



# ACRE Africa

## Agile Impact Study Data Analytics

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Report completed by Busara on behalf  
of Mercy Corps AgriFin

March 2021



Busara



MERCY  
CORPS

AGRIFIN



mastercard  
foundation

# About Mercy Corps AgriFin

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

Mercy Corps' AgriFin Accelerate Program (AFA) was created with the goal of supporting the expansion of digital financial services to one million farmers in Sub-Saharan Africa (SSA).

- 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.



AFA and its partners provides increased access to digital services that help address some of farmers' pressing challenges. Over the years it has become important to assess the importance of increased access to digital services.



Busara and Mercy Corps AgriFin works together to conduct a series of impact assessments of the adoption, usage and outcomes of digital services provided by AgriFin and its partners.



# About Agile Impact Study

Impact evaluation based on in-house data provided by partner organizations



This **Agile Impact Study** aims to unpack the impact of AFA's support to a variety of partners. More specifically, it seeks to uncover:

- Impacts of partners' products and services on farmers' farming practice, farming outcome, and resilience to shocks
- Factors that drive **adoption** and **usage**
- Farmers experience and perception of the products and services
- Outcome of capacity building and training
- With a focus on women and youth, if data is available



A featured partner, ACRE Africa is an Insurance intermediary that provides risk management solutions to reduce agricultural and climate risks for smallholder farmers. In this study, we evaluate:

- How experience with 2 ACRE insurance products differ across farmers
- What have they benefited from the insurance and who benefited more than others
- What additional data is required to make inferences for action

## ■ Partners onboarded with this study:

- **ACRE**
- eProd
- Hello Tractor
- Ignitia
- TruTrade
- SunCulture
- aWhere
- KALRO

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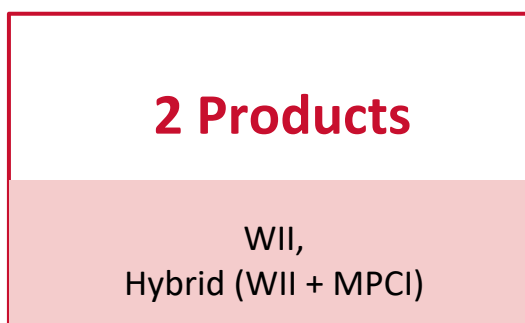
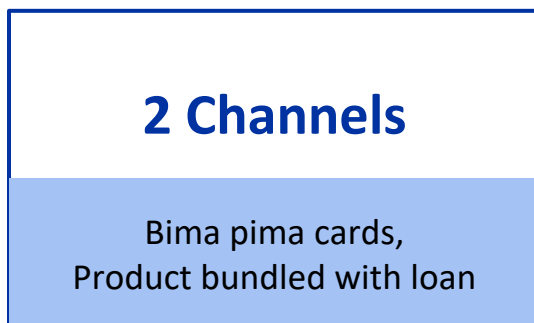


# Executive Summary



# Executive summary

We navigated the analysis around the following elements to unpack the benefit farmers have gained from ACRE, and how the experience for each farmer segment looks like:



*Note that “Bima pima cards” are actually part of the product design, scratch cards that provide farmers a unique code for registration. In the dataset shared by ACRE, “Bima pima cards” is used to refer this disaggregated way of onboarding farmers. In this document, we adopt the same language to indicate that specific onboarding channel.*

**We dropped 2 data entries where county or product data is missing, leaving the total sample size 2101. We created new variables to enable in-depth analysis:**

- Premium/Amount covered => to evaluate if a farmer paid at a higher, lower or the same level as the majority
- Compensation/Premium paid => to evaluate if a farmer has been compensated more, less or the same as the premium paid

# Executive summary

Below are a few notes to keep in mind when interpreting data and inferring analysis results:

## Differences in 2 Products

- Distribution cost
  - It varies by product and it is loaded in the final premium
  - Thus, a bundled product (e.g. hybrid with credit) will be cheaper than a stand alone product (e.g. WII)
- Coverage
  - Hybrid product has additional coverage, compared to WII.
  - Thus, its users might receive higher compensation.

## How Compensation Happens

- Loss under weather index is broken crop per phase.
- Compensation can happen at one phase which then translates to small payout.
- In the case of hybrid product, compensation can occur in 2 facets where observed perils differ under WII and MPCl.
- Thus there may be a relatively higher payout instance for byprid product.

## Interpreting Benefits of Insurance

- Amount of compensation is influenced by rainfall. Occurrence of an insured peril does not lead to 100% payout automatically.
- Lack of details on index calculation, the analysis chooses 2 angles to review the benefits farmer gain from insurance:
  - Premium/Sum Insured
  - Compensation/Premium
- Using a single angle won't give a comprehensive understanding.

# Executive summary

All farmers who got WII via bima pima card have paid a premium of 10% as the amount covered by the insurance. Of all farmers who got the Hybrid product (WII + MPCl) with bundled loan through institution, 96% have paid a lower price (i.e.  $< 10\%$  of the amount covered) for premium, and the other 4% paid higher ( $> 10\%$  of the amount covered).

Less than half have claimed for compensation, which is true for both products. Of all WII farmers who have claimed, 95% were compensated for the exact amount as premium, and the rest 5% got paid for more than premium. Of all Hybrid farmers who have claimed, more than half were compensated less for premium, and the rest got paid for more than premium.

Bear in mind that WII farmers take up 87% of the sample. It is unclear how representative the sample is to the ACRE customer population. Additional key information is needed before making inferences for action.





# Sample Overview

# Summary of ACRE Farmer Profiles

**2101**  
Total Sample

**1822**  
Bimodal,  
3 counties

**279**  
Unimodal,  
5 counties

**87 %**  
are individual  
farmers who got  
WII via bima pima  
cards, all from  
Busia, Kakamega  
and Siaya

**1822**  
farmers with WII

**297**  
farmers with Hybrid  
(WII + MPCl)

**903**  
have claimed and  
received compensation



# Who are ACRE's Customers

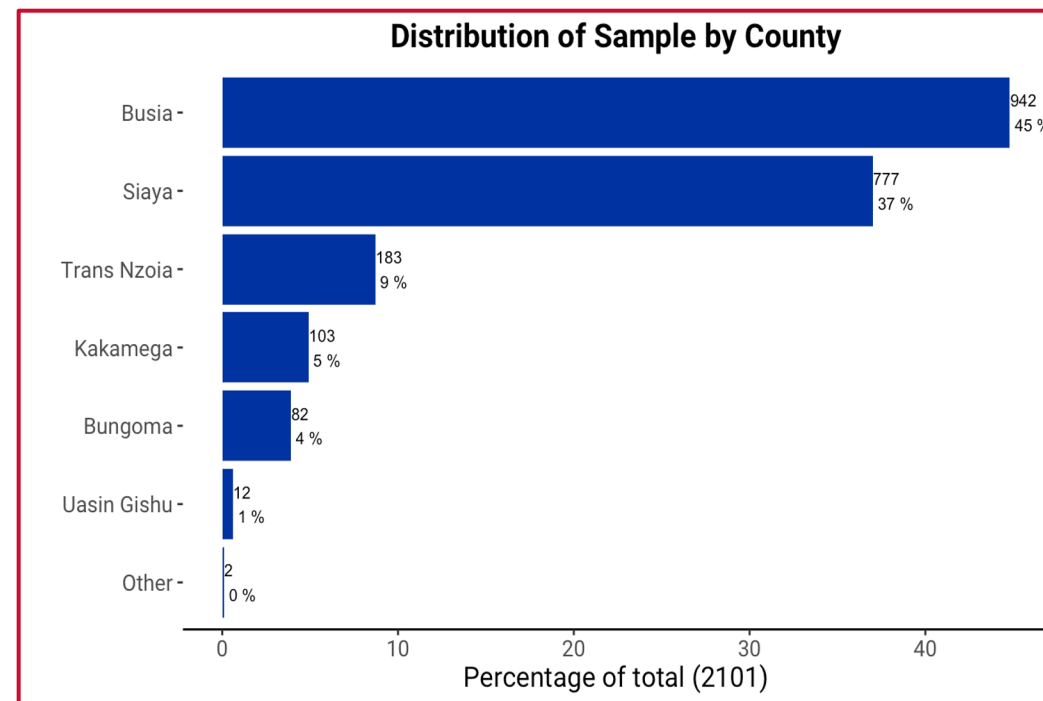
Farmer demographics





# Busia and Siaya count for more than 80% in the sample, with Nakuru and Nandi underrepresented

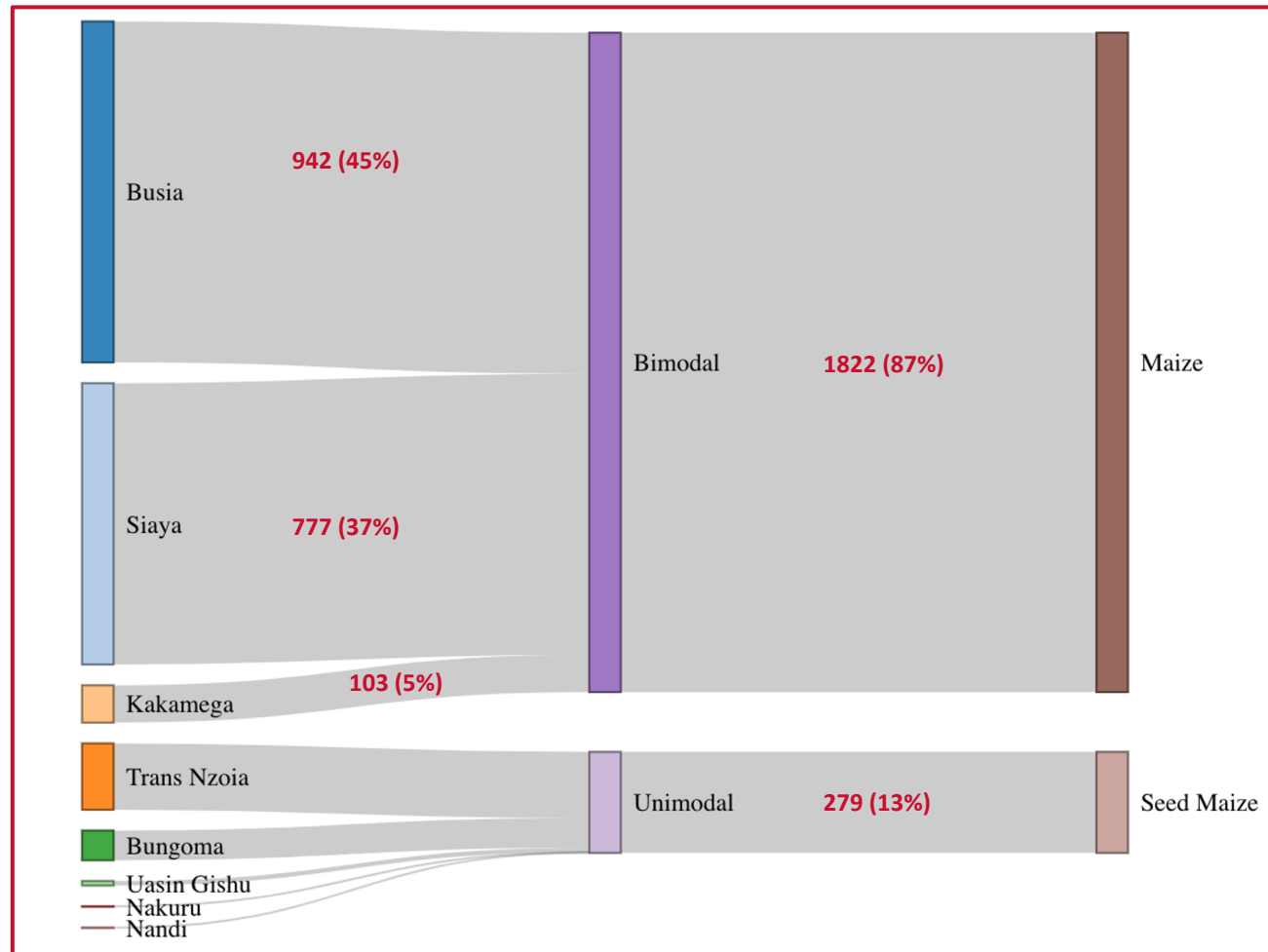
County	Count	Percentage
Bungoma	82	4
Busia	942	45
Kakamega	103	5
Nakuru	1	0
Nandi	1	0
Siaya	777	37
Trans Nzoia	183	9
Uasin Gishu	12	1



- In the sample selected by ACRE, nearly half of the farmers come from Busia, followed by Siaya (37%). Farmers from west part of Kenya account for 90% of the sample. With Nakuru and Nandi being underrepresented, extreme values in these 2 counties explains the outstanding high average in most of the cases.
- The product ownership and value chain covered are highly associated with the region where farmers come from, given ACRE's strategy.

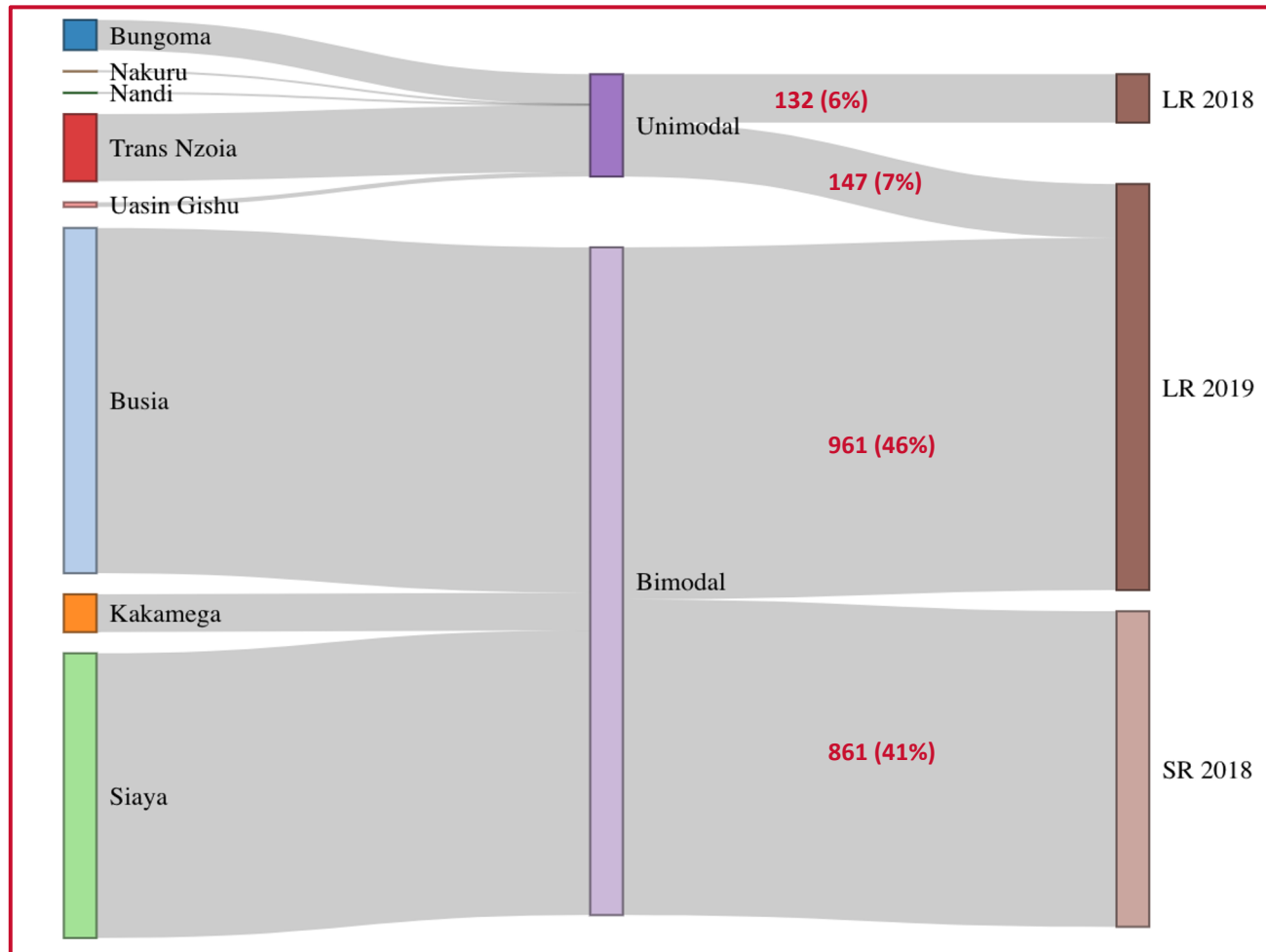
Data source: ACRE sample

# Maize value chain is covered by Bimodal counties, where farmers account for nearly 90% of the sample



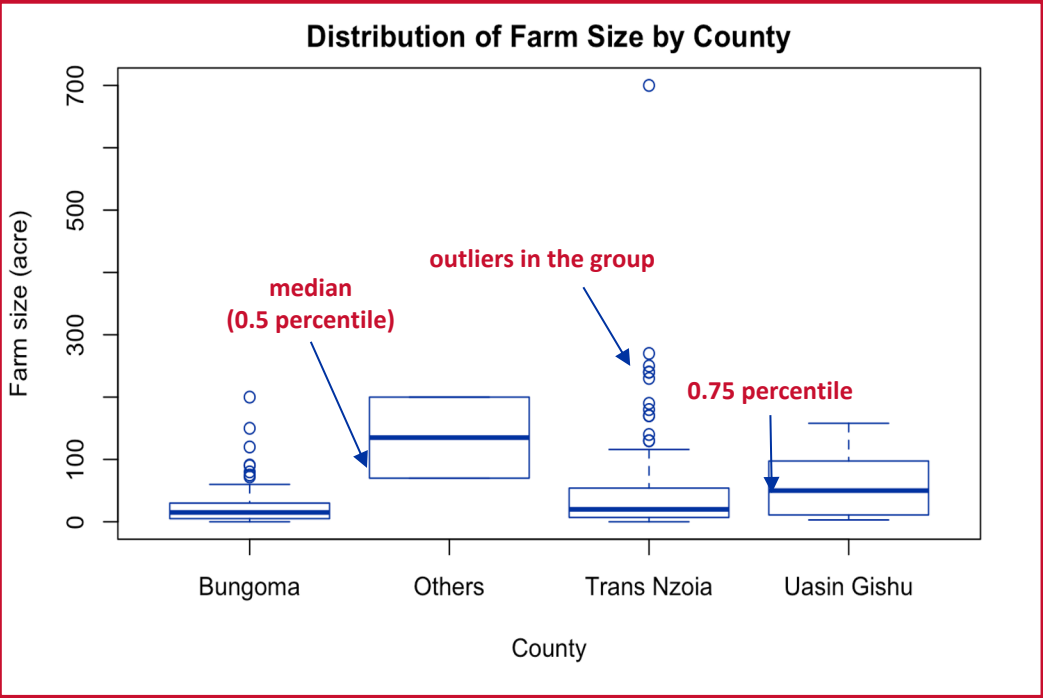
- Rain seasons in Kenya has informed ACRE's strategy of product design. Two raining seasons are taken into the measurement: LR (long-rain) March - August, SR (short-rain) September - December.
- ACRE has designed its strategy in the way that counties with 2 raining seasons receive bimodal products, covered by maize value chain, whereas counties with LR only receive unimodal product, covered by seed maize value chain.
- The sample is predominantly represented by farmers receiving bimodal in 3 counties in west Kenya (87%), with the rest 13% representing 5 counties.

