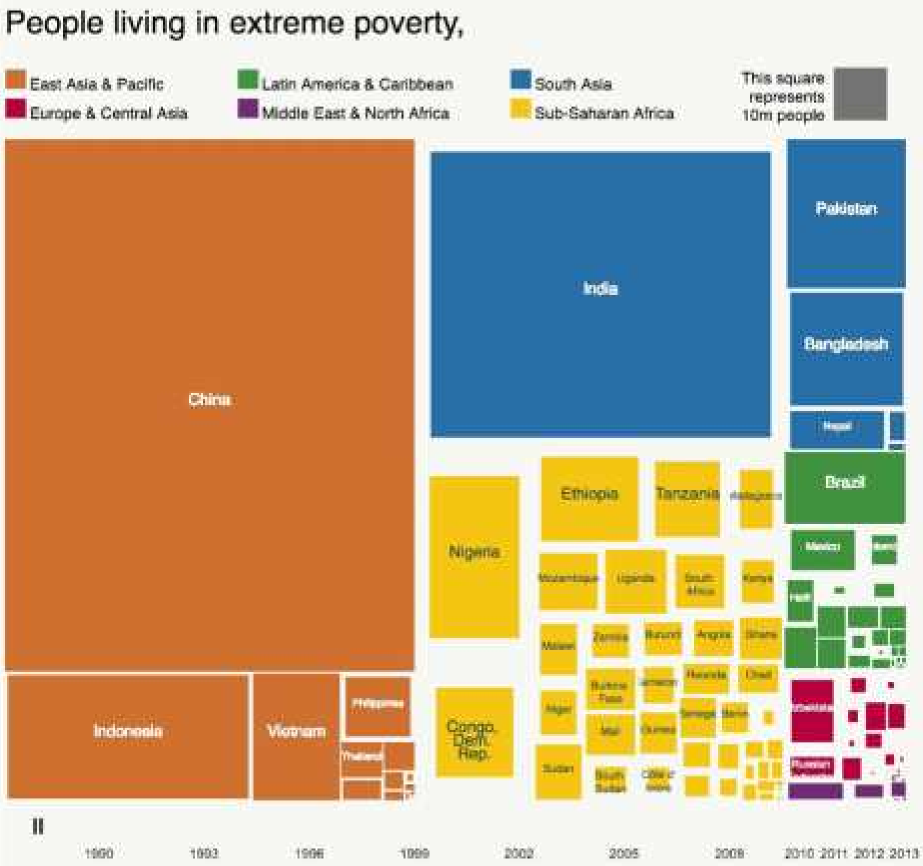
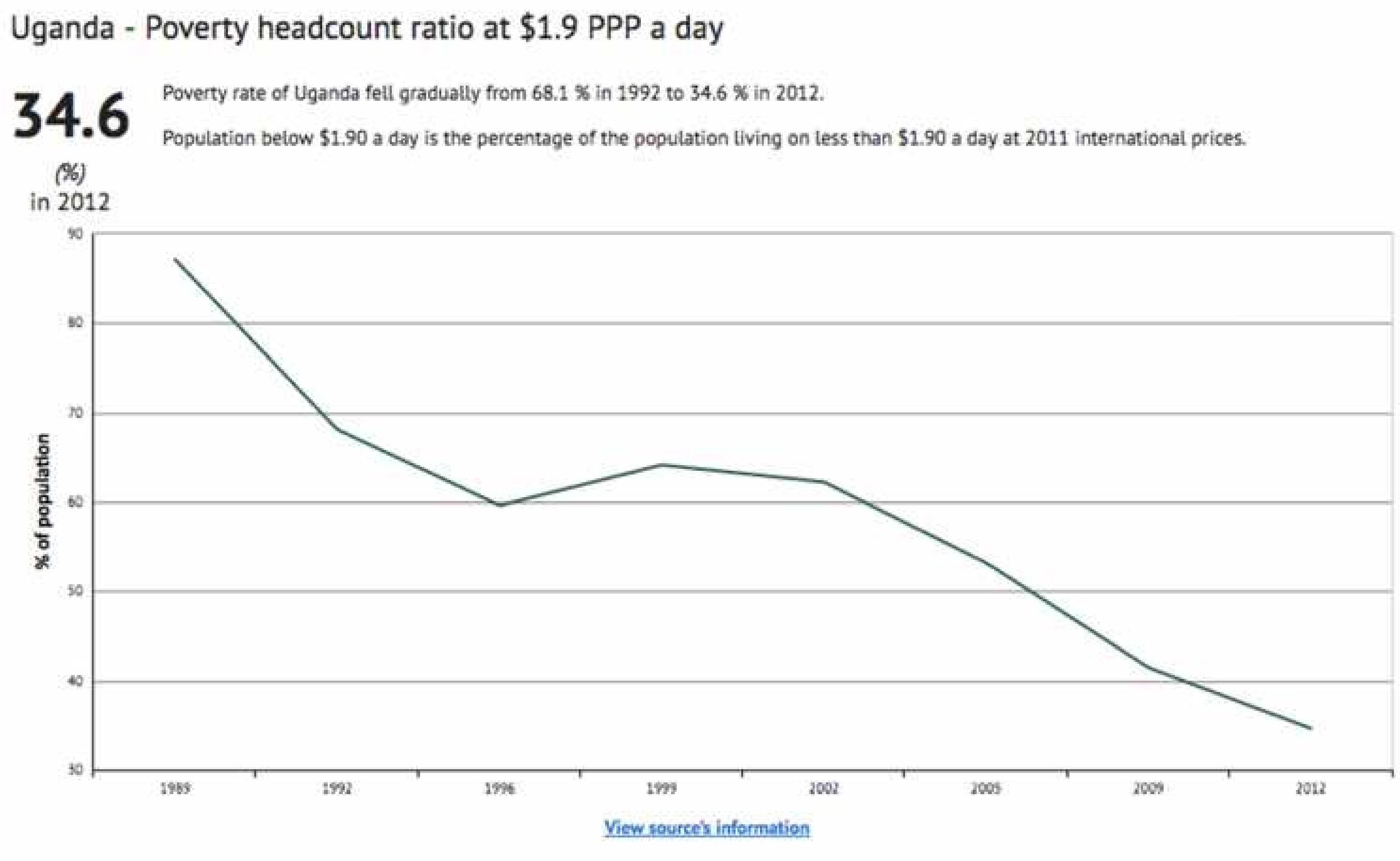
PLENARY ADDRESSES: How can ICTs promote innovations in development evaluation to benefit a more inclusive and sustainable rural transformation?

Presenter:
Ms Haishan Fu, Director, World Bank's Development Data Group


People living in extreme poverty,

We use technology to bring data from farm to table



Uganda - Poverty headcount ratio at $1.9 PPP a day

34.6

(%)

in 2012

Poverty rate of Uganda fell gradually from 68.1 % in 1992 to 34.6 % in 2012.

Population below $1.90 a day is the percentage of the population living on less than $1.90 a day at 2011 international prices.

90
80
70
60
50
40
30
% of population
1989
1992
1996
1999
2002
2005
2009
2012

View source's information

Credit: The Crowd and The Cloud

Credit: The Crowd and The Cloud

Census
2014
together we count
COUNTING FOR PLANNING
AND IMPROVED SERVICE
DELIVERY
PRADO
TOYOTA 4WD
UAG

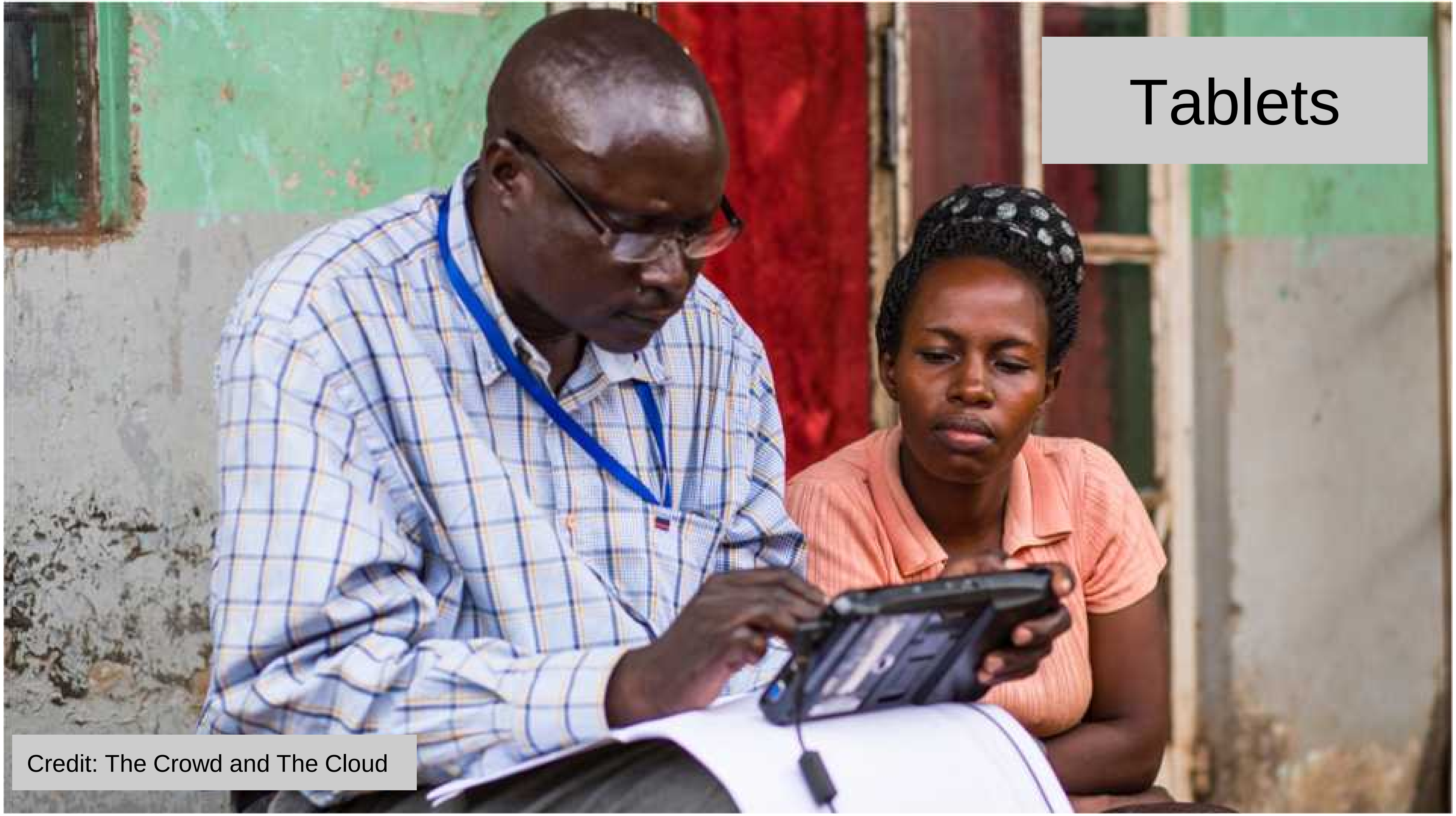
Credit: The Crowd and The Cloud

Credit: The Crowd and The Cloud

Credit: The Crowd and The Cloud

Credit: The Crowd and The Cloud

Tablets

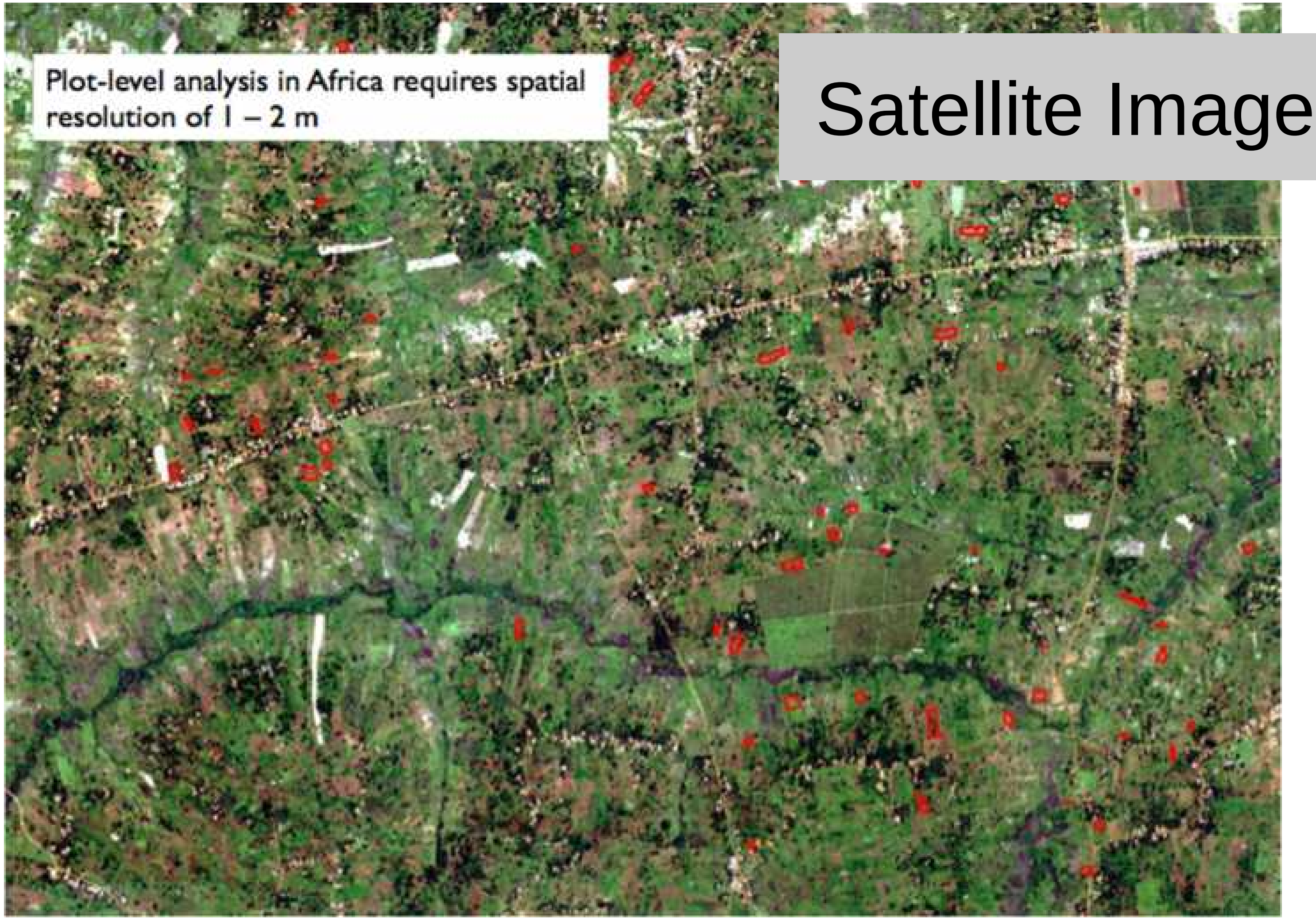


Credit: The Crowd and The Cloud

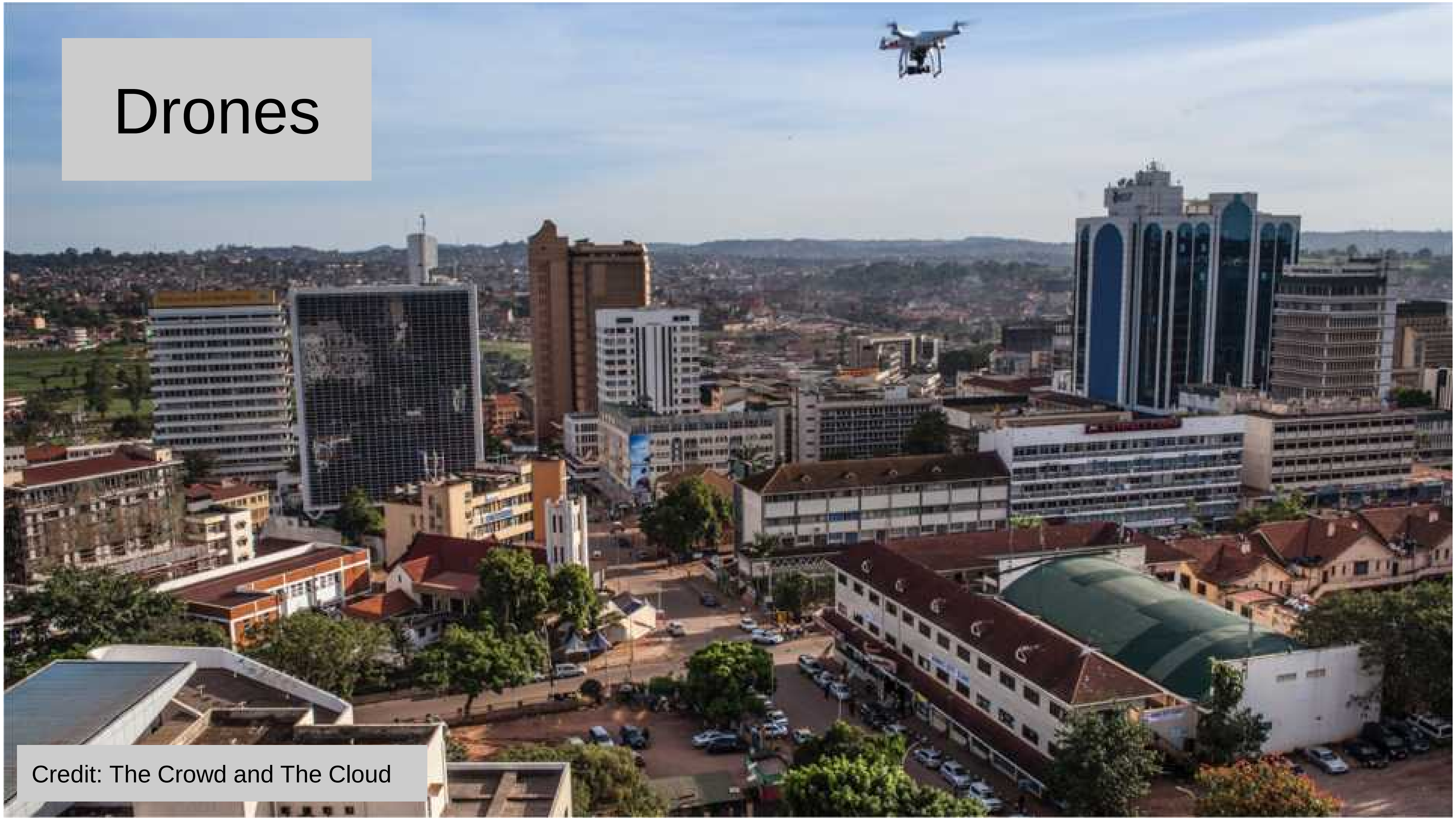
GPS

Credit: The Crowd and The Cloud

Satellite Imagery



Plot-level analysis in Africa requires spatial resolution of 1 – 2 m



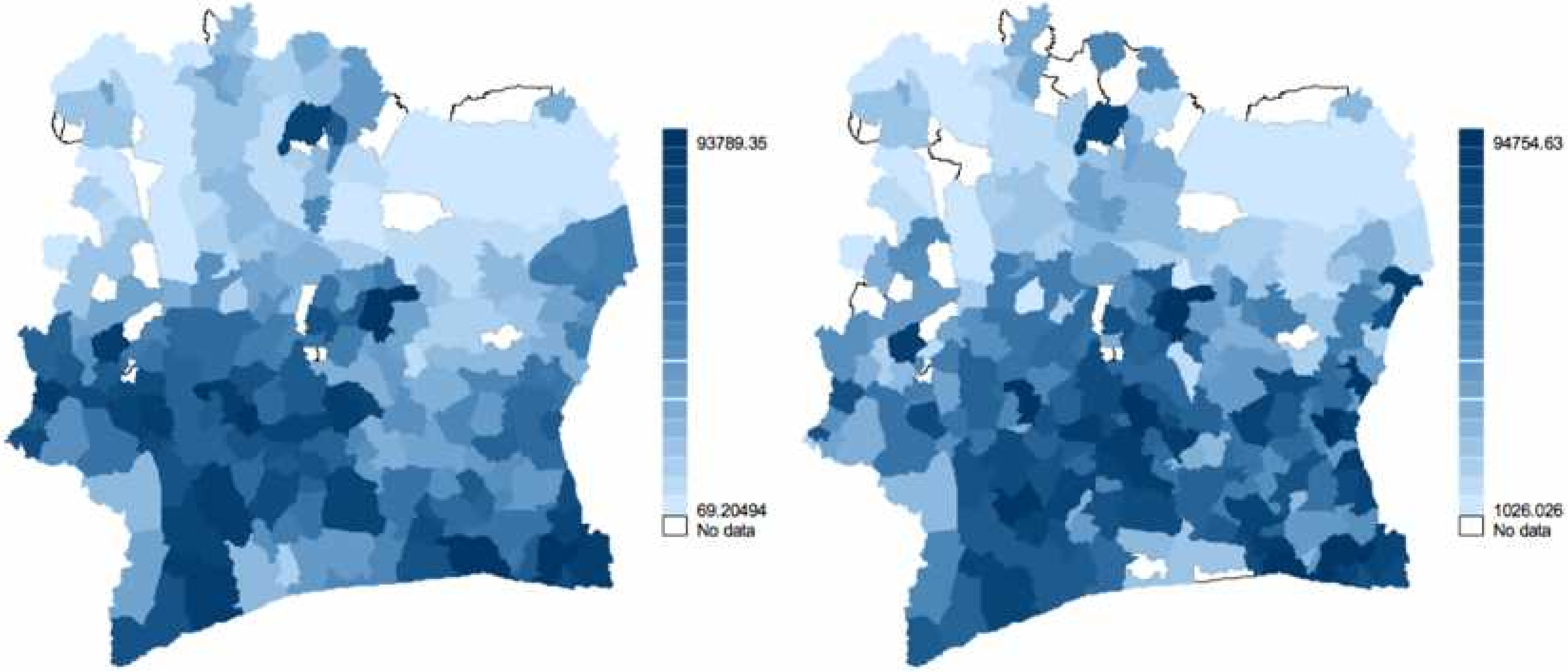
Drones

Credit: The Crowd and The Cloud

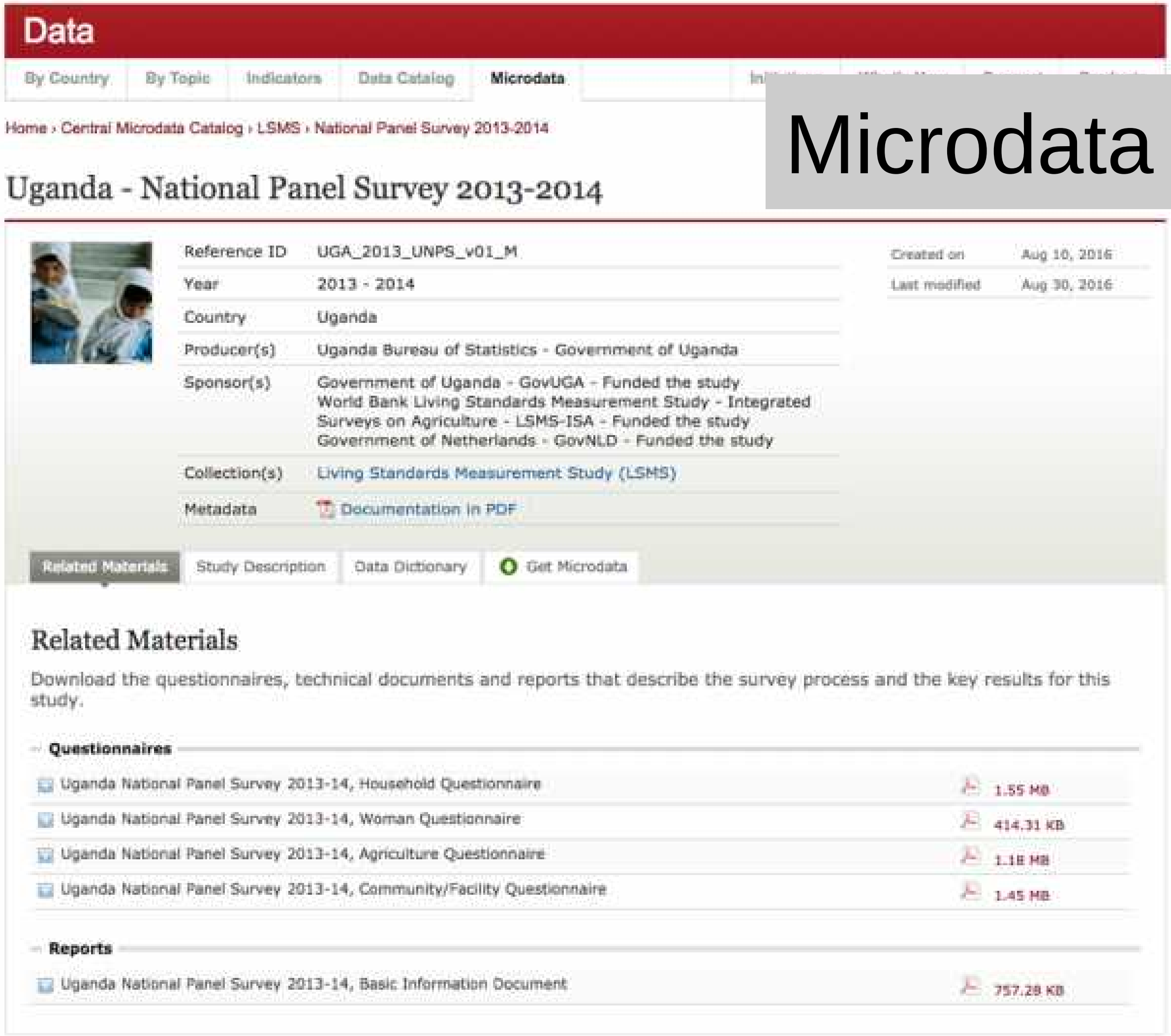
Sensors

Mobile Phone Metadata

Figure 5: Observed population density (left) vs predicted population density based on subscriber data (right)


93789.35
69.20494
No data
94754.63
1026.026
No data

Microdata Catalog


Data
By Country
By Topic
Indicators
Data Catalog
Microdata
Home › Central Microdata Catalog › LSMS › National Panel Survey 2013-2014
Related Materials
Study Description
Data Dictionary
Get Microdata

Uganda - National Panel Survey 2013-2014

Reference ID	UGA_2013_UNPS_v01_M
Year	2013 - 2014
Country	Uganda
Producer(s)	Uganda Bureau of Statistics - Government of Uganda
Sponsor(s)	Government of Uganda - GovUGA - Funded the study World Bank Living Standards Measurement Study - Integrated Surveys on Agriculture - LSMS-ISA - Funded the study Government of Netherlands - GovNLD - Funded the study
Collection(s)	Living Standards Measurement Study (LSMS)
Metadata	Documentation in PDF

Created on	Aug 10, 2016
Last modified	Aug 30, 2016

Related Materials

Download the questionnaires, technical documents and reports that describe the survey process and the key results for this study.

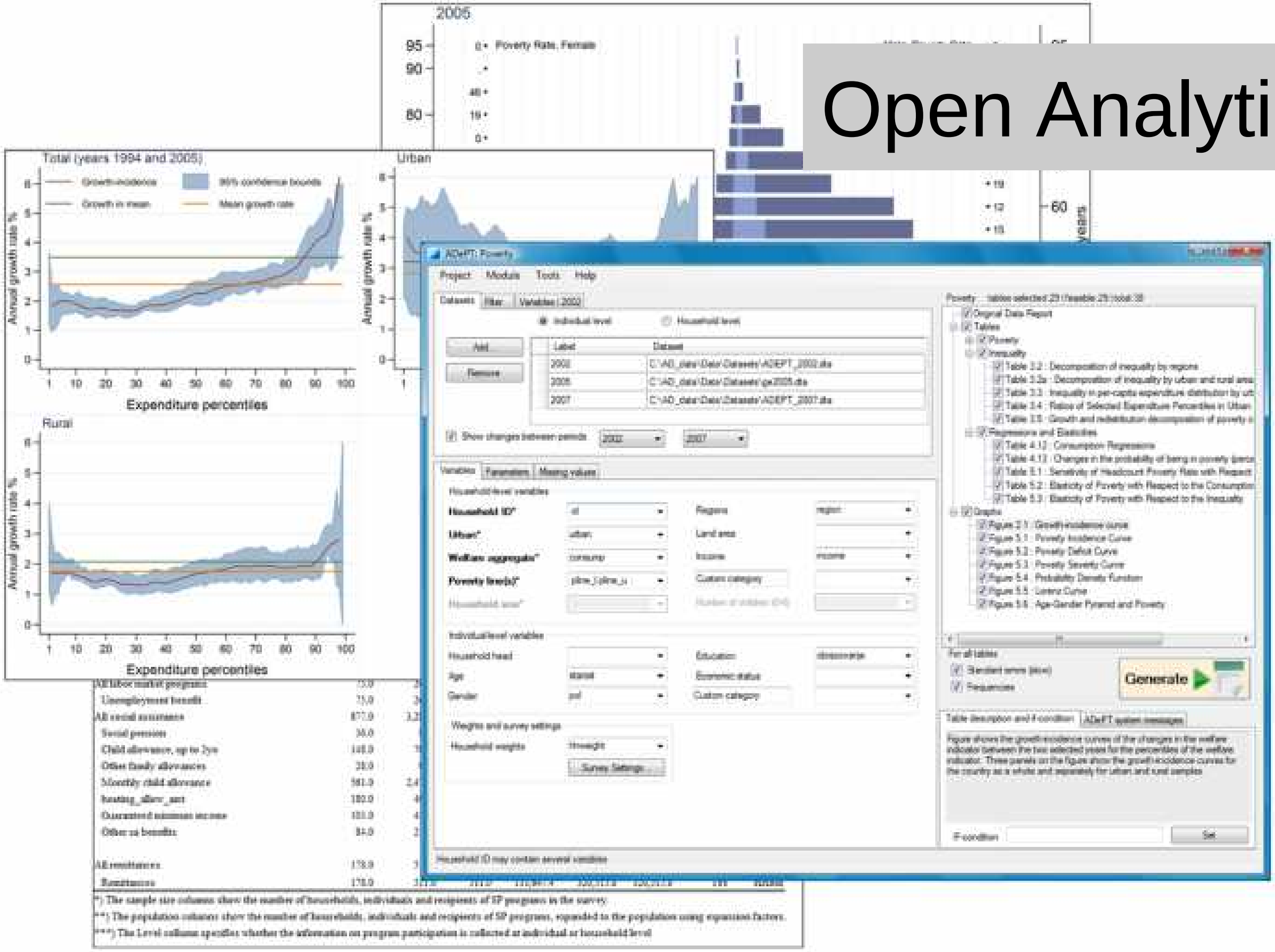
Questionnaires

Uganda National Panel Survey 2013-14, Household Questionnaire	1.55 MB
Uganda National Panel Survey 2013-14, Woman Questionnaire	414.31 KB
Uganda National Panel Survey 2013-14, Agriculture Questionnaire	1.18 MB
Uganda National Panel Survey 2013-14, Community/Facility Questionnaire	1.45 MB

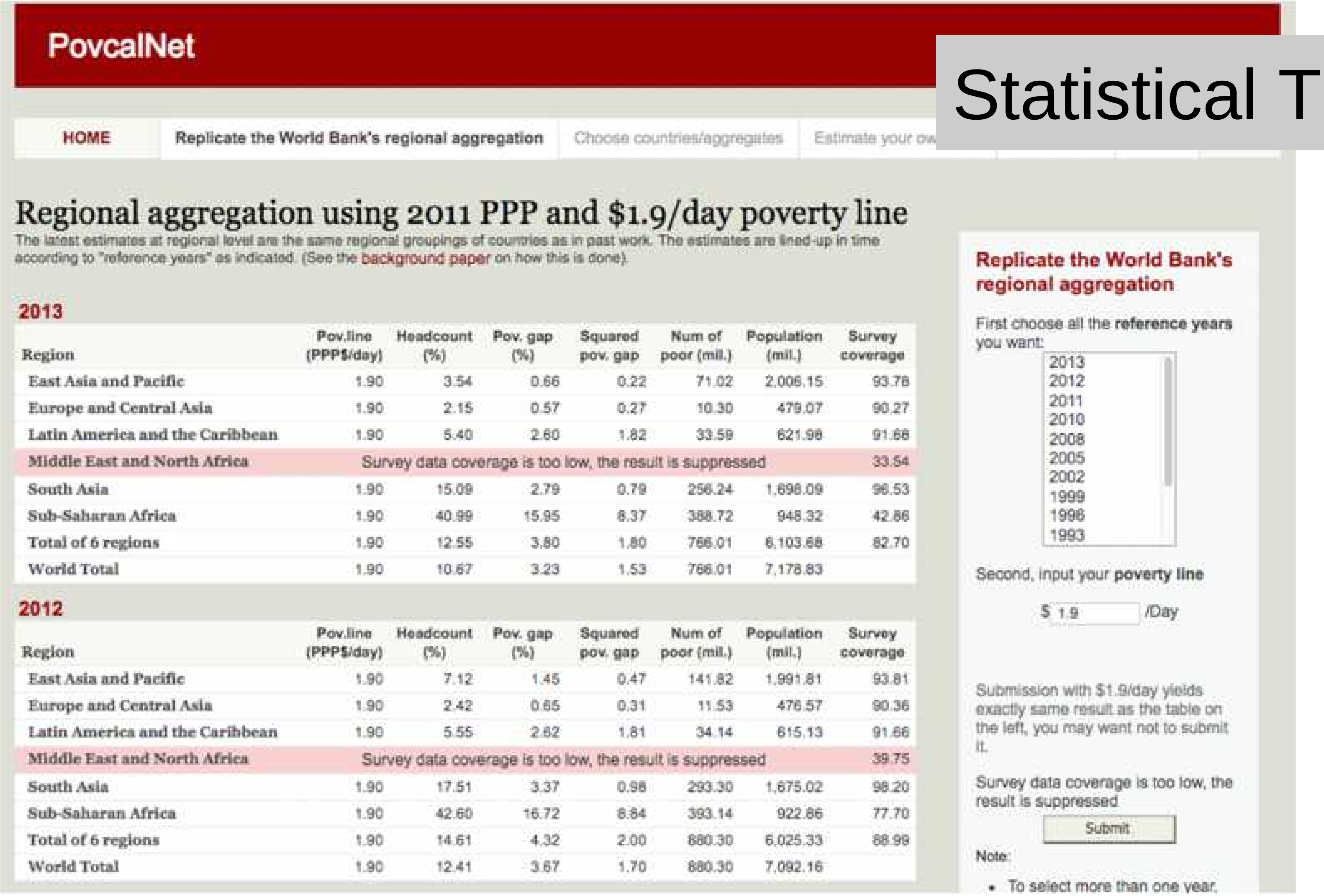
Reports

Uganda National Panel Survey 2013-14, Basic Information Document	757.28 KB

Open Analytical Tools


2005
Poverty Rate, Female
Total (years 1994 and 2005)
Urban
Rural
Growth-incidence
Growth in mean
95% confidence bounds
Mean growth rate
Annual growth rate %
Expenditure percentiles
years
ADePT: Poverty
Project
Module
Tools
Help
Datasets
Filter
Variables: 2002
Individual level
Household level
Add...
Remove
Label
Dataset
Variables
Parameters
Missing values
Household ID*
Urban*
Welfare aggregate*
Poverty line(s)*
Regions
Land area
Income
Custom category
Household head
Age
Gender
Education
Economic status
Weights and survey settings
Household weights
Survey Settings...
Generate
Set

Statistical Tables



PovcalNet
HOME
Replicate the World Bank's regional aggregation
Choose countries/aggregates
Estimate your ow

Regional aggregation using 2011 PPP and $1.9/day poverty line

The latest estimates at regional level are the same regional groupings of countries as in past work. The estimates are lined-up in time according to "reference years" as indicated. (See the background paper on how this is done).

2013

Region	Pov.line (PPP$/day)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Num of poor (mil.)	Population (mil.)	Survey coverage
East Asia and Pacific	1.90	3.54	0.66	0.22	71.02	2,006.15	93.78
Europe and Central Asia	1.90	2.15	0.57	0.27	10.30	479.07	90.27
Latin America and the Caribbean	1.90	5.40	2.60	1.82	33.59	621.98	91.68
Middle East and North Africa	Survey data coverage is too low, the result is suppressed						33.54
South Asia	1.90	15.09	2.79	0.79	256.24	1,698.09	96.53
Sub-Saharan Africa	1.90	40.99	15.95	8.37	388.72	948.32	42.86
Total of 6 regions	1.90	12.55	3.80	1.80	766.01	6,103.68	82.70
World Total	1.90	10.67	3.23	1.53	766.01	7,178.83	

2012

Region	Pov.line (PPP$/day)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Num of poor (mil.)	Population (mil.)	Survey coverage
East Asia and Pacific	1.90	7.12	1.45	0.47	141.82	1,991.81	93.81
Europe and Central Asia	1.90	2.42	0.65	0.31	11.53	476.57	90.36
Latin America and the Caribbean	1.90	5.55	2.62	1.81	34.14	615.13	91.66
Middle East and North Africa	Survey data coverage is too low, the result is suppressed						39.75
South Asia	1.90	17.51	3.37	0.98	293.30	1,675.02	98.20
Sub-Saharan Africa	1.90	42.60	16.72	8.84	393.14	922.86	77.70
Total of 6 regions	1.90	14.61	4.32	2.00	880.30	6,025.33	88.99
World Total	1.90	12.41	3.67	1.70	880.30	7,092.16	

Replicate the World Bank's regional aggregation

First choose all the **reference years** you want:

Second, input your **poverty line**

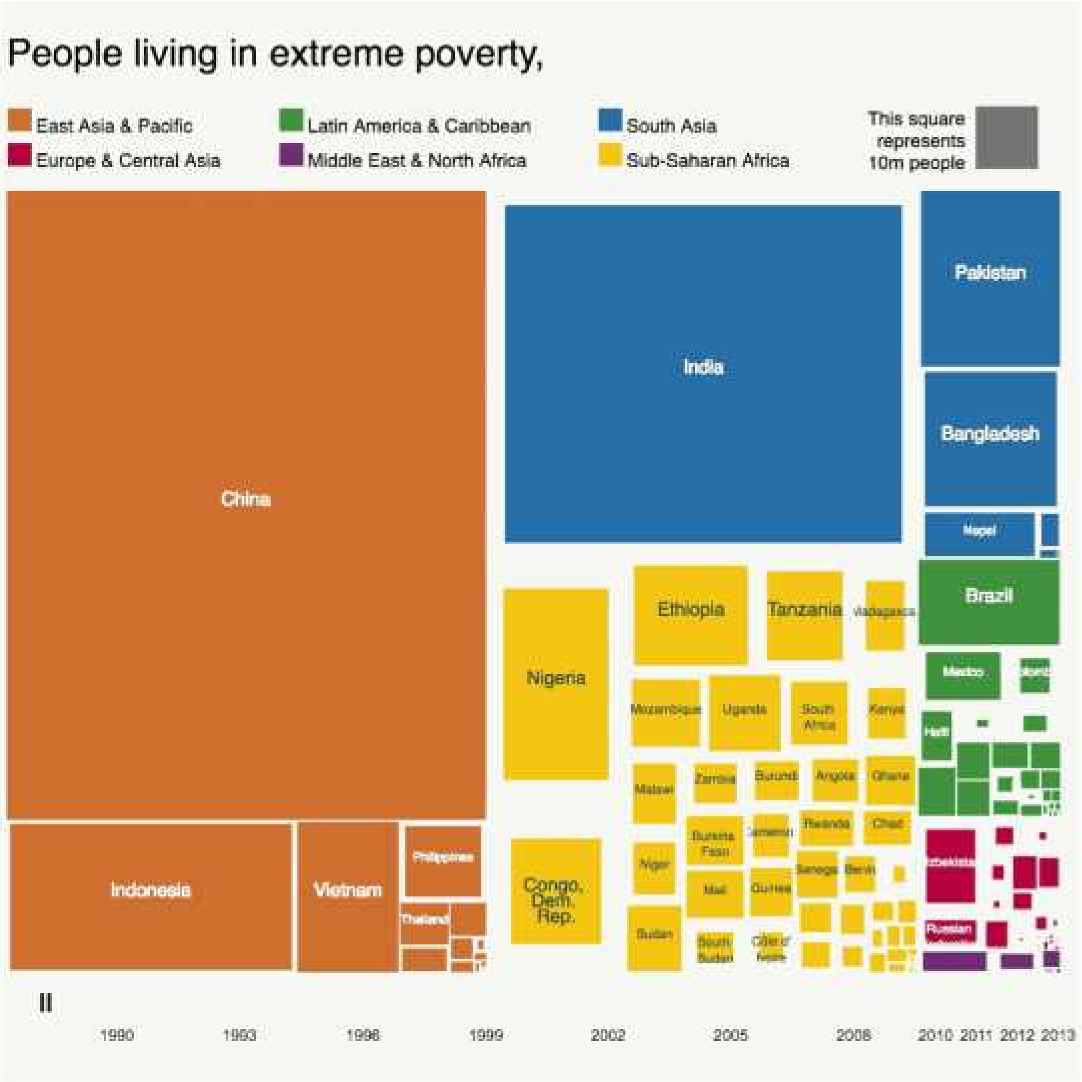
$ 1.9 /Day

Submission with $1.9/day yields exactly same result as the table on the left, you may want not to submit it.

Survey data coverage is too low, the result is suppressed

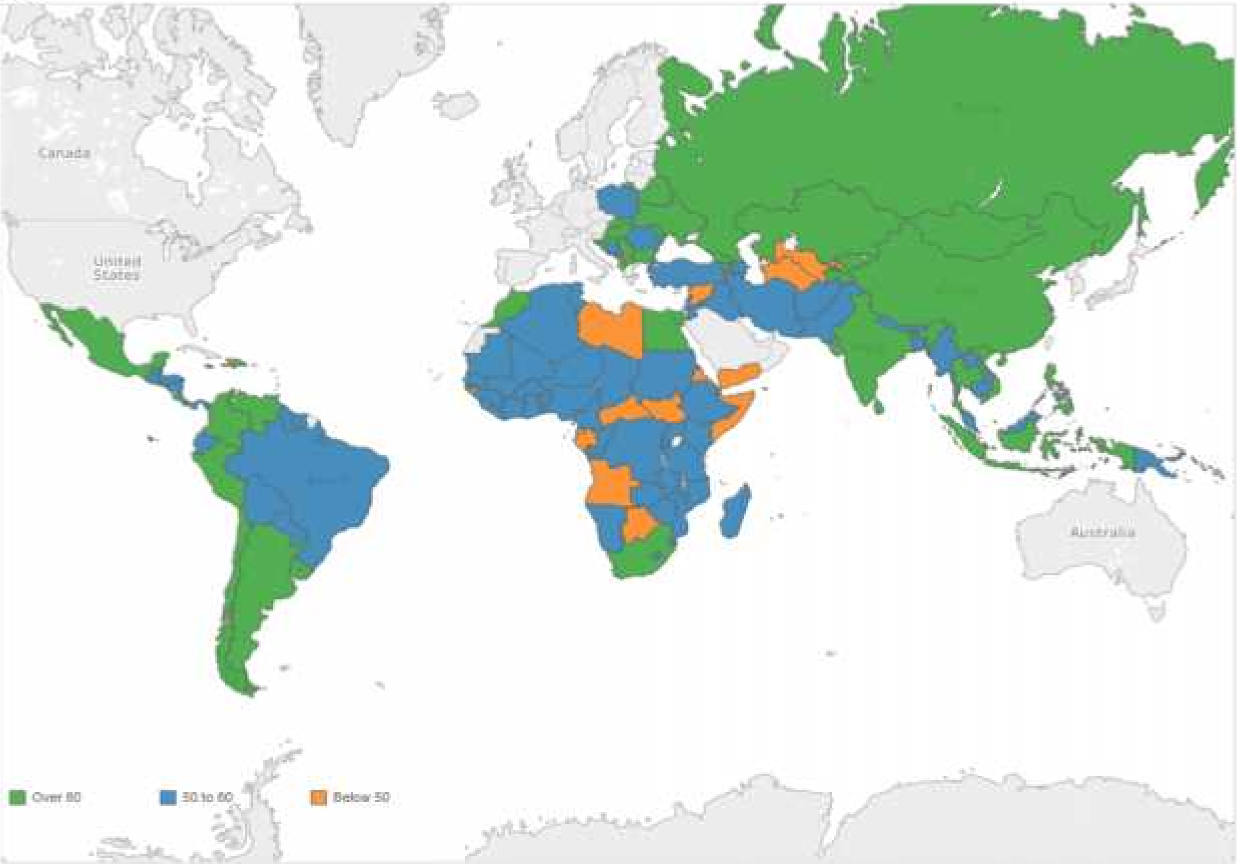
Note:

- To select more than one year,

People living in extreme poverty,
East Asia & Pacific
Europe & Central Asia
Latin America & Caribbean
Middle East & North Africa
South Asia
Sub-Saharan Africa
This square represents 10m people
China
Indonesia
Vietnam
Philippines
Thailand
India
Pakistan
Bangladesh
Nepal
Brazil
Mexico
olomb
Haiti
Nigeria
Congo, Dem. Rep.
Ethiopia
Tanzania
Madagasca
Mozambique
Uganda
South Africa
Kenya
Malawi
Zambia
Burundi
Angola
Ghana
Burkina Faso
ameroo
Rwanda
Chad
Niger
Senegal
Benin
Mali
Guinea
Sudan
South Sudan
Côte d' Ivoire
zbekista
Russian
II
1990
1993
1996
1999
2002
2005
2008
2010
2011
2012
2013

The technology is already here, it’s just not evenly distributed

Statistical Capacity Indicator



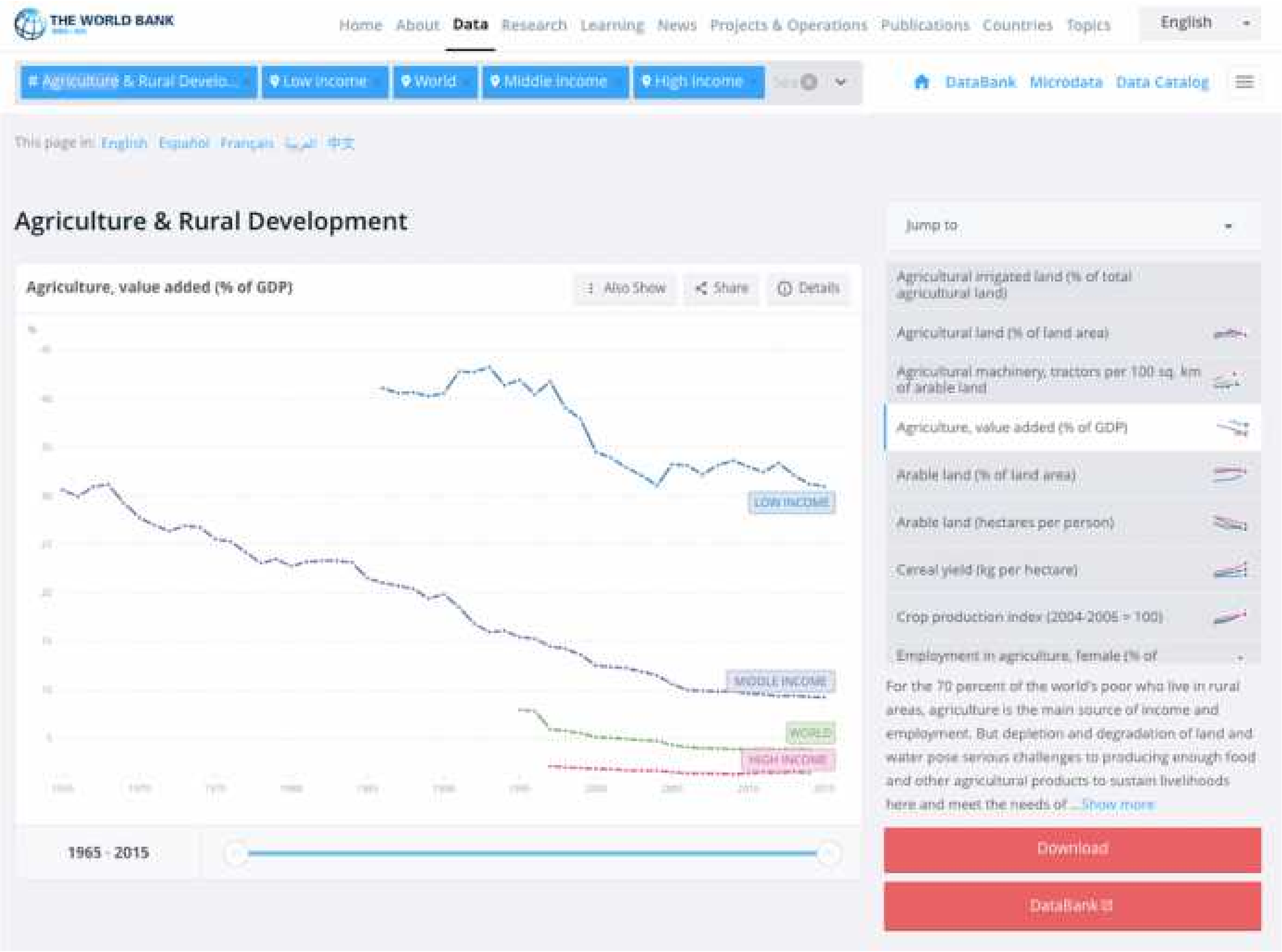
2016

Canada
United States
Australia
🟩 Over 80
🟦 50 to 80
🟧 Below 50

HEALTH INFORMATION BUREAU

GLOBAL PARTNERSHIP
FOR SUSTAINABLE DEVELOPMENT DATA

We can’t stop at producing data: we’ve got to put data to use for development


THE WORLD BANK
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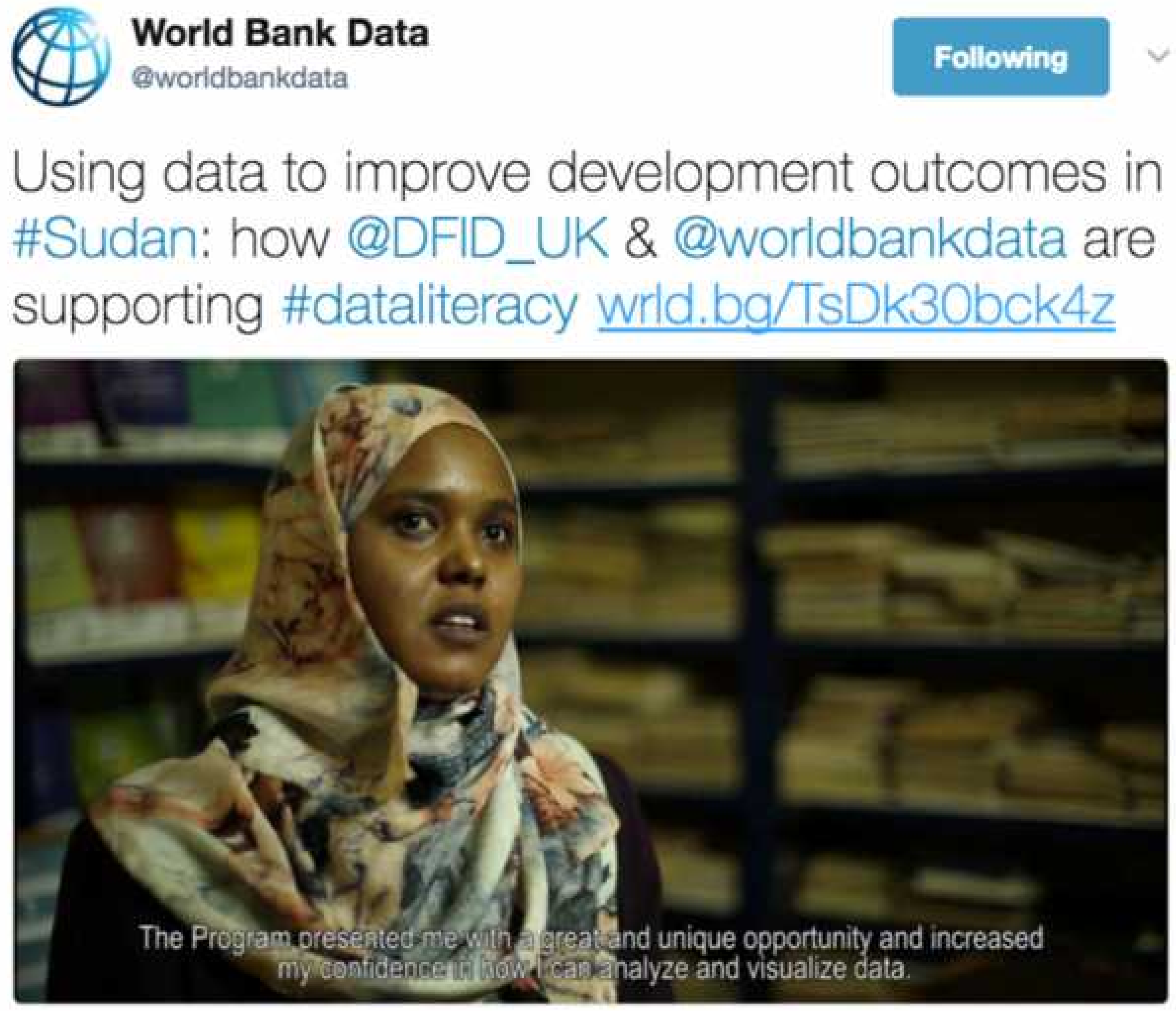
# Agriculture & Rural Develo...
Low income
World
Middle income
High income
DataBank
Microdata
Data Catalog
This page in: English Español Français العربية 中文
Jump to
Also Show
Share
Details
%
45
40
35
30
25
20
15
10
5
LOW INCOME
MIDDLE INCOME
WORLD
HIGH INCOME
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
1965 - 2015
Download
DataBank

Agriculture & Rural Development

Agriculture, value added (% of GDP)

Agricultural irrigated land (% of total agricultural land)
Agricultural land (% of land area)
Agricultural machinery, tractors per 100 sq. km of arable land
Agriculture, value added (% of GDP)
Arable land (% of land area)
Arable land (hectares per person)
Cereal yield (kg per hectare)
Crop production index (2004-2006 = 100)
Employment in agriculture, female (% of

For the 70 percent of the world's poor who live in rural areas, agriculture is the main source of income and employment. But depletion and degradation of land and water pose serious challenges to producing enough food and other agricultural products to sustain livelihoods here and meet the needs of ...Show more



World Bank Data
@worldbankdata

Using data to improve development outcomes in #Sudan: how @DFID_UK & @worldbankdata are supporting #dataliteracy wrld.bg/TsDk30bck4z

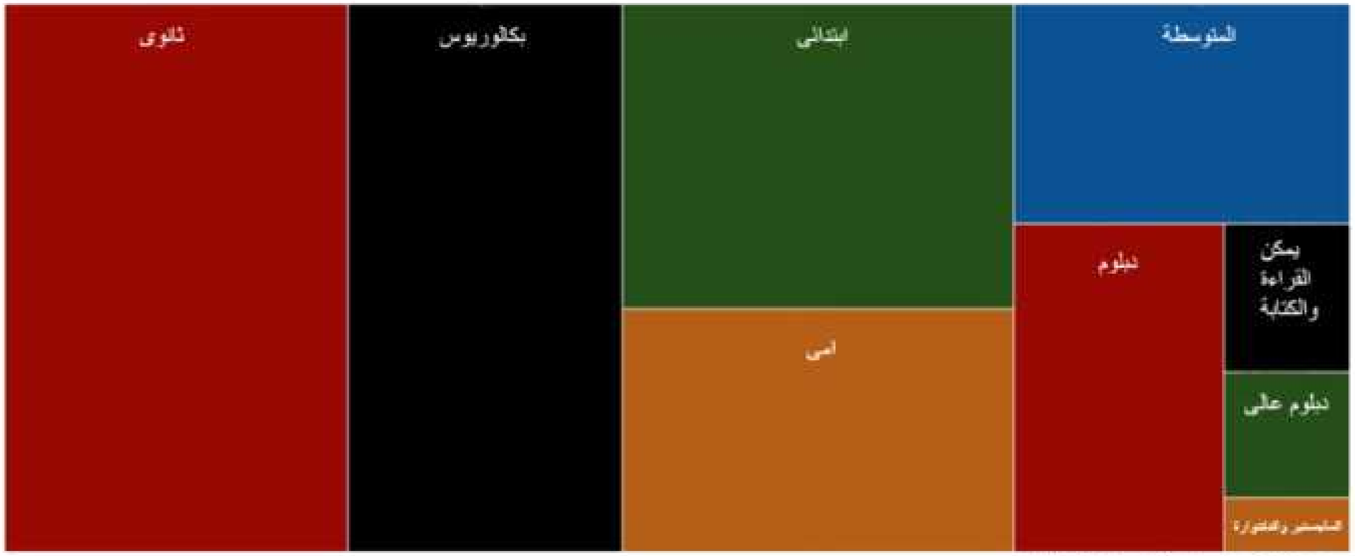
The Program presented me with a great and unique opportunity and increased my confidence in how I can analyze and visualize data.

Building on the training he received,
Shawgi began a trend of
evidence-based journalism,

البيانات

يعمل هذا البرنامج، على اعتباره جزءا من تكوين الإمكانيات، على التمكين من الوصول إلى البيانات المفتوحة ونشرها بسهولة والتي يمكن أن يستخدمها المشاركون لتحسين مهاراتهم وابتكار حكايات توجهها البيانات وتطبيقات.

رؤية جميع مجموعات البيانات

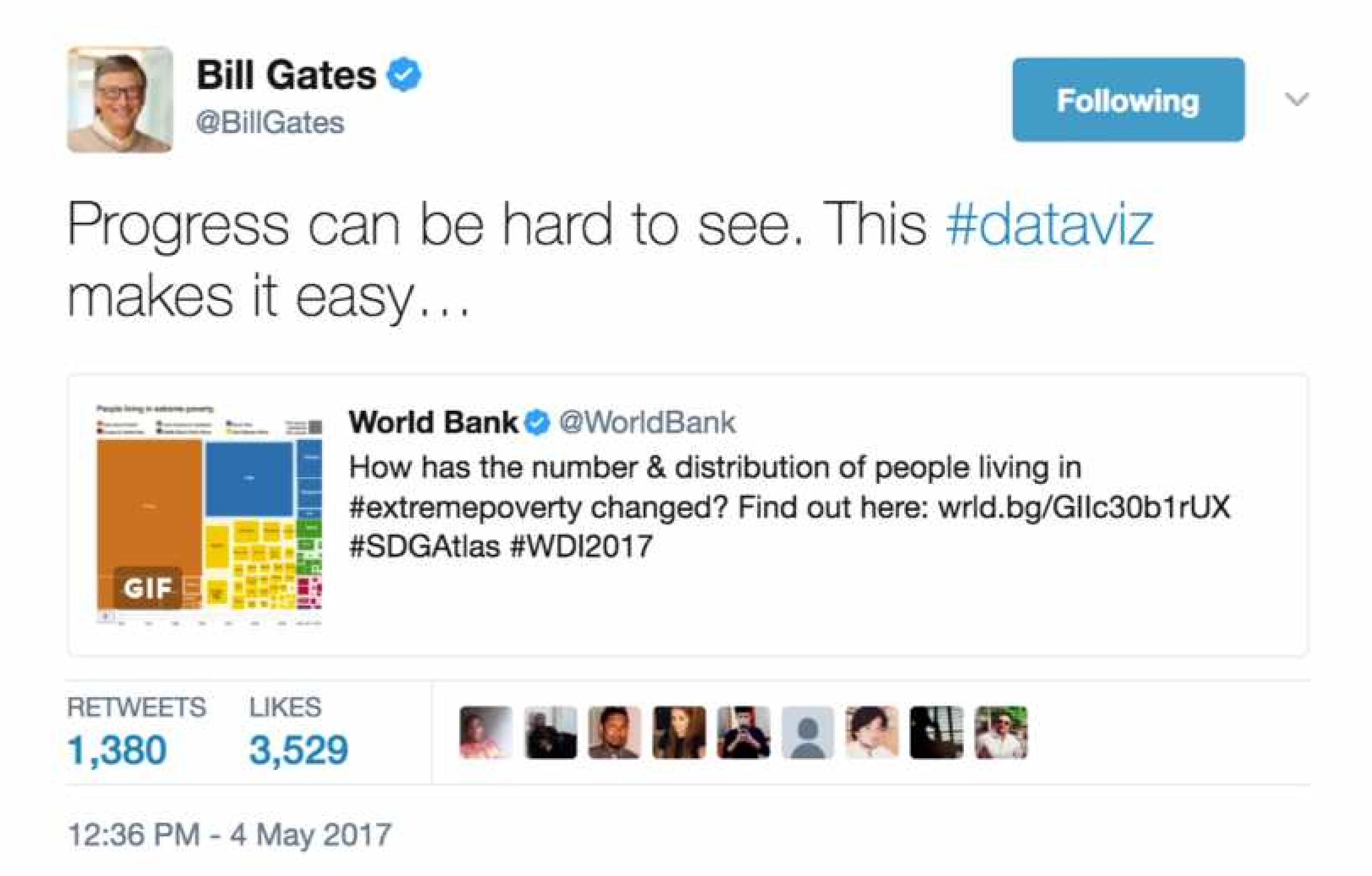


المسح لسنة 2014: مستوى التعليم (أعلى درجة تحققت) (العدد)

عمليات الاستقصاء الخاصة بالأسر السودانية

نتائج عمليات الاستقصاء الخاصة بالأسر السودانية التي أجرتها وزارة التنمية الدولية، والتي تم جمعها في 2012، و2013 بالتركيز على مناحي إدراك جودة الخدمة العامة وتقديم الخدمة العامة في مجالات التعليم، والصحة، والمياه والصرف الصحي. تعد بيانات هذا الاستقصاء فريدة من نوعها في السياق السوداني.

المزيد من المعلومات <<



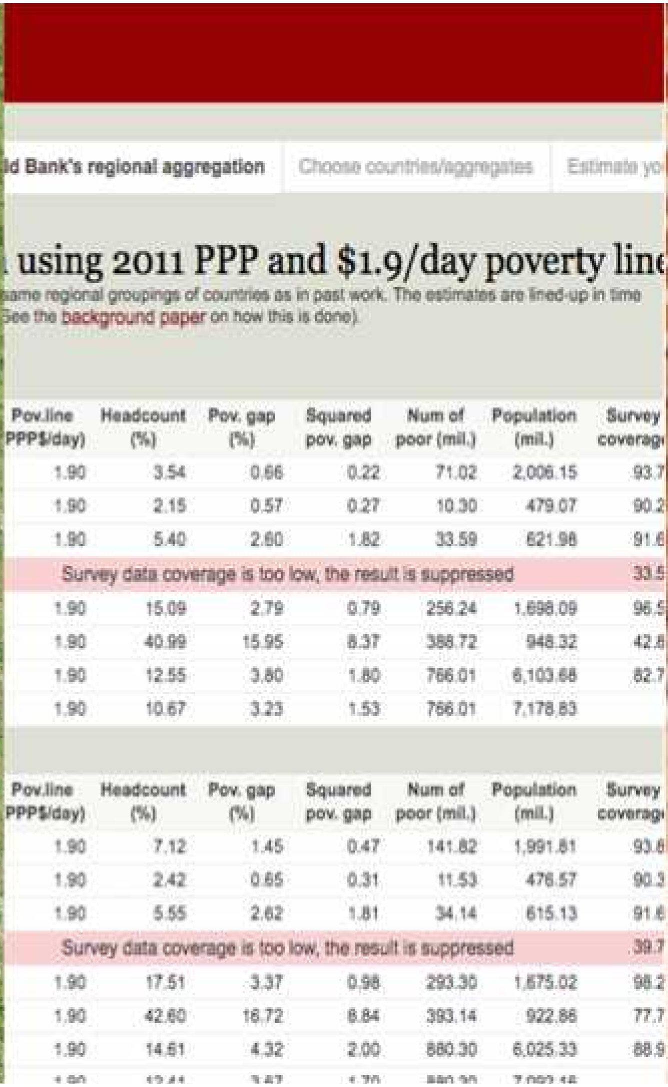
Bill Gates
@BillGates

Progress can be hard to see. This #dataviz makes it easy…

World Bank @WorldBank
How has the number & distribution of people living in #extremepoverty changed? Find out here: wrld.bg/GIlc30b1rUX #SDGAtlas #WDI2017

RETWEETS 1,380
LIKES 3,529

12:36 PM - 4 May 2017



ld Bank's regional aggregation | Choose countries/aggregates | Estimate yo

using 2011 PPP and $1.9/day poverty line

same regional groupings of countries as in past work. The estimates are lined-up in time
See the background paper on how this is done).

Pov.line PPP$/day)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Num of poor (mil.)	Population (mil.)	Survey coverag
1.90	3.54	0.66	0.22	71.02	2,006.15	93.7
1.90	2.15	0.57	0.27	10.30	479.07	90.2
1.90	5.40	2.60	1.82	33.59	621.98	91.6
Survey data coverage is too low, the result is suppressed						33.5
1.90	15.09	2.79	0.79	256.24	1,698.09	96.5
1.90	40.99	15.95	8.37	388.72	948.32	42.8
1.90	12.55	3.80	1.80	766.01	6,103.68	82.7
1.90	10.67	3.23	1.53	766.01	7,178.83	

Pov.line PPP$/day)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Num of poor (mil.)	Population (mil.)	Survey coverag
1.90	7.12	1.45	0.47	141.82	1,991.81	93.6
1.90	2.42	0.65	0.31	11.53	476.57	90.3
1.90	5.55	2.62	1.81	34.14	615.13	91.6
Survey data coverage is too low, the result is suppressed						39.7
1.90	17.51	3.37	0.98	293.30	1,675.02	98.2
1.90	42.60	16.72	8.84	393.14	922.86	77.7
1.90	14.61	4.32	2.00	880.30	6,025.33	88.9

THEME 1: ICTs APPLIED TO DATA COLLECTION: Are they increasing the effectiveness and efficiency of evaluations?

Breakout session 1: Simulated field visits in Somalia

Presenters:
Ms Monica Zikusooka, Regional Monitoring, Evaluation, Accountability and Learning Manager, Save the Children-East and Southern Africa Region
Mr Hassan Ileli, Information Technology Manager, Save the Children-Somalia

Save the Children

Simulated Field Visits (SFV) in fragile and conflict environments

A case of Save the Children in Somalia

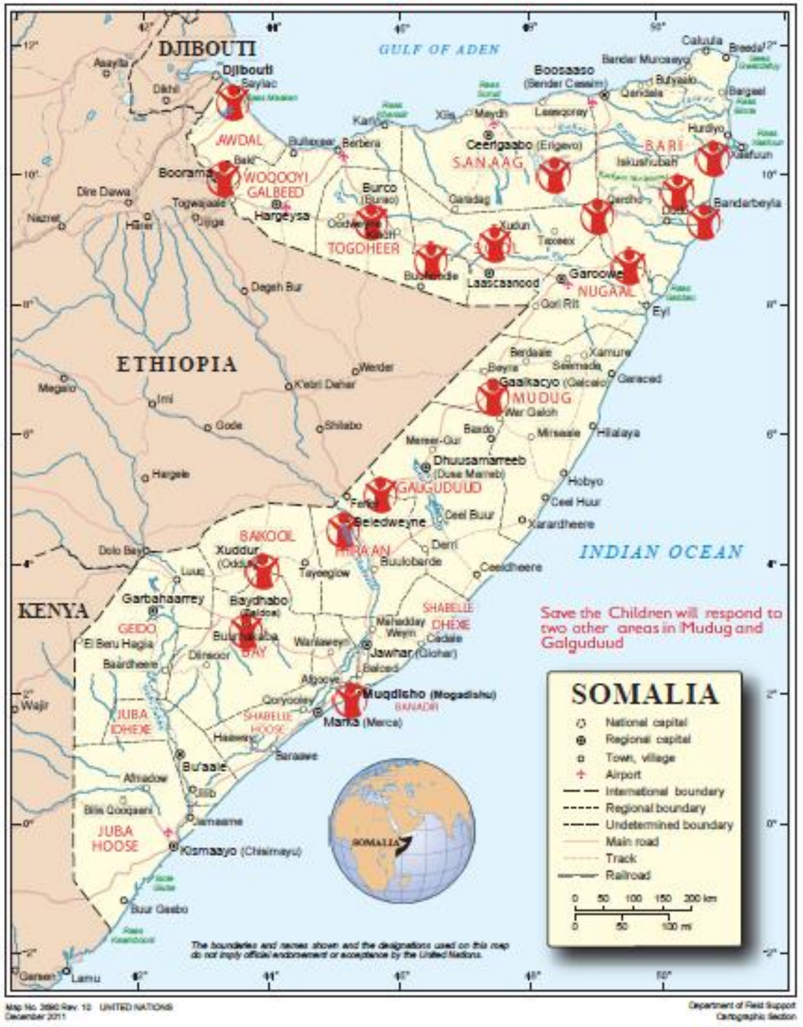
OVERVIEW

- Save the Children in Somalia
- Program context
- Program monitoring and the Simulated Field Visits (SFV)
- Methodology of the SFV
- Lessons learned and challenges of the SFV
- Value added by ICT in the SFV and in Program Monitoring and Evaluation as a whole

SAVE THE CHILDREN IN SOMALIA

- Despite progress, acute humanitarian needs and development challenges persist in Somalia
- Chronically high malnutrition rates, displaced populations, limited access to basic services → constant stress by drought, floods and continued armed conflict
- Save the children is implementing life saving and development programs in Nutrition, Health, Education, Child Protection, Child Rights Governance & Food Security and Livelihoods across the country
- Directly reached 1,276,392 children and adults in 2016

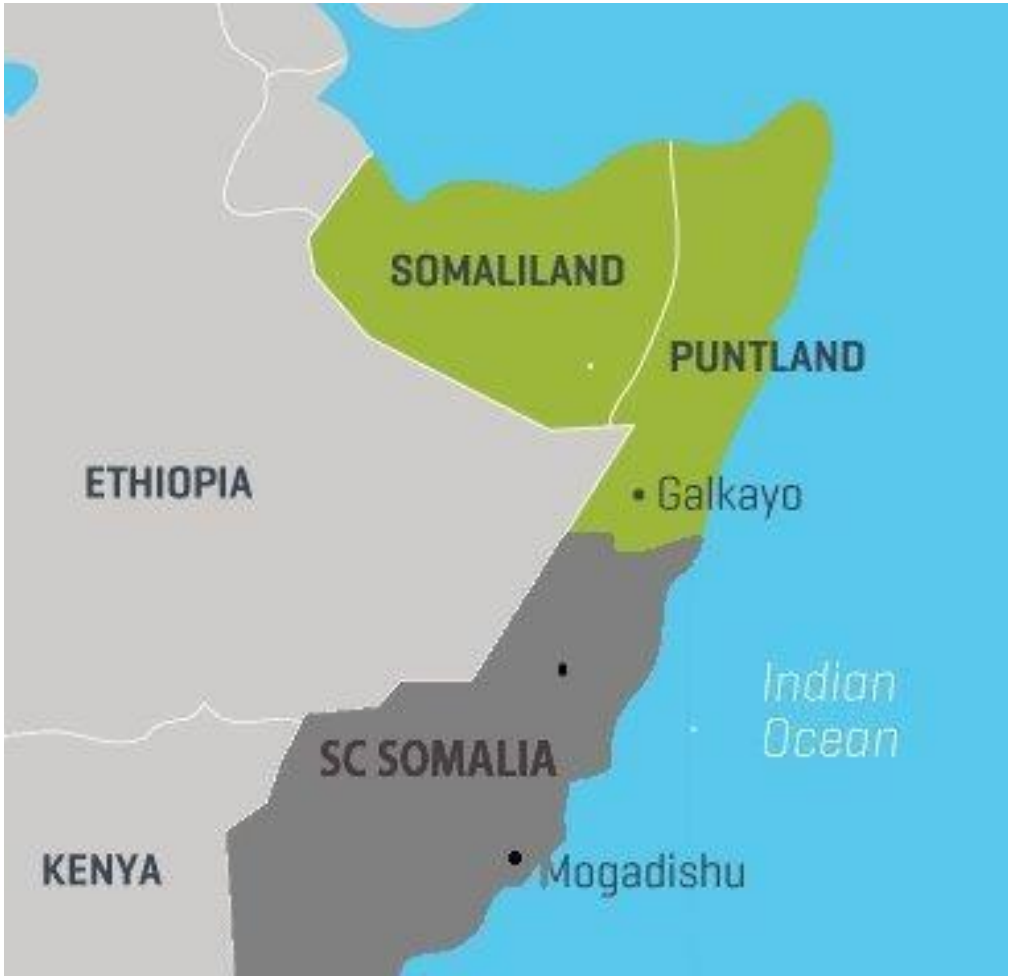
Save the Children Program Areas



Save the Children will respond to two other areas in Mudug and Galguduud

DJIBOUTI
Djibouti
GULF OF ADEN
ETHIOPIA
KENYA
INDIAN OCEAN
AWDAL
WOQOOYI GALBEED
Hargeysa
TOGDHEER
SANAAG
BARI
NUGAAL
Garoowe
MUDUG
Gaalkacyo
GALGUDUUD
Dhuusamarreeb
HIIRAAN
Beledweyne
BAKOOL
Xuddur
BAY
Baydhabo
GEDO
SHABELLE DHEXE
SHABELLE HOOSE
BANADIR
Muqdisho (Mogadishu)
JUBA DHEXE
JUBA HOOSE
Kismaayo (Chisimayu)
Boosaaso
Burco
Laascaanood
SOMALIA
SOMALIA
National capital
Regional capital
Town, village
Airport
International boundary
Regional boundary
Undetermined boundary
Main road
Track
Railroad
0 50 100 150 200 km
0 50 100 mi
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
Map No. 3690 Rev. 10 UNITED NATIONS December 2011
Department of Field Support Cartographic Section

PROGRAMME CONTEXT


SOMALILAND
PUNTLAND
ETHIOPIA
Galkayo
SC SOMALIA
Indian Ocean
KENYA
Mogadishu

Three regions with different security levels and travel restrictions

Large –scale SC programmes in South and Central Somalia

Very limited access for non-local staff to field sites in this part of Somalia

Little understanding of the ground reality in this area

South Central Somalia was the most violent operational setting for humanitarian workers (Aid Worker Security Database)

PROGRAMME MONITORING AND THE SIMULATED FIELD VISIT

Mechanisms for remote monitoring have been developed:

- Setting up and ensuring functionality of community Accountability mechanisms
- Engaging independent field monitors
- Use of GPS enabled cameras and Mobile phones for data collection in routine monitoring and in evaluations
- Collation of real time field data into dash boards to support real time decision making
- **Conducting Simulated field visits**

THE SIMULATED FIELD VISIT (SFV)

The first SFV was conducted in 2013 as part of a review of a nutrition programme in Puntland and Hiran (south and central Somalia) to look more in depth into the programmes ahead of a donor audit.

