

# Evaluation: how can we help farmers do better?

A workshop for the ECHO International Agriculture  
Conference 2016

# Outline

- ❑ Why evaluate? --share our experience (5 minutes)
- ❑ Some evaluation tools we use (10 minutes)
  - ❑ Impact evaluation
  - ❑ NDVI (Vegetation Index)
  - ❑ FRS (Farmer recall survey)
  - ❑ Poverty Index
- ❑ Some lessons learned (40 minutes)
- ❑ Q&A (5 minutes)

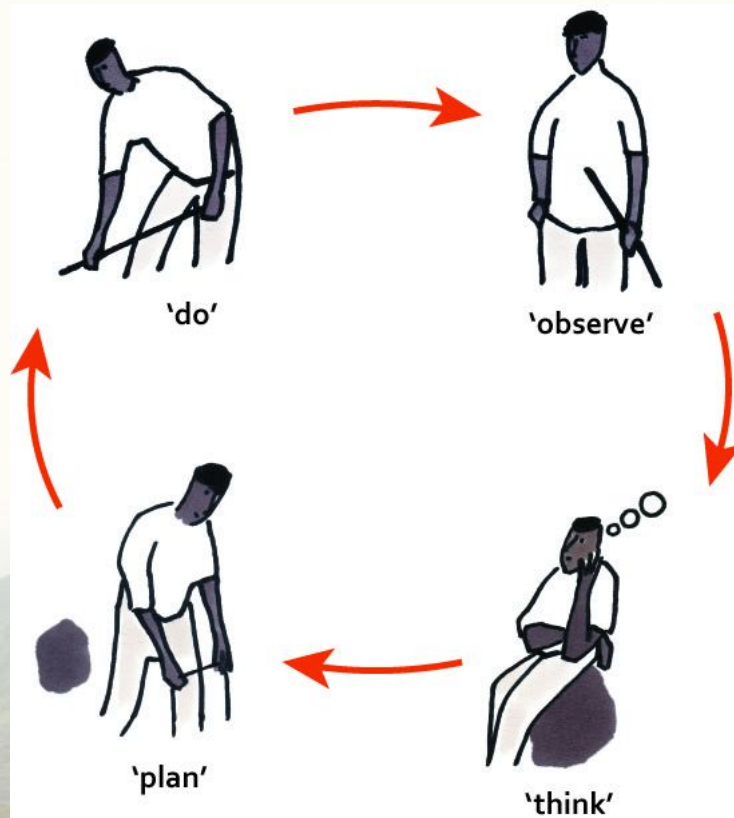
# What is your current field of work?



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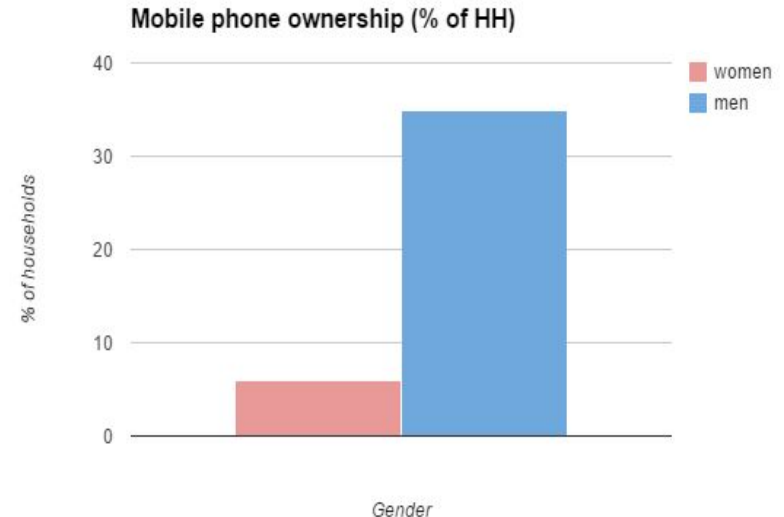
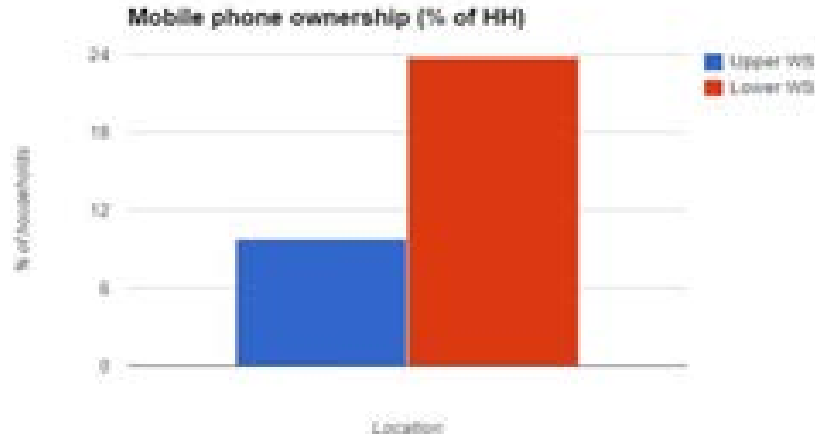
# Why evaluate?



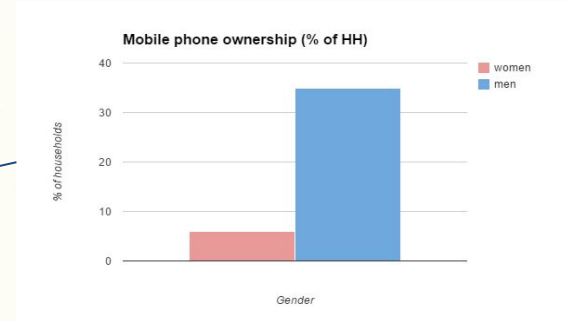
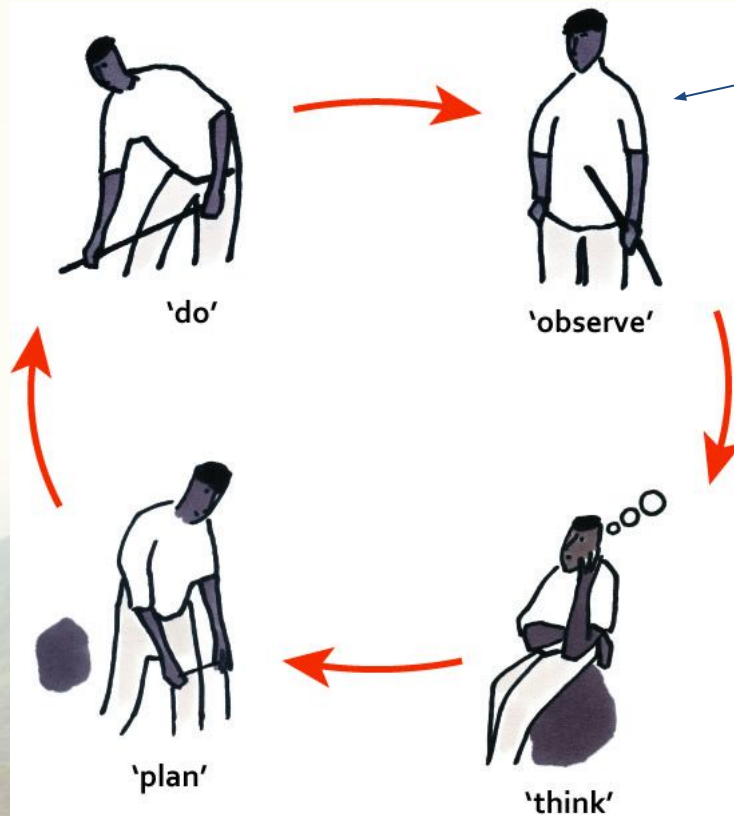
# Why evaluate?