# Nearly half of the farmers are “early adopters” who received ACRE product in 2018

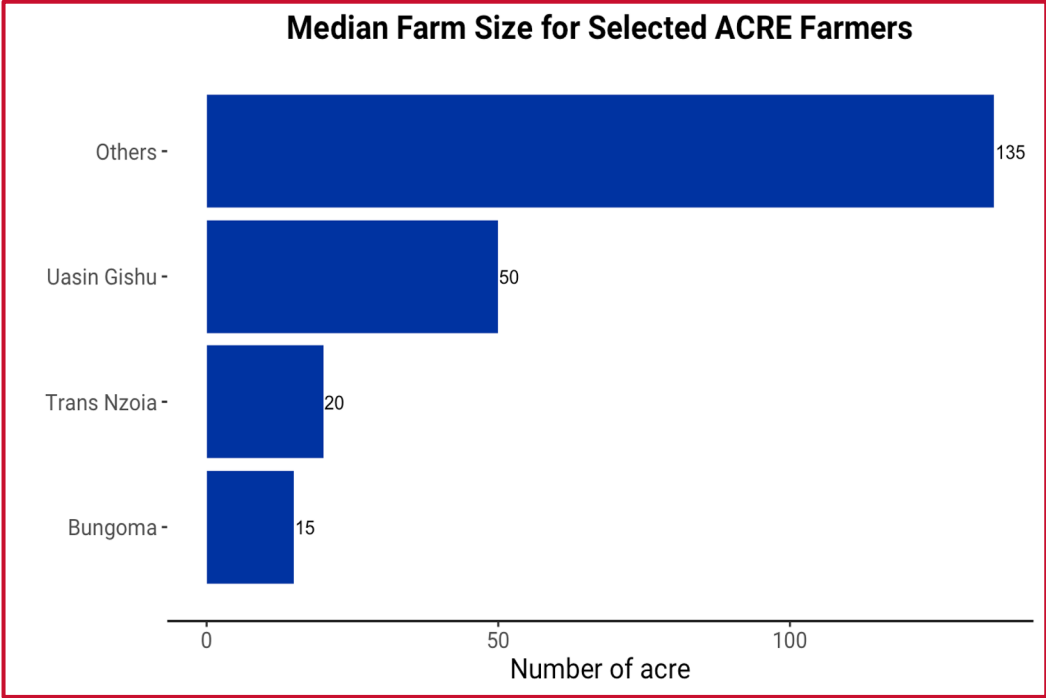


- Unimodal product was introduced in long-rain season (LR) only. Farmers in this sample receiving unimodal product were enrolled in either 2018 or 2019.
- Bimodal product was introduced to half of the sample farmers from the 3 counties, Busia, Kakamega and Siaya, in 2018 during SR, and soon after to another half in that region in 2019 during LR.
- In almost all counties, half of the farmers are “earlier adopters” who received ACRE product in 2018, and the other half received the same product in 2019. The only exception is with Nakuru and Nandi, represented by 1 farmer each.

# Half of the farmers in Uasin Gishu own a piece of land of 50 acres or more



base = 279



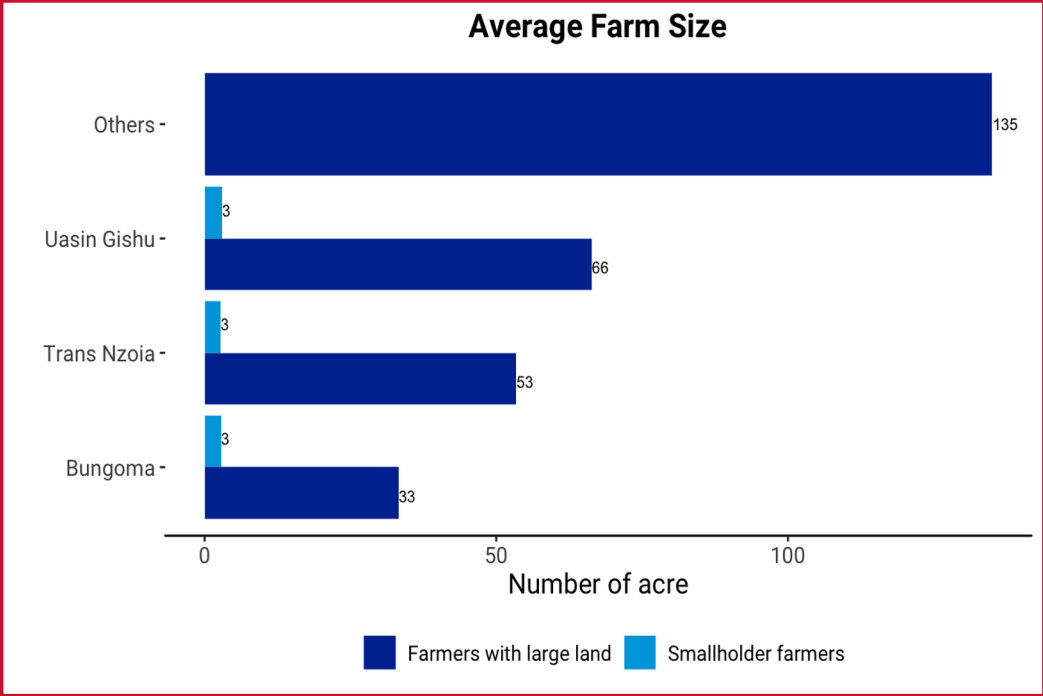
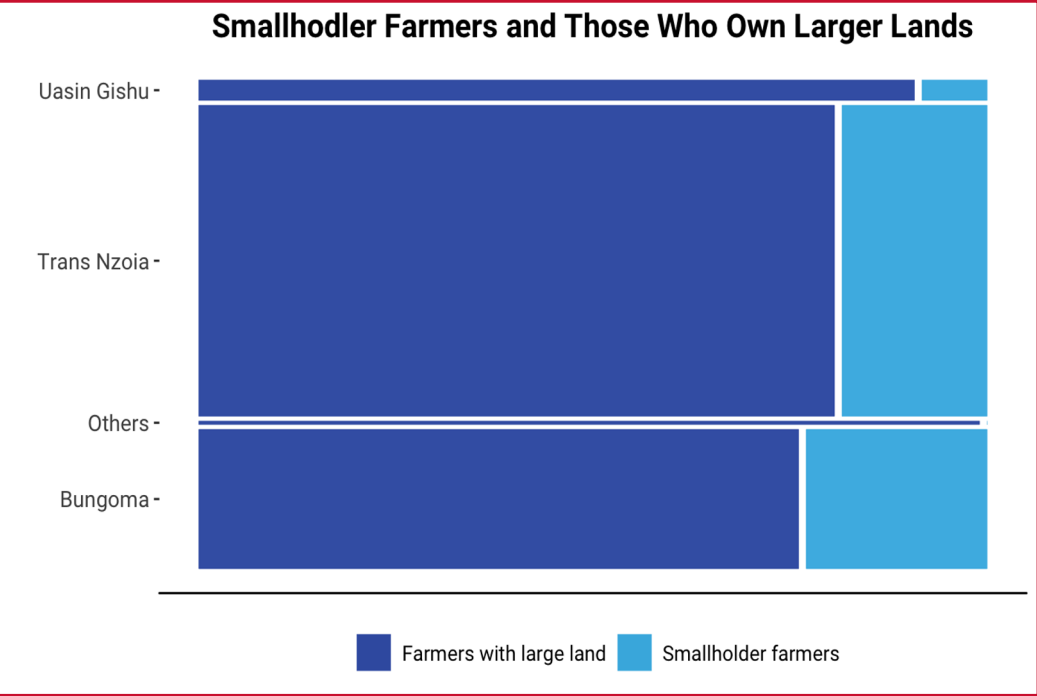
base = 279

- Data of farm size is only available for the 5 counties receiving unimodal product, all covered by Seed Maize value chain. Given the particular product strategy by ACRE, we know that farmers in the rest 3 countries (i.e. Bima pima farmers) typically own a piece of land less than 5 acres.
- The farmer from Nandi owns a piece of 200 acre land and the one from Nakuru has one for 70 acre, which drives the median or average level of the region.

Data source: ACRE sample



On average, smallholder farmers from Uasin Gishu, Trans Nzoia and Bungoma own a similar size of land around 3 acre



- Applying the standard suggested by ACRE, we categorized farmers who owns a land smaller than 5 acre as “smallholder farmers”. The unimodal region is dominated by farmers who own a large piece of land.
- Average farm size for smallholder farmers remains the same across Uasin Gishu, Trans Nzoia and Bungoma. Farmers who have large lands and are from Uasin Gishu on average own a piece of 66 acre land.

Data source: ACRE sample



# How is their relationship with ACRE

Onboarding and training, Product ownership, Value claimed, Renewal, and Loan uptake

The background of the slide features a photograph of a person, likely a farmer, standing in a field of tall, green plants. The entire image is overlaid with a semi-transparent red filter. The person is positioned in the upper right quadrant, looking down. The field extends to the bottom of the frame, where some plants are in focus.

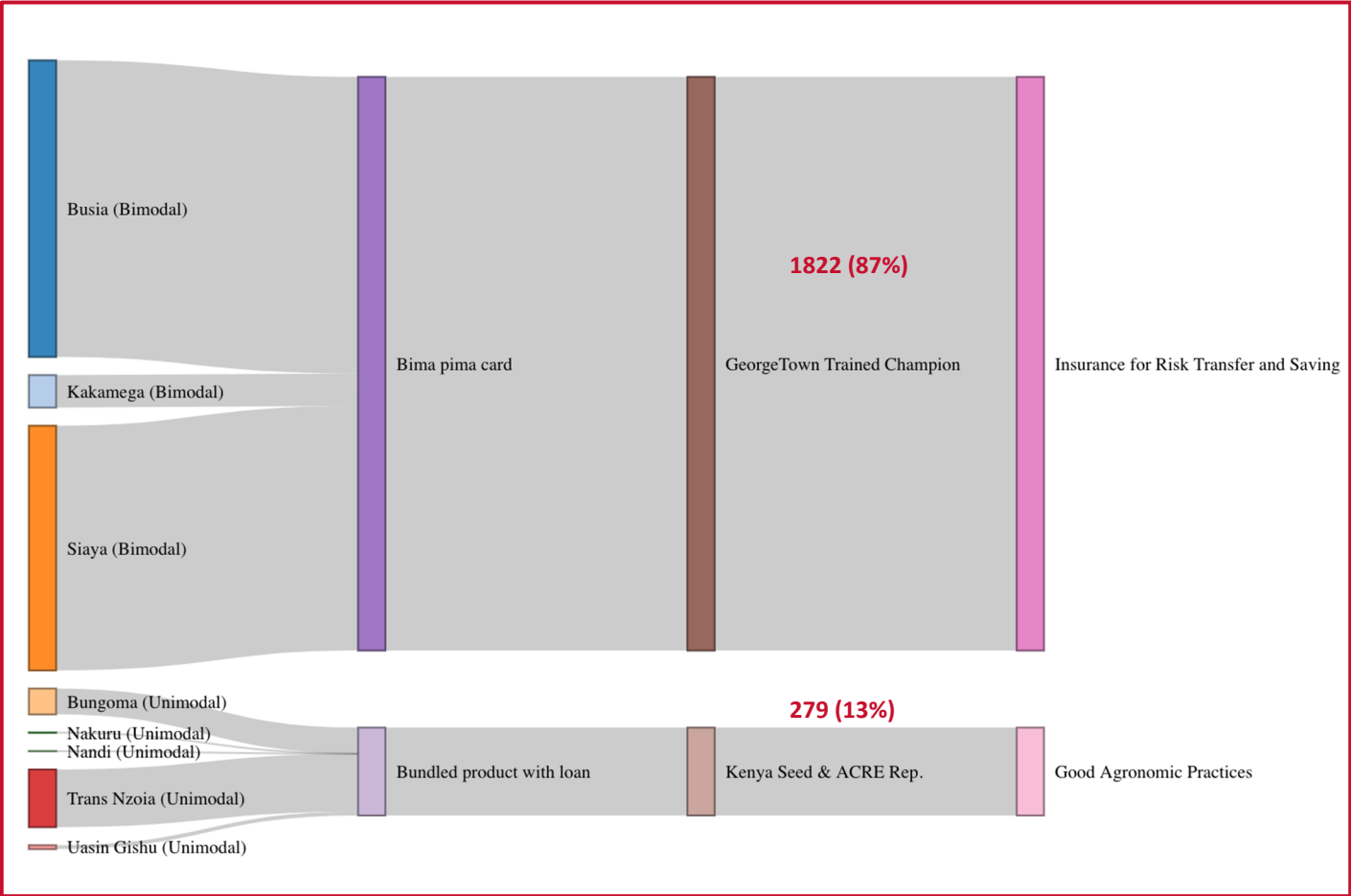
# Onboarding and Training

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In this section, we analyzed the the unique model ACRE has applied to onboard farmers in different regions.



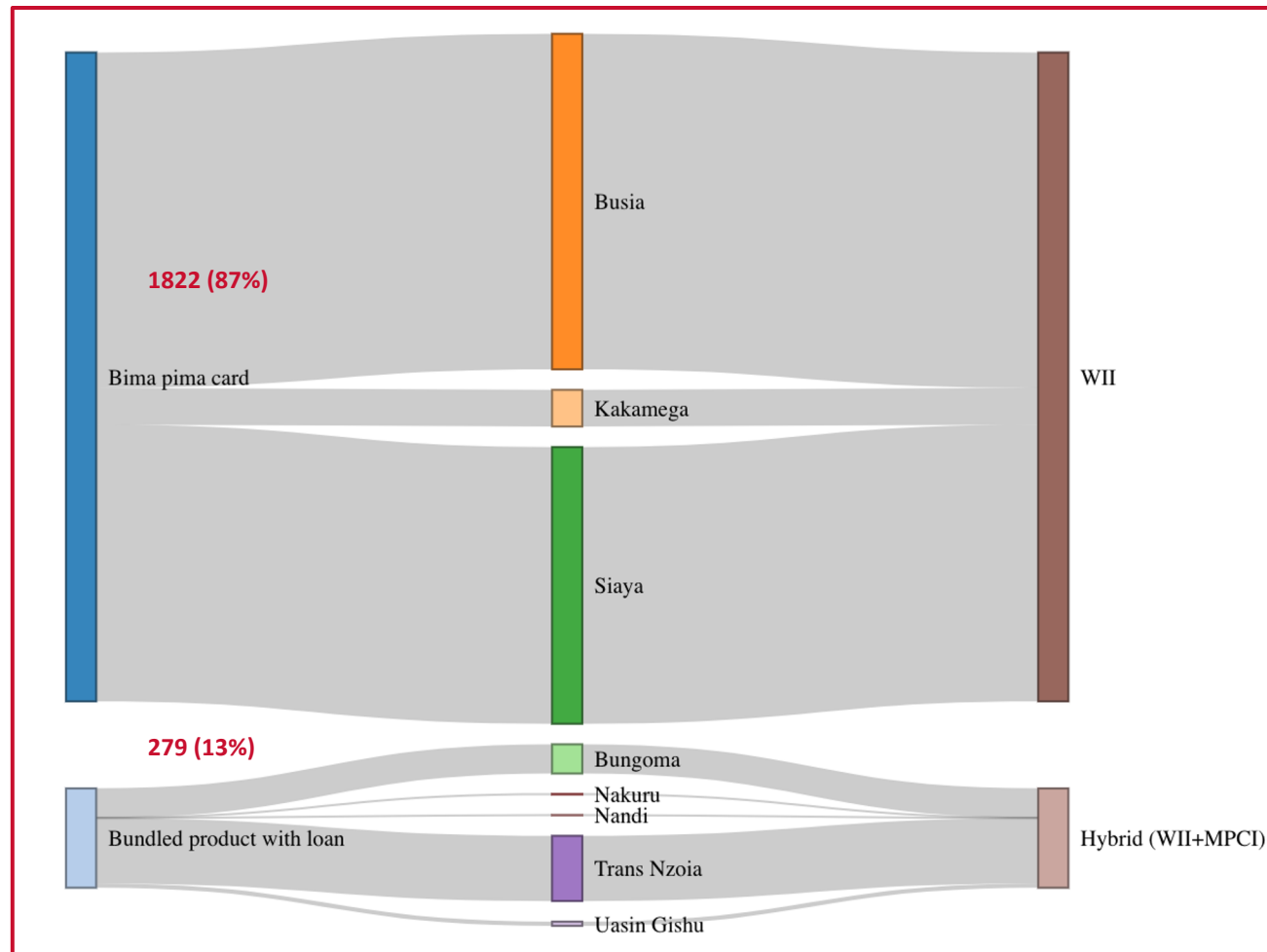
Farmers who registered via bima pima cards have received training on insurance, whereas farmers onboarded via institutes were trained on good agronomic practices



- ACRE has used two channels to onboard farmers: bima pima card, and bundled products with loans.
- Bima pima are scratch cards that have a unique code. Farmers can register this code and their details via USSD. ACRE has partnered with agro-dealers as distribution points.
- Bundled product with loan is distributed through partnerships with financial institutions, agribusinesses and mobile network operators.
- All farmers in Busia, Kakamega and Siaya got the product through bima pima cards, whereas farmers in the rest 5 counties were onboarded with financial institutes.