The international staff of the review team conducted the review of the Puntland programme without much access difficulty , but insecurity prevented direct access to Hiran. To ensure that the review could be conducted to a similar level of depth as the face-to face review in Puntland, it was necessary to be creative with methods of the review

A number of tools were then developed to support this particular review and were further developed into the SFV

THE SIMULATED FIELD VISIT

Aims of the Simulated Field Visit

- Monitoring of nutrition programmes (verification of programme existence!!)
- Assessing the programme perfomance
- Provide TA support to programmes that cannot be accessed by international staff:
- Identifying gaps and areas for capacity development
- Connection with the field teams and motivation

METHODOLOGY OF THE SIMULATED FIELD VISIT

Minimum standards/quality benchmarks and information needs agreed

Documents and photos provided by the field

Skype/phone calls with the field

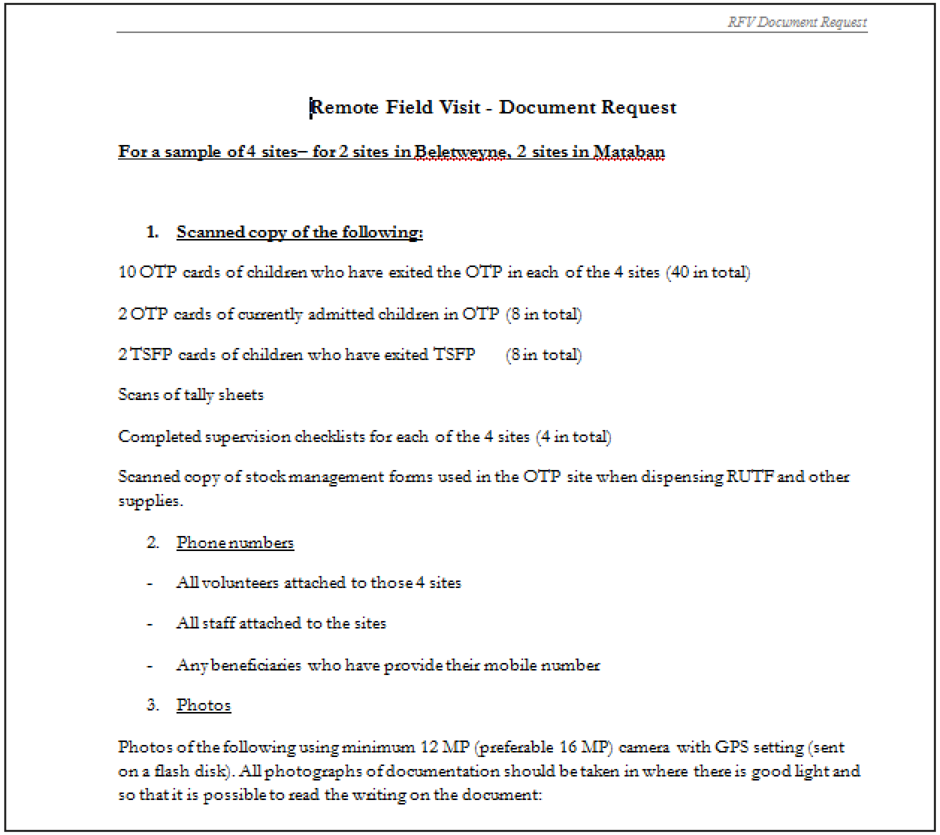
Joint review of documents with the field

Feedback and action planning

METHODOLOGY OF THE SIMULATED FIELD VISIT

Field team provides:

- Specific photographs of different points in the programme with GPS
- Scans of a sample of TSFP and OTP cards
- Phone numbers of volunteers and staff attached to sites being visited
- Scans of stock records and tally sheets
- Completed checklists and FGD notes



RFV Document Request

Remote Field Visit - Document Request

For a sample of 4 sites– for 2 sites in Beletweyne, 2 sites in Mataban

1. **Scanned copy of the following:**

10 OTP cards of children who have exited the OTP in each of the 4 sites (40 in total)

2 OTP cards of currently admitted children in OTP (8 in total)

2 TSFP cards of children who have exited TSFP (8 in total)

Scans of tally sheets

Completed supervision checklists for each of the 4 sites (4 in total)

Scanned copy of stock management forms used in the OTP site when dispensing RUTF and other supplies.

2. Phone numbers

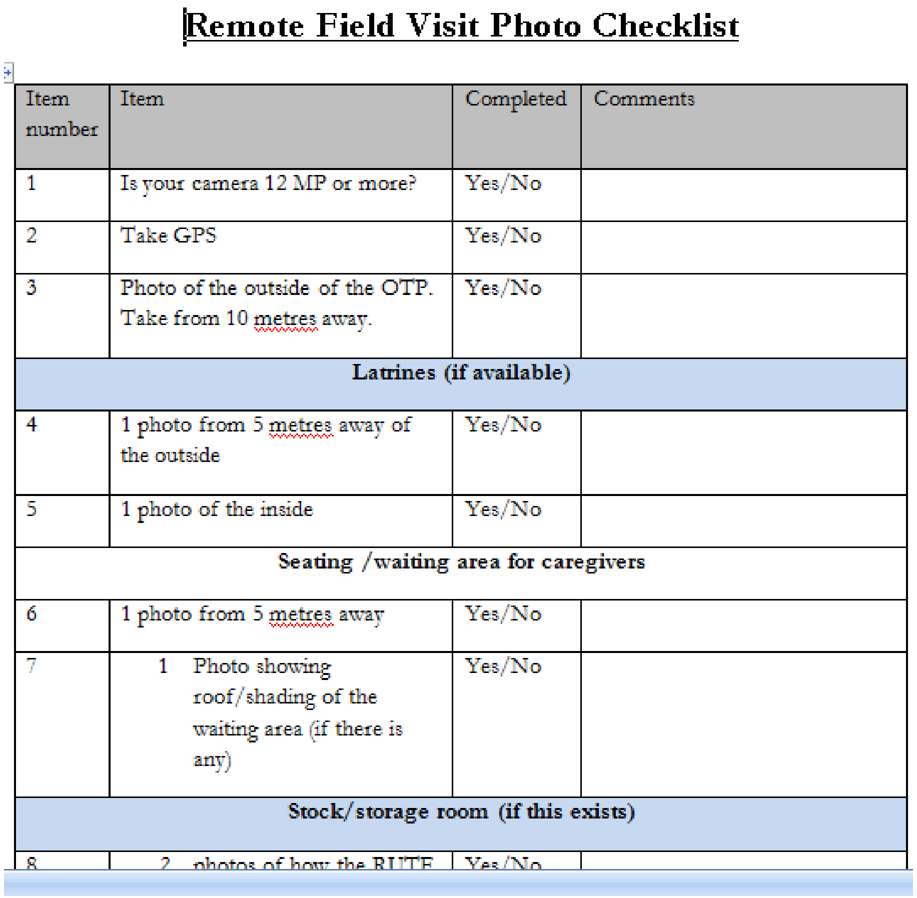
- All volunteers attached to those 4 sites
- All staff attached to the sites
- Any beneficiaries who have provide their mobile number

3. Photos

Photos of the following using minimum 12 MP (preferable 16 MP) camera with GPS setting (sent on a flash disk). All photographs of documentation should be taken in where there is good light and so that it is possible to read the writing on the document:

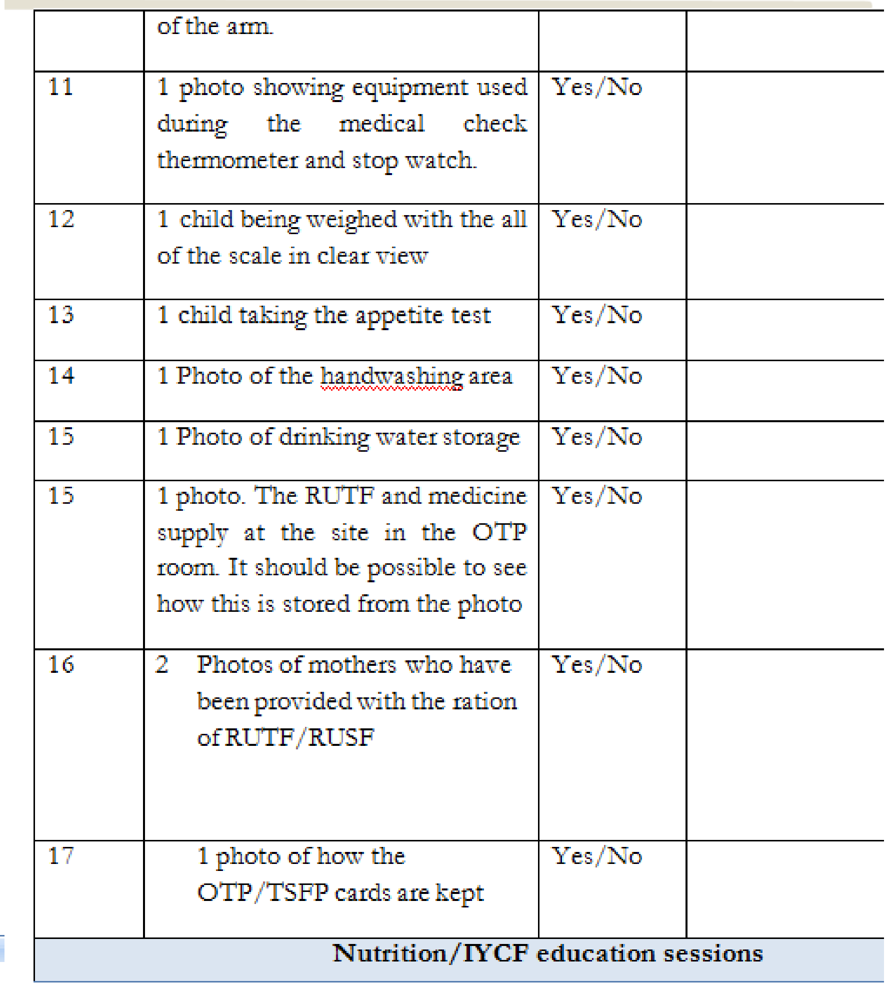
METHODOLOGY OF THE SIMULATED FIELD VISIT SPECIFIC

Photos requested



Remote Field Visit Photo Checklist

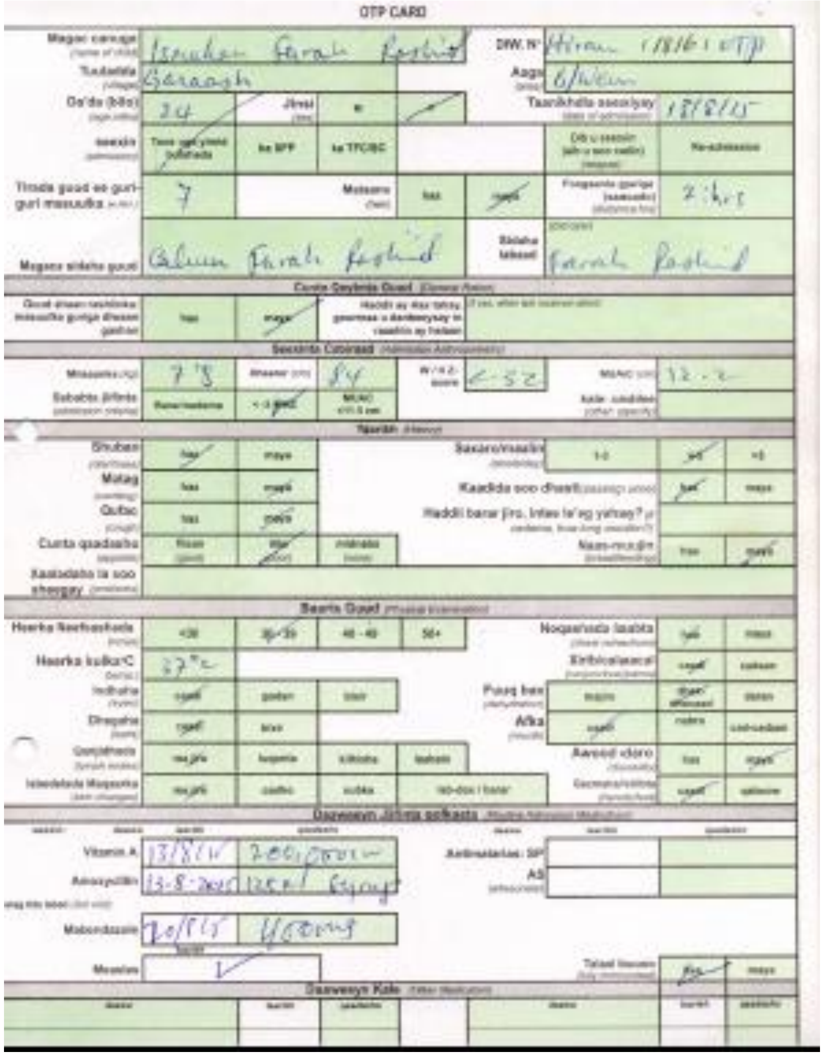
Item number	Item	Completed	Comments
1	Is your camera 12 MP or more?	Yes/No	
2	Take GPS	Yes/No	
3	Photo of the outside of the OTP. Take from 10 metres away.	Yes/No	
	Latrines (if available)		
4	1 photo from 5 metres away of the outside	Yes/No	
5	1 photo of the inside	Yes/No	
	Seating /waiting area for caregivers		
6	1 photo from 5 metres away	Yes/No	
7	1 Photo showing roof/shading of the waiting area (if there is any)	Yes/No	
	Stock/storage room (if this exists)		
8	2 photos of how the RUTF	Yes/No	



	of the arm.		
11	1 photo showing equipment used during the medical check thermometer and stop watch.	Yes/No	
12	1 child being weighed with the all of the scale in clear view	Yes/No	
13	1 child taking the appetite test	Yes/No	
14	1 Photo of the handwashing area	Yes/No	
15	1 Photo of drinking water storage	Yes/No	
15	1 photo. The RUTF and medicine supply at the site in the OTP room. It should be possible to see how this is stored from the photo	Yes/No	
16	2 Photos of mothers who have been provided with the ration of RUTF/RUSF	Yes/No	
17	1 photo of how the OTP/TSFP cards are kept	Yes/No	
	Nutrition/IYCF education sessions		

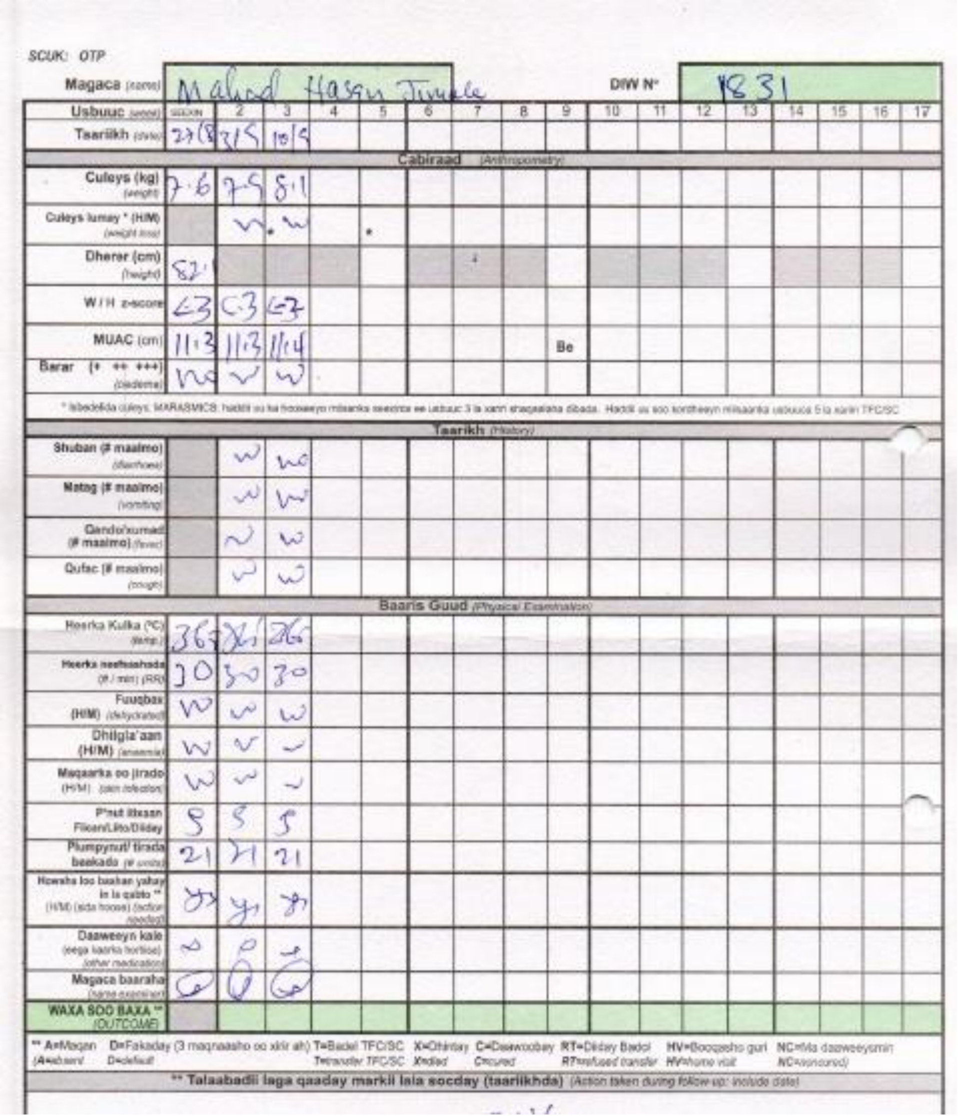
METHODOLOGY OF THE SIMULATED FIELD VISIT

Scanned Documents - 10 OTP cards for each site provided



OTP CARD

DIW. N° Hiran (1816 OTP)



SCUK: OTP

Magaca (name) Mahad Hasan Jimale

DIW N° 1831

Usbuuc (week)	[illegible]	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Taariikh (date)	27/8	3/9	10/9														
Cabiraad (Anthropometry)																	
Culeys (kg) (weight)	7.6	7.9	8.1														
Culeys lumay * (H/M) (weight loss)		w	w														
Dherer (cm) (height)	82.1																
W / H z-score	<3	<3	<3														
MUAC (cm)	11.3	11.3	11.4						Be								
Barar (+ ++ +++) (oedema)	no	w	w														
Taarikh (History)																	
Shuban (# maalmo) (diarrhoea)		w	no														
Matag (# maalmo) (vomiting)		w	w														
Qandho/xumad (# maalmo) (fever)		w	w														
Qufac (# maalmo) (cough)		w	w														
Baaris Guud (Physical Examination)																	
Heerka Kulka (°C) (temp.)	36.7	36	36														
Heerka neefsashada (# / min) (RR)	30	30	30														
Fuuqbax (H/M) (dehydrated)	w	w	w														
Dhiigla'aan (H/M) (anaemia)	w	w	w														
Maqaarka oo jirado (H/M) (skin infection)	w	w	w														
P'nut iltesan Fiican/Liito/Diiday	5	5	5														
Plumpynut/ tirada baakada (# units)	21	21	21														
Howsha loo baahan yahay in la qabto ** (H/M) (action needed)	yes	yes	yes														
Daaweeyn kale (other medication)	[illegible]	[illegible]	[illegible]														
Magaca baaraha (name examiner)	[illegible]	[illegible]	[illegible]														
WAXA SOO BAXA ** (OUTCOME)																	

** A=Maqan (A=absent) D=Fakaday (3 maqnaasho oo xiriir ah) (D=default) T=Badel TFC/SC (T=transfer TFC/SC) X=Dhintay (X=died) C=Daawoobay (C=cured) RT=Diiday Badol (RT=refused transfer) HV=Booqasho guri (HV=home visit) NC=Ma daaweeysmin (NC=noncured)

** **Talaabadii laga qaaday markii lala socday (taariikhda)** (Action taken during follow-up: include date)

METHODOLOGY OF THE SIMULATED FIELD VISIT

Focus Group Discussions

Focus group discussion - beneficiaries

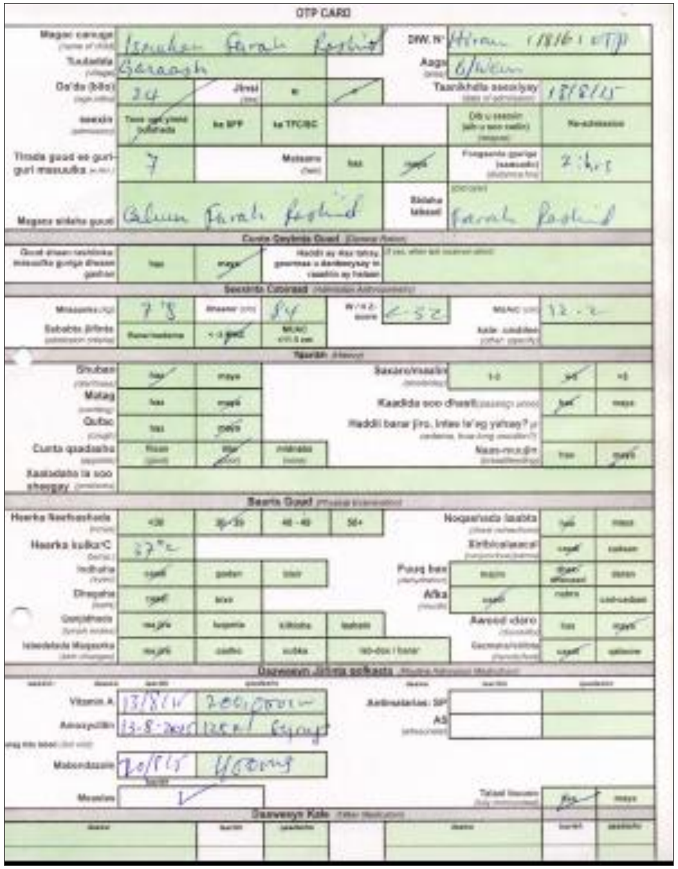
Site name – number of beneficiaries

1. How long have your children been in the programme?	
2. Do you know why you/your child is in the OTP/SFP? How are children selected to be part of the programme?	
3. . How did your children come to be in the programme – how were they identified and where? (facility/village/home)	

Ismuujinta Aduunka 2014
"TAAGEER NAASNUUJINTA"
WORLD BREASTFEEDING WEEK 2014

METHODOLOGY OF THE SIMULATED FIELD VISIT
Document Analysis

- **How are the OTP protocols being followed?**
  - Patient registration (registration cards)
  - Admission and Discharge procedures
  - Treatment (medicines & RUTF)
  - Patient followup
- **Stock Management (scanned stock cards & tally sheets)**
- **Focus group discussion notes**
- **Photographs**



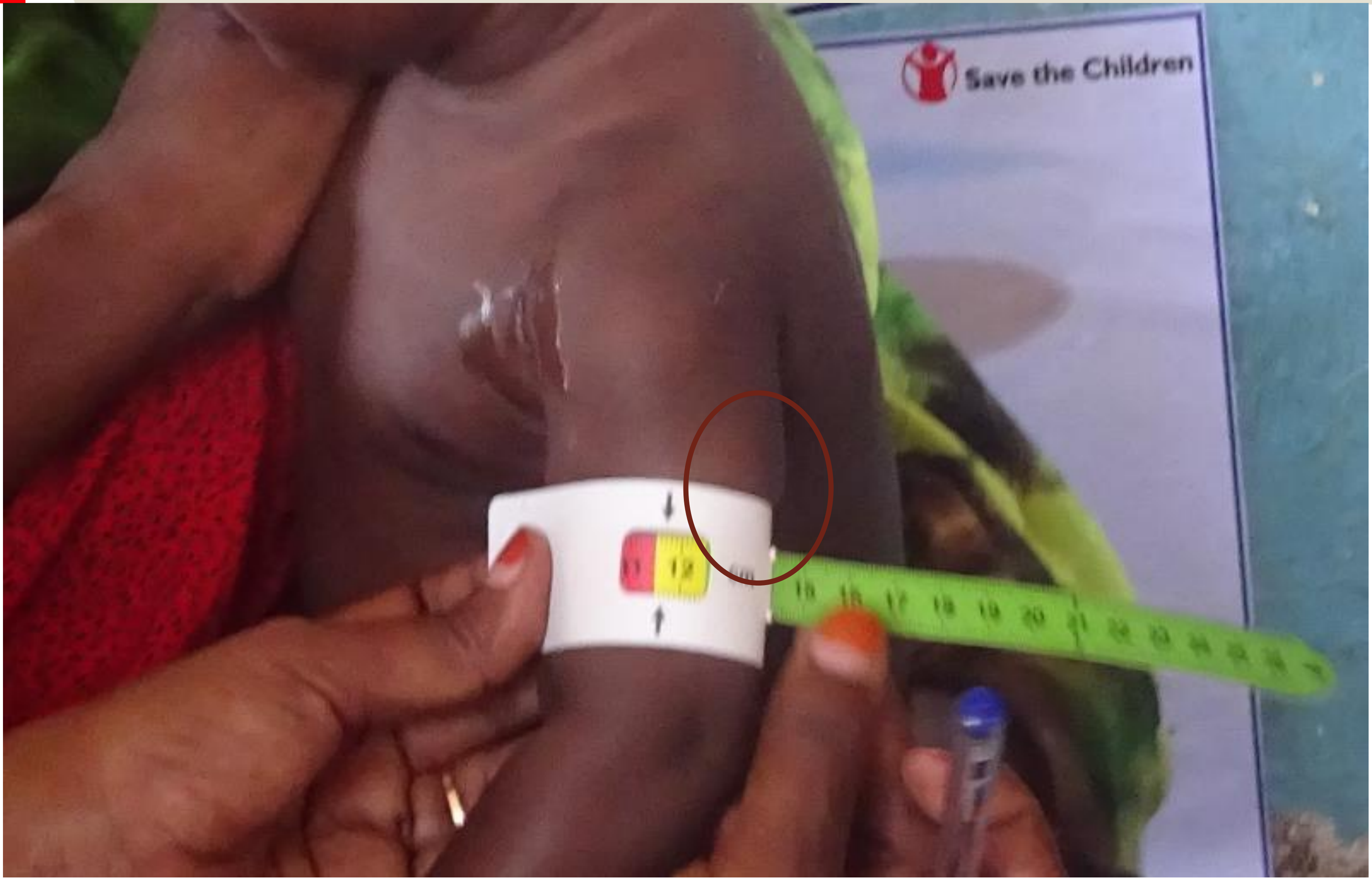
METHODOLOGY OF THE SIMULATED FIELD VISIT

Photographs - nutrition promotion activities

Nutrition promotion activities in two different sites

METHODOLOGY OF THE SIMULATED FIELD VISIT

Photographs….MUAC measurements


Save the Children
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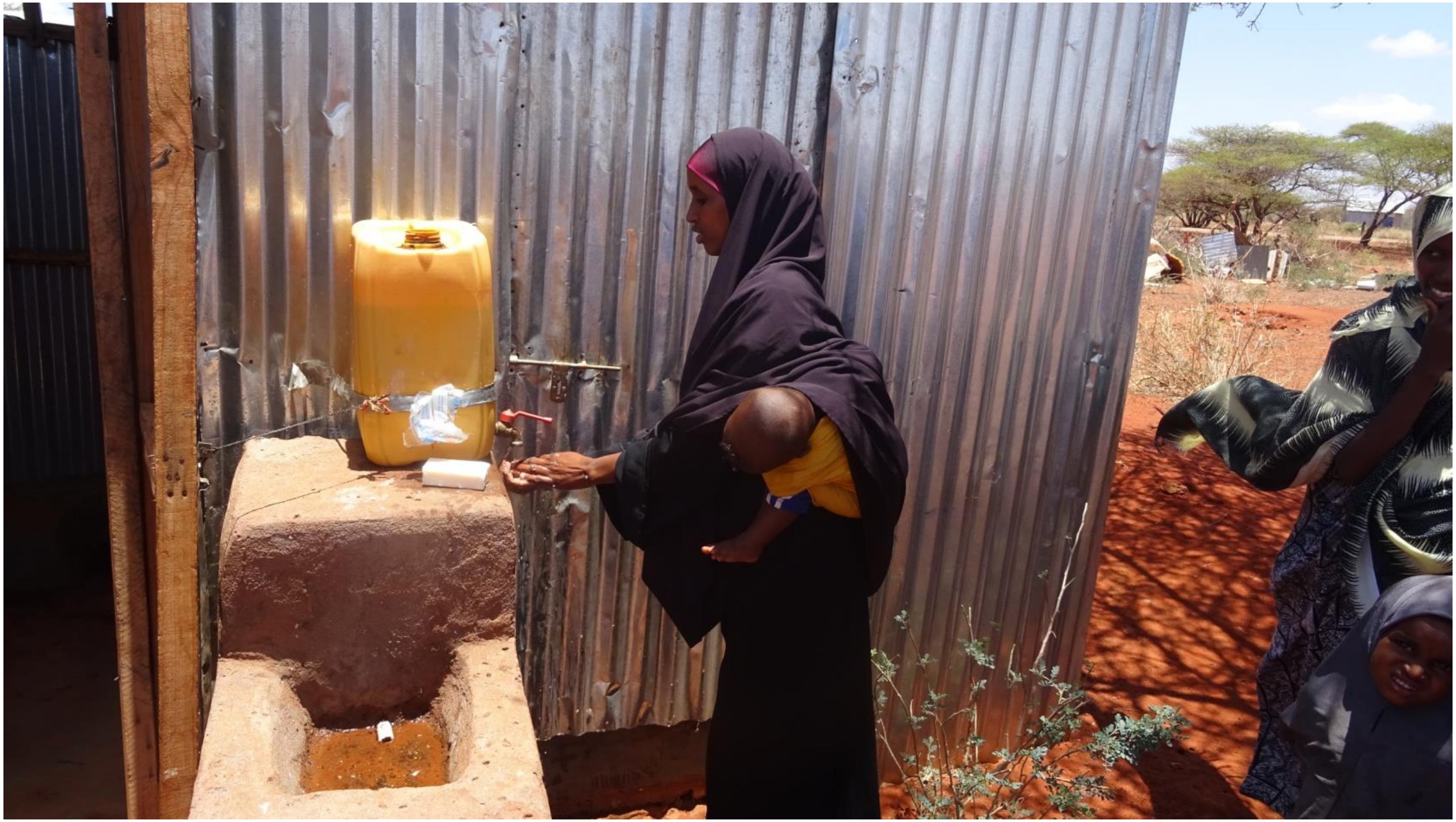
METHODOLOGY OF THE SIMULATED FIELD VISIT

Photographs ..site set up

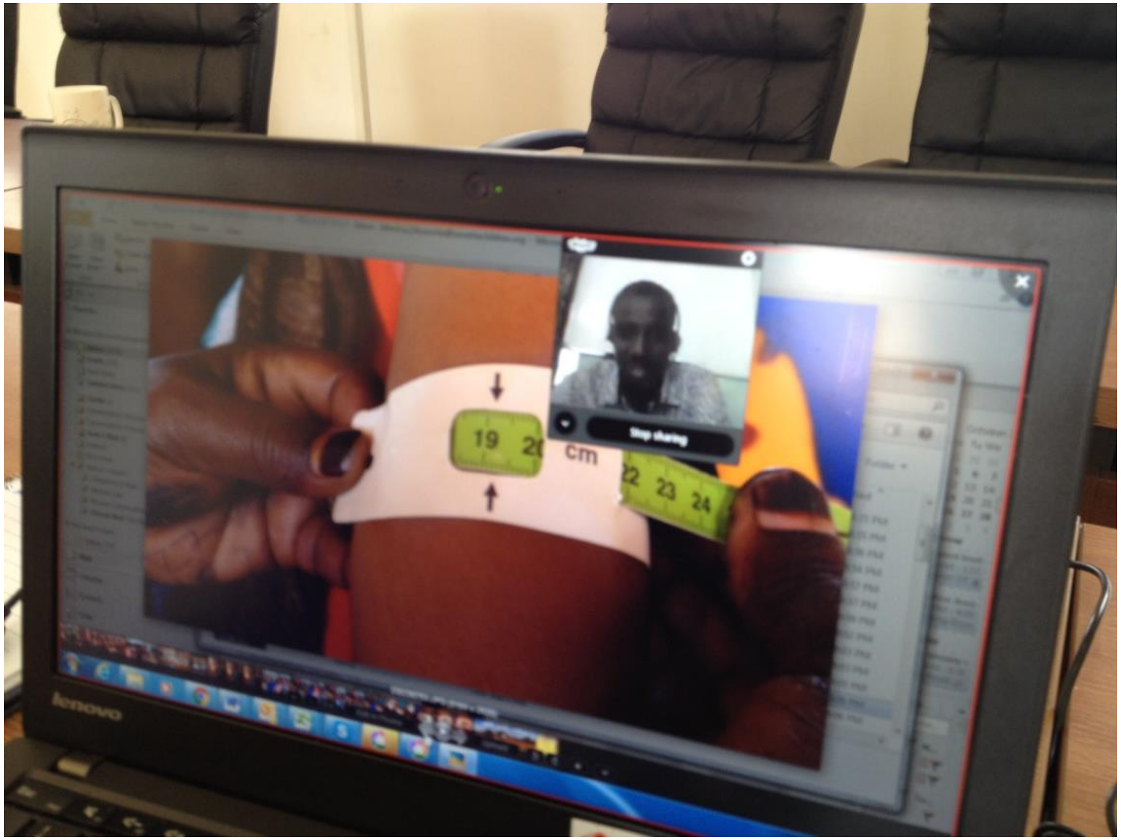
METHODOLOGY OF THE SIMULATED FIELD VISIT

Photographs…. WASH facilities



METHODOLOGY OF THE SIMULATED FIELD VISIT
Discussion with the field team

Triangulation of data, findings, feedback, challenges, action planning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Stop sharing
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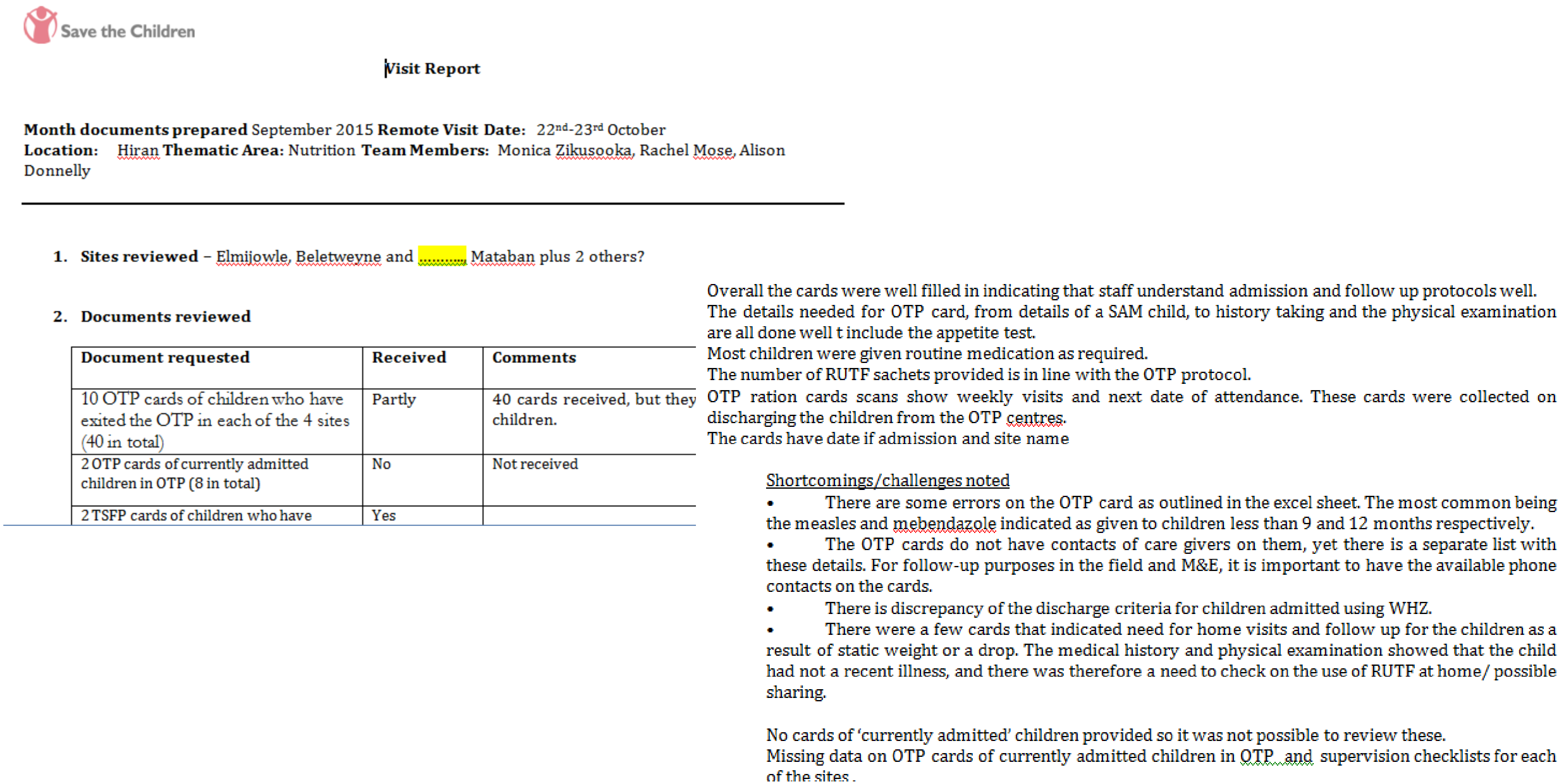
METHODOLOGY OF THE SIMULATED FIELD VISIT

Report



Save the Children

Visit Report

Month documents prepared September 2015 **Remote Visit Date:** 22nd-23rd October
Location: Hiran **Thematic Area:** Nutrition **Team Members:** Monica Zikusooka, Rachel Mose, Alison Donnelly

1. **Sites reviewed** – Elmijowle, Beletweyne and ………. Mataban plus 2 others?

2. **Documents reviewed**

Document requested	**Received**	**Comments**
10 OTP cards of children who have exited the OTP in each of the 4 sites (40 in total)	Partly	40 cards received, but they children.
2 OTP cards of currently admitted children in OTP (8 in total)	No	Not received
2 TSFP cards of children who have	Yes	

Overall the cards were well filled in indicating that staff understand admission and follow up protocols well.
The details needed for OTP card, from details of a SAM child, to history taking and the physical examination are all done well t include the appetite test.
Most children were given routine medication as required.
The number of RUTF sachets provided is in line with the OTP protocol.
OTP ration cards scans show weekly visits and next date of attendance. These cards were collected on discharging the children from the OTP centres.
The cards have date if admission and site name

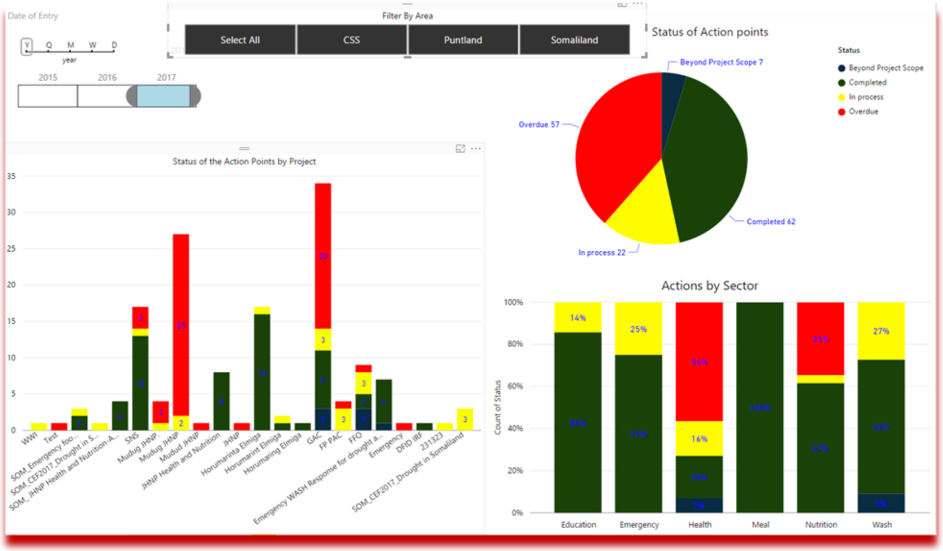
Shortcomings/challenges noted

- There are some errors on the OTP card as outlined in the excel sheet. The most common being the measles and mebendazole indicated as given to children less than 9 and 12 months respectively.
- The OTP cards do not have contacts of care givers on them, yet there is a separate list with these details. For follow-up purposes in the field and M&E, it is important to have the available phone contacts on the cards.
- There is discrepancy of the discharge criteria for children admitted using WHZ.
- There were a few cards that indicated need for home visits and follow up for the children as a result of static weight or a drop. The medical history and physical examination showed that the child had not a recent illness, and there was therefore a need to check on the use of RUTF at home/ possible sharing.

No cards of 'currently admitted' children provided so it was not possible to review these.
Missing data on OTP cards of currently admitted children in OTP and supervision checklists for each of the sites .

METHODOLOGY OF THE SIMULATED FIELD VISIT

Action plan follow up


Date of Entry
Y Q M W D
year
2015
2016
2017
Filter By Area
Select All
CSS
Puntland
Somaliland
Status of Action points
Status
● Beyond Project Scope
● Completed
● In process
● Overdue
Beyond Project Scope 7
Overdue 57
Completed 62
In process 22
Status of the Action Points by Project
35
30
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SOM_CEF2017_Drought in S...
SOM_JHNP Health and Nutrition-A...
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SOM_CEF2017_Drought in Somaliland
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2
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6
3
Actions by Sector
Count of Status
100%
80%
60%
40%
20%
0%
14%
86%
25%
75%
56%
16%
20%
7%
100%
35%
62%
27%
64%
9%
Education
Emergency
Health
Meal
Nutrition
Wash

online action track

- Actions logged into an action plan tracker at the field site – responsible person, field manager and operations director alerted on the action (from monitoring, evaluations, community feedback etc) via email
- Auto alerts on pending actions
- Auto escalation of uncompleted actions
- Management visibility of status in implementing actions
- Accountability for program quality at all levels

IMPROVEMENTS OVER TIME

2013

- Dosages of RUTF provided were incorrect
- No information on actions taken for children with static and/or faltering weight
- No information on vaccination against measles
- No information on the discharge outcomes.
- Some photographs indicated that MUAC was not taken correctly
- Waiting space and facilities were inadequate.

2015/16

- 61%, 74% and 96% of the eligible children with vaccination status noted in the 2nd, 3rd and 4th reviews respectively
- Children who received correct amount of RUTF improved from 69.4% in the initial review to 100% in the 4th review.
- Discharge information improved from 51% in the initial review to 80% in the 4th review.
- Less progress in ensuring that poor weight gain is identified and investigated

LESSONS LEARNED AND CHALLENGES OF THE SFV

Prior preparation especially in getting a complete set of documents as requested will determine the quality and usefulness of the SFV.

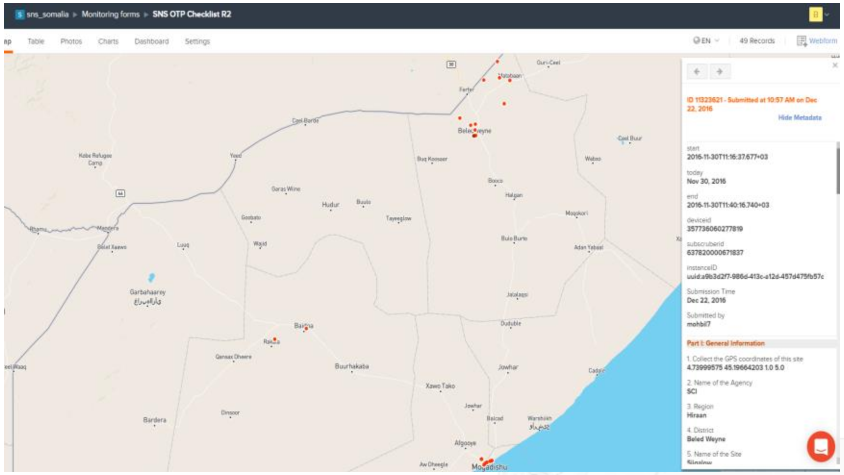
Quality of photographs can be an issue. Training of the team in taking photos is needed.

It often takes a lot of communication to get all the correct photos and documents

As the review team is not actually travelling to the field, strict discipline is required to set aside uninterrupted time to conduct the SFV.

The big question: How useful is this when the field teams choose what to show you?

BEYOND THE SFV.. Real time monitoring of program quality and performance


sns_somalia ▸ Monitoring forms ▸ SNS OTP Checklist R2
Table
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Baydhaba
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ID 11323621 - Submitted at 10:57 AM on Dec 22, 2016

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start
2016-11-30T11:16:37.677+03

today
Nov 30, 2016

end
2016-11-30T11:40:16.740+03

deviceid
357736060277819

subscruberid
637820000671837

instanceID
uuid:a9b3d2f7-986d-413c-a12d-457d475fb57c

Submission Time
Dec 22, 2016

Submitted by
mohbil7

Part I: General Information

1. Collect the GPS coordinates of this site
4.73999575 45.19664203 1.0 5.0

2. Name of the Agency
SCI

3. Region
Hiraan

4. District
Beled Weyne

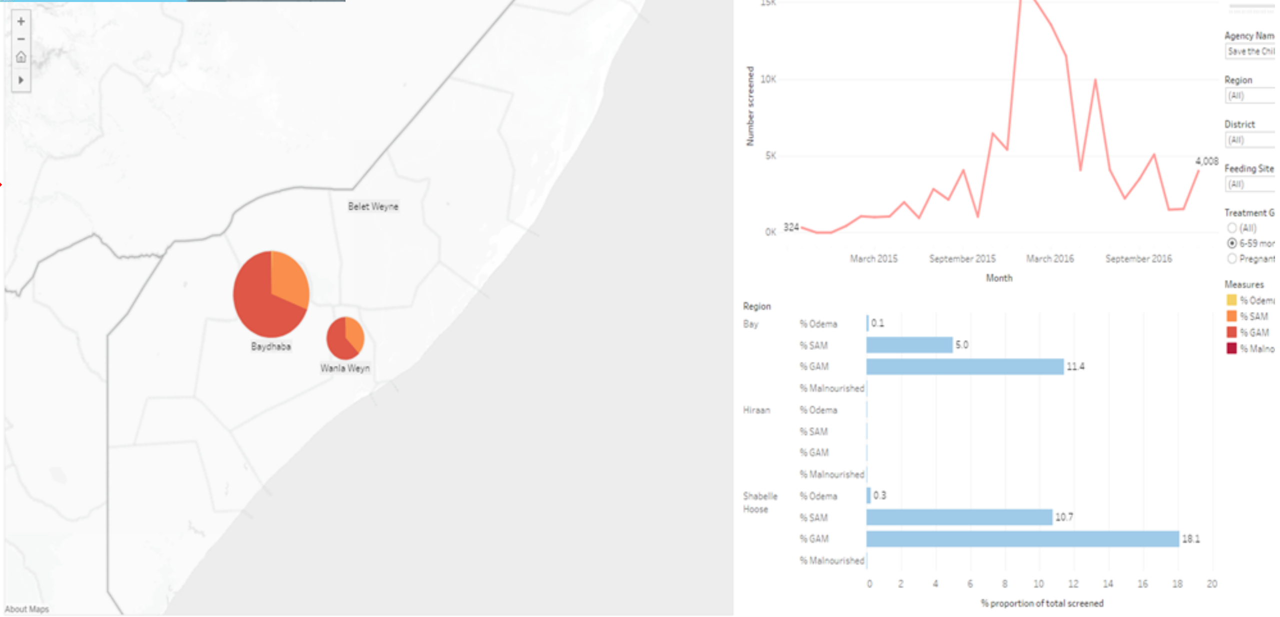
5. Name of the Site
Siinalow

Quality Monitoring information by location & date

Key program indicators by location

Kobo, ONA & Tableau Platforms

SNS - Nutrition Early Warning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Date (Month
July 2016

Agency Nam
Save the Chi

Region
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VALUE ADDED BY ICT in SFV and M&E

- **Verification** of the existence of programs
- **Real time data** that supports decision making at all levels
- Stronger **data integrity**
- Improved **data quality** – can be ensured remotely
- **Cost effectiveness** in data collection and analysis
- Better tracking of program quality and performance in **inaccessible locations**
- **Learning across sites/locations** as performance data is pooled into centralized dash boards
- Better support and **engagement with field teams** in remote

THANK YOU

Save the Children

Breakout session 2a: Geospatial analysis in the Philippines

Presenter:
Mr Malte Lech, Evaluator, German Institute
for Development Evaluation

Geospatial analysis in impact evaluations – a land-use planning intervention in the Philippines

Breakout Session 2: Using geospatial analysis for Impact evaluations

ICT4Eval – IFAD, Rome| June, 06 - 07th 2017

Dr. Malte Lech

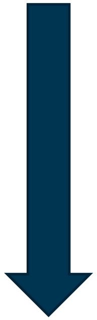
Evaluator

Geospatial analysis: a potential start into ICT in evaluation

Geospatial analysis: Relatively cost-efficient and ‚easy‘

- Open-Source (Desktop GIS: QGIS / R)
- Open-Data
- Online learning resources

First **stepping-stone** to leverage the potential for **ICT in evaluative work**



- Geospatial analysis
- Spatial econometrics

…

- Remote Sensing
- ‚Big Data‘ / ANN / ML

Complexity of tools
Readjustment of skill-sets in evaluation teams

Overcoming **to-big-to evaluate (2B2E)** challenges / **new insights** on established and new evaluative questions

Key questions

How are we experiencing **‚to-big-to-evaluate‘ (2B2E)** challenges in DEval‘s **Land Use Planning Impact Evaluation**?

What are **practical sollutions** for 2B2E problems?

How can you **structure project workflow** in **(interdisciplinary) geoanalysis-teams?**

Land Use Planning Impact Evaluation at DEval: SIMPLE intervention

Sustainable integrated Sustainable Integrated Management and Planning for Local Government Ecosystems (SIMPLE)

- Component project of Environment and Rural Development program (EnRD)
- **Duration:** 2006 - 2015
- **Regional scope:** Visayas Region, Philippines

FLOOD
EARLY WARNING
SYSTEM
ST. BERNARD
giz

SIMPLE consists of:

- descriptions of well-tried processes and instruments for the management of land use
- Training components / writeshops / GIS support

Implemented by

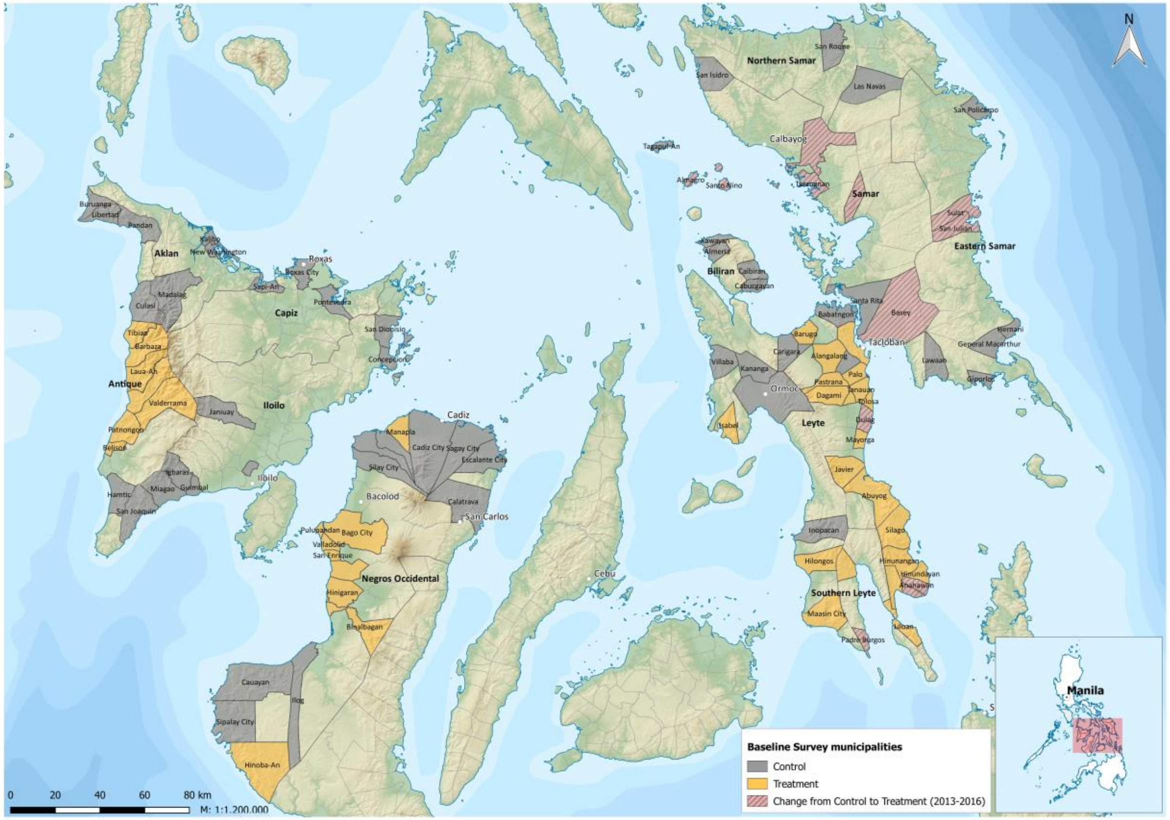
A straightforward evaluation?

‚Baseline' data collection in 2012

- 3,000 household
- 300 villages
- 100 municipalities

‚Endline' data collection in 2016

- Quasi-experimental design
- Propensity score matching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Tibiao
Barbaza
Laua-An
Antique
Valderrama
Janiuay
Iloilo
San Dionisio
Concepcion
Patnongon
Belison
Igbaras
Miagao
Guimbal
Hamtic
San Joaquin
Iloilo
Cadiz
Manapla
Cadiz City
Sagay City
Escalante City
Silay City
Bacolod
Calatrava
San Carlos
Pulupandan
Bago City
Valladolid
San Enrique
Negros Occidental
Hinigaran
Binalbagan
Cauayan
Ilog
Sipalay City
Hinoba-An
Cebu
Northern Samar
San Roque
San Isidro
Las Navas
San Policarpo
Calbayog
Tagapul-An
Almagro
Santo Nino
Tarangnan
Samar
Sulat
San Julian
Eastern Samar
Kawayan
Almeria
Biliran
Caibiran
Cabucgayan
Santa Rita
Basey
Babatngon
Barugo
Carigara
Alangalang
Tacloban
Hernani
General Macarthur
Lawaan
Giporlos
Villaba
Kananga
Ormoc
Palo
Pastrana
Tanauan
Dagami
Tolosa
Isabel
Leyte
Dulag
Mayorga
Javier
Abuyog
Inopacan
Silago
Hilongos
Hinunangan
Hinundayan
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Padre Burgos
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80 km
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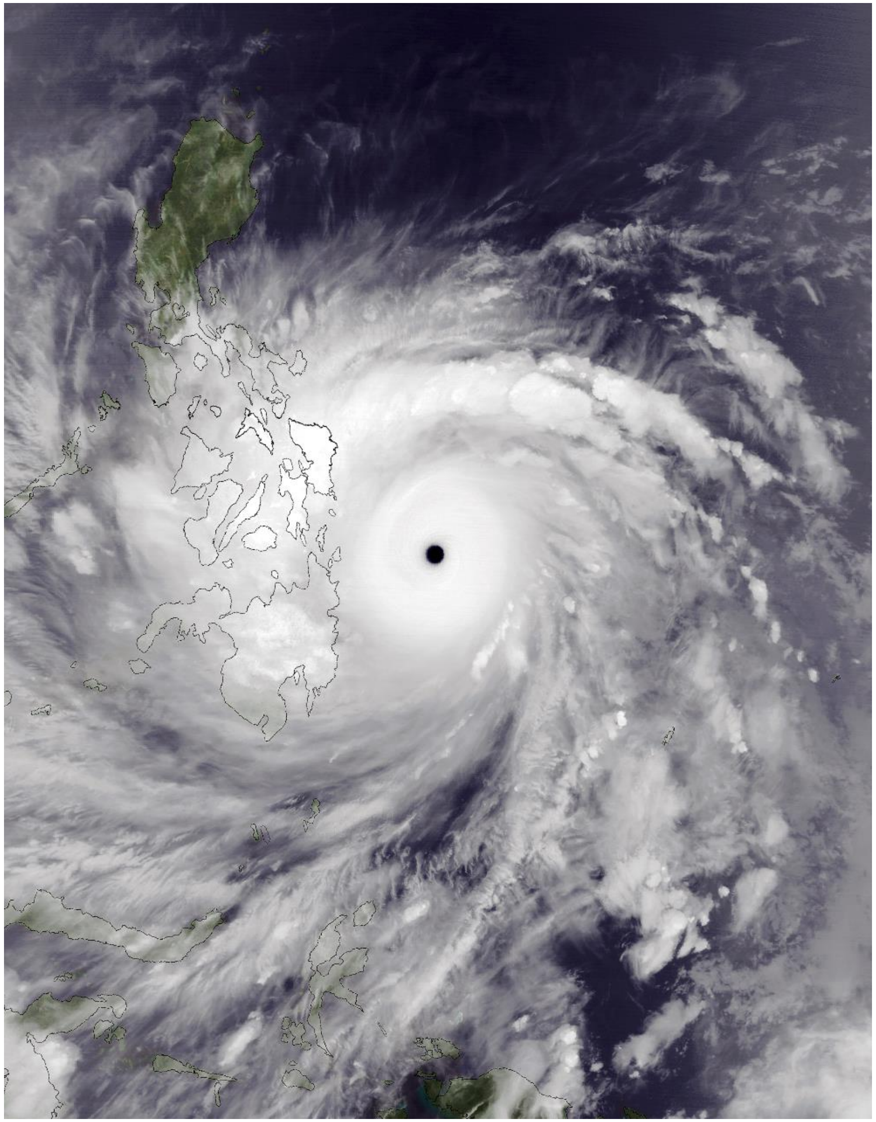
Baseline Survey municipalities
Control
Treatment
Change from Control to Treatment (2013-2016)

Typhoon Yolanda - November 2013



Typhoon Haiyan (Yolanda)

- 6,343 confirmed casualties *
- 1,058 people missing *
- Followed by remendous international aid and donor support

* National Disaster Risk Reduction and Management Council (NDRRMC) 2013 – Final Report Effects of Typhoon "Yolanda" (Haiyan)

Further complexities

Typhoon Yolanda

- Difficulties in **attribution** of treatment / differentiation
- **Varying outcomes** depending on affectedness

Outcomes so large and complex that survey data will not be able to reveal true extent

- Reduction of **deforestaton** and **illegal logging**
- Idenfication of areas prone for **natural hazards**
- Scale and scope of survey data

A real-world intervention that does not follow experimental evaluation setting

- **Intended and unintended Policy Diffusion**
- **Attribution of trainings** by different authorities
- **Overlapping project goals**

Key questions

How are we experiencing **‚to-big-to-evaluate‘ (2B2E)** challenges in DEval‘s **Land Use Planning Impact Evaluation**?

What are **practical sollutions** for 2B2E problems?

How can you **structure project workflow** in **(interdisciplinary) geoanalysis-teams?**

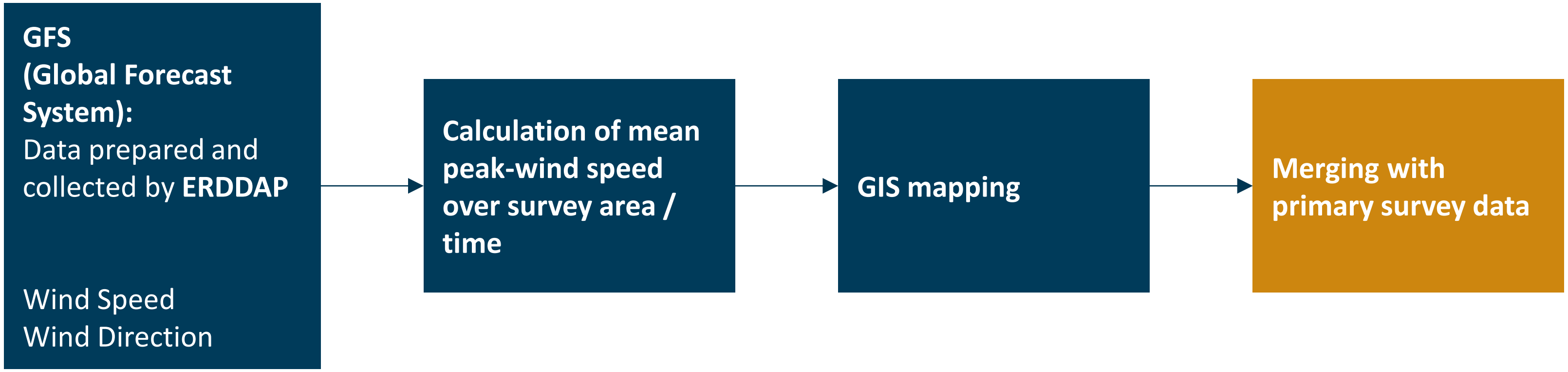
Practical solutions: Typhoon Yolanda

Challenge

- **Little comprehensive data** about exposure of intervention / control municipalities / Difficulty to evaluate the reported impacts in regard to the intevention
- **Varying quality of self-assessment** of interviewed persons (overestimation)

Solution

- **Approximation of Typhoon exposure** based on geographically referenced weather data:



GFS
(Global Forecast System):
Data prepared and collected by **ERDDAP**

Wind Speed
Wind Direction

Calculation of mean peak-wind speed over survey area / time

GIS mapping

Merging with primary survey data

Practical solutions: Typhoon Yolanda

Pros

- Fast and easy way to gain an approximation of Typhoon impacts

Cons

- Still needs extensive knowledge about local conditions (coastal exposition)

Pearson correlation coefficient	GFS: wind speed,	GFS: wind speed + coastal exposition
Casualties (% of mun. pop)	.27	.40
Injured persons (% of mun. pop)	.28	.30
Missing persons (% of mun. pop)	.25	.40

Sources: NDRRMC 2013, GFS 2016

Utilization

- Assessment of intervention and control's exposure to Yolanda
- Utilization as matching variable for PSM

Practical solutions: Large-scale outcomes

Challenge

- Geographically large outcomes that are hard to measure using only survey data (Forest cover change / Natural disasters)
- Limited ability to generalize survey data due to regionally clustered sampling

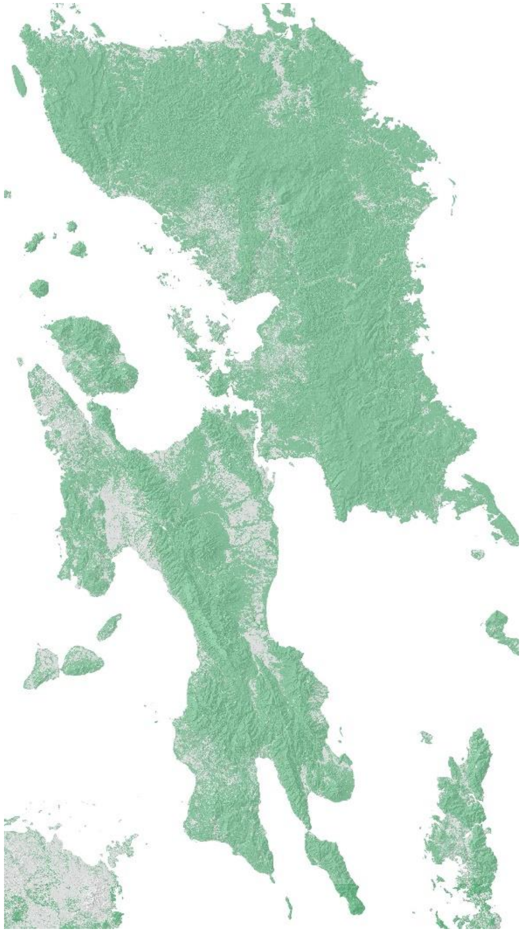
Solution

- Using external geographic data (remote sensing and open source vector data) to quantify outcomes in intervention and control municipalities

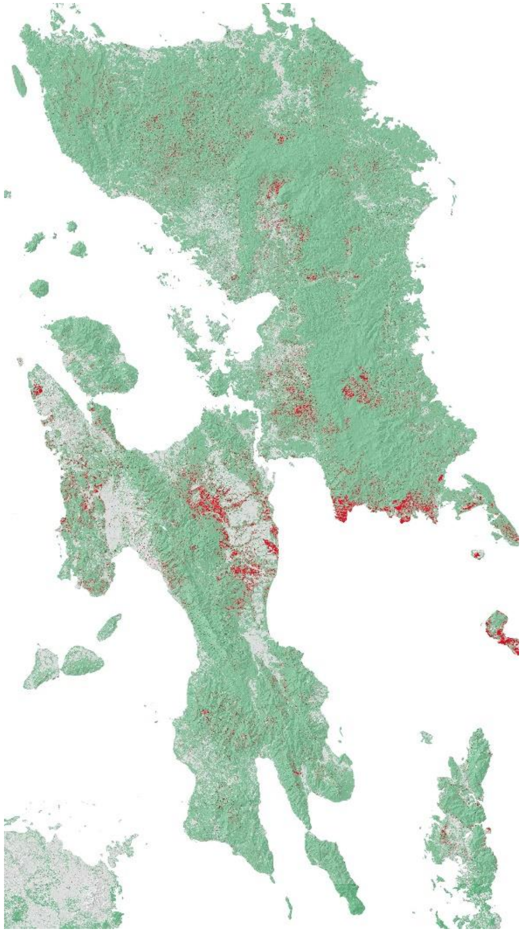
Practical solutions: Forest cover measurement

Forest cover / Deforestation

- **High resolution forest cover change data based on Landsat data** (Hansen et al. 2013)
- Relatively precise measurement of change in forest cover (30m raster cell size)
- **Correction for deforestation caused by Typhoon Yolanda in 2013**
- Assessment of forest cover change in intervention and control municipalities



Forest cover 2000 in Leyte, Philippines



Forest cover loss 2000 – 2015 in Leyte, Philippines

Practical solutions: Natural hazard asssessment

Natural hazard assessment

- Simplified multi-hazard mapping to analyze households‘ potential exposure to localized natural hazards
- Contextualization of survey data

Data collection and consolidation:

- Digital Terrain Model (SRTM)
- Geocoded rivers and streams (OSM)
- Global Forest Cover

Flooding

1. Coastal
2. River

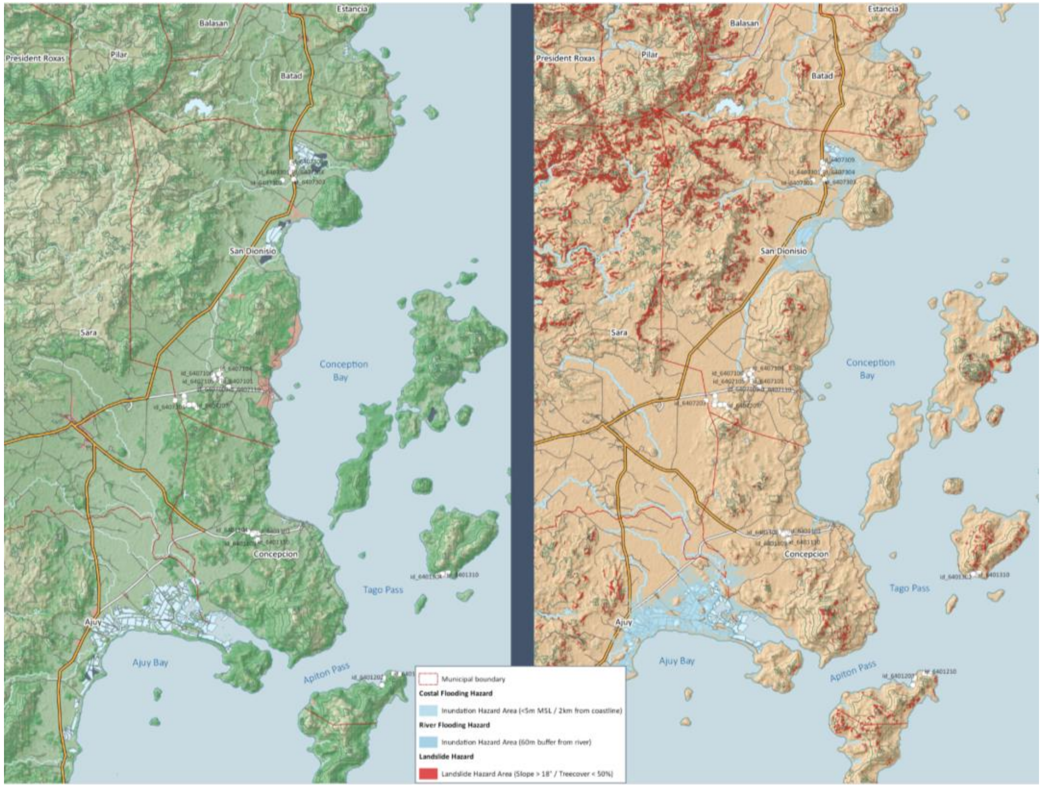
(Terrain height, aspect, buffer)

Landslides

(Slope and Forest Cover)

Volcanic Hazard

(Buffer)


Balasan
Estancia
President Roxas
Pilar
Batad
San Dionisio
Sara
Conception Bay
Concepcion
Tago Pass
Ajuy
Ajuy Bay
Apiton Pass
Municipal boundary
Costal Flooding Hazard
Inundation Hazard Area (<5m MSL / 2km from coastline)
River Flooding Hazard
Inundation Hazard Area (60m buffer from river)
Landslide Hazard
Landslide Hazard Area (Slope > 18° / Treecover < 50%)

Practical solutions: Policy diffusion

Challenge

- Control municipalities might be **‚contaminated'** by support measures similar to the treatment: **„Congested development cooperation landscape"**
- Personnel from control municipalities might **interact** with treated personnel: **Unintended spillover.**

Solution

- Controlling **for spatial autocorrelation** of outcome

Outcome and geographic area → **Definition and refinement of distance matrix** → **Calculation and detection of spatial autocorrelation** → **Accounting for diffusion in statistical data analysis**

Practical solutions: Policy diffusion

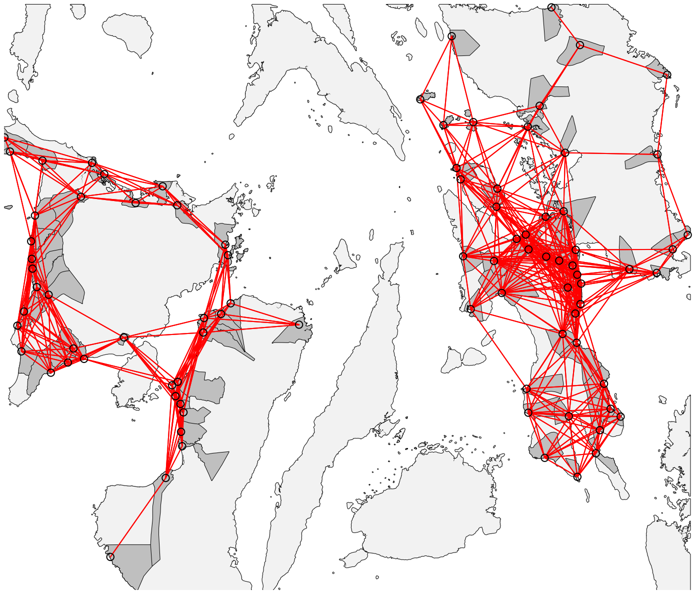
Approach

- Experimentation with various approaches to measure **distance and proximity:**

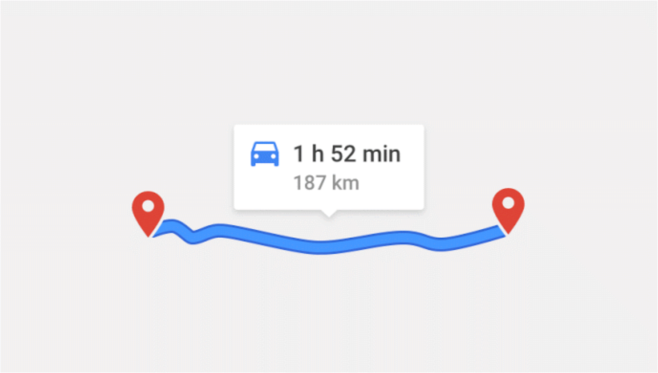
  Geographic proximity, institutional proximity, cultural proximity (Boschma 2005), road network distance

- Calculate **distance matrix** and **spillover of outcomes**: **Integration into data analysis**

Simple connectivity matrix



Travel time distance matrix based on Google Maps API



Key questions

How are we experiencing **‚to-big-to-evaluate‘ (2B2E)** challenges in DEval‘s **Land Use Planning Impact Evaluation**?