- ❑ Understand the context
- ❑ Find out how we are doing (hurting or helping?)
- ❑ Help farmers make better decisions

Eg. mobile phone ownership in target watershed in DR.Congo

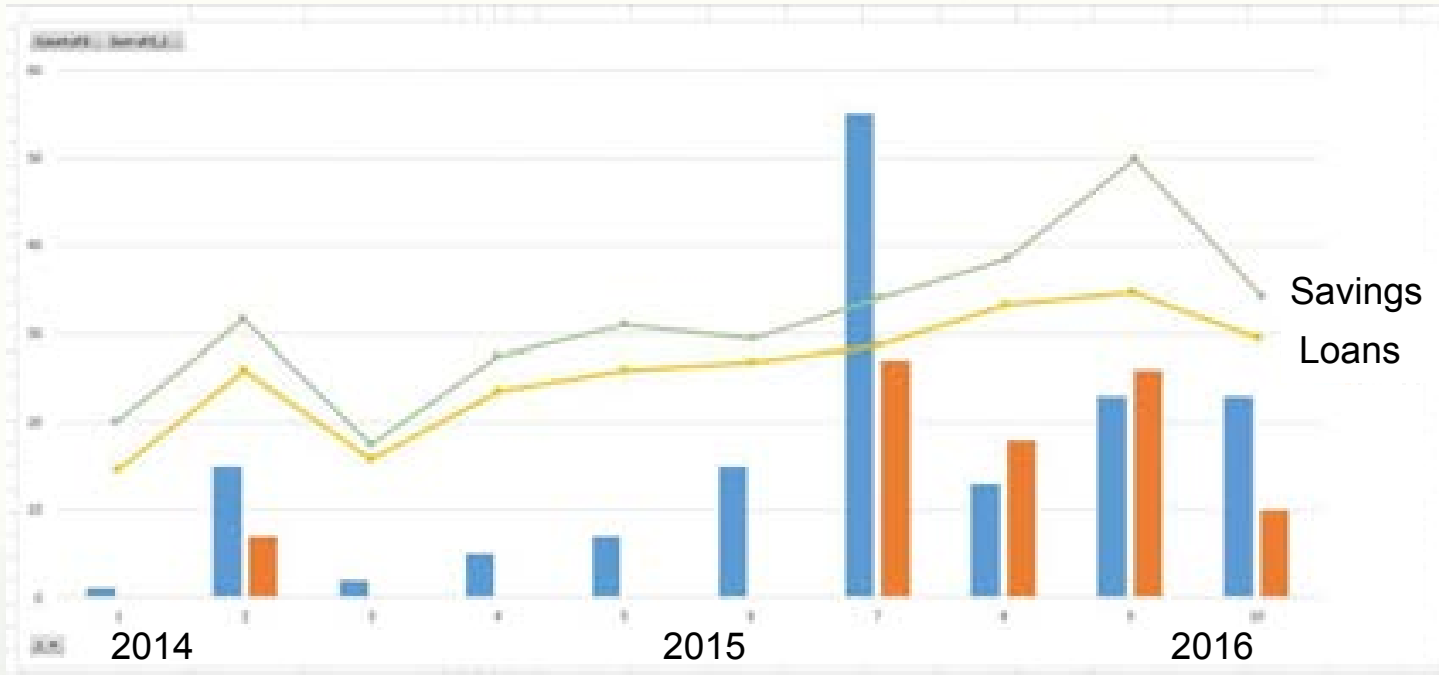


# Why evaluate?



# Why evaluate?

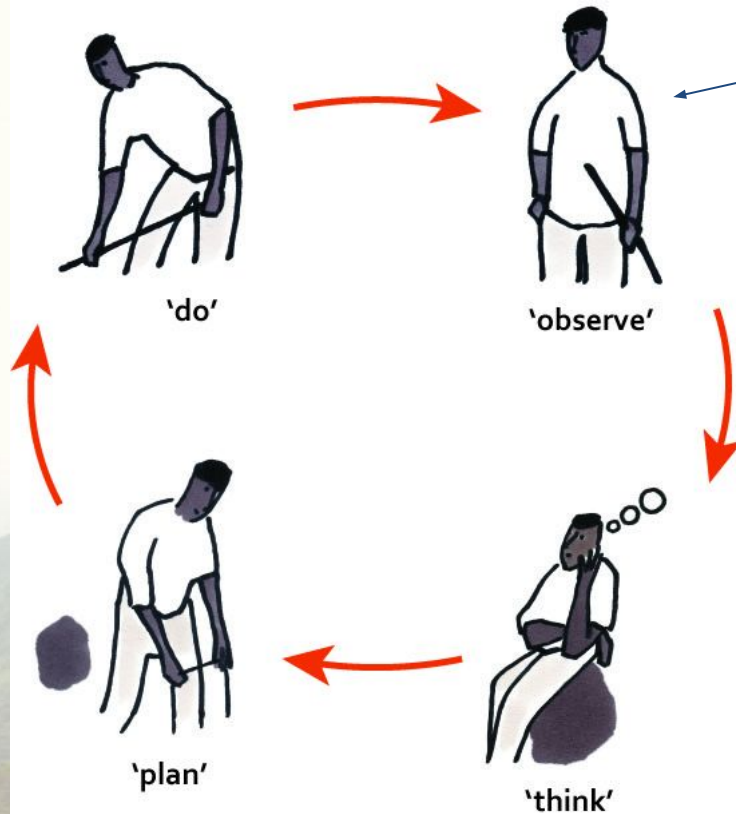
Investment in savings groups in Burundi



<http://www.crisis.acled.com/category/burundi/>

Number of incidences  
Number of fatalities

# Why evaluate?





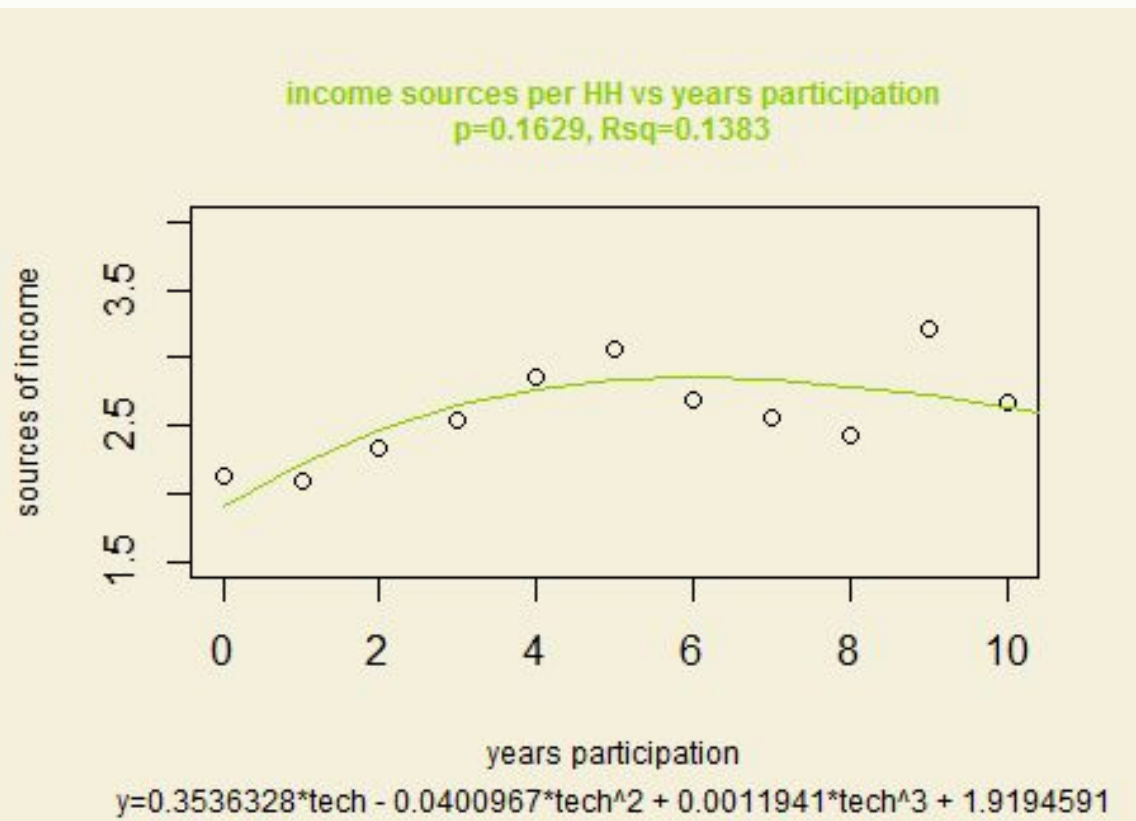
# Some evaluation tools we use

- ❑ Impact Evaluation