# Bima pima card is an easy accessible way for farmers to get ACRE's weather index insurance



- Bima pima sometimes is bundled with seeds sold by digital marketplace like Farmers Pride. Either way, this is a disaggregated channel, where every individual farmer can buy insurance scratch cards together with inputs.
- When onboarded via institutions, farmer might need to meet certain criteria.
- Farmers receive WII (Weather Index Insurance) via bima pima cards. and they receive a hybrid product of WII and Multi-Peril Crop Insurance (MPCI) if through institutions (bundled with loan)
- The accessibility to ACRE products by onboarding channel could potentially explain the difference between consumer volumes of two products. But further data is needed to validate the hypothesis.

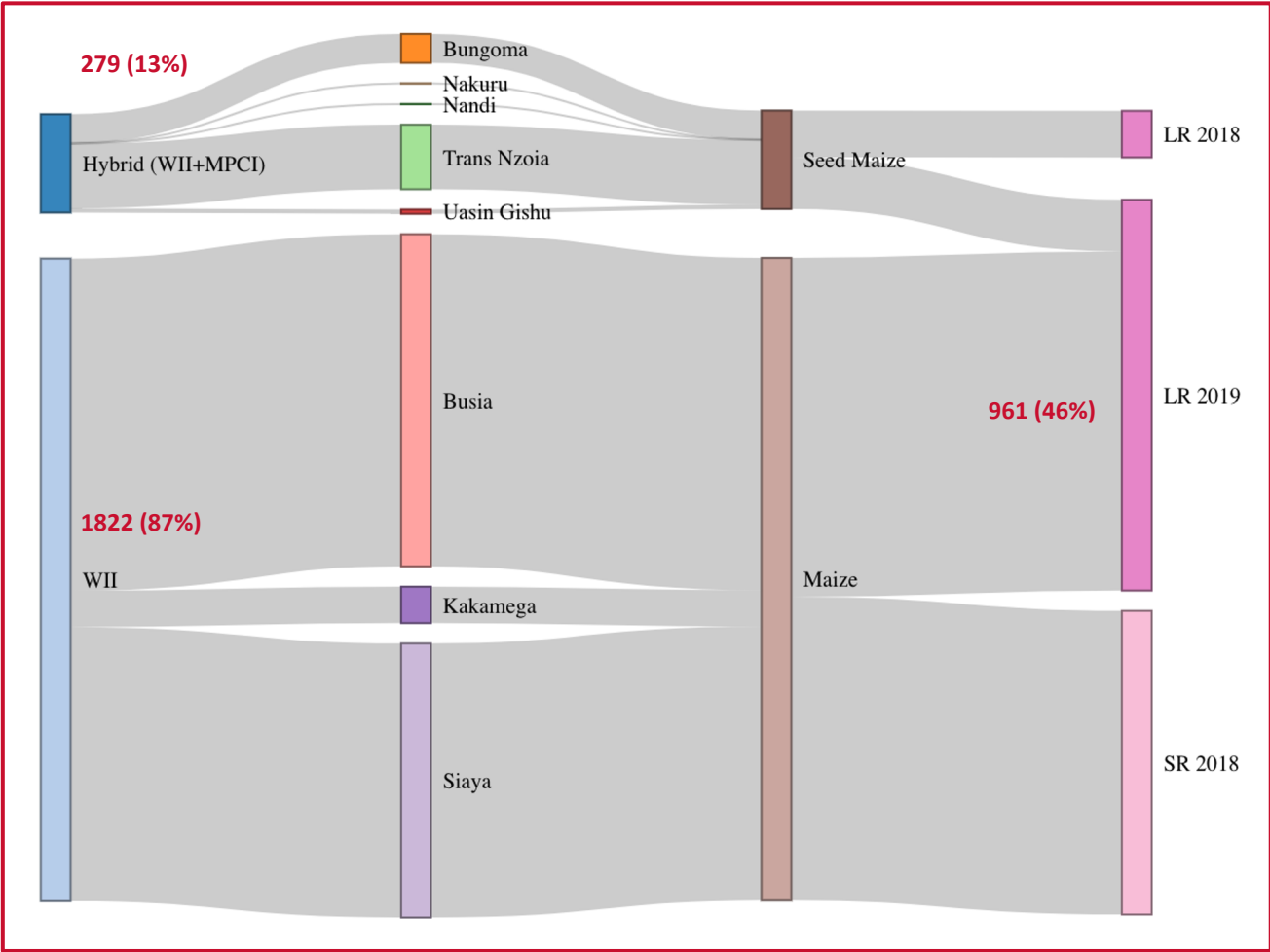
The background of the slide features a photograph of a person, likely a woman, standing in a field of tall, leafy plants. The entire image is overlaid with a semi-transparent red filter. The person is positioned in the upper right quadrant, looking down. The plants in the foreground and background are dense and green, though the red overlay gives them a reddish tint.

# Premium and Expected Coverage

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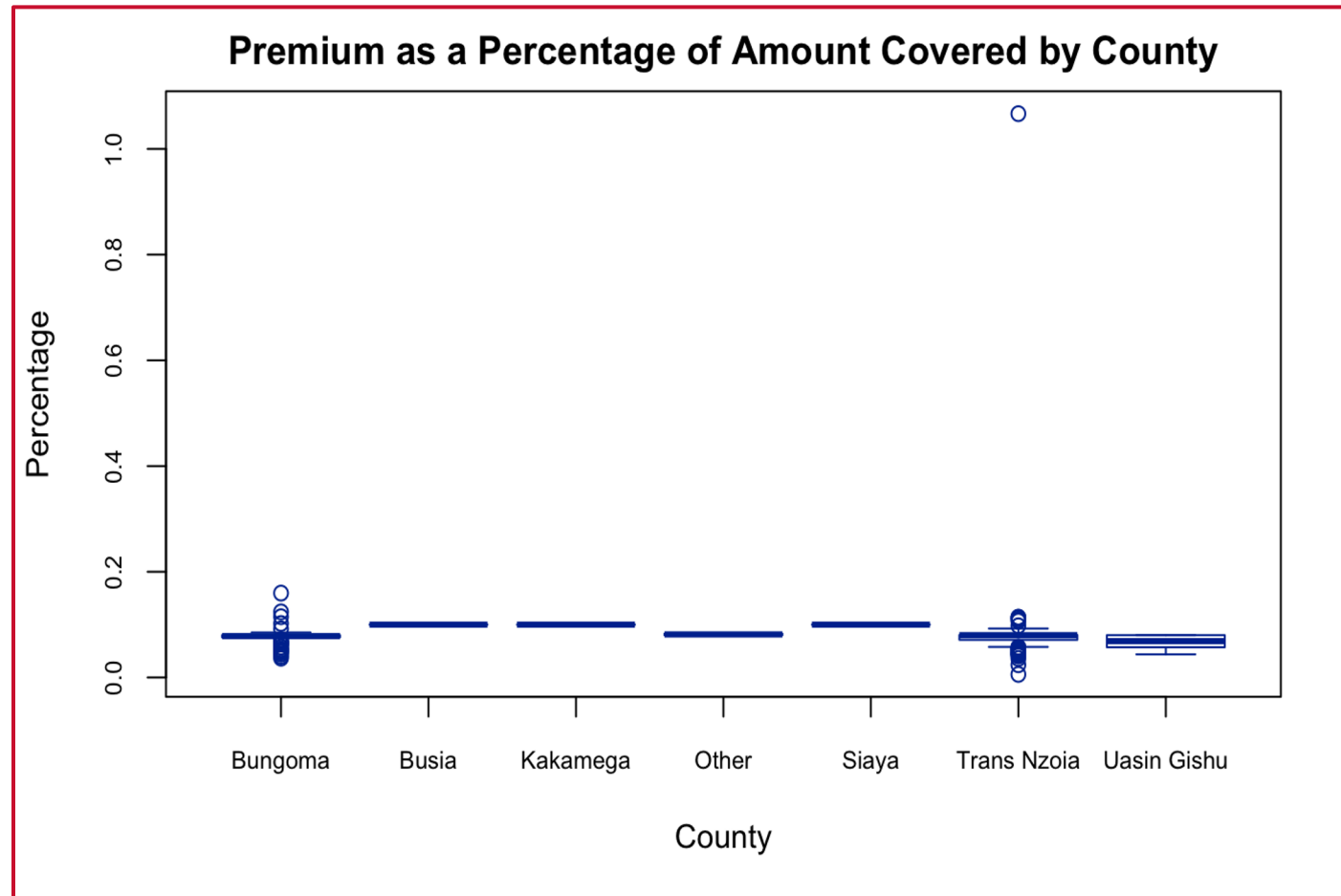
In this section, we analyzed the ownership of two ACRE products, amounts covered by the products, and who have paid relatively higher or lower premium prices for the products

# Nearly half of the sample purchased their first ACRE product WII via bima pima cards in 2019



- All 1822 farmers (87% of total) from Busia, Kakamega and Siaya who obtained the insurance product via bima pima cards have obtained WII (Weather Index Insurance), and have had their maize covered for risk when the rainfall is not on their side. They have gone through training sessions on how insurance can help transfer risk and serve as a saving toll held by trainers from GeorgeTown.
- Among the 1822, half (961, 46% of total) purchased their first ACRE product in 2019, most recent within the sample.
- The rest 13% were engaged with the featured hybrid product, WII + MPCI, trained by representatives from Kenya Seed and ACRE on good agronomic practices.

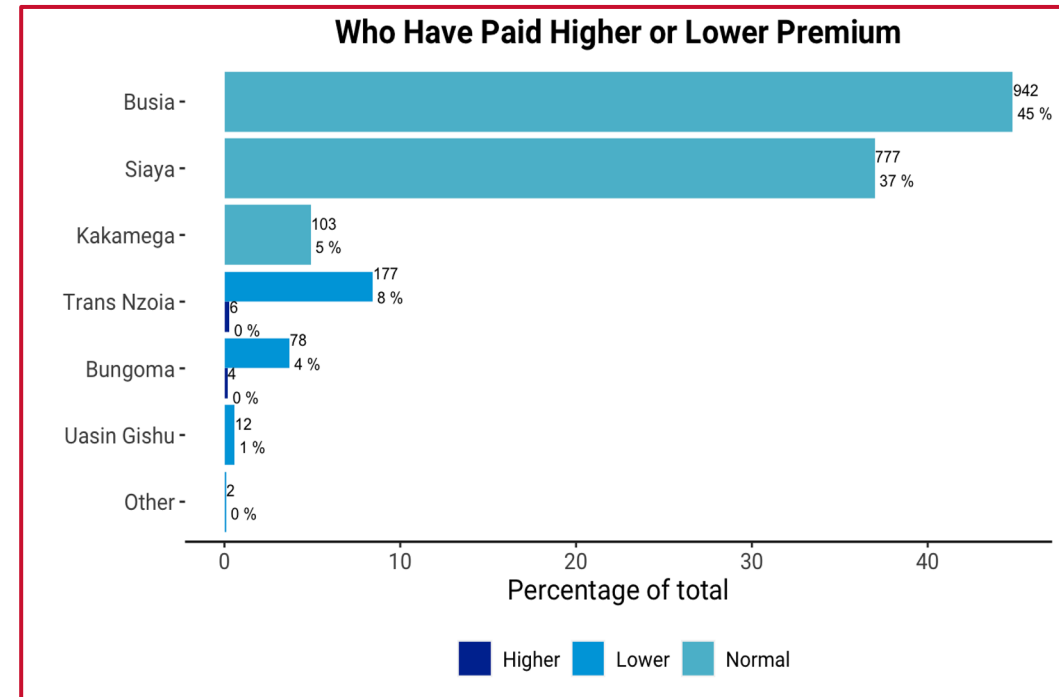
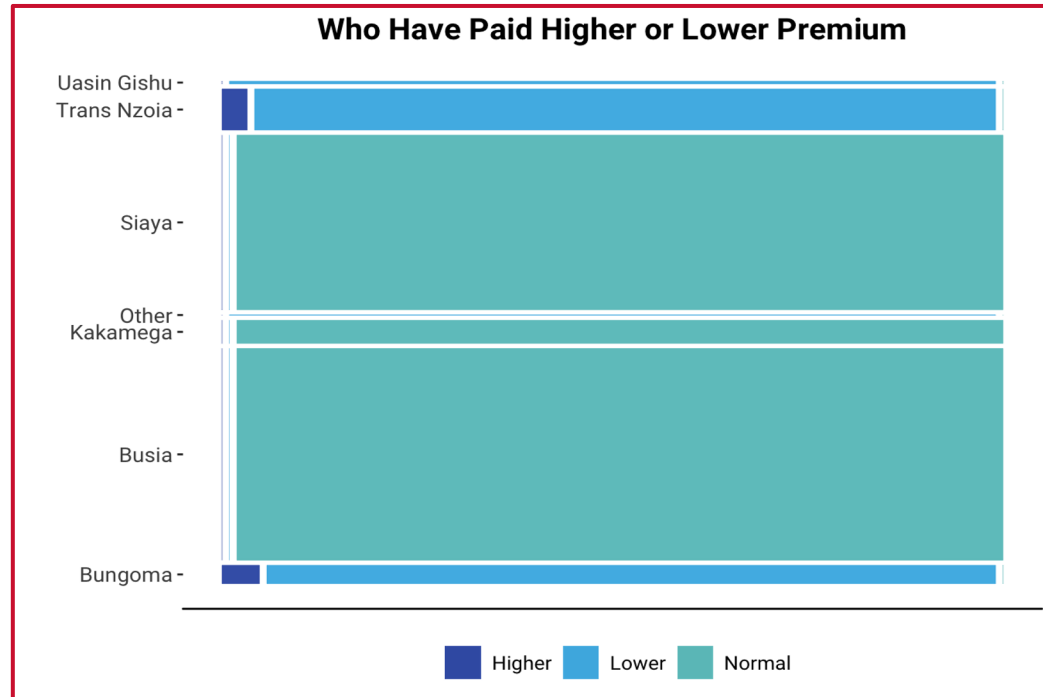
Bungoma and Trans Nzoia have more farmers who have paid either higher or lower than the majority



- We have generated a new variable, premium as a percentage of amount covered by the insurance product, to evaluate who have paid relatively more, relative less, or pretty much the same as majority for the insurance.
- In the box-plot, when 5 lines of quantile overlap, like Busia, Kakamega, Siaya, and Nakuru + Nandi (i.e. other), it indicates that in each group, a farmer pays similar level as others for insurance.
- Across all counties, the premium paid by the vast majority is about 10% of the amount insurance covers. A number of farmers in Bungoma and Trans Nzoia paid a relatively higher or lower premium.
- Additional data on demographics will help unpack the user segments.