What are **practical sollutions** for 2B2E problems?

How can you **structure project workflow** in **(interdisciplinary) geoanalysis-teams?**

Geoanalysis workflow

Different approaches

- **Different disciplines, common project goal**
- Finding a **common language** and understanding
- Requires effort to **lobby for geographic integration**

Different tools

- **Desktop GIS** for smaller analysis and visual proofing, remote sensing
- **R** for large-scale geoproecssing, calculation and automation

Managing interfaces and workflow (Philippines project)

- **Survey data** the project is based on is the common ground
- **Municipal, Village and Household IDs** as common identifier
- **Exchange format** mostly .csv and .shp file formats + .geotiff for raster data

Data sources and cost

Increasing availability of open-source data / software

- **Base geometries:** http://gadm.org/
- **Terrain data / Remote Sensing data (Landsat / Sentinel):** https://earthexplorer.usgs.gov/
- **Open Street Map:** Preprocessed (geofabrik.de)
- **Global Forest Change:** http://earthenginepartners.appspot.com/science-2013-global-forest/download_v1.3.html

⇒ **Free / quality varies regionally (needs proofing)**

Commercial vendors (remote sensing):

- Airbus Defence and Space (Pléiades, SPOT)
- Digital Globe (GeoEye, World View)

⇒ **High price / high quality (resolution)**

Geocoded data for evaluative work

- http://aiddata.org: Geocoded donor data

No ‚one-stop-shop' solution but hunting and gathering

Summary and Outlook

Examples presented: „what is feasible in everydays evaluative work“

Increasing complexity and details – a question of resources:

- Diffusion analysis: connectivity matrix based on **real-time traffic information**

Geographic analysis can be a stepping-stone into more sophisticated use of technologies for evaluation:

- Increasing the size of datasets for analysis
- Merging different data-sources (poverty, remittances, mobile phone data)
- Automation of data (pre-)processing and analysis

Technologically complex evaluation techniques

- Complementary but no replacement for existing evaluation techniques

Thank you for your attention

Dr. Malte Lech

Mail: malte.lech@deval.org

Phone: +49 228 336907 - 969

Breakout session 2b: Evaluating environmental impact

Presenter:
Mr Juha Ilari Uitto, Director,
Independent Evaluation Office, Global
Environment Facility

Independent Evaluation Office
GLOBAL ENVIRONMENT FACILITY

Evaluating Environmental Impact Using Technology

Dr. Juha Uitto, Director
Dr. Geeta Batra, Dy. Director & Chief Evaluation Officer
Dr. Anupam Anand, Evaluation Officer

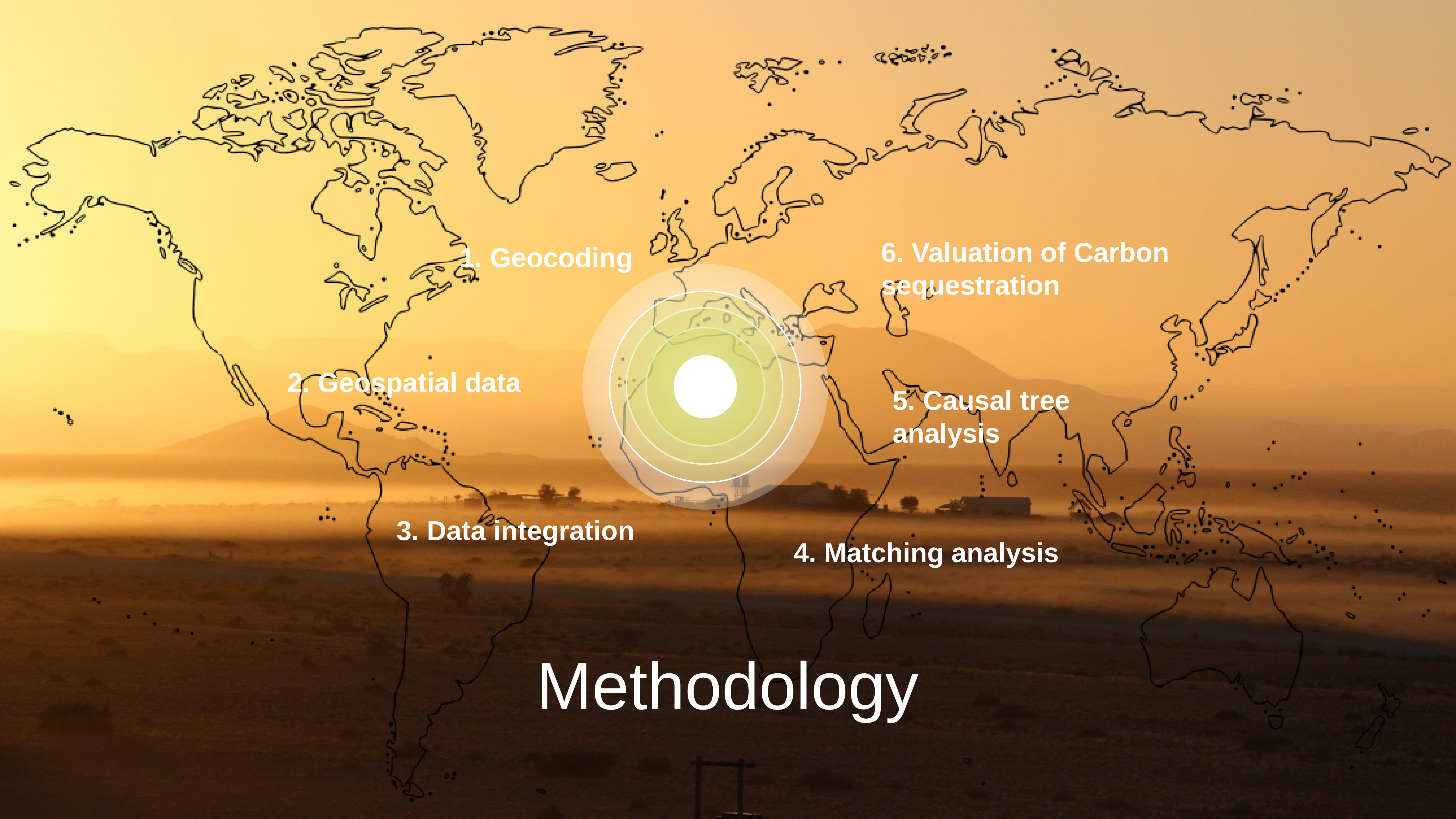
Independent Evaluation Office, Global Environment Facility

Information and Communication Technologies for Evaluation (ICT4Eval) Using Innovative Approaches to Development Evaluation International Conference
Rome, Italy, 6-7 June 2017

Why use ICT in evaluations?

- Efficiency
- Analysis at different scales
- Aiding objectivity and transparency
- Applicable to variety of evaluation methods

GEF Land Degradation Projects



1. Geocoding

2. Geospatial data

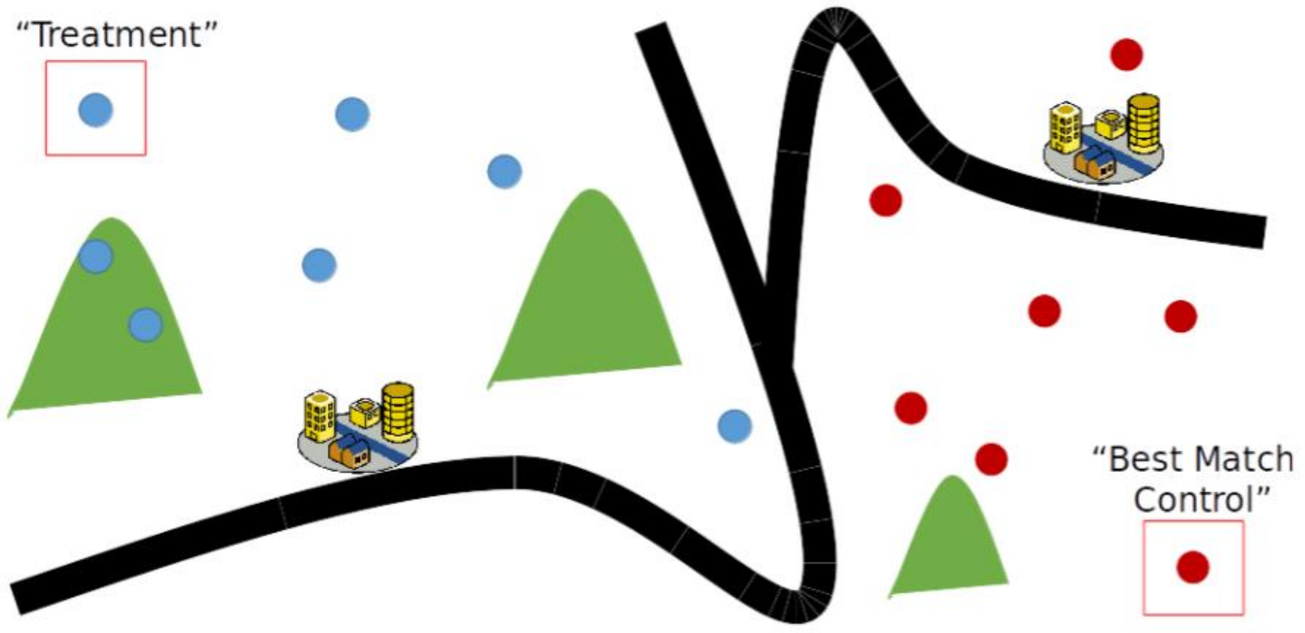
3. Data integration

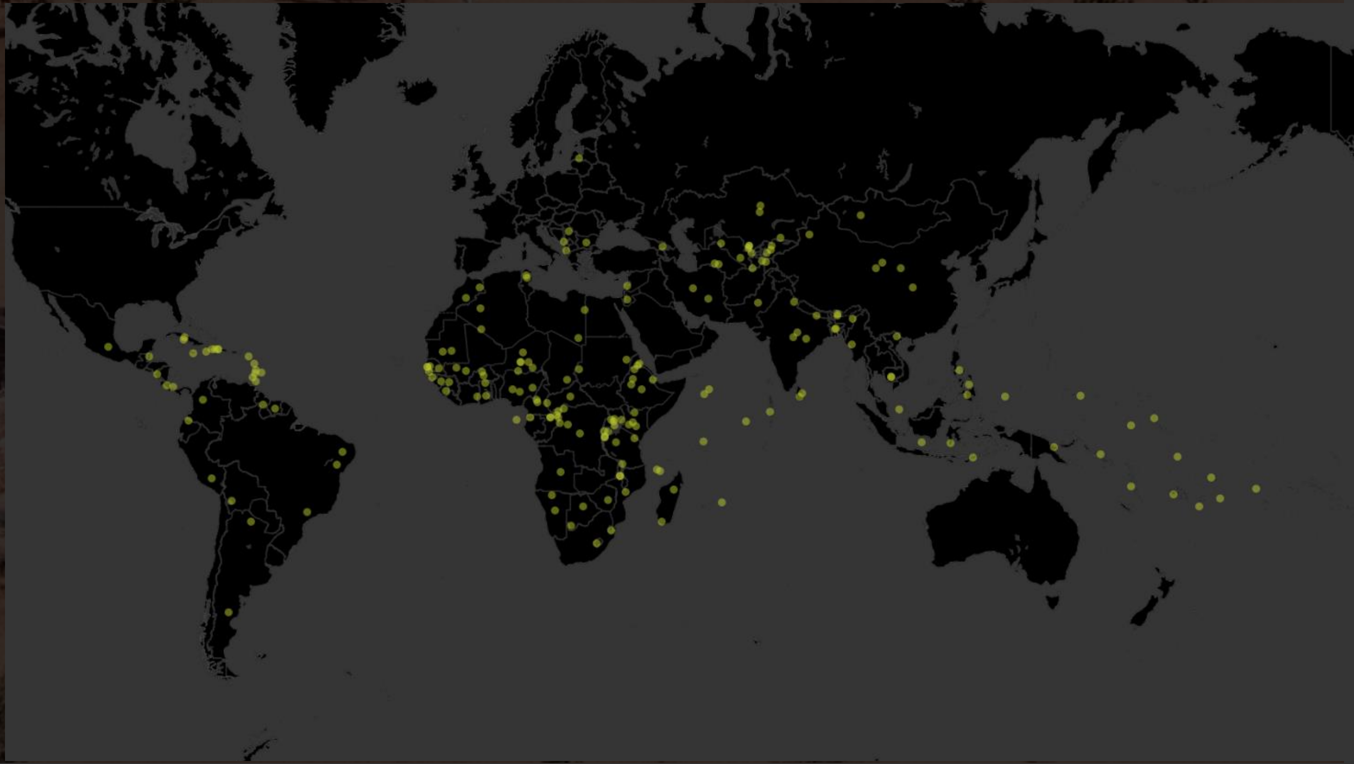
4. Matching analysis

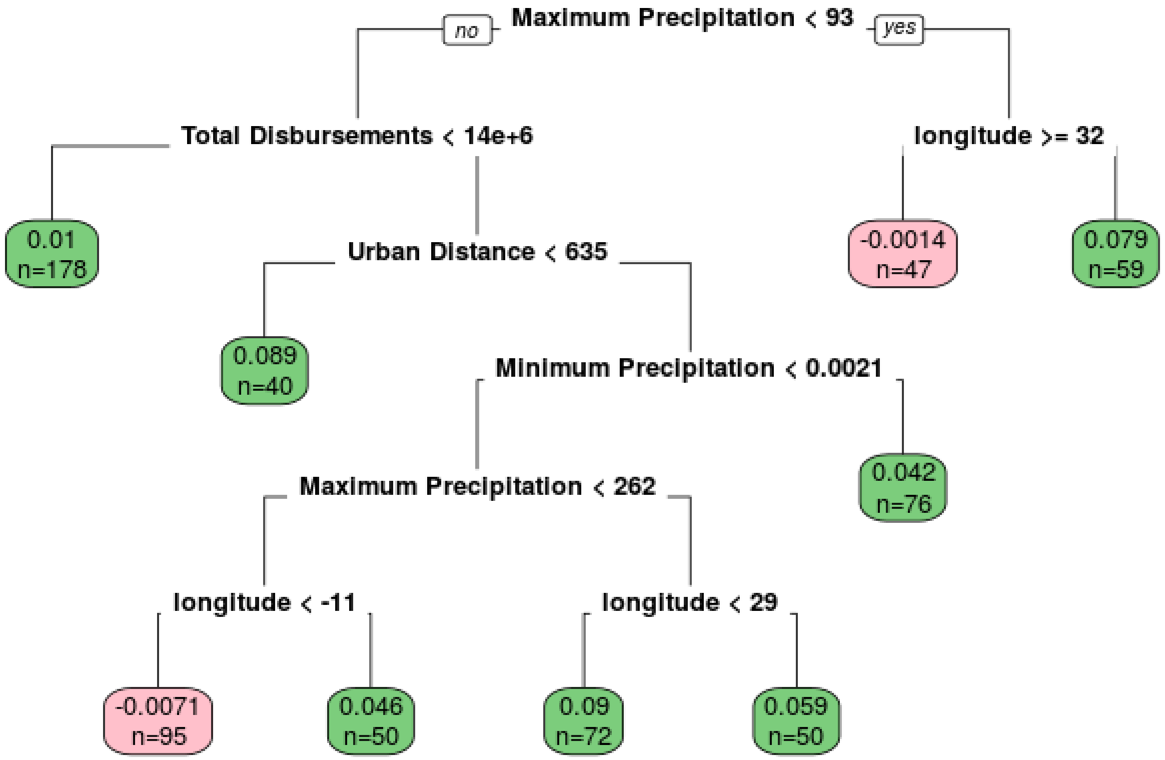
5. Causal tree analysis

6. Valuation of Carbon sequestration

Methodology

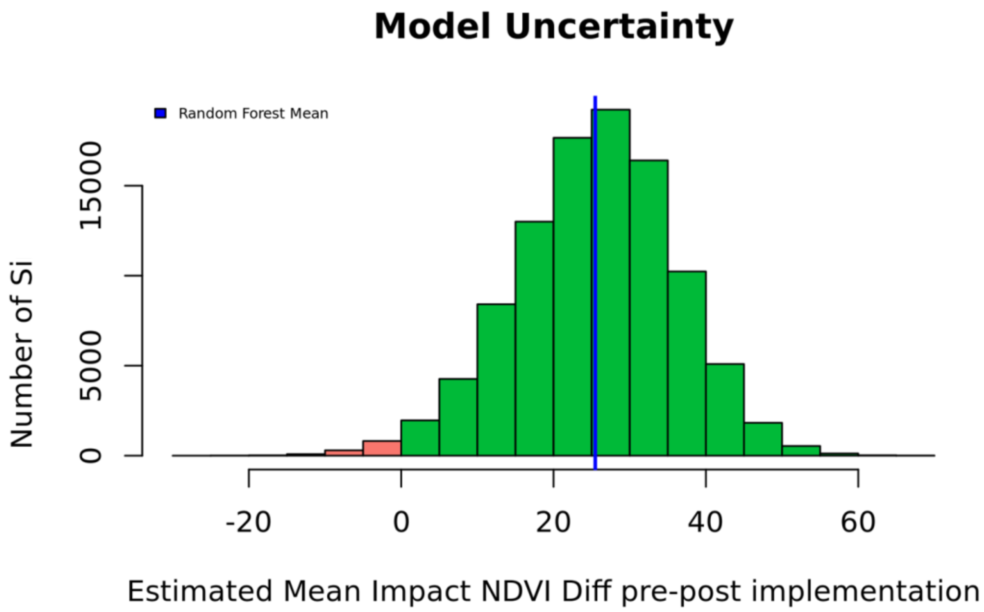

"Treatment"
"Best Match Control"

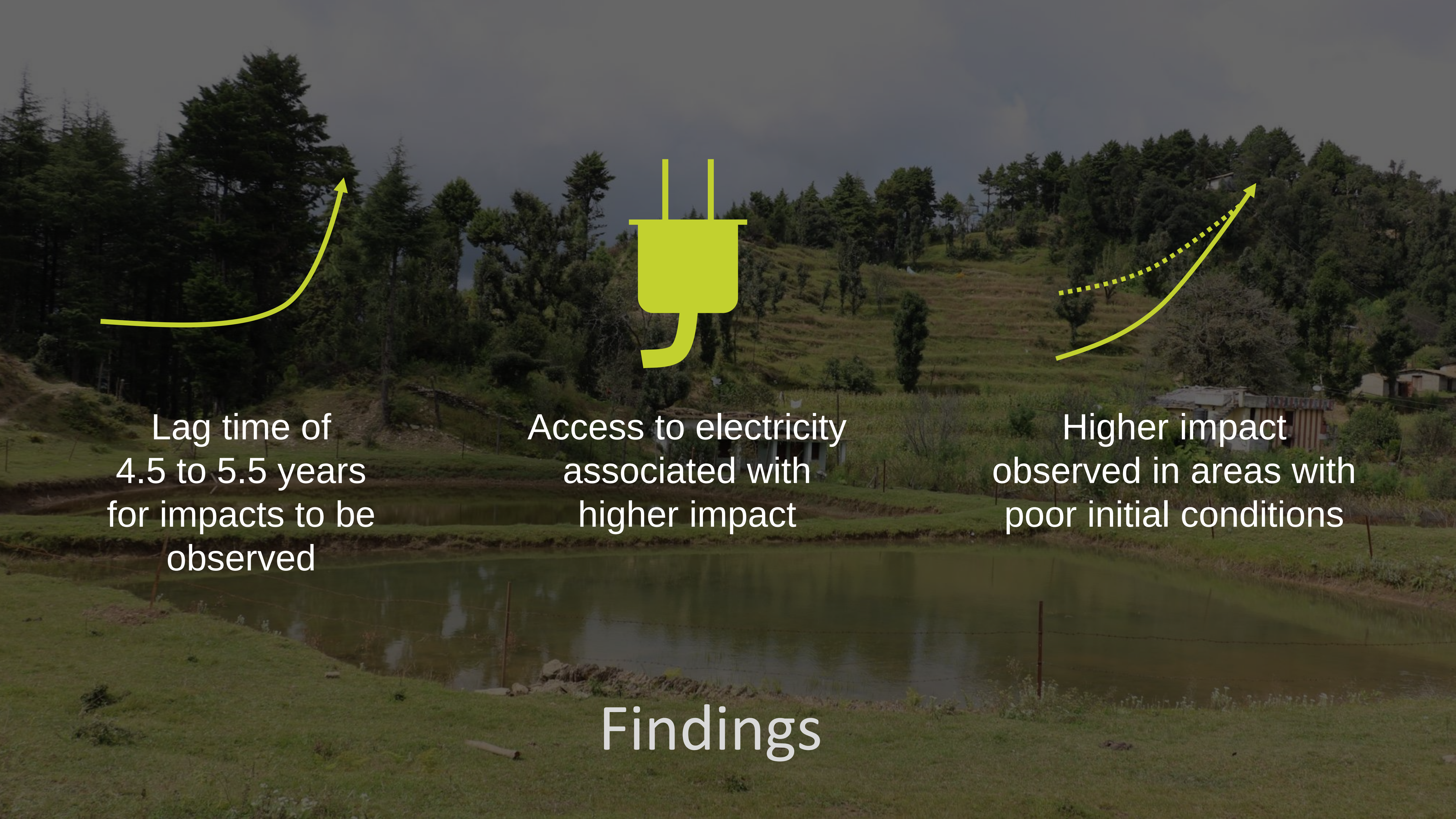



Maximum Precipitation < 93
no
yes
Total Disbursements < 14e+6
longitude >= 32
0.01
n=178
Urban Distance < 635
-0.0014
n=47
0.079
n=59
0.089
n=40
Minimum Precipitation < 0.0021
Maximum Precipitation < 262
0.042
n=76
longitude < -11
longitude < 29
-0.0071
n=95
0.046
n=50
0.09
n=72
0.059
n=50

Machine learning, causal tree method for assessing factors influencing outcomes and influencing outcomes and impact.

Model simulation done numerous times to account for model Uncertainty



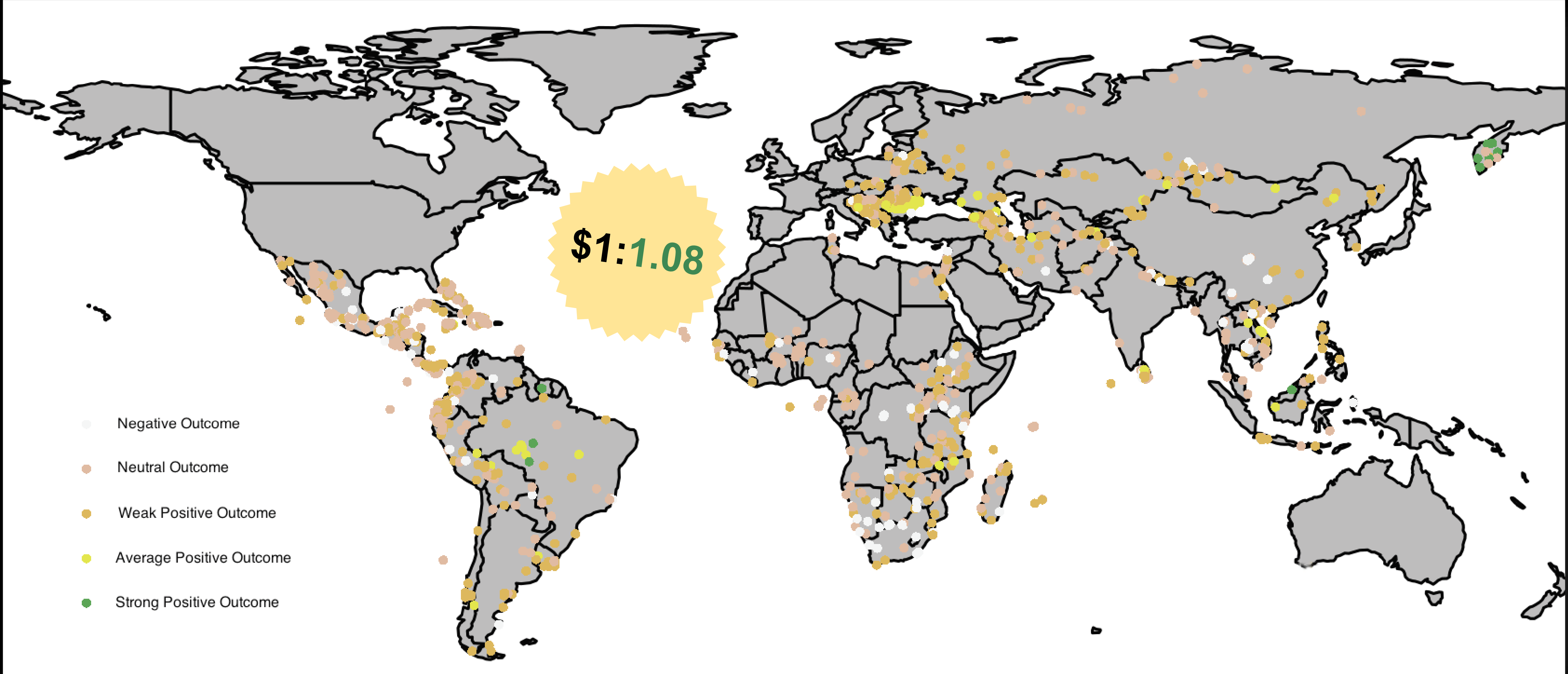


Findings

Lag time of
4.5 to 5.5 years
for impacts to be
observed

Access to electricity
associated with
higher impact

Higher impact
observed in areas with
poor initial conditions

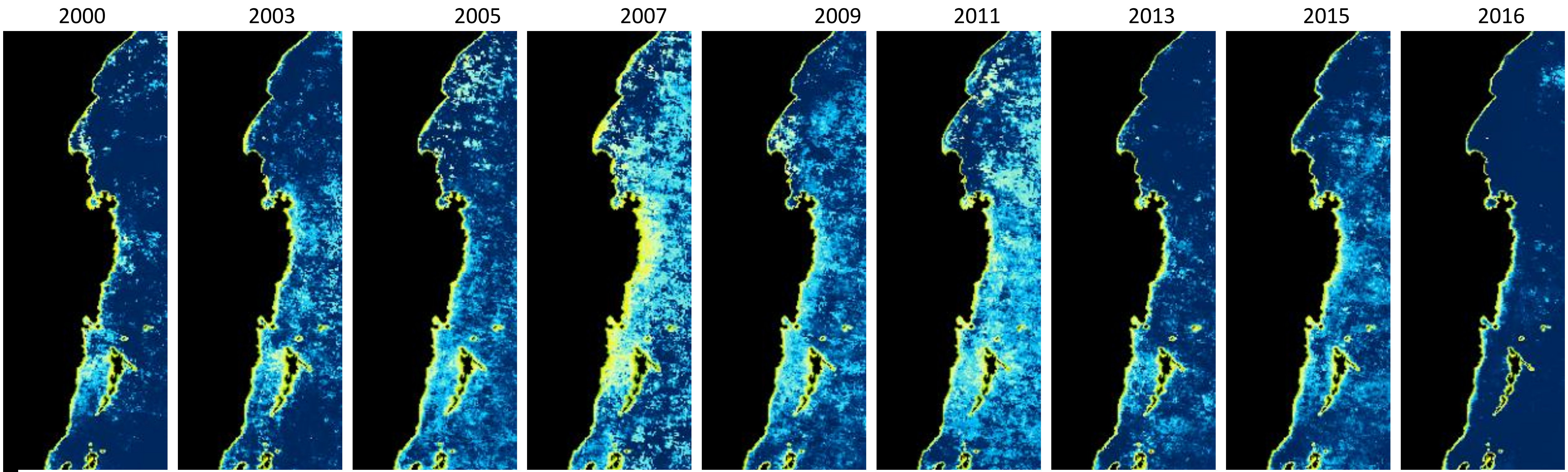

Negative Outcome
Neutral Outcome
Weak Positive Outcome
Average Positive Outcome
Strong Positive Outcome

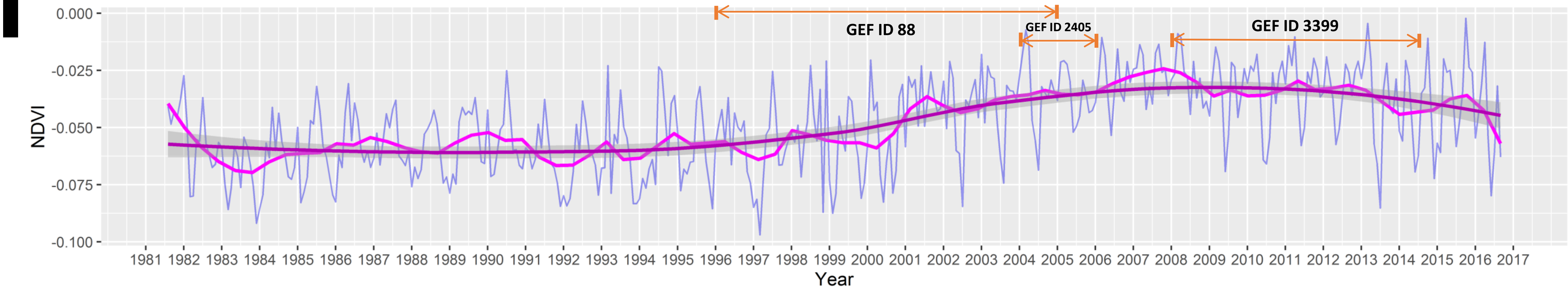
$1:1.08

GEF land degradation project valuations

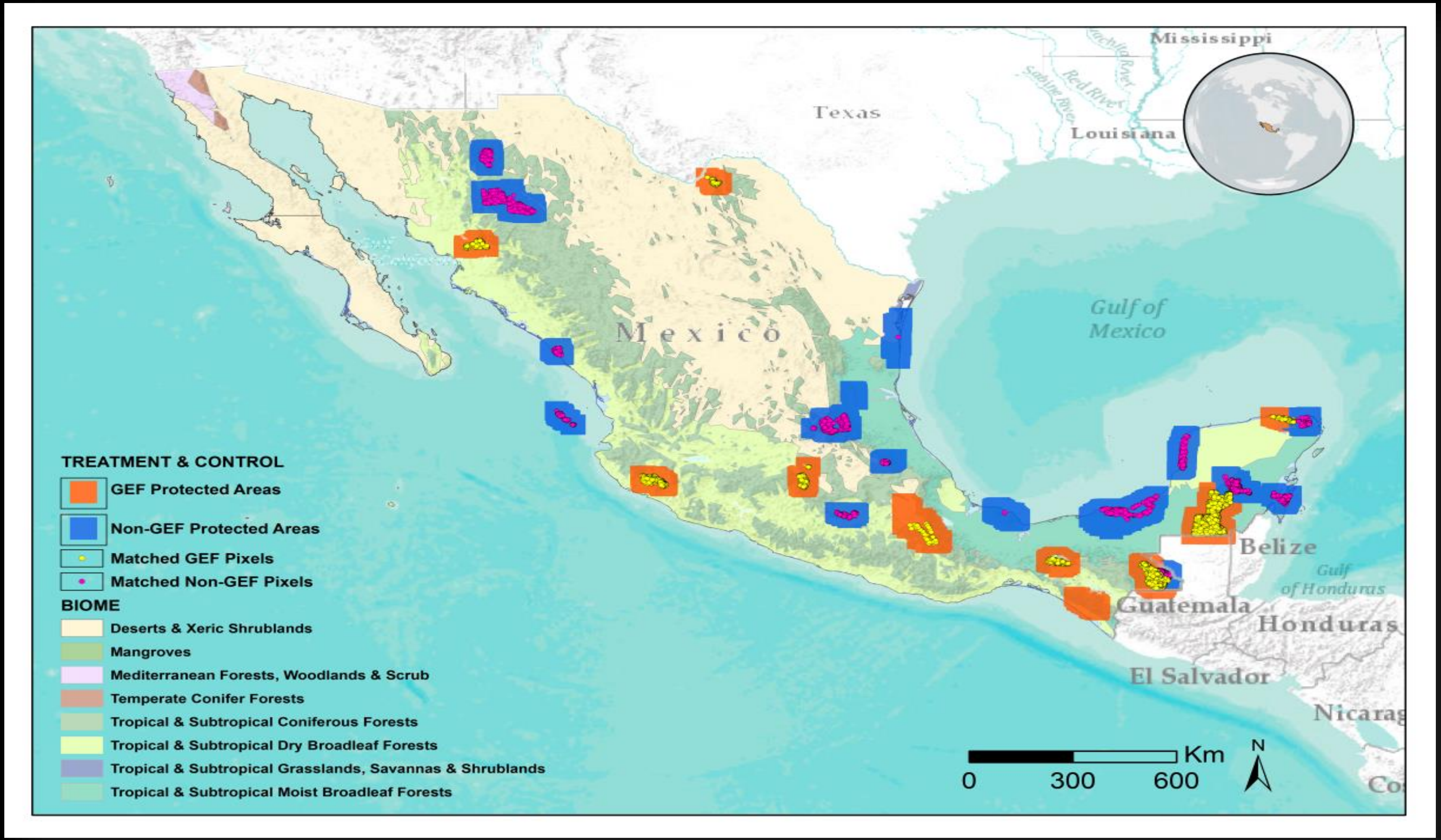
International Waters

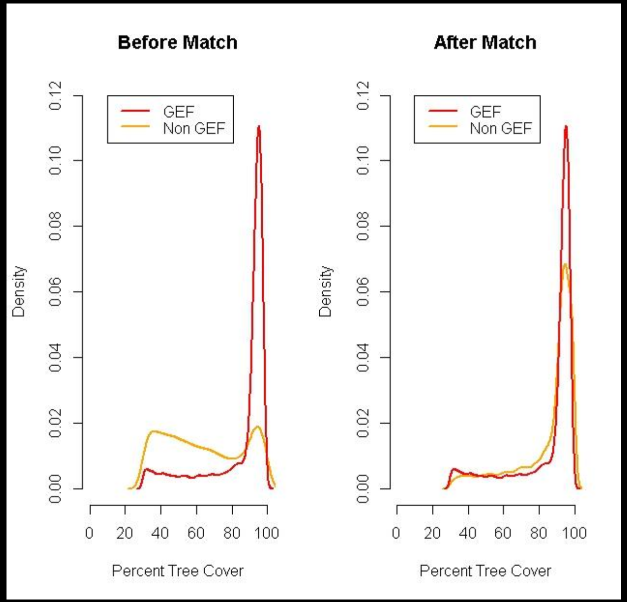
Lake Victoria: Vegetation presence


Vegetation
Water
2000
2003
2005
2007
2009
2011
2013
2015
2016



Biodiversity


Mississippi
Texas
Louisiana
Red River
Sabine River
Gulf of Mexico
Mexico
Belize
Gulf of Honduras
Guatemala
Honduras
El Salvador
Nicarag
Co
TREATMENT & CONTROL
GEF Protected Areas
Non-GEF Protected Areas
Matched GEF Pixels
Matched Non-GEF Pixels
BIOME
Deserts & Xeric Shrublands
Mangroves
Mediterranean Forests, Woodlands & Scrub
Temperate Conifer Forests
Tropical & Subtropical Coniferous Forests
Tropical & Subtropical Dry Broadleaf Forests
Tropical & Subtropical Grasslands, Savannas & Shrublands
Tropical & Subtropical Moist Broadleaf Forests
Km
0
300
600
N

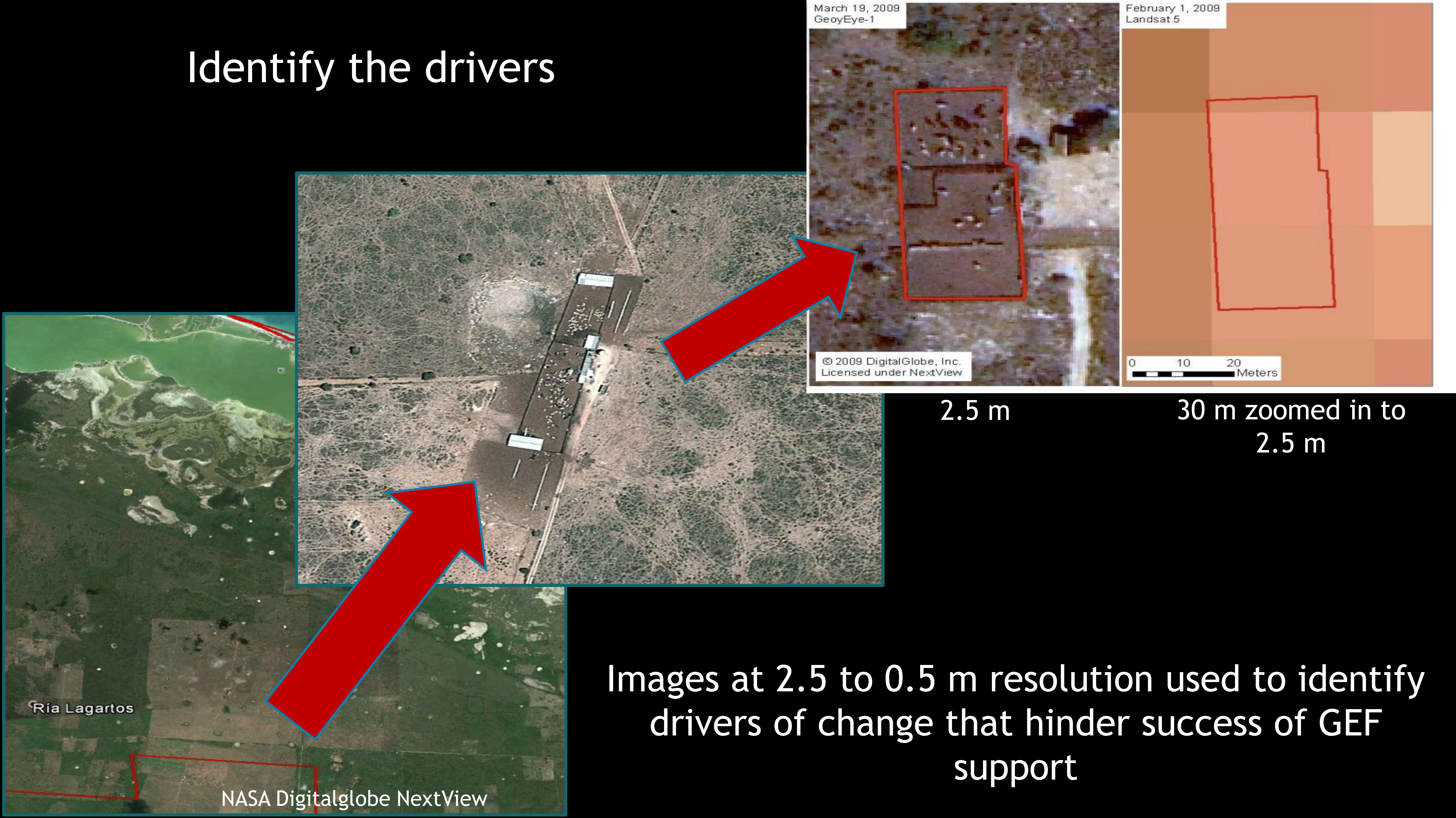


GEF-supported PAs have 23% less forest loss

Did the intervention cause the change?

Quasi-experimental evaluation design based on propensity score matching

Identify the drivers


March 19, 2009
GeoyEye-1
February 1, 2009
Landsat 5
0
10
20
Meters
Ría Lagartos

© 2009 DigitalGlobe, Inc.
Licensed under NextView

2.5 m

30 m zoomed in to 2.5 m

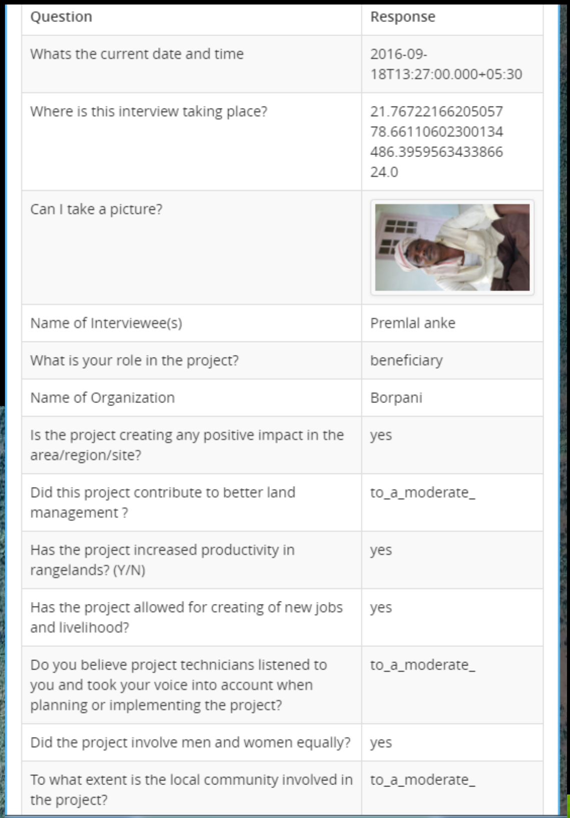
NASA Digitalglobe NextView

Images at 2.5 to 0.5 m resolution used to identify drivers of change that hinder success of GEF support

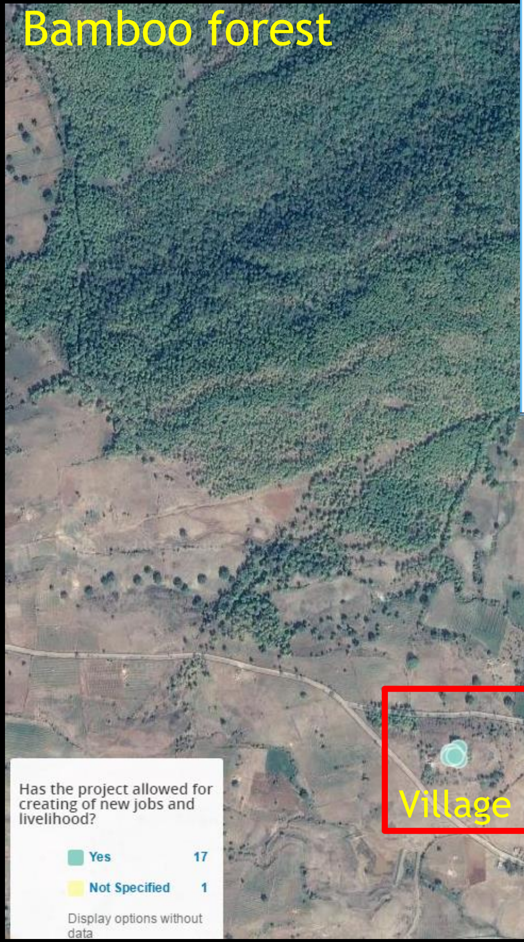
Triangulating Across Methods

20

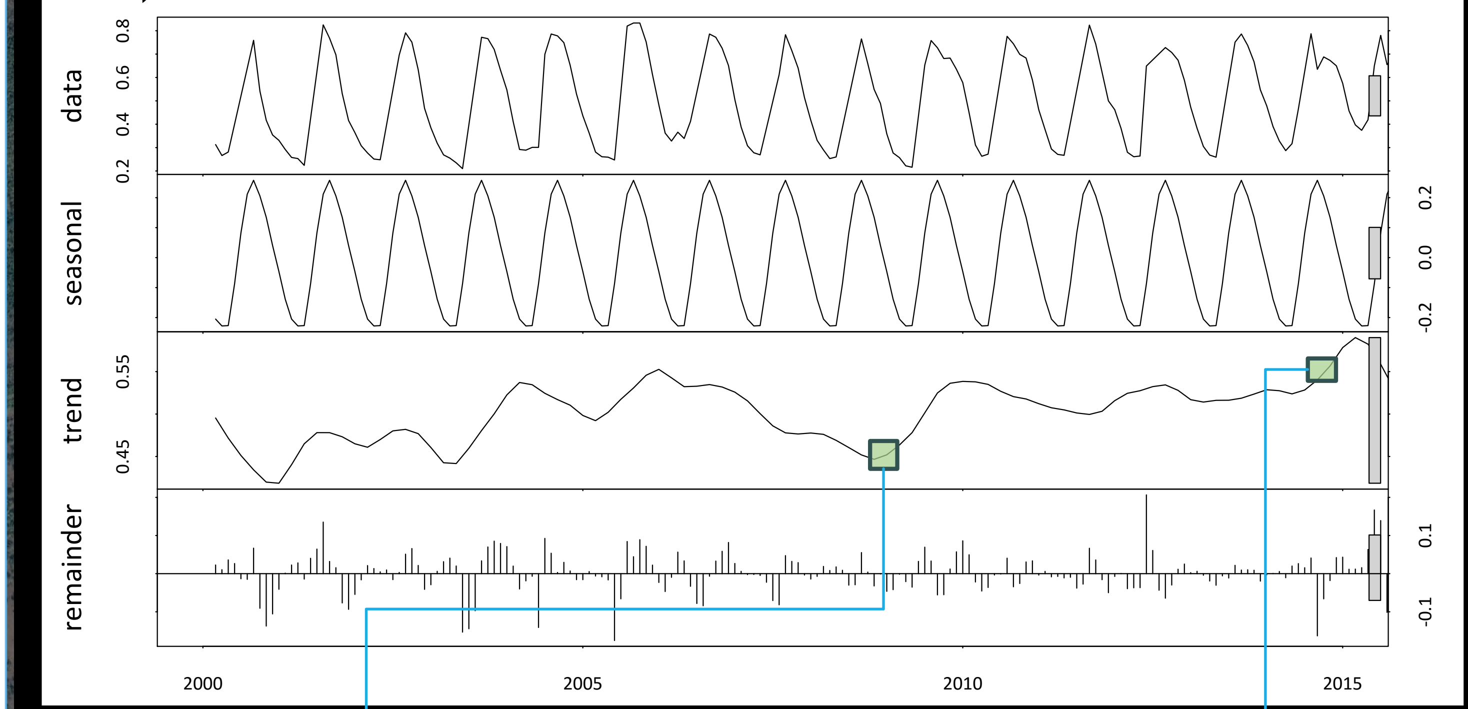
Beneficiary survey

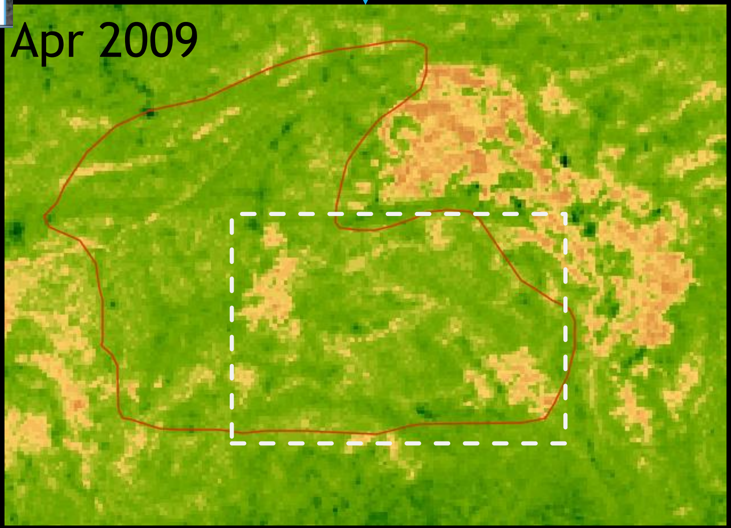


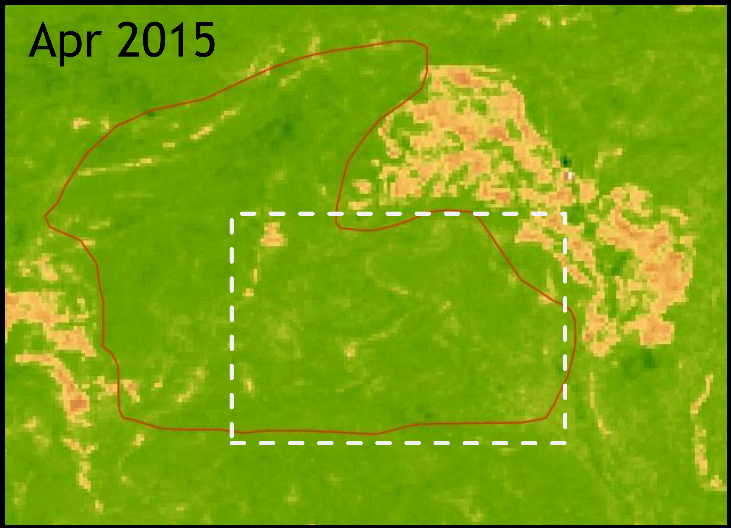
Question	Response
Whats the current date and time	2016-09-18T13:27:00.000+05:30
Where is this interview taking place?	21.76722166205057 78.66110602300134 486.3959563433866 24.0
Can I take a picture?	
Name of Interviewee(s)	Premlal anke
What is your role in the project?	beneficiary
Name of Organization	Borpani
Is the project creating any positive impact in the area/region/site?	yes
Did this project contribute to better land management ?	to_a_moderate_
Has the project increased productivity in rangelands? (Y/N)	yes
Has the project allowed for creating of new jobs and livelihood?	yes
Do you believe project technicians listened to you and took your voice into account when planning or implementing the project?	to_a_moderate_
Did the project involve men and women equally?	yes
To what extent is the local community involved in the project?	to_a_moderate_


Bamboo forest
Village
Has the project allowed for creating of new jobs and livelihood?
Yes 17
Not Specified 1
Display options without data

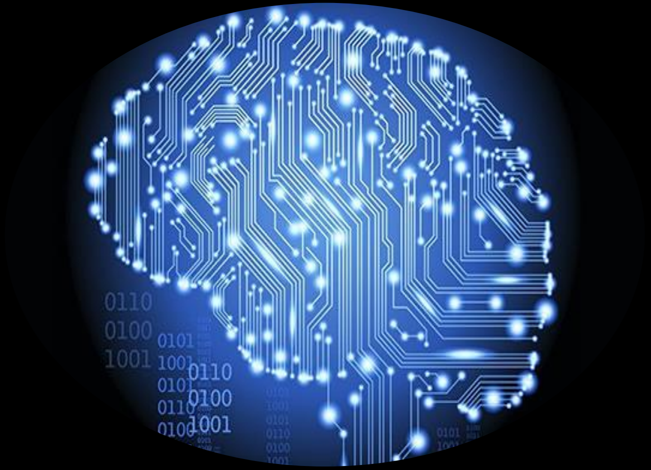
Time series analysis using satellite data







Challenges and limitations



High computing power and technical skills needed

Uneven availability and accuracy of contextual variables across sites

Cannot always answer “how” and “why” questions

Need for field verification/ groundtruthing

Solutions and lessons

Partner

with global institutions

Mixed
Methods

Use mixed approaches and methods

Continue exploring

new technology

Approach evaluation as a dynamic learning process

IFAD LUSIP, Swaziland
GEF ID 3390

Thank you

http://www.gefieo.org/

Breakout session 3 – Using earth observation to support the evaluation of an income enhancement project in Georgia

Presenters:
Hansdeep Khaira, Evaluation Officer, IOE, IFAD
Giancarlo Pini, independent consultant, World Food Programme (WFP) - Vulnerability Analysis Mapping (IFAD-WFP Joint Climate Analysis Partnership)

Using Earth Observation in supporting evaluation of an income enhancement project

Hansdeep Khaira* - Giancarlo Pini**

*IFAD's Independent Office of Evaluation

**World Food Programme – IFAD-WFP Joint Climate Analysis Partnership

Information and Communication Technologies for Evaluation (ICT4Eval) International Conference Rome, 6-7 June 2017

Background

- IOE requested to set up and test a methodology (based on EO data) supporting Impact Evaluation of an irrigation rehabilitation Project aimed at improving incomes.

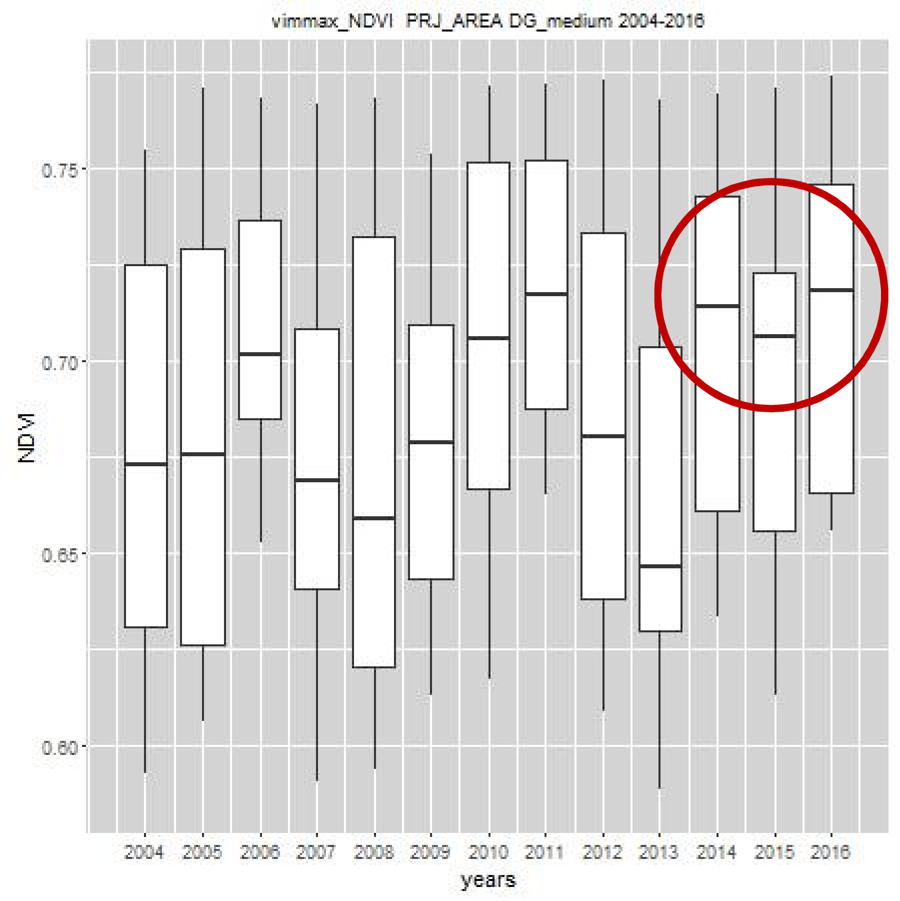
- The goal was to set an operational and reliable methodology and test it in view of possible use in future IOE evaluations.

Objective

- To estimate magnitude & significance of difference in vegetation development (NDVI) based on temporal variations (project baseline 2013 and endline 2016)

- The methodology should be able to perform a cost-effective verification of the effectiveness of the intervention that may be used as i) a preliminary screening, ii) support field verification missions and iii) as a medium/long-term impact monitoring tool when applied repeatedly over time.

Methodology



NDVI variations between before and after the intervention could be due to

i) the intervention itself,

ii) the stage of development of the vegetation at those particular times, and

iii) the seasonal weather conditions in the period preceding the observation

WHAT CAN WE DO TO IMPROVE OUR ANALYSIS ?

Methodology

- The methodology applied is derived from the “**Before/After Control/Impact** ‘BACI’ contrast presented in a recent research paper.

- The rationale is that project interventions will cause a different pattern of change from before to after the treatment compared with similar areas not treated by the project.

- The original paper applied the BACI to a natural vegetation restoration project.

- Our pilot project is the first time BACI is applied in agriculture.

Methodology

- Data: Analysis performed using 250-m NASA MODIS NDVI product (8 days) from 2004 to 2016 (Landsat on going)

- Project Area: Five irrigation schemes that were rehabilitated as part of project intervention. Farm plots split into three sizes: small (< 2ha), medium (2-10ha) large (> 10ha) - to understand better the effect on different types of farmers.

- Selection of non-treated sites based on:
    - similar land cover
    - geographic proximity
    - not subjected to intervention
    - randomly selected

Methodology: Steps

- Undertake **unsupervised classification** (KMeans cluster analysis) to classify area according to different vegetation development patterns.

- Assess pixel **similarity** in treated (T) and non-treated (NT) areas Similarity has been defined as the complement of the RMSE:

  Similarity s = 1–RMSE.

  Values close to one indicate nearly identical overall composition of a T and the NT. Pixels with a similarity smaller than 0.9 were discarded

- In the next step, we randomly extracted 50 NT and then the NDVI was extracted for all valid pixels belonging to the T and NT areas for the period before and after the intervention. The 20 NT with higher RMSE were considered for the calculation of the BACI contrast.

Methodology: Steps

- The impact of the intervention is evaluated by the change between T and NT before and after the intervention.

$$\textbf{BACI contrast} = (\mu NT_a - \mu NT_b) - (\mu T_a - \mu T_b)$$

where μ is the site-specific spatial NDVI mean; NT_a, T_a stand respectively for non-treated area and treated area at endline (after); NT_b and T_b stand respectively for non-treated area and treated area at baseline (before).

- By convention, a negative BACI contrast indicates that the variable has increased more in the intervention site with respect to controls in the time period before and after intervention.
- The BACI analysis provides two important statistics: the significance level (P-value) of the BACI effect test and the BACI contrast*.
- *The (null) hypothesis of no change was rejected at the conventional 5% significance level.

Results

Perimeter name	Zone	BACI index (contrast)	Relative contrast %	P-value	Before and After Time-frame
Does-Grakali	full area	-0.0052	-0.73	0.0080061	2011-13vs2014-16
Does-Grakali	medium fields	-0.0155	-2.16	0.0002820	2011-13vs2014-16
Does-Grakali	small fields	-0.0067	-0.89	0.2066130	2011-13vs2014-16
Lami-Misaktsieli	full area	0.0024	0.34	0.0000150	2011-13vs2014-16
Lami-Misaktsieli	large fields	-0.035	-4.9	0.0892510	2011-13vs2014-16
Lami-Misaktsieli	medium fields	0.0203	2.89	0.0000470	2011-13vs2014-16
Lami-Misaktsieli	small fields	0.0036	0.48	0.0004710	2011-13vs2014-16
Karagaji	full area	0.0216	2.98	0.0001090	2012-14vs2015-16
Karagaji	small fields	-0.0031	-0.41	0.0058530	2012-14vs2015-16
Metehki	full area	0.0065	0.85	0.2082250	2012-14vs2015-16
Metehki	small fields	-0.0113	-1.45	0.0001110	2012-14vs2015-16
Dzevera-Shertuli	full area	0.0043	0.61	0.0145280	2013-15vs2016
Dzevera-Shertuli	medium fields	0.0595	9.24	0.3925540	2013-15vs2016
Dzevera-Shertuli	small fields	-0.0044	-0.63	0.0140050	2013-15vs2016

Negative BACI contrasts (in bold)
Green background is used to highlight negative BACI contrasts that are significant at the 0.05 P-value
Light green background is used to highlight negative BACI contrasts that are very close to significant 0.05 P-value
Grey background indicates a non-significant/no BACI effect.

Results

A significantly negative BACI contrast (i.e. improvement in NDVI with respect to NT after the intervention) detected in 7 out of 14 samples respectively but only 4 with significant 0.05 P-value.

In three of the five schemes, small plots in treatment areas performed better than similar plots in non-treatment areas.

Average relative contrast of -1.24% in sites with significant BACI effect.

Considering NDVI as a proxy of the vegetation development, these numbers mean a limited improvement in the vegetation development with respect to the controls areas.

Results

Field mission

Results of ground-truthing carried out though a field mission confirmed the low uptake of irrigation in intervention areas.

Some of the increase in vegetation was due to more grass being grown (livestock fodder).

Impact Evaluation

Results of HH survey also showed statistically significant increase in land area available for irrigation but insignificant increase in area irrigated after intervention.

Lessons learned

Some of the main lessons learned that could further improve the quality of outputs:

- Complex environment (anthropized irrigated area) led to challenges in explaining whether the change is related to difference of vegetation greenness or due to switch in cropping pattern.
- A well-designed field visit is essential to explain the confounding factors (e.g. crop rotation, crop change, etc.).
- Survey firm should collect household data with coordinates, which could then be utilised for cross-reference of the NDVI data in the same area of interest.

Lessons learned

- Preparation is the key:
  - exact delineation boundary (command area) for project's area.
  - pre-assessing the accuracy of treatment area maps through discussions with project staff.

- When NDVI is used in conjunction with household survey, two strategies can be explored:
  - Using NDVI to aid control group selection of the household survey.
  - Using NDVI to select a control group additional to control group used for household survey.

Lessons learned

- In sum, while the methodology provides an opportunity for better understanding of the impact of project intervention on agricultural productivity, a well-designed control group and field visits and generally improved information from the field, will enhance the quality of the assessment, especially when evaluating projects with complex vegetation coverage and land use such the ones object of this study.

Next steps

- The methodology has been completely automatized by developing an algorithm in open source statistical software R (R Development CoreTeam, 2016). It can be applied easily to other IE
- Better integrate the EO analysis in the IE procedures
- Great potentialities coming from newly available EO data (Sentinel II at 10 mt. resolution)

Breakout session 4. Collect Earth: innovative and free multi-purpose land monitoring through remote sensing data

Presenters:
Mr Danilo Mollicone, Forestry Officer and Project Lead Technical Officer, Forestry Department, FAO Mr Giulio Marchi, Geospatial Forestry Officer, Forestry Department, FAO

Supported by:

Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety

based on a decision of the German Bundestag

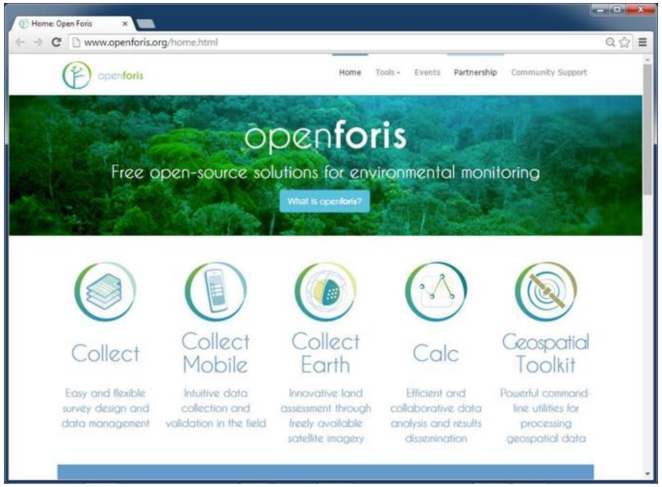
openforis
COLLECT EARTH

Collect Earth:
Augmented Visual Interpretation for Land Monitoring

Danilo Mollicone – Giulio Marchi
FAO - Food and Agriculture Organization of the United Nations

Food and Agriculture
Organization of the
United Nations

OpenForis.org Suite


Home: Open Foris

www.openforis.org/home.html

openforis

Home Tools Events Partnership Community Support

openforis

Free open-source solutions for environmental monitoring

What is openforis?

Collect
Easy and flexible survey design and data management

Collect Mobile
Intuitive data collection and validation in the field

Collect Earth
Innovative land assessment through freely available satellite imagery

Calc
Efficient and collaborative data analysis and results dissemination

Geospatial Toolkit
Powerful command-line utilities for processing geospatial data

Capacity Building for RED

www.fao.org/forestry/nfms-for-redd/en/

english français español

Capacity Building for REDD+ NFMS

send by email

Food and Agriculture Organization of the United Nations

FAO Home
Forestry
Capacity Building for REDD+ NFMS
Outcomes
Countries
Activities
Outputs
Tools
Partners
Donor
Project team

Capacity Building for REDD+ NFMS

Ceram Sea in Indonesia

The **National Forest Monitoring and Information Systems for a transparent and truthful REDD+ process** project aims to directly support the UNFCCC REDD+ readiness process in eighteen countries (Non-Annex I Parties) and to develop free tools for forest monitoring that could be used by other countries.

The project will support the establishment of key elements of national forest monitoring systems for REDD+, compliant with REDD+ requirements, through experience sharing, knowledge transfer and capacity development.

The project contributes to the Open Foris initiative. Open Foris is set of free and open-source software tools that facilitates flexible and efficient data collection, analysis and reporting.

Partners

FAO Forestry Department

National Institute for Space Research in Brazil, INPE

University of Idaho

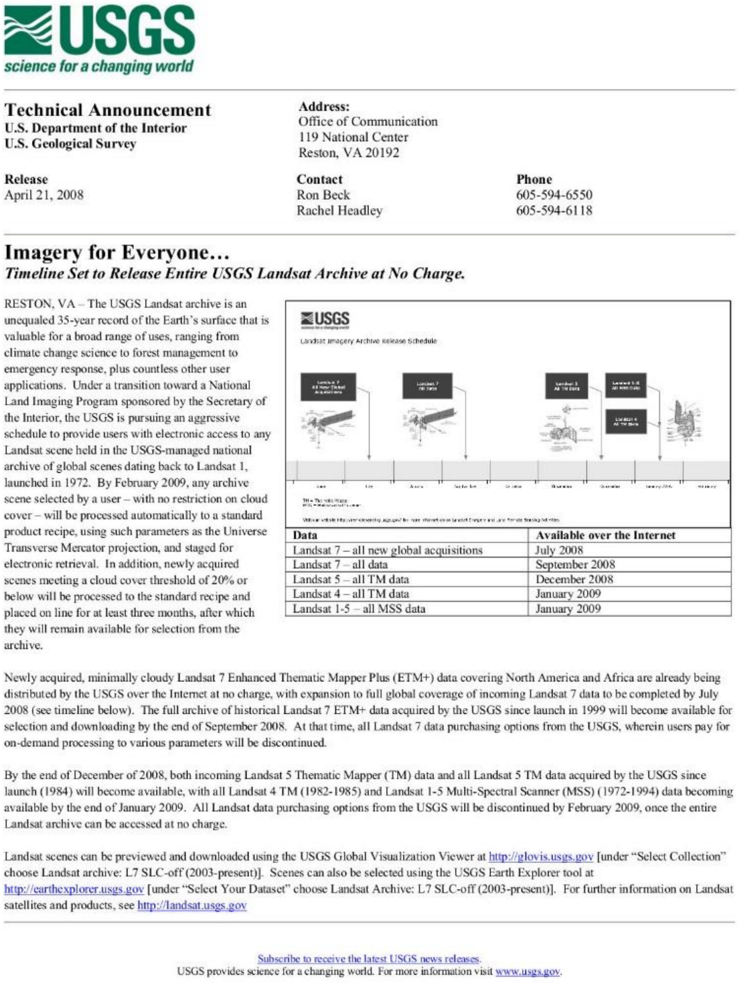
Related sites
- BMUB
- INPE
- ICI, this project
- REDD+
- UNFCCC
- Open Foris

Project cooperation
- FAO Finland Programme
- CD-REDD II
- MICCA GHG
- SilvaMed
- ICI/NAMA
- UN-REDD
- ACTO

- International Climate Initiative (IKI) of German Ministry for the Environment (BMUB)
- Support to the Forestry Department of FAO
- Free and Open Source Software for forest and land monitoring
- FAO project "National Forest Monitoring and Information Systems for a transparent and truthful REDD+ process“
- LC4Climate with the Department of Interior, USGS, USFS, UNFCCC and NASA-SERVIR, Action Against Desertification/Great .