- ❑ NDVI, Normalized Difference Vegetation Index
- ❑ FRS, Farmer Recall Survey
- ❑ Poverty Index

# Some evaluation tools we use

## Impact Evaluation

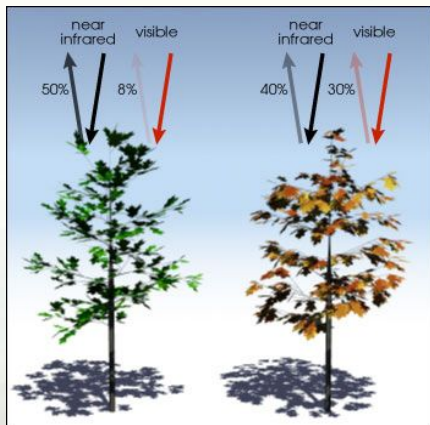
- Looks at long term results
- Once every 3 years
- Nearly 2000 households surveyed in 6 countries in 2014
- quantitative (household survey) and qualitative (participatory workshops)



# Some evaluation tools we use

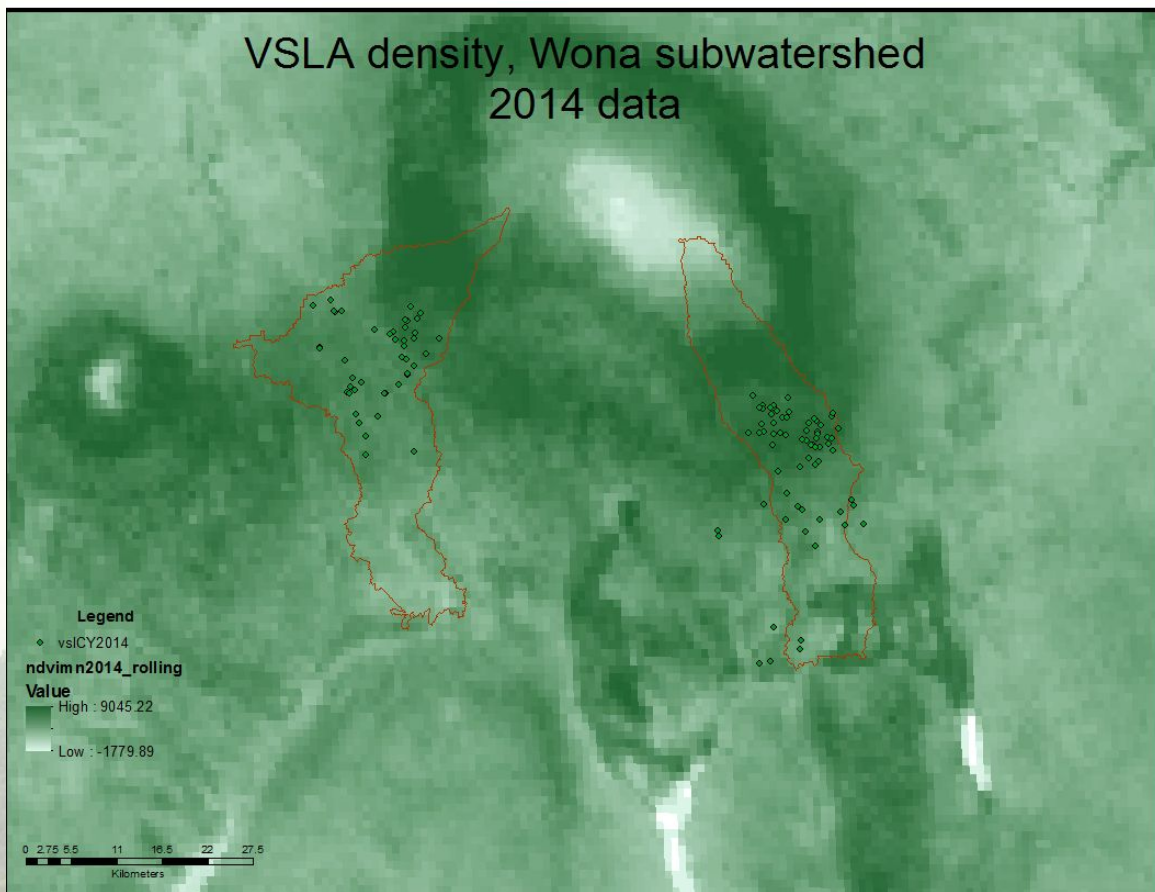
## NDVI

- Normalized difference vegetation index
- Use satellite data to measure vegetation
- Ability to quantify effect of tree planting