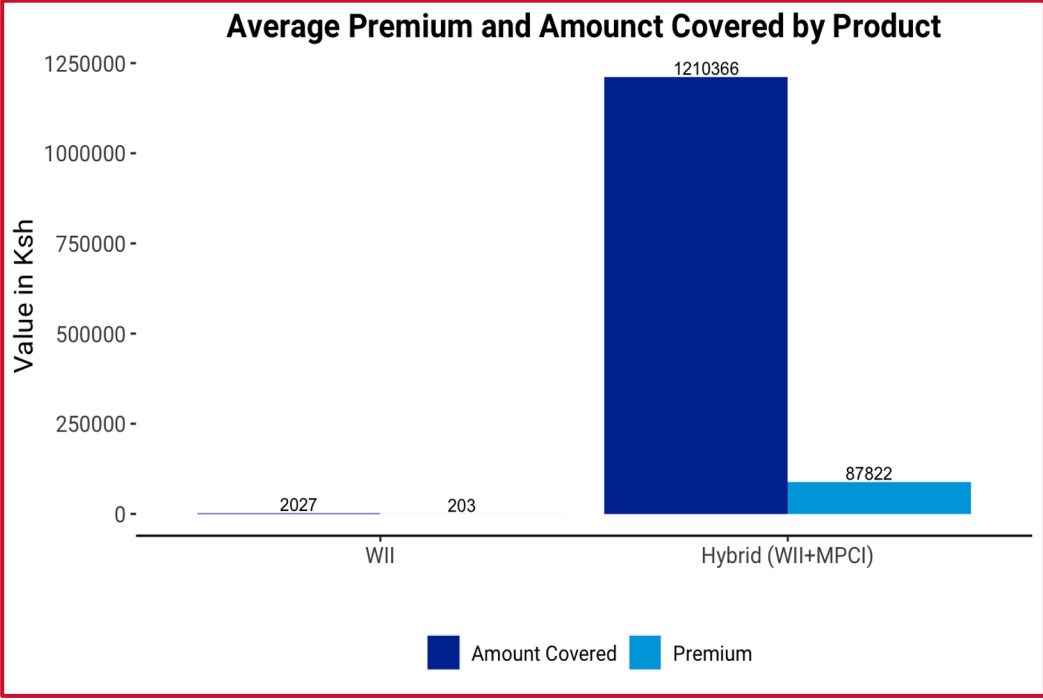
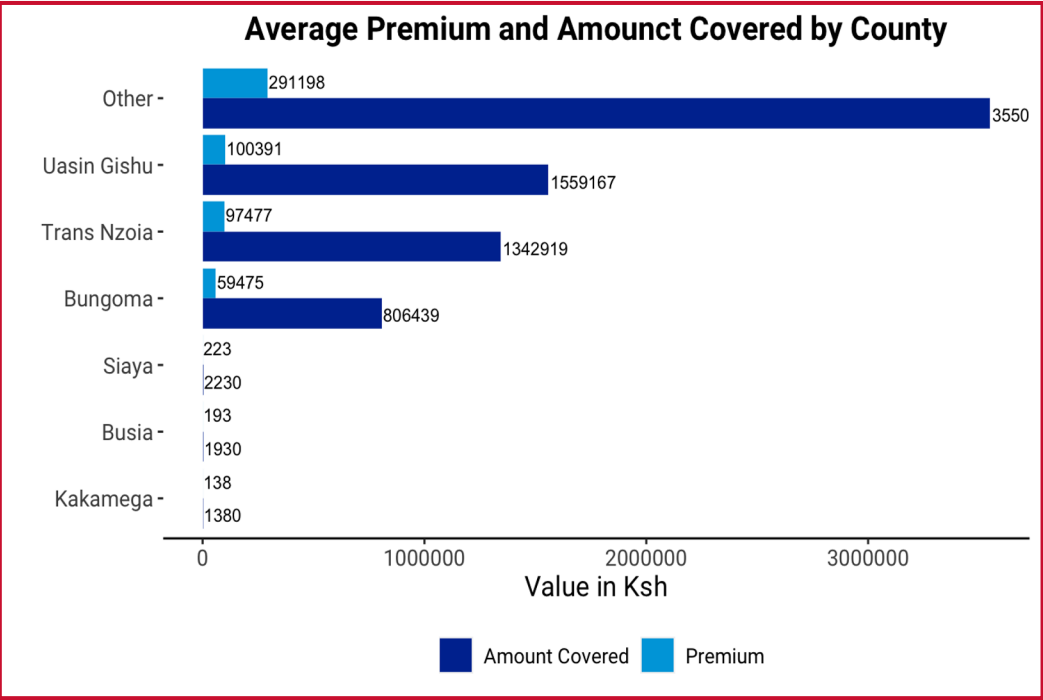
All farmers receiving WII via bima pima cards have paid a premium price as 10% of the amount covered



- Farmers with a premium/amount covered percentage = 0.1 are categorized as “normal”, and as “higher” when > 0.1, “lower” when < 0.1. All farmers in the 3 counties receiving WII via bima pima cards have paid a normal level of premium price.
- Among those who were onboarded via product bundled with loan through institutions, the vast majority have paid a relative lower premium than others in the regions.

Data source: ACRE sample

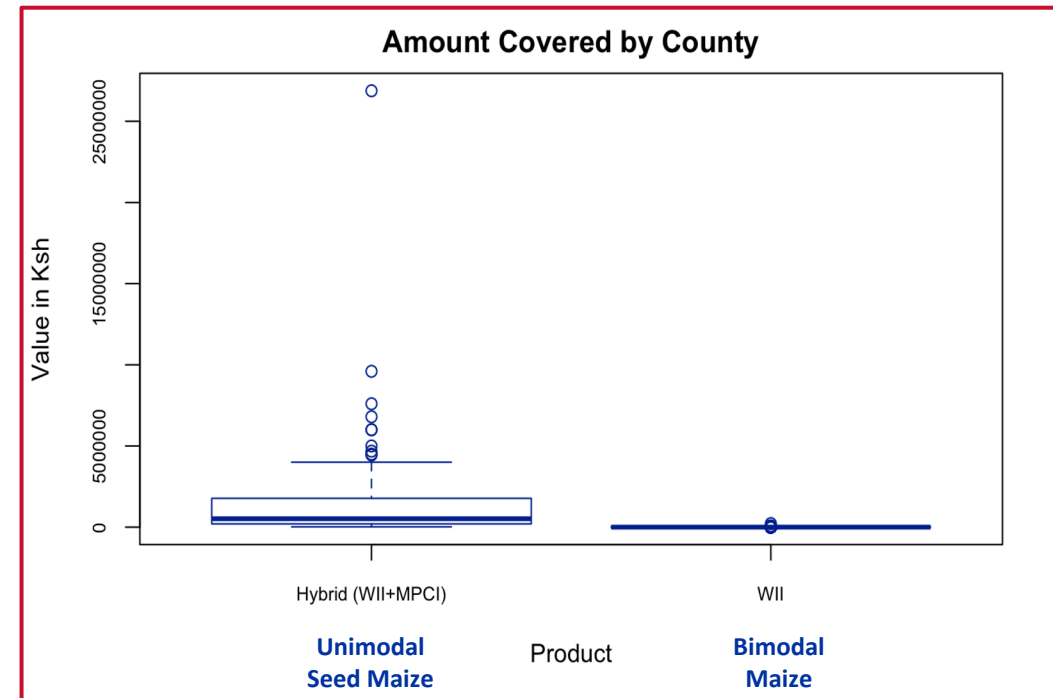
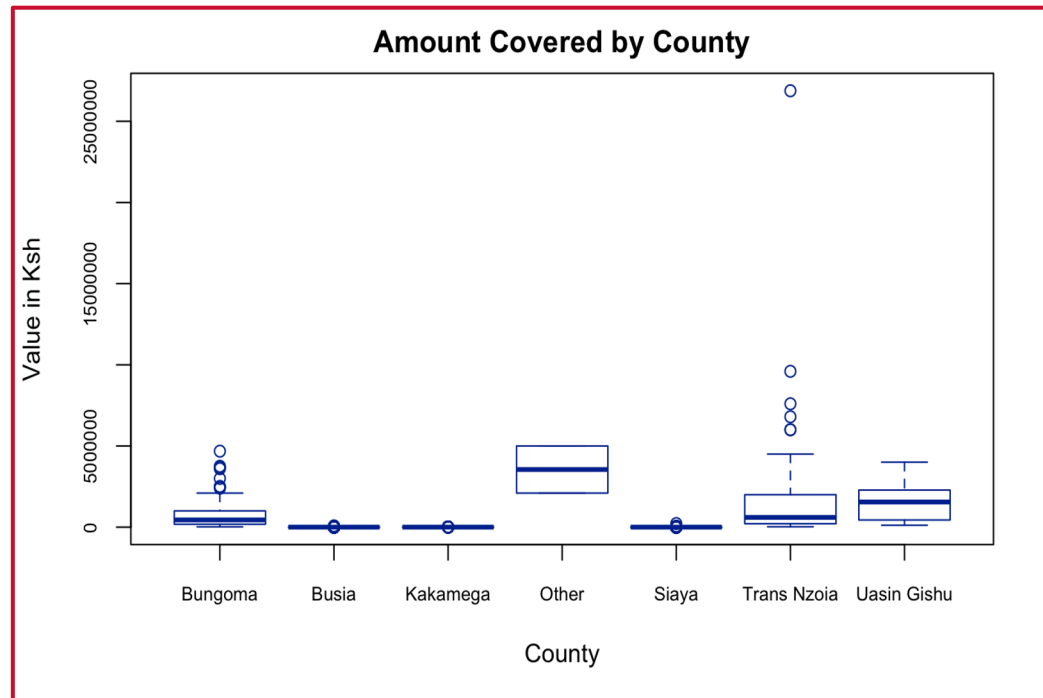
Farmers onboarded via institutions for bundled product with loan have a much higher value covered by WII + MPCl in case of loss



- Extreme cases in Nandi and Nakuru has driven the average level in the areas. But even if we compare between 2 products without Nandi and Nakuru, we still observe that farmers who were onboarded with bundled product with loan through institutions have a much higher average level for premium paid and amount covered by their WII + MPCl.
- The criteria applied on qualified farmers by institutions could possibly explain the gap between 2 groups.

Data source: ACRE sample

Farmers with WII could claimed much less value than those with hybrid product, because they paid less premium



- A couple of farmers who purchased hybrid product have an amount covered > 5 million Ksh, most of whom are from Trans Nzoia. When a loss happens, on average, farmers who have purchased WII could potentially claim for up to 2000 Ksh.
- Data on value claimed will help understand whether WII farmer actually benefited less from ACRE insurance product.

Data source: ACRE sample

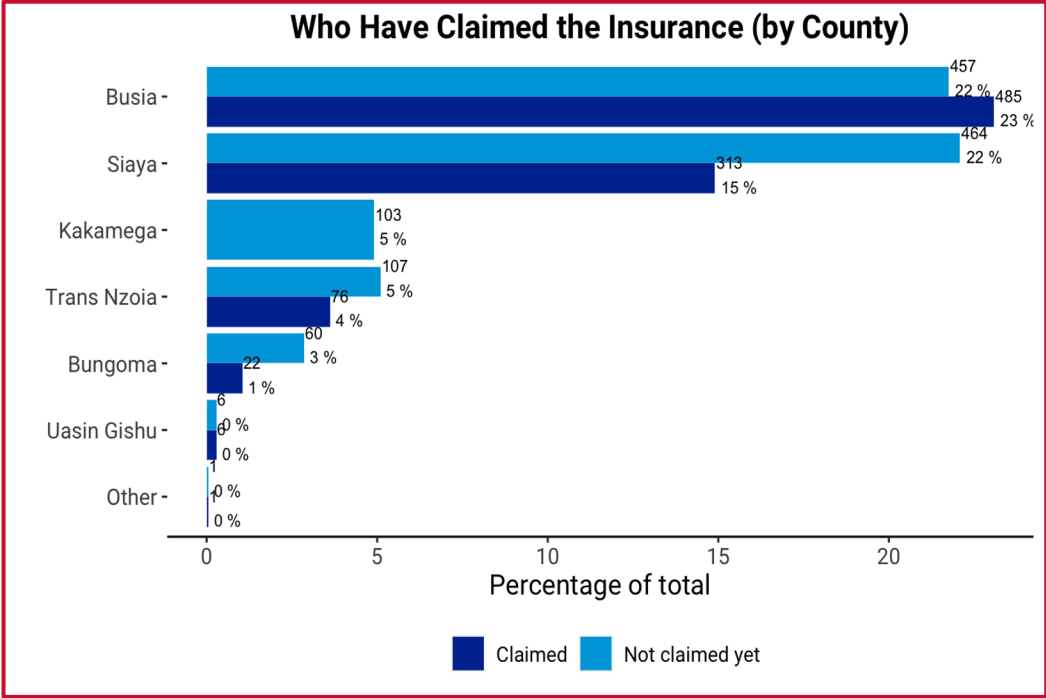
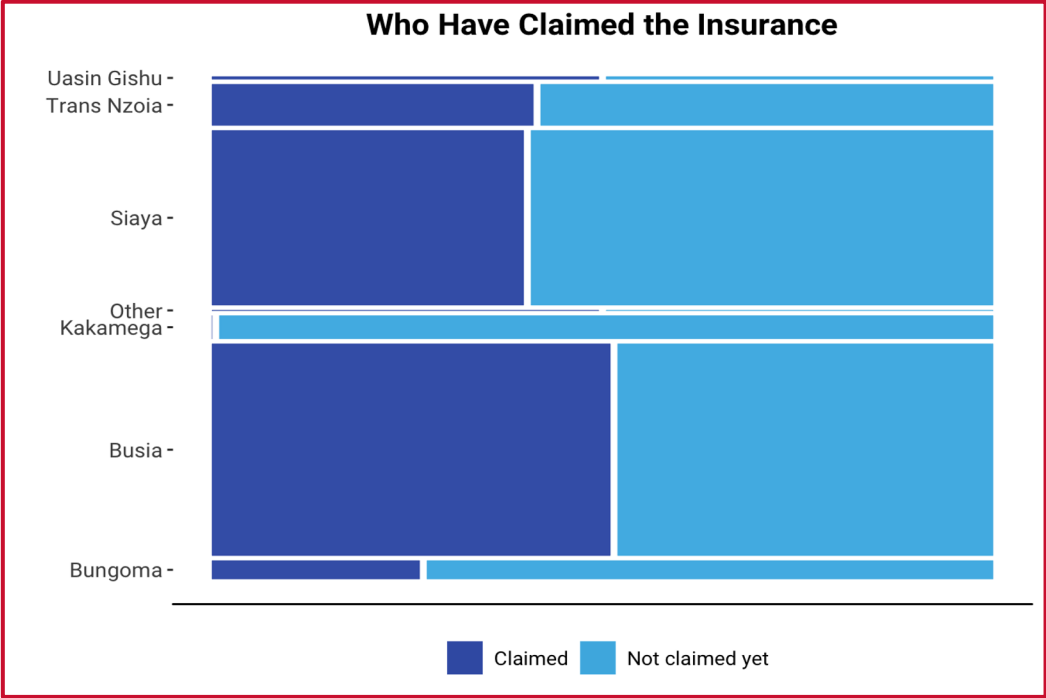
The background of the slide features a photograph of a person, likely a farmer, standing in a field of tall, green crops. The entire image is overlaid with a semi-transparent red filter. In the foreground, there is a shallow, light-colored bowl containing several pieces of fruit, possibly mangoes, resting on the ground amidst the vegetation.

# Compensation

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In this section, we analyzed farmer profiles on who have claimed for loss and how much they have benefited from ACRE products.

# Overall, 42% of farmers have claimed for loss

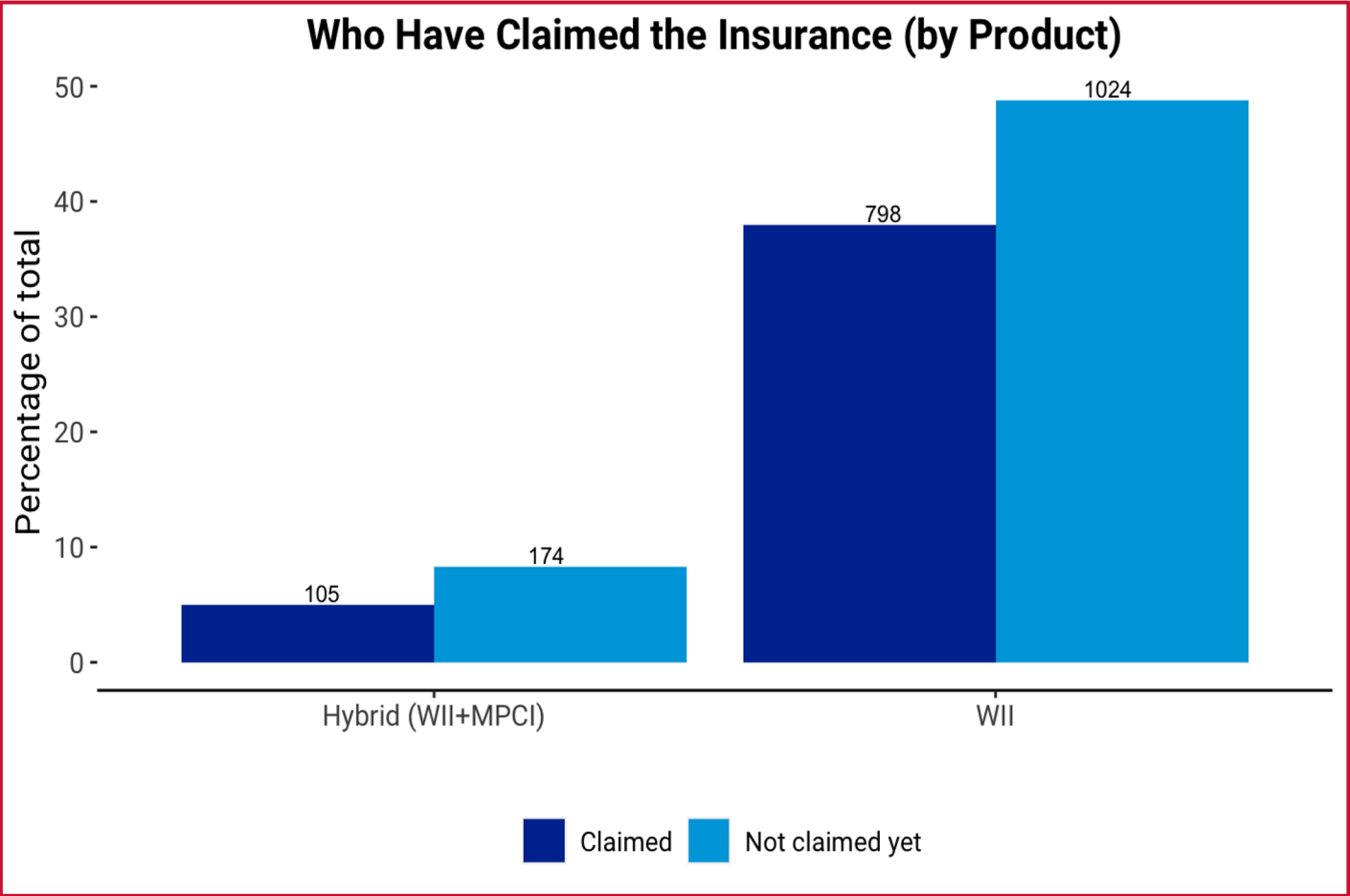


- Farmers from Kakamega have not yet claimed any, whereas more than half in Busia has claimed for loss.
- Additional data on the loss will be necessary to evaluate how much the value claimed has helped farmers recover from the loss.