In the beginning was the price

- **Technical Announcement**
  U.S. Department of the Interior, U.S. Geological Survey
  April 21, **2008**
- **Landsat**: the longest-running civilian Earth-observing programme (since 1972)
- **USD 700**, up to 4,000 in '80s
- Landsat and LDCM Headlines
  October 1, 2008
  "All Landsat 7 ETM+ scenes held in the USGS EROS archive are now available at no charge"



USGS
science for a changing world

Technical Announcement
U.S. Department of the Interior
U.S. Geological Survey

Address:
Office of Communication
119 National Center
Reston, VA 20192

Release
April 21, 2008

Contact	**Phone**
Ron Beck	605-594-6550
Rachel Headley	605-594-6118

Imagery for Everyone…
Timeline Set to Release Entire USGS Landsat Archive at No Charge.

RESTON, VA – The USGS Landsat archive is an unequaled 35-year record of the Earth's surface that is valuable for a broad range of uses, ranging from climate change science to forest management to emergency response, plus countless other user applications. Under a transition toward a National Land Imaging Program sponsored by the Secretary of the Interior, the USGS is pursuing an aggressive schedule to provide users with electronic access to any Landsat scene held in the USGS-managed national archive of global scenes dating back to Landsat 1, launched in 1972. By February 2009, any archive scene selected by a user – with no restriction on cloud cover – will be processed automatically to a standard product recipe, using such parameters as the Universe Transverse Mercator projection, and staged for electronic retrieval. In addition, newly acquired scenes meeting a cloud cover threshold of 20% or below will be processed to the standard recipe and placed on line for at least three months, after which they will remain available for selection from the archive.

Data	**Available over the Internet**
Landsat 7 – all new global acquisitions	July 2008
Landsat 7 – all data	September 2008
Landsat 5 – all TM data	December 2008
Landsat 4 – all TM data	January 2009
Landsat 1-5 – all MSS data	January 2009

Newly acquired, minimally cloudy Landsat 7 Enhanced Thematic Mapper Plus (ETM+) data covering North America and Africa are already being distributed by the USGS over the Internet at no charge, with expansion to full global coverage of incoming Landsat 7 data to be completed by July 2008 (see timeline below). The full archive of historical Landsat 7 ETM+ data acquired by the USGS since launch in 1999 will become available for selection and downloading by the end of September 2008. At that time, all Landsat 7 data purchasing options from the USGS, wherein users pay for on-demand processing to various parameters will be discontinued.

By the end of December of 2008, both incoming Landsat 5 Thematic Mapper (TM) data and all Landsat 5 TM data acquired by the USGS since launch (1984) will become available, with all Landsat 4 TM (1982-1985) and Landsat 1-5 Multi-Spectral Scanner (MSS) (1972-1994) data becoming available by the end of January 2009. All Landsat data purchasing options from the USGS will be discontinued by February 2009, once the entire Landsat archive can be accessed at no charge.

Landsat scenes can be previewed and downloaded using the USGS Global Visualization Viewer at http://glovis.usgs.gov [under "Select Collection" choose Landsat archive: L7 SLC-off (2003-present)]. Scenes can also be selected using the USGS Earth Explorer tool at http://earthexplorer.usgs.gov [under "Select Your Dataset" choose Landsat Archive: L7 SLC-off (2003-present)]. For further information on Landsat satellites and products, see http://landsat.usgs.gov

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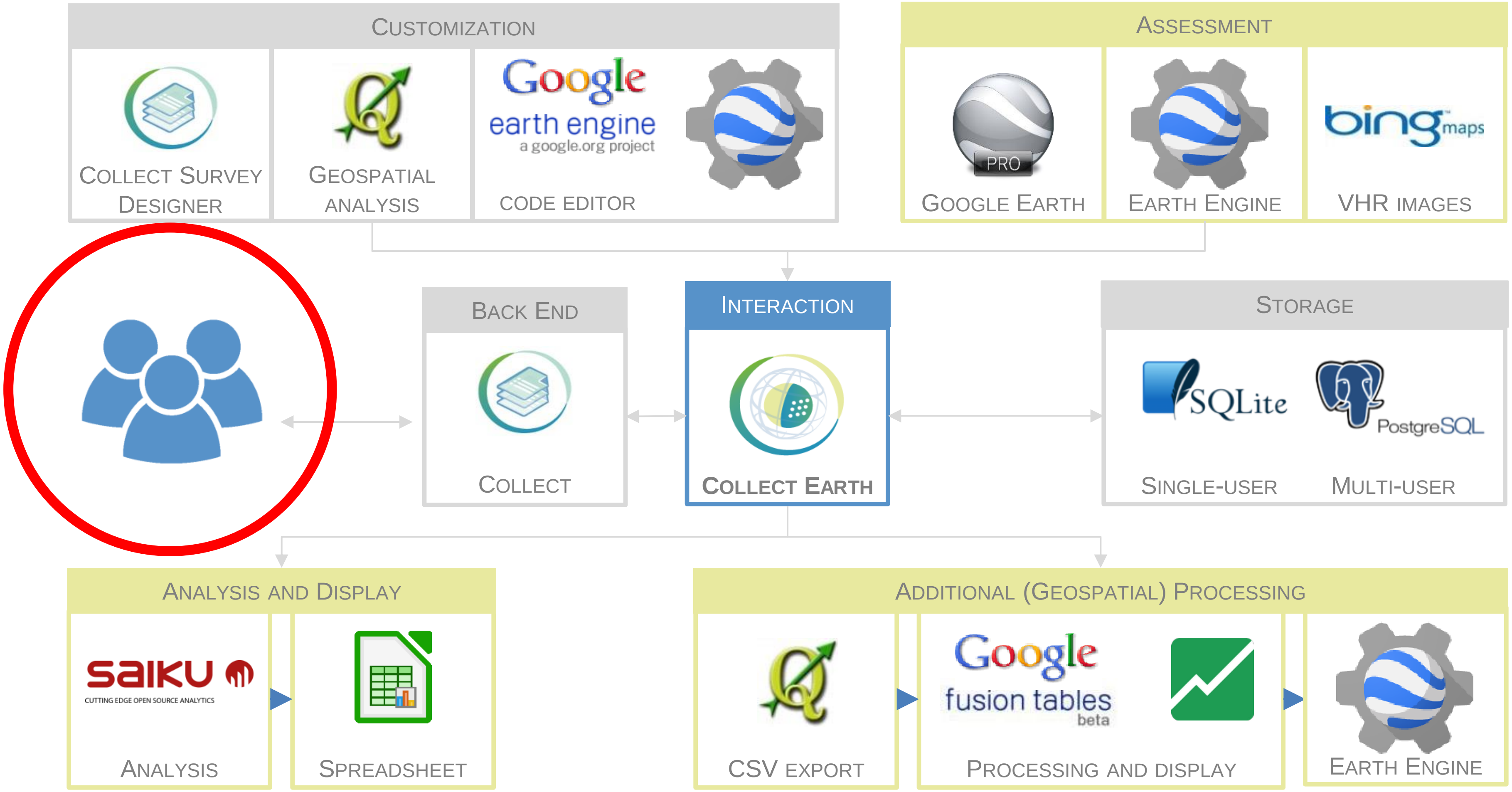
USGS provides science for a changing world. For more information visit www.usgs.gov.

Collect Earth System Overview



CUSTOMIZATION

- COLLECT SURVEY DESIGNER
- GEOSPATIAL ANALYSIS
- CODE EDITOR

Google earth engine
a google.org project

ASSESSMENT

- GOOGLE EARTH
- EARTH ENGINE
- VHR IMAGES

PRO
bing maps

BACK END

- COLLECT

INTERACTION

- COLLECT EARTH

STORAGE

- SINGLE-USER
- MULTI-USER

SQLite
PostgreSQL

ANALYSIS AND DISPLAY

- ANALYSIS
- SPREADSHEET

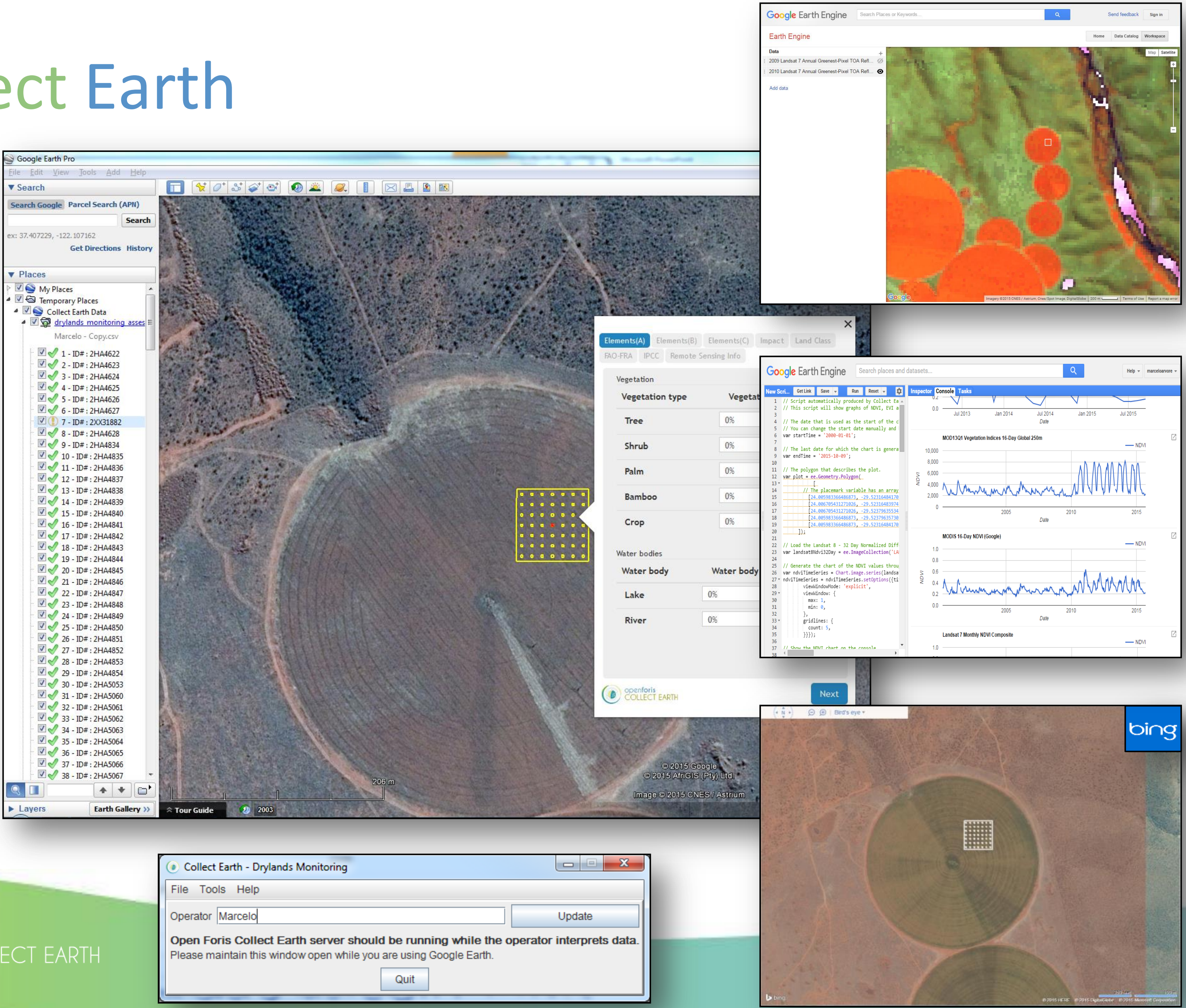
saiku
CUTTING EDGE OPEN SOURCE ANALYTICS

ADDITIONAL (GEOSPATIAL) PROCESSING

- CSV EXPORT
- PROCESSING AND DISPLAY
- EARTH ENGINE

Google fusion tables
beta

Collect Earth


Google Earth Pro
File Edit View Tools Add Help
Search
Search Google
Parcel Search (APN)
Search
ex: 37.407229, -122.107162
Get Directions
History
Places
Layers
Earth Gallery
Tour Guide
2003
206 m
© 2015 Google
© 2015 AfriGIS (Pty) Ltd.
Image © 2015 CNES / Astrium
Elements(A)
Elements(B)
Elements(C)
Impact
Land Class
FAO-FRA
IPCC
Remote Sensing Info
openforis COLLECT EARTH
Next
Google Earth Engine
Search Places or Keywords
Send feedback
Sign in
Earth Engine
Home
Data Catalog
Workspace
Data
Add data
Map
Satellite
Search places and datasets...
Help
marcelorezende
New Scri...
Get Link
Save
Run
Reset
Inspector
Console
Tasks
bing
Bird's eye

- My Places
- Temporary Places
  - Collect Earth Data
    - drylands_monitoring_asses
      - Marcelo - Copy.csv
        - 1 - ID# : 2HA4622
        - 2 - ID# : 2HA4623
        - 3 - ID# : 2HA4624
        - 4 - ID# : 2HA4625
        - 5 - ID# : 2HA4626
        - 6 - ID# : 2HA4627
        - 7 - ID# : 2XX31882
        - 8 - ID# : 2HA4628
        - 9 - ID# : 2HA4834
        - 10 - ID# : 2HA4835
        - 11 - ID# : 2HA4836
        - 12 - ID# : 2HA4837
        - 13 - ID# : 2HA4838
        - 14 - ID# : 2HA4839
        - 15 - ID# : 2HA4840
        - 16 - ID# : 2HA4841
        - 17 - ID# : 2HA4842
        - 18 - ID# : 2HA4843
        - 19 - ID# : 2HA4844
        - 20 - ID# : 2HA4845
        - 21 - ID# : 2HA4846
        - 22 - ID# : 2HA4847
        - 23 - ID# : 2HA4848
        - 24 - ID# : 2HA4849
        - 25 - ID# : 2HA4850
        - 26 - ID# : 2HA4851
        - 27 - ID# : 2HA4852
        - 28 - ID# : 2HA4853
        - 29 - ID# : 2HA4854
        - 30 - ID# : 2HA5053
        - 31 - ID# : 2HA5060
        - 32 - ID# : 2HA5061
        - 33 - ID# : 2HA5062
        - 34 - ID# : 2HA5063
        - 35 - ID# : 2HA5064
        - 36 - ID# : 2HA5065
        - 37 - ID# : 2HA5066
        - 38 - ID# : 2HA5067

Data:
2009 Landsat 7 Annual Greenest-Pixel TOA Refl...
2010 Landsat 7 Annual Greenest-Pixel TOA Refl...

Vegetation

Vegetation type	Vegetat
Tree	0%
Shrub	0%
Palm	0%
Bamboo	0%
Crop	0%

Water bodies

Water body	Water body
Lake	0%
River	0%

```
// Script automatically produced by Collect Ea
// This script will show graphs of NDVI, EVI a

// The date that is used as the start of the c
// You can change the start date manually and 
var startTime = '2000-01-01';

// The last date for which the chart is genera
var endTime = '2015-10-09';

// The polygon that describes the plot.
var plot = ee.Geometry.Polygon(
        [
          // The placemark variable has an array
            [24.005983366486873, -29.52316484170
            [24.006705431271026, -29.52316483974
            [24.006705431271026, -29.52379635534
            [24.005983366486873, -29.52379635730
            [24.005983366486873, -29.52316484170
        ]);

// Load the Landsat 8 - 32 Day Normalized Diff
var landsat8Ndvi32Day = ee.ImageCollection('LA

// Generate the chart of the NDVI values throu
var ndviTimeSeries = Chart.image.series(landsa
ndviTimeSeries = ndviTimeSeries.setOptions({ti
          viewWindowMode: 'explicit',
          viewWindow: {
            max: 1,
            min: 0,
          },
          gridlines: {
            count: 5,
          }}});

// Show the NDVI chart on the console
```

Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
8,000
6,000
4,000
2,000
0
2005
2010
2015
Date
MODIS 16-Day NDVI (Google)
NDVI
1.0
0.8
0.6
0.4
0.2
0.0
2005
2010
2015
Date
Landsat 7 Monthly NDVI Composite
NDVI
1.0

Collect Earth - Drylands Monitoring

File
Tools
Help
Update
Quit

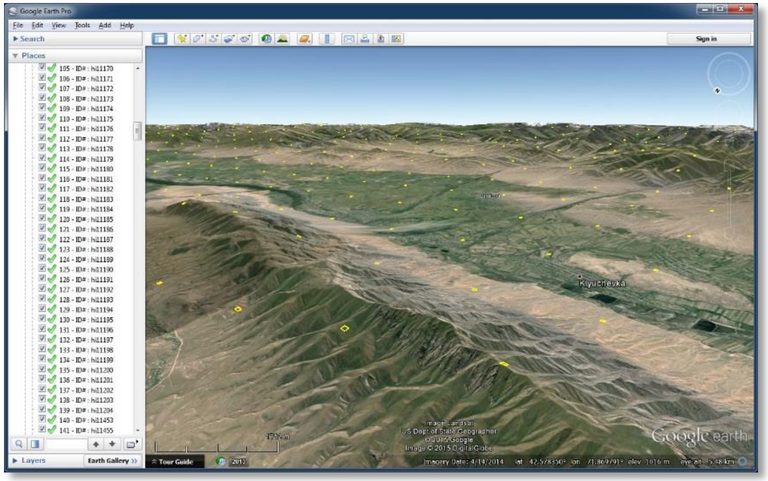
Operator: Marcelo

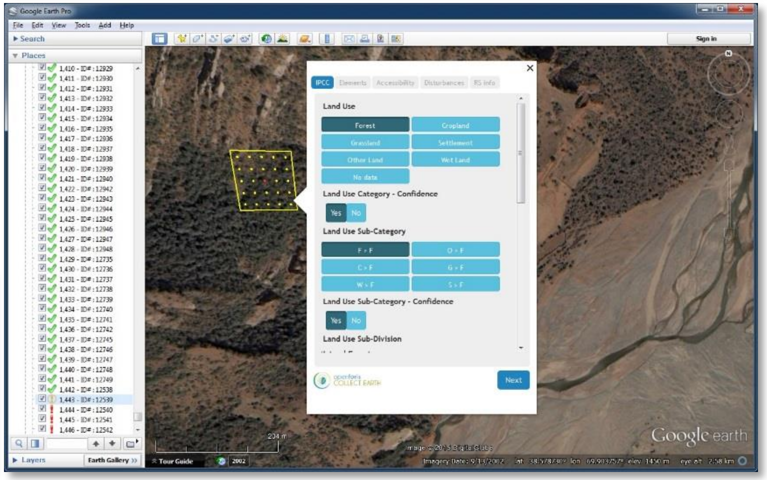
Open Foris Collect Earth server should be running while the operator interprets data.
Please maintain this window open while you are using Google Earth.

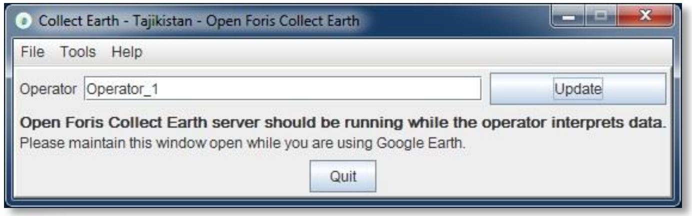
COLLECT EARTH

Collect Earth

- Innovative HTML-based **Google Earth plug-in**
- **Augmented visual** interpretation
- Highly **customizable**
- **Point**-based LULUCF sampling
- **GUI** data entry
- Easy and powerful tool
- **VHR** multi-temporal
- **Geo sync** Earth Engine, Bing Maps


Google Earth Pro
File Edit View Tools Add Help
Search
Places
Layers
Earth Gallery
Tour Guide
Sign in
Google earth


Google Earth Pro
File Edit View Tools Add Help
Search
Places
IPCC
Elements
Accessibility
Disturbances
RS info
Land Use
Forest
Cropland
Grassland
Settlement
Other Land
Wet Land
No data
Land Use Category - Confidence
Yes
No
Land Use Sub-Category
F > F
O > F
C > F
G > F
W > F
S > F
Land Use Sub-Category - Confidence
Yes
No
Land Use Sub-Division
Next
Google earth

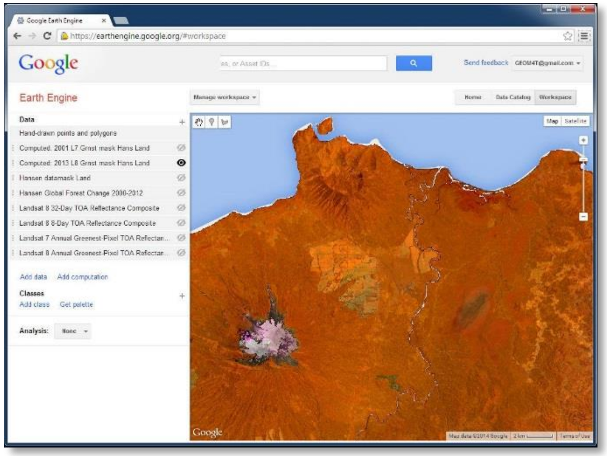

Collect Earth - Tajikistan - Open Foris Collect Earth
File Tools Help
Update
Quit

Operator: Operator_1

Open Foris Collect Earth server should be running while the operator interprets data.
Please maintain this window open while you are using Google Earth.

Earth Engine Integration

- **Easy access** to and **display** of **satellite data**
- Landsat 7/8 Greenest Pixel *et alia*
- **Multi-temporal** dataset
- Landsat, Sentinel 2, MODIS, SRTM, land cover, atmospheric data, …
- **No search/download**/ store/process…
- Data
    - **entry in Google Earth**
    - **review in Earth Engine**


Google Earth Engine
https://earthengine.google.org/#workspace
Google
Send feedback
Earth Engine
Manage workspace
Home
Data Catalog
Workspace
Map
Satellite
Google

Data

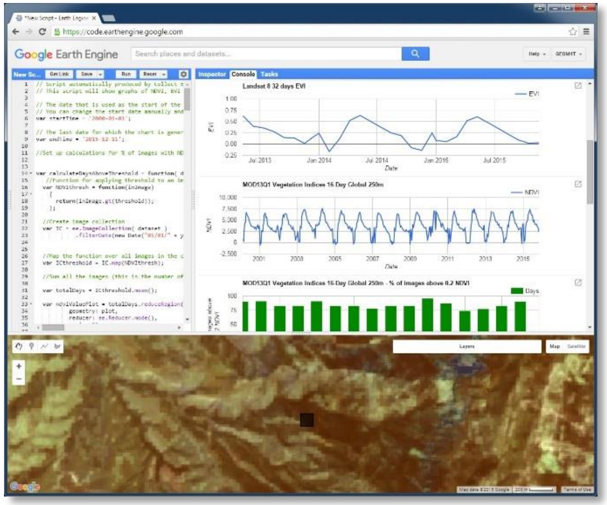
Hand-drawn points and polygons
Computed: 2001 L7 Grnst mask Hans Land
Computed: 2013 L8 Grnst mask Hans Land
Hansen datamask Land
Hansen Global Forest Change 2000-2012
Landsat 8 32-Day TOA Reflectance Composite
Landsat 8 8-Day TOA Reflectance Composite
Landsat 7 Annual Greenest-Pixel TOA Reflectan…
Landsat 8 Annual Greenest-Pixel TOA Reflectan…

Add data Add computation

Classes

Add class Get palette

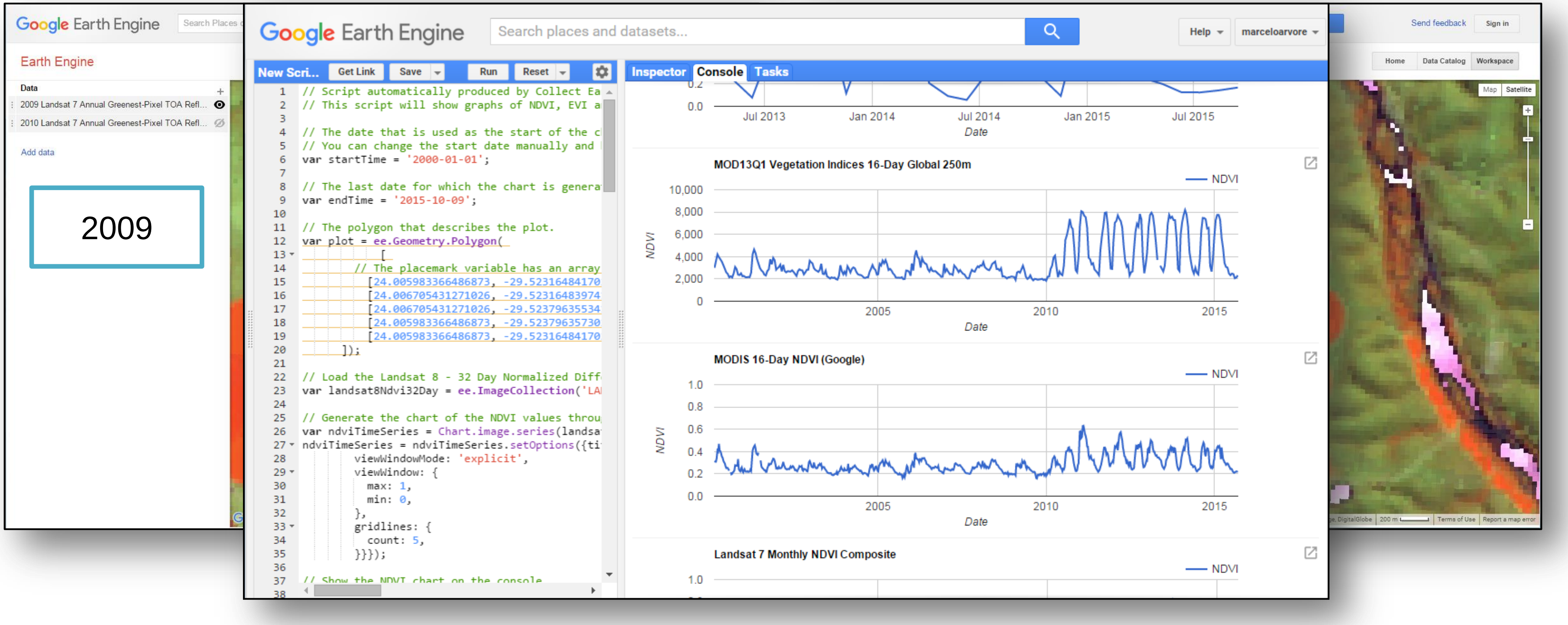
Analysis: None


*New Script - Earth Engine
https://code.earthengine.google.com
Google Earth Engine
Search places and datasets...
Help
GEOMAT
New Sc...
Get Link
Save
Run
Reset
Inspector
Console
Tasks
Landsat 8 32 days EVI
EVI
1.00
0.75
0.50
0.25
0.00
0.25
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
7,500
5,000
2,500
0
-2,500
2001
2003
2005
2007
2009
2011
2013
2015
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m - % of images above 0.2 NDVI
Days
100
75
50
Layers
Map
Satellite

```
// Script automatically produced by Collect E
// This script will show graphs of NDVI, EVI

// The date that is used as the start of the
// You can change the start date manually and
var startTime = '2000-01-01';

// The last date for which the chart is gener
var endTime = '2015-12-31';

//Set up calculations for % of images with ND


var calculateDaysAboveThreshold = function( d
   //Function for applying threshold to an im
  var NDVIthresh = function(inImage)
    {
      return(inImage.gt(threshold));
    });

  //Create image collection
  var IC = ee.ImageCollection( dataset )
             .filterDate(new Date("01/01/" + y


  //Map the function over all images in the c
  var ICthreshold = IC.map(NDVIthresh);

  //Sum all the images (this is the number of

  var totalDays = ICthreshold.mean();

  var ndviValuePlot = totalDays.reduceRegion(
          geometry: plot,
          reducer: ee.Reducer.mode(),
```

Google Earth Engine and
Earth Engine API Playground

Accurate year of land use conversion using Google Earth Engine

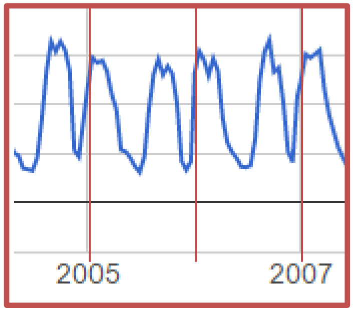


```
// Script automatically produced by Collect Ea
// This script will show graphs of NDVI, EVI a

// The date that is used as the start of the c
// You can change the start date manually and 
var startTime = '2000-01-01';

// The last date for which the chart is genera
var endTime = '2015-10-09';

// The polygon that describes the plot.
var plot = ee.Geometry.Polygon(
            [
        // The placemark variable has an array
          [24.005983366486873, -29.52316484170
          [24.006705431271026, -29.52316483974
          [24.006705431271026, -29.52379635534
          [24.005983366486873, -29.52379635730
          [24.005983366486873, -29.52316484170
      ]);

// Load the Landsat 8 - 32 Day Normalized Diff
var landsat8Ndvi32Day = ee.ImageCollection('LA

// Generate the chart of the NDVI values throu
var ndviTimeSeries = Chart.image.series(landsa
ndviTimeSeries = ndviTimeSeries.setOptions({ti
        viewWindowMode: 'explicit',
        viewWindow: {
          max: 1,
          min: 0,
        },
        gridlines: {
          count: 5,
        }}});

// Show the NDVI chart on the console
```

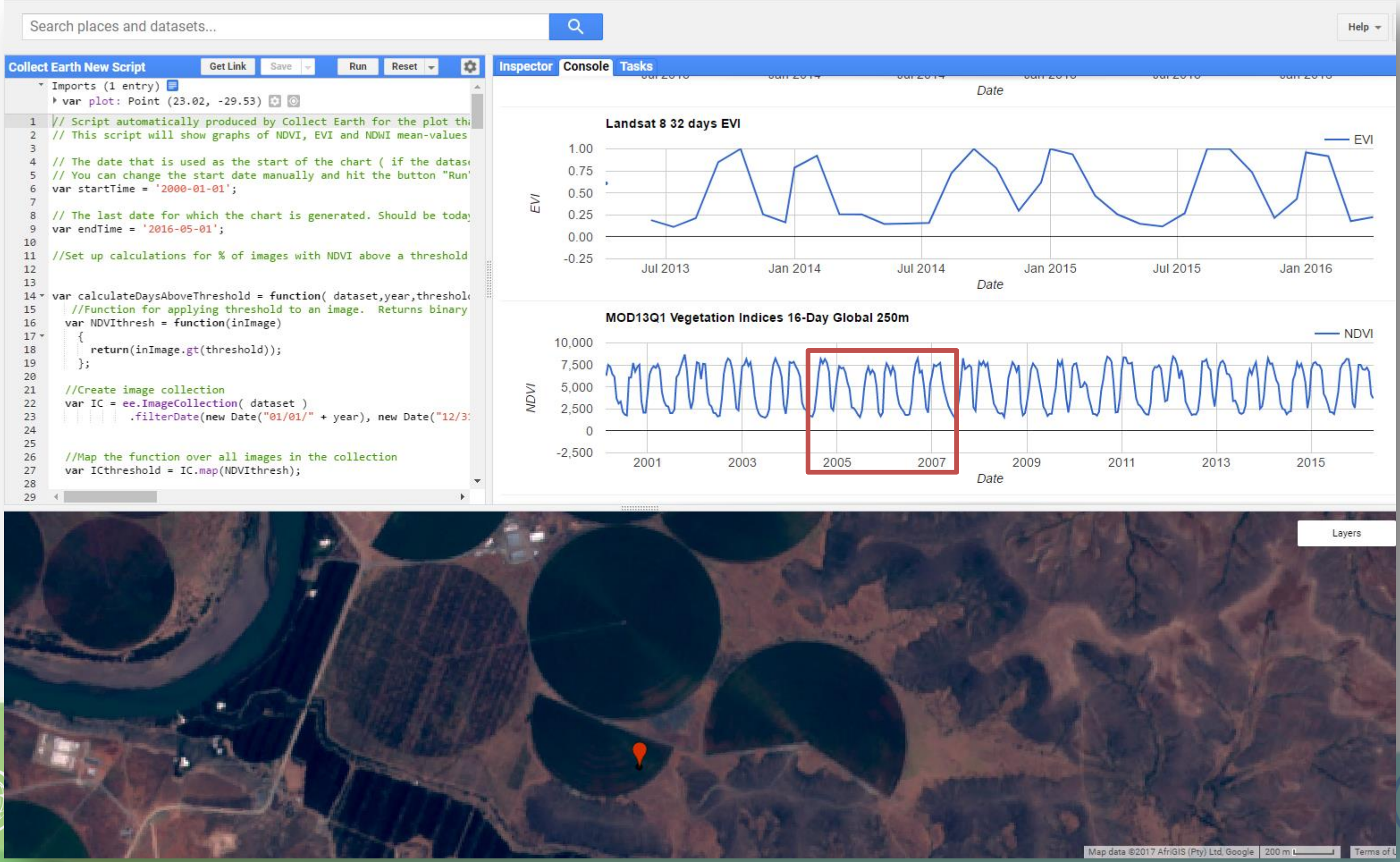
Google Earth Engine
Search Places
Earth Engine
Data
2009 Landsat 7 Annual Greenest-Pixel TOA Refl...
2010 Landsat 7 Annual Greenest-Pixel TOA Refl...
Add data
2009
Search places and datasets...
Help
marceloarvore
New Scri...
Get Link
Save
Run
Reset
Inspector
Console
Tasks
0.2
0.0
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
8,000
6,000
4,000
2,000
0
2005
2010
2015
Date
MODIS 16-Day NDVI (Google)
NDVI
1.0
0.8
0.6
0.4
0.2
0.0
2005
2010
2015
Date
Landsat 7 Monthly NDVI Composite
NDVI
1.0
Send feedback
Sign in
Home
Data Catalog
Workspace
Map
Satellite
DigitalGlobe
200 m
Terms of Use
Report a map error

COLLECT EARTH

Google Earth Engine and Earth Engine API Playground



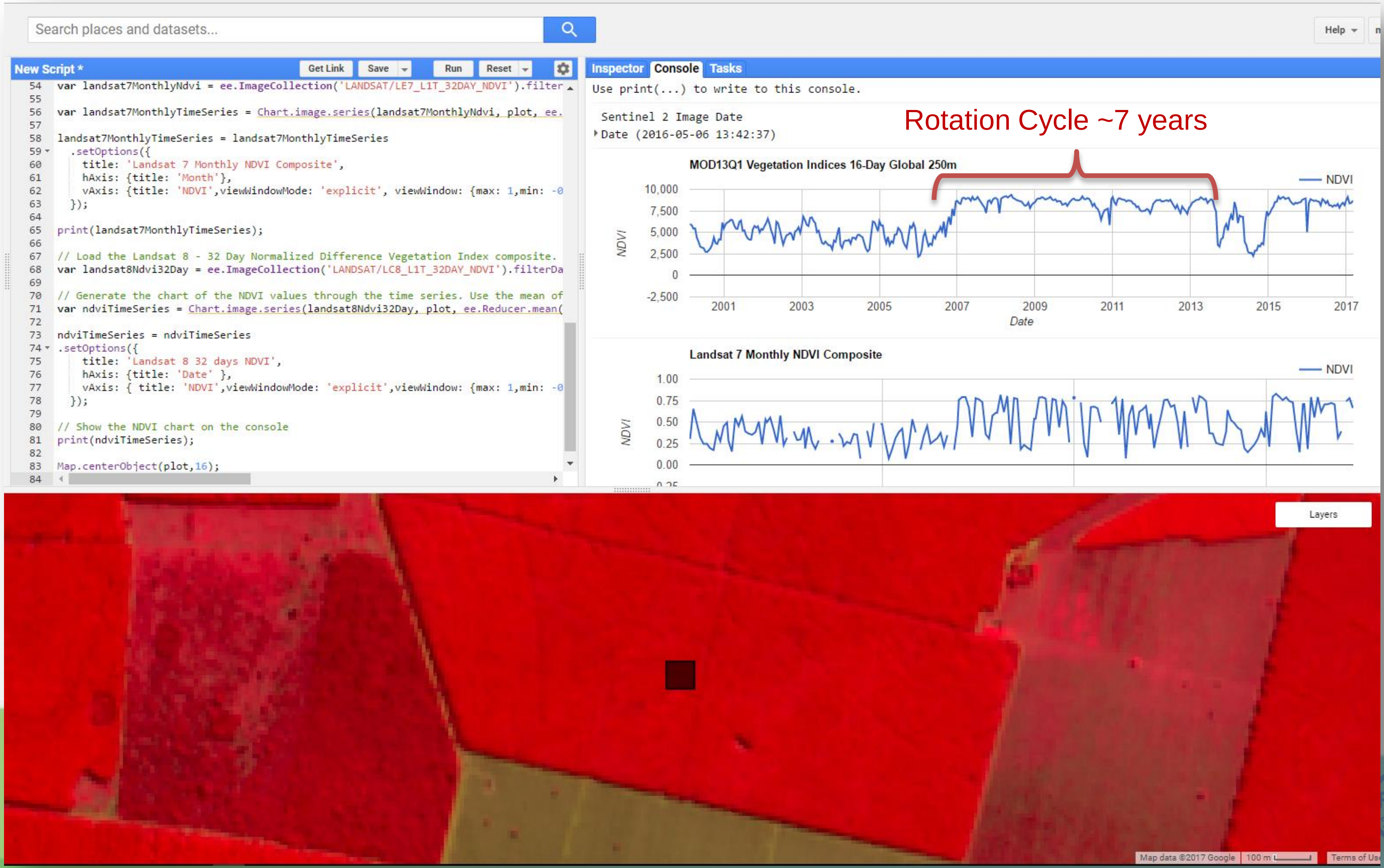
Example: Irrigated agriculture in South Africa


Search places and datasets...
Help
Collect Earth New Script
Get Link
Save
Run
Reset
Inspector
Console
Tasks
Date
Landsat 8 32 days EVI
EVI
1.00
0.75
0.50
0.25
0.00
-0.25
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
7,500
5,000
2,500
0
-2,500
2001
2003
2005
2007
2009
2011
2013
2015
Date
Layers
Map data ©2017 AfriGIS (Pty) Ltd, Google
200 m
Terms of U

```
Imports (1 entry)
 var plot: Point (23.02, -29.53)
// Script automatically produced by Collect Earth for the plot th
// This script will show graphs of NDVI, EVI and NDWI mean-values

// The date that is used as the start of the chart ( if the datas
// You can change the start date manually and hit the button "Run
var startTime = '2000-01-01';

// The last date for which the chart is generated. Should be toda
var endTime = '2016-05-01';

//Set up calculations for % of images with NDVI above a threshold


var calculateDaysAboveThreshold = function( dataset,year,threshol
   //Function for applying threshold to an image.  Returns binary
  var NDVIthresh = function(inImage)
    {
      return(inImage.gt(threshold));
    };

  //Create image collection
  var IC = ee.ImageCollection( dataset )
            .filterDate(new Date("01/01/" + year), new Date("12/3


  //Map the function over all images in the collection
  var ICthreshold = IC.map(NDVIthresh);

```

Google Earth Engine and
Earth Engine API Playground

Example: Planted Forests in Brazil



Search places and datasets...
Help
New Script *
Get Link
Save
Run
Reset
Inspector
Console
Tasks
Layers
Map data ©2017 Google
100 m
Terms of Use

```
var landsat7MonthlyNdvi = ee.ImageCollection('LANDSAT/LE7_L1T_32DAY_NDVI').filter

var landsat7MonthlyTimeSeries = Chart.image.series(landsat7MonthlyNdvi, plot, ee.

landsat7MonthlyTimeSeries = landsat7MonthlyTimeSeries
  .setOptions({
    title: 'Landsat 7 Monthly NDVI Composite',
    hAxis: {title: 'Month'},
    vAxis: {title: 'NDVI',viewWindowMode: 'explicit', viewWindow: {max: 1,min: -0
  });

print(landsat7MonthlyTimeSeries);

// Load the Landsat 8 - 32 Day Normalized Difference Vegetation Index composite.
var landsat8Ndvi32Day = ee.ImageCollection('LANDSAT/LC8_L1T_32DAY_NDVI').filterDa

// Generate the chart of the NDVI values through the time series. Use the mean of
var ndviTimeSeries = Chart.image.series(landsat8Ndvi32Day, plot, ee.Reducer.mean(

ndviTimeSeries = ndviTimeSeries
.setOptions({
    title: 'Landsat 8 32 days NDVI',
    hAxis: {title: 'Date' },
    vAxis: { title: 'NDVI',viewWindowMode: 'explicit',viewWindow: {max: 1,min: -0
  });

// Show the NDVI chart on the console
print(ndviTimeSeries);

Map.centerObject(plot,16);

```

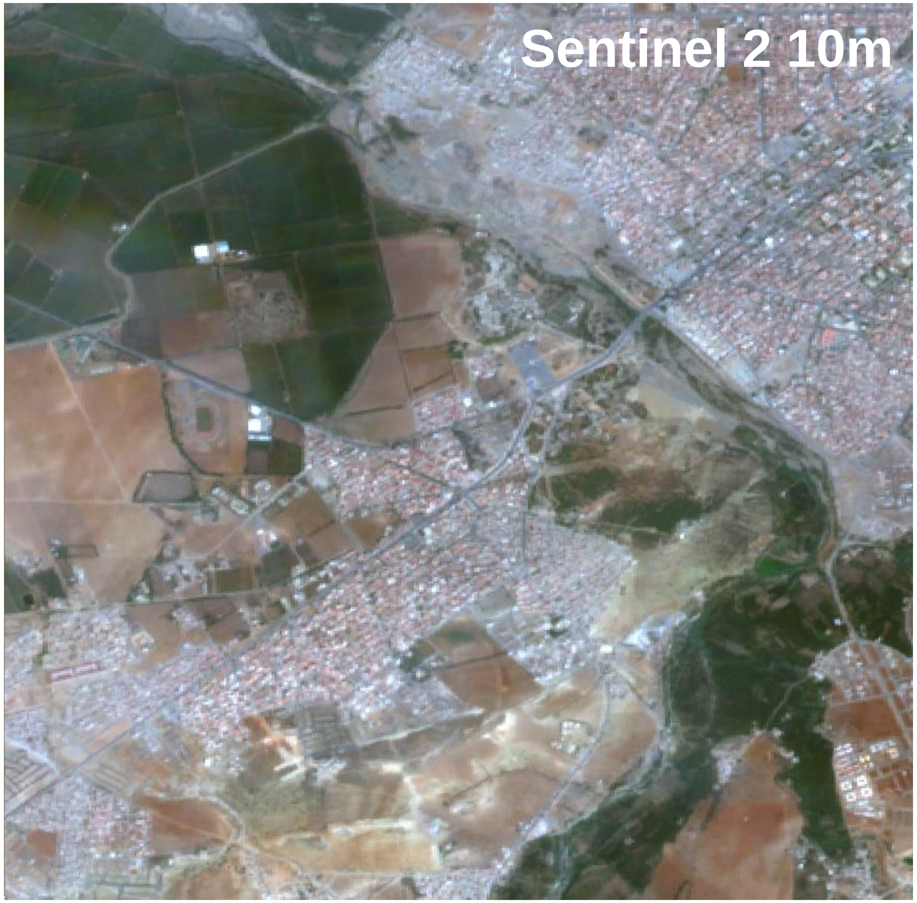
```
Use print(...) to write to this console.

 Sentinel 2 Image Date
▸Date (2016-05-06 13:42:37)
```

Rotation Cycle ~7 years

MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
7,500
5,000
2,500
0
-2,500
2001
2003
2005
2007
2009
2011
2013
2015
2017
Date
NDVI
Landsat 7 Monthly NDVI Composite
NDVI
1.00
0.75
0.50
0.25
0.00
NDVI

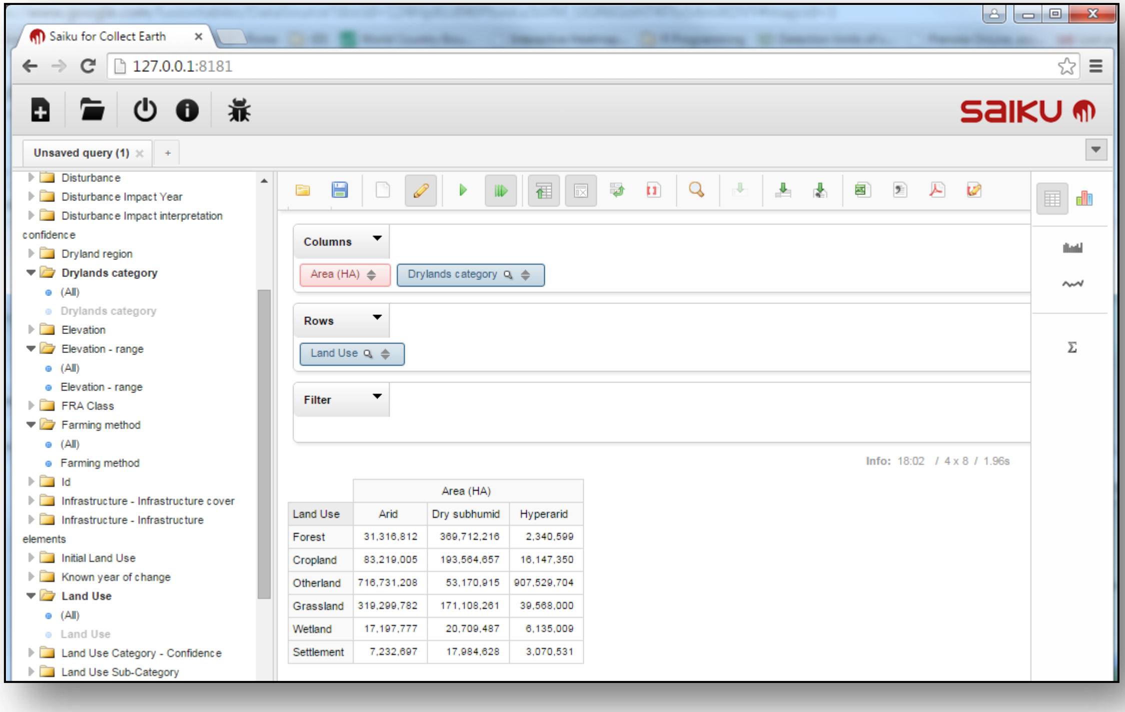
Sentinel 2

- Freely distributed in GBs
- Global coverage
- Frequency:
- **10 days** with one satellite
- 5 days with two satellites
- Resolution: **10 m**
- Available in Code Editor



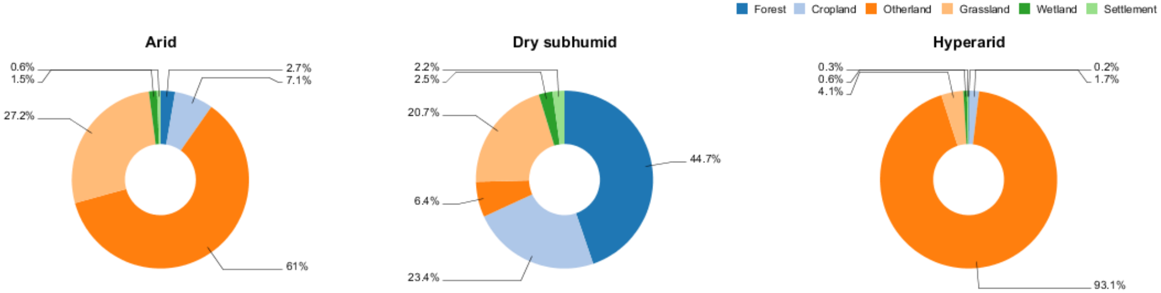
Saiku

- Easy user interface
- Drag-and-drop system
- Fast, intuitive, flexible analysis
- Colourful and informative charts, graphs
- Export to Excel, CSV, PDF, JPG, PNG


Saiku for Collect Earth
127.0.0.1:8181
saiku
Unsaved query (1)
Disturbance
Disturbance Impact Year
Disturbance Impact interpretation confidence
Dryland region
Drylands category
(All)
Drylands category
Elevation
Elevation - range
(All)
Elevation - range
FRA Class
Farming method
(All)
Farming method
Id
Infrastructure - Infrastructure cover
Infrastructure - Infrastructure elements
Initial Land Use
Known year of change
Land Use
(All)
Land Use
Land Use Category - Confidence
Land Use Sub-Category
Columns
Area (HA)
Drylands category
Rows
Land Use
Filter
Σ

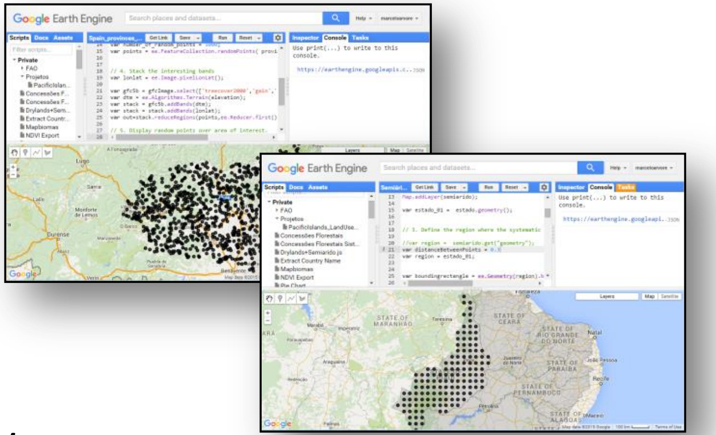
Info: 18:02 / 4 x 8 / 1.96s

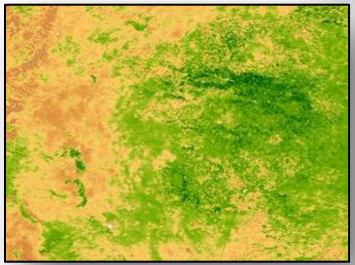
	Area (HA)		
Land Use	Arid	Dry subhumid	Hyperarid
Forest	31,316,812	369,712,216	2,340,599
Cropland	83,219,005	193,564,657	16,147,350
Otherland	716,731,208	53,170,915	907,529,704
Grassland	319,299,782	171,108,261	39,568,000
Wetland	17,197,777	20,709,487	6,135,009
Settlement	7,232,697	17,984,628	3,070,531



Conclusions

- Sensors are evolving quickly, together with the availability of Earth observations products
- No need of powerful computers to run powerful analysis
- Collect Earth is always coupled with a strong capacity development component
- Incorporation of local knowledge
- Fully customizable


Google Earth Engine
Google Earth Engine



Middle East Drylands

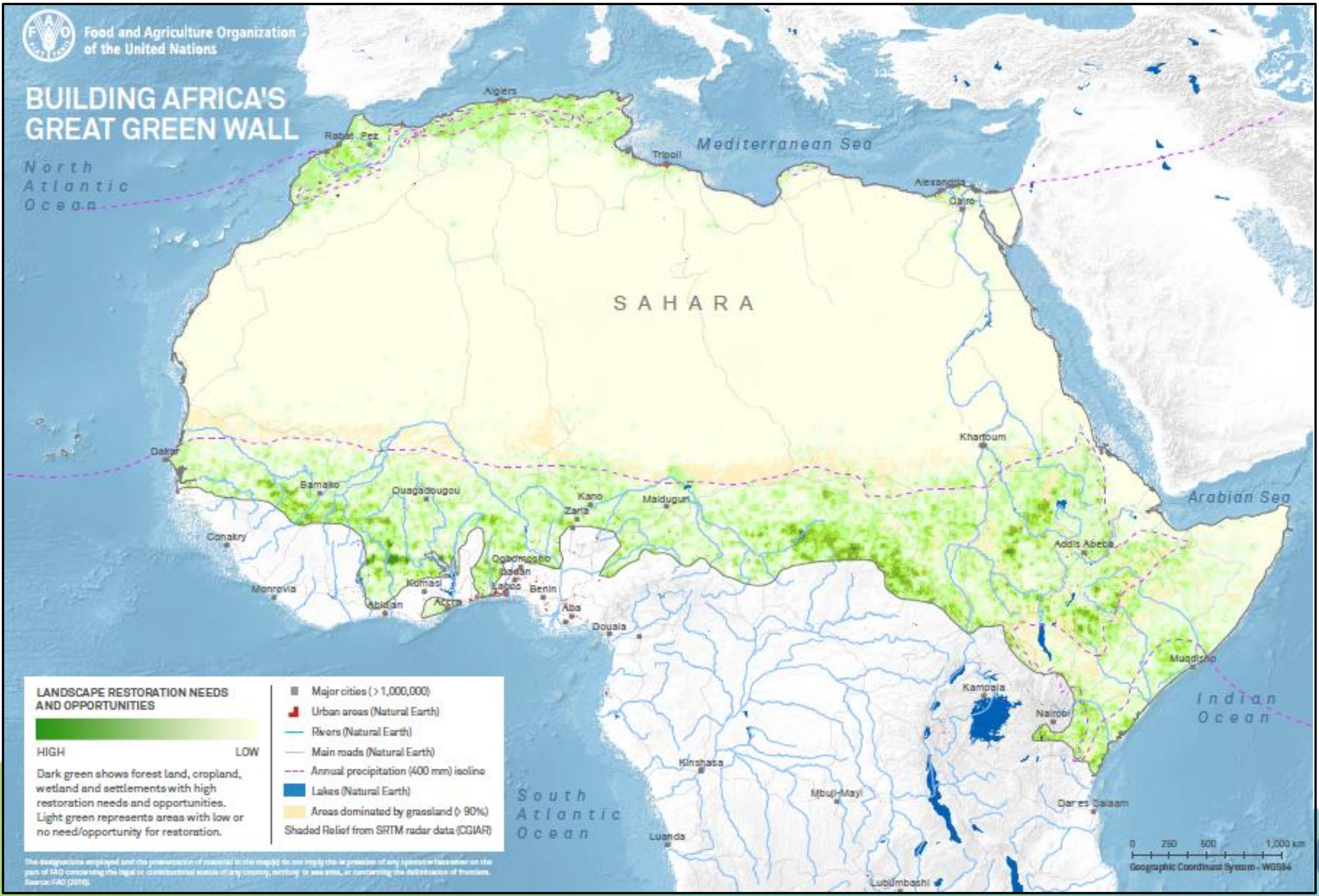
openforis
COLLECT EARTH

Collect Earth
Case studies

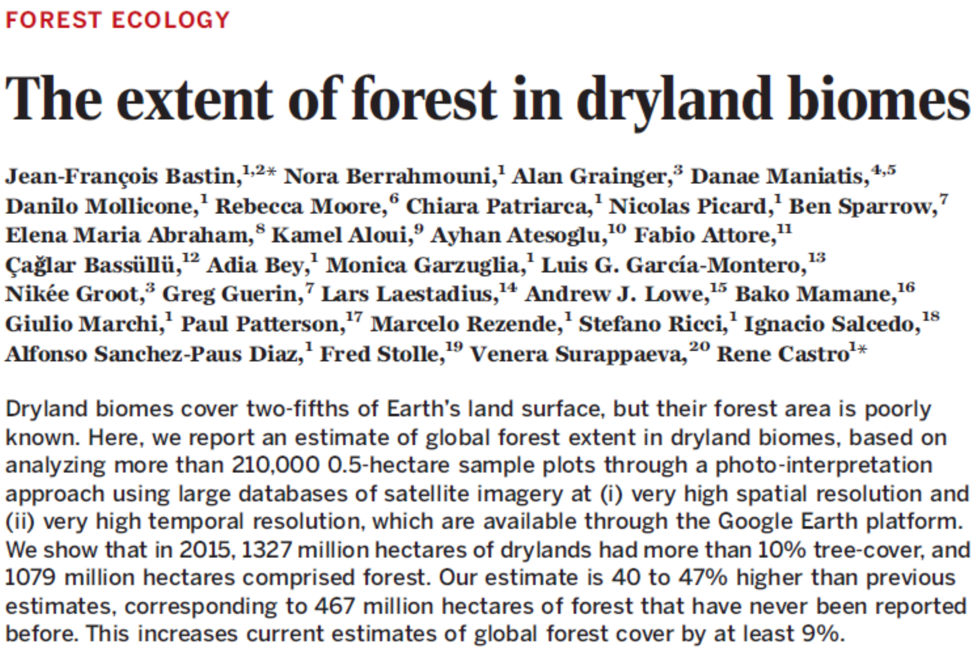
Food and Agriculture Organization of the United Nations

FAO Action Against Desertification:
Restoration needs/opportunities in Africa’s Great Green Wall

http://www.fao.org/in-action/action-against-desertification/resources/en/


Food and Agriculture Organization of the United Nations
BUILDING AFRICA'S GREAT GREEN WALL
North Atlantic Ocean
Mediterranean Sea
SAHARA
Arabian Sea
Indian Ocean
South Atlantic Ocean
Algiers
Rabat
Fez
Tripoli
Alexandria
Cairo
Khartoum
Dakar
Bamako
Ouagadougou
Kano
Zaria
Maiduguri
Conakry
Ogbomosho
Ibadan
Kumasi
Lagos
Benin
Monrovia
Abidjan
Accra
Aba
Douala
Addis Abeba
Muqdisho
Kampala
Nairobi
Kinshasa
Mbuji-Mayi
Dar es Salaam
Luanda
Lubumbashi
LANDSCAPE RESTORATION NEEDS AND OPPORTUNITIES
HIGH
LOW
Dark green shows forest land, cropland, wetland and settlements with high restoration needs and opportunities. Light green represents areas with low or no need/opportunity for restoration.
Major cities (> 1,000,000)
Urban areas (Natural Earth)
Rivers (Natural Earth)
Main roads (Natural Earth)
Annual precipitation (400 mm) isoline
Lakes (Natural Earth)
Areas dominated by grassland (> 90%)
Shaded Relief from SRTM radar data (CGIAR)
0
250
500
1,000 km
Geographic Coordinate System - WGS84

New global forest geography



FOREST ECOLOGY

The extent of forest in dryland biomes

Jean-François Bastin,[1,2]* Nora Berrahmouni,[1] Alan Grainger,[3] Danae Maniatis,[4,5] Danilo Mollicone,[1] Rebecca Moore,[6] Chiara Patriarca,[1] Nicolas Picard,[1] Ben Sparrow,[7] Elena Maria Abraham,[8] Kamel Aloui,[9] Ayhan Atesoglu,[10] Fabio Attore,[11] Çağlar Bassüllü,[12] Adia Bey,[1] Monica Garzuglia,[1] Luis G. García-Montero,[13] Nikée Groot,[3] Greg Guerin,[7] Lars Laestadius,[14] Andrew J. Lowe,[15] Bako Mamane,[16] Giulio Marchi,[1] Paul Patterson,[17] Marcelo Rezende,[1] Stefano Ricci,[1] Ignacio Salcedo,[18] Alfonso Sanchez-Paus Diaz,[1] Fred Stolle,[19] Venera Surappaeva,[20] Rene Castro[1]*

Dryland biomes cover two-fifths of Earth's land surface, but their forest area is poorly known. Here, we report an estimate of global forest extent in dryland biomes, based on analyzing more than 210,000 0.5-hectare sample plots through a photo-interpretation approach using large databases of satellite imagery at (i) very high spatial resolution and (ii) very high temporal resolution, which are available through the Google Earth platform. We show that in 2015, 1327 million hectares of drylands had more than 10% tree-cover, and 1079 million hectares comprised forest. Our estimate is 40 to 47% higher than previous estimates, corresponding to 467 million hectares of forest that have never been reported before. This increases current estimates of global forest cover by at least 9%.

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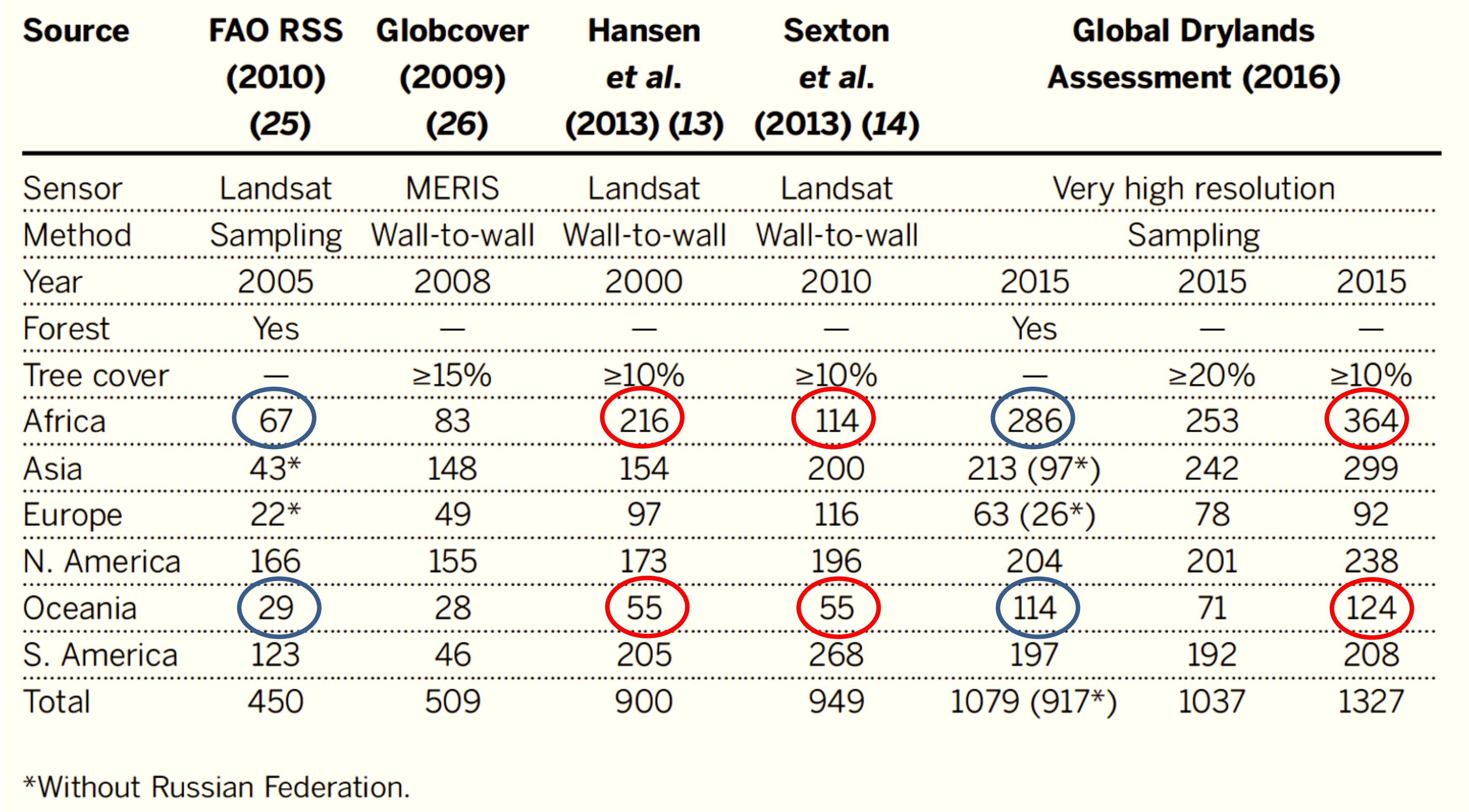
FOREST GEOGRAPHY
Mapping forests of the dryland biome p. 635

Forest/tree cover extension in Drylands

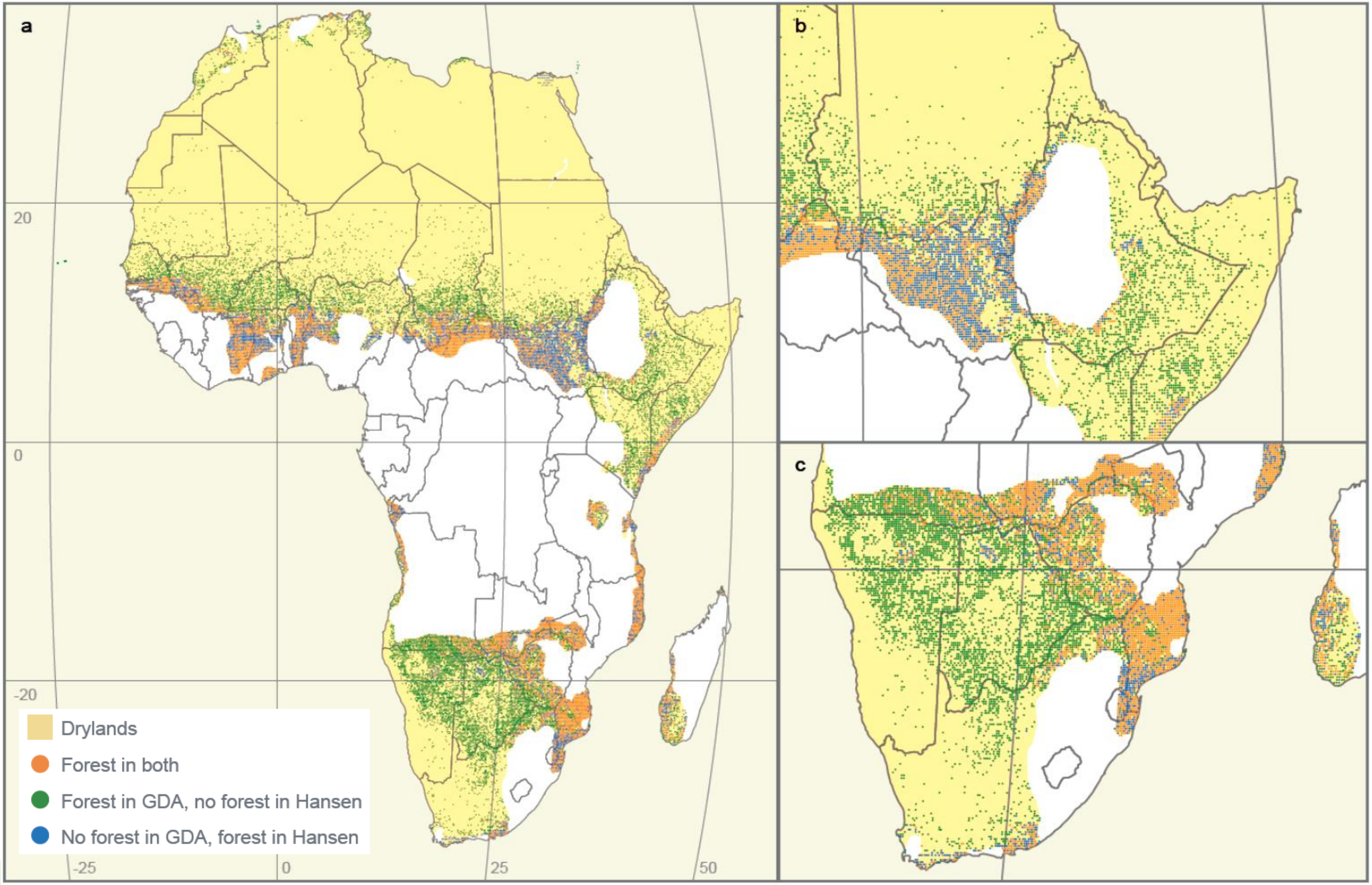
	Total area	Tree canopy cover ≥ 10%	Forest	Tree canopy cover ≥ 10% and < 40%	Open forest	Tree canopy cover ≥ 40%	Closed forest
Continent							
Africa	1961	364	286	213	151	151	135
Asia	1950	299	213	104	37	195	176
Europe	295	92	63	29	7	63	56
North America	694	238	204	77	49	161	155
Oceania	685	124	114	94	85	30	29
South America	546	208	197	33	26	75	171
Drylands total	6132	1327	1079	550	355	777	724

Our data compared with previous estimates



Source	**FAO RSS (2010) (*25*)**	**Globcover (2009) (*26*)**	**Hansen *et al.* (2013) (*13*)**	**Sexton *et al.* (2013) (*14*)**	**Global Drylands Assessment (2016)**		
Sensor	Landsat	MERIS	Landsat	Landsat	Very high resolution		
Method	Sampling	Wall-to-wall	Wall-to-wall	Wall-to-wall	Sampling		
Year	2005	2008	2000	2010	2015	2015	2015
Forest	Yes	—	—	—	Yes	—	—
Tree cover	—	≥15%	≥10%	≥10%	—	≥20%	≥10%
Africa	67	83	216	114	286	253	364
Asia	43*	148	154	200	213 (97*)	242	299
Europe	22*	49	97	116	63 (26*)	78	92
N. America	166	155	173	196	204	201	238
Oceania	29	28	55	55	114	71	124
S. America	123	46	205	268	197	192	208
Total	450	509	900	949	1079 (917*)	1037	1327

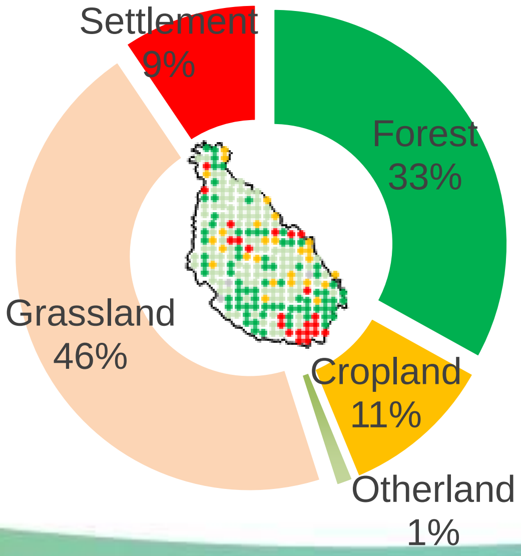
*Without Russian Federation.

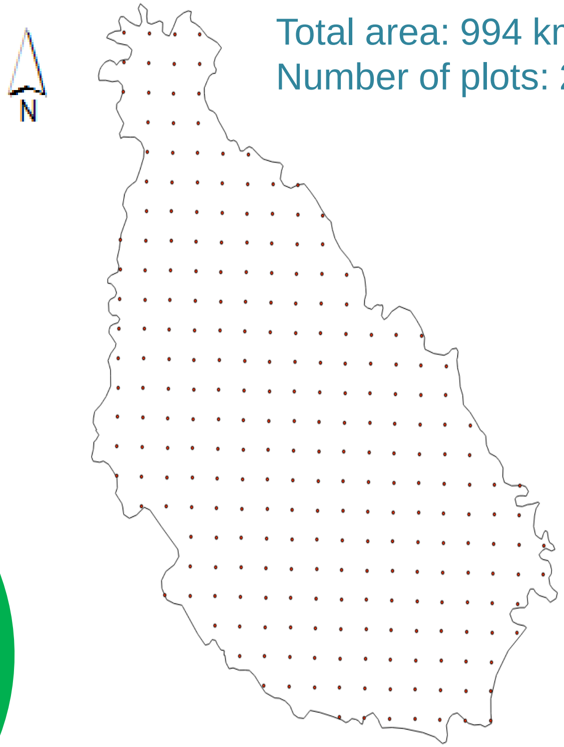
 a
b
c
20
0
-20
-25
0
25
50
Drylands
Forest in both
Forest in GDA, no forest in Hansen
No forest in GDA, forest in Hansen

CAPE VERDE – SANTIAGO ISLAND

Collect Earth case study to assess Land Degradation Neutrality

Land use distribution





Total area: 994 km^2
Number of plots: 234

Land use change matrix to assess LDN

Area (ha)	2015 - Current land use					
2000 - Initial Land Use	Forest	Cropland	Otherland	Grassland	Settlement	total 2000
Forest	29,009			853	2,560	**32,422**
Cropland		10,665		853		**11,518**
Otherland			1,280			**1,280**
Grassland	3,839			43,088		**46,927**
Settlement					6,826	**6,826**
total 2015	**32,849**	**10,665**	**1,280**	**44,794**	**9,385**	

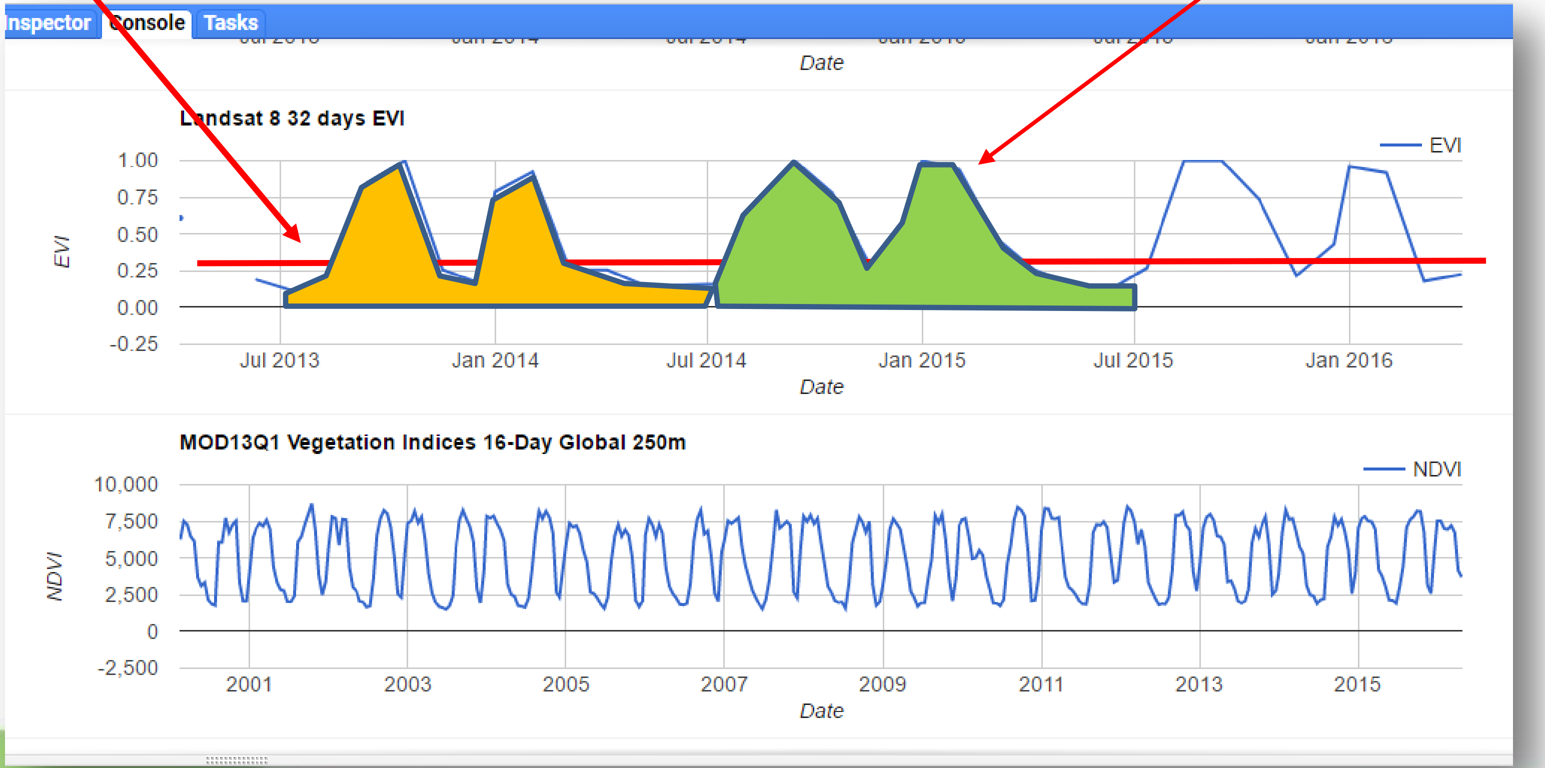
Based on IPCC 2006 AFOLU Guidelines

New approach to assess land degradation neutrality

- **Green days** = number of days with green vegetation per year
- **Annual green** = integral of annual vegetation index
- **Land productivity in cropland** = number of harvest per year
- **Tree cover trend** = changes in tree cover
- **Tree count trend** = changes in tree count

Green days

Annual green


Inspector
Console
Tasks
Date
Landsat 8 32 days EVI
EVI
1.00
0.75
0.50
0.25
0.00
-0.25
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Date
MOD13Q1 Vegetation Indices 16-Day Global 250m
NDVI
10,000
7,500
5,000
2,500
0
-2,500
2001
2003
2005
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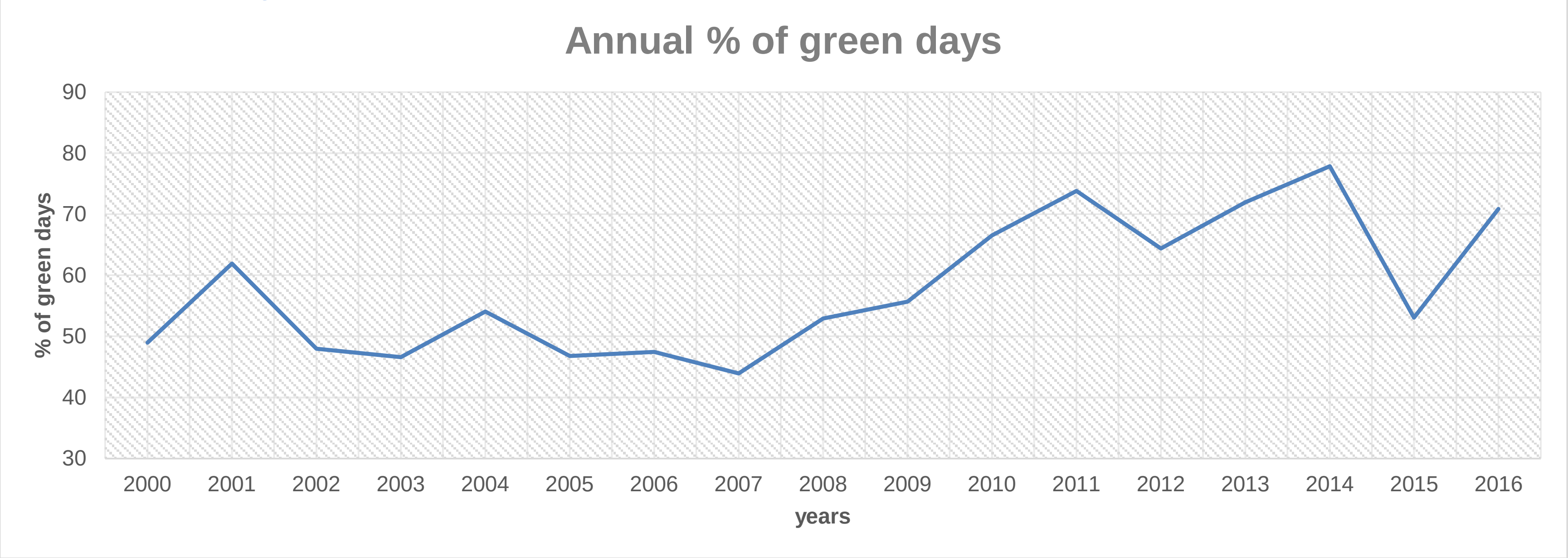
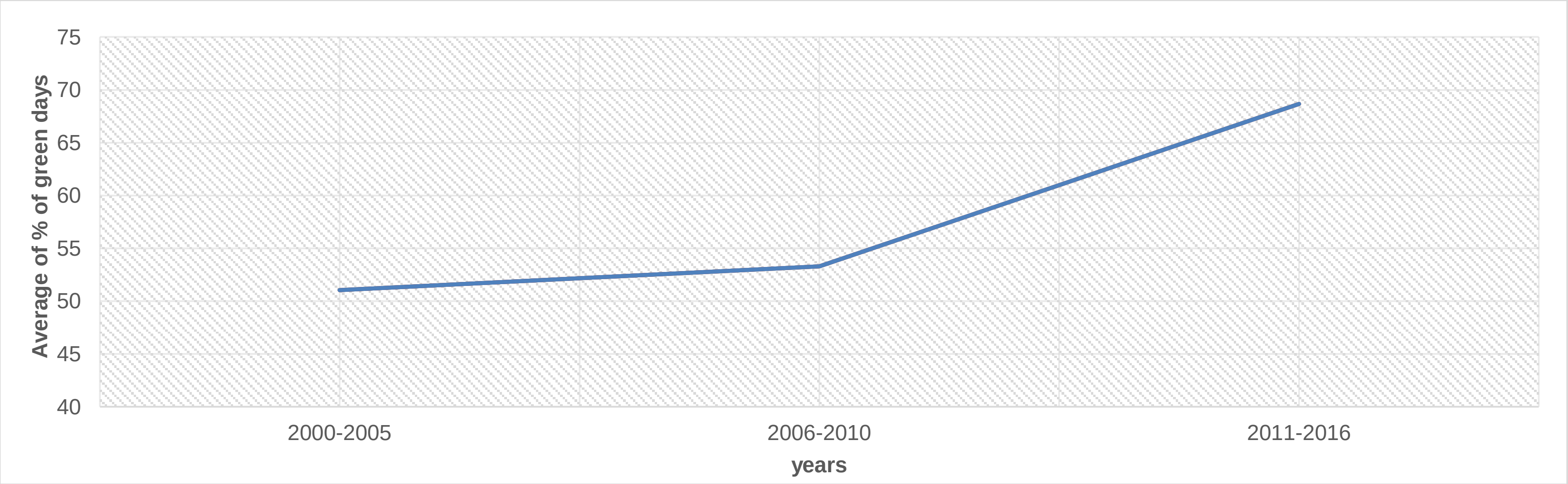
2009
2011
2013
2015
Date

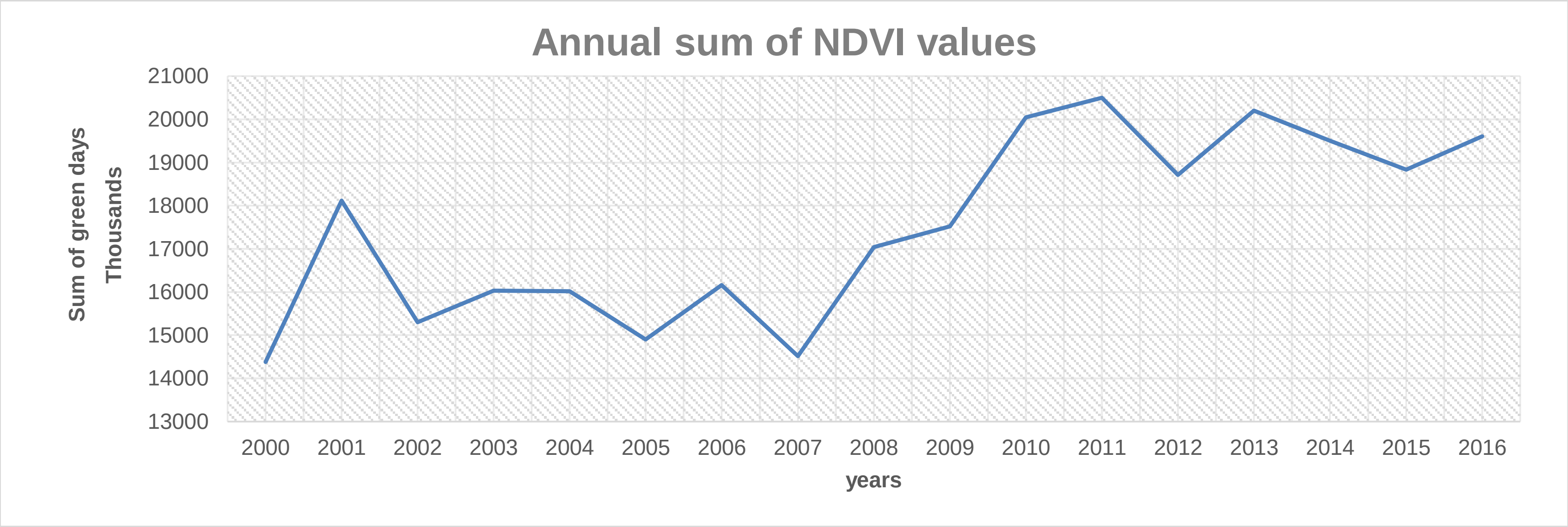
Green days

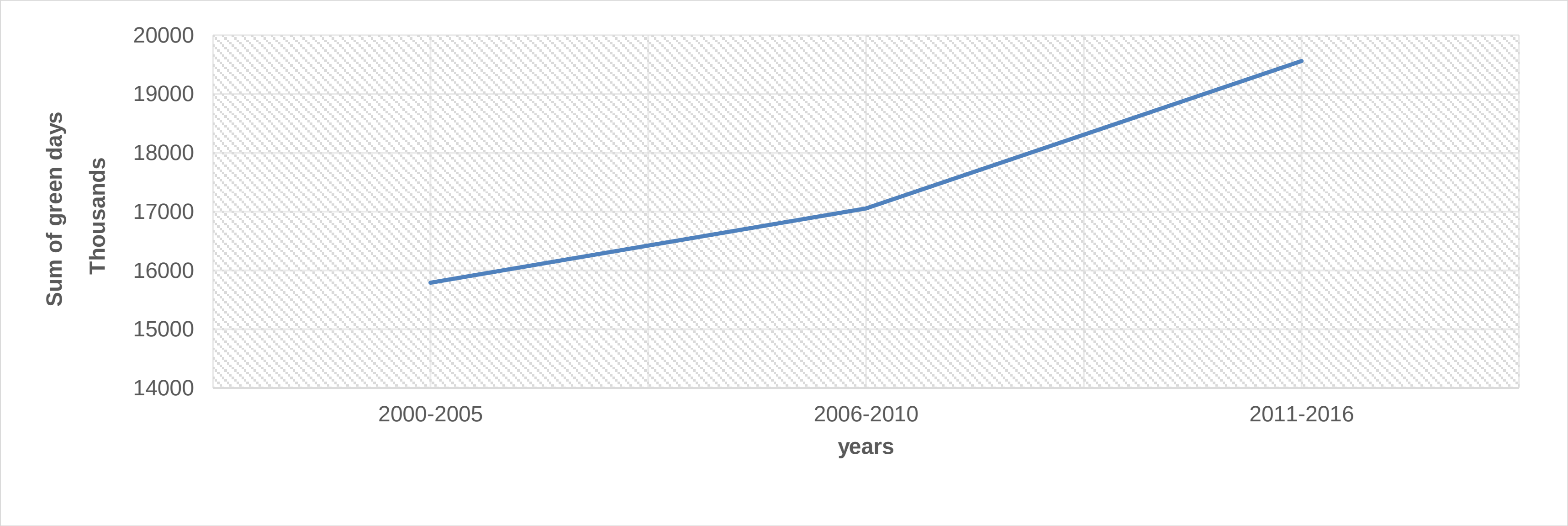




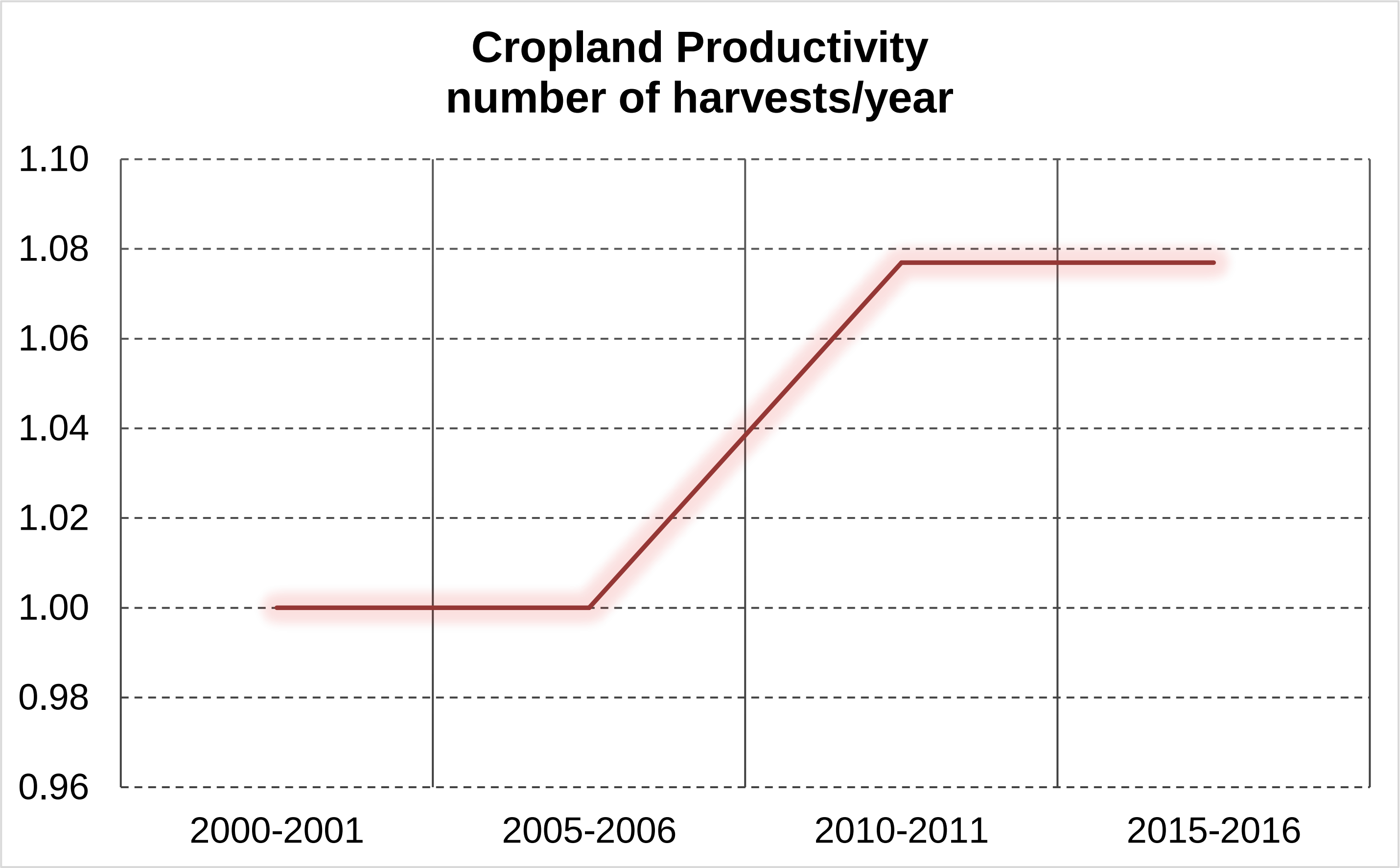
COLLECT EARTH

Annual green



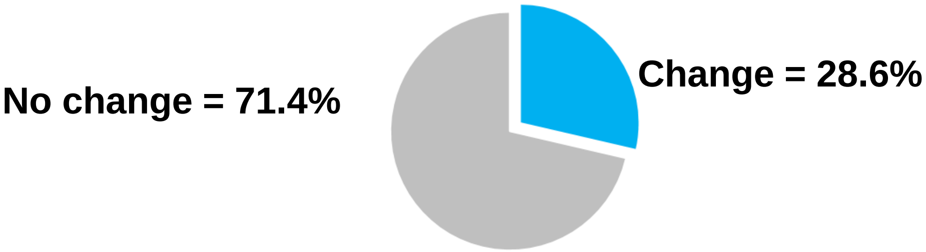


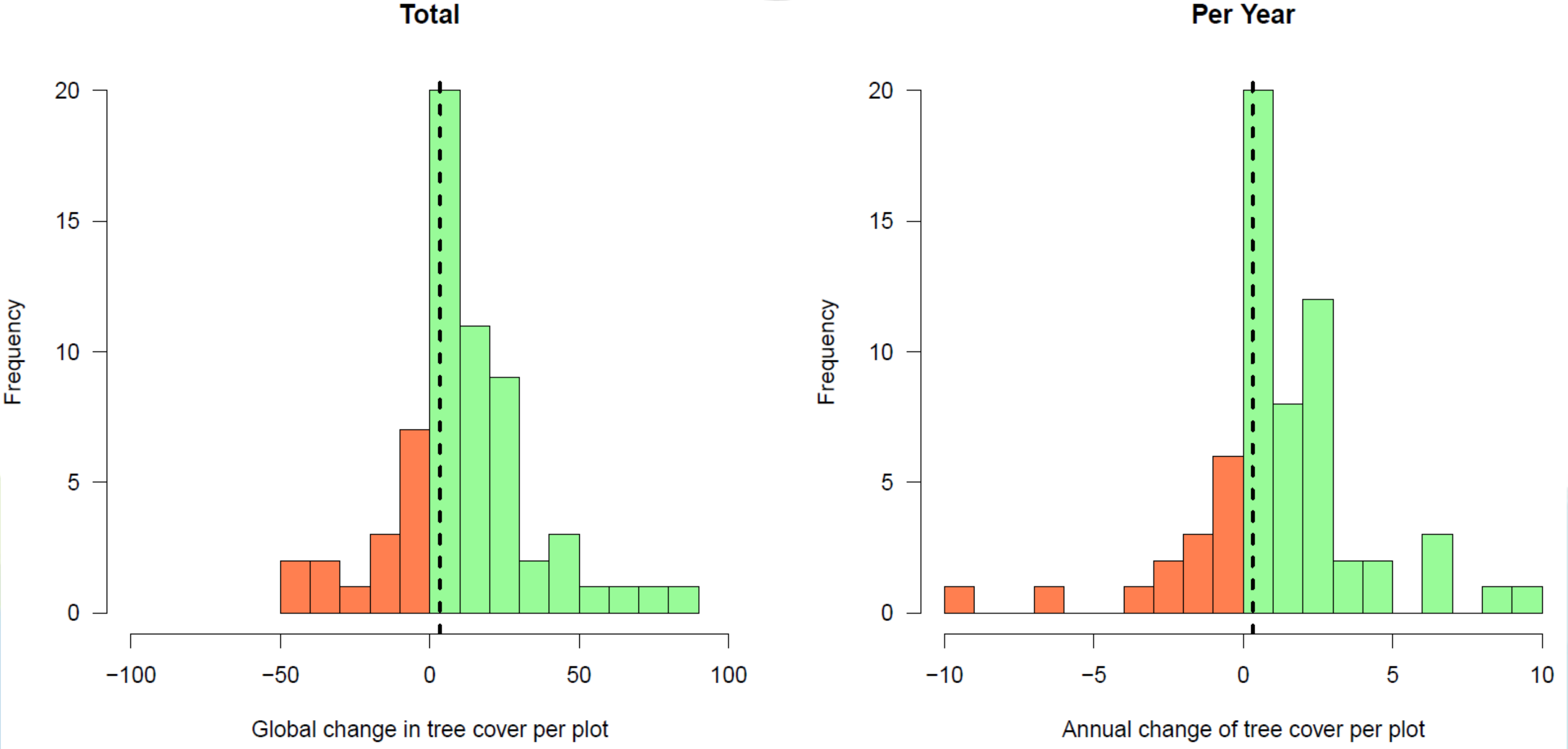
Land productivity in cropland



Tree cover trends

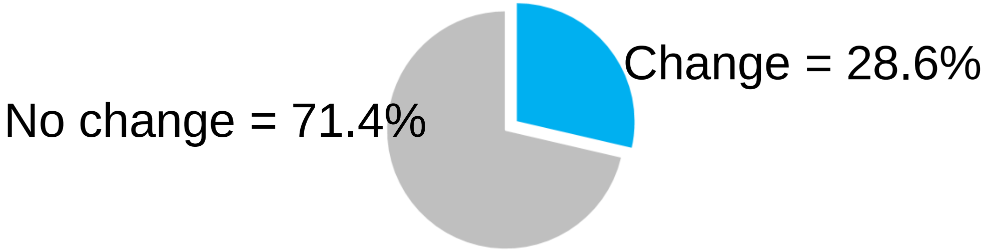
- Tree cover change, in total (figure 1) and per year (figure 2)
- Overall tree cover change (including plots without change): **+ 3.5% of tree cover**
- Annual tree cover change (including plots without change): **+0.32% of tree cover**

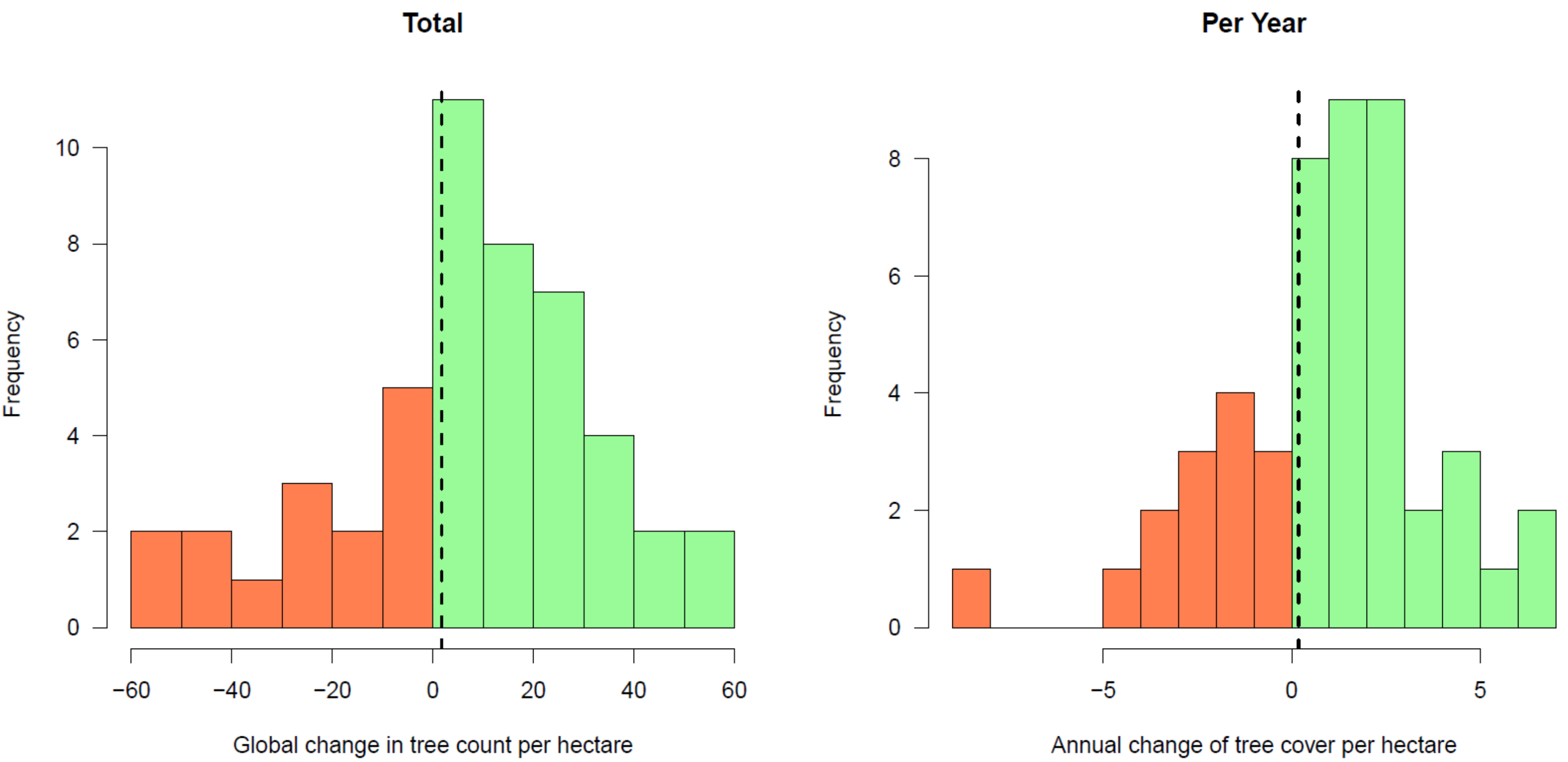




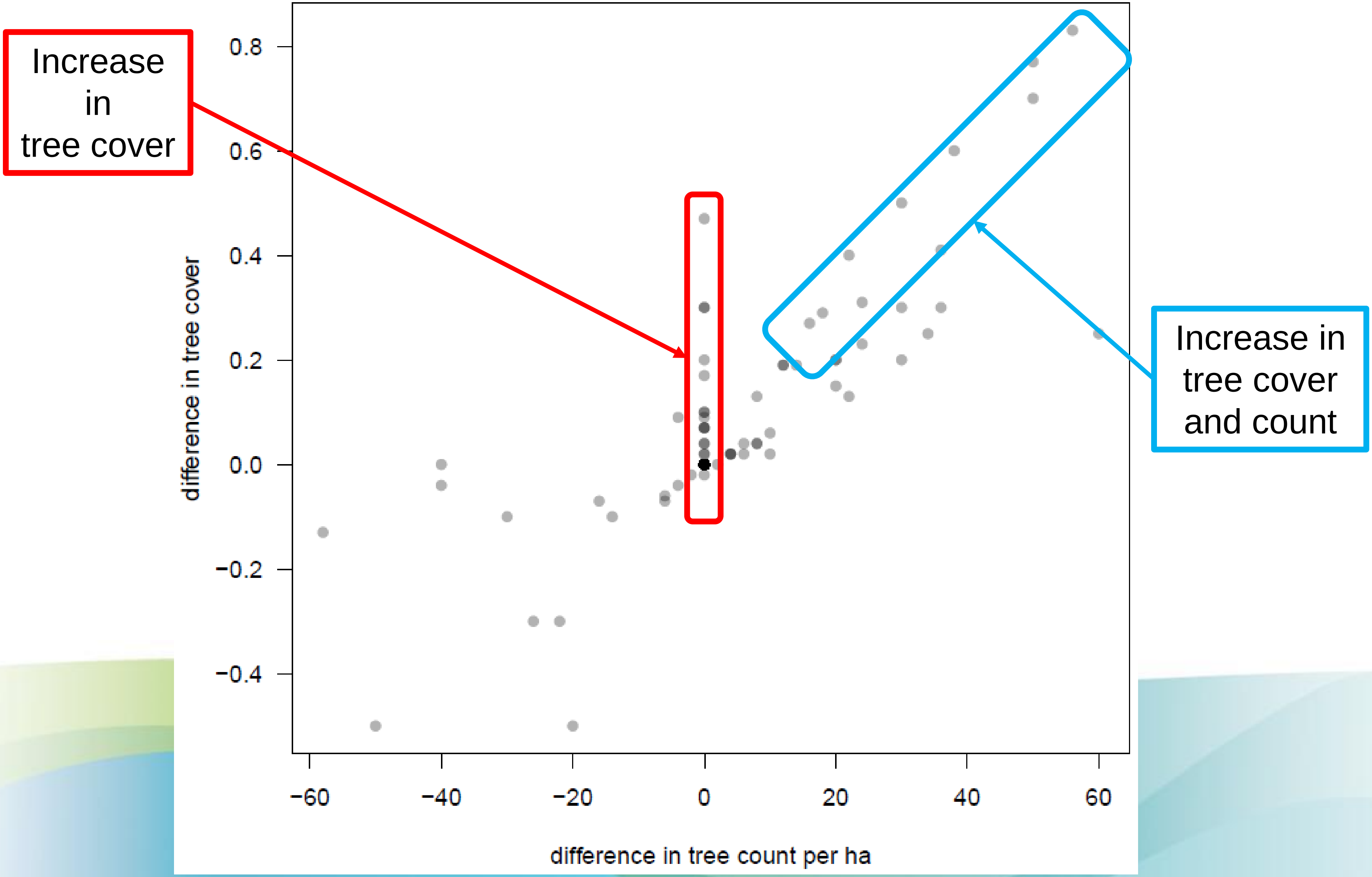
Tree count trends

- Tree count change, in total (figure 1) and per year (figure 2)
- Overall tree count (including plots without change) : **+ 1.74 of tree per ha**
- Annual change in tree count (including plots without change): **+ 0.18 of tree per ha**





Tree cover over tree counts



Increase in tree cover

Increase in tree cover and count

openforis
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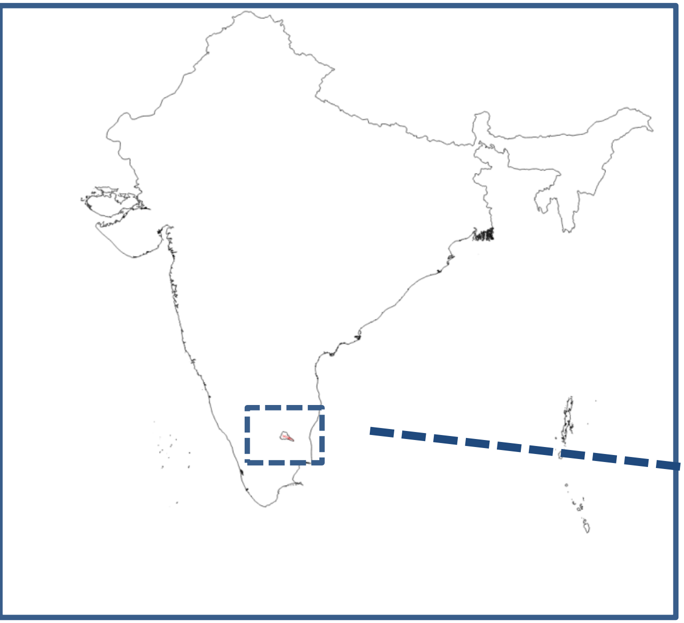
Collect Earth:

Water body restoration and rehabilitation in the UPPER VELLAR sub basin (TN-IAMWARM project)

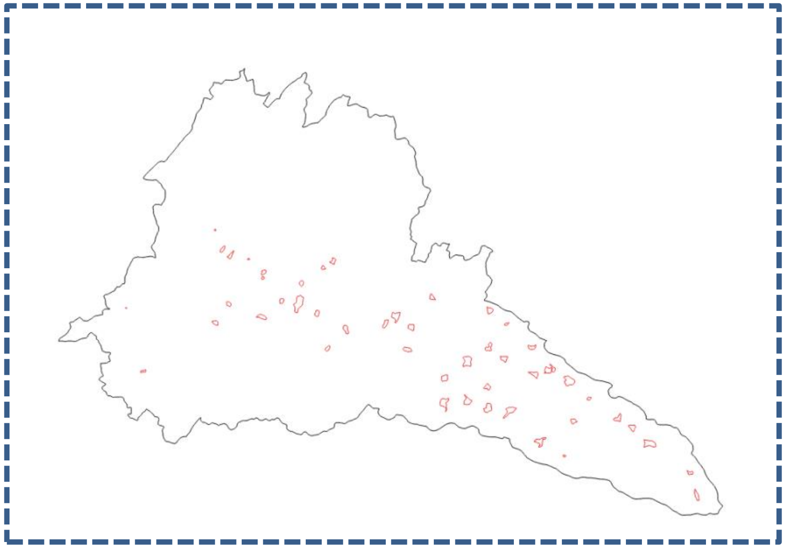
Food and Agriculture
Organization of the
United Nations

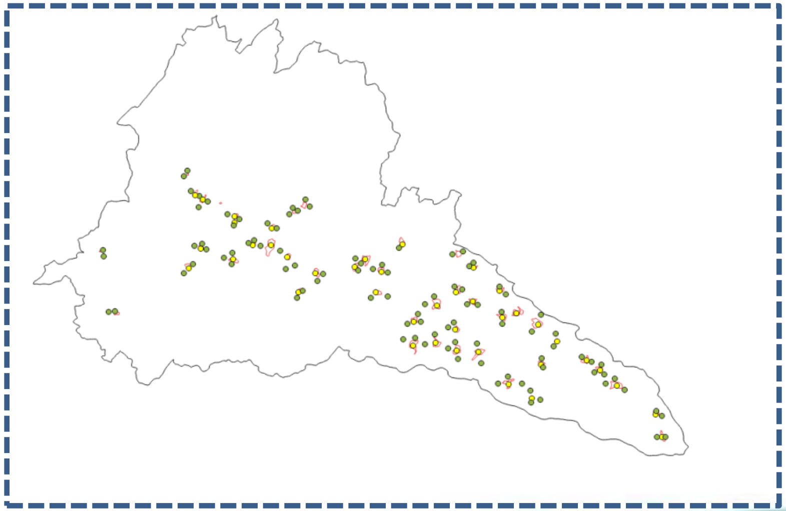
UPPER VELLAR SUB BASIN
Phase 2007-2008



Upper Vellar area: 1829 km^2

Total number of water tank: 49



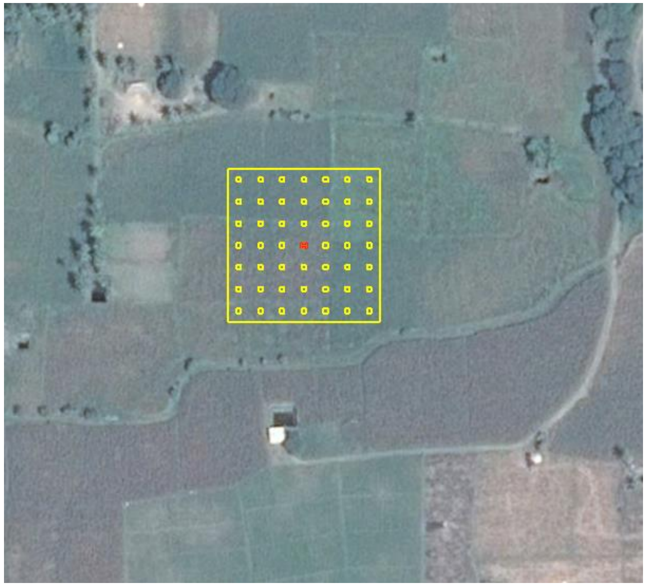


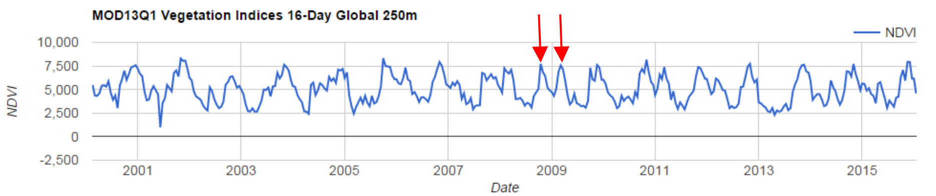
Total number of plots assessed: 140

Cropland: 99 water tank:41

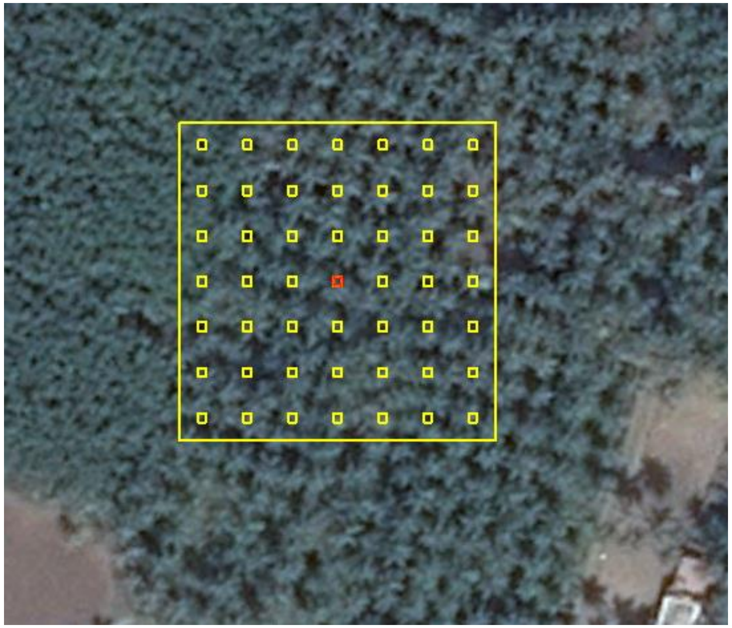
Example of croplands

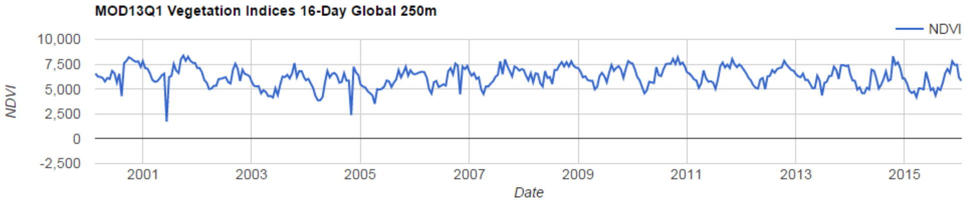
ID 45





ID 10

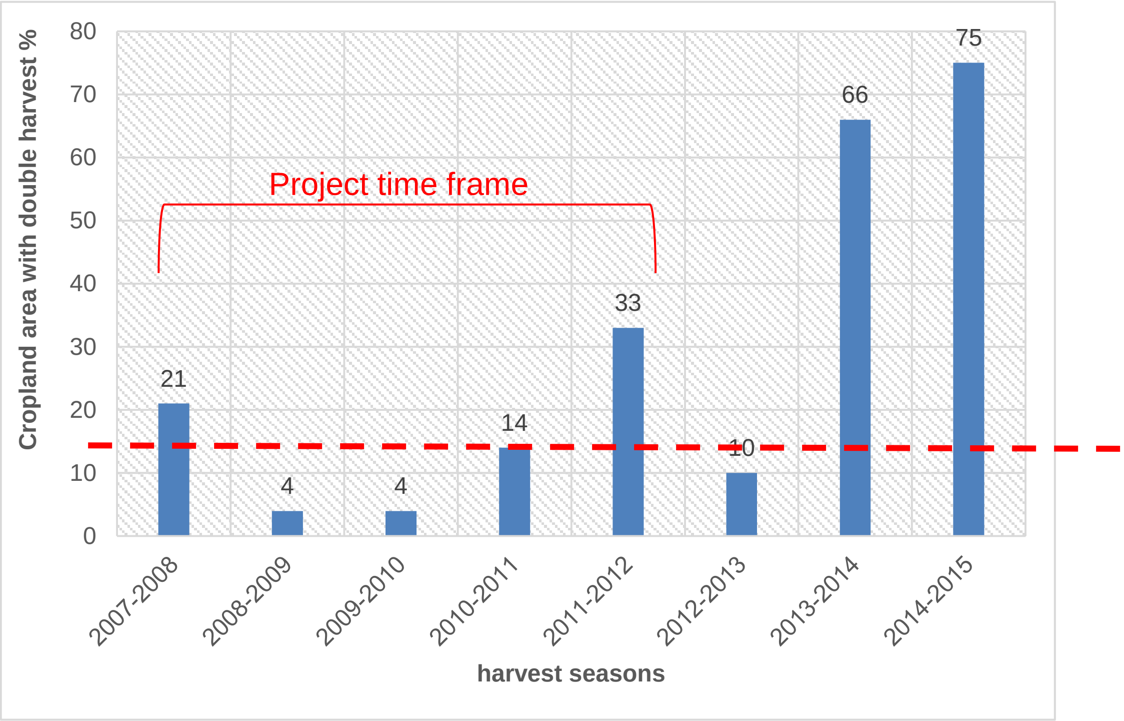




15% of the cropland area has palm plantation

Percentage of cropland with double harvest

Results on 84 test plots



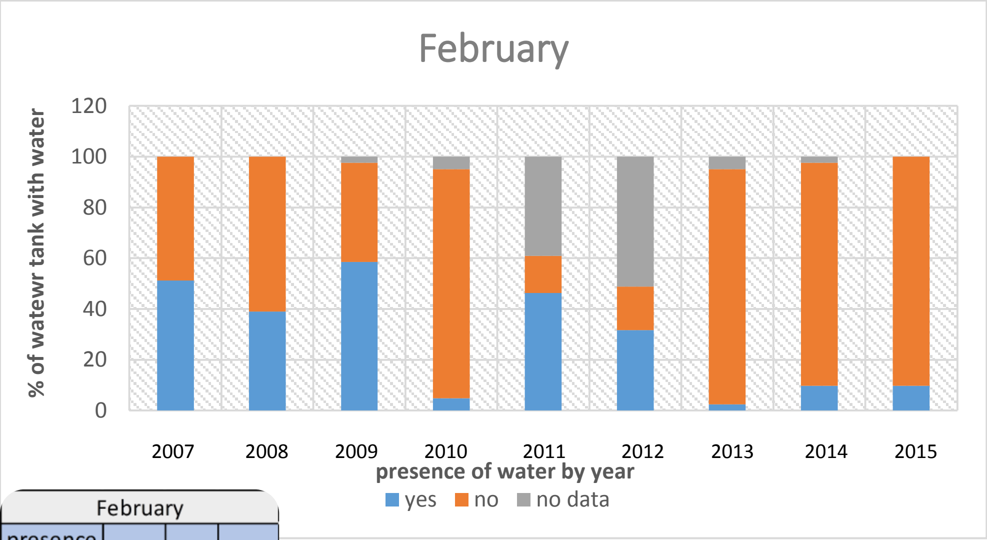
15 % project baseline (average of the cropland area with double harvest)

Quantitative estimate

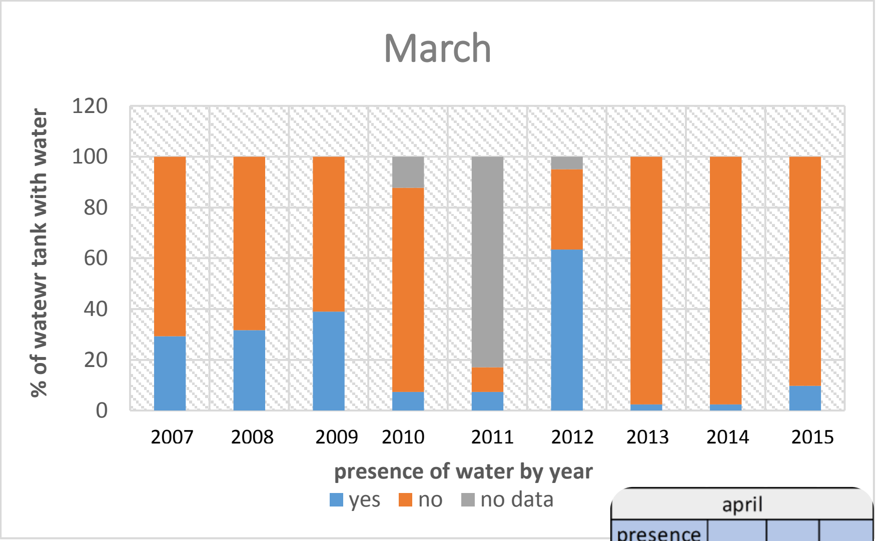
- In 2012-2013 the cropland area with double harvest decreased by 5%.
- In 2013-2014 and 2014-2015 the cropland are with double harvest increased by 51% and 60% respectively

Potential water tank analysis

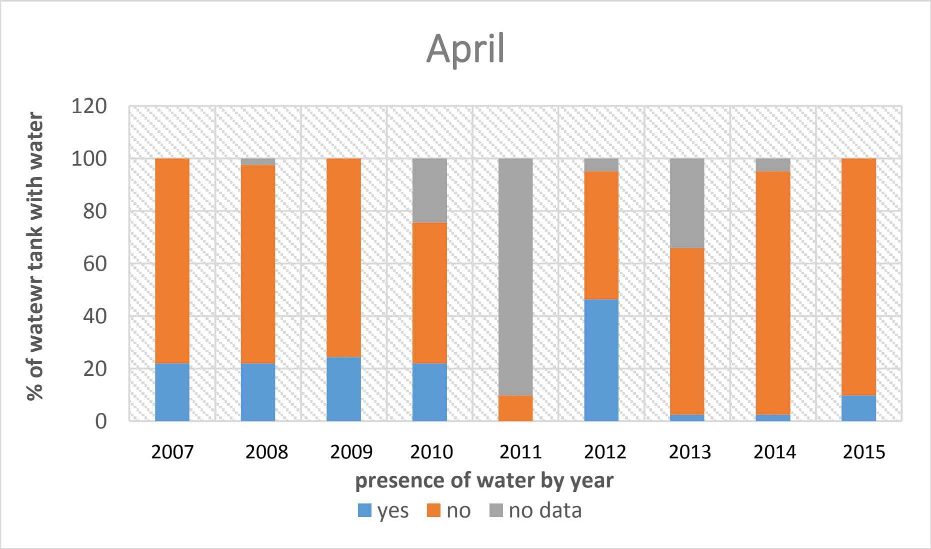
Results on 41 test plots



February			
presence of water by year	yes	no	no data
2007	51.2	48.8	0.0
2008	39.0	61.0	0.0
2009	58.5	39.0	2.4
2010	4.9	90.2	4.9
2011	46.3	14.6	39.0
2012	31.7	17.1	51.2
2013	2.4	92.7	4.9
2014	9.8	87.8	2.4
2015	9.8	90.2	0.0

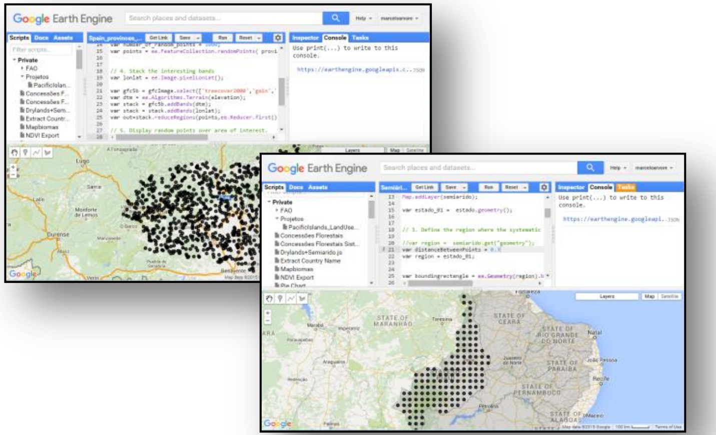


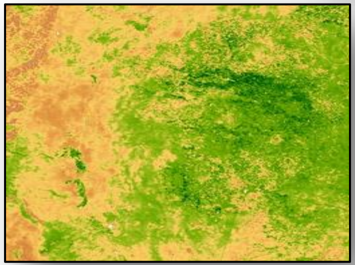
april			
presence of water by year	yes	no	no data
2007	22.0	78.0	0.0
2008	22.0	75.6	2.4
2009	24.4	75.6	0.0
2010	22.0	53.7	24.4
2011	0.0	9.8	90.2
2012	46.3	48.8	4.9
2013	2.4	63.4	34.1
2014	2.4	92.7	4.9
2015	9.8	90.2	0.0



Conclusions

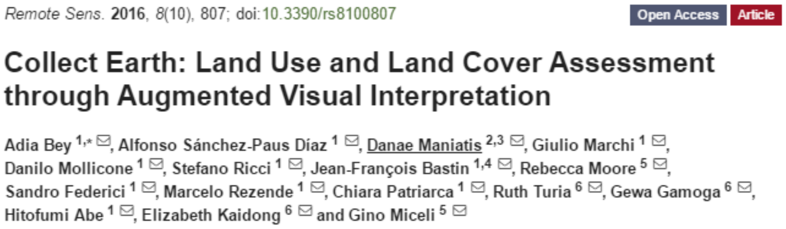
- Land Degradation Neutrality can be represented through trends in land elements
- Technology and data are now freely available
- No need of powerful computers, only internet connection is necessary
- Collect Earth is an user friendly tool, perfect for capacity building/development activities


Google Earth Engine
Google Earth Engine



Middle East Drylands

References

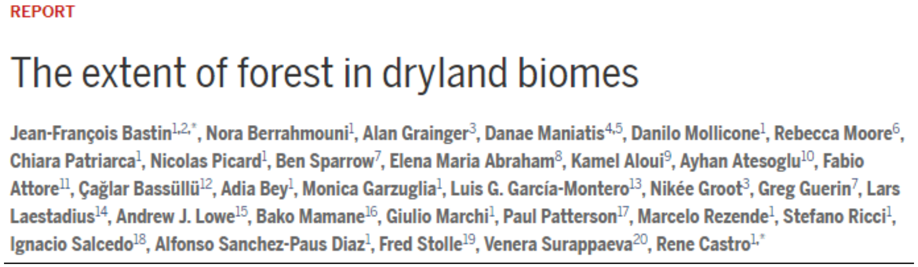


Remote Sens. **2016**, *8*(10), 807; doi:10.3390/rs8100807 Open Access Article

Collect Earth: Land Use and Land Cover Assessment through Augmented Visual Interpretation

Adia Bey [1,*] ✉, Alfonso Sánchez-Paus Díaz [1] ✉, Danae Maniatis [2,3] ✉, Giulio Marchi [1] ✉, Danilo Mollicone [1] ✉, Stefano Ricci [1] ✉, Jean-François Bastin [1,4] ✉, Rebecca Moore [5] ✉, Sandro Federici [1] ✉, Marcelo Rezende [1] ✉, Chiara Patriarca [1] ✉, Ruth Turia [6] ✉, Gewa Gamoga [6] ✉, Hitofumi Abe [1] ✉, Elizabeth Kaidong [6] ✉ and Gino Miceli [5] ✉

http://www.mdpi.com/2072-4292/8/10/807



REPORT

The extent of forest in dryland biomes

Jean-François Bastin[1,2,*], Nora Berrahmouni[1], Alan Grainger[3], Danae Maniatis[4,5], Danilo Mollicone[1], Rebecca Moore[6], Chiara Patriarca[1], Nicolas Picard[1], Ben Sparrow[7], Elena Maria Abraham[8], Kamel Aloui[9], Ayhan Atesoglu[10], Fabio Attore[11], Çağlar Bassüllü[12], Adia Bey[1], Monica Garzuglia[1], Luis G. García-Montero[13], Nikée Groot[3], Greg Guerin[7], Lars Laestadius[14], Andrew J. Lowe[15], Bako Mamane[16], Giulio Marchi[1], Paul Patterson[17], Marcelo Rezende[1], Stefano Ricci[1], Ignacio Salcedo[18], Alfonso Sanchez-Paus Diaz[1], Fred Stolle[19], Venera Surappaeva[20], Rene Castro[1,*]

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Links:

www.openforis.org
www.openforis.org/tools/collect-earth.html
www.fao.org/forestry/nfms-for-redd/en/
Map of Events

Breakout session 5. Mobile-based data collection tools for programme monitoring and evaluation

Presenters:
Mr Dieffi Tchifou Miltiade, CEO, Open-IT and Information Systems Designer
Mr Wael Attia, Lead Information and Knowledge Management Officer, Analysis and Trends Service, Programme and Policy Division, WFP

Information and Communication Technologies
for Evaluation International Conference
Rome June 6-7, 2017

IFAD
Investing in rural people

Mobile based data collection

An overview of Tools, Methods and case studies

DIEFFI TCHIFOU M.

OPEN-IT
Intégrateur de solutions

CaDEA

Introduction

It is a fact that the quality of an evaluation depend on reliable data. historically, surveys for data collection has always been paper based; which presents some limitations in terms of quality, reliability and duration of processing of data. with the emerging of the ICTs this last years there are news approaches in data collection process such as web based data collection and **mobile based data collection**.

Keys points

- What are mobile based data collection tools?
- How do mobile based data collection works?
- How are mobile based better than paper-based data collection?
- Principles of designing effective ODK based surveys in developing countries.

What are mobile based data collection tools?

For the data collection we need both equipment and software

Equipment

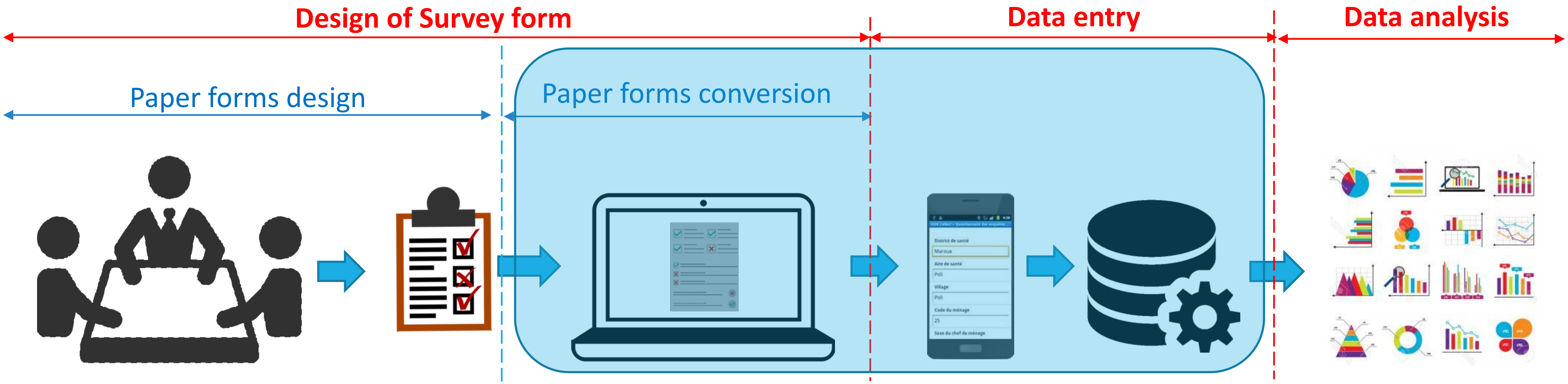
- Computer for Form Design and Data Extraction
- Smartphone for data entry and transmission
- Server for receiving and storing data

Software

- Form Design tools (MS Excel, XLSForm Offline, iFormBuilder, ODK Build…)
- Data entry and data transmission tools (ODK Collect, KoBo Collect…)
- Extraction tools (ODK aggregate, gammu-smsd…)

How do mobile based data collection works?

The process of mobile based data collection is not too different from the paper based. the main difference stand from the tools and means to render data ready for analysis.



Design of Survey form

Data entry

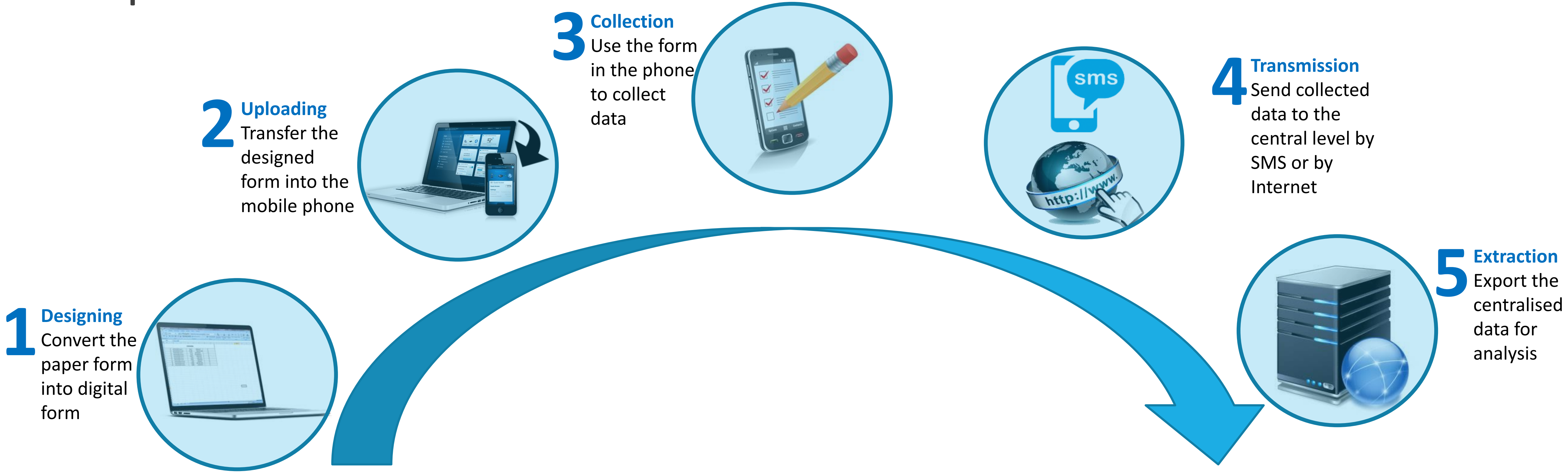
Data analysis

Paper forms design

Paper forms conversion

Mobile based data collection process

the process of mobile based data collection consist into five phases:



1 Designing
Convert the paper form into digital form

2 Uploading
Transfer the designed form into the mobile phone

3 Collection
Use the form in the phone to collect data

4 Transmission
Send collected data to the central level by SMS or by Internet

5 Extraction
Export the centralised data for analysis

How are mobile based better than paper-based data collection?

Even if there is no big differences in the mobile based and paper-based data collection process, there are several advantages to use mobile for data collection than to use paper in terms of:

- ***Speed***
- ***Accuracy***
- ***Data format***
- ***Cost***

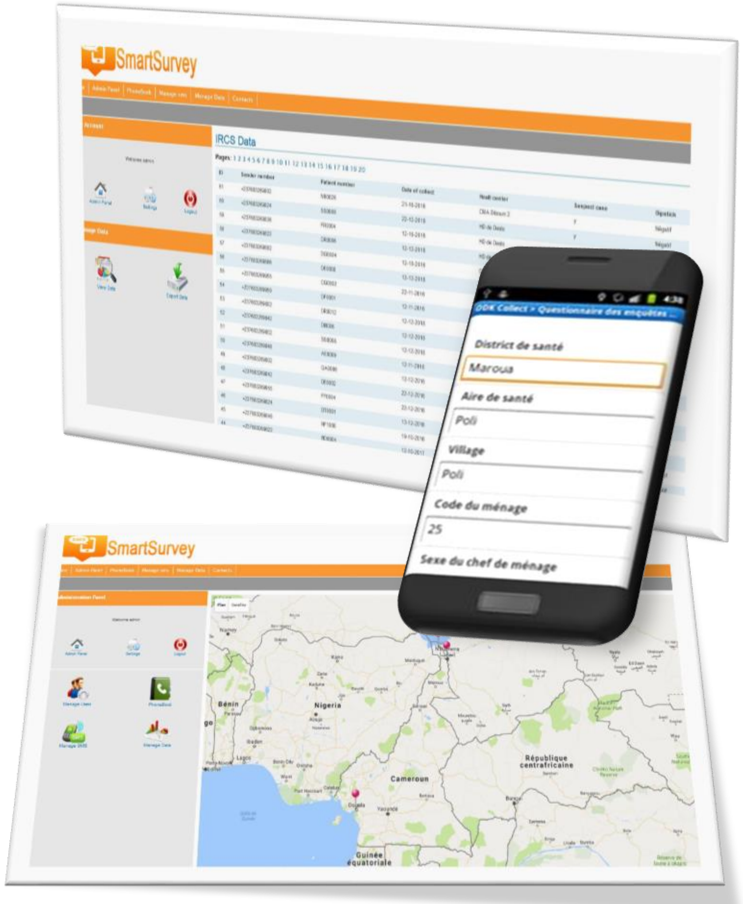
Principles of designing effective ODK based surveys in developing countries

To well understand what are Principles of designing effective ODK based surveys in developing countries let us first look at some case studies in which we used ODK based surveys. After what we will emphasize on **challenges**, **lessons learns** and some **good practices**.

Dove Project

Dove is an epidemiological surveillance of cholera project in the Far North of Cameroon

- The objective of Dove is to detect any cholera epidemic at an early stage in order to provide an effective response
- 13,000 households were placed under surveillance for 06 months (April-September 2015)
- Nearly 312,000 notices were sent by SMS

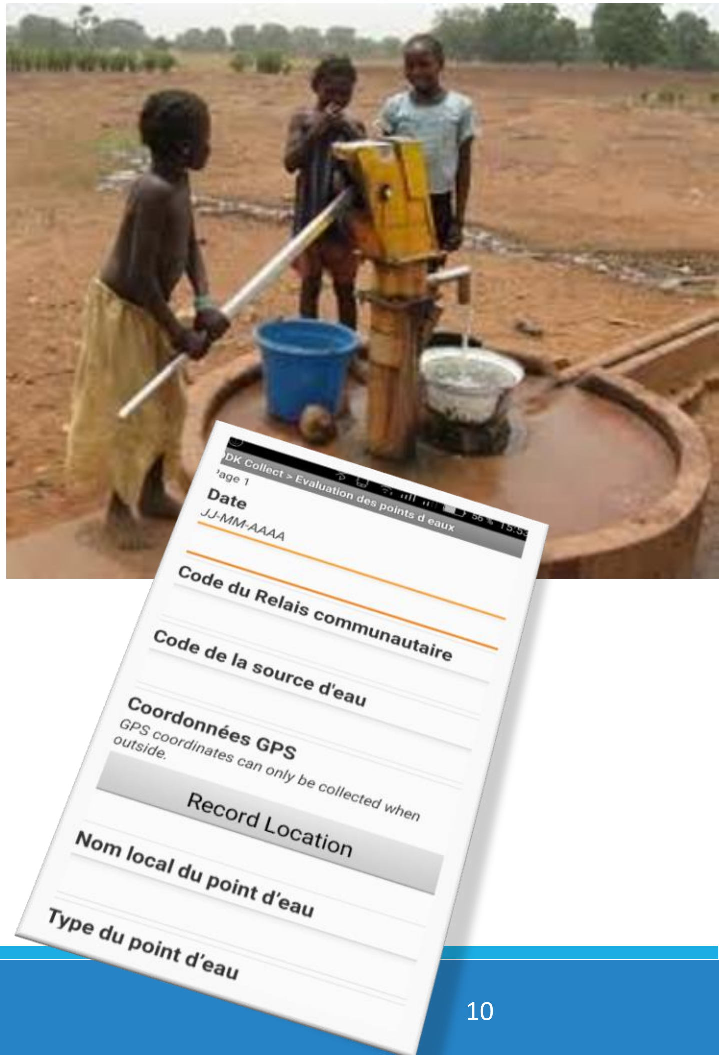

SmartSurvey
IRCS Data
SmartSurvey
ODK Collect > Questionnaire des enquêtes
Bénin
Nigeria
Cameroun
République centrafricaine
Guinée équatoriale

District de santé
Maroua
Aire de santé
Poli
Village
Poli
Code du ménage
25
Sexe du chef de ménage

REMMOC Project

REMMOC is a project that aims to reduce the mortality and the morbidity of Cholera in the town of Douala Cameroon

- The objective was to identify potential sources of cholera in order to carry out preventive actions.
- 30 investigators from the study areas were trained in the identification and characterization of water points and the use of smartphones for reporting .
- More than 1,500 water points have been identified and evaluated in one month



DK Collect > Evaluation des points d eaux

age 1

Date

JJ-MM-AAAA

Code du Relais communautaire

Code de la source d'eau

Coordonnées GPS

GPS coordinates can only be collected when outside.

Nom local du point d'eau

Type du point d'eau

What was the challenges?

While designing the above projects we realized that we will face some difficulties due to the context in which they will be implement.

- One of the project was to be implement in remote area without internet access and continuous power supply.
- Data were to be centralized and process in real time.
- Even if some of the community relays in charge to collect data were used to with mobile phone, it will be a need to train them on how to use mobile phone to collect data.

What did we learn?

- The use of smartphones has greatly reduced the margin of error in the collection of data since the data analysed are those directly entered by the interviewer.
- The data collected are geolocated which make verification very easy.
- The durability of the data is ensured by the fact that the collected data are digital

Some good practices in the design of ODK based surveys

- Create two or three short surveys forms instead of one long.
- Since the SMS length is limited it is better to use closed questions and codified answers.
- Implement at least one day of pre testing in the real context of the survey
- Monitor permanently data sent from the field

Thank You

THEME 2: ICTs APPLIED TO DATA ANALYSIS: How can ICT tools contribute to enhance evaluation rigour and what potential do they hold for the future?

Breakout session 6. Improving systematic reviews and evidence gap maps by text mining and machine learning

Presenter:
Mr Edoardo Masset, Deputy Director, Syntheses and Review Office, 3ie

International Initiative for Impact Evaluation

Improving systematic reviews and evidence gap maps by text mining and machine learning

Edoardo Masset
Deputy Director, 3ie
emasset@3ieimpact.org

ICT4Dev Conference
IFAD Rome
6th June 2017

Outline

- Systematic reviews and evidence gap maps
- Applications of text mining and machine learning
- Some examples from 3ie
- Future developments

What is evidence synthesis?