$$\frac{(0.50 - 0.08)}{(0.50 + 0.08)} = 0.72$$

$$\frac{(0.4 - 0.30)}{(0.4 + 0.30)} = 0.14$$

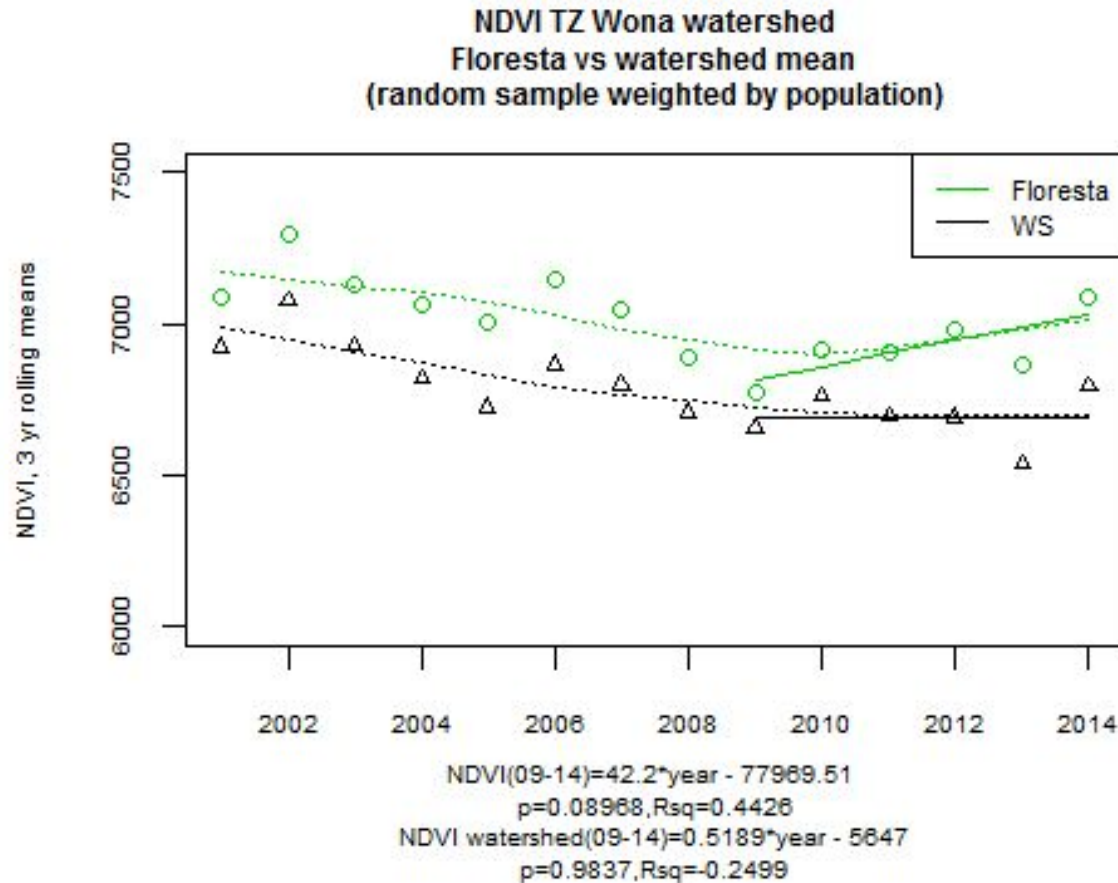


<http://earthobservatory.nasa.gov/Features/MeasuringVegetation/>

# Some evaluation tools we use



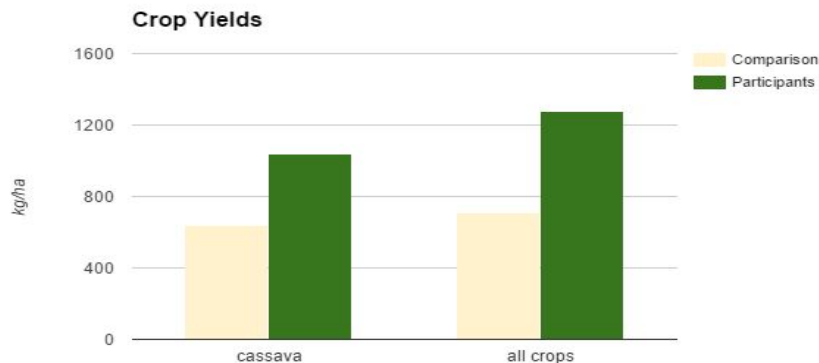
## NDVI



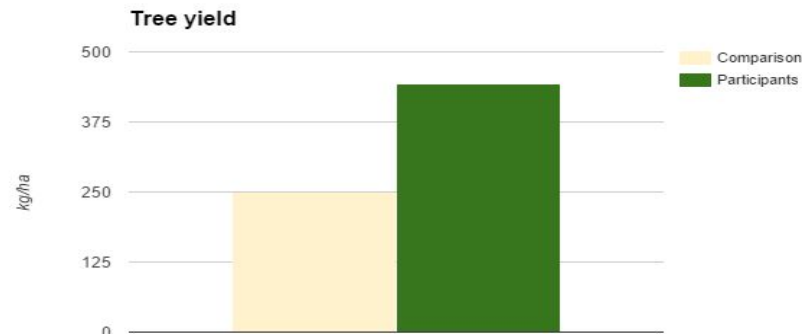
# Some evaluation tools we use

## FRS

- Farmer recall survey
- Ask farmers about yields as soon as possible after cropping season
- Studies show FRS equally or more accurate than field plots






62% increase in cassava yields,  
79.8% increase in overall crop yields



77% increase in tree yields

# Some evaluation tools we use

## Multidimensional Poverty Index


-  Combines several indicators to create representative picture of poverty
-  Based on methodology adopted by UNDP and the World Bank
-  Multidimensional--more than just *income*

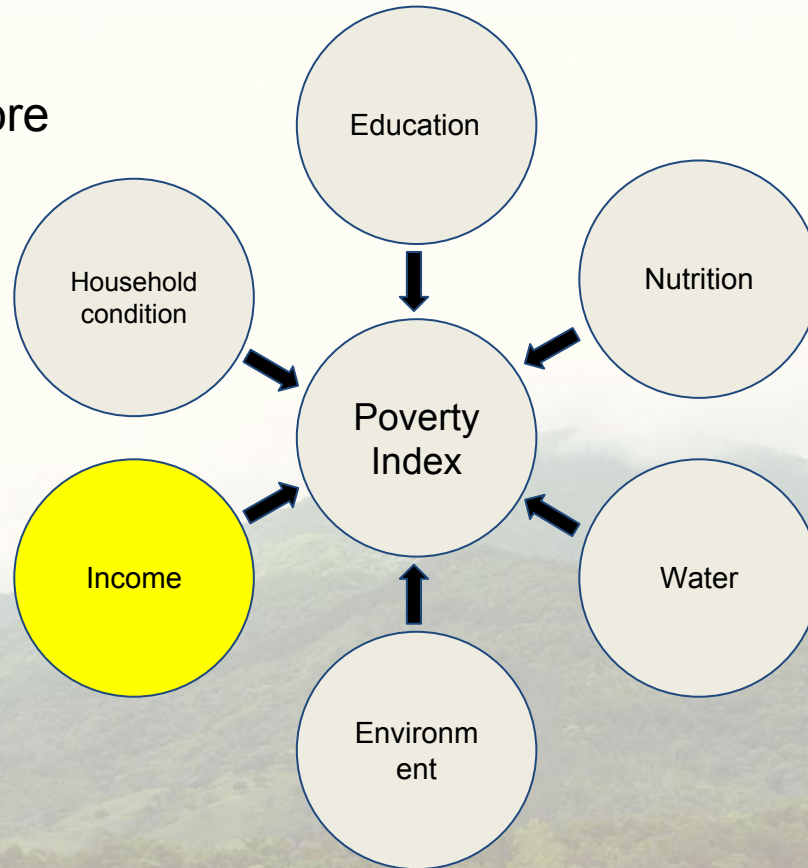
|                  |                                  |
|------------------|----------------------------------|
| Living standards | Dirt floors                      |
|                  | Rooms per household              |
|                  | Households owning land           |
|                  | Regular savings                  |
|                  | Income diversity                 |
|                  | Time to fetch clean water        |
| Education        | Girls attending secondary school |
| Food security    | Meals per day                    |
|                  | Nutrition diversity              |
|                  | Crop diversity                   |
|                  | Farming technique diversity      |
| Environment      | Soil quality                     |



# Some evaluation tools we use

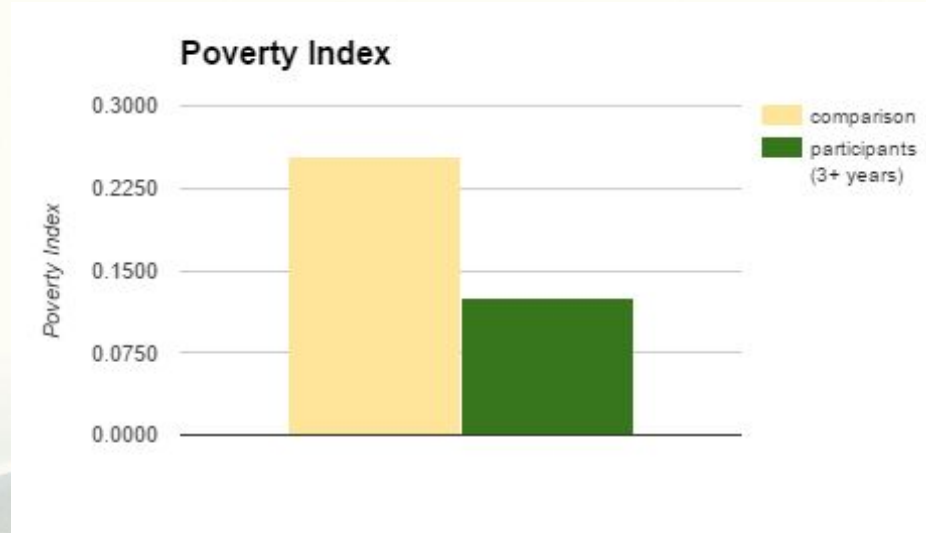
## Multidimensional Poverty Index

-  Multidimensional--more than just income



# Some evaluation tools we use

## Multidimensional Poverty Index





# Some lessons learned

- ❑ Design
- ❑ Sample
- ❑ Time
- ❑ Indicators
- ❑ Training
- ❑ Handling data
- ❑ Data analysis
- ❑ Getting data to those who need it



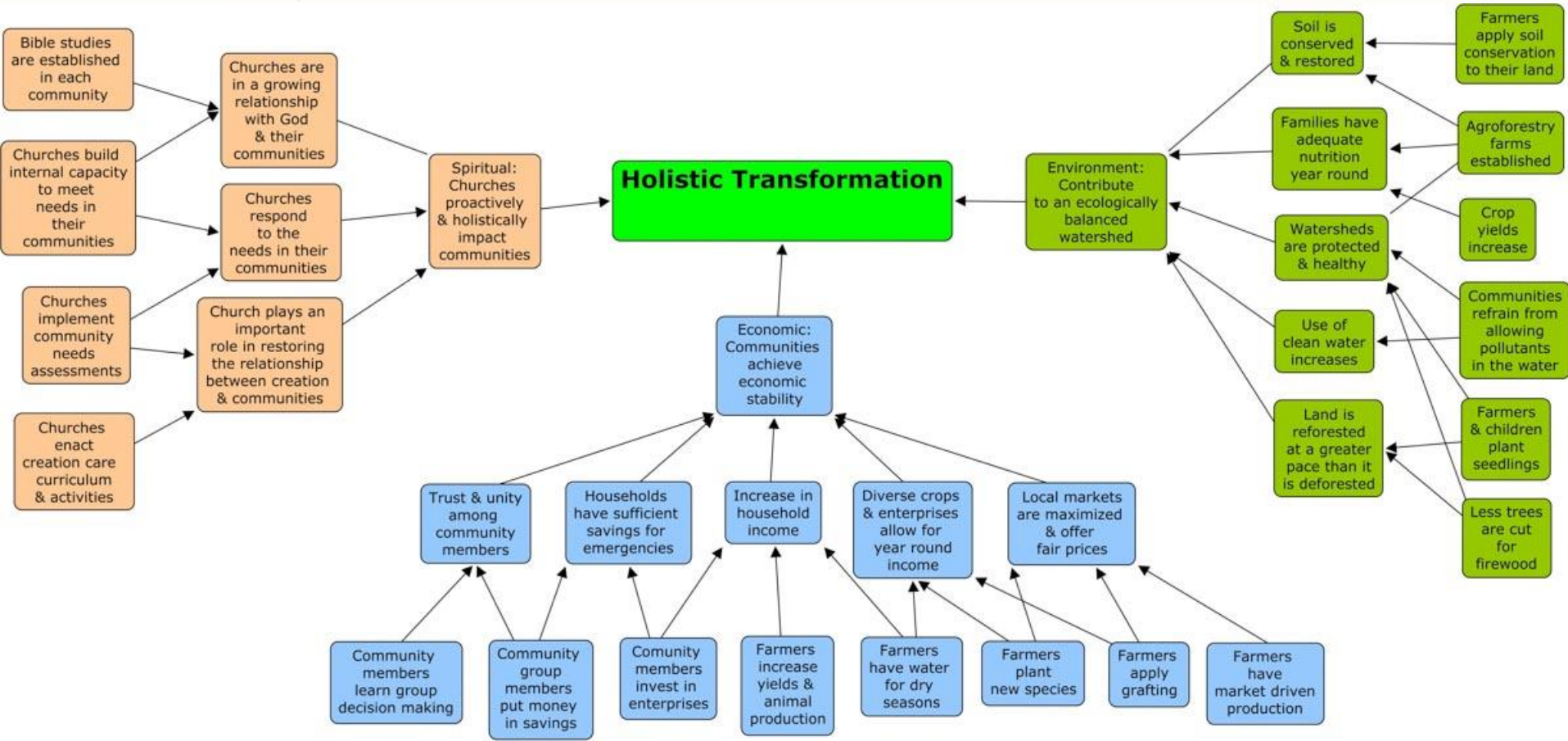
# Design

- ❏ Use a logic model
  - ❏ “How does change happen?”
  - ❏ Input from key stakeholders
  - ❏ Can be derived from Logical framework, Theory of change



# Design

## Use a logic model



# Design

What components?

Stories &  
photos

Household  
Survey

Remote  
sensing

Participatory  
workshops

3rd Party  
Data

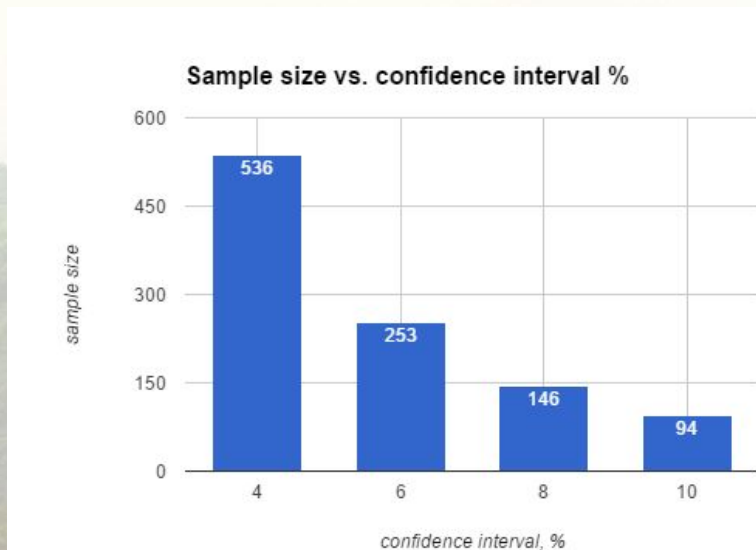
Interviews





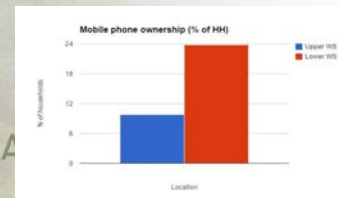
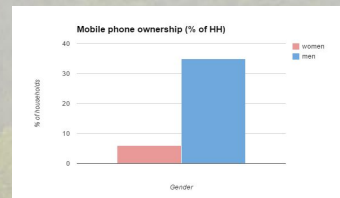
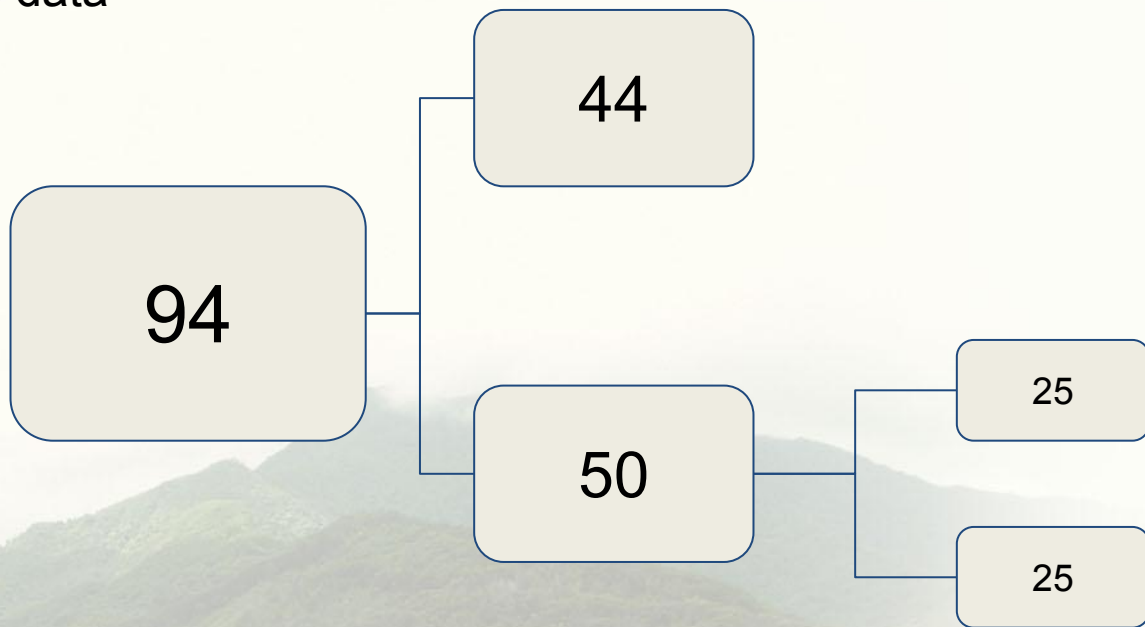
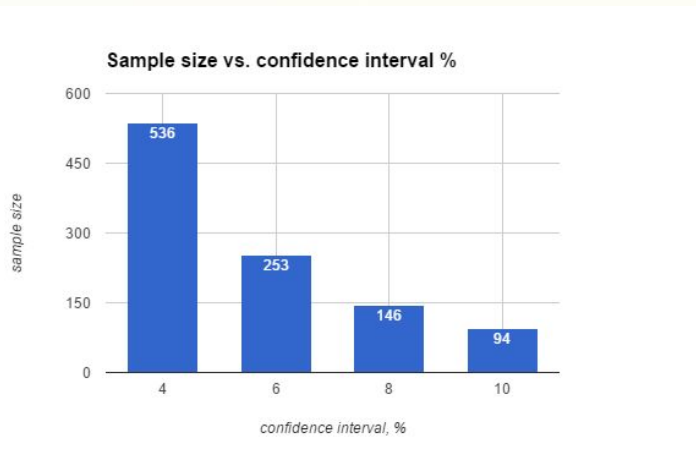
# Sample

- Sample should be random--include program participants & non-participants
- Gold standard: randomized control trials
- Sample size based on population in question and level of precision required
  - Many tools available to help estimate sample size, eg: <http://www.surveysystem.com/sscalc.htm>
  - Larger sample more important if you are going to disaggregate data



# Sample



- Larger sample more important if you are going to disaggregate data



# Time




## Survey length

-  Survey fatigue affects data quality
-  Target only essential data







## Evaluation length

-  Season is important in farming communities and survey questions may be season dependent--duration of any evaluation activity should be as short as possible



## Preparation time

-  Input from key stakeholders
-  Evaluation design
-  Development of training materials
-  Training & implementation



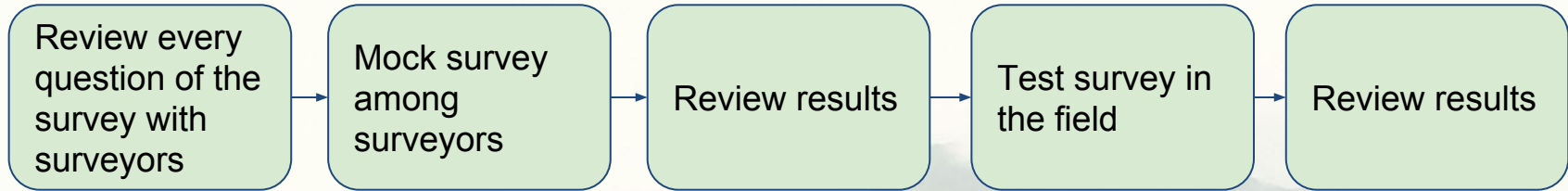
# Indicators

- ❑ Return on Investment (or effort) for indicators used in a survey
  - ❑ some kinds of data are easier to collect than others
- ❑ End use
  - ❑ who is the target audience of evaluation results? Farmers? Decision-makers? Donors? Public?
- ❑ Wording is critical--eliminate all possible ambiguity
  - ❑ Eg. "How much land do you own?"
  - ❑ Better:
    1. Do you own land? (yes/no)
    2. If yes, how much land do you own?
    3. Please specify units of land"
- ❑ Eg. type of flooring material
  - ❑ Easy to collect data
  - ❑ Reliable
  - ❑ Correlates with level of household well-being
  - ❑ Can contribute to calculation of a poverty index



# Training

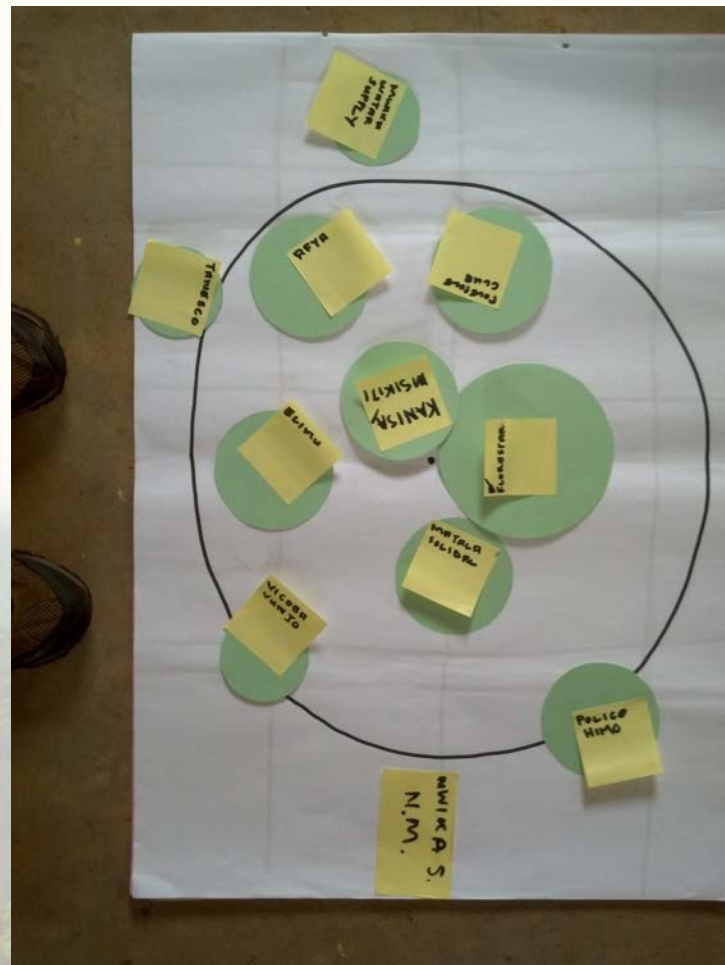
- ❑ Written guide
- ❑ Where possible, use local non-staff as surveyors
- ❑ In person training



- ❑ Murphy's law applies:
  - ❑ “anything that can be misinterpreted will be misinterpreted”

# Handling data

- Data are one of the main products of an evaluation
  - Assuring product quality is critical
- Participatory workshops
  - Photos of workshop results
  - Location, and Group type (control or treatment) written on workshop results



# Handling data

## Surveys

- Survey form is clearly printed and easy to complete (if using paper)
- Hire a print shop
- Extra copies available to every surveyor
- Every survey form numbered with a unique number
- Name of surveyor recorded
- Completed survey forms submitted daily if possible
- Data entry online if possible
- Use data validation rules (eg. numeric only, range 1-100, etc)
- Qualified data entry person

22. 2.2. Je, nyumba ina akiba ya fedha ya kutosha kwa matumizi hadi miezi sita ijayo?  
*Mark only one oval.*

☐ hapana  
☐ ndiyo

23. 2.3. Aina ya sakafu \*  
*Mark only one oval.*

☐ udongo  
☐ mbao/mianzi  
☐ saruji  
☐ kigae  
☐ nyingine

24. 2.4. Je, kaya hii inamiliki Ng'ombe? \*  
*Mark only one oval.*

☐ no  
☐ yes

25. 2.5. Nyumba yako ina vyumba vingapi ? \*  
*Include all rooms, bedrooms plus other rooms. Choose '0' if respondent has no house.  
Mark only one oval.*

☐ 0  
☐ 1  
☐ 2  
☐ 3  
☐ 4  
☐ 5  
☐ 6  
☐ 7  
☐ 8  
☐ more than 8

26. 2.6.1. Je, kuna wasichana katika kaya ya jirani wenye uwezo kielimu na umri ufaao kwenda sekondari vidato vya juu (form V na VI)? \*  
*have age and education requirements.  
Mark only one oval.*

☐ hapana  
☐ ndiyo

27. 2.6.2. Kama ndiyo, kuna wasichana katika kaya ya jirani wanaohudhuria sekondari vidato vya juu mara kwa mara (angalau siku 10 kwa mwezi) \*  
*attend at least 10 days per month  
Mark only one oval.*

☐ hapana  
☐ ndiyo  
☐ question does not apply

# Data analysis

## Tests we use

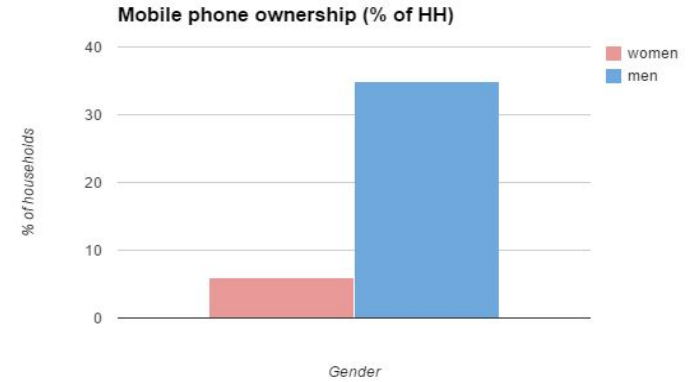
- Chi squared test (of proportions) eg. % households owning cell phones
- T Test (of means) eg. amount of land owned
- Regression
- What are the chances that the pattern we see is an accident or not?

## Use open source platform R

- (<https://www.r-project.org/>)

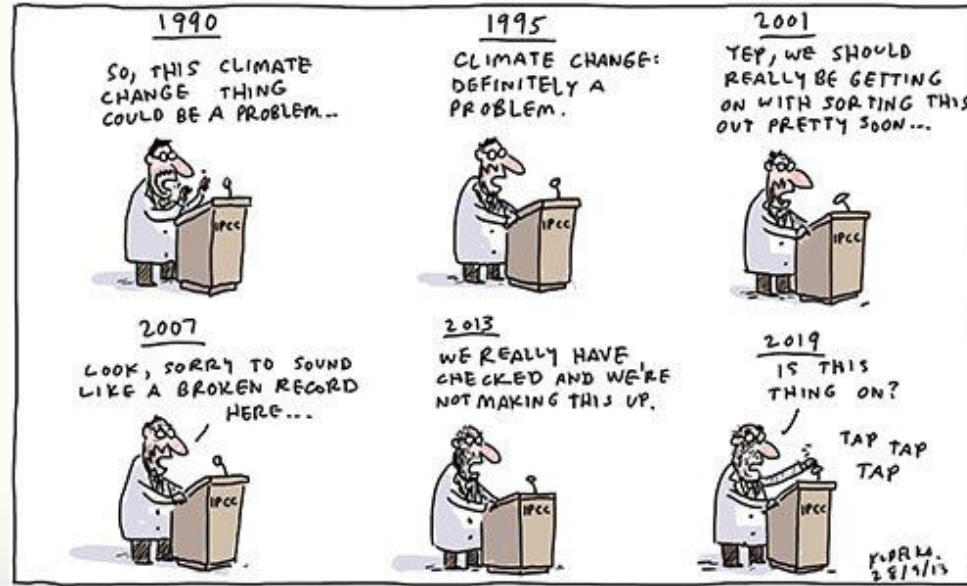
## Reproducible results

- Document any steps used in data cleaning and analysis



# Getting data to those who need it

Big challenge for many organizations



Requires collaboration across organization(s)

- eg. watershed planning

Creative representation of data

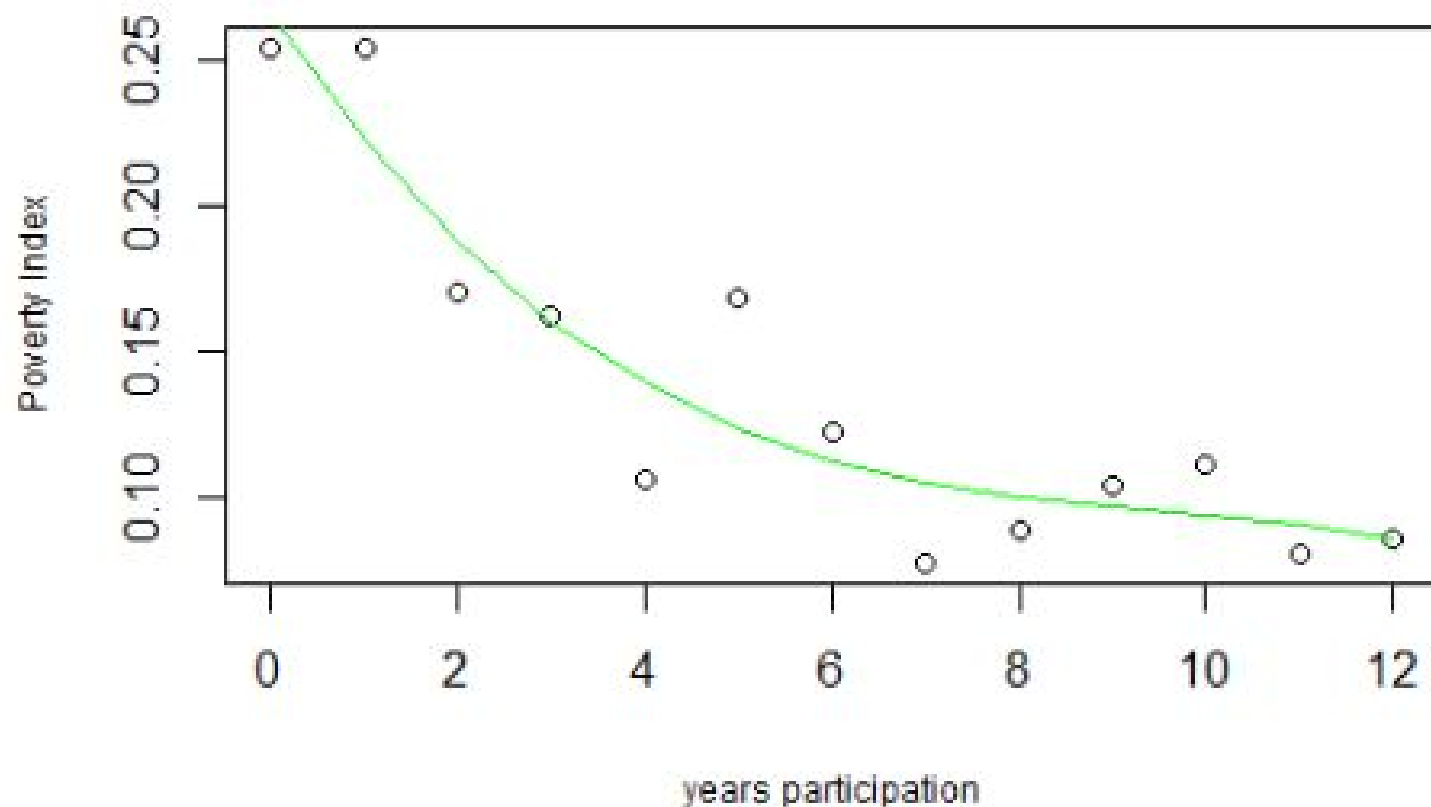
- eg. Poverty Index



# Thank you

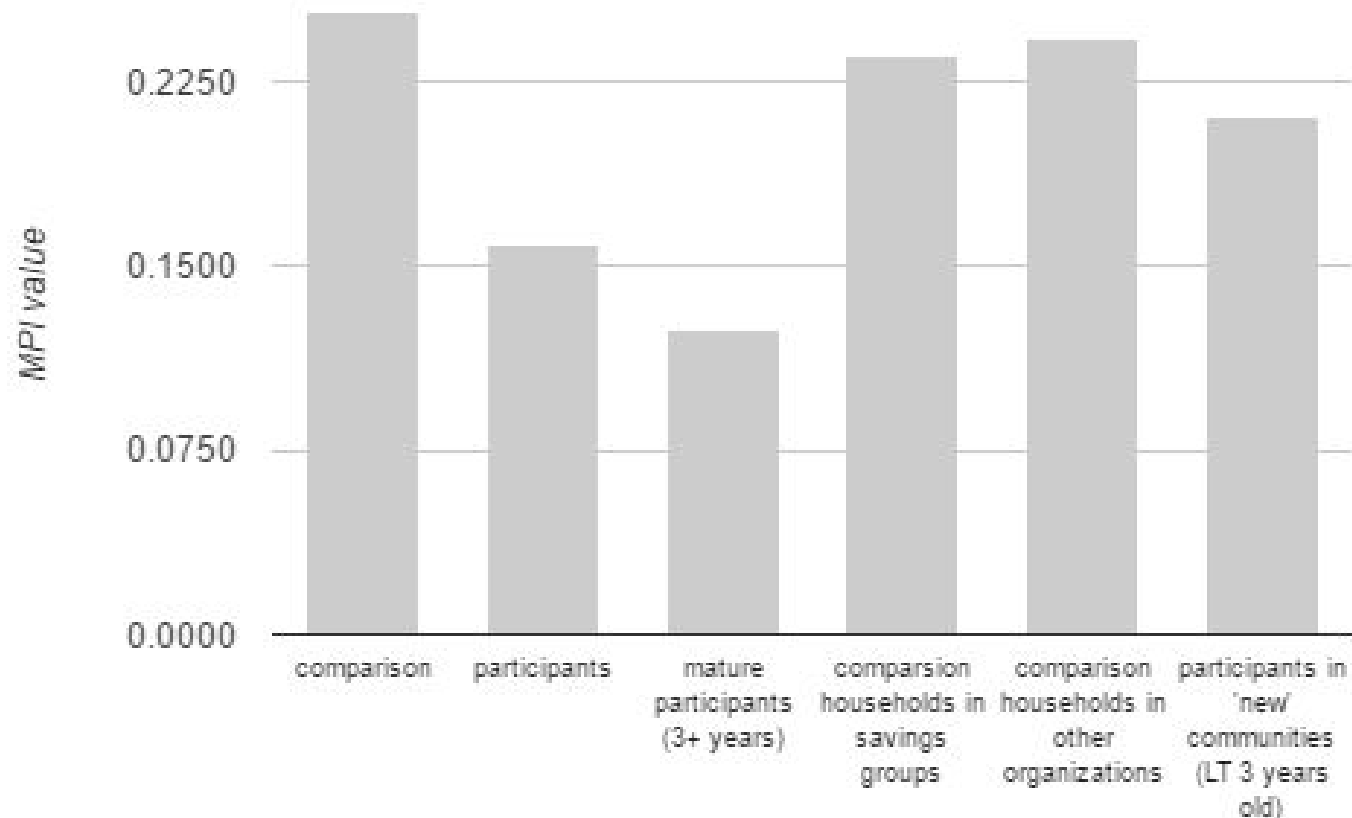
Contact: Bob Morikawa  
Technical Director  
[plantwithpurpose.org](http://plantwithpurpose.org)  
[robert@plantwithpurpose.org](mailto:robert@plantwithpurpose.org)

Poverty Index vs Years participation



$$\text{MPI}(\text{part}) = -0.0001607 \cdot \text{year}^3 + 0.0046473 \cdot \text{year}^2 - 0.0476394 \cdot \text{year} + 0.2658744, \quad p=0.00029, \quad R^2=0.8211$$

## MPI by type of household







# NDVI