Data source: ACRE sample

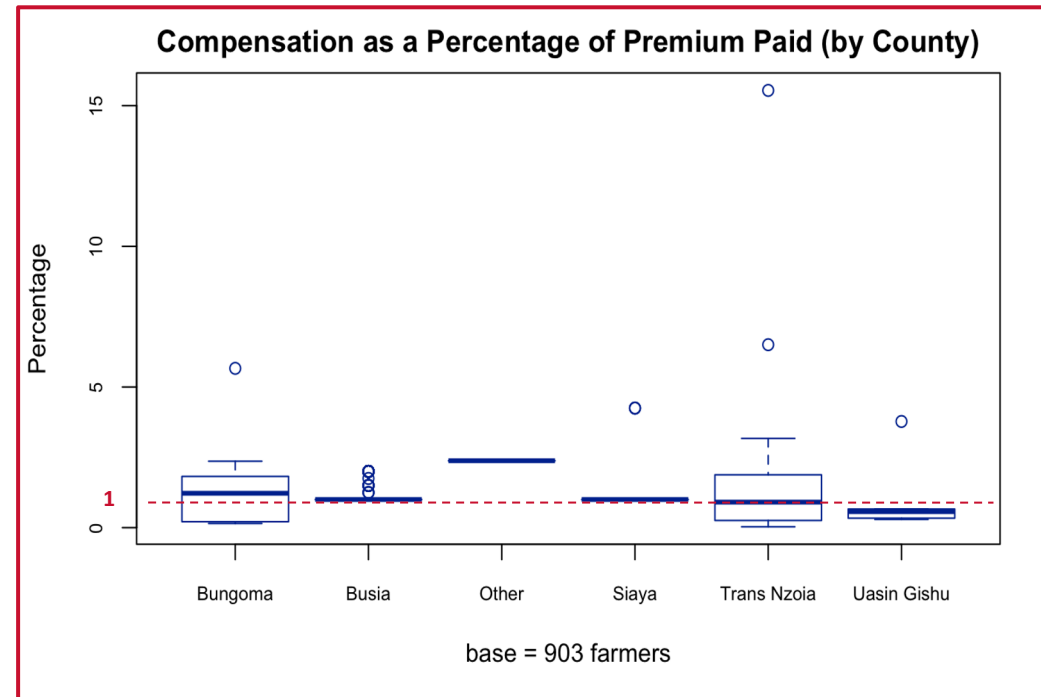
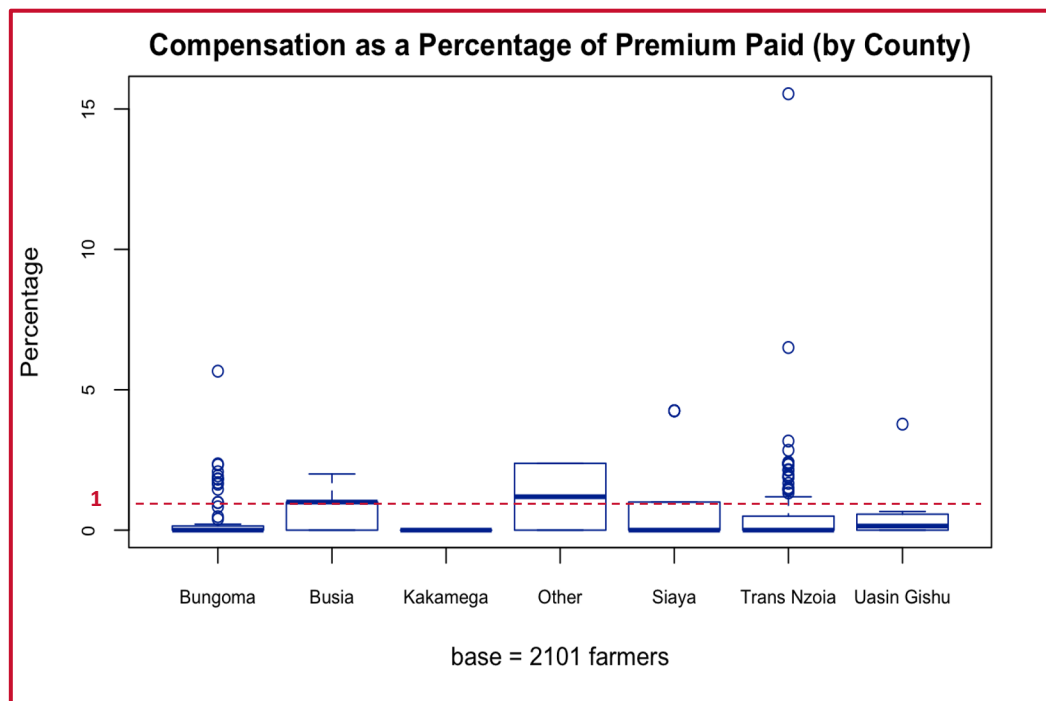


# More farmers have not yet claimed a loss to ACRE, true for both products



- Note that 1822 farmers from Busia, Kakamega and Siaya all have WII via bima pima cards, which accounts for 87% of the total sample.
- Within each product, there are more farmers who have not yet claimed a loss to ACRE. Additional data on the criteria (such as rainfall precipitation and benchmark rainfall level) and whether a farmer has met the criteria will help further examine the magnitude of benefit farmers have gained.
- Ideally, data of loss will also help assess the degree of benefit. Without additional data, we have generated a new variable to look at the benefit of insurance from the angle of compensation received as a percentage of premium price.

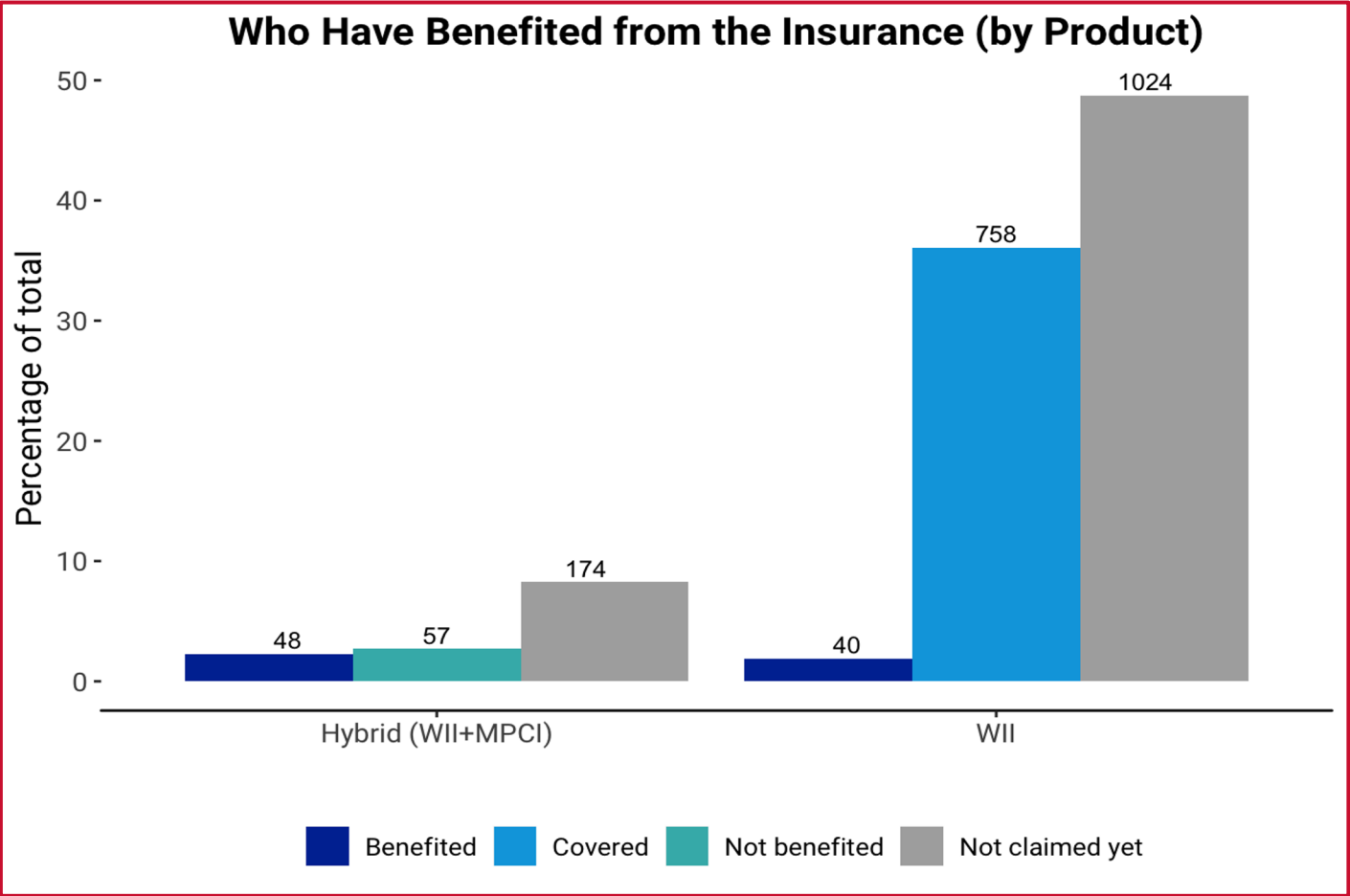
All farmers in Busia who claimed have received a compensation at least the same as the premium, whereas some farmers in Bungoma and Trans Nzoia received less than what they have paid for premium



- Within-county gap is observed in Trans Nzoia and Bungoma. Busia, Bungoma and Trans Nzoia have farmers who have received a compensation higher than what has been paid for the premium. Meanwhile, half of those who claimed in Trans Nzoia and Bungoma have received less than what they paid for premium.
- An extreme case happened in Trans Nzoia where the farmer have received a compensation 15 times as the premium. Additional data on farmer demographics will help unpack more details of beneficiary segments. Gap within group is seen in Trans Nzoia.

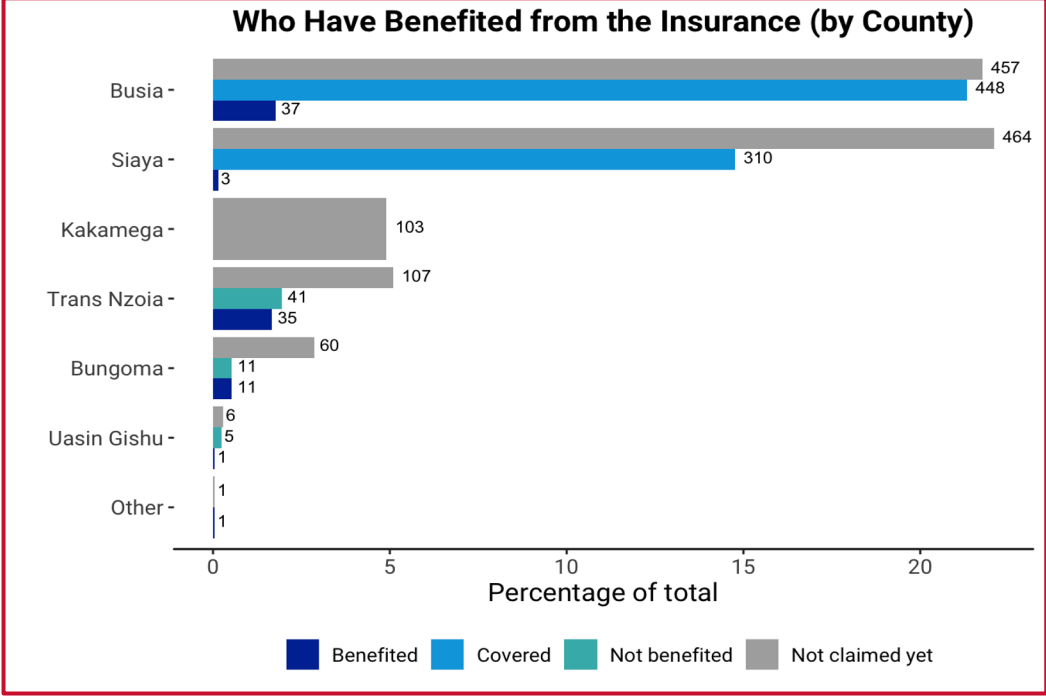
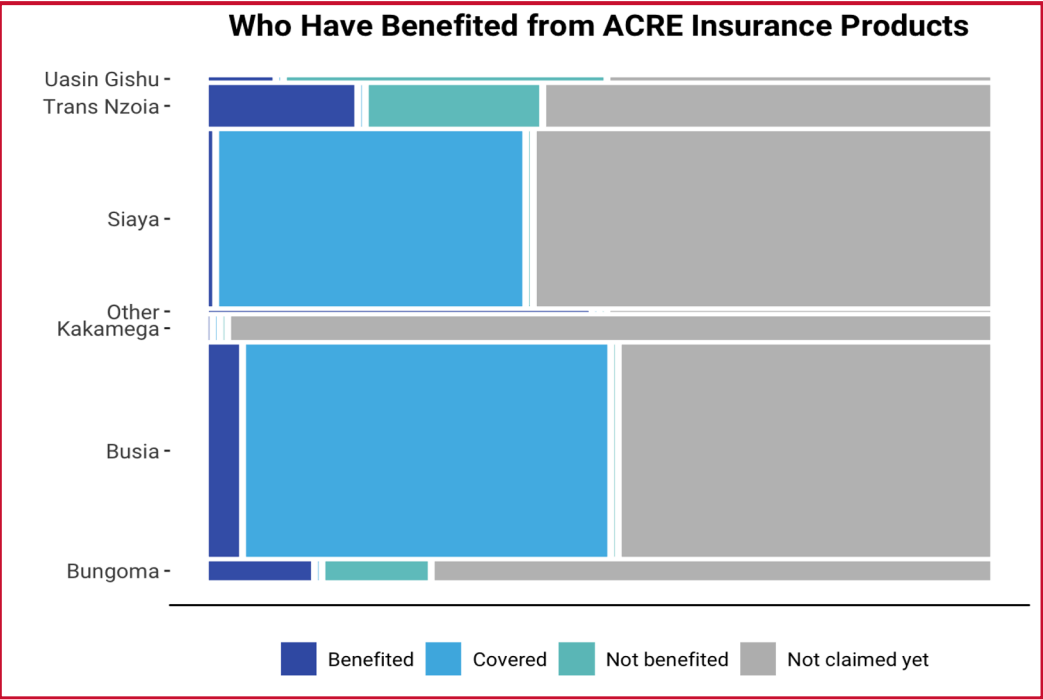
Data source: ACRE sample

For WII farmers, the vast majority of those who claimed have been compensated for exactly the same amount as paid for premium



- Farmers with a compensation/premium percentage = 1 are categorized as “covered”, and as “benefited” when it is > 1, “not benefited” when it is < 1. Those who have not yet claimed have a percentage = 0.
- All farmer who have been covered are from the group of WII product, where all farmers got WII via bima pima cards at a “normal” premium price that is 10% of the sum insured. The blue bar of “covered” tells that the vast majority of those who have claimed in WII group have received a compensation that is 10% of the sum insured.
- Those who have claimed within Hybrid group, where almost everyone has paid a “lower” premium (i.e. <10% of amount covered), almost half have farmers have been compensated for more than they have paid.

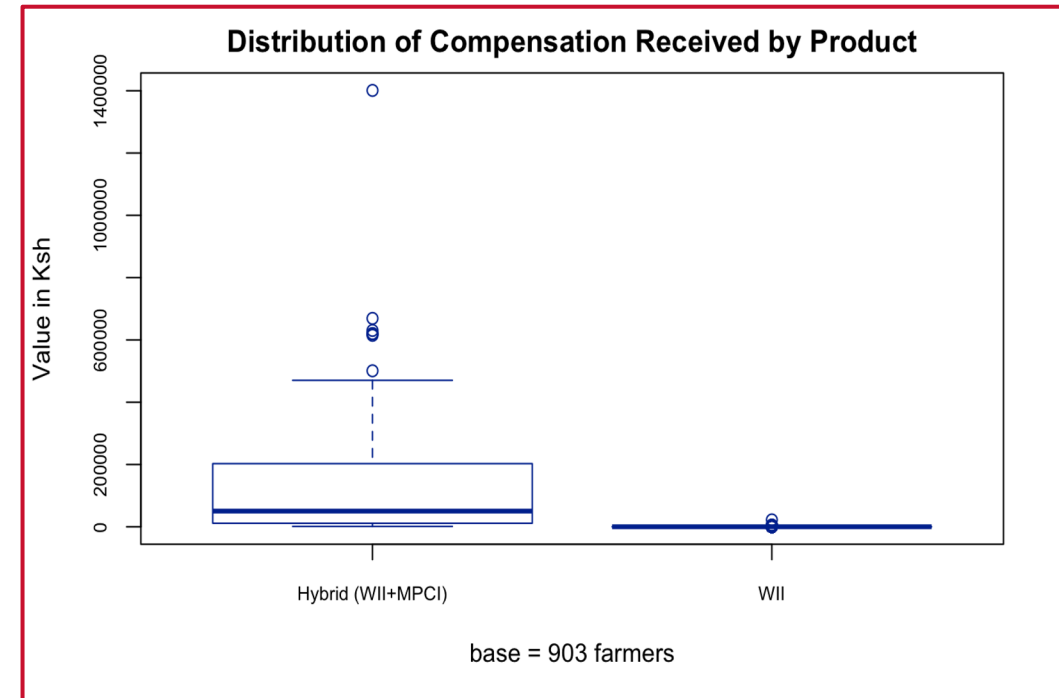
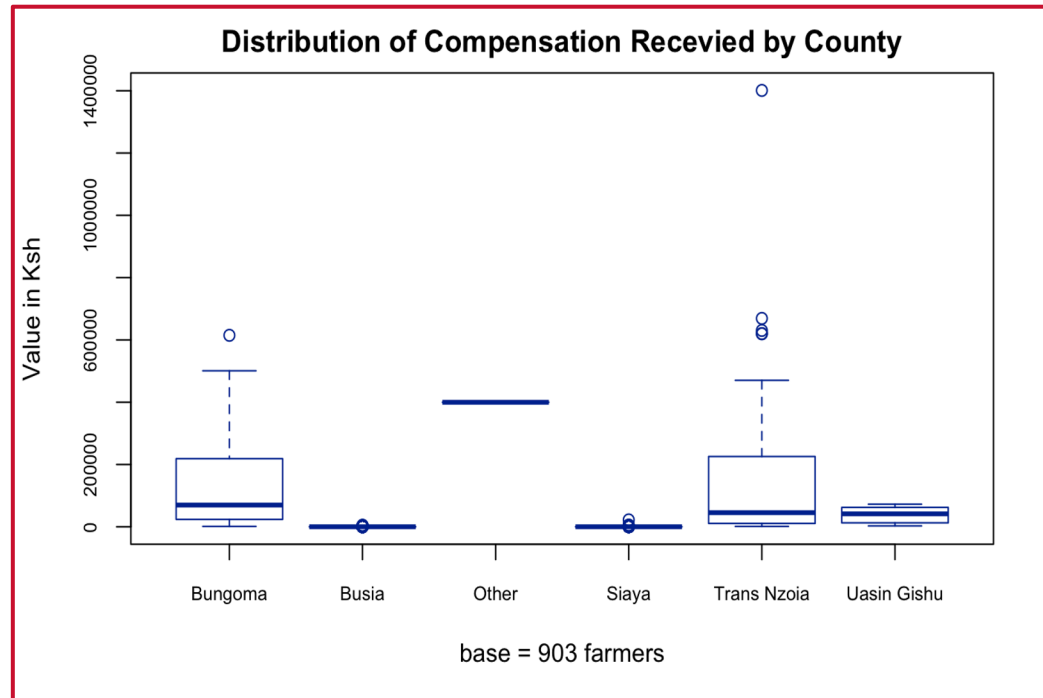
For Hybrid farmers, among those who have claimed, half of them did not get covered by the premium paid



- Note that the group of Hybrid product is where 96% of the farmers paid a relatively lower premium price, i.e. < 10% of the amount covered. When they claimed for loss, half of them got compensated even less than the premium paid.
- Neither “who has paid higher or low for premium” or “who have benefited” could solely indicate which product is more favorable for farmers. Additional data on how each onboarding channel works may help evaluate and compare the impacts between 2 products.

Data source: ACRE sample

WII is of smaller scale at the farmer level, smaller premium and smaller value claimed, but much larger in terms of user volume

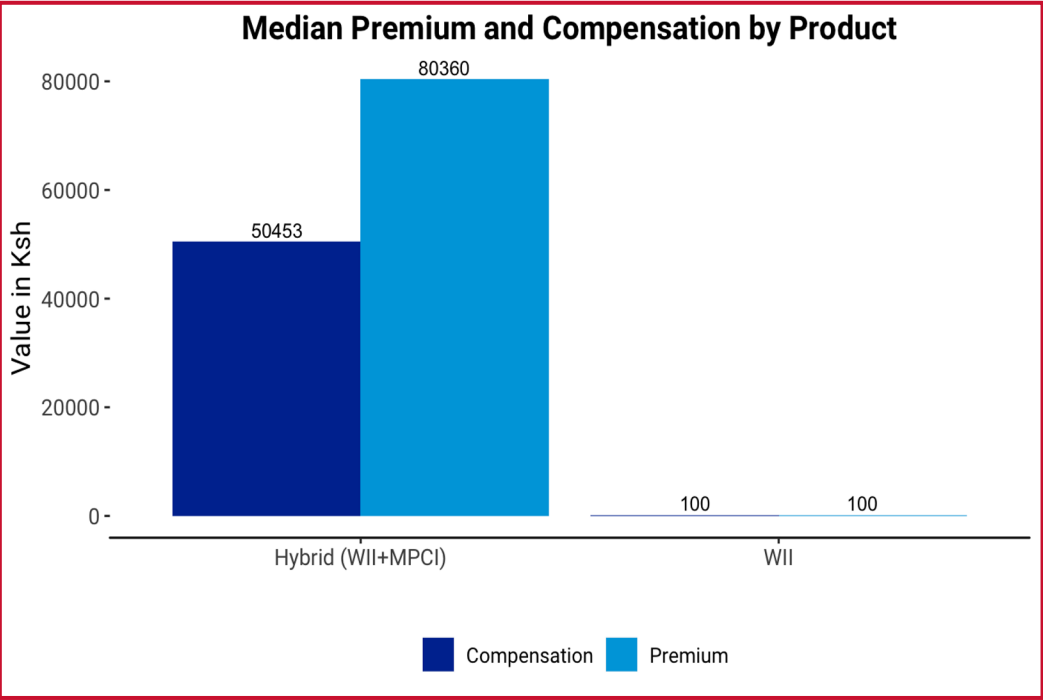


- Among those who have claimed a loss to ACRE (903, 43% of total), farmers who have purchased hybrid product, onboarded via product bundled with loan through institutions, have been compensated more than farmers who got WII via bima pima cards. This is mainly explained by the product design that Hybrid product has additional coverage thus more compensation when loss occurs.
- This echoes with the fact that farmers in hybrid group have paid higher premium than WII farmers, even though half of them get compensated less than what they paid.

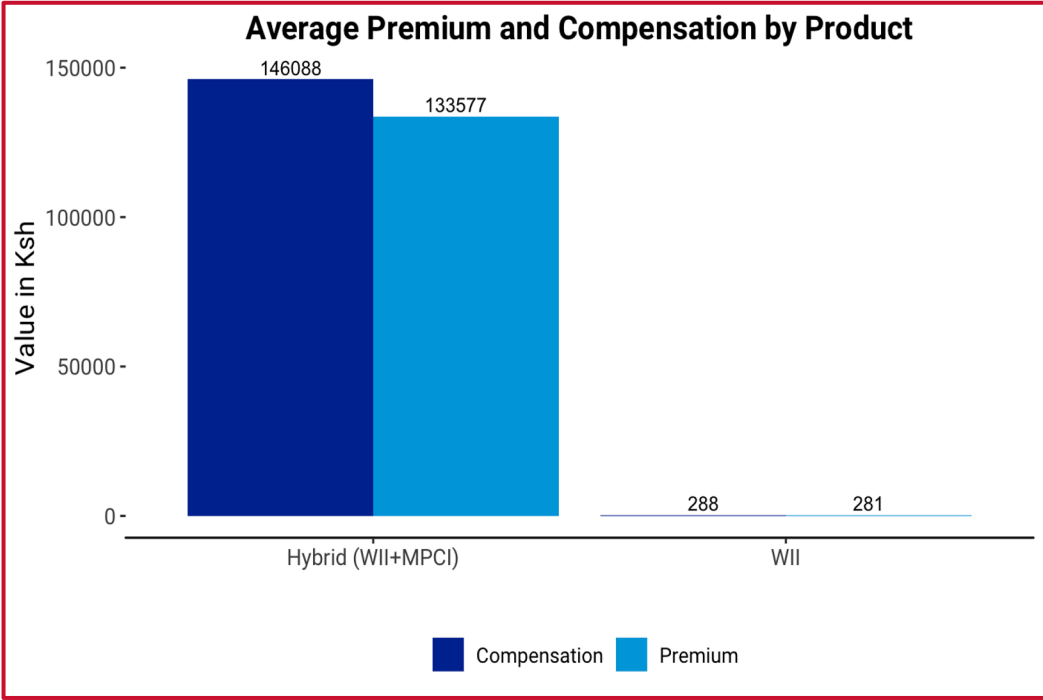
Data source: ACRE sample



Half of the farmers in hybrid group have received 50K or more to make up for the loss, whereas the median for WII farmers is only 100 ksh



base = 903

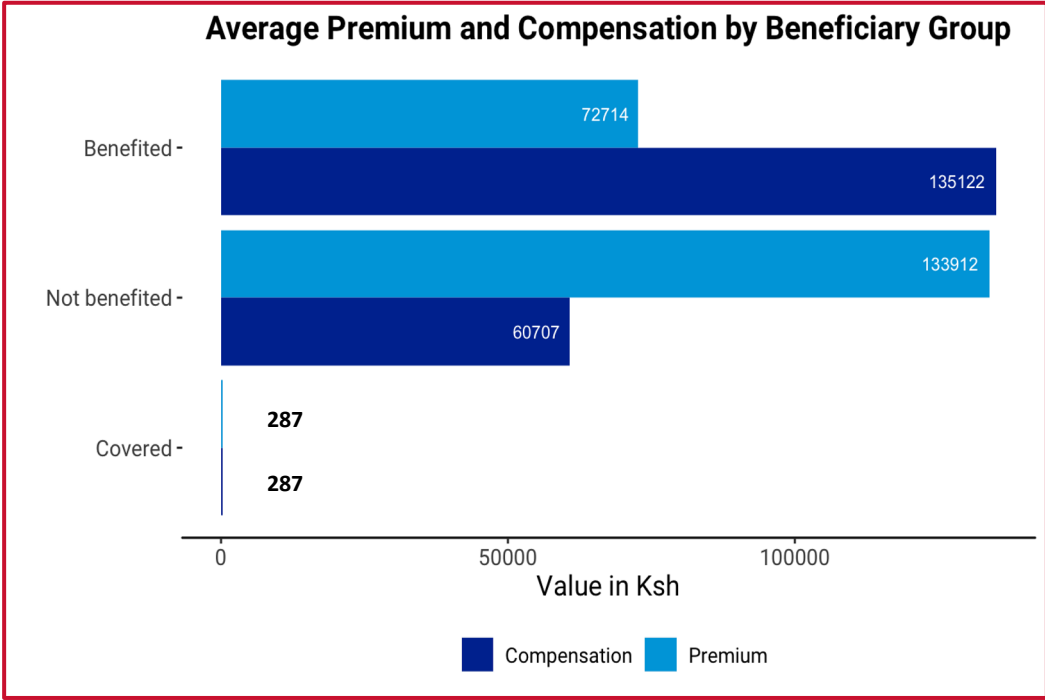
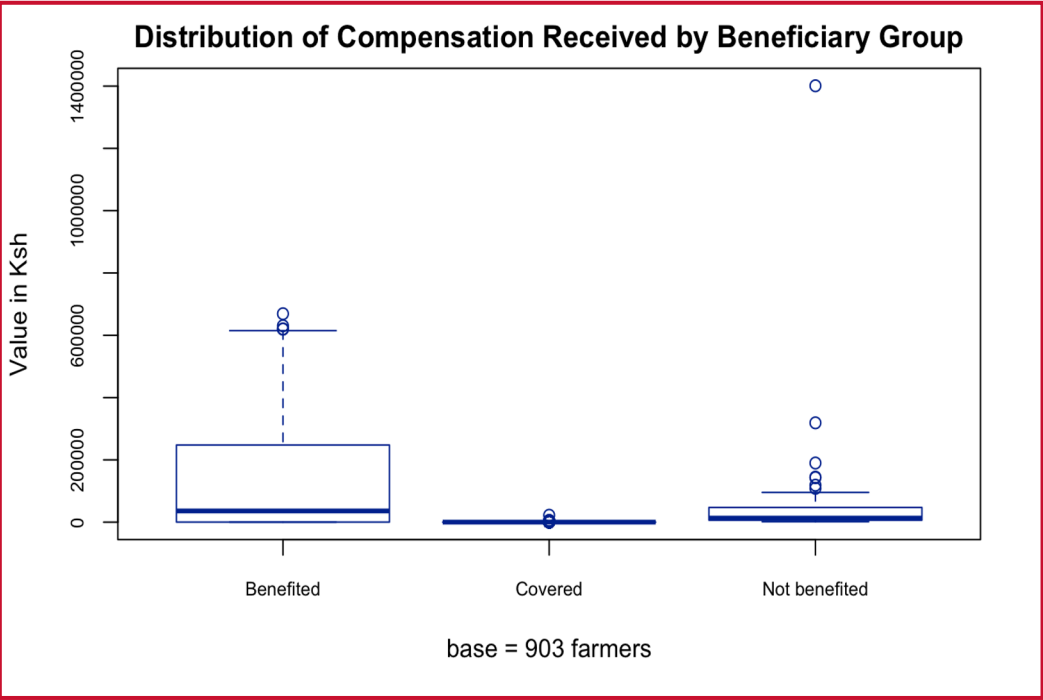


base = 903

- Median value indicates how half of the people in a group performs. In terms of median, farmers with hybrid product have received a compensation 500 times as that for WII farmers. With an average that is even higher for the group (146 K), we have observed several farmers who have received an outstanding amount of compensation (mostly from Trans Nozia and Bungoma).

Data source: ACRE sample

On average, farmers who did not benefit account for half of the hybrid group farmers who got compensation, received less than half of the premium paid



- Those who are not benefited are all from the group of hybrid product. On average, they have got (60K), less than half of what they have paid for premium (13K). There is an extreme case (in Trans Nzoia) where the farmer has claimed about 1.4m yet it is still less than what he had paid. Additional data will help understand what leaves these farmers who have paid high premium receive less than it.

Data source: ACRE sample

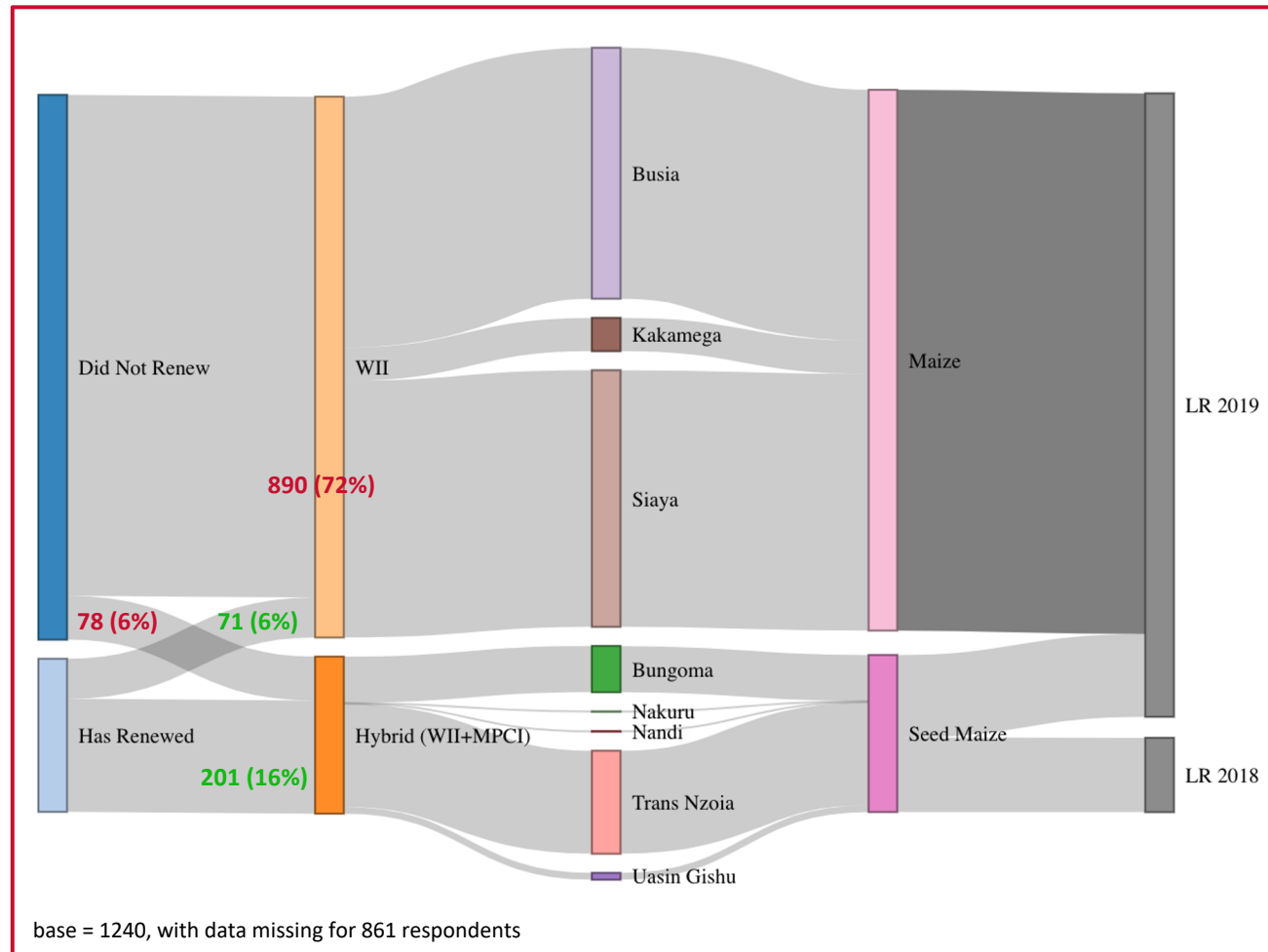
The background of the slide features a photograph of a person, likely a woman, standing in a field of tall, leafy plants. The entire image is overlaid with a semi-transparent red filter. The person is positioned in the upper right quadrant, looking down. The plants in the foreground and background are dense and green, though the red overlay gives them a monochromatic appearance.

# Renewal

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In this section, we analyzed the segment who did not renew the insurance, and posted a few questions for ACRE to take into consideration and action.

# Roughly 80% did not renew the product, most of who are farmers who got WII via bima pima cards



- The available data tell that, 80% farmers did not renew the product, and the vast majority are farmers who purchased WII via bima pima cards.
- Of note, this data is missing for 861 respondents, and 854 of them are WII farmers. Whether these farmers have renewed the product is to be valid before drawing a conclusion on the relation between dropout and product.
- If validated, a few questions ACRE might want to ask:
  - Bima pima provides an easier way for farmers to access, but does it place barriers for farmers to renew?
  - Do farmers drop out because they do not feel like benefiting from it?
  - What will be an effective way to maintain WII farmers?



The background of the slide features a photograph of a person, likely a woman, standing in a field of tall, green plants. The image is heavily overlaid with a semi-transparent red filter, which covers the entire scene. The person is positioned in the upper right quadrant, looking down. The field extends to the bottom of the frame, where some plants are in focus.

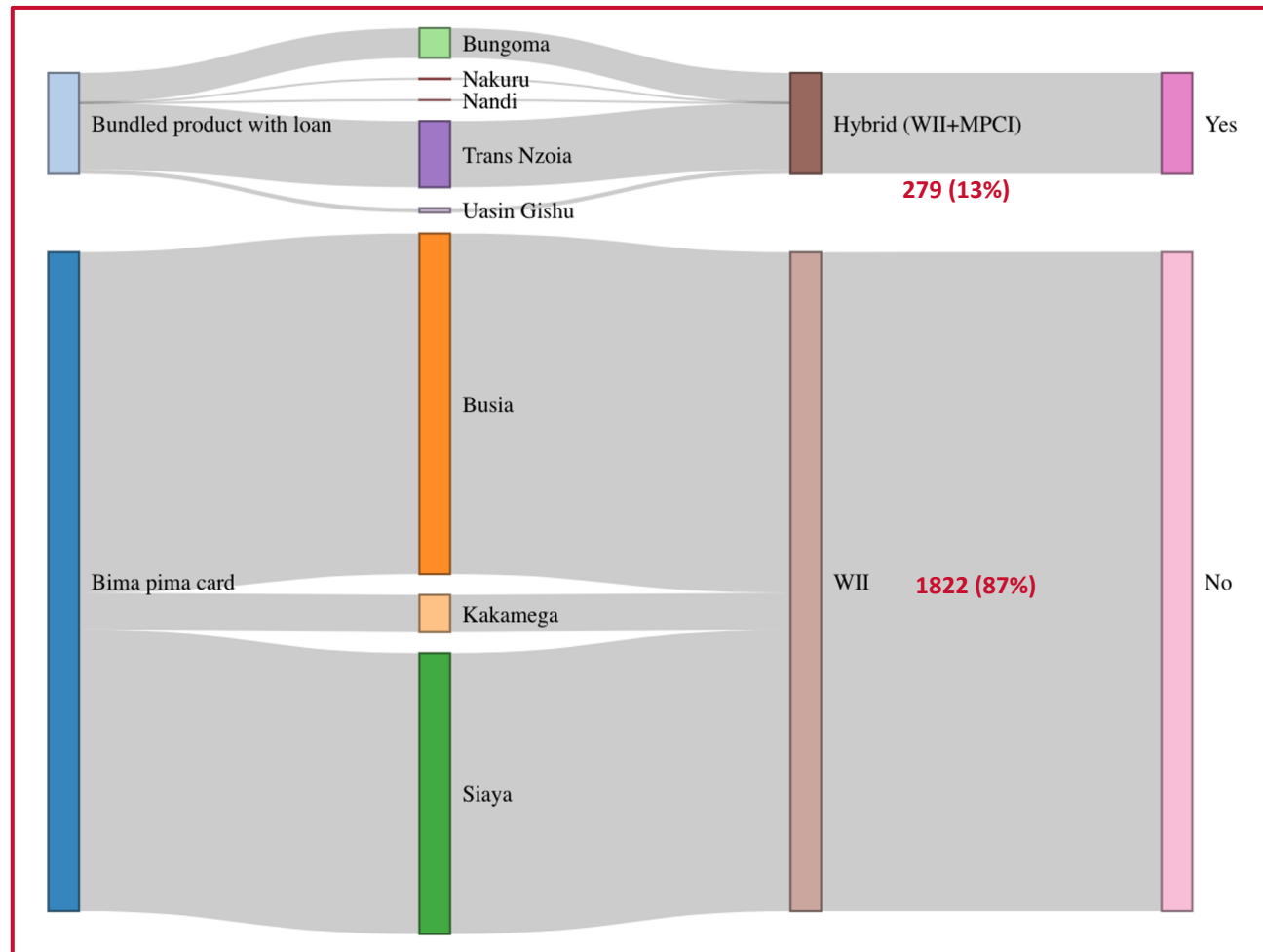
# Loan Uptake

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In this section, we analyzed the profile of loan takers and the situation of their repayment.

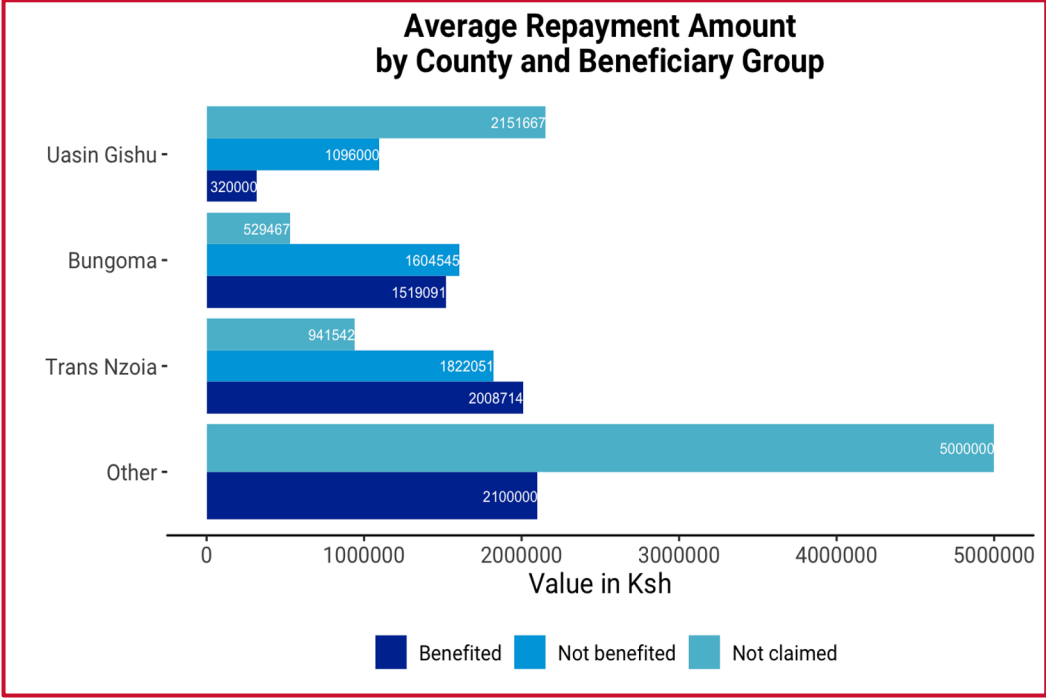
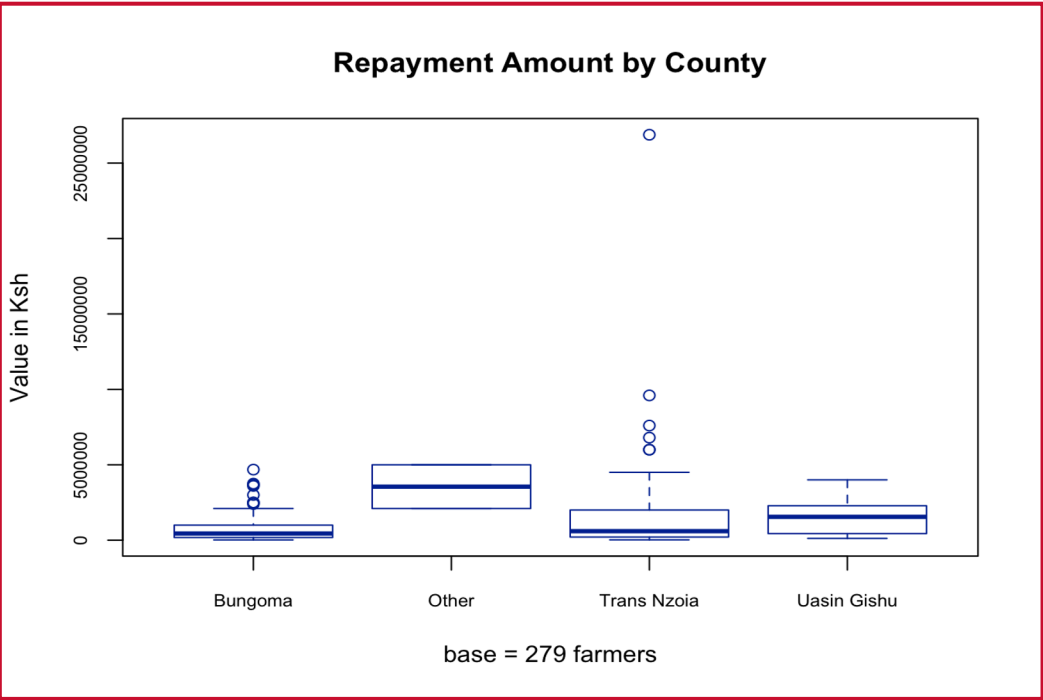


# All the loan takers in this sample are owners of hybrid product, onboarded through partnership



- Note that all of the 279 farmers who got hybrid product were onboarded via product bundled with loan, through the partnership with institutions.
- The onboarding channel likely explains the higher loan uptake rate within the group of hybrid owners.
- It is unclear where any of the WII farmers who know about ACRE product via bima pima card are aware of either the opportunity of getting loan or the information of how to get it from ACRE; and if so, how many of them would like to take one.

In Uasin Gishu, those who did not benefit from the hybrid product have so far repaid 3 times as those who benefited



- In Uasin Gishu, those who did not benefited from the product have an average repayment amount 3 times as those who benefited.
- Data on loan or outstanding amount, what it was spent for, and repayment sources will help evaluate the impact of loan provision.

Data source: ACRE sample



Are the observed difference across  
groups and regions statistically  
meaningful?

*Vast majority* farmers who got hybrid (WII + MPCI) paid significantly lower for premium, with the remaining 4% (*from Bungoma, Trans Nzoia*) in the group paid significantly higher



### ANOVA and Tukey HSD to Test Difference across Premium Payee Groups

```

              Df      Sum Sq    Mean Sq F value    Pr(>F)
premium_type  2 1858318793333 929159396666   301.5 <0.0000000000000002 ***
Residuals    2098 6466017237614   3081991057
---

```

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
 Tukey multiple comparisons of means  
 95% family-wise confidence level

Fit: aov(formula = premium ~ premium\_type, data = pct2)

```

$premium_type
              diff      lwr      upr      p adj
Lower-Higher  9333.556 -32599.13  51266.25 0.8605742
Normal-Higher -78620.058 -119907.25 -37332.87 0.0000250
Normal-Lower  -87953.614 -96458.21 -79449.02 0.0000000

```

- As the ANOVA test is significant, Tukey HSD (Tukey Honest Significant Differences) was further computed for performing multiple pairwise-comparison between the means of groups.
- Premium amount paid between any two counties is also significantly different, except for Uasin Gishu and Bungoma, Uasin Gishu and Trans Nzoia, and among the 3 counties covered by WII (i.e. Siaya, Busia and Kakamega)

### ANOVA and Tukey HSD to Test Difference across Counties

```

              Df      Sum Sq    Mean Sq F value    Pr(>F)
county        6 2025049571005 337508261834   112.2 <0.0000000000000002 ***
Residuals    2094 6299286459942   3008255234
---

```

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
 Tukey multiple comparisons of means  
 95% family-wise confidence level

Fit: aov(formula = premium ~ county, data = pct2)

```

$county
              diff      lwr      upr      p adj
Busia-Bungoma   -59281.79492 -77918.675 -40644.915 0.0000000
Kakamega-Bungoma -59336.78839 -83292.878 -35380.699 0.0000000
Other-Bungoma    231723.20190 115879.261 347567.143 0.0000001
Siaya-Bungoma    -59251.81226 -78046.484 -40457.140 0.0000000
Trans Nzoia-Bungoma 38001.96904 16491.689 59512.249 0.0000042
Uasin Gishu-Bungoma 40916.26857 -9112.750 90945.287 0.1932028
Kakamega-Busia   -54.99348 -16853.462 16743.475 1.0000000
Other-Busia      291004.99682 176427.019 405582.975 0.0000000
Siaya-Busia       29.98266  -7814.379  7874.344 1.0000000
Trans Nzoia-Busia 97283.76396  84207.585 110359.943 0.0000000
Uasin Gishu-Busia 100198.06348  53174.697 147221.430 0.0000000
Other-Kakamega    291059.99029 175497.566 406622.415 0.0000000
Siaya-Kakamega     84.97613 -16888.384 17058.336 1.0000000
Trans Nzoia-Kakamega 97338.75743  77400.166 117277.348 0.0000000
Uasin Gishu-Kakamega 100253.05696  50879.401 149626.713 0.0000001
Siaya-Other      -290975.01416 -405578.764 -176371.265 0.0000000
Trans Nzoia-Other -193721.23286 -308801.517 -78640.948 0.0000151
Uasin Gishu-Other -190806.93333 -314434.124 -67179.742 0.0001128
Trans Nzoia-Siaya 97253.78130  83953.673 110553.889 0.0000000
Uasin Gishu-Siaya 100168.08082  53081.953 147254.208 0.0000000
Uasin Gishu-Trans Nzoia 2914.29953 -45320.085 51148.684 0.9999973

```

Data source: ACRE sample



Farmers who have *benefited* (Bangoma, Trans Nzoia for hybrid, Busia for WII) have been compensated significantly *higher* **than who did not benefited** (Bangoma, Trans Nzoia for hybrid).



# Additional information on degree of loss and level of rainfall is needed to assess the impact of insurance on the WII farmers

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
claim_type	3	1701460374640	567153458213	234.5	<0.0000000000000002 ***
Residuals	2097	5071262714466	2418341781		
---					
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Tukey multiple comparisons of means					
95% family-wise confidence level					
Fit: aov(formula = value_claimed ~ claim_type, data = benefit)					
\$claim_type					
		diff	lwr	upr	p adj
Covered-Benefited		-134834.7501	-149073.957	-120595.543	0.0000000
Not benefited-Benefited		-74415.4864	-95912.682	-52918.291	0.0000000
Not claimed yet-Benefited		-135122.2052	-149086.767	-121157.644	0.0000000
Not benefited-Covered		60419.2637	43053.922	77784.606	0.0000000
Not claimed yet-Covered		-287.4551	-6155.562	5580.651	0.9992864
Not claimed yet-Not benefited		-60706.7188	-77847.578	-43565.860	0.0000000

- There are four beneficiary groups under the test:
  - benefited
  - not benefited
  - covered (i.e. compensation received = premium paid)
  - not claimed yet (i.e. compensation = 0)
- Difference between any 2 groups is significant, except for “covered” and “not claimed yet”.
- Additional data such as the magnitude of loss and rainfall precipitation is required before concluding on how much WII has helped the farmers overcome weather related risks.



# Summary of Findings

# Summary of Findings



## User Profile

- **87%** of the sample are from **3 counties** in west Kenyan, Busia, Kakamega, and Siaya, **bimodal** with 2 raining seasons, covered for **maize** value chain.
- **Half** are “**early adopters**” who were enrolled in 2018
- **Half** of the farmers in **Uasin Gishu** own a piece of land of 50 acres or more
- **All** farmers under **bimodal** got **WII** via **bima pima cards** from agro-dealers, whereas the rest under **unimodal** were onboarded via **product bundled with loan** through **institutions** for **hybrid product (WII + MPCl)**



## User Experience

- Bima pima card is an easy accessible way for individual farmers to get WII
- All farmers receiving WII via bima pima cards paid a premium price as 10% of the amount covered. All farmers with hybrid product paid either higher or lower premium than the majority
- More farmers have not yet claimed a loss to ACRE, true for both products
- The vast majority of WII farmers who claimed were compensated for exactly the same amount as paid for premium
- More than half of the Hybrid farmers who claimed get compensated less than the premium they paid



## Significant Discrepancies

- 96% of farmers with Hybrid paid significantly lower for premium, the remaining 4% (from Bungoma, Trans Nzoia) paid significantly higher
- Half of those who claimed in Trans Nzoia and Bungoma have received less than the premium, the other half got compensated more than premium
- As to compensation, significant gaps were identified among farmers in most counties, particularly salient for Bungoma, Trans Nzoia and Busia





What information is needed to  
inform inference and action





## User Profile

- Additional demographic data
- Accessibility: how easily can an average farmer earn about ACRE, and know where to find an agro-dealer for products
- A representative sample



## Functionality of Product

- How each channel works
- How is the compensation mechanism designed (e.g. what makes a farmer receiving much more than the other in the same county with similar premium paid)
- Loan: amount, purpose, outstanding payment, availability (especially for WII farmers)



## Magnitude of Impact

- Measure of loss, measure of farm outcome
- Rainfall precipitation and/or standards applied to each region
- Other factors to consider when comparing 2 products



# Appendix

## County, Season (modal) and the Value Chain

County	Season	Value Chain	Count	Percentage
Bungoma	Unimodal (Mar-Aug)	Seed Maize	82	4
Busia	Bimodal (March-Aug,Sep-Dec)	Maize	942	45
Kakamega	Bimodal (March-Aug,Sep-Dec)	Maize	103	5
Nakuru	Unimodal (Mar-Aug)	Seed Maize	1	0
Nandi	Unimodal (Mar-Aug)	Seed Maize	1	0
Siaya	Bimodal (March-Aug,Sep-Dec)	Maize	777	37
Trans Nzoia	Unimodal (Mar-Aug)	Seed Maize	183	9
Uasin Gishu	Unimodal (Mar-Aug)	Seed Maize	12	1

## County, Season (modal) and Enroll Time

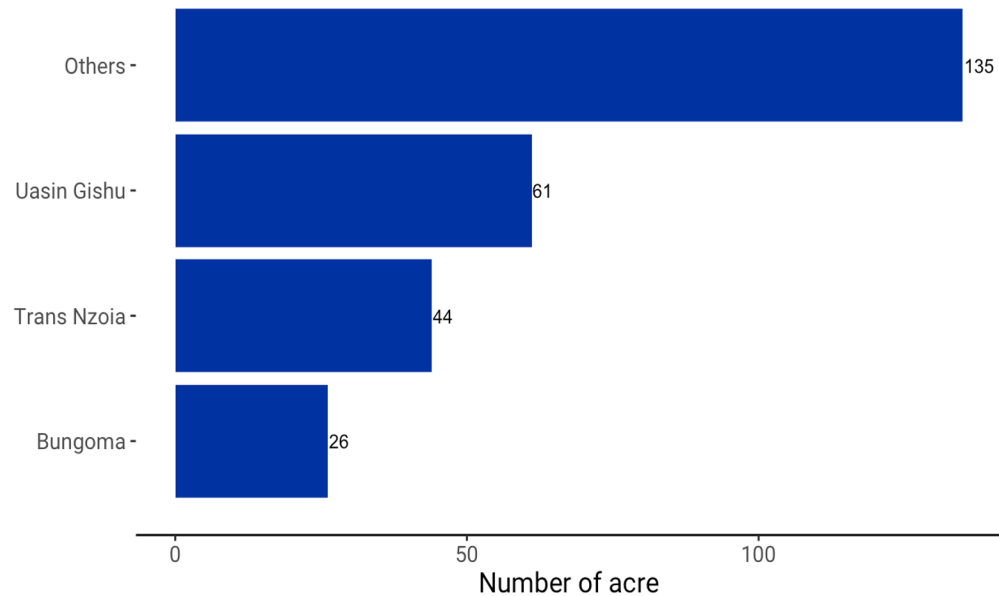
County	Season	Enroll Season	Count	Percentage
Bungoma	Unimodal (Mar-Aug)	LR 2018	42	2
Bungoma	Unimodal (Mar-Aug)	LR 2019	40	2
Busia	Bimodal (March-Aug,Sep-Dec)	LR 2019	446	21
Busia	Bimodal (March-Aug,Sep-Dec)	SR 2018	496	24
Kakamega	Bimodal (March-Aug,Sep-Dec)	LR 2019	59	3
Kakamega	Bimodal (March-Aug,Sep-Dec)	SR 2018	44	2
Nakuru	Unimodal (Mar-Aug)	LR 2019	1	0
Nandi	Unimodal (Mar-Aug)	LR 2018	1	0
Siaya	Bimodal (March-Aug,Sep-Dec)	LR 2019	456	22
Siaya	Bimodal (March-Aug,Sep-Dec)	SR 2018	321	15
Trans Nzoia	Unimodal (Mar-Aug)	LR 2018	83	4
Trans Nzoia	Unimodal (Mar-Aug)	LR 2019	100	5
Uasin Gishu	Unimodal (Mar-Aug)	LR 2018	6	0

Data source: ACRE sample

## Average Farm Size for Counties with Unimodal Product

## County, Onboarding Channel, Training Host and Topic

**Average Farm Size for Selected ACRE Farmers**



Channel	County	Host	Topic	Count	Percentage
Bima pima card	Busia	GeorgeTown Trained Champion	Insurance for Risk Transfer and Saving	942	45
Bima pima card	Kakamega	GeorgeTown Trained Champion	Insurance for Risk Transfer and Saving	103	5
Bima pima card	Siaya	GeorgeTown Trained Champion	Insurance for Risk Transfer and Saving	777	37
Bundled product with loan	Bungoma	Kenya Seed & ACRE Rep.	Good Agronomic Practices	82	4
Bundled product with loan	Nakuru	Kenya Seed & ACRE Rep.	Good Agronomic Practices	1	0
Bundled product with loan	Nandi	Kenya Seed & ACRE Rep.	Good Agronomic Practices	1	0
Bundled product with loan	Trans Nzoia	Kenya Seed & ACRE Rep.	Good Agronomic Practices	183	9
Bundled product with loan	Uasin Gishu	Kenya Seed & ACRE Rep.	Good Agronomic Practices	12	1

Data source: ACRE sample

### County, Onboarding Channel, and Product

Channel	County	Product	Count	Percentage
Bima pima card	Busia	WII	942	45
Bima pima card	Kakamega	WII	103	5
Bima pima card	Siaya	WII	777	37
Bundled product with loan	Bungoma	Hybrid (WII+MPCI)	82	4
Bundled product with loan	Nakuru	Hybrid (WII+MPCI)	1	0
Bundled product with loan	Nandi	Hybrid (WII+MPCI)	1	0
Bundled product with loan	Trans Nzoia	Hybrid (WII+MPCI)	183	9
Bundled product with loan	Uasin Gishu	Hybrid (WII+MPCI)	12	1

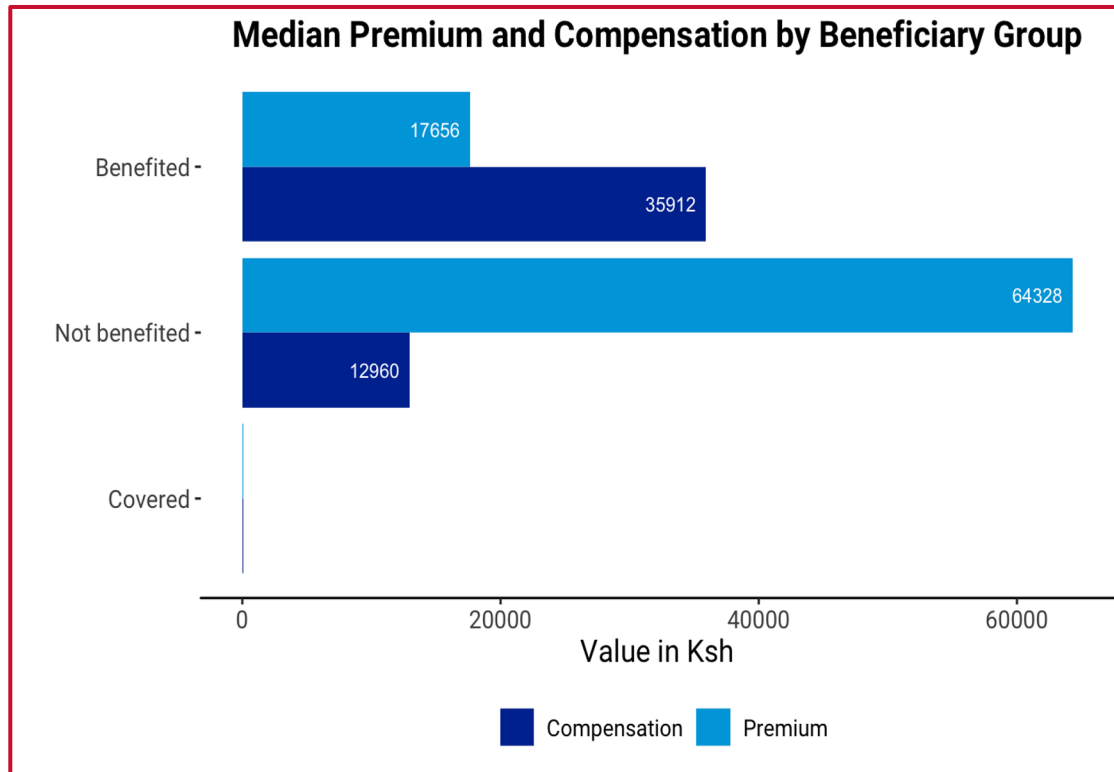
### County, Product, Crop Covered, and Year of Purchase

Product	County	Crop Covered	Year of Purchase	Count	Percentage
Hybrid (WII+MPCI)	Bungoma	Seed Maize	LR 2018	42	2
Hybrid (WII+MPCI)	Bungoma	Seed Maize	LR 2019	40	2
Hybrid (WII+MPCI)	Nakuru	Seed Maize	LR 2019	1	0
Hybrid (WII+MPCI)	Nandi	Seed Maize	LR 2018	1	0
Hybrid (WII+MPCI)	Trans Nzoia	Seed Maize	LR 2018	83	4
Hybrid (WII+MPCI)	Trans Nzoia	Seed Maize	LR 2019	100	5
Hybrid (WII+MPCI)	Uasin Gishu	Seed Maize	LR 2018	6	0
Hybrid (WII+MPCI)	Uasin Gishu	Seed Maize	LR 2019	6	0
WII	Busia	Maize	LR 2019	446	21
WII	Busia	Maize	SR 2018	496	24
WII	Kakamega	Maize	LR 2019	59	3
WII	Kakamega	Maize	SR 2018	44	2
WII	Siaya	Maize	LR 2019	456	22

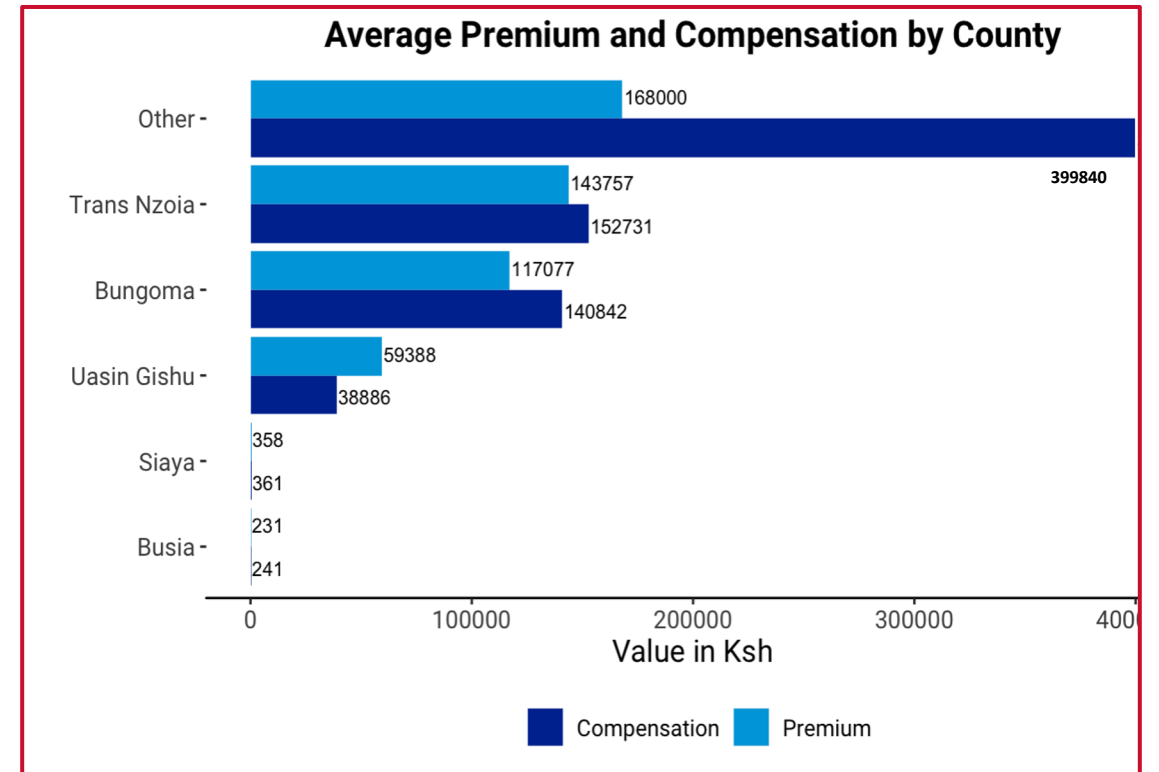
Data source: ACRE sample



## Median Value of Premium and Value Claimed, by Beneficiary Group



## Average Value of Premium and Value Claimed, by County

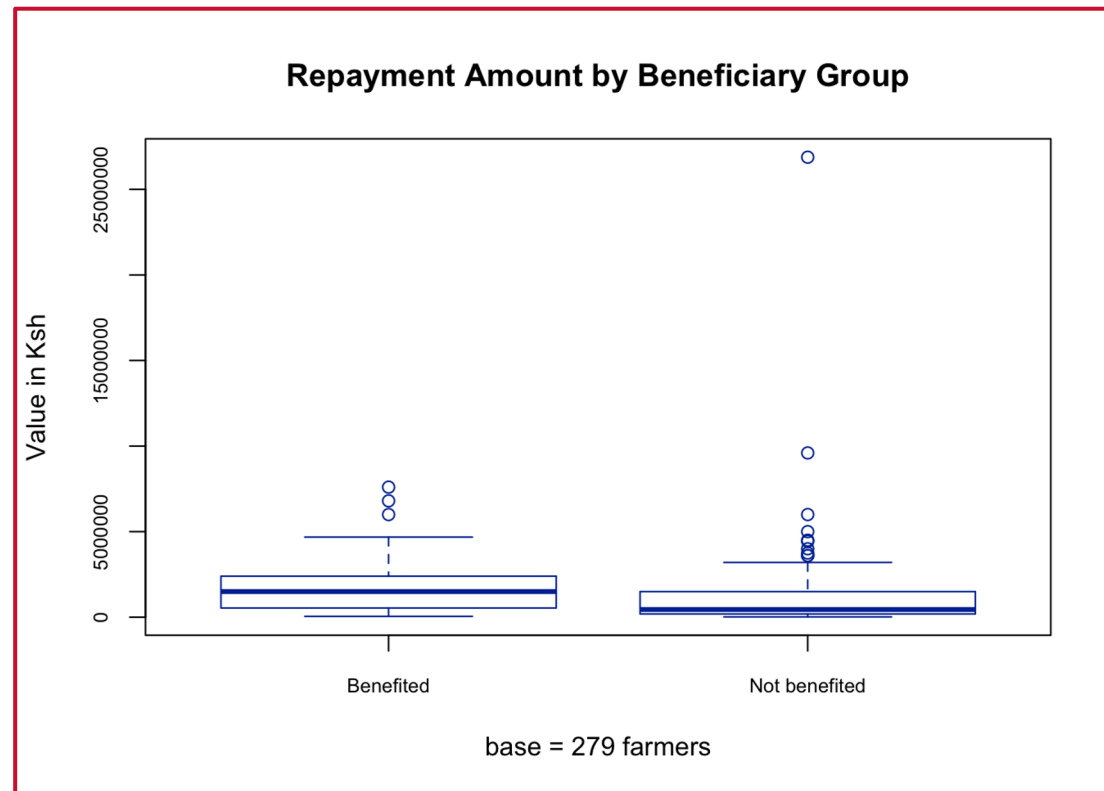


Data source: ACRE sample

## County, Product, Onboarding Channel, and Loan Uptake

County	Product	Onboarding Channel	Taken Loan	Count	Percentage
Bungoma	Hybrid (WII+MPCI)	Bundled product with loan	No	17	1
Bungoma	Hybrid (WII+MPCI)	Bundled product with loan	Yes	65	3
Busia	WII	Bima pima card	No	910	43
Busia	WII	Bima pima card	Yes	32	2
Kakamega	WII	Bima pima card	No	97	5
Kakamega	WII	Bima pima card	Yes	6	0
Nakuru	Hybrid (WII+MPCI)	Bundled product with loan	Yes	1	0
Nandi	Hybrid (WII+MPCI)	Bundled product with loan	Yes	1	0
Siaya	WII	Bima pima card	No	744	35
Siaya	WII	Bima pima card	Yes	33	2
Trans Nzoia	Hybrid (WII+MPCI)	Bundled product with loan	No	59	3
Trans Nzoia	Hybrid (WII+MPCI)	Bundled product with loan	Yes	124	6
Uasin Gishu	Hybrid (WII+MPCI)	Bundled product with loan	No	2	0

## Repayment Amount by Beneficiary Group



Data source: ACRE sample



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