Systematic collection and presentation of evidence on a particular topic or programme using rigorous methods

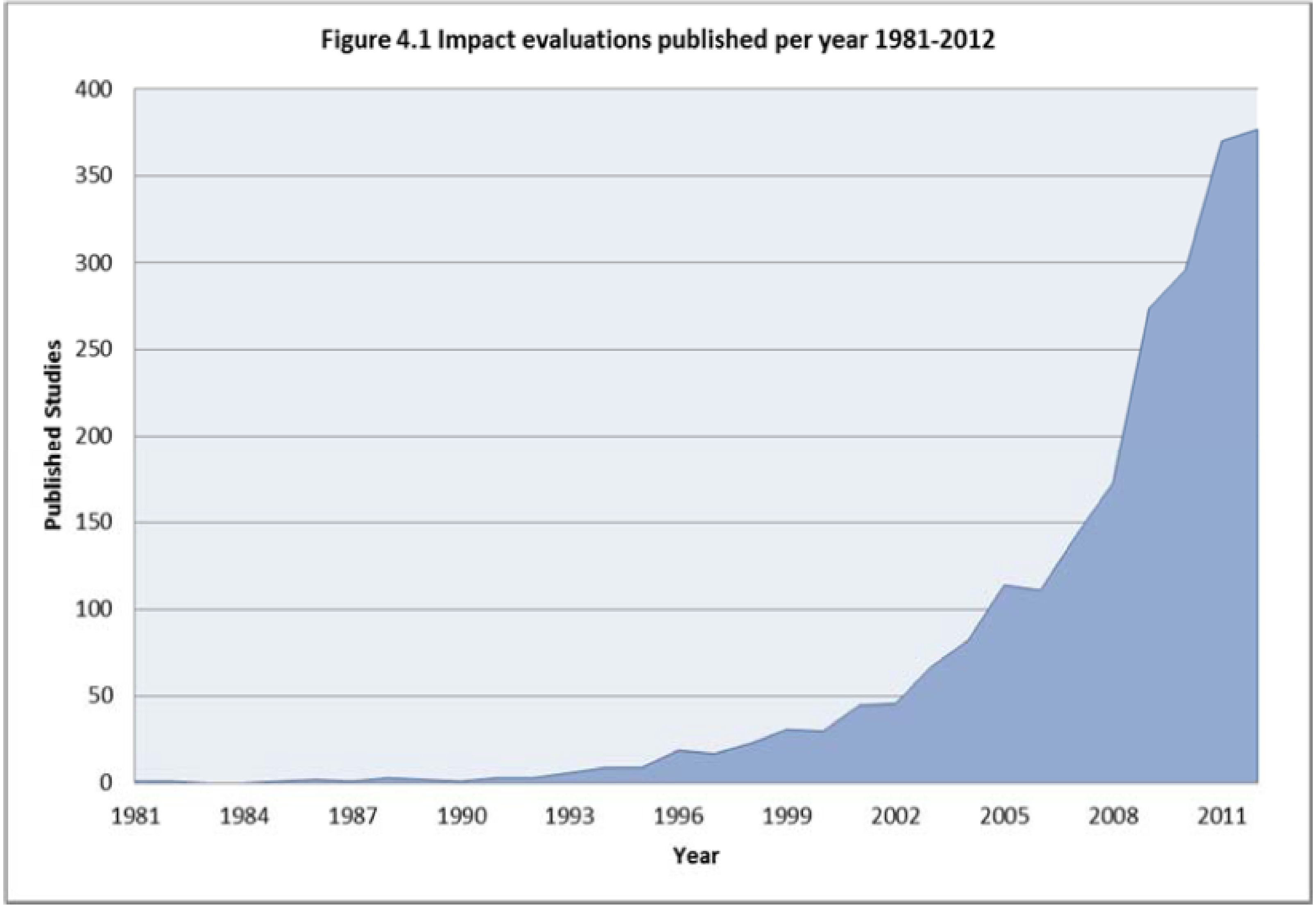
Evidence and gap maps

Rapid evidence assessments

Systematic reviews

Statistical meta-analyses

Impact evaluations in LMICs are increasing exponentially



Source: Reproduced from Drew Cameron and Anjini Mishra. 2014.

Dozens of systematic reviews on what works

International Initiative for Impact Evaluation
Synthetic Review 008

ONE WAY TO STOP AIDS USE CONDOMS WHILE HAVING SEX

Behaviour Change Interventions to Prevent HIV among Women Living in Low and Middle Income Countries

Sandra McCoy, R. Abigail Kangwende and Nancy S. Padian
December 2009

Water, sanitation and hygiene interventions to combat childhood diarrhoea in developing countries
Hugh Waddington, Birte Snilstveit, Howard White, and Lorna Fewtrell

August 2009

al Initiative for Impact Evaluation
aluations IE 004

A rapid assessment randomized-controll
improved cookstoves in rural Ghana

International Initiati
3ie Impact Evaluations IE

Paying for perform
Anemia

International Initiative for Impact Evaluation
3ie Impact Evaluations IE 006

The GoBifo Project Evalu
the Impacts of Commun
in Sierra Leone
Katherine Casey, Rachel Glennerster
2012

International Initiative for Impact
3ie Impact Evaluations IE 002

The Promise of Preschool in Africa: A Randomized
Impact Evaluation of Early Childhood Development

International Initiative for I
Systematic Review 007

The impact of daycare programs on child health, nutrition and development in developing countries: a systematic review

Jef L Leroy, Paola Gadsden and Maite Guijarro
September 2011

International Initiative for Impact Evaluation
Systematic Review 006

Willingness to pay for cleaner water in less developed countries: systematic review of experimental evidence

Clair Null, Michael Kremer, Edward Miguel, Jorge Garcia Hombrados, Robyn Meeks and Alix Peterson Zwane

March 2012

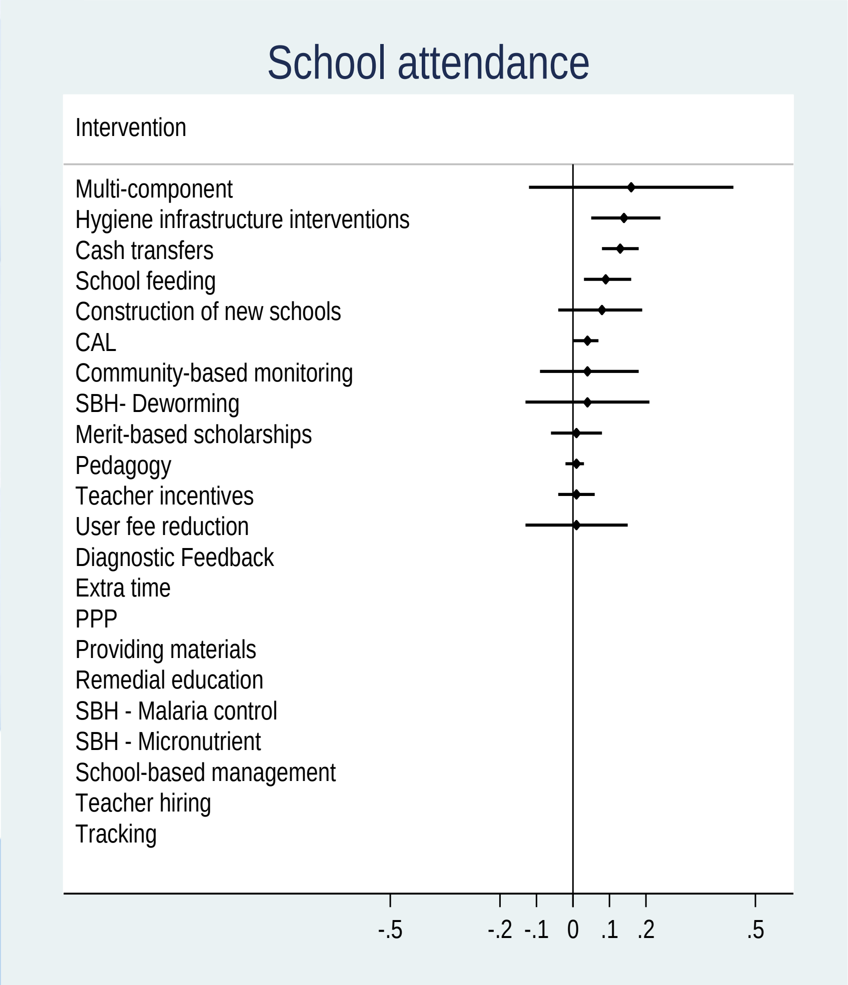
Why we need systematic reviews?

- Two studies are better than one
- To make sense of an increasing amount of evidence
- To delegate information processing to intelligent machines or people
- To filter the existing evidence
- To make statements about what works in general and in what context

PLEEAASSE! STOP INFORMING ME!

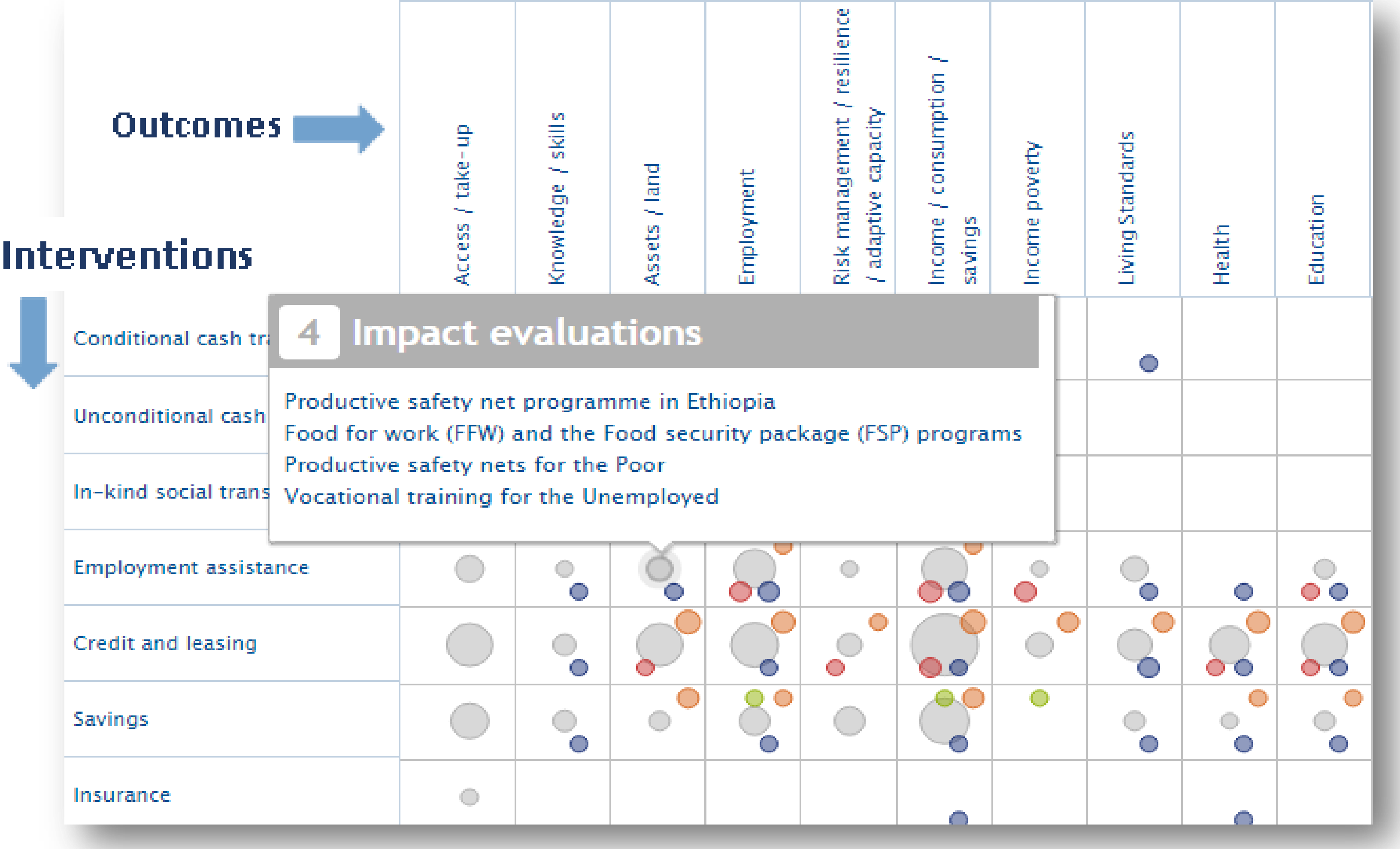
Conclusions of systematic reviews

Meta-analyses and narrative syntheses


School attendance

"There is no evidence for an effect of microcredit on women's control over household spending… (and) it is therefore very unlikely that, overall, microcredit has a meaningful and substantial impact on empowerment processes in a broader sense."
(Vaessen et al. 2014)

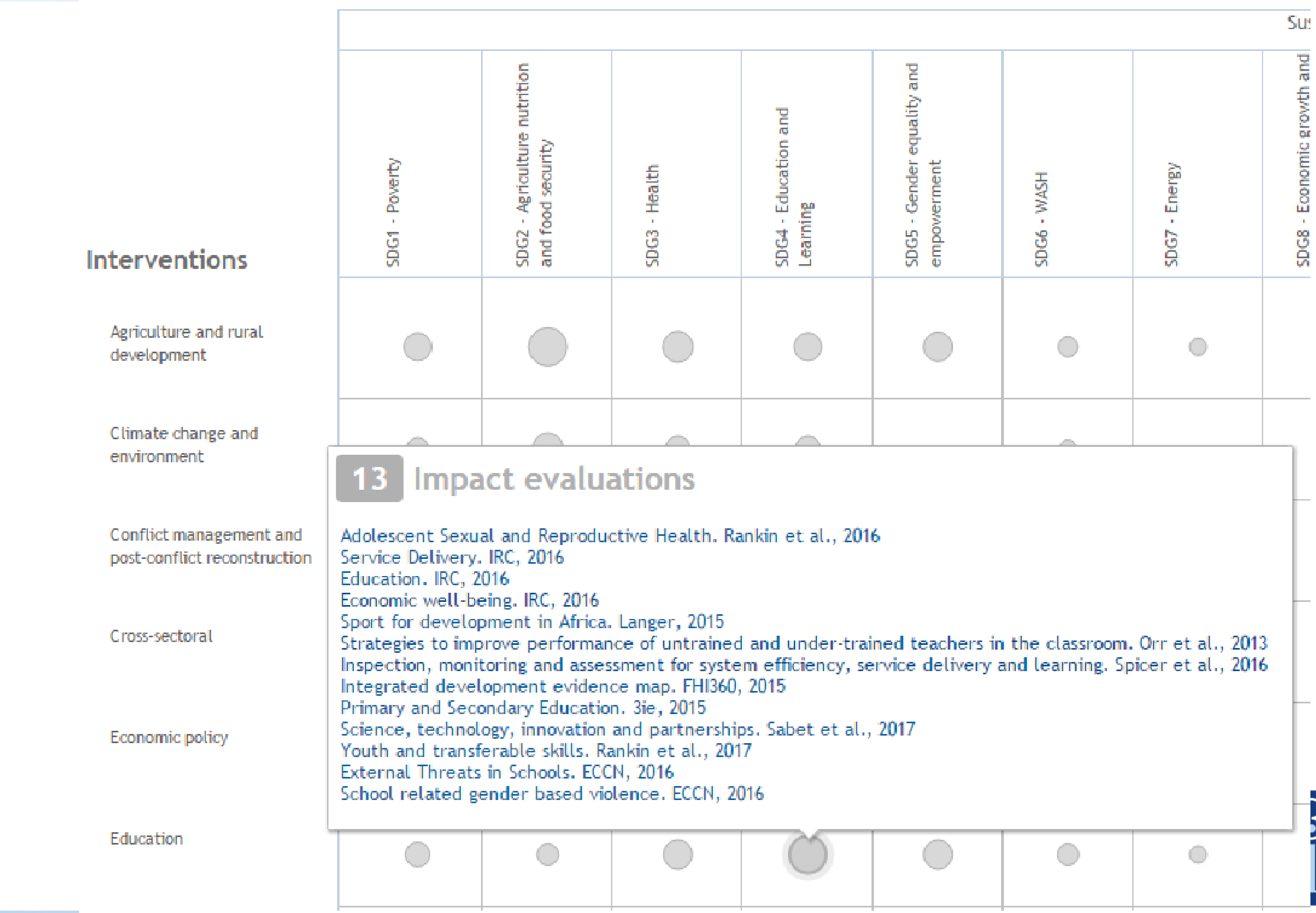
What are Evidence Gap Maps?


Outcomes
Interventions
Access / take-up
Knowledge / skills
Assets / land
Employment
Risk management / resilience / adaptive capacity
Income / consumption / savings
Income poverty
Living Standards
Health
Education
Conditional cash tr
Unconditional cash
In-kind social trans
Employment assistance
Credit and leasing
Savings
Insurance

4 Impact evaluations

Productive safety net programme in Ethiopia
Food for work (FFW) and the Food security package (FSP) programs
Productive safety nets for the Poor
Vocational training for the Unemployed

Supporting evidence-informed policy making
Funding research that matters



Interventions	SDG1 - Poverty	SDG2 - Agriculture nutrition and food security	SDG3 - Health	SDG4 - Education and Learning	SDG5 - Gender equality and empowerment	SDG6 - WASH	SDG7 - Energy	SDG8 - Economic growth and
Agriculture and rural development	●	●	●	●	●	●	●	
Climate change and environment	●	●	●	●		●		
Conflict management and post-conflict reconstruction								
Cross-sectoral								
Economic policy								
Education	●	●	●	●	●	●	●	

13 Impact evaluations

Adolescent Sexual and Reproductive Health. Rankin et al., 2016
Service Delivery. IRC, 2016
Education. IRC, 2016
Economic well-being. IRC, 2016
Sport for development in Africa. Langer, 2015
Strategies to improve performance of untrained and under-trained teachers in the classroom. Orr et al., 2013
Inspection, monitoring and assessment for system efficiency, service delivery and learning. Spicer et al., 2016
Integrated development evidence map. FHI360, 2015
Primary and Secondary Education. 3ie, 2015
Science, technology, innovation and partnerships. Sabet et al., 2017
Youth and transferable skills. Rankin et al., 2017
External Threats in Schools. ECCN, 2016
School related gender based violence. ECCN, 2016

Steps in systematic reviews

- Define review question and criteria
- Search studies
- Screen the studies
- Extract data from studies
- Assess quality of the studies
- Summarise the data
- Report conclusions and recommendations

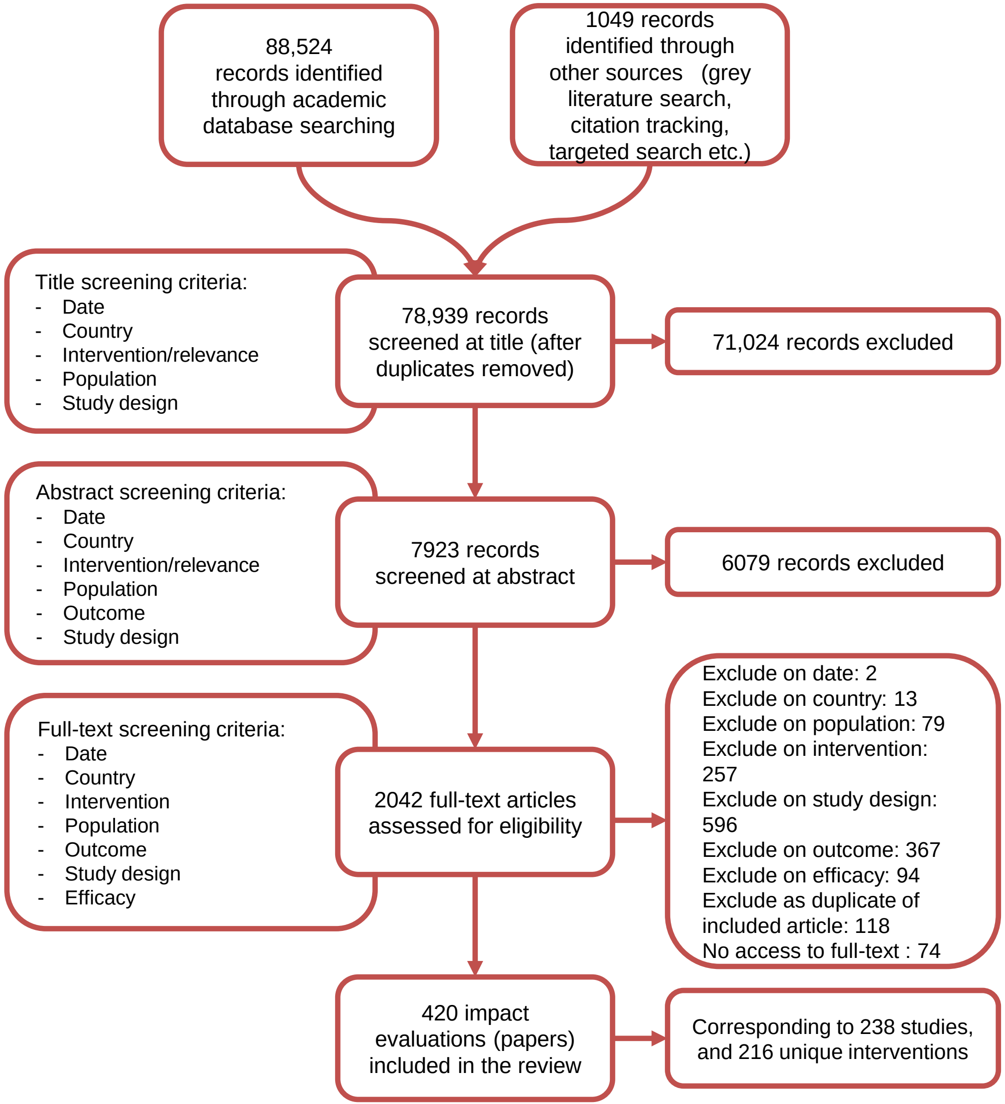
A time-consuming exercise

- Evidence and gap maps (1-6 months)
- Systematic reviews (12-24 months)
- Much of tedious and mechanical work

- Delays are common and reviews become quickly out-of-date
- Typically it takes 2.5-6.5 years for a study to be included in a review!

Search and screening are time consuming

- Studies are retrieved from databases (Web of Science, Google Scholar etc.)
- Titles and abstracts are manually screened by reviewers
- 10,000 is the norm (max 1 million), with 2 minutes per title, this is 45 days work



88,524 records identified through academic database searching

1049 records identified through other sources (grey literature search, citation tracking, targeted search etc.)

Title screening criteria:
- Date
- Country
- Intervention/relevance
- Population
- Study design

78,939 records screened at title (after duplicates removed)

71,024 records excluded

Abstract screening criteria:
- Date
- Country
- Intervention/relevance
- Population
- Outcome
- Study design

7923 records screened at abstract

6079 records excluded

Full-text screening criteria:
- Date
- Country
- Intervention
- Population
- Outcome
- Study design
- Efficacy

2042 full-text articles assessed for eligibility

Exclude on date: 2
Exclude on country: 13
Exclude on population: 79
Exclude on intervention: 257
Exclude on study design: 596
Exclude on outcome: 367
Exclude on efficacy: 94
Exclude as duplicate of included article: 118
No access to full-text : 74

420 impact evaluations (papers) included in the review

Corresponding to 238 studies, and 216 unique interventions

And it is getting worse..

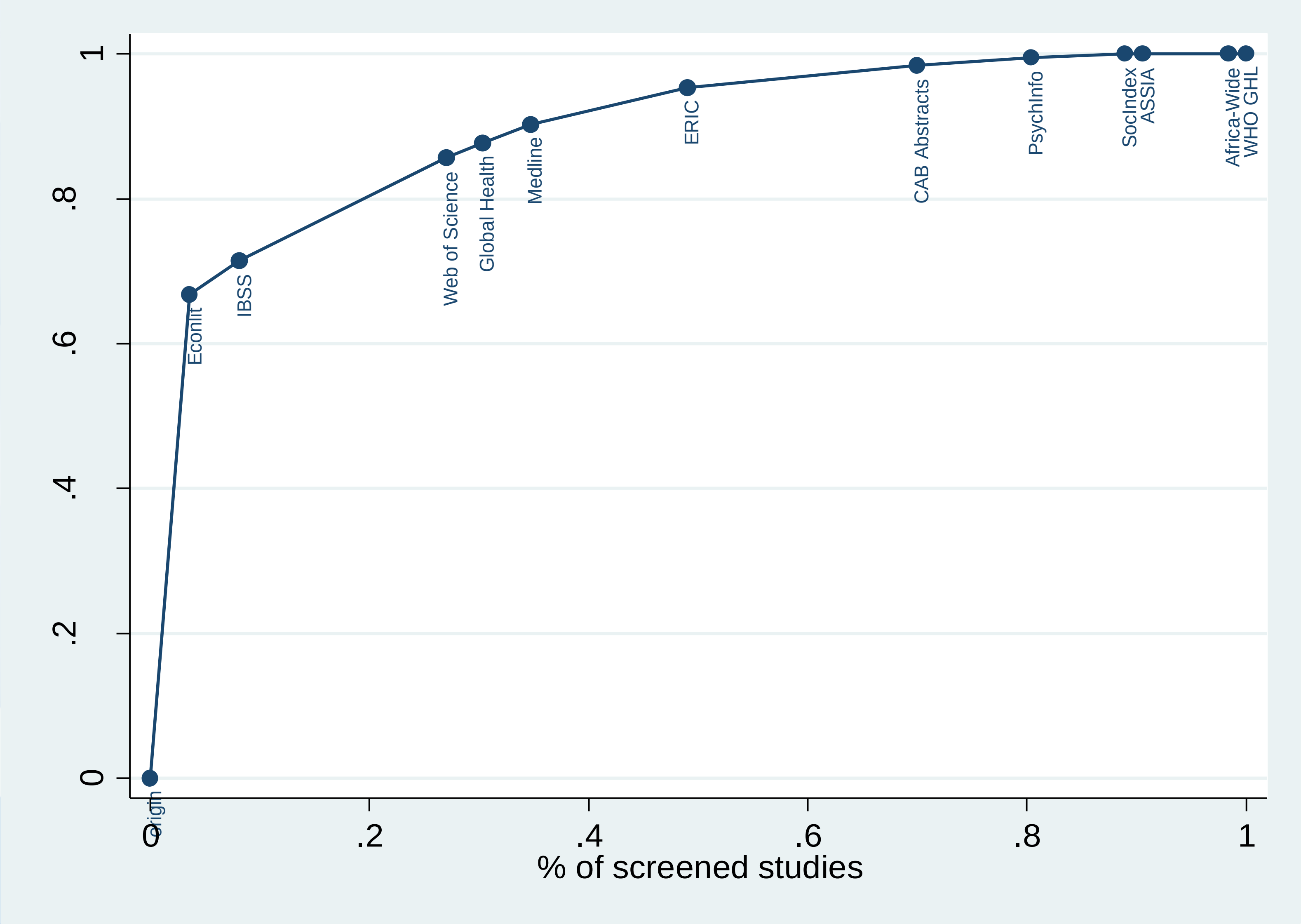
- The number of databases available is increasing
- The number of journals and reports is increasing
- The amount of evidence and of impact evaluations are increasing
- Maps and review get out of date quickly and need to be updated

A possible solution

Systematic reviews aim at including ALL available studies. However, time can be saved if:

- We are able to assign to each study a probability of being included: a “relevance” score
- We are willing to miss out studies by not screening studies with low probability

20% of the search delivers 80% of the studies



Machine-assisted reviews

Can we predict what the databases will deliver? Can we use the prediction to prioritise or to cut-down our search?

Yes, steps:

- Researchers screen a subsample of studies
- The machine runs a logistic regression of inclusion on words and combination of words
- Probabilities of inclusion are calculated

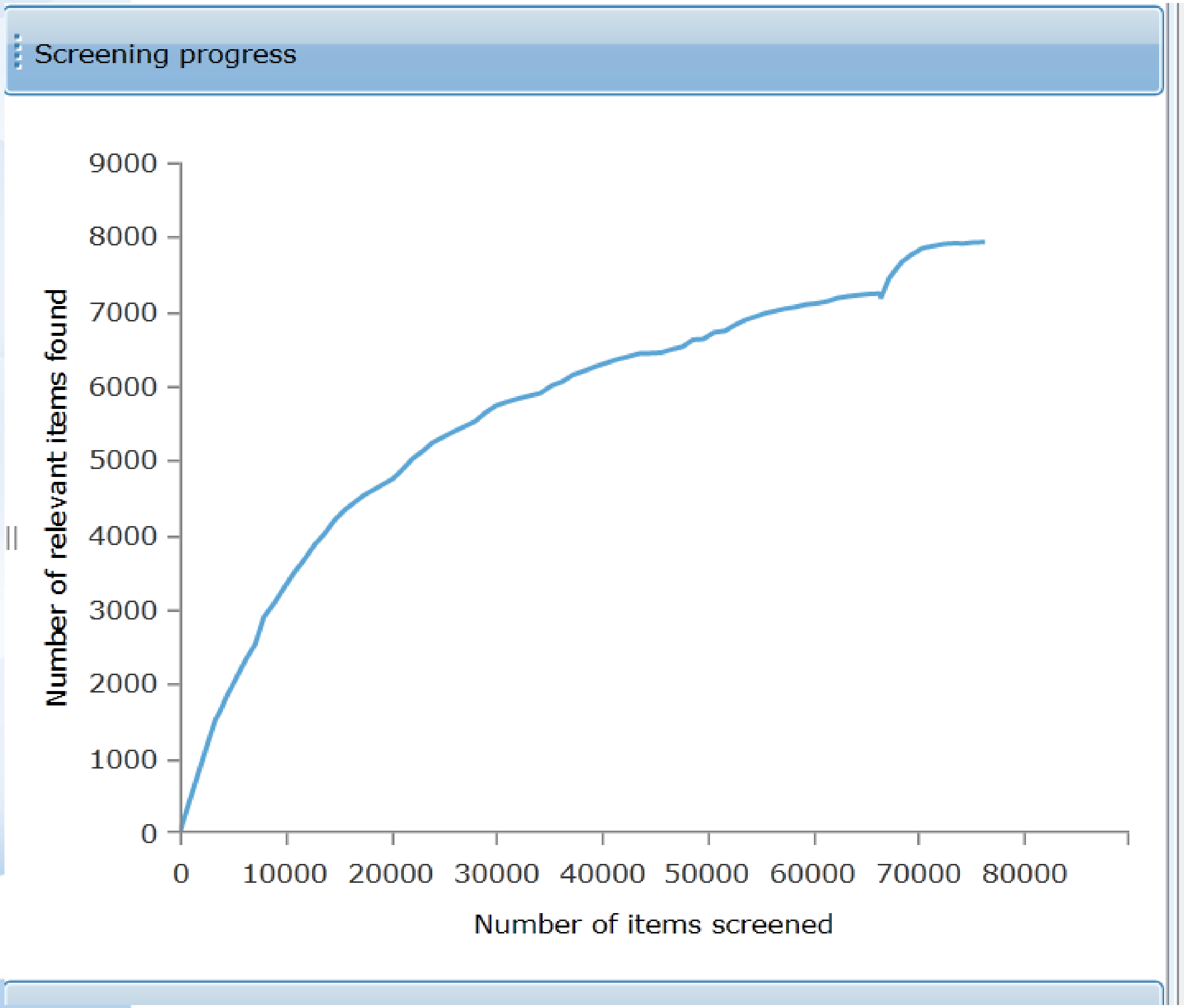
Machine learning

The process can incorporate active learning between researchers and machine;

- Researchers make first screening
- Machines suggest studies with high probability of inclusion
- Researchers make further screening
- Machines further refine the probabilities
- And so on..

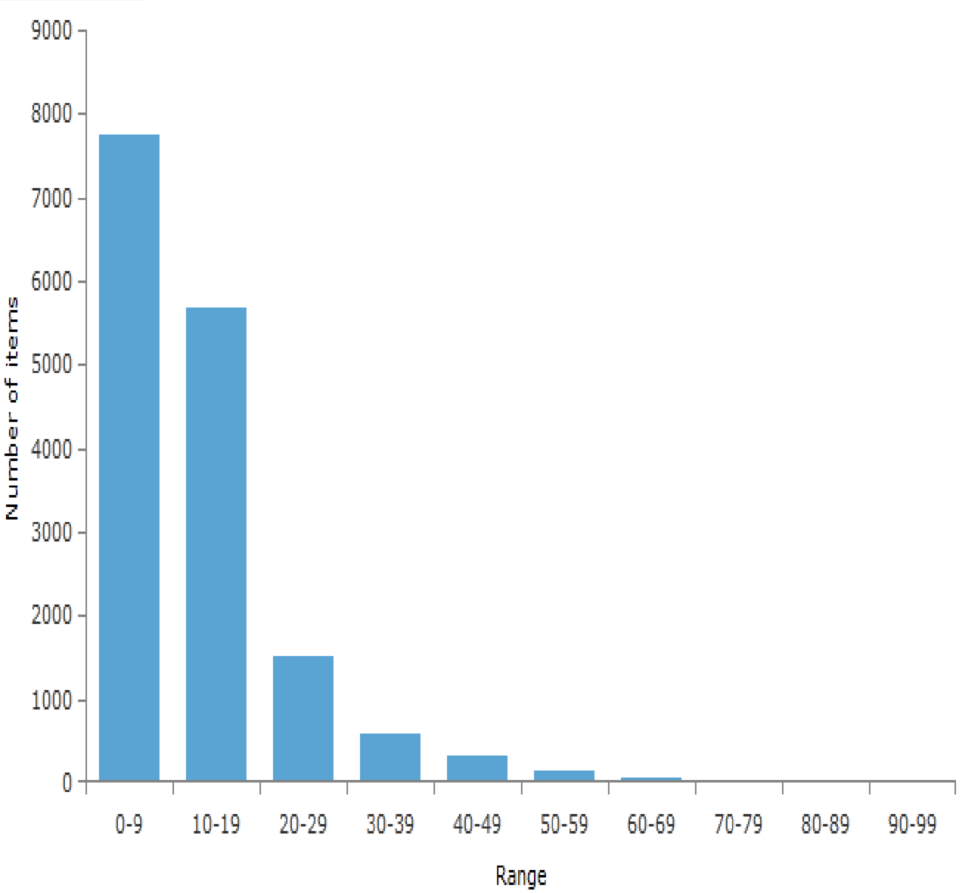
Reported savings are between 10-90% of search (but up to 5% studies being missed…)

3ie example: prioritisation EER


Screening progress
Number of relevant items found
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
0
10000
20000
30000
40000
50000
60000
70000
80000
Number of items screened

- 80,000 hits
- Screened 3,000 titles
- Studies were ranked by probabilities
- Higher probability studies are screened first

3ie example: systematic review database



- 16,000 hits
- 1,200 titles screened
- Classifier is tested and probabilities are calculated
- Studies with inclusion probability <20% are excluded
- 2,500 studies screened
- Workload reduction over 70%

The future: quick reviews updates

Systematic reviews and gap map go quickly out of date because:

- Exponential growth of studies
- Length of reviewing process
- Text mining and machine learning classifier are ideal for updating
- Previous search is used for predicting future search

The future: full automation of reviews

- Quality appraisal by machines is under testing and machines can support synthesis, analysis, writing and all aspects of review
- Some authors suggest reviews will be entirely conducted by machines
- Particularly applicable in medicine where evidence is standardised

The future: living systematic reviews

www.ucnauri.com

- Growing innovations in tools and platforms
- Transition from paper-based journal systematic reviews to living systematic reviews
- Systematic reviews become living document continuously updated as evidence becomes available by machines and users contributions

Thank you

www.3ieimpact.org

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/3ievideos

international-initiative-for-impact-evaluation

New Delhi London Washington, DC

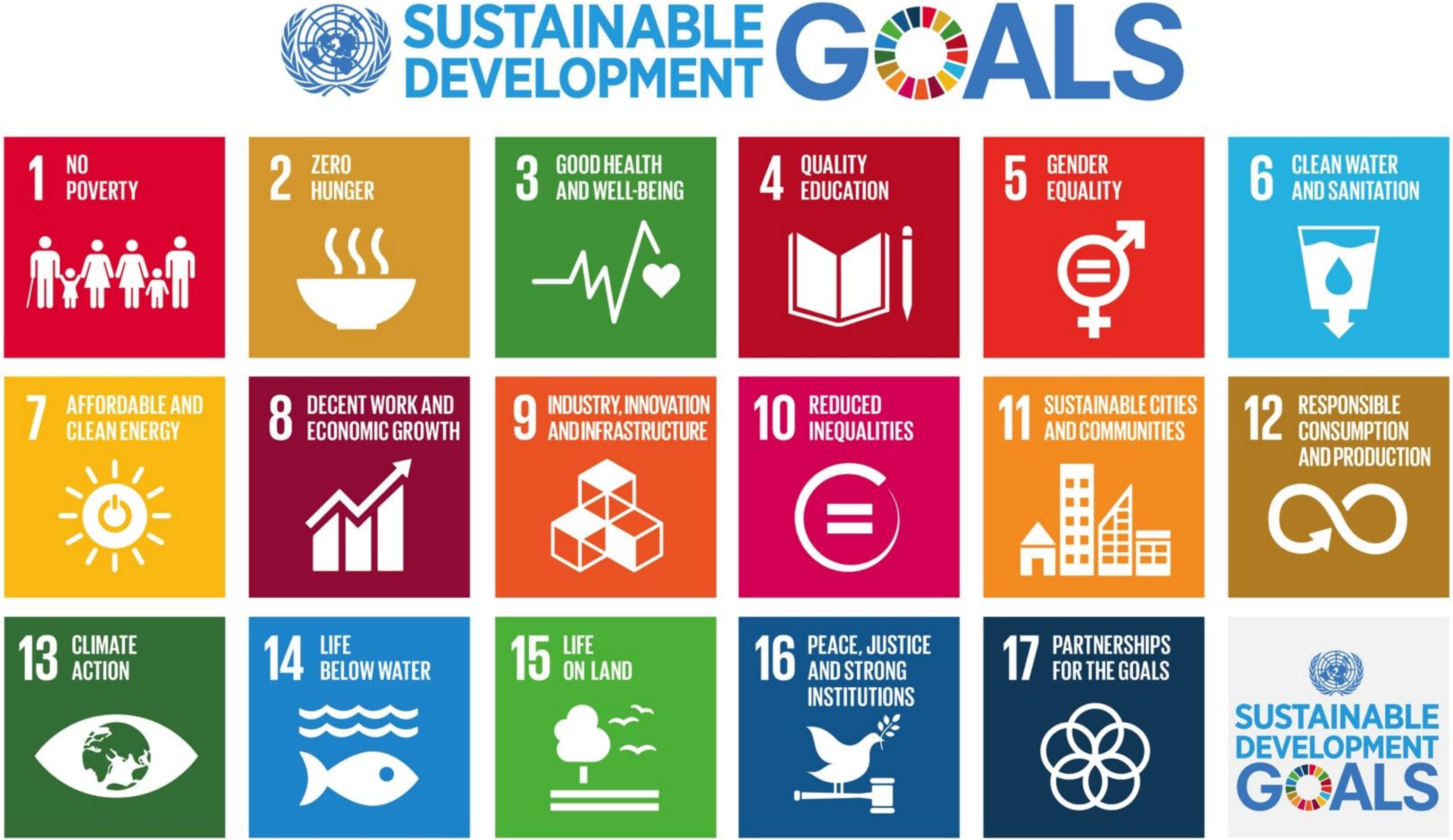
Breakout session 7. Mapping poverty with satellite imagery and machine learning

Presenter:
Mr Neal Jean, Researcher, Stanford
University

Mapping Poverty

Neal Jean, Marshall Burke, Michael Xie,
W. Matthew Davis, David B. Lobell, Stefano Ermon

STANFORD
UNIVERSITY



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

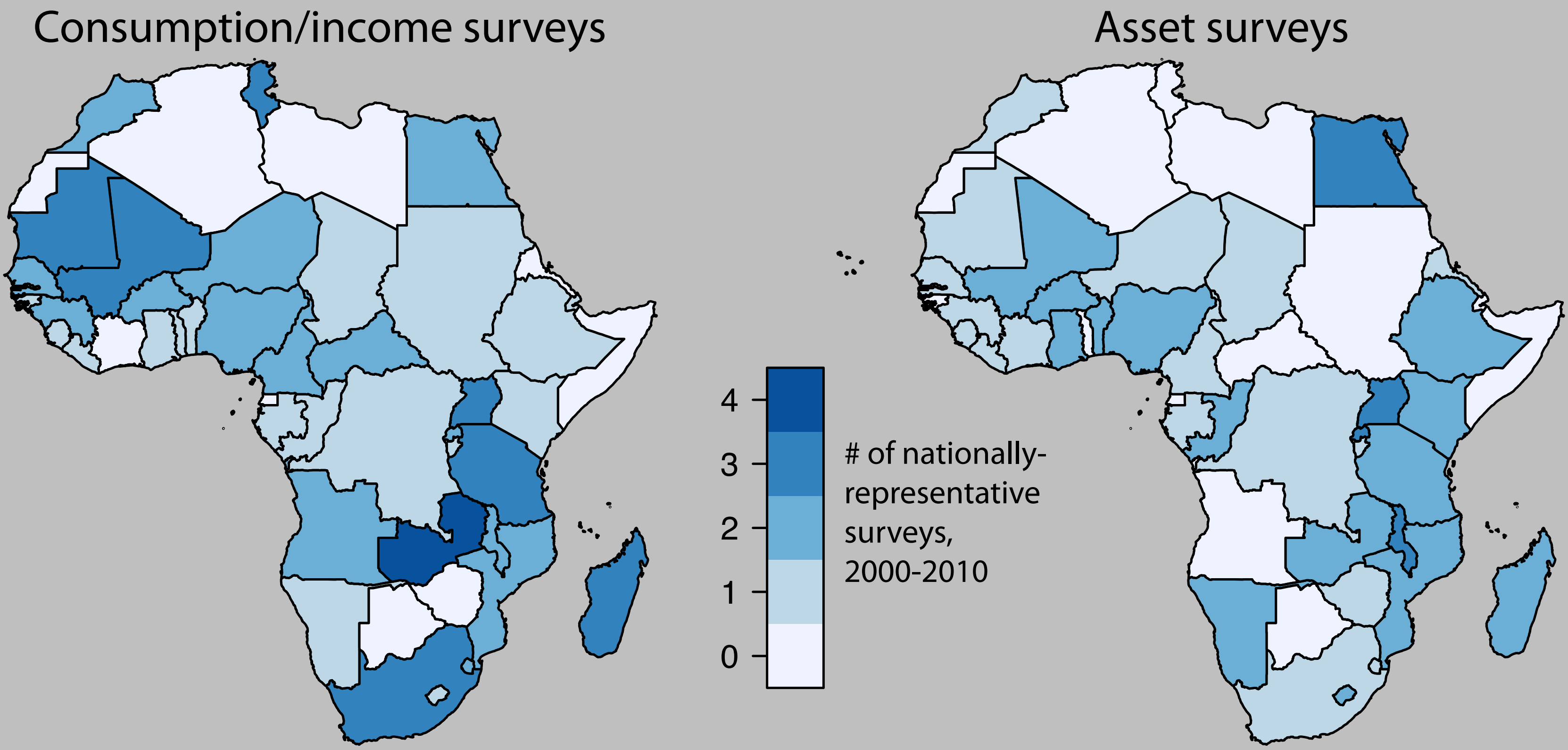
14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

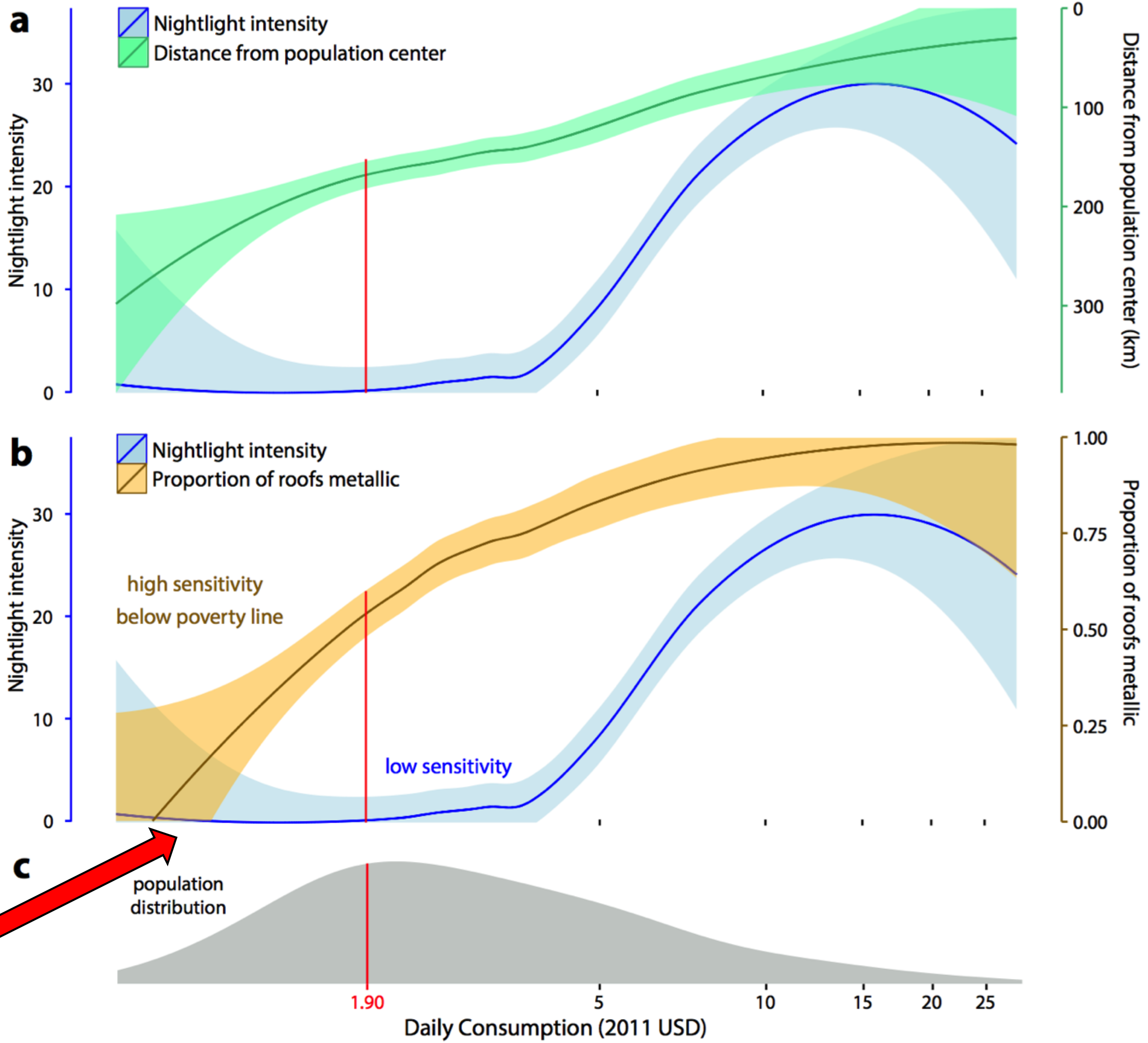
17 PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS


Consumption/income surveys
Asset surveys
4
3
2
1
0
# of nationally-representative surveys, 2000-2010

Improved development data are sorely needed

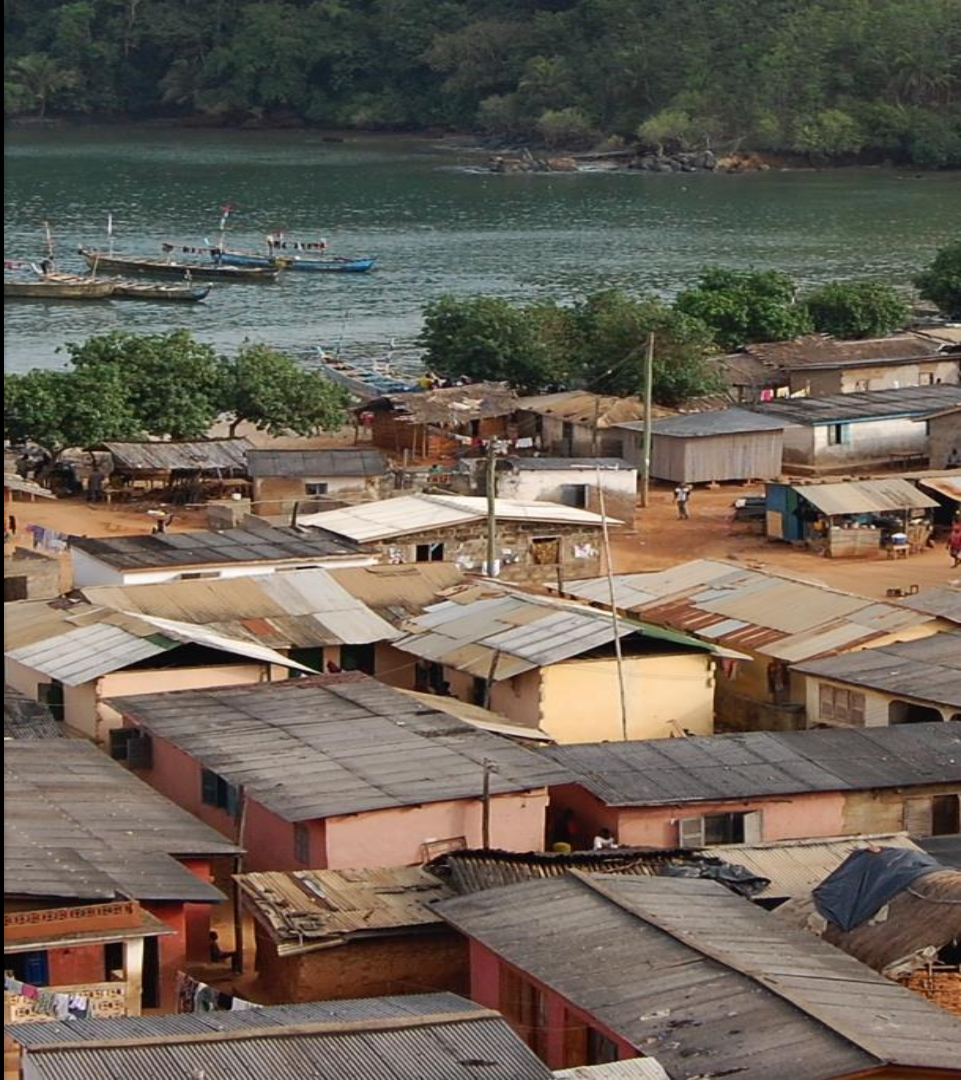
Nightlights are not useful for very poor areas



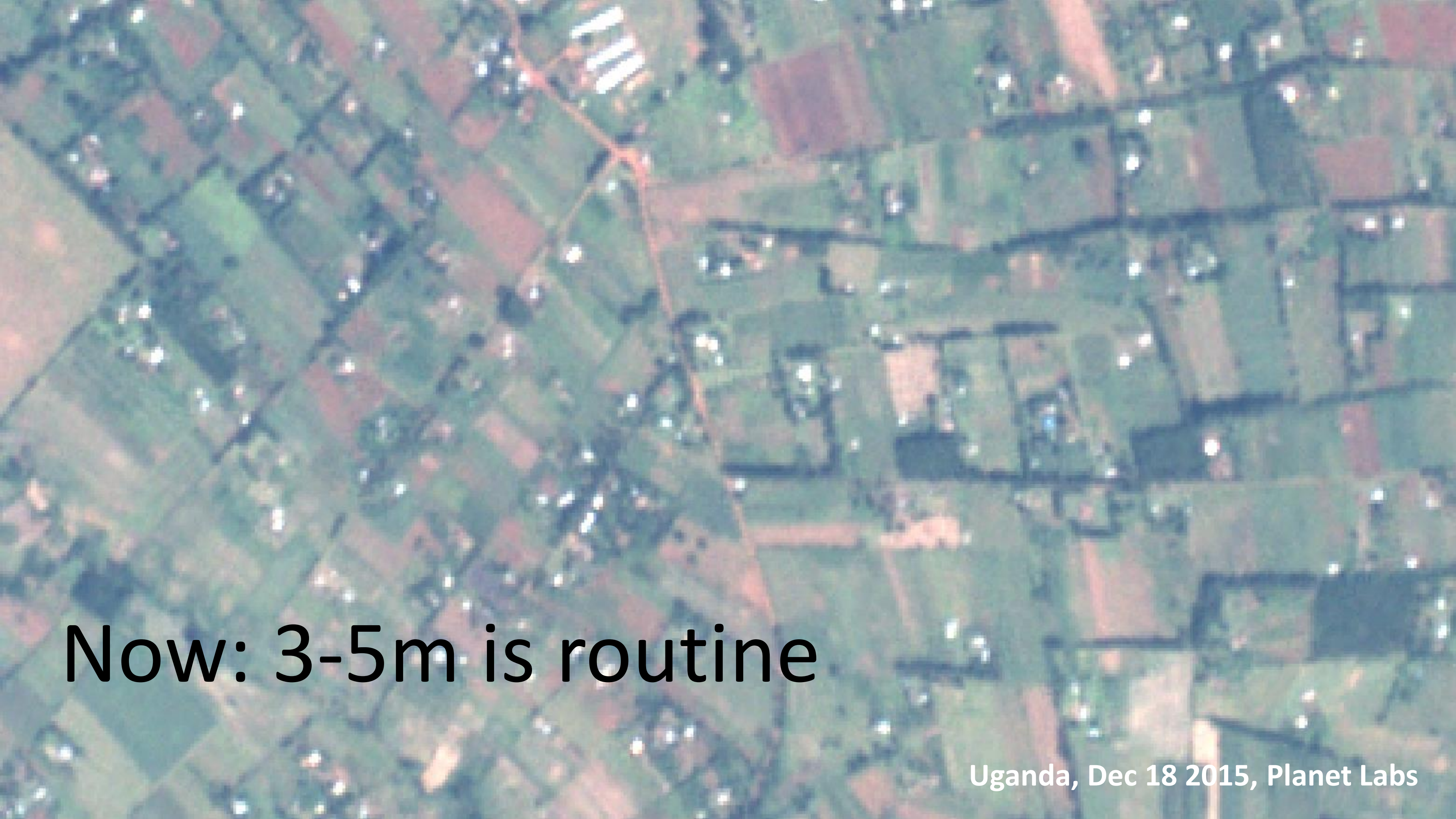
Almost no variation below the poverty line

GiveDirectly

MOTOROLA
Ksh1,200.00 from
541100 - Give
Direct Inc
BACK
REPLY

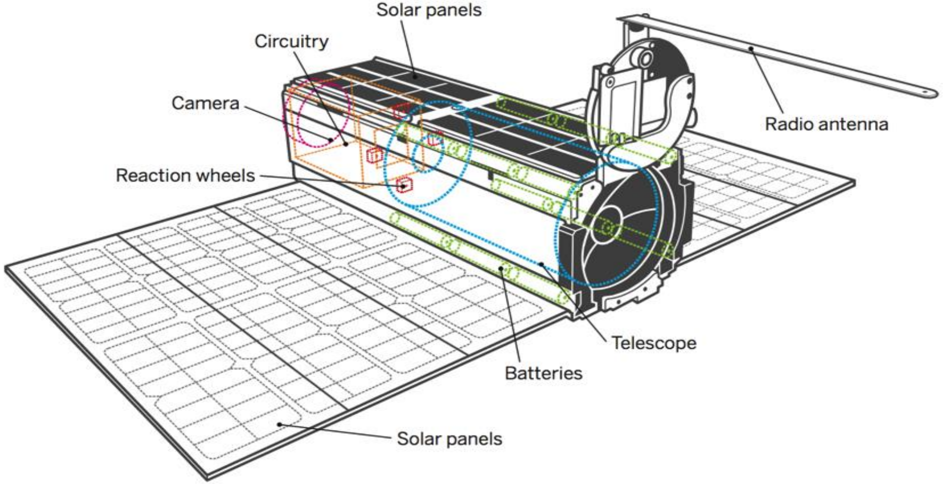


Traditional imagery: Landsat, 30m

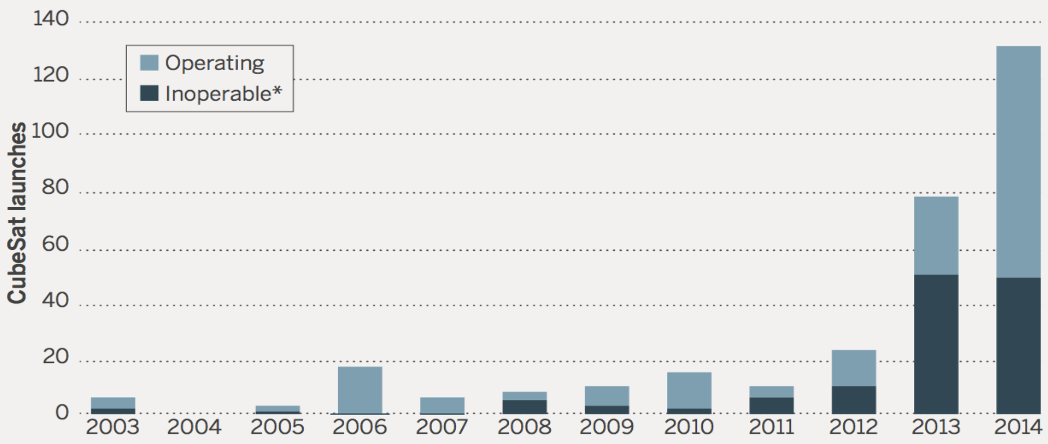


Now: 3-5m is routine

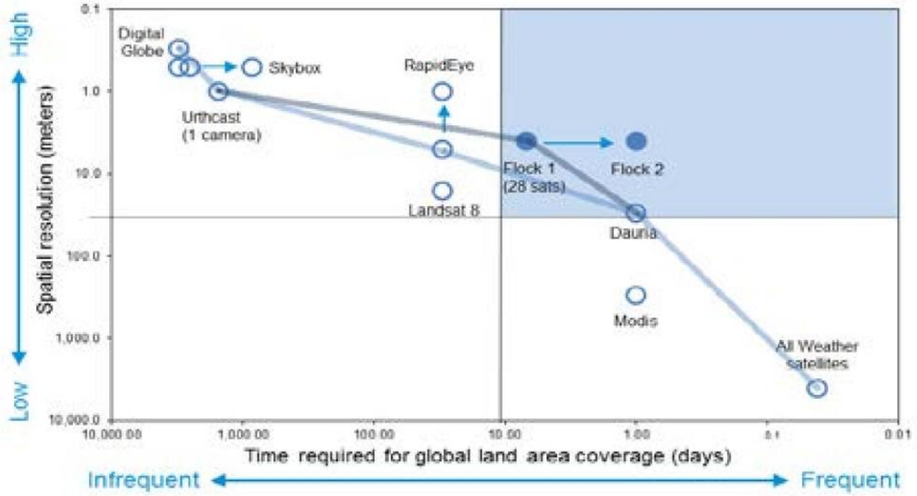
Uganda, Dec 18 2015, Planet Labs


Solar panels
Circuitry
Camera
Reaction wheels
Radio antenna
Telescope
Batteries
Solar panels

CubeSat launches since 2013



*CubeSats that have reentered the atmosphere, are dead in orbit, or failed to launch. As of 10 March 2015.



Resolution vs. revisit rate

Hand, “Thinking inside the box”, *Science*, Apr 2015.
Boshuizen et al., AIAA/USU Conference on Small Satellites, 2014.

Capella Space

DigitalGlobe™

planet.

Skybox
Imaging

Terra Bella

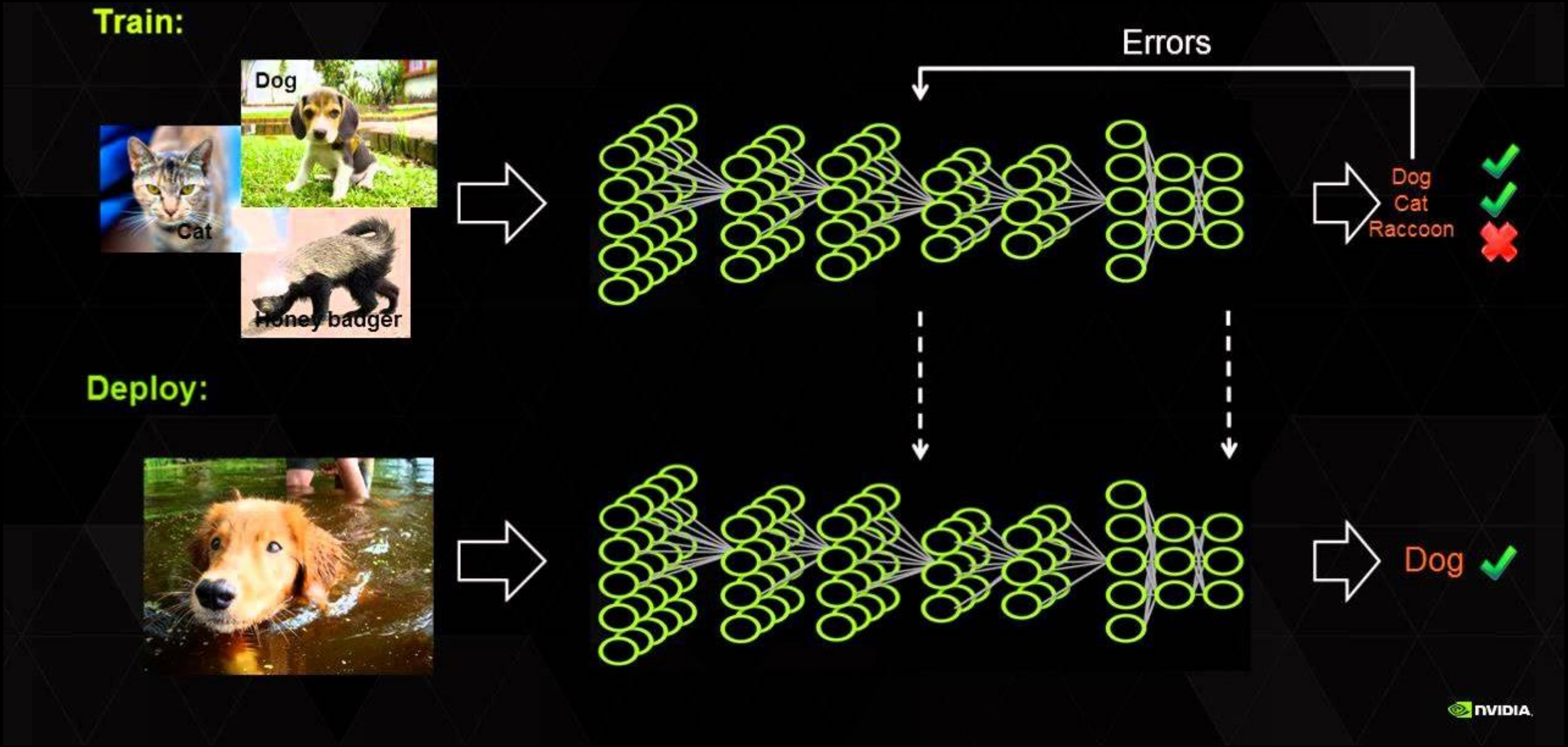
Descartes
Labs

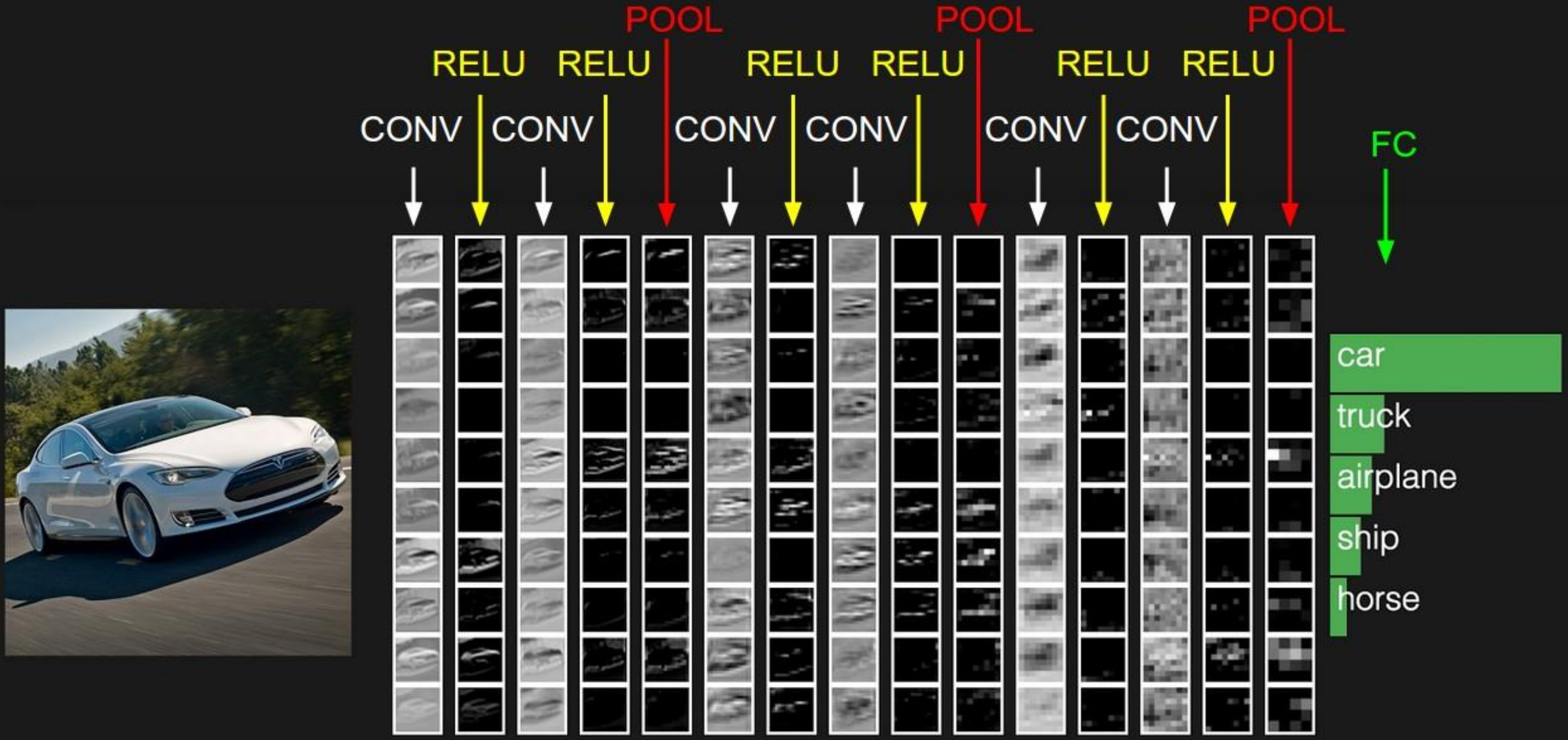
FLOWMINDER.ORG

Orbital Insight

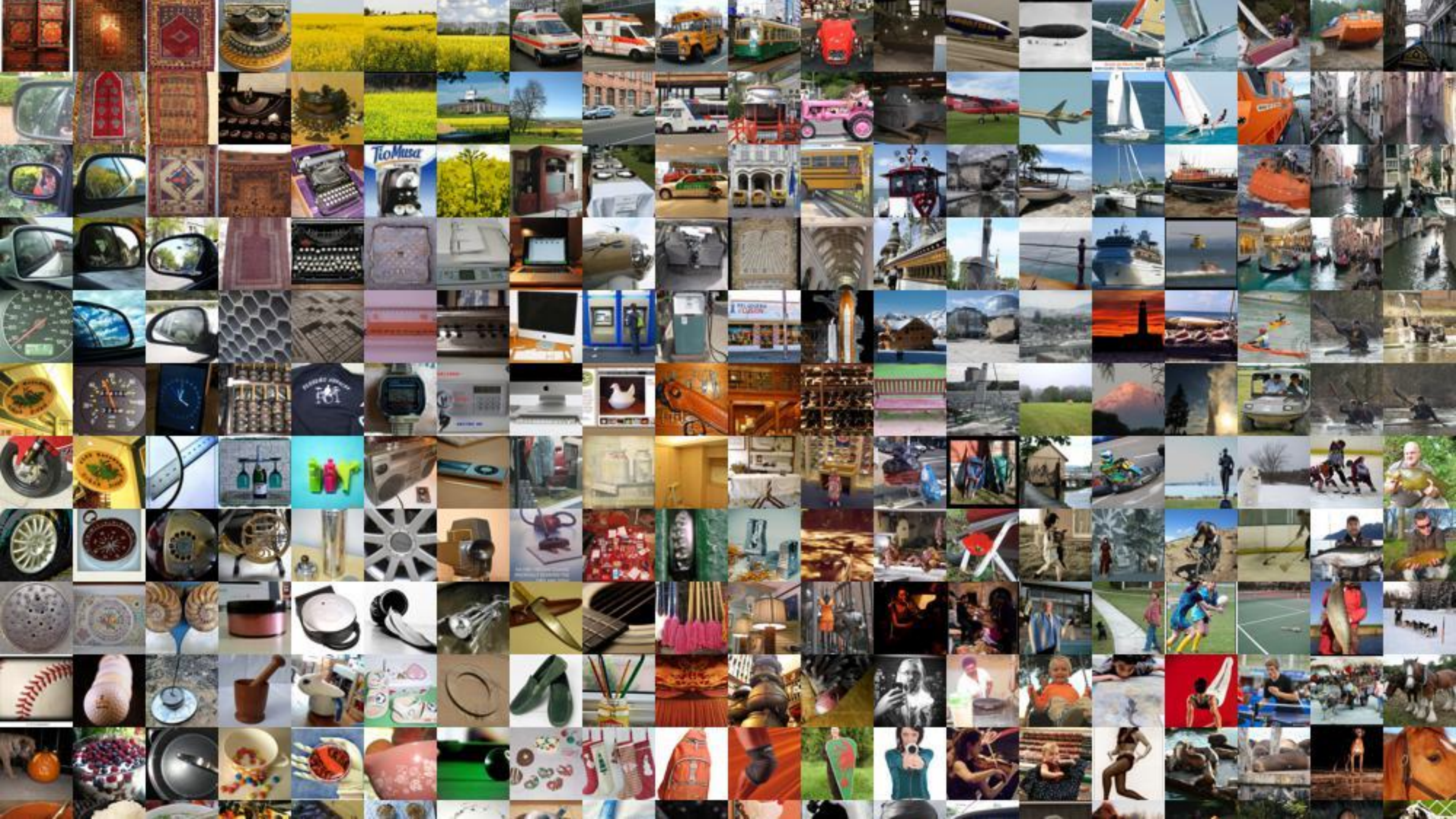
PREMISE

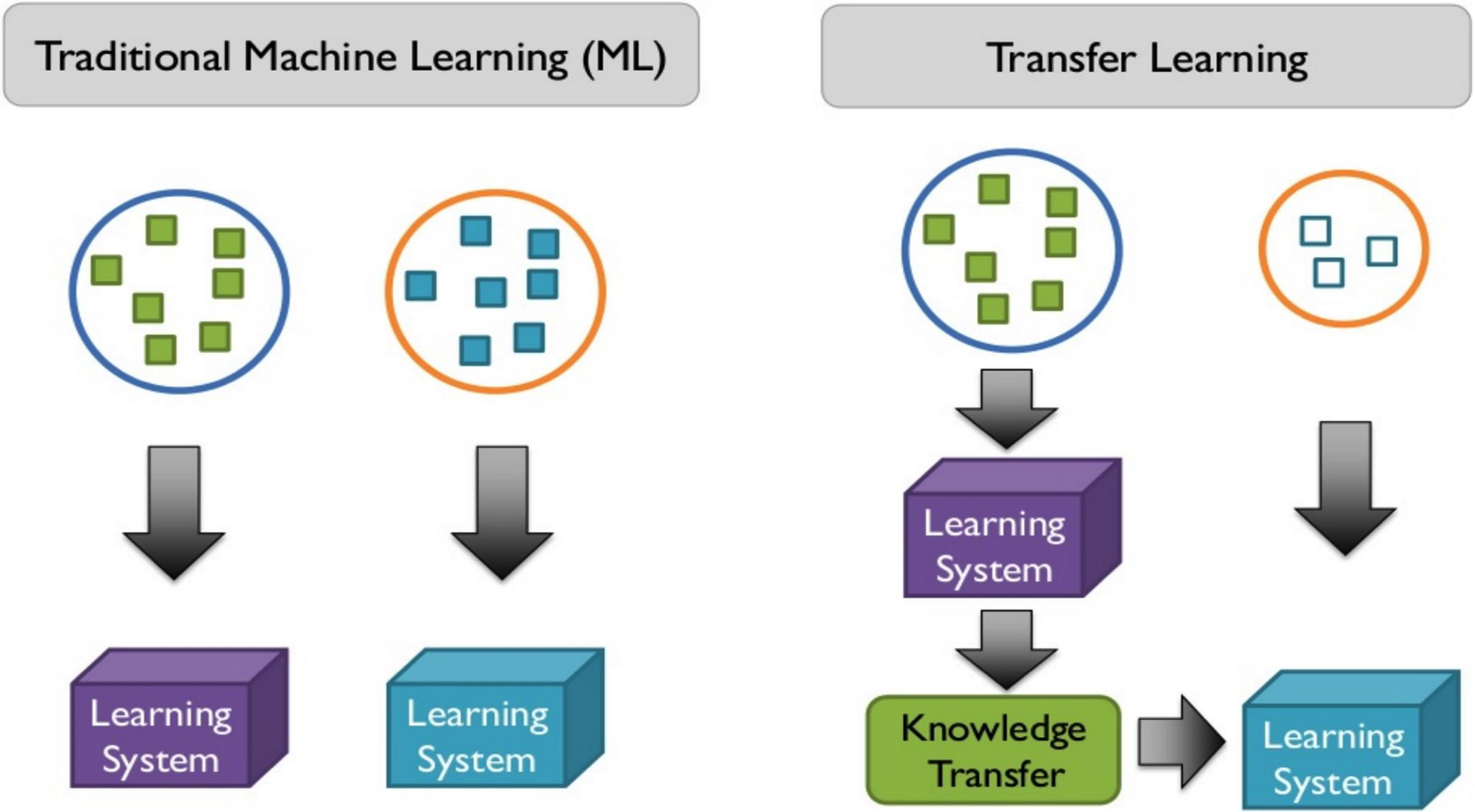
Deep Learning


Train:
Dog
Cat
Honey badger
Errors
Dog
Cat
Raccoon
Deploy:
Dog
NVIDIA


CONV
RELU
CONV
RELU
POOL
CONV
RELU
CONV
RELU
POOL
CONV
RELU
CONV
RELU
POOL
FC
car
truck
airplane
ship
horse

A. Karpathy, Stanford CS 231n Course Notes, http://cs231n.github.io/convolutional-networks/


TioMusa



Traditional Machine Learning (ML)

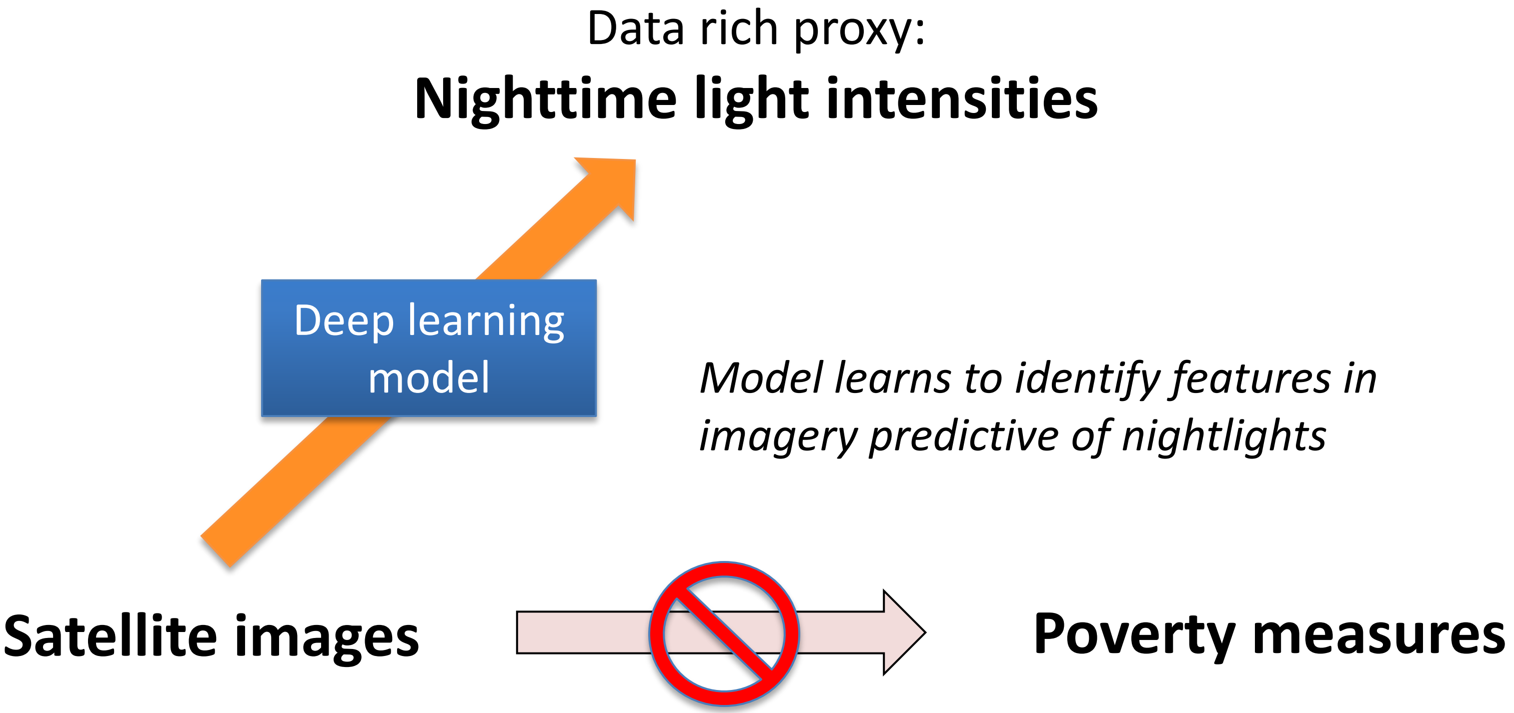
Transfer Learning

Learning System
Learning System
Learning System
Knowledge Transfer
Learning System

Cool Runnings

© AFP/Getty Images

“Transfer learning” approach



Data rich proxy:

Nighttime light intensities

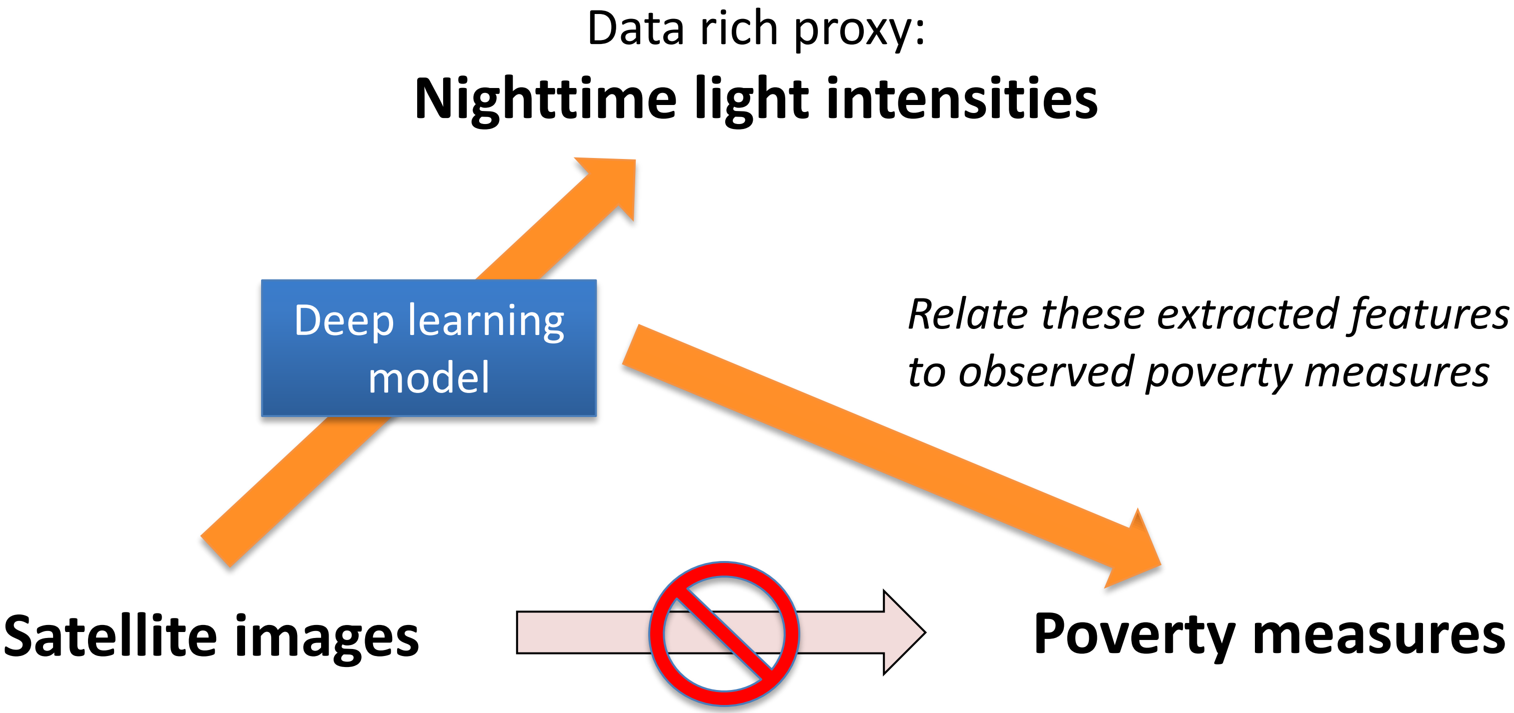
Deep learning model

Model learns to identify features in imagery predictive of nightlights

Satellite images

Poverty measures

“Transfer learning” approach



Data rich proxy:

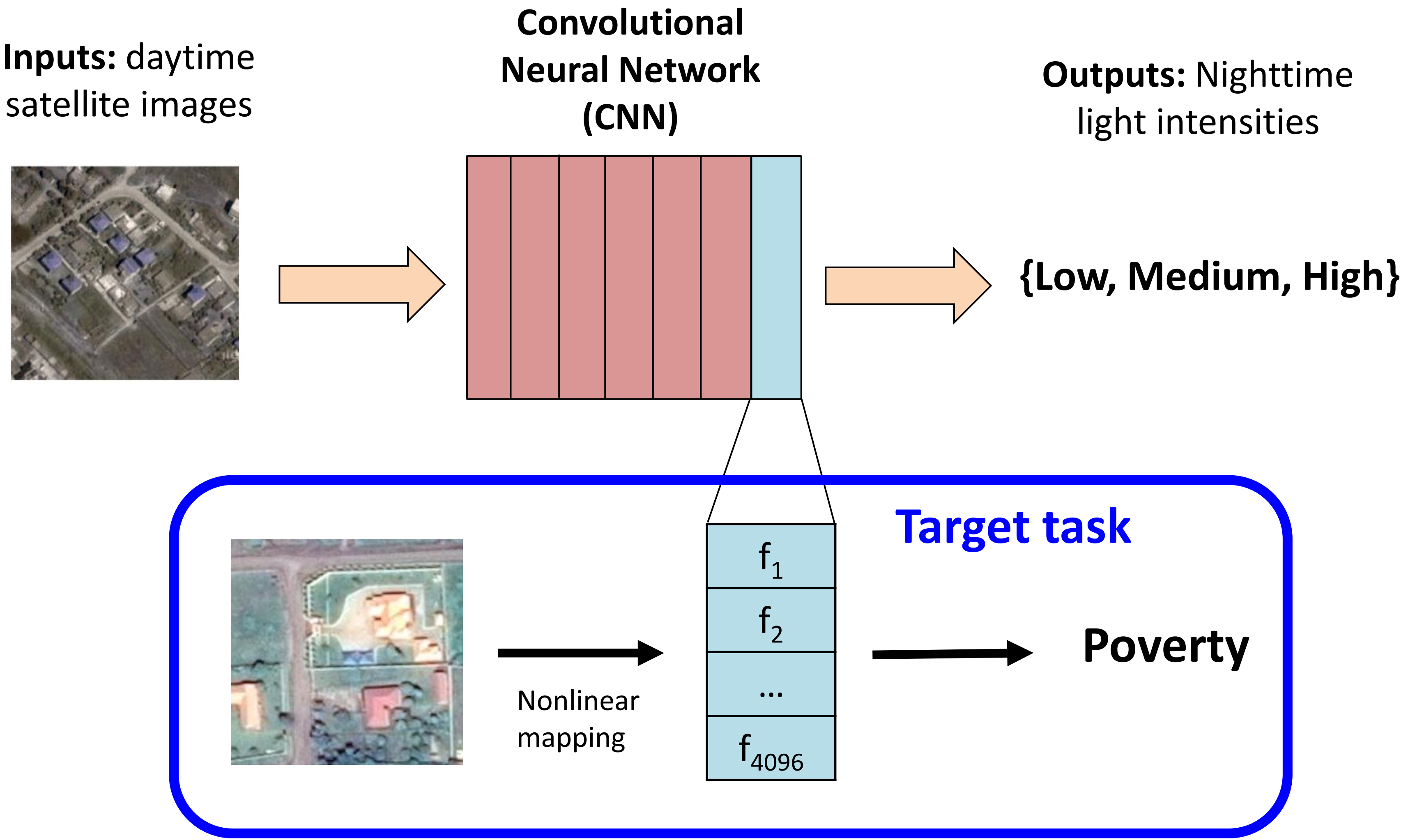
Nighttime light intensities

Deep learning model

Relate these extracted features to observed poverty measures

Satellite images

Poverty measures



Inputs: daytime satellite images

Convolutional Neural Network (CNN)

Outputs: Nighttime light intensities

{Low, Medium, High}

Target task

Nonlinear mapping

f_1

f_2

…

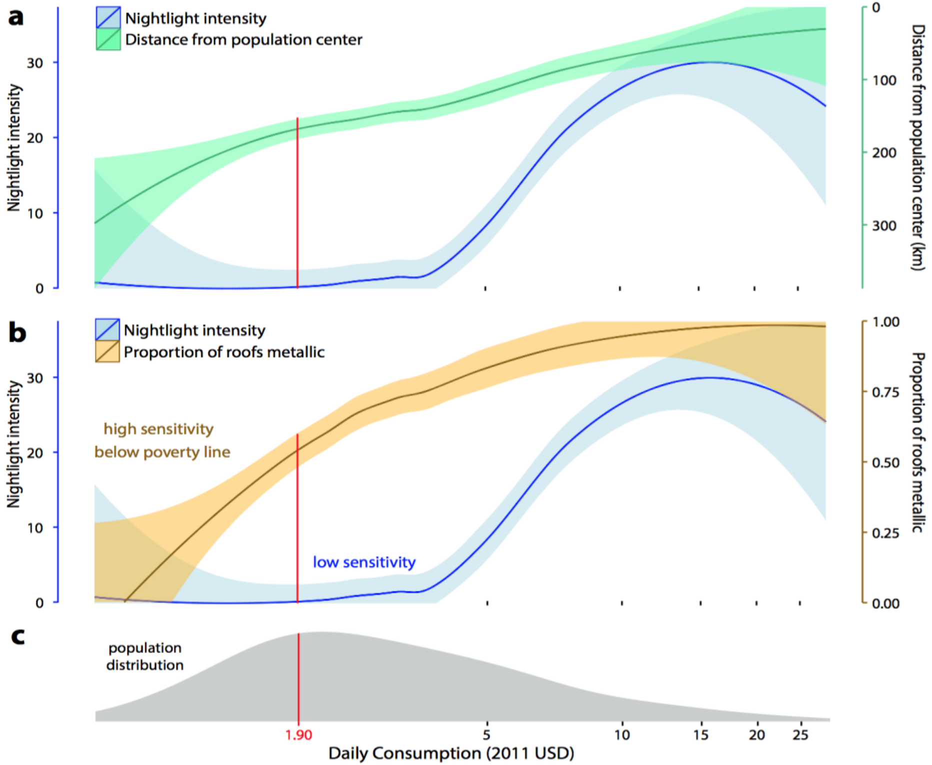
f_{4096}

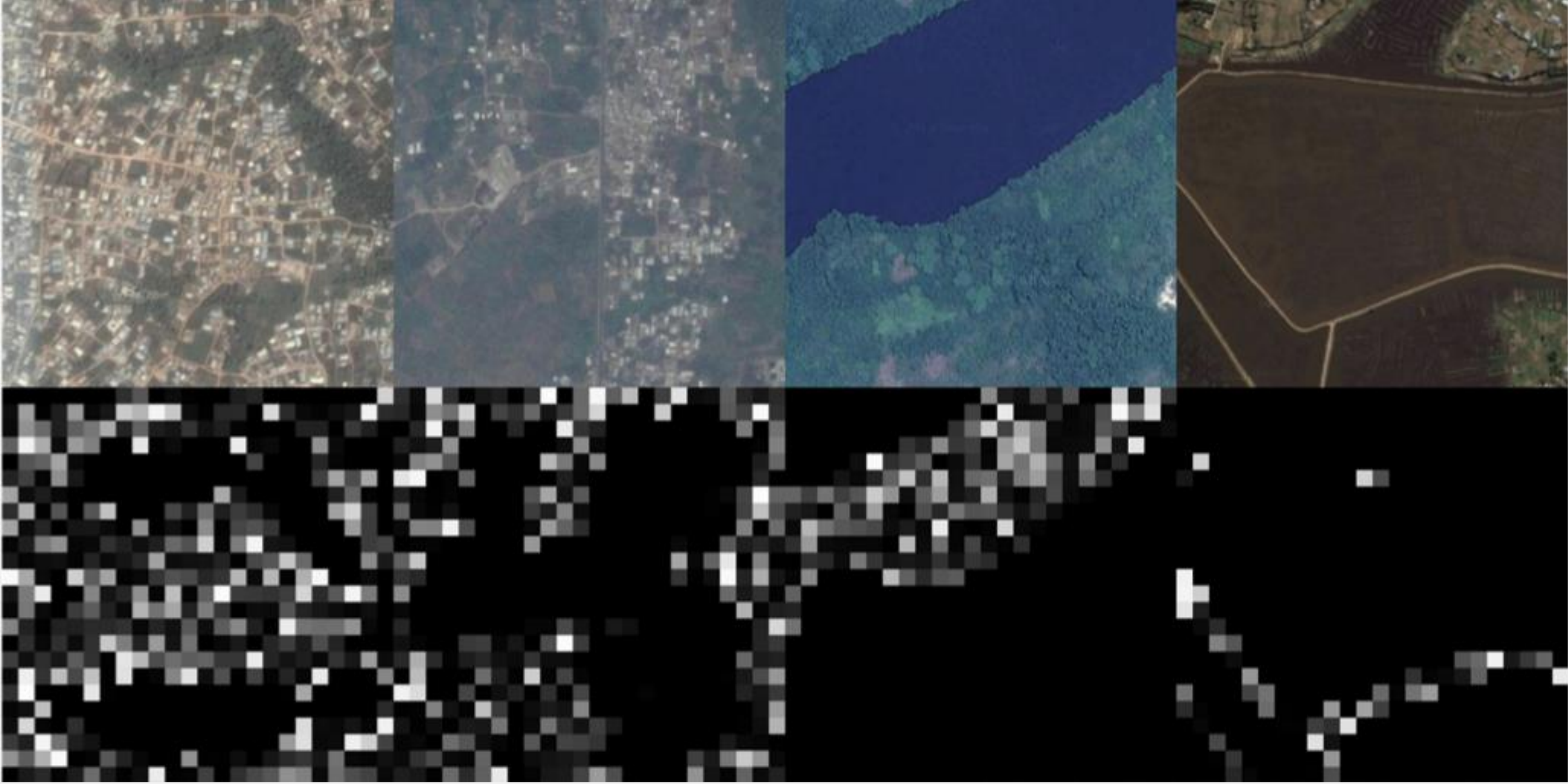
Poverty

How does this improve over nightlights?

Daytime imagery contains much richer information than a single nightlights value

Nightlights can help in learning these features, which show variation at lower income levels

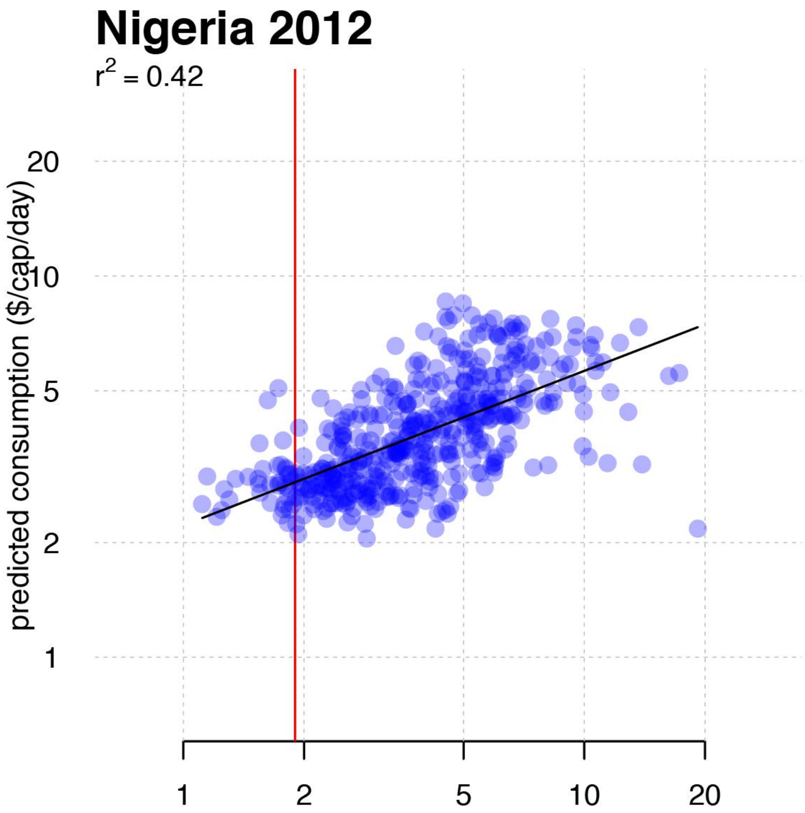



Urban
Non-urban
Water
Road

Consumption expenditure at village level (LSMS)

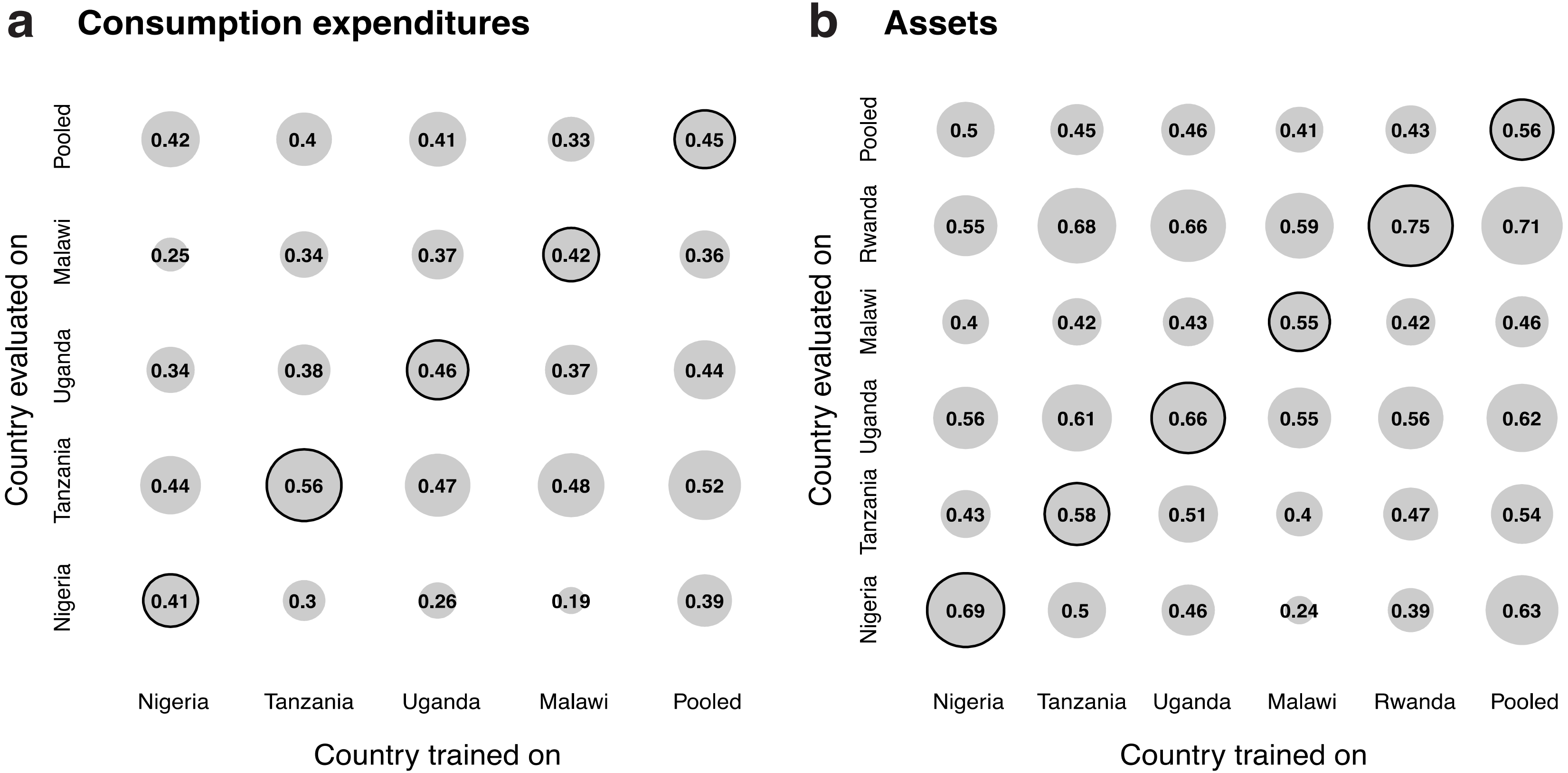
USAID
FROM THE AMERICAN PEOPLE
THE WORLD BANK

Fit ridge regression model


Nigeria 2012

$r^2 = 0.42$

Models appear to "travel well"

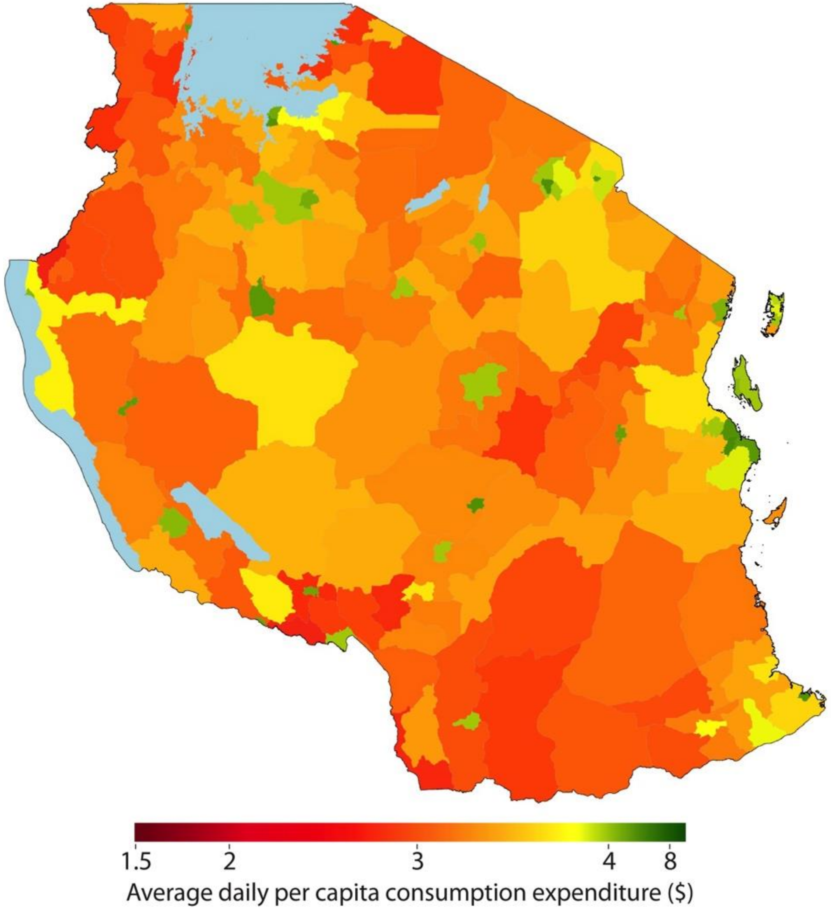


a Consumption expenditures

	Nigeria	Tanzania	Uganda	Malawi	Pooled
Pooled	0.42	0.4	0.41	0.33	0.45
Malawi	0.25	0.34	0.37	0.42	0.36
Uganda	0.34	0.38	0.46	0.37	0.44
Tanzania	0.44	0.56	0.47	0.48	0.52
Nigeria	0.41	0.3	0.26	0.19	0.39

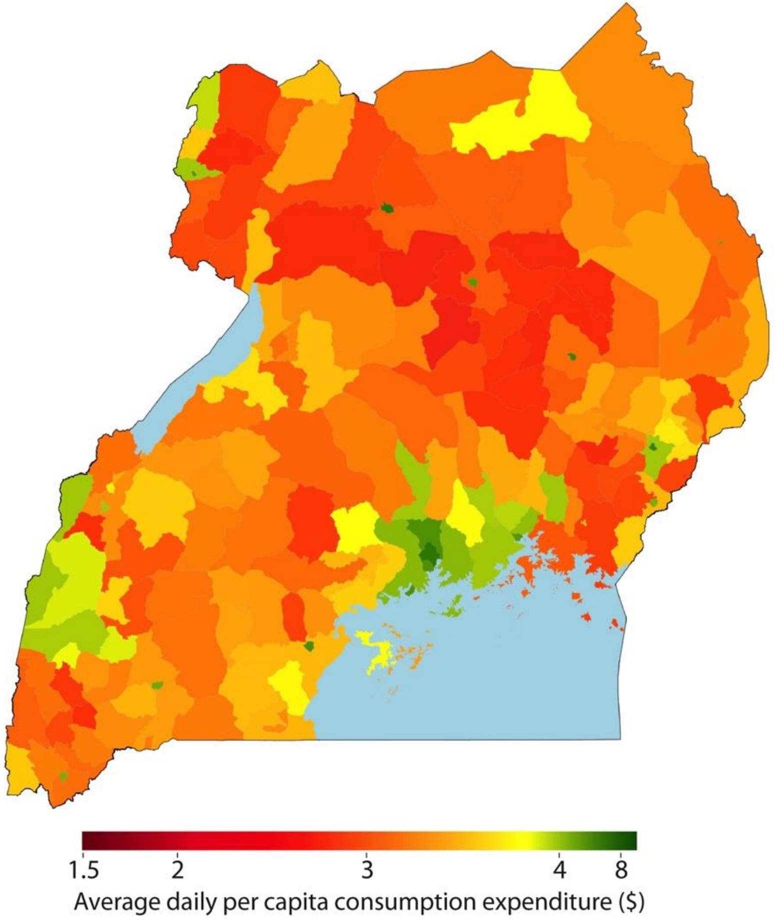
b Assets

	Nigeria	Tanzania	Uganda	Malawi	Rwanda	Pooled
Pooled	0.5	0.45	0.46	0.41	0.43	0.56
Rwanda	0.55	0.68	0.66	0.59	0.75	0.71
Malawi	0.4	0.42	0.43	0.55	0.42	0.46
Uganda	0.56	0.61	0.66	0.55	0.56	0.62
Tanzania	0.43	0.58	0.51	0.4	0.47	0.54
Nigeria	0.69	0.5	0.46	0.24	0.39	0.63



Tanzania, estimated daily per capita expenditure (2012-2015)

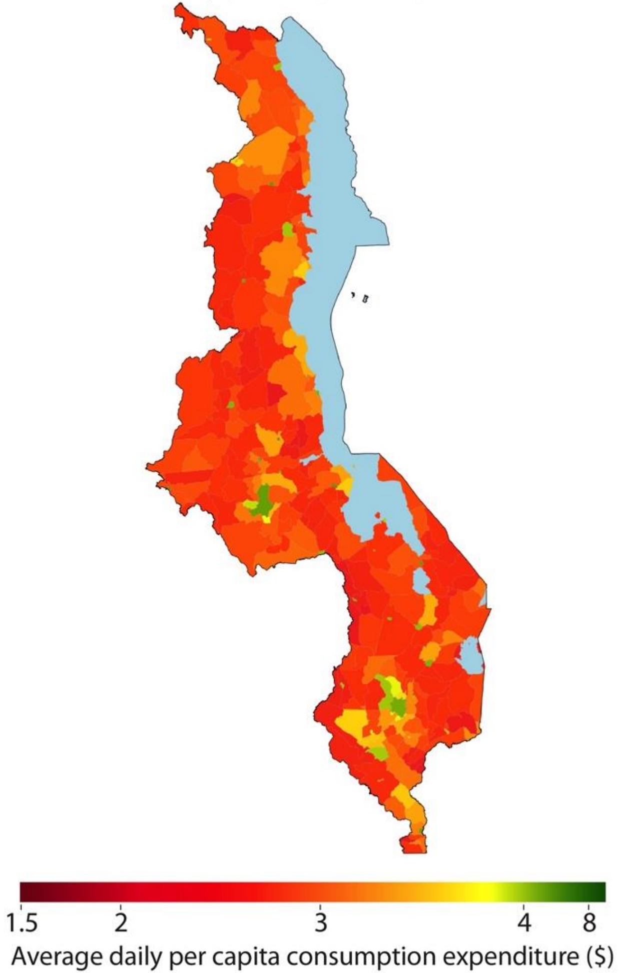
1.5
2
3
4
8
Average daily per capita consumption expenditure ($)



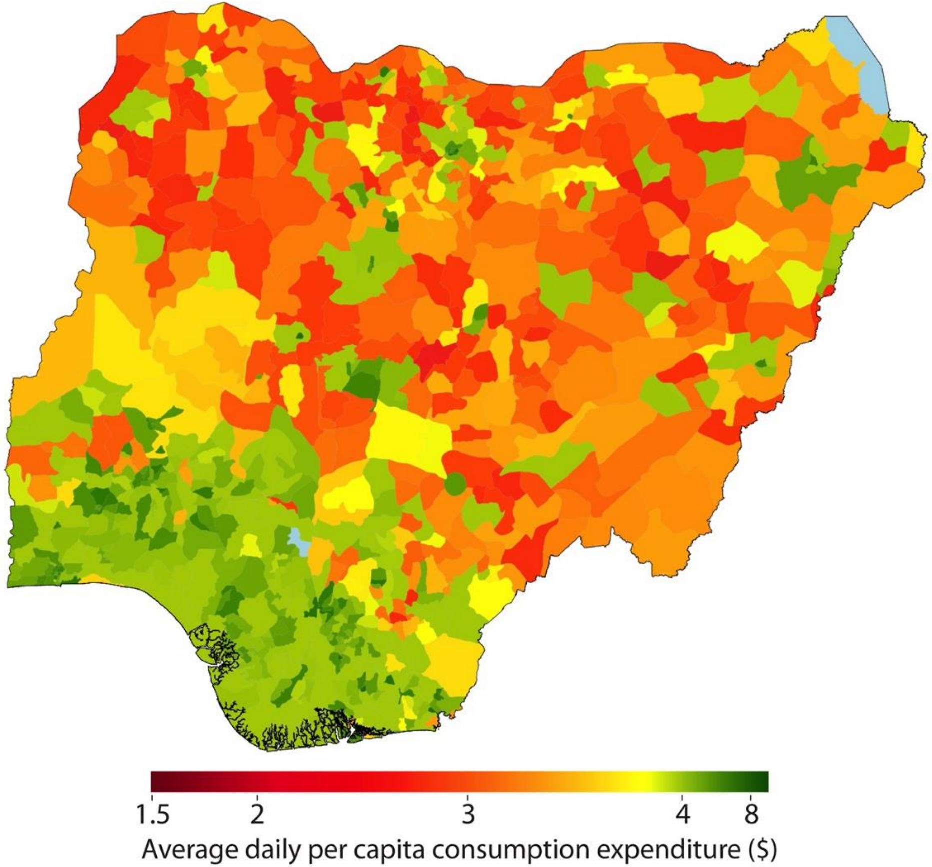
Uganda, estimated daily per capita expenditure (2012-2015)

1.5
2
3
4
8
Average daily per capita consumption expenditure ($)

Malawi, estimated daily per capita expenditure (2012-2015)


1.5
2
3
4
8
Average daily per capita consumption expenditure ($)

Nigeria, estimated daily per capita expenditure (2012-2015)

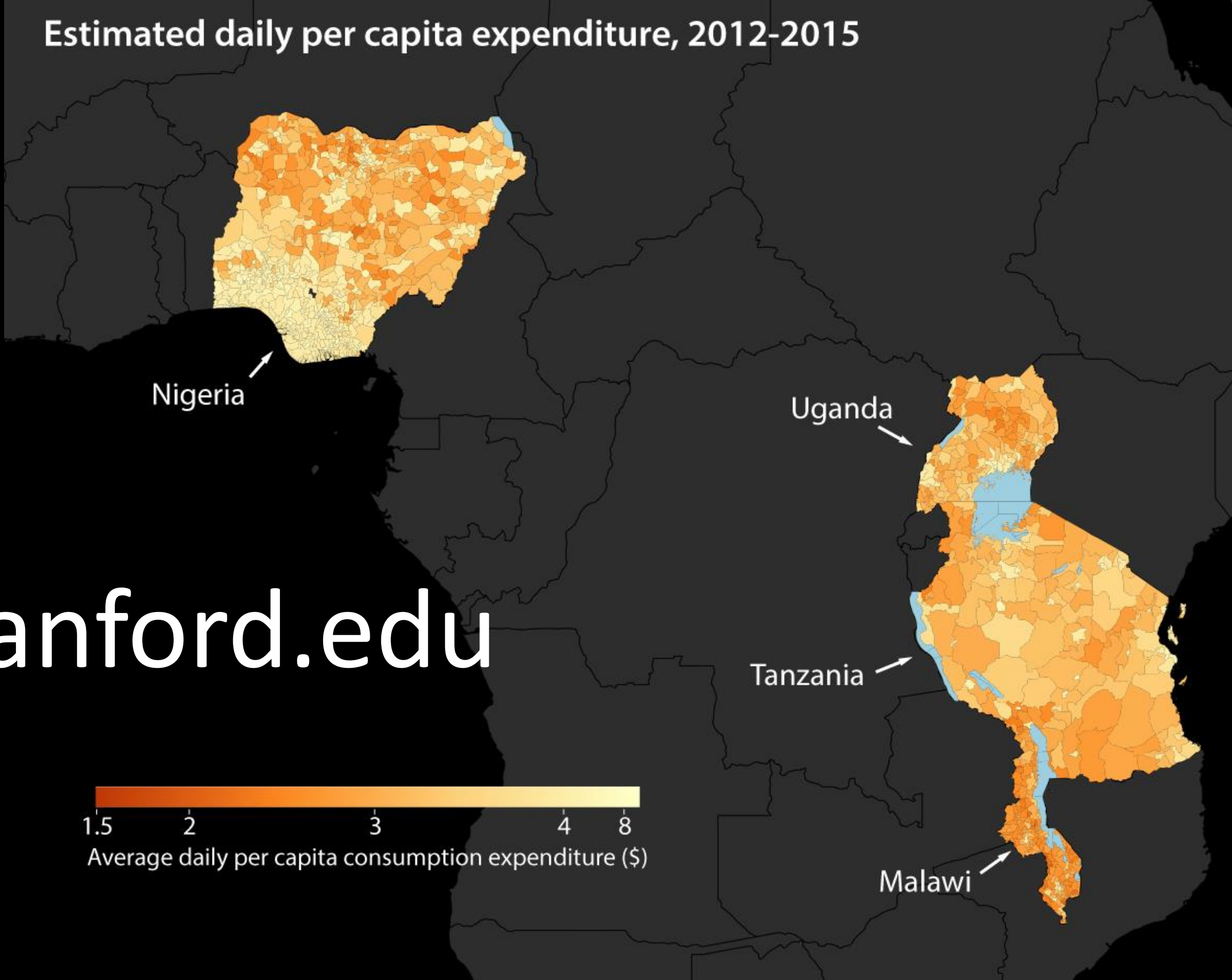

1.5
2
3
4
8
Average daily per capita consumption expenditure ($)

Project roadmap

- Collect data
  - Satellite images
  - Household surveys
- Train machine learning models
  - Python, Tensorflow
  - GPUs
- Validate models
  - Requires ground truth data
- Produce outputs
  - Make predictions, maps

Future applications

- Prediction and mapping
  - Health (stunting, wasting)
  - Agriculture (crop yields)
  - Environment (deforestation, pollution)
  - Infrastructure (electrification, sanitation)
- Monitoring
  - Anomaly detection
  - Early warning systems



Estimated daily per capita expenditure, 2012-2015

Nigeria
Uganda
Tanzania
Malawi
1.5
2
3
4
8
Average daily per capita consumption expenditure ($)

sustain.stanford.edu

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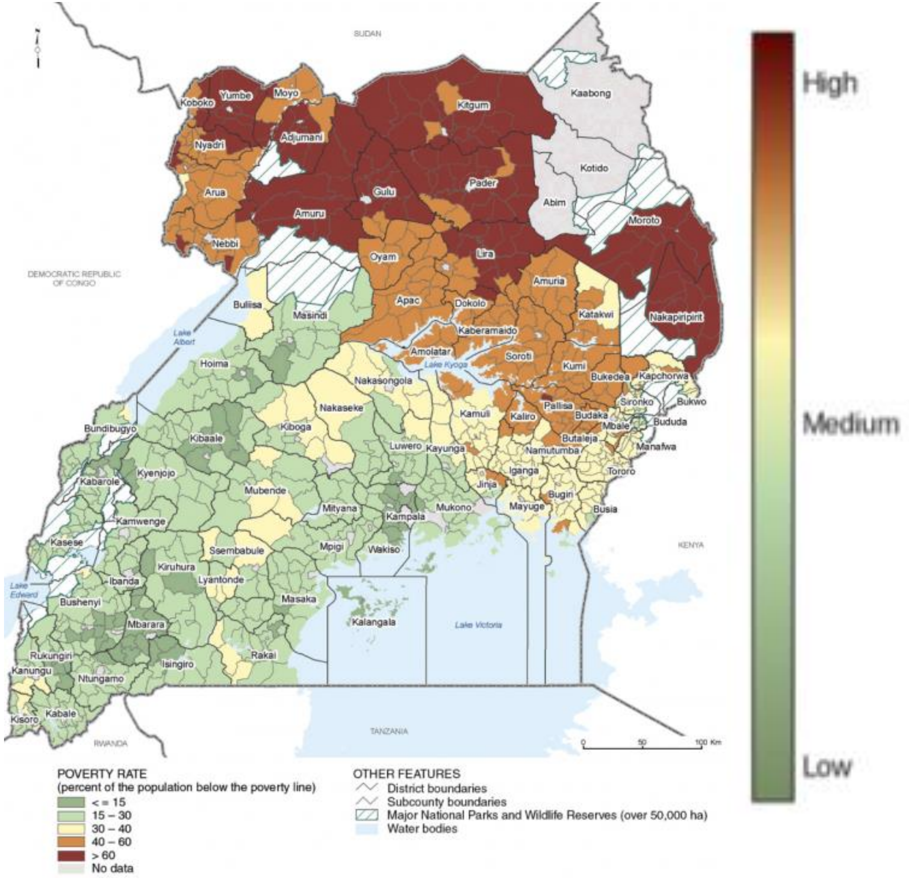
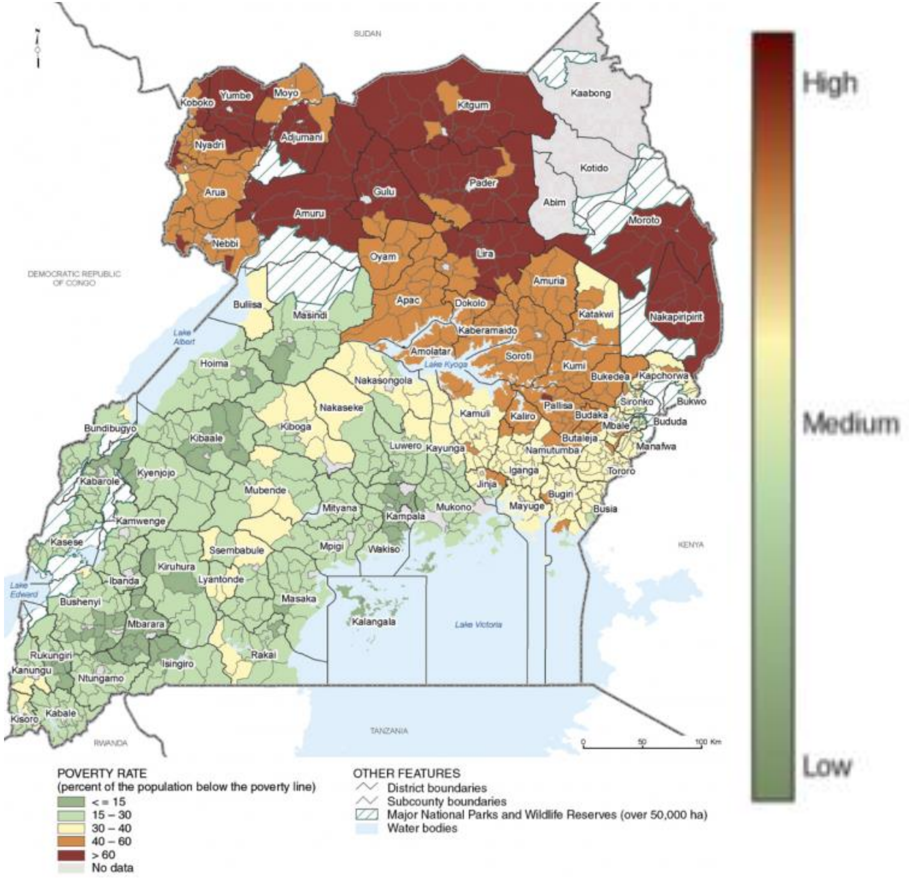
Supplemental

Uganda poverty rates (2005)


SUDAN
DEMOCRATIC REPUBLIC OF CONGO
KENYA
TANZANIA
RWANDA
Koboko
Yumbe
Moyo
Kitgum
Kaabong
Nyadri
Adjumani
Kotido
Pader
Arua
Gulu
Abim
Amuru
Moroto
Nebbi
Oyam
Lira
Amuria
Apac
Dokolo
Buliisa
Masindi
Katakwi
Nakapiripirit
Kaberamaido
Lake Albert
Amolatar
Soroti
Lake Kyoga
Hoima
Kumi
Bukedea
Kapchorwa
Nakasongola
Sironko
Bukwo
Pallisa
Nakaseke
Kamuli
Kaliro
Budaka
Mbale
Bududa
Bundibugyo
Kiboga
Kibaale
Butaleja
Manafwa
Luwero
Kayunga
Namutumba
Kyenjojo
Iganga
Tororo
Kabarole
Jinja
Mubende
Bugiri
Mityana
Kampala
Mukono
Mayuge
Busia
Kamwenge
Kasese
Mpigi
Wakiso
Ssembabule
Kiruhura
Lyantonde
Ibanda
Lake Edward
Masaka
Bushenyi
Kalangala
Lake Victoria
Mbarara
Rukungiri
Rakai
Kanungu
Isingiro
Ntungamo
Kabale
Kisoro
0
50
100 Km
POVERTY RATE
(percent of the population below the poverty line)
<= 15
15 – 30
30 – 40
40 – 60
> 60
No data
OTHER FEATURES
District boundaries
Subcounty boundaries
Major National Parks and Wildlife Reserves (over 50,000 ha)
Water bodies
High
Medium
Low

Uganda poverty rates (2005)


SUDAN
DEMOCRATIC REPUBLIC OF CONGO
KENYA
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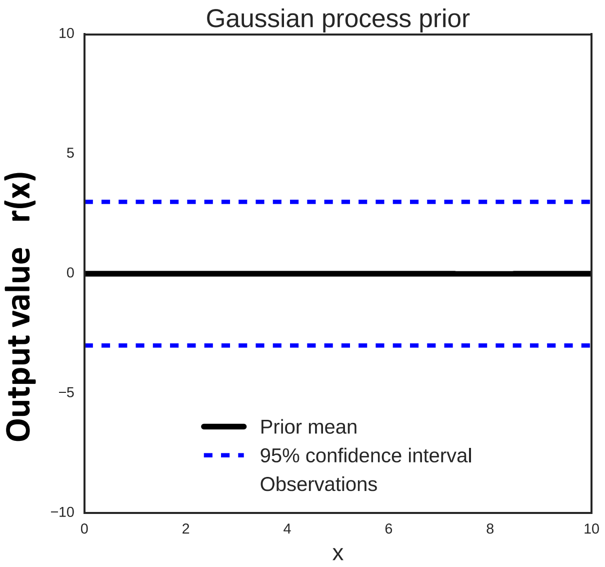
RWANDA
Koboko
Yumbe
Moyo
Adjumani
Nyadri
Arua
Nebbi
Kitgum
Kaabong
Kotido
Abim
Moroto
Pader
Gulu
Amuru
Lira
Oyam
Apac
Dokolo
Amuria
Katakwi
Nakapiripirit
Kaberamaido
Amolatar
Lake Kyoga
Soroti
Kumi
Bukedea
Kapchorwa
Sironko
Bukwo
Pallisa
Budaka
Mbale
Bududa
Manafwa
Kaliro
Butaleja
Tororo
Namutumba
Kamuli
Iganga
Jinja
Bugiri
Busia
Mayuge
Kayunga
Luwero
Nakasongola
Nakaseke
Kiboga
Buliisa
Masindi
Lake Albert
Hoima
Bundibugyo
Kibaale
Kyenjojo
Kabarole
Mubende
Mityana
Kampala
Mukono
Wakiso
Mpigi
Kamwenge
Kasese
Ssembabule
Kiruhura
Lyantonde
Ibanda
Lake Edward
Bushenyi
Mbarara
Masaka
Kalangala
Lake Victoria
Rakai
Isingiro
Rukungiri
Kanungu
Ntungamo
Kabale
Kisoro
0 50 100 Km
POVERTY RATE
(percent of the population below the poverty line)
<= 15
15 – 30
30 – 40
40 – 60
> 60
No data
OTHER FEATURES
District boundaries
Subcounty boundaries
Major National Parks and Wildlife Reserves (over 50,000 ha)
Water bodies
High
Medium
Low

Spatial dynamics of poverty?

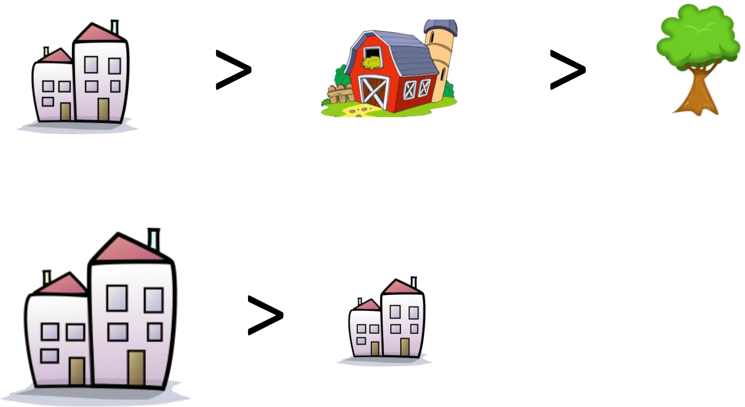
Gaussian Processes to model spatial correlations

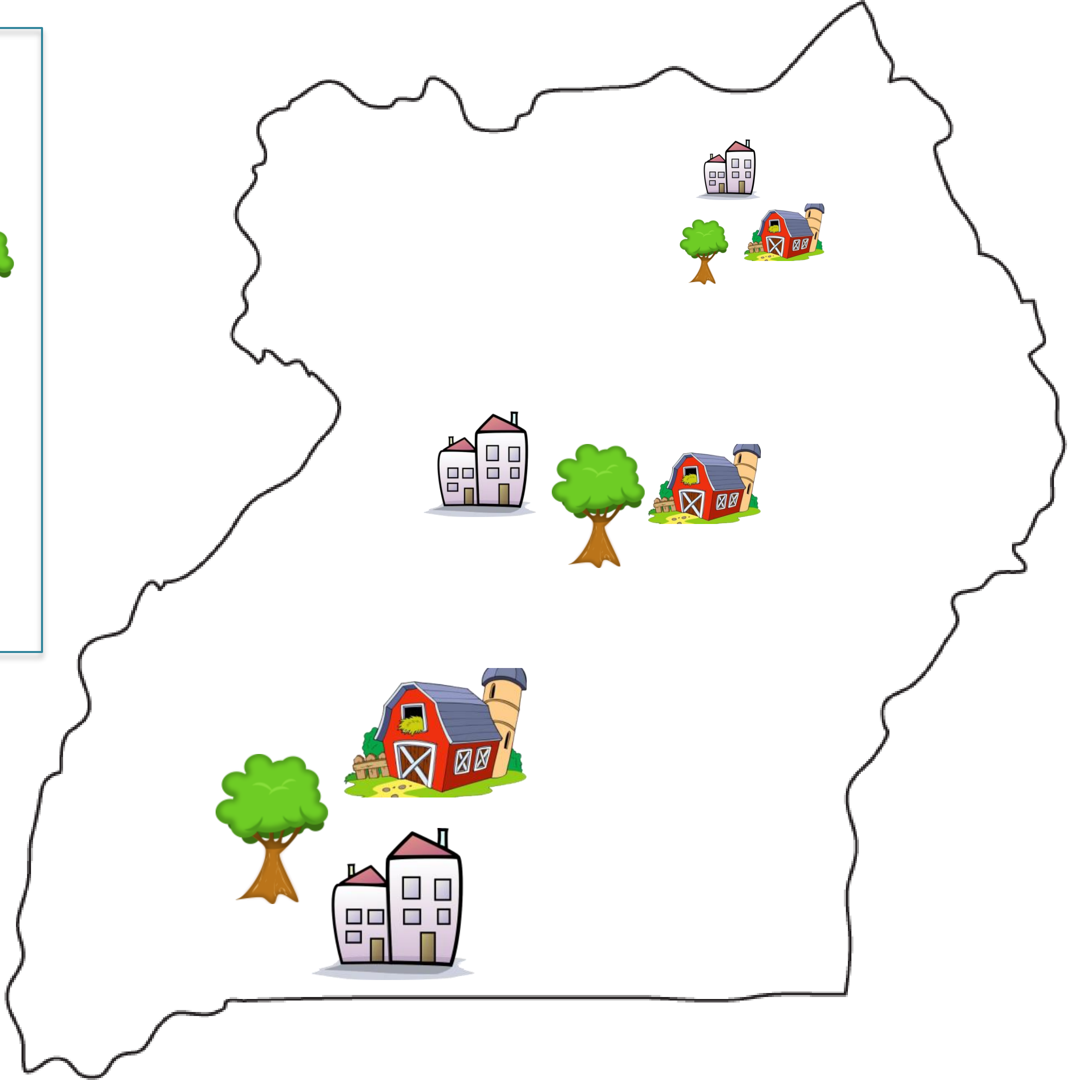


$$r(x) \sim \mathcal{GP}(0, k(x, x'))$$

Issue: does not take images into account!

Wealth Legend:



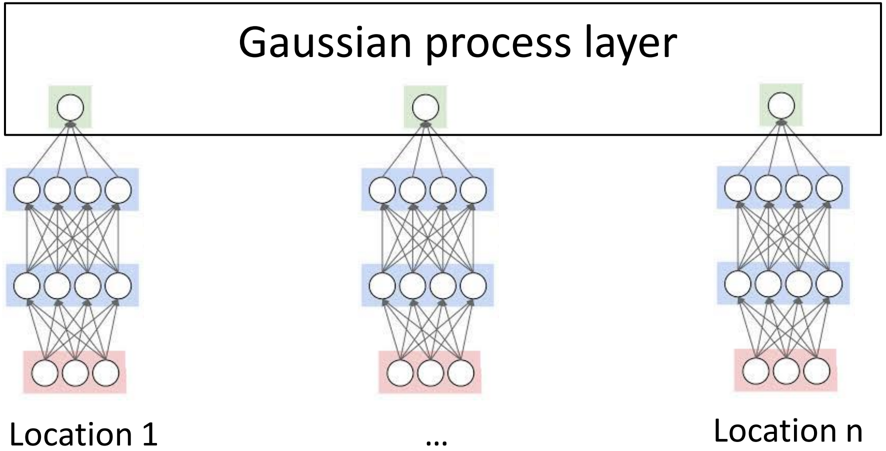


Deep linear GP model

$$f(x) = \underbrace{h(x)}_{\text{Features from CNN}}^{T}\beta$$

Key Idea: combine GP with CNN

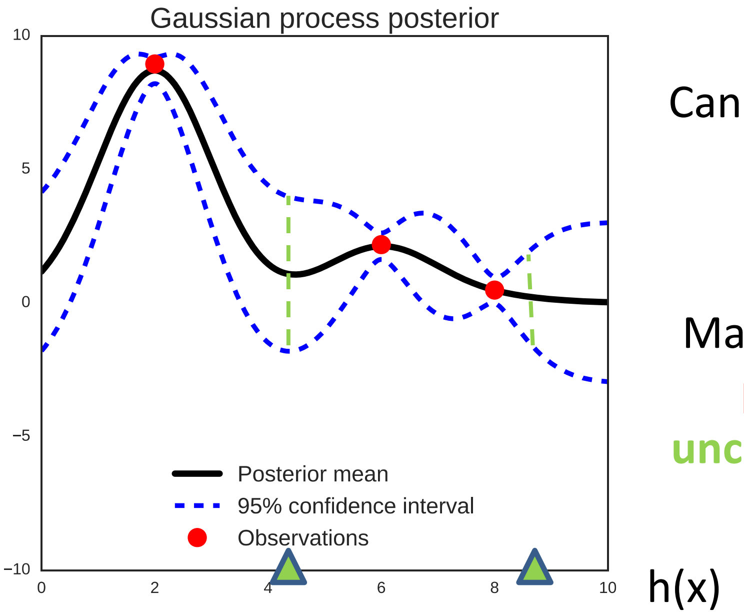
Enforces spatial correlation


Gaussian process layer
Location 1
…
Location n

Semi-supervised learning

$$f(x) = \underbrace{h(x)}_{\text{Features from CNN}}{}^T \beta + r(x), \quad r(x) \sim \mathcal{GP}(0, k(x, x'))$$

△ = unlabeled data point



Can **quantify the uncertainty** on our predictions

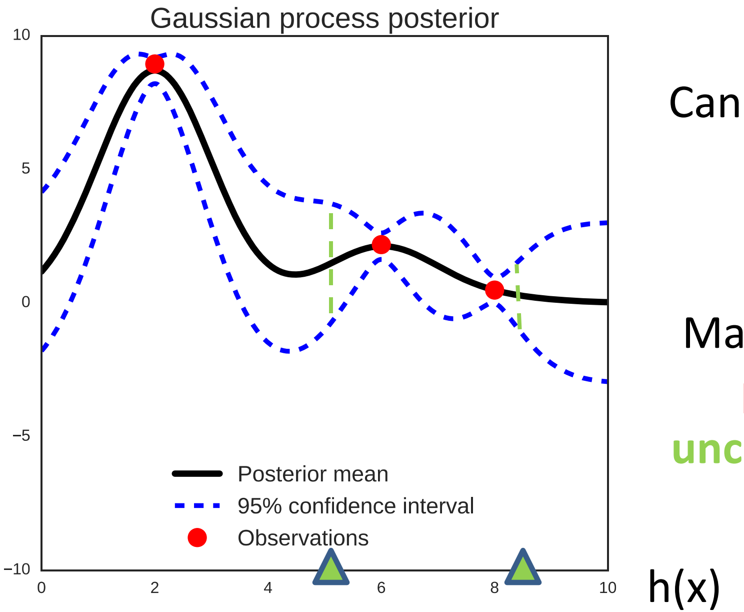
Idea:

Maximize **likelihood of *labeled* points**, and minimize the **uncertainty of *unlabeled* points**

Semi-supervised learning

$$f(x) = \underbrace{h(x)}_{\textbf{Features from CNN}}{}^T \beta + r(x), \quad r(x) \sim \mathcal{GP}(0, k(x, x'))$$

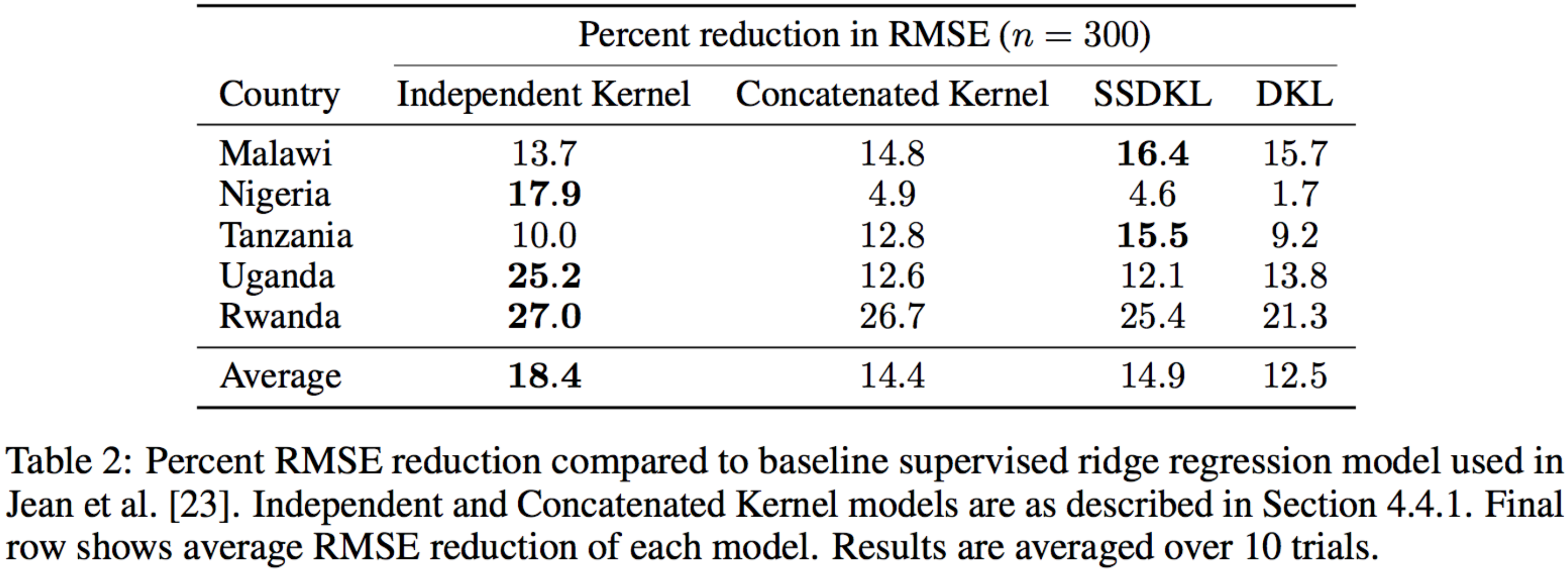
▲ = unlabeled data point



Can **quantify the uncertainty** on our predictions

Idea:
Maximize **likelihood of *labeled* points**, and minimize the **uncertainty of *unlabeled* points**

Incorporating location data



Country	Percent reduction in RMSE ($n = 300$)			
	Independent Kernel	Concatenated Kernel	SSDKL	DKL
Malawi	13.7	14.8	**16.4**	15.7
Nigeria	**17.9**	4.9	4.6	1.7
Tanzania	10.0	12.8	**15.5**	9.2
Uganda	**25.2**	12.6	12.1	13.8
Rwanda	**27.0**	26.7	25.4	21.3
Average	**18.4**	14.4	14.9	12.5

Table 2: Percent RMSE reduction compared to baseline supervised ridge regression model used in Jean et al. [23]. Independent and Concatenated Kernel models are as described in Section 4.4.1. Final row shows average RMSE reduction of each model. Results are averaged over 10 trials.

Breakout session 8. Machine learning and causal inference - How machine learning methods might help to improve the rigour of quantitative impact evaluations

Presenter:
Mr Paul Jasper, consultant, M&E Portfolio,
and Deputy Portfolio Leader, Cross-Cutting
Portfolio, Oxford Policy Management

Oxford Policy Management

Big Data, Machine Learning, and Causal Inference

ICT4Eval – International Conference
IFAD Headquarters, Rome, Italy

Paul Jasper
paul.jasper@opml.co.uk

6 June 2017

Contents

- Introduction
- What is new about Big Data?
- Statistical learning and machine learning approaches
- How can machine learning approaches be employed to help with causal inference?
- One example: preventing model misspecification in quasi-experimental evaluations
- Conclusion

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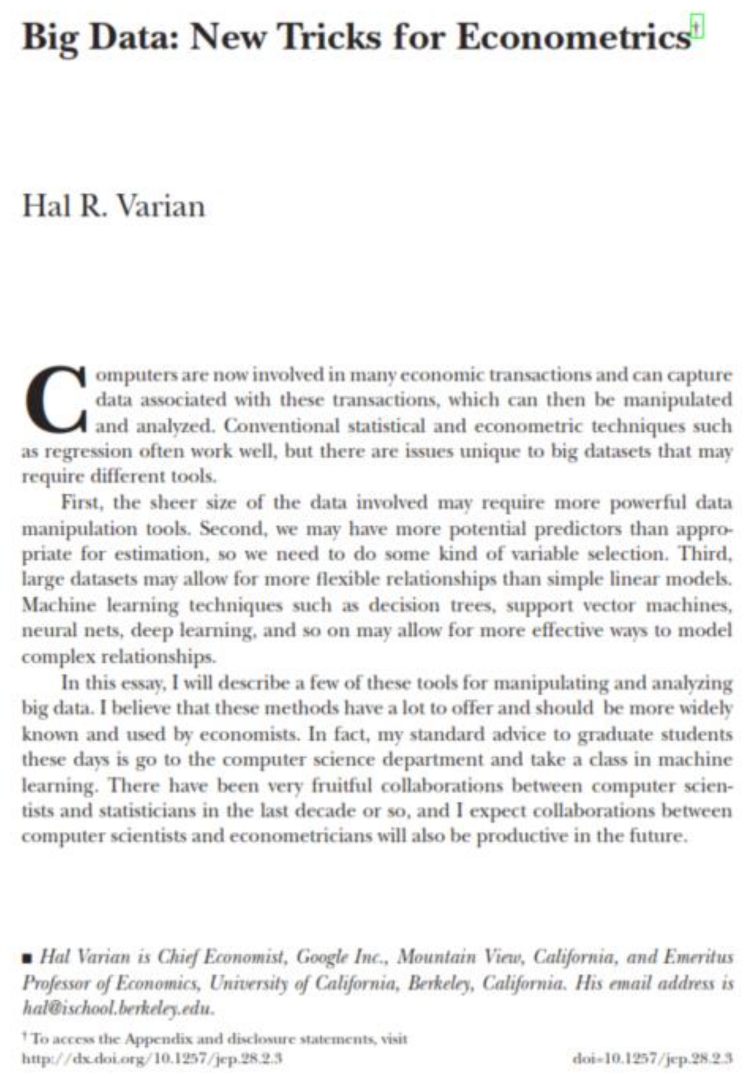
Introduction

- Until very recently, Big Data and machine learning was not something most economists were concerned with

- But then, much attention was paid to Varian (2014) in the Journal of Economic Perspectives:

  “*In fact, my standard advice to graduate students these days is go to the computer science department and take a class in machine learning*.”



Big Data: New Tricks for Econometrics[†]

Hal R. Varian

Computers are now involved in many economic transactions and can capture data associated with these transactions, which can then be manipulated and analyzed. Conventional statistical and econometric techniques such as regression often work well, but there are issues unique to big datasets that may require different tools.

First, the sheer size of the data involved may require more powerful data manipulation tools. Second, we may have more potential predictors than appropriate for estimation, so we need to do some kind of variable selection. Third, large datasets may allow for more flexible relationships than simple linear models. Machine learning techniques such as decision trees, support vector machines, neural nets, deep learning, and so on may allow for more effective ways to model complex relationships.

In this essay, I will describe a few of these tools for manipulating and analyzing big data. I believe that these methods have a lot to offer and should be more widely known and used by economists. In fact, my standard advice to graduate students these days is go to the computer science department and take a class in machine learning. There have been very fruitful collaborations between computer scientists and statisticians in the last decade or so, and I expect collaborations between computer scientists and econometricians will also be productive in the future.

■ *Hal Varian is Chief Economist, Google Inc., Mountain View, California, and Emeritus Professor of Economics, University of California, Berkeley, California. His email address is hal@ischool.berkeley.edu.*

[†] To access the Appendix and disclosure statements, visit http://dx.doi.org/10.1257/jep.28.2.3

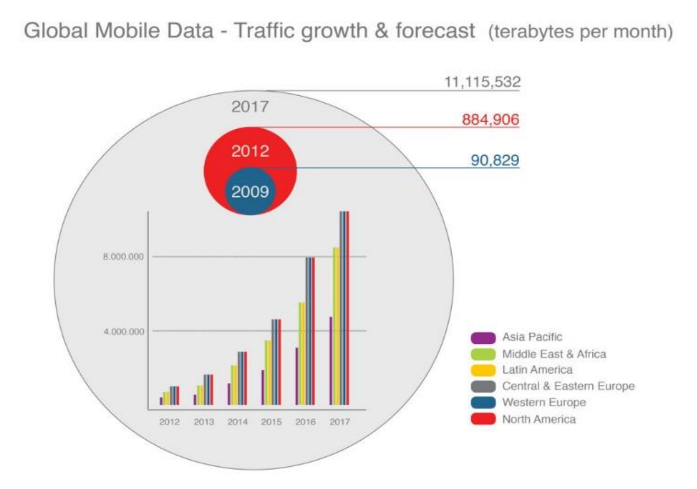
doi=10.1257/jep.28.2.3

What is new about Big Data?

- Definition is unclear

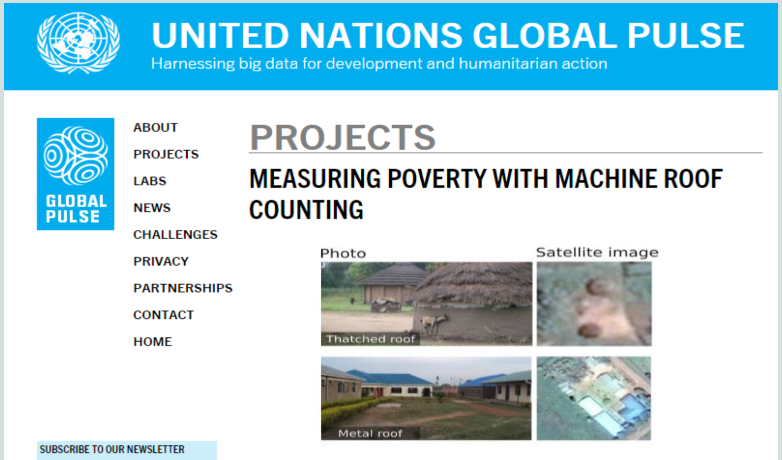
…but it is certainly not just about the data.

New data?



Source: datapopalliance.org

‘New’ methods and tools!


UNITED NATIONS GLOBAL PULSE
Harnessing big data for development and humanitarian action
GLOBAL PULSE
ABOUT
PROJECTS
LABS
NEWS
CHALLENGES
PRIVACY
PARTNERSHIPS
CONTACT
HOME
SUBSCRIBE TO OUR NEWSLETTER

PROJECTS

MEASURING POVERTY WITH MACHINE ROOF COUNTING

Photo
Satellite image
Thatched roof
Metal roof

Source: [UN Global Pulse Projects]

- Large N
- Large P
- Real time
- High frequency

- Computational statistics
- Artificial intelligence
- Machine/statistical learning
- ‘Data Science’

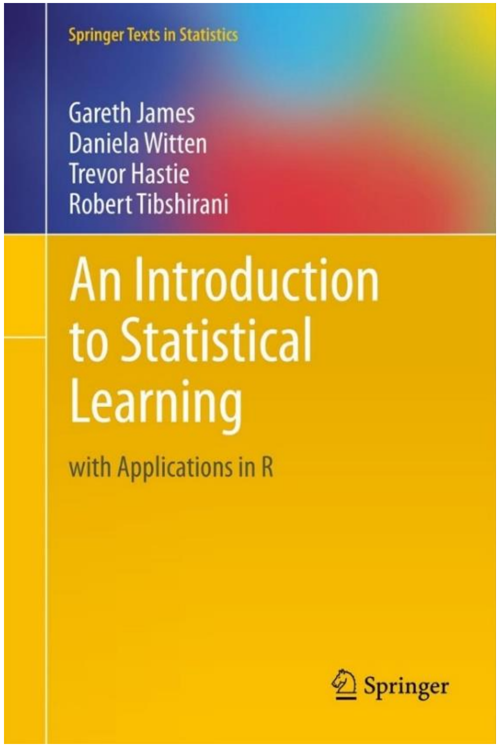
Statistical learning/machine learning vs. ‘classical econometrics’

- “Understanding data”

- Since the late 1980s, “… statistical learning has emerged as a new subfield in statistics, focussed on supervised and unsupervised modelling and **prediction**”.

- An important distinction:
  - ‘classical’ methods in econometrics solve estimation problems
    - with assumptions about (linear) data generation processes (e.g. $\mathrm{Y} = \mathrm{X}\beta + \epsilon$) and distributions of variables involved
    - deriving algebraic solutions to estimation problems (e.g. OLS → $\hat{\beta} = (\mathrm{X}'\mathrm{X})^{-1}\mathrm{X}'\mathrm{Y}$)
    - employing a frequentist approach to hypothesis testing
  - vs. computational methods that solve estimation problems
    - by exploiting **computational power in combination with re-sampling methods**
    - **derive highly non-linear, algorithmic solutions**
    - **and make little assumption about the data generating process**

→ I would consider methods that fall under the second definition as ‘new’ statistical learning in the narrow sense



Springer Texts in Statistics

Gareth James
Daniela Witten
Trevor Hastie
Robert Tibshirani

An Introduction to Statistical Learning

with Applications in R

Springer

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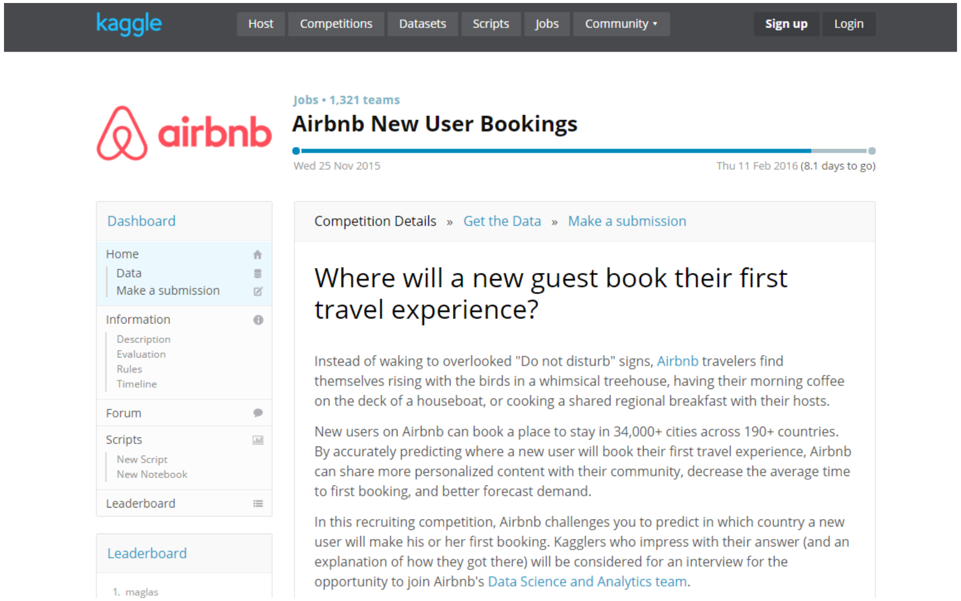
Statistical learning: taxonomy of estimation problems

- Supervised learning:
  - Learn something about the relationship between features (x) and outcome measures (y), often **out-of-sample prediction** ($E(Y) = f(x)$) and **regularisation** (What are good predictors of y?)
- Unsupervised learning:
  - Spot patterns and structure in the data (only x data), often **summarisation**


kaggle
Host
Competitions
Datasets
Scripts
Jobs
Community ▾
Sign up
Login
airbnb
Jobs • 1,321 teams
Airbnb New User Bookings
Wed 25 Nov 2015
Thu 11 Feb 2016 (8.1 days to go)
Dashboard
Home
Data
Make a submission
Information
Description
Evaluation
Rules
Timeline
Forum
Scripts
New Script
New Notebook
Leaderboard
Leaderboard
1. maglas
Competition Details » Get the Data » Make a submission

Where will a new guest book their first travel experience?

Instead of waking to overlooked "Do not disturb" signs, Airbnb travelers find themselves rising with the birds in a whimsical treehouse, having their morning coffee on the deck of a houseboat, or cooking a shared regional breakfast with their hosts.

New users on Airbnb can book a place to stay in 34,000+ cities across 190+ countries. By accurately predicting where a new user will book their first travel experience, Airbnb can share more personalized content with their community, decrease the average time to first booking, and better forecast demand.

In this recruiting competition, Airbnb challenges you to predict in which country a new user will make his or her first booking. Kagglers who impress with their answer (and an explanation of how they got there) will be considered for an interview for the opportunity to join Airbnb's Data Science and Analytics team.

Source: kaggle.com

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Supervised learning approaches: some examples

- Regression trees:
  - Applicable for **non-linear prediction problems**
  - Re-sampling used to identify ‘depth’ of regression trees
- LASSO regression:
  - Quite well-known ‘penalised’ regression, where RSS is minimised subject to absolute value of estimated coefficients
  - Re-sampling used to identify ideal penalty term
  - Applicable for **regularisation, i.e. selection of best sub-set of explanatory variables**
- Vectors support machines
- Combinations!
  - Generally perform better than any singular predictor

→ **Re-sampling is always crucial to ‘tune’ models.**

- Note that this requires computational power

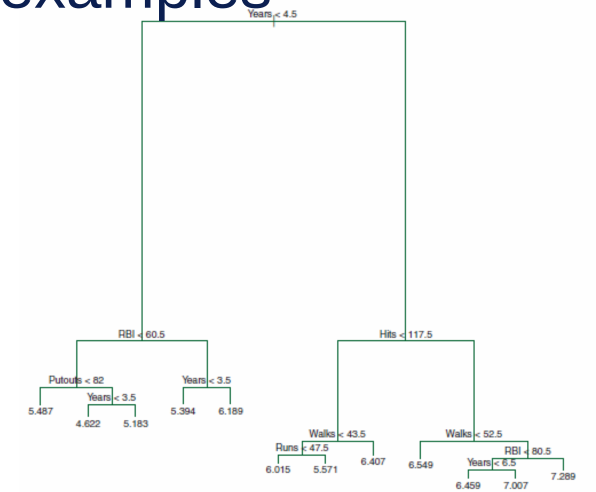
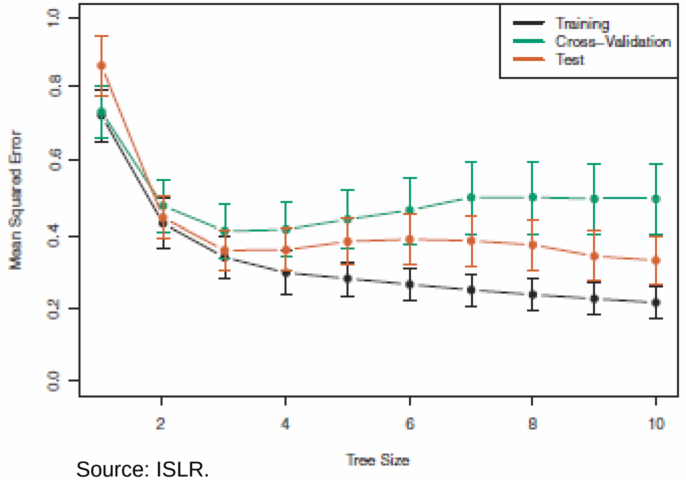

Years < 4.5
RBI < 60.5
Hits < 117.5
Putouts < 82
Years < 3.5
Years < 3.5
5.487
4.622
5.183
5.394
6.189
Walks < 43.5
Runs < 47.5
6.015
5.571
6.407
Walks < 52.5
RBI < 80.5
Years < 6.5
6.549
6.459
7.007
7.289

FIGURE 8.4. *Regression tree analysis for the* `Hitters` *data. The unpruned tree that results from top-down greedy splitting on the training data is shown.*



Source: ISLR.

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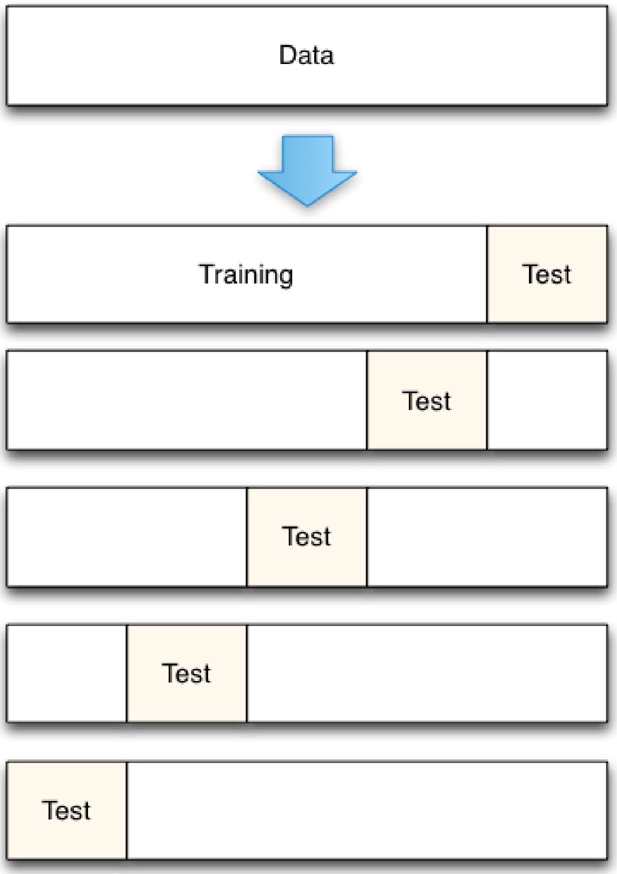
Statistical learning: the importance of cross-validation for model fitting

- The basic idea **in a prediction context:**
  - Use part of your data to ‘**train**’ your model
  - Use the other part to ‘**test**’ it – *compare prediction to truth*
  - Repeat several times with different splits
  - Estimate your average performance (e.g. mean squared error)
- This can be employed both for
  - Model assessment
  - Model selection
    - Choose model specification that minimises your estimated MSE
    - Process avoids overfitting (in-sample performance vs out-of-sample performance)
- **Note: this is an entirely empirical method of choosing your best model.**



Source: kaggle.com

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Statistical learning: strengths …

- Strengths:
  - Out-of-sample prediction and regularisation
  - ‘Deep learning’ - computer just won against human in Go
  - Can make use of all the Big Data around
  - Extremely powerful with large datasets

Artificial intelligence

Computer says Go

Beating a Go champion with machine learning

Jan 30th 2016 | From the print edition

Timekeeper
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Statistical learning: strengths … and weaknesses

- Inference
  - No direct interest in parameter estimation
    - E.g. from a regression tree prediction, it is not possible to directly get $\hat{\beta}$
  - No direct interest in underlying data generation structure
    - Different prediction functions might have similar performance
  - Prediction is not causal inference
    - Predicting outcomes well does not directly help with counterfactual problem
    - **But – this is what we want to solve in impact evaluations!**

Artificial intelligence

Computer says Go

Beating a Go champion with machine learning

Jan 30th 2016 | From the print edition

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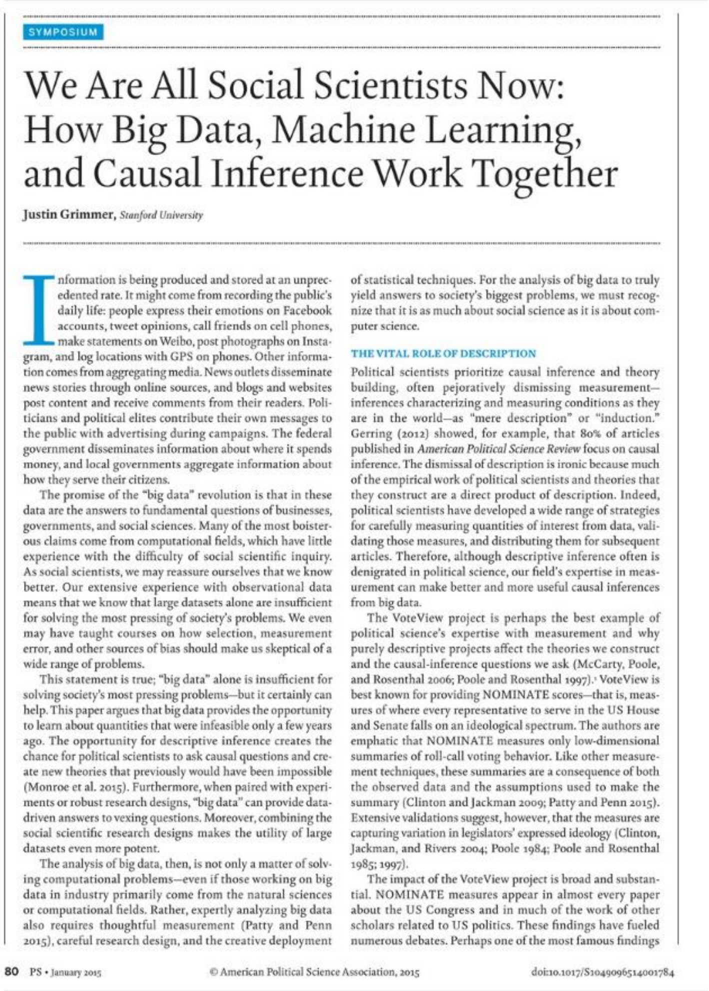
How can machine learning be employed to help with causal inference?

- The distinction ML as prediction/regularisation tool vs causal inference is not really as clear-cut.
- There is an emerging literature on this topic:
  - American National Academy of Sciences had a colloquium on “Drawing Causal Inference from Big Data” in 2015
  - Justin Grimmer, Stanford, 2014: “We are all Social Scientists Now”
  - **Sendhil Mullainathan and Jann Spiess, JEP Spring 2017: “Machine Learning: an Applied Econometric Approach”**



SYMPOSIUM

We Are All Social Scientists Now: How Big Data, Machine Learning, and Causal Inference Work Together

Justin Grimmer, *Stanford University*

Information is being produced and stored at an unprecedented rate. It might come from recording the public's daily life: people express their emotions on Facebook accounts, tweet opinions, call friends on cell phones, make statements on Weibo, post photographs on Instagram, and log locations with GPS on phones. Other information comes from aggregating media. News outlets disseminate news stories through online sources, and blogs and websites post content and receive comments from their readers. Politicians and political elites contribute their own messages to the public with advertising during campaigns. The federal government disseminates information about where it spends money, and local governments aggregate information about how they serve their citizens.

The promise of the “big data” revolution is that in these data are the answers to fundamental questions of businesses, governments, and social sciences. Many of the most boisterous claims come from computational fields, which have little experience with the difficulty of social scientific inquiry. As social scientists, we may reassure ourselves that we know better. Our extensive experience with observational data means that we know that large datasets alone are insufficient for solving the most pressing of society's problems. We even may have taught courses on how selection, measurement error, and other sources of bias should make us skeptical of a wide range of problems.

This statement is true; “big data” alone is insufficient for solving society's most pressing problems—but it certainly can help. This paper argues that big data provides the opportunity to learn about quantities that were infeasible only a few years ago. The opportunity for descriptive inference creates the chance for political scientists to ask causal questions and create new theories that previously would have been impossible (Monroe et al. 2015). Furthermore, when paired with experiments or robust research designs, “big data” can provide data-driven answers to vexing questions. Moreover, combining the social scientific research designs makes the utility of large datasets even more potent.

The analysis of big data, then, is not only a matter of solving computational problems—even if those working on big data in industry primarily come from the natural sciences or computational fields. Rather, expertly analyzing big data also requires thoughtful measurement (Patty and Penn 2015), careful research design, and the creative deployment of statistical techniques. For the analysis of big data to truly yield answers to society's biggest problems, we must recognize that it is as much about social science as it is about computer science.

THE VITAL ROLE OF DESCRIPTION

Political scientists prioritize causal inference and theory building, often pejoratively dismissing measurement—inferences characterizing and measuring conditions as they are in the world—as “mere description” or “induction.” Gerring (2012) showed, for example, that 80% of articles published in *American Political Science Review* focus on causal inference. The dismissal of description is ironic because much of the empirical work of political scientists and theories that they construct are a direct product of description. Indeed, political scientists have developed a wide range of strategies for carefully measuring quantities of interest from data, validating those measures, and distributing them for subsequent articles. Therefore, although descriptive inference often is denigrated in political science, our field's expertise in measurement can make better and more useful causal inferences from big data.

The VoteView project is perhaps the best example of political science's expertise with measurement and why purely descriptive projects affect the theories we construct and the causal-inference questions we ask (McCarty, Poole, and Rosenthal 2006; Poole and Rosenthal 1997).[1] VoteView is best known for providing NOMINATE scores—that is, measures of where every representative to serve in the US House and Senate falls on an ideological spectrum. The authors are emphatic that NOMINATE measures only low-dimensional summaries of roll-call voting behavior. Like other measurement techniques, these summaries are a consequence of both the observed data and the assumptions used to make the summary (Clinton and Jackman 2009; Patty and Penn 2015). Extensive validations suggest, however, that the measures are capturing variation in legislators' expressed ideology (Clinton, Jackman, and Rivers 2004; Poole 1984; Poole and Rosenthal 1985; 1997).

The impact of the VoteView project is broad and substantial. NOMINATE measures appear in almost every paper about the US Congress and in much of the work of other scholars related to US politics. These findings have fueled numerous debates. Perhaps one of the most famous findings

80 PS • January 2015 © American Political Science Association, 2015 doi:10.1017/S1049096514001784

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How can machine learning be employed to help with causal inference?

Three main areas that I observe in evaluation work:

- Prediction as part of an estimation procedure: in many cases, causal inference requires a ‘prediction step’
  - Instrumental Variables:
    - First stage: predict $\hat{x}$ using instruments (z)
    - Second stage: OLS on $y = \hat{x}\beta + \epsilon$
    - Hence, you can use ML to improve the first stage
  - Predicting counterfactuals when having ‘big data’
    - E.g. UN Global pulse: “Using Financial Transactions Data to Measure Economic Resilience to Natural Disasters” (2016)

- Data-mining to find heterogeneous treatment effects and assess robustness of estimates to model selection
  - A lot of work by Susan Athey at Stanford

- **Regularisation to prevent model misspecification**
  - This is what we are looking at at OPM

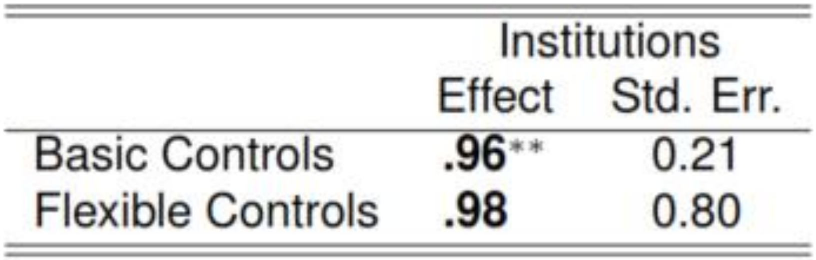
The problem: model misspecification – an example

- Example taken from [Victor Chernozhukov’s](#) **webpage (MIT)**
  - Note: ‘big data’ context with large p
  - Published in JEP, Spring 2014, Vol. 28 (2), pp. 29-50.

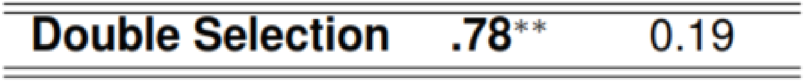
- Acemoglu, Johnson, Robinson (2001): *The effect of institutions on the Wealth of Nations*
  - Outcome: GDP per capita of countries today
  - Effect of interest: quality of institutions (D)
  - Instrument used: early settler mortality (Z)
  - Covariates:
    - Basic: constant and latitude
    - Flexible: transformations of latitude and continent dummies
- Problem: regularisation bias or OVB
  - Can we drop the flexible controls?

- Solution: double selection using Machine Learning (LASSO)
  - Select covariates that predict Y and
  - Select covariates that predict D or Z

→ This applies more generally to approaches that rely on controlling for observable covariates



	Institutions	
	Effect	Std. Err.
Basic Controls	.96**	0.21
Flexible Controls	.98	0.80



Double Selection	.78**	0.19

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The problem: model misspecification in non-experimental impact evaluations

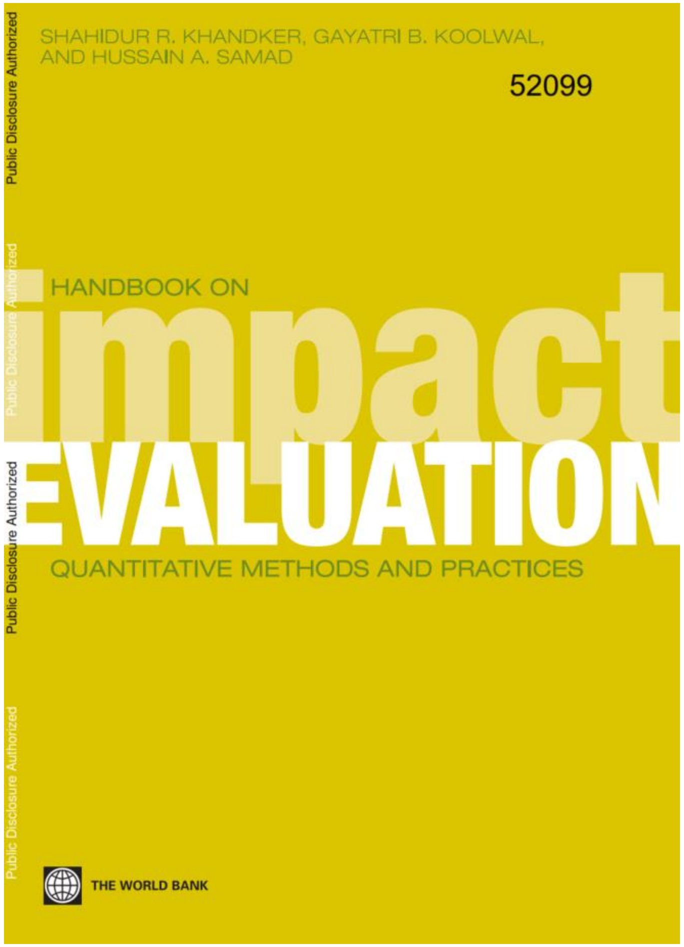
- In practice, many impact evaluations rely on conditional independence or unconfoundedness assumption:

$$(Y_1, Y_0) \perp T | X$$

  - "Conditional on covariates, treatment assignment (T) is independent of the potential outcomes."

- This includes popular methods, such as e.g. PSM and regression approaches used in quasi-experimental evaluations

→ Selecting the right covariates, i.e. correct model specification is important to derive unbiased estimates of treatment effects



SHAHIDUR R. KHANDKER, GAYATRI B. KOOLWAL,
AND HUSSAIN A. SAMAD

52099

HANDBOOK ON
impact
EVALUATION
QUANTITATIVE METHODS AND PRACTICES

THE WORLD BANK

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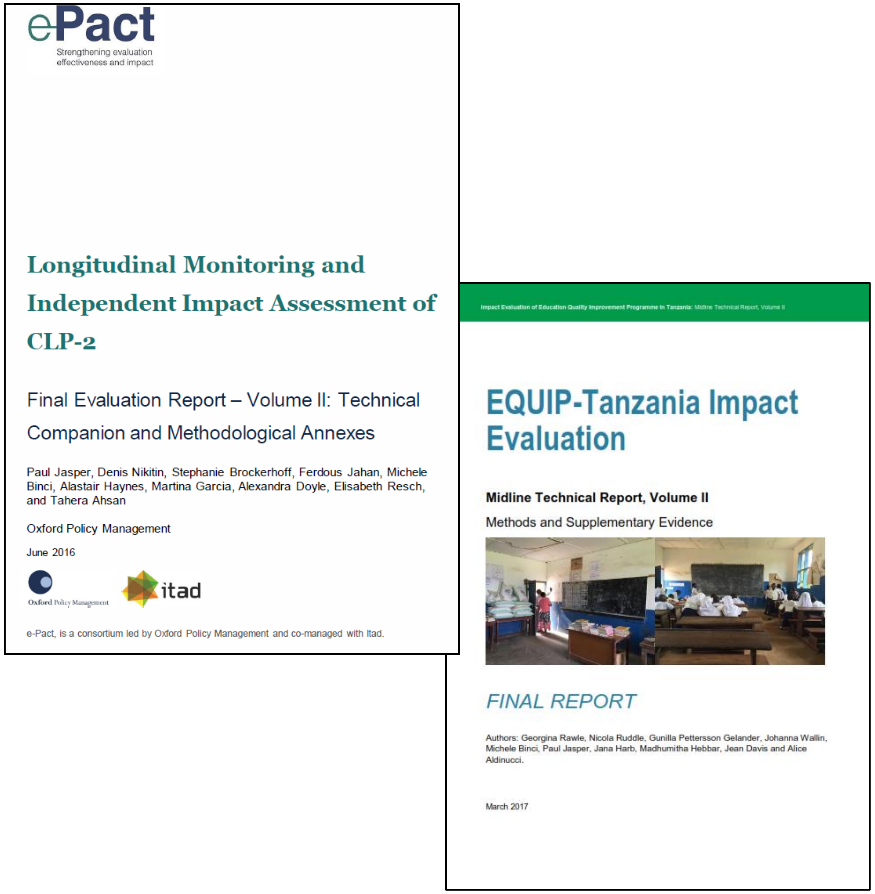
Preventing model misspecification in evaluations

- Approaches that are used for covariate selection:
  - Theory
  - ‘Deep knowledge’
- Potentially dangerous?
  - Survey data commonly has many variables (200+) – these can be combined in many ways to create ‘flexible controls’
  - It is likely that outcomes are related to covariates in complex, non-linear ways
  - Risk of omitted variable bias is large

- What is commonly done to address this:
  - Show robustness of results to different specifications

- What we are working on:
  - **Using algorithmic (stepwise regressions/LASSO) regularisation for principled model selection in quasi-experimental impact evaluations**
    - PSM approaches (EQUIP-T and CLP-2 Evaluations)



ePact
Strengthening evaluation effectiveness and impact

Longitudinal Monitoring and Independent Impact Assessment of CLP-2

Final Evaluation Report – Volume II: Technical Companion and Methodological Annexes

Paul Jasper, Denis Nikitin, Stephanie Brockerhoff, Ferdous Jahan, Michele Binci, Alastair Haynes, Martina Garcia, Alexandra Doyle, Elisabeth Resch, and Tahera Ahsan

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Impact Evaluation of Education Quality Improvement Programme in Tanzania: Midline Technical Report, Volume II

EQUIP-Tanzania Impact Evaluation

Midline Technical Report, Volume II

Methods and Supplementary Evidence

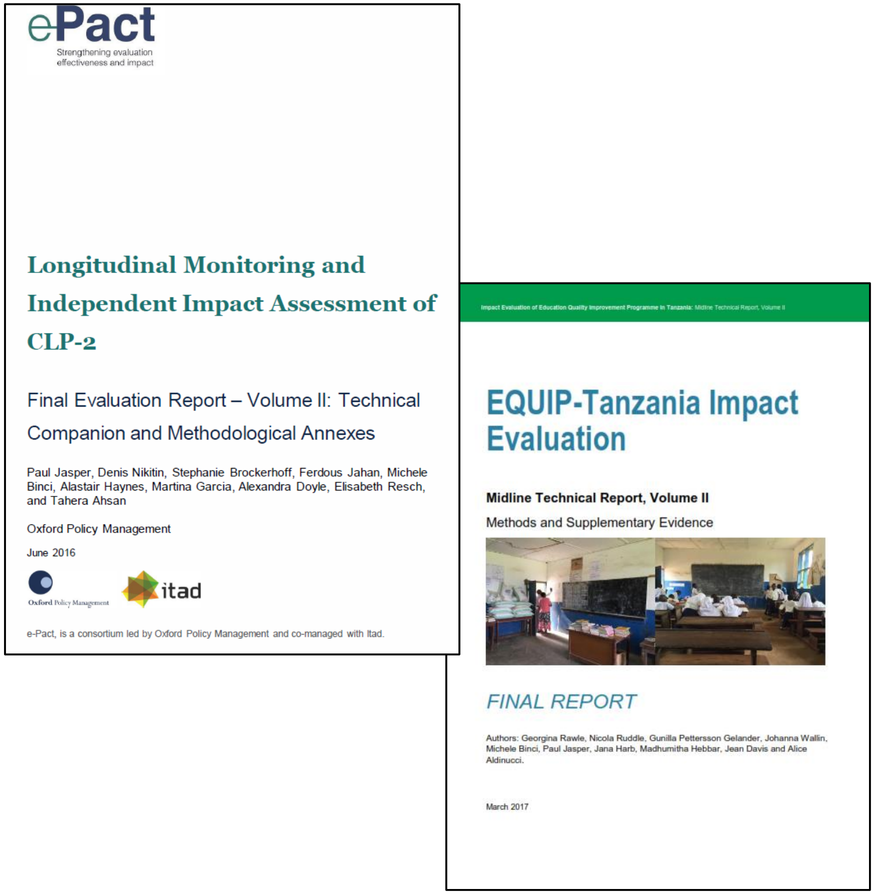
FINAL REPORT

Authors: Georgina Rawle, Nicola Ruddle, Gunilla Pettersson Gelander, Johanna Wallin, Michele Binci, Paul Jasper, Jana Harb, Madhumitha Hebbar, Jean Davis and Alice Aldinucci.

March 2017

Preventing model misspecification: example of PSM

- PSM requires including the right set of covariates in the first-stage PS estimation
  - "Right set" means all covariates relevant to control for selection bias (i.e. related to treatment and outcome)
  - These can be non-linear transformations (polynomials, interactions) of basic covariates
  - Survey data often gives the possibility of controlling for 100+ covariates – together with transformations, this gives a very large set of potential covariates (large P).
- The approach we are testing (inspired by double ML literature):
  - Step 1: run algorithmic selection (stepwise regressions, LASSO) on both treatment and outcome, using basic covariates.
  - Step 2: repeat including transformations.
  - Step 3: predict PS using the union of selected variables.
  - Step 4: perform matching and balancing tests using different matching approaches



ePact
Strengthening evaluation effectiveness and impact

Longitudinal Monitoring and Independent Impact Assessment of CLP-2

Final Evaluation Report – Volume II: Technical Companion and Methodological Annexes

Paul Jasper, Denis Nikitin, Stephanie Brockerhoff, Ferdous Jahan, Michele Binci, Alastair Haynes, Martina Garcia, Alexandra Doyle, Elisabeth Resch, and Tahera Ahsan

Oxford Policy Management

June 2016

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Impact Evaluation of Education Quality Improvement Programme in Tanzania: Midline Technical Report, Volume II

EQUIP-Tanzania Impact Evaluation

Midline Technical Report, Volume II

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March 2017

Conclusion: three main points

- Statistical/machine learning is here to stay - ‘classical’ econometric approaches will be mixed with computational methods more frequently for inference purposes.

- Much of this still sits in academic departments but slowly feeding into mainstream applied work.

- Some promising areas:
  - Predicting counterfactuals
  - IVs
  - In the context of RCTs: identifying heterogeneous treatment effects using principled data mining.
  - **Quasi-experimental and observational inference: preventing model misspecification.**

BRACE YOURSELF
MACHINE LEARNING IS COMING
memegenerator.net

Source: https://memegenerator.net/instance/51894319

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Thank you

Breakout session 9. Advances in qualitative data analysis - Humans and machines learning together

Presenter:
Mr Stuart Shulman, Founder and CEO, Texifter LLC

Advances in Qualitative Data Analysis: Humans and Machines Learning Together

Prepared for the International Conference on ICT for Evaluation
hosted by
The Independent Office of Evaluation of the
International Fund for Agricultural Development (IFAD)

IFAD
Investing in rural people

Dr. Stuart Shulman
Founder & CEO
Texifter

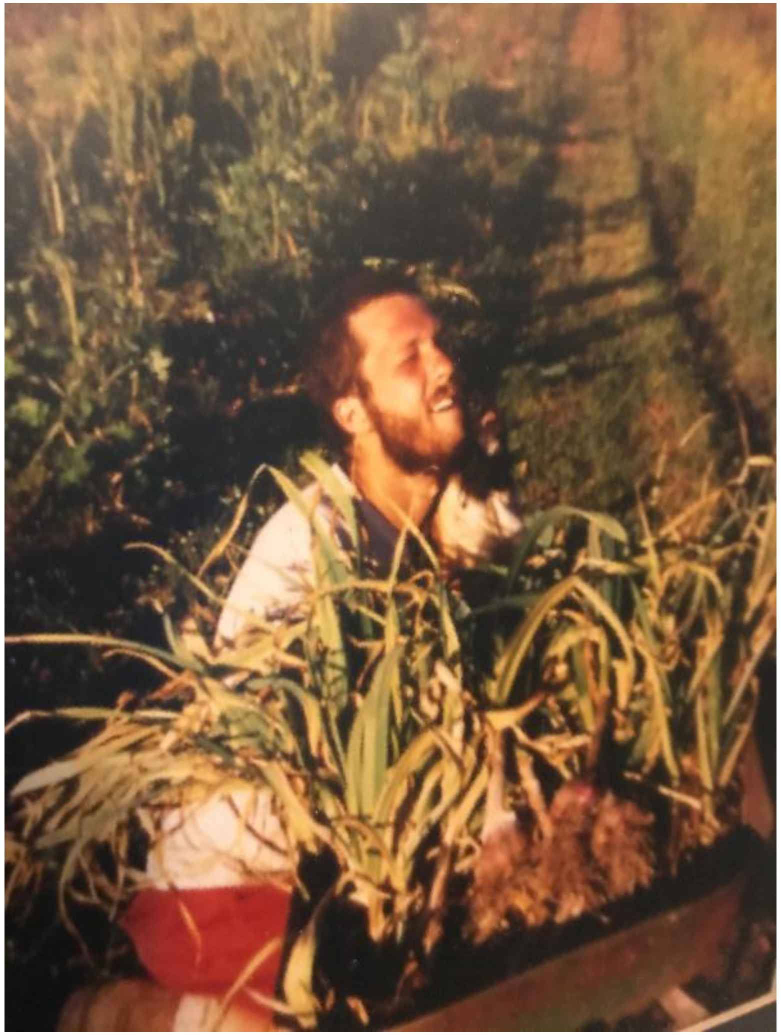
Outline of Presentation

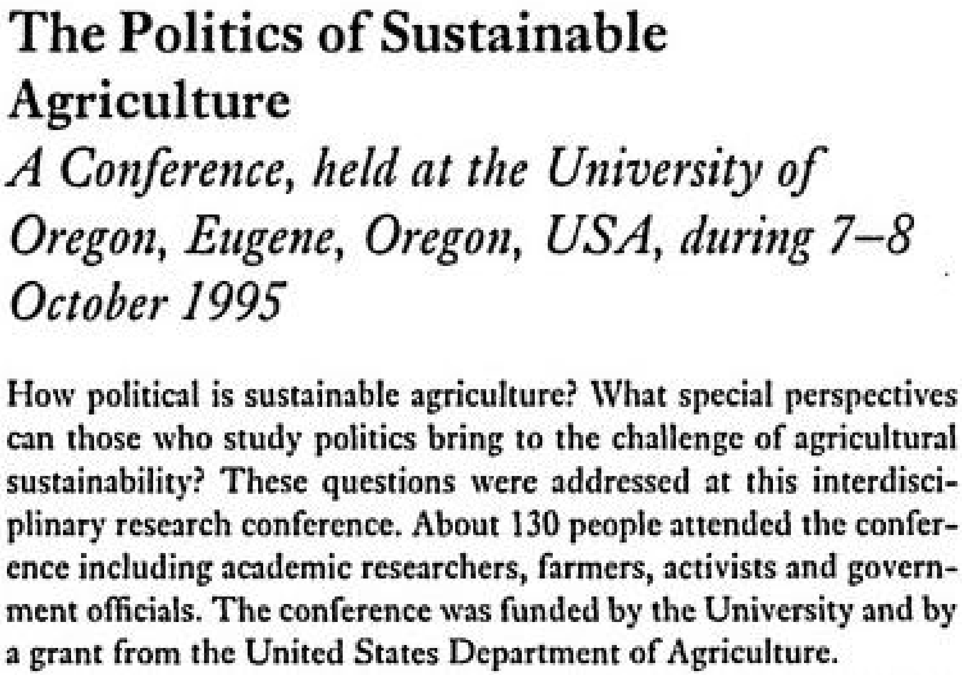
1. Background: My Roots
2. Qualitative Methods
3. Computer Assisted Qualitative Data Analysis Software
4. Collaboration & Measurement
5. Human & Machine Learning
6. Questions & Answers

Part One

BACKGROUND: MY ROOTS

Early 1990s: My Sustainable Agriculture Roots



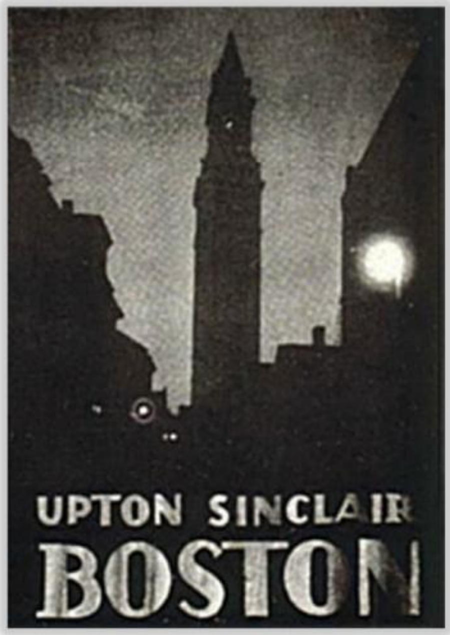


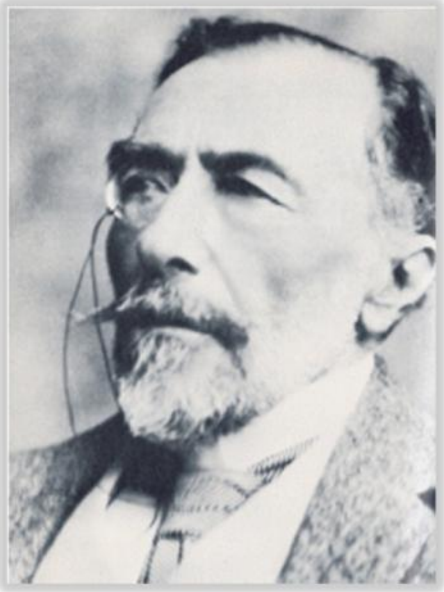
The Politics of Sustainable Agriculture

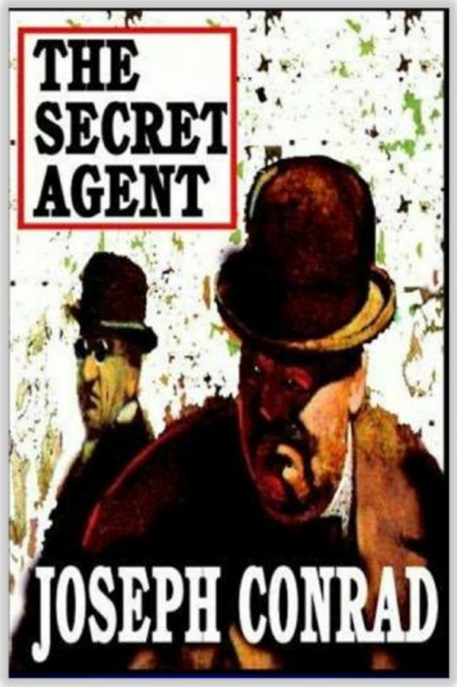
A Conference, held at the University of Oregon, Eugene, Oregon, USA, during 7–8 October 1995

How political is sustainable agriculture? What special perspectives can those who study politics bring to the challenge of agricultural sustainability? These questions were addressed at this interdisciplinary research conference. About 130 people attended the conference including academic researchers, farmers, activists and government officials. The conference was funded by the University and by a grant from the United States Department of Agriculture.

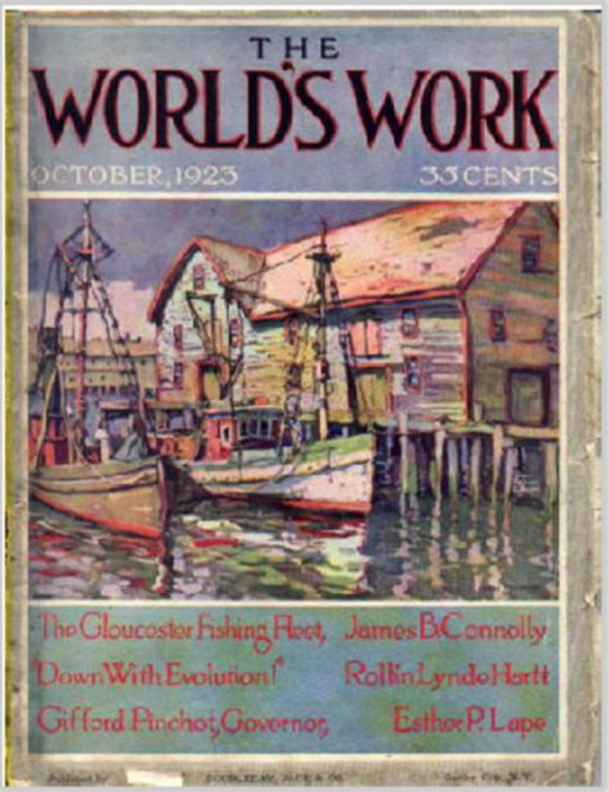
Emergent properties found in very well read texts, such as the character type “extremist agent of the law”


UPTON SINCLAIR
BOSTON



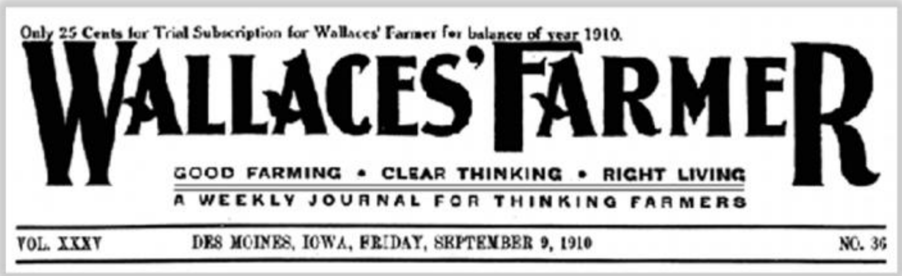

THE SECRET AGENT
JOSEPH CONRAD

Agenda-setting in the press



THE
WORLD'S WORK
OCTOBER, 1923
35 CENTS

The Gloucester Fishing Fleet, James B. Connolly
"Down With Evolution!" Rollin Lynde Hartt
Gifford Pinchot, Governor, Esther P. Lape

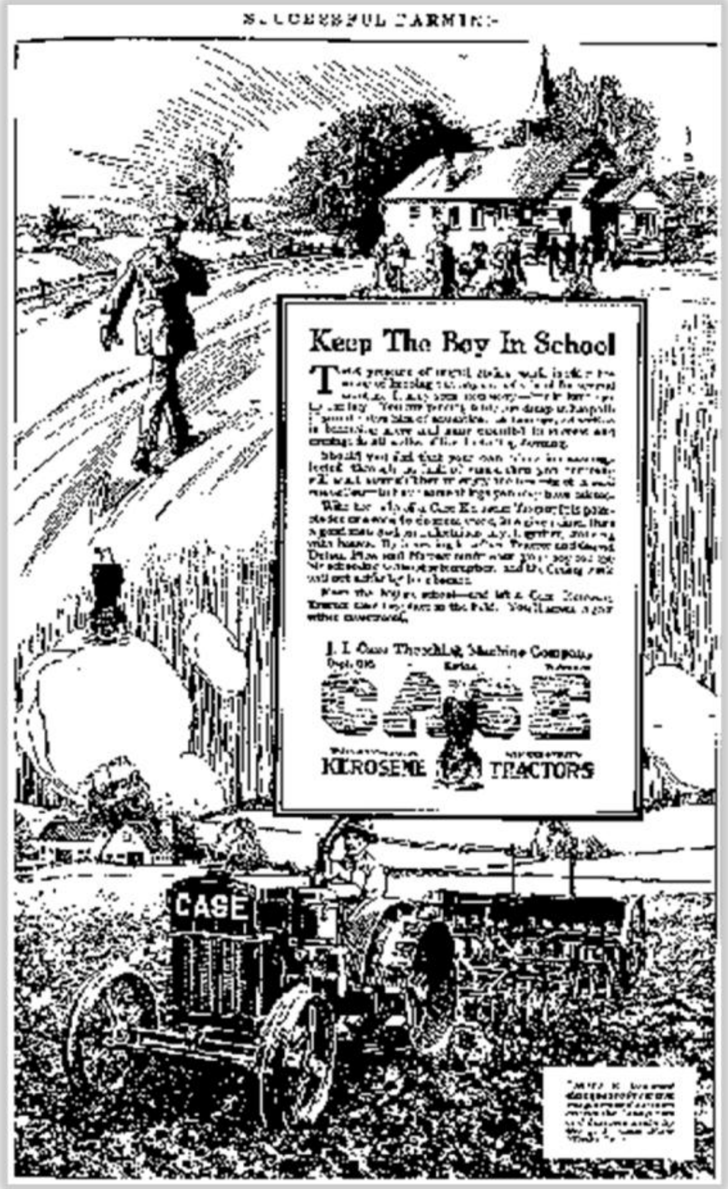


Only 25 Cents for Trial Subscription for Wallaces' Farmer for balance of year 1910.

WALLACES' FARMER

GOOD FARMING • CLEAR THINKING • RIGHT LIVING
A WEEKLY JOURNAL FOR THINKING FARMERS

VOL. XXXV DES MOINES, IOWA, FRIDAY, SEPTEMBER 9, 1910 NO. 36



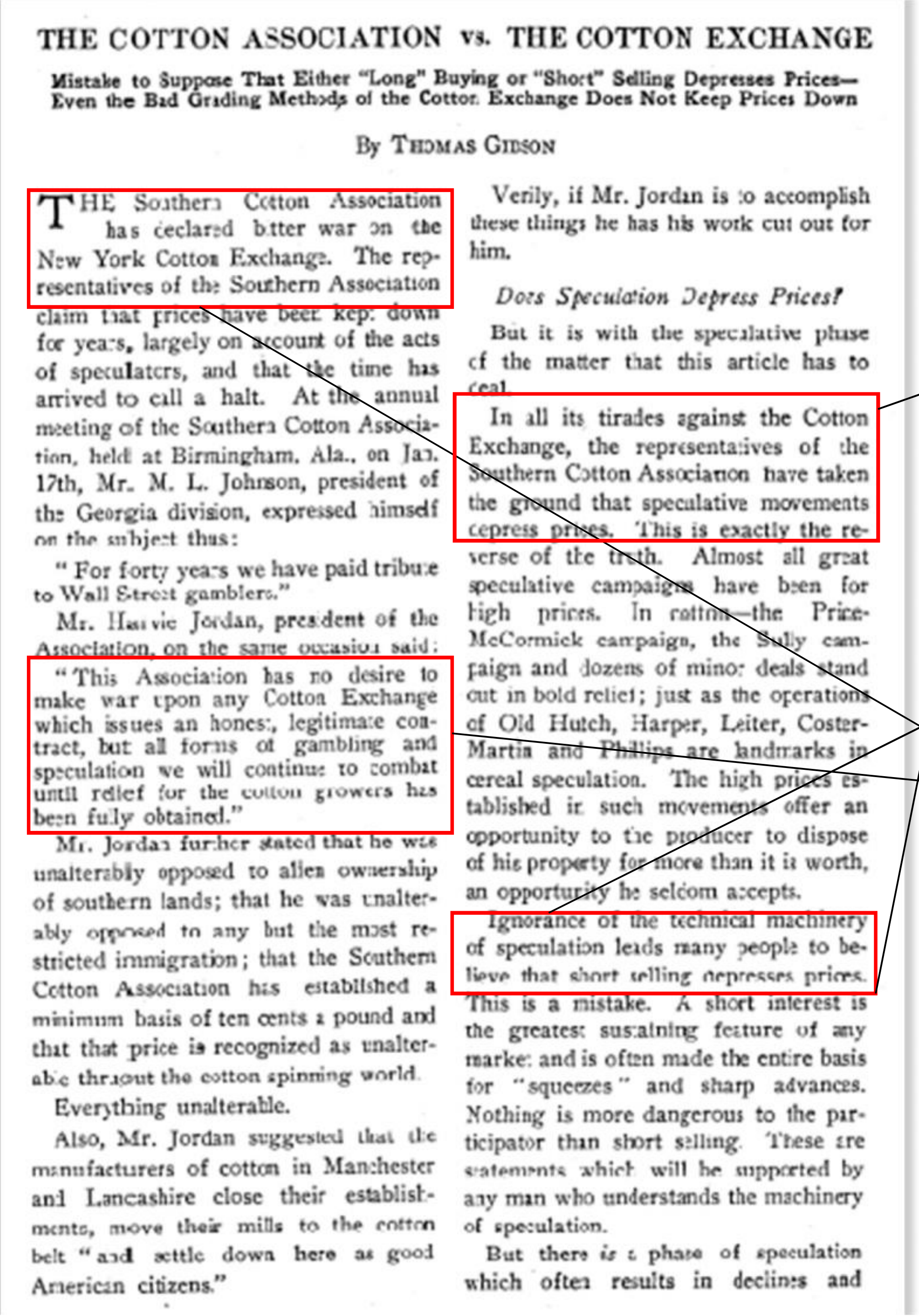
SUCCESSFUL FARMING

Keep The Boy In School

J. I. Case Threshing Machine Company

CASE

KEROSENE TRACTORS



THE COTTON ASSOCIATION vs. THE COTTON EXCHANGE

Mistake to Suppose That Either "Long" Buying or "Short" Selling Depresses Prices—Even the Bad Grading Methods of the Cotton Exchange Does Not Keep Prices Down

By Thomas Gibson

THE Southern Cotton Association has declared bitter war on the New York Cotton Exchange. The representatives of the Southern Association claim that prices have been kept down for years, largely on account of the acts of speculators, and that the time has arrived to call a halt. At the annual meeting of the Southern Cotton Association, held at Birmingham, Ala., on Jan. 17th, Mr. M. L. Johnson, president of the Georgia division, expressed himself on the subject thus:

" For forty years we have paid tribute to Wall Street gamblers."

Mr. Harvie Jordan, president of the Association, on the same occasion said:

"This Association has no desire to make war upon any Cotton Exchange which issues an honest, legitimate contract, but all forms of gambling and speculation we will continue to combat until relief for the cotton growers has been fully obtained."

Mr. Jordan further stated that he was unalterably opposed to alien ownership of southern lands; that he was unalterably opposed to any but the most restricted immigration; that the Southern Cotton Association has established a minimum basis of ten cents a pound and that that price is recognized as unalterable thruout the cotton spinning world.

Everything unalterable.

Also, Mr. Jordan suggested that the manufacturers of cotton in Manchester and Lancashire close their establishments, move their mills to the cotton belt "and settle down here as good American citizens."

Verily, if Mr. Jordan is to accomplish these things he has his work cut out for him.

Does Speculation Depress Prices?

But it is with the speculative phase of the matter that this article has to deal.

In all its tirades against the Cotton Exchange, the representatives of the Southern Cotton Association have taken the ground that speculative movements depress prices. This is exactly the reverse of the truth. Almost all great speculative campaigns have been for high prices. In cotton—the Price-McCormick campaign, the Sully campaign and dozens of minor deals stand out in bold relief; just as the operations of Old Hutch, Harper, Leiter, Coster-Martin and Phillips are landmarks in cereal speculation. The high prices established in such movements offer an opportunity to the producer to dispose of his property for more than it is worth, an opportunity he seldom accepts.

Ignorance of the technical machinery of speculation leads many people to believe that short selling depresses prices. This is a mistake. A short interest is the greatest sustaining feature of any market and is often made the entire basis for "squeezes" and sharp advances. Nothing is more dangerous to the participator than short selling. These are statements which will be supported by any man who understands the machinery of speculation.

But there *is* a phase of speculation which often results in declines and

Rates and Terms for Credit

Farm Profitability

Cost of Living

Soil Fertility

Education

Relations between Classes

Exploration
Speculation
Coding
Validation

Circa 1999

National Organic Program

USDA ORGANIC

N·U·D I·S·T

USDA ORGANIC

National Science Foundation

WHERE DISCOVERIES BEGIN

science

eRulemaking

< Research Group >

May 2001
Council for Excellence in Government

June 2002
National Defense University

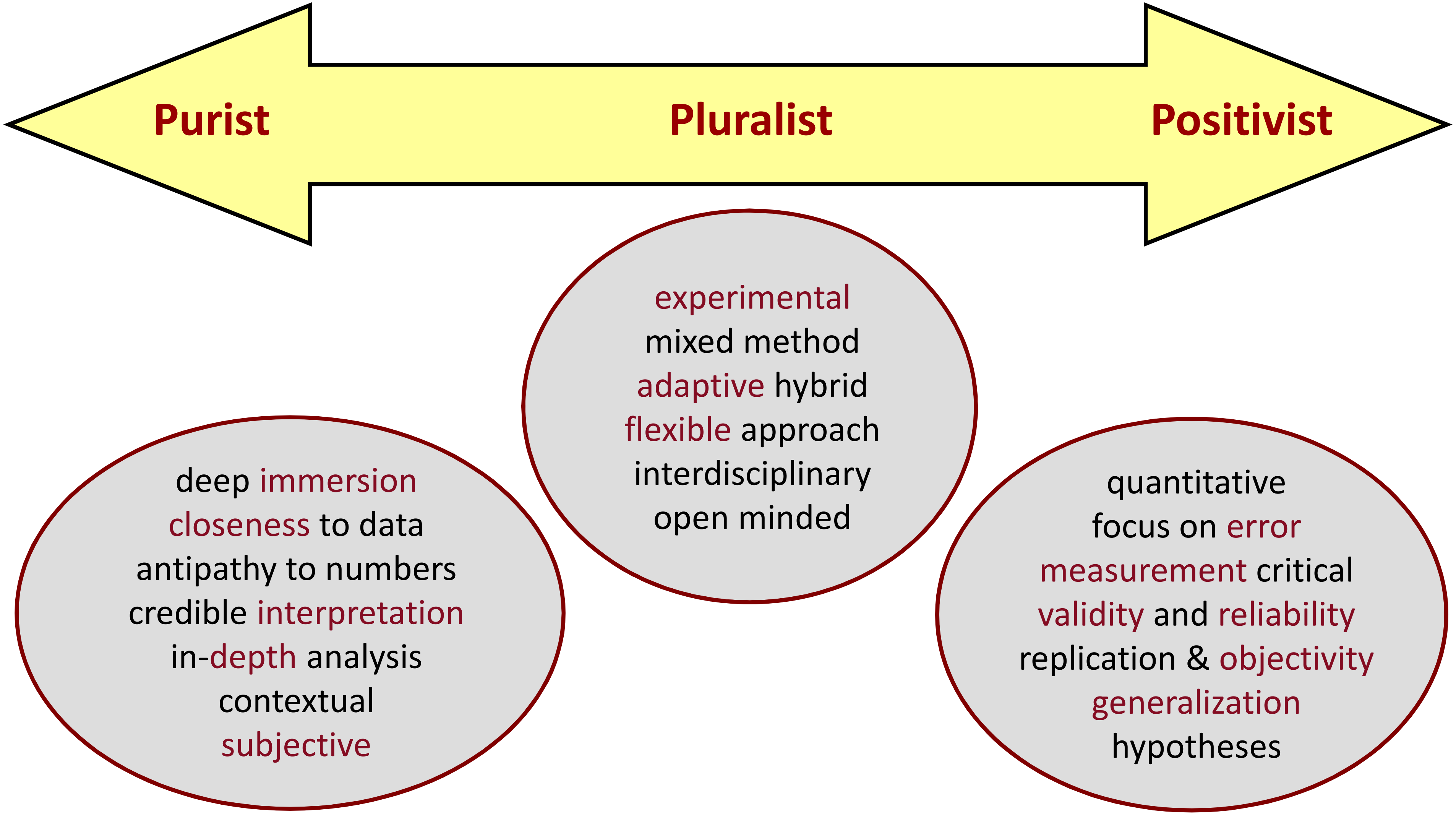
Part Two

QUALITATIVE METHODS

Qualitative Methods: Genes, Taste, or Tactic?

- **Qualitative by birth or choice?**
  - Some look to words as an alternative to number crunching
  - Others rooted in rich and meaningful interpretive traditions
- **Another group is fluent in both qual & quant**
  - Mixed methods open up rather than limits fields of knowledge
- **One central goal is valid inferences about phenomena**
  - Replicable and transparent methods
  - Attention to error and corrective measures
  - Internal and external validation of results
- **Using computers for qualitative data analysis helps, but…**
  - Rigor still originates with the research design, not the technology
  - Software makes better organization and efficiency possible
  - Coders enable the researcher to step back while scaling up

A Spectrum of Methods Approaches



Purist

Pluralist

Positivist

deep immersion
closeness to data
antipathy to numbers
credible interpretation
in-depth analysis
contextual
subjective

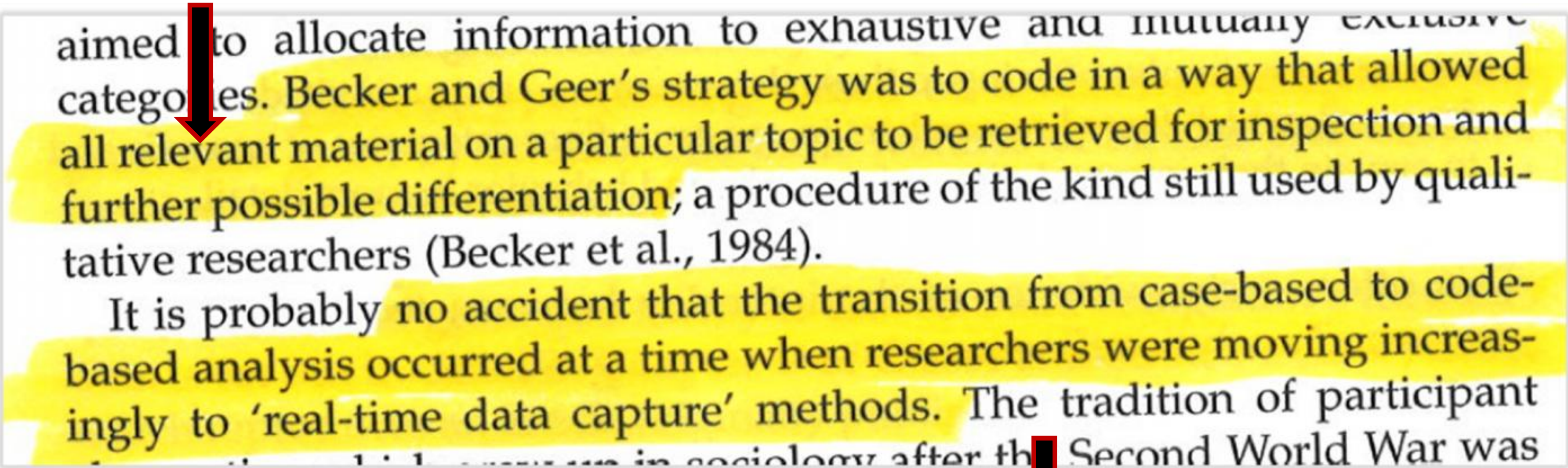
experimental
mixed method
adaptive hybrid
flexible approach
interdisciplinary
open minded

quantitative
focus on error
measurement critical
validity and reliability
replication & objectivity
generalization
hypotheses

Part Three

COMPUTER ASSISTED QUALITATIVE DATA ANALYSIS SOFTWARE

An Incredibly Important Book

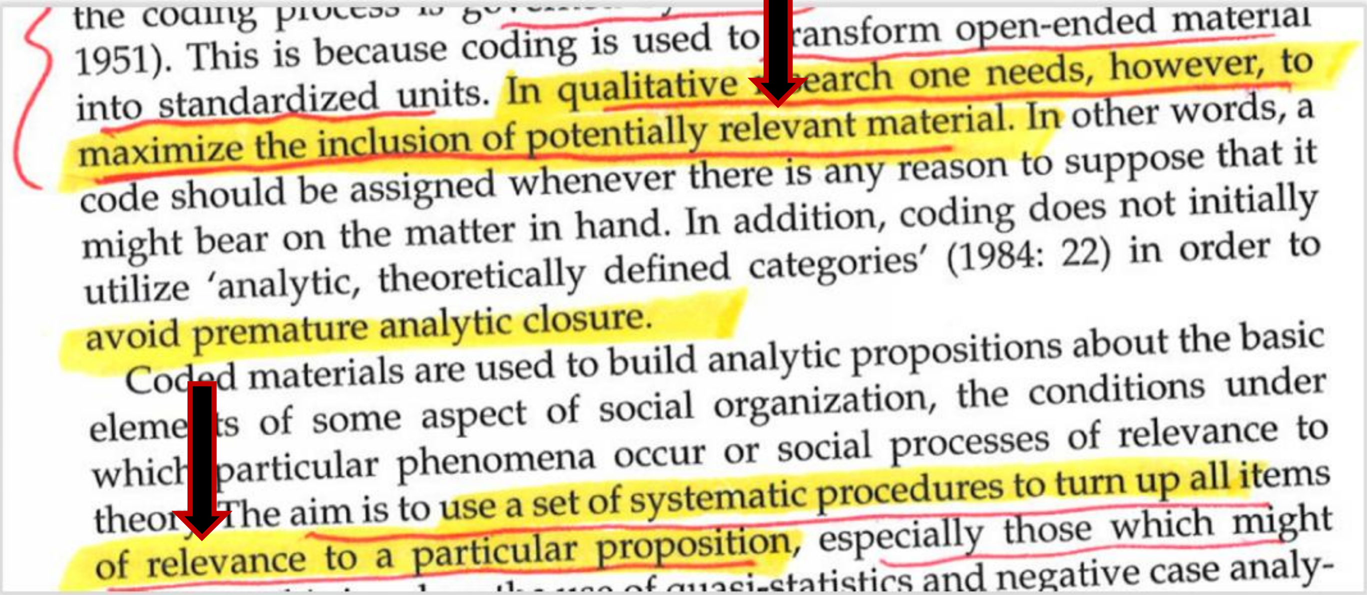


aimed to allocate information to exhaustive and mutually exclusive categories. Becker and Geer's strategy was to code in a way that allowed all relevant material on a particular topic to be retrieved for inspection and further possible differentiation; a procedure of the kind still used by qualitative researchers (Becker et al., 1984).

It is probably no accident that the transition from case-based to code-based analysis occurred at a time when researchers were moving increasingly to 'real-time data capture' methods. The tradition of participant ... in sociology after the Second World War was

Computer Analysis
and
Qualitative Research

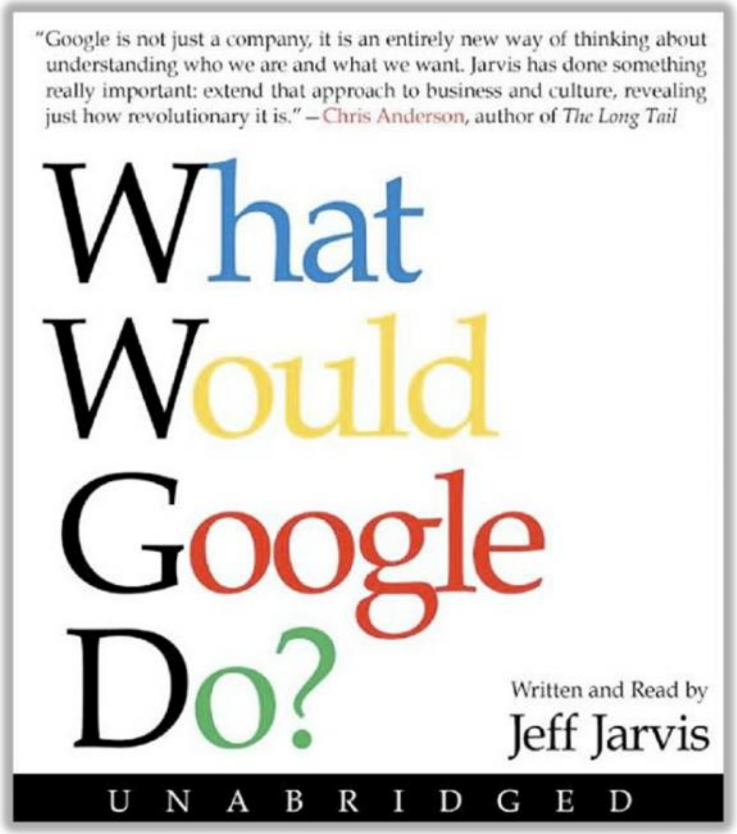
Nigel G. Fielding & Raymond M. Lee

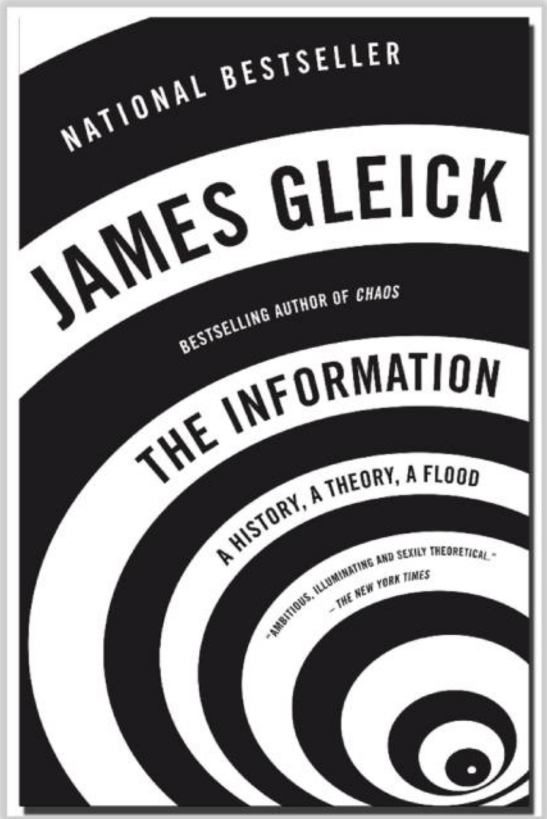


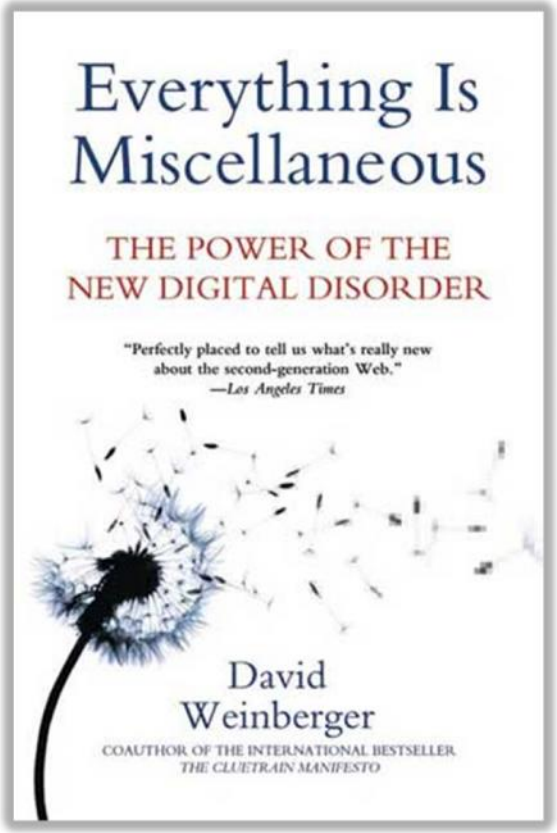
... 1951). This is because coding is used to transform open-ended material into standardized units. In qualitative research one needs, however, to maximize the inclusion of potentially relevant material. In other words, a code should be assigned whenever there is any reason to suppose that it might bear on the matter in hand. In addition, coding does not initially utilize 'analytic, theoretically defined categories' (1984: 22) in order to avoid premature analytic closure.

Coded materials are used to build analytic propositions about the basic elements of some aspect of social organization, the conditions under which particular phenomena occur or social processes of relevance to theory. The aim is to use a set of systematic procedures to turn up all items of relevance to a particular proposition, especially those which might ... the use of quasi-statistics and negative case analy-

Other Very Important Books


"Google is not just a company, it is an entirely new way of thinking about understanding who we are and what we want. Jarvis has done something really important: extend that approach to business and culture, revealing just how revolutionary it is." –Chris Anderson, author of The Long Tail
What Would Google Do?
Written and Read by
Jeff Jarvis
UNABRIDGED


NATIONAL BESTSELLER
JAMES GLEICK
BESTSELLING AUTHOR OF CHAOS
THE INFORMATION
A HISTORY, A THEORY, A FLOOD
"AMBITIOUS, ILLUMINATING AND SEXILY THEORETICAL."
–THE NEW YORK TIMES


Everything Is Miscellaneous
THE POWER OF THE NEW DIGITAL DISORDER
"Perfectly placed to tell us what's really new about the second-generation Web."
—Los Angeles Times
David Weinberger
COAUTHOR OF THE INTERNATIONAL BESTSELLER
THE CLUETRAIN MