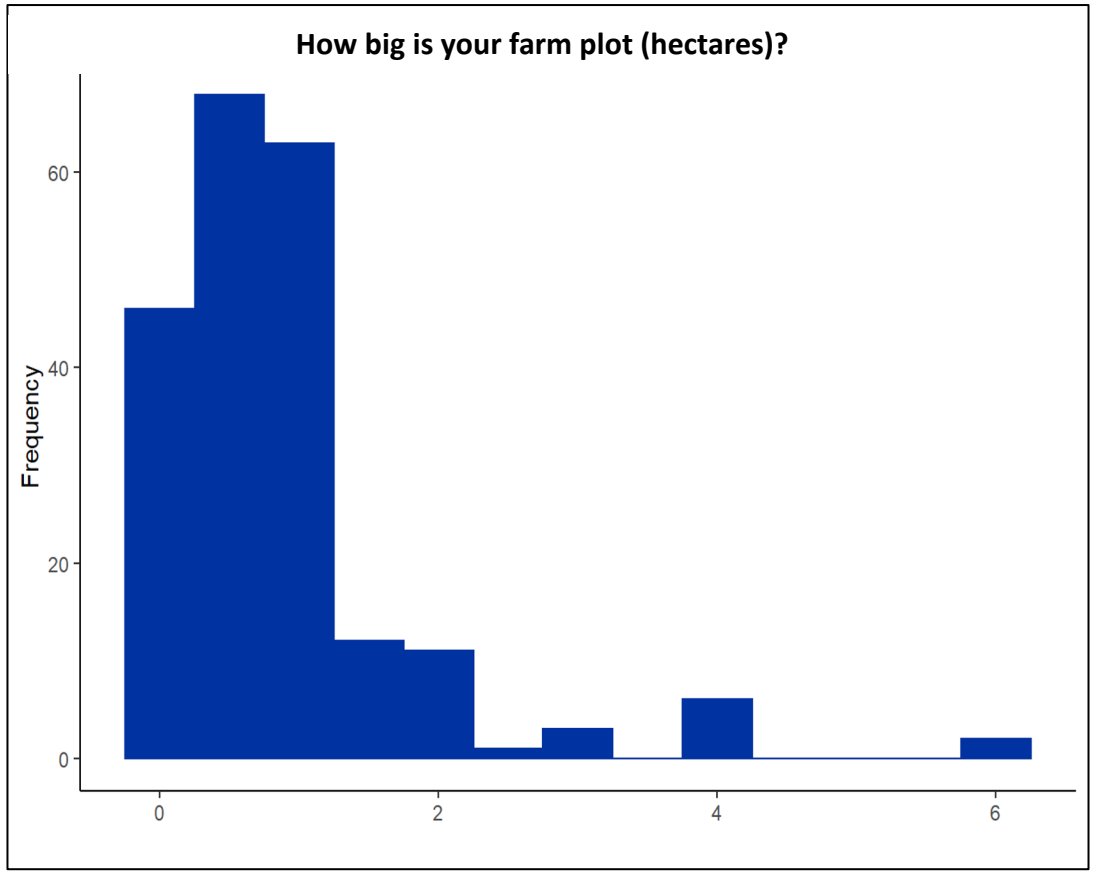


Data source: Quantitative Survey



- 45% of Ishamba farmers grow maize. 10% grow vegetables like cabbages, kale, and green grams.
- The majority of maize farmers are tending their crops on the farm (47%) and harvesting (41%)

Surveyed farmers on average have smaller sizes of farm land than the average Kenyan farmer



Data source: Quantitative Survey

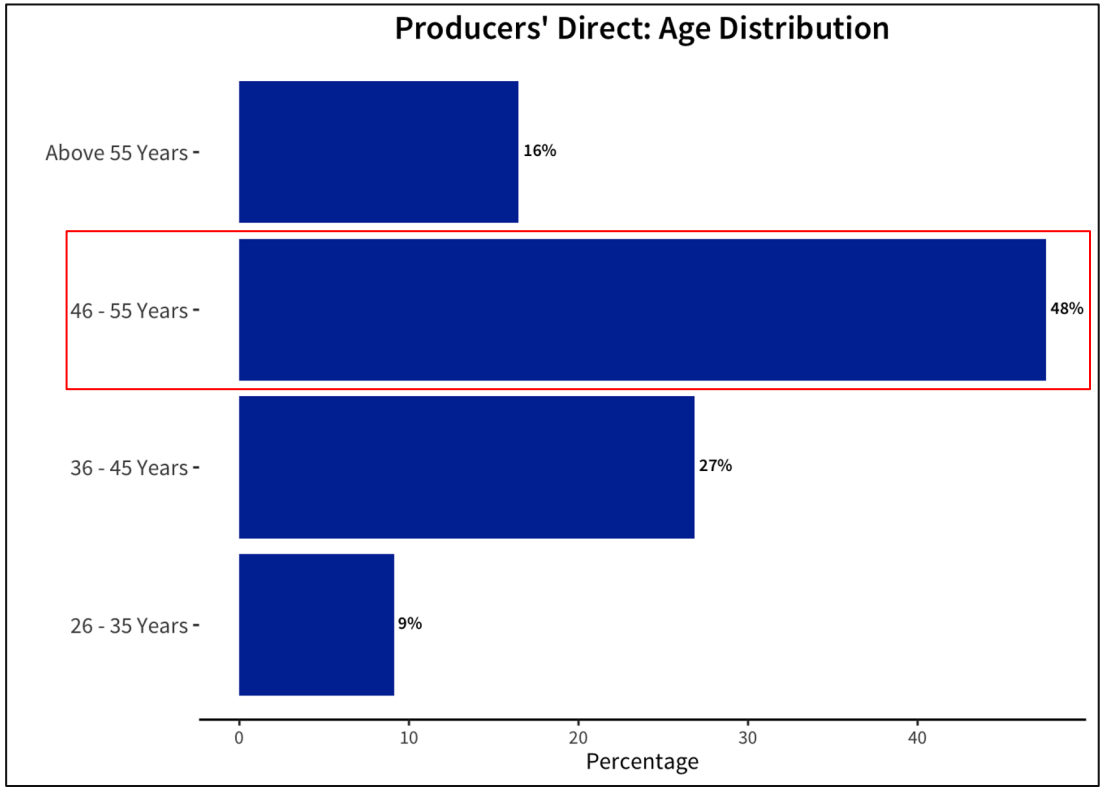
0.88 hectares
Average plot size of iShamba respondents

1.86 hectares
National average for farmers

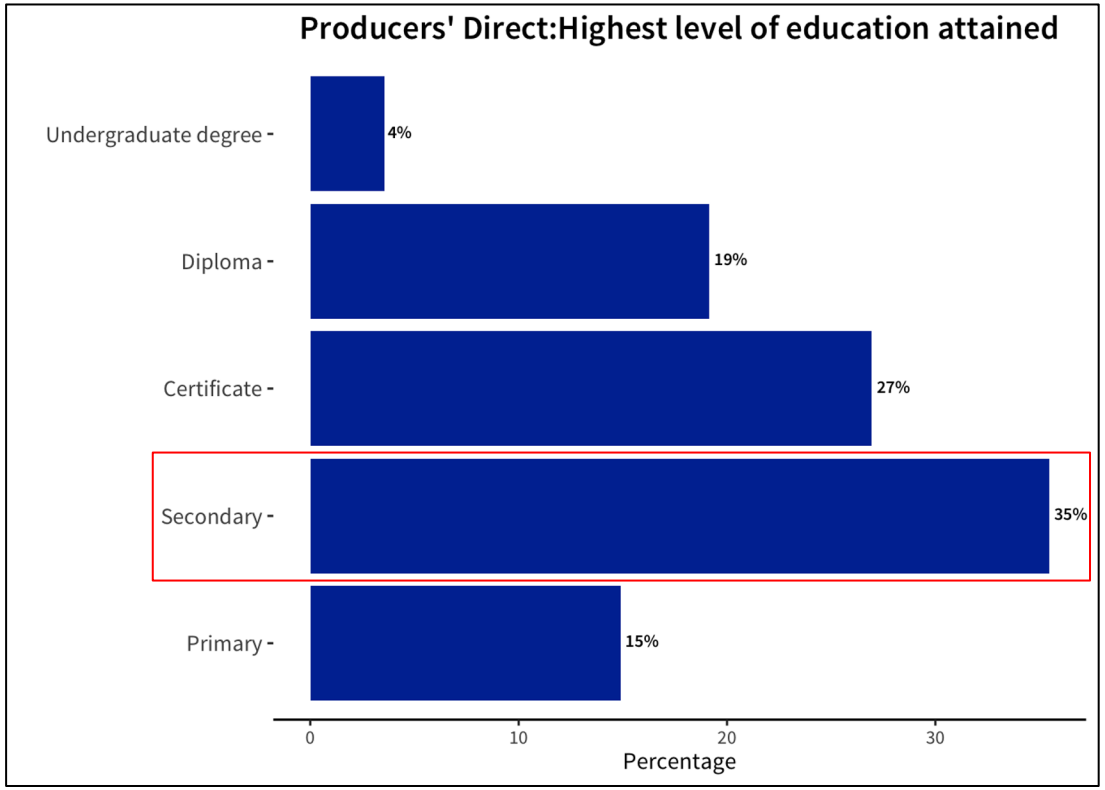
- iShamba respondents have smaller plots than the average plot size in Kenya.
- 72% of Kenyan farmers have plot sizes under 5 hectares.

Surveyed farmers are on average older than the average Kenyan and have at least a secondary education

Age Distribution

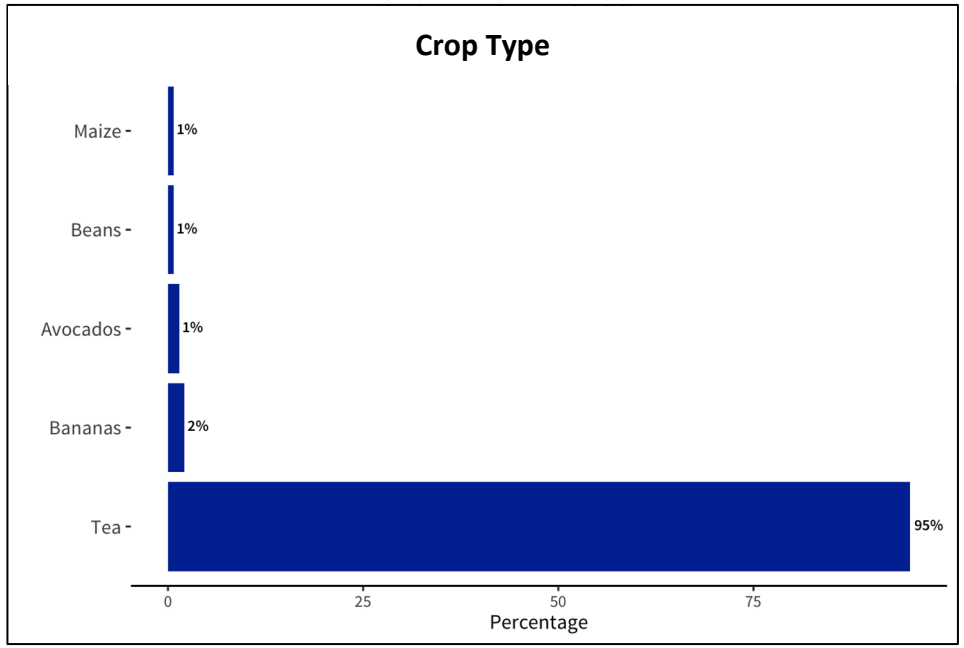


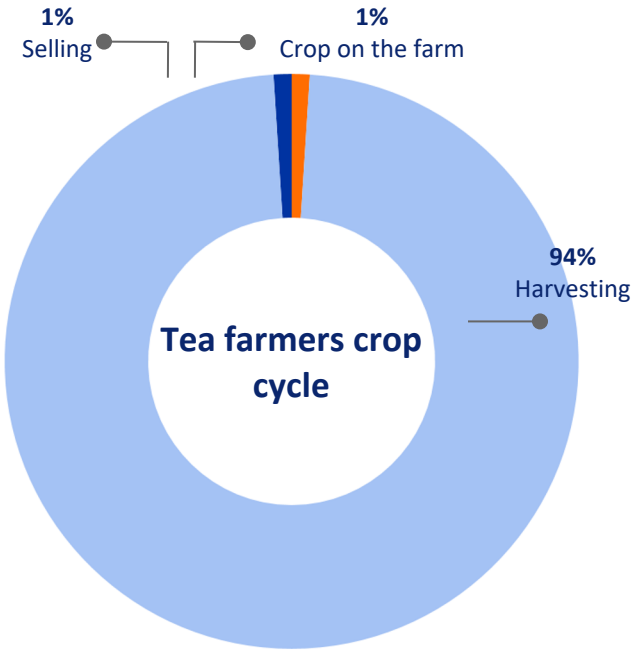
Education level



Data source: Quantitative Survey

The main crop grown is tea and the majority of tea farmers are harvesting

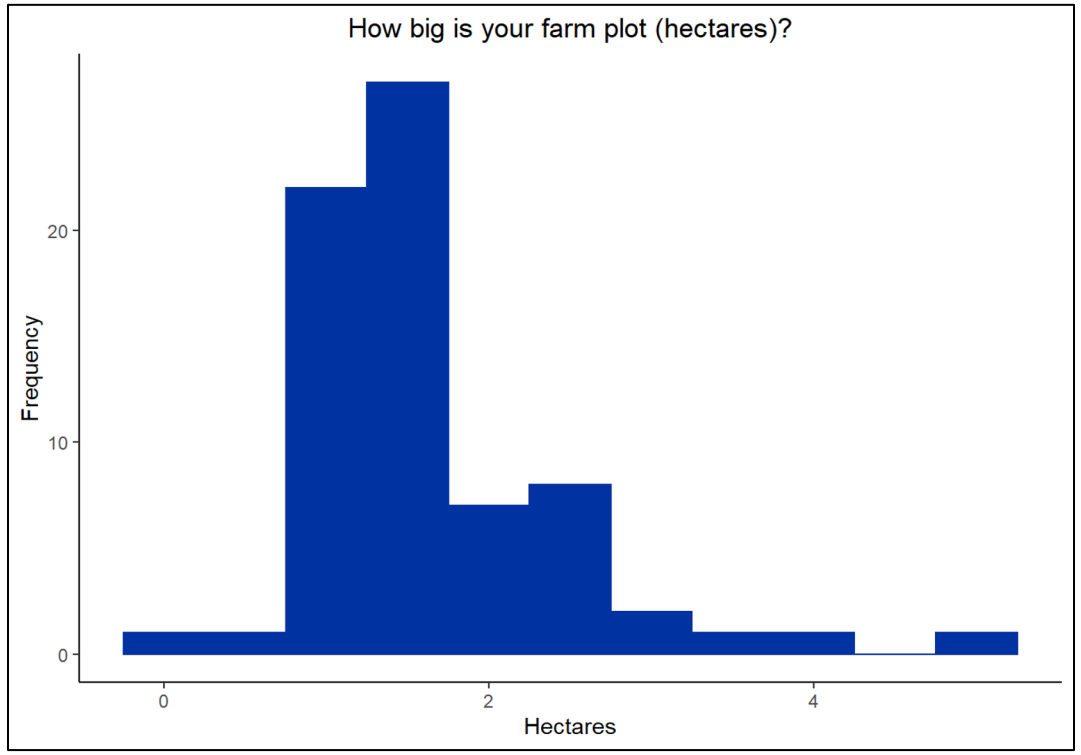




Data source: Quantitative Survey

- Given that the Producers Direct conducted the survey among tea farmers, it's not surprising to see that 95% of farmers reported that they plant tea on their farm.
- 94% of surveyed tea farmers are harvesting their tea. In this climate, farmers may face challenges accessing markets to sell their produce due to some transportation disruptions.

Surveyed farmers on average have smaller sizes of farm land than the average Kenyan farmer



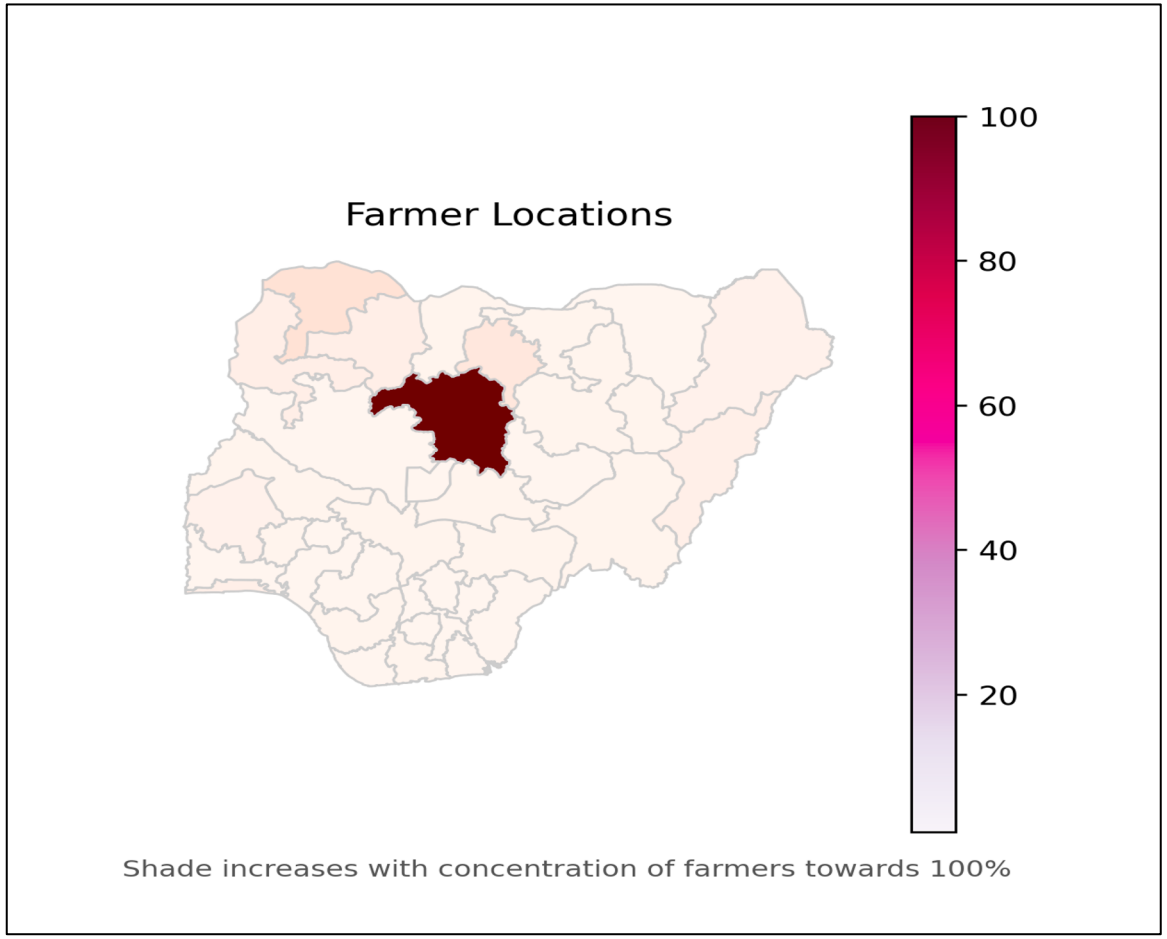
Data source: Quantitative Survey

1.69 hectares
Average plot size of PD respondents

1.86 hectares[1]
National average for farmers

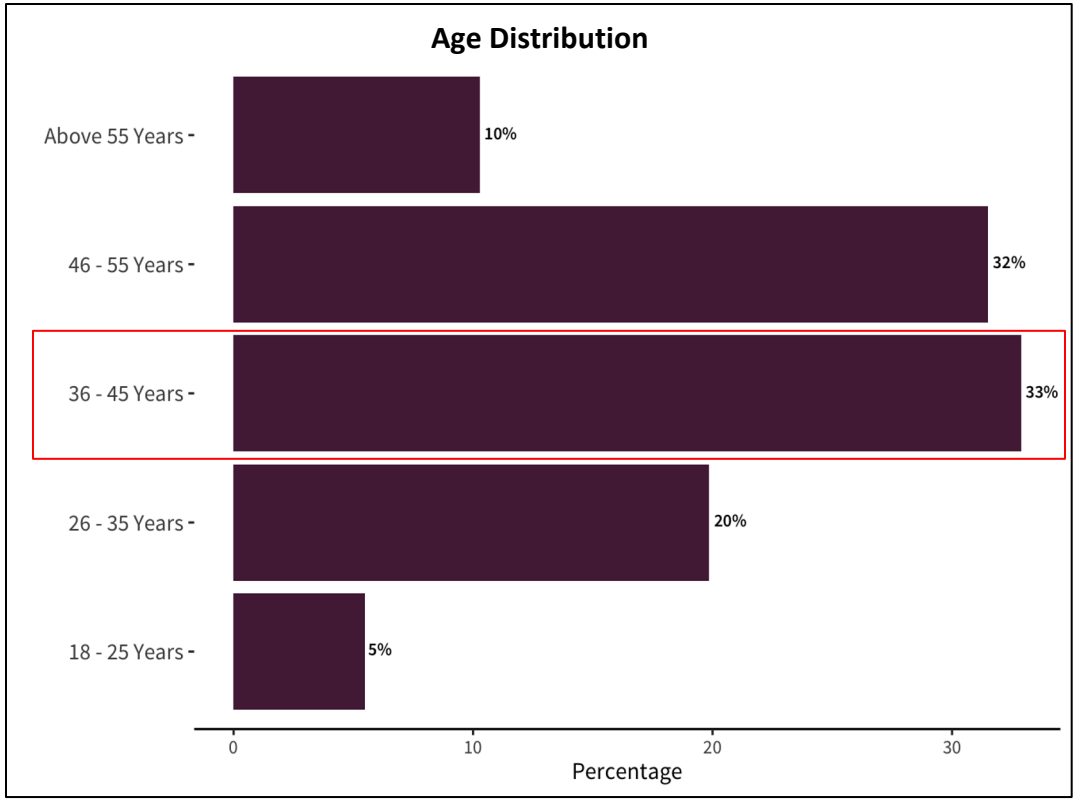
- Producer's Direct respondents have smaller plots than the average plot size in Kenya
- 72% of Kenyan farmers have plot sizes under 5 hectares

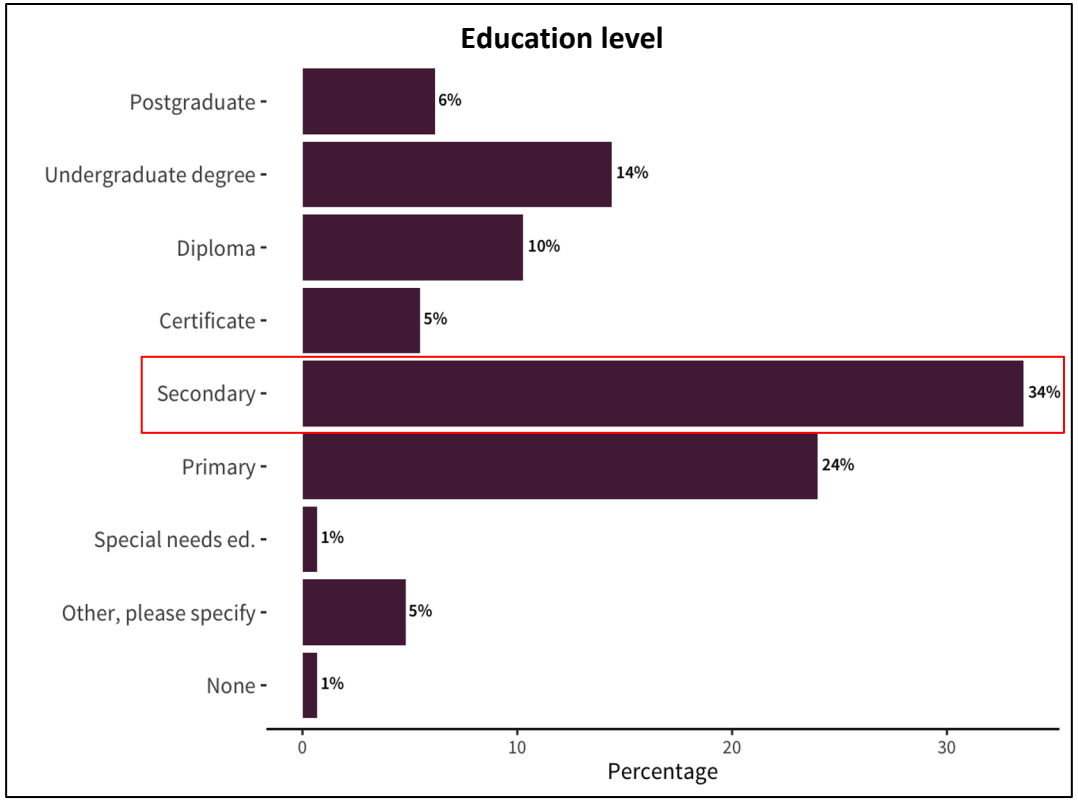
The survey focused on the northern region of Nigeria



- Respondents sampled for this survey are concentrated in Northern Nigeria - Kaduna, Sokoto, and Kano.
- 68% of farmers are from Kaduna State - dark red.

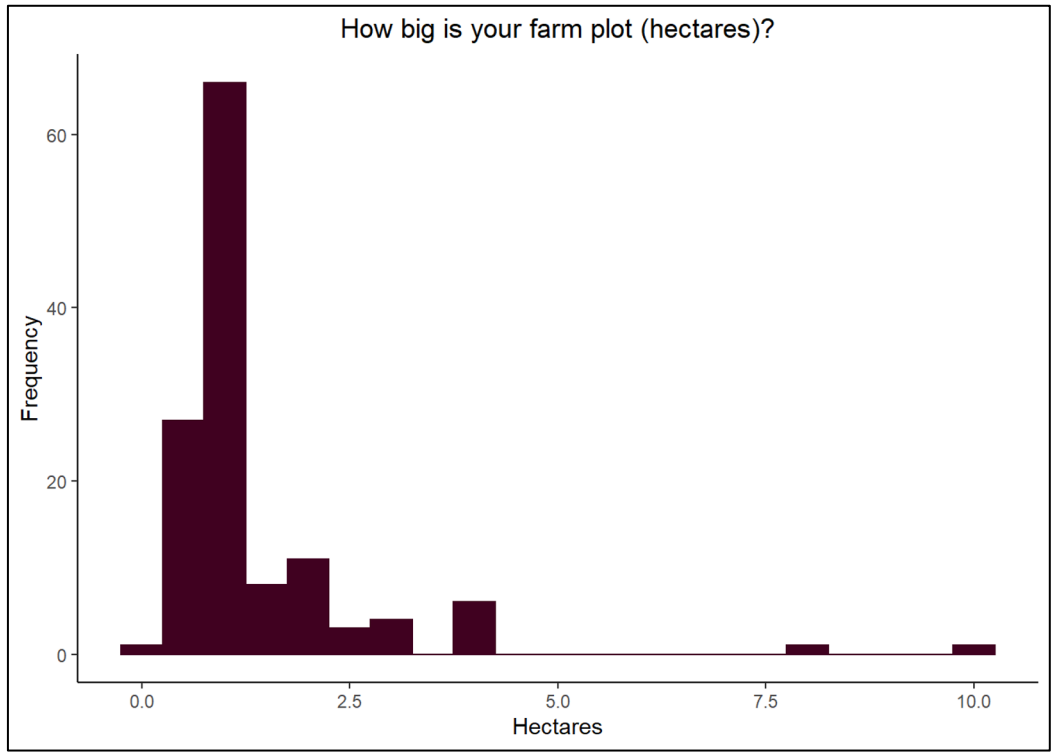
Surveyed farmers are 36-45, with secondary school education





Data source: Quantitative Survey

Surveyed farmers have smaller sizes of farm land



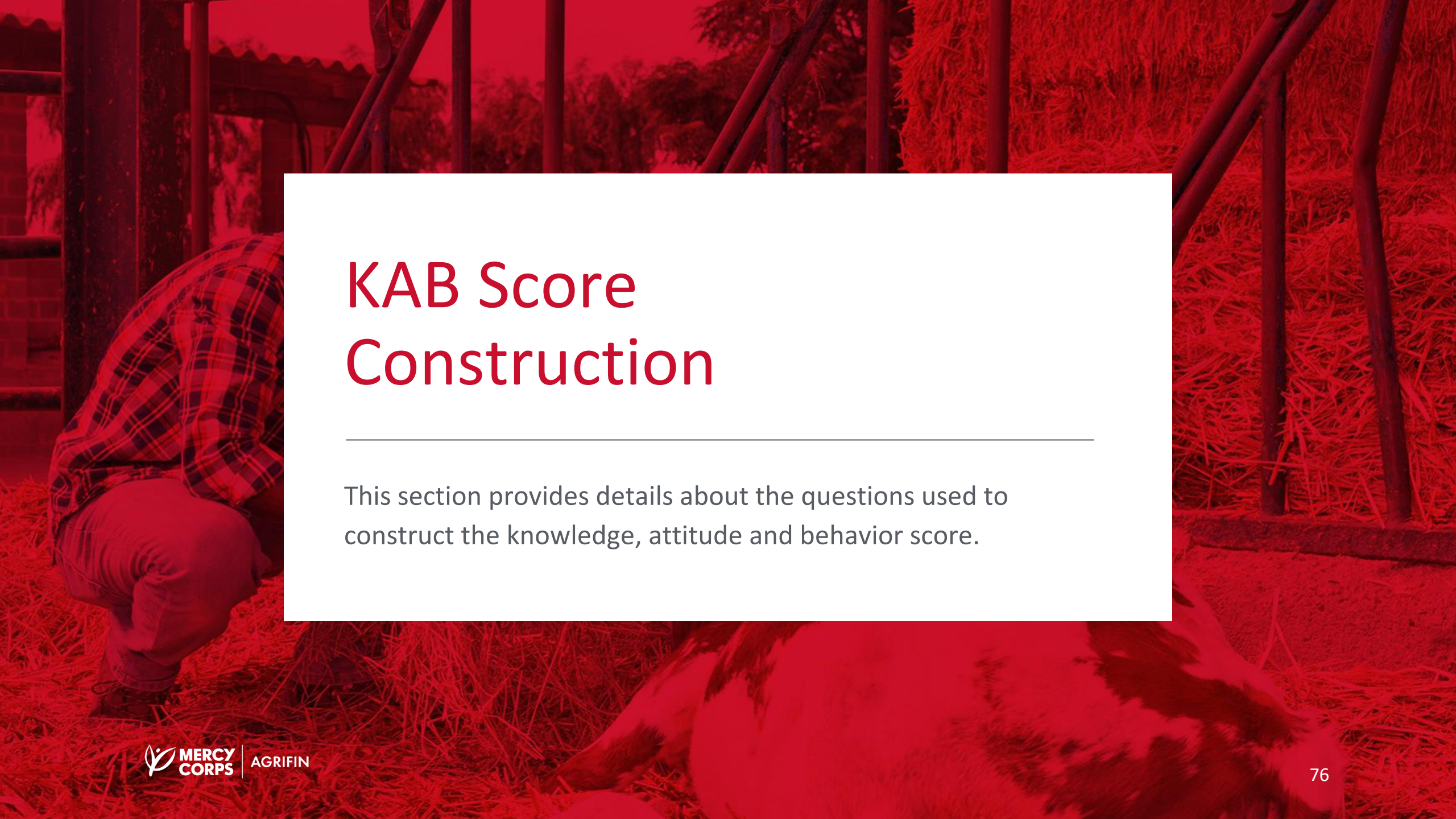
4.4 hectares
Average plot size of Airtel 3-2-1 respondents

1.9 hectares[1]
National average for farmers

- Airtel 3-2-1 respondents have larger plots than the average plot size in Nigeria.
  - 3-2-1 customers may be higher income than the average farmer in Nigeria; they need access to a phone and data.
- 83% of Nigerian farmers own land, as opposed to renting.

[1] National Survey and Segmentation of Smallholder Households in Nigeria, CGAP, 2017

Data source: Quantitative Survey



KAB Score Construction

This section provides details about the questions used to construct the knowledge, attitude and behavior score.

Surveyed farmers were segmented by the KAB Score

We developed a score to understand the level of knowledge, attitude, and behavior (KAB) among surveyed farmers. A subsequent grouping was done to rank low, medium, and high scores. Understanding these various levels of knowledge, attitude, and behaviors will allow partners to tailor their communications to suit the needs of their farmers.

The KAB score is made up of three key areas[1]

- **Knowledge -** This represents the understanding of Covid-19. An aggregate knowledge score was created by grading objective questions on Covid-19 symptoms, prevention, transmission and social distancing guidance. Questions were created based on Covid-19 messaging from partners such as Ideo.
  - Example question: “Can livestock transmit Covid-19”
- **Attitude -** This refers to a farmers feeling towards Covid-19. An attitude score was created by grading subjective responses to attitudes surrounding Covid-19 prevention and response. Positive attitudes towards using preventative measures were graded favorably.
  - Example question: “What do you think: should people in your country not shake other people's hands because of Covid-19 right now?”
- **Behaviors -** Behavior refers to ways in which a farmer demonstrate their knowledge and attitude through their actions. A behavior score was created by grading behaviors, as they align with Covid-19 prevention methods such as using mobile money, avoiding mass transportation and wearing a mask.
  - Example question: “Are you wearing a mask during normal daily activities?”

[1]See the Appendix for more details on how we constructed the KAB score



Covid-19 Timeline

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Covid-19 Timeline in Kenya

Date	Directive/Activity
13th March, 2020	First case reported in Kenya
15th March, 2020	Travel restrictions from international countries and closure of schools in the same week, ban on congressional meetings
25th March, 2020	7pm - 5am nationwide curfew
6th April, 2020	Cessation of movement in Nairobi, Kwale, Mombasa, and Kilifi
6th June, 2020	Ease of curfew hours down to 9pm - 4am
6th July, 2020	Lifting of lockdown in the counties, re-opening of places of worship
15th July & 1st Aug, 2020	Resumption of local air travel and international air travel respectively
28th September, 2020	Ease of curfew hours down to 11pm to 4am, resumption of operation of bars and restaurants, increase of no. of people allowed in gatherings

Covid-19 Timeline in Nigeria

Date	Directive / Activity
27th February, 2020	First case reported in Lagos, Nigeria
30th March, 2020	Lockdown order in Lagos, FCT, and Ogun State
2nd April, 2020	More states issue lockdown order
2nd May, 2020	Nationwide curfew implemented (8pm-6am)
4th May, 2020	Mandatory face masks in public
2nd June, 2020	FG relaxes lockdown, shortens curfew (10pm-4am)
29th June, 2020	FG lifts ban on interstate travel and announces re-opening of schools in July
29th August, 2020	Nigeria re-opens its borders for international flights

Covid-19 Timeline in Ethiopia

Date	Directive / Activity
13th March, 2020	First case of the virus reported.
16th March, 2020	Schools, sporting events, and public gatherings shall be suspended for 15 days.
23rd March, 2020	Ethiopia closed all land borders and deployed security forces to halt the movement of people along the borders.
8th April, 2020	Five-month long state of emergency in response to the growing number of coronavirus cases.
June 1st, 2020	The government announces the postponement of the general election.

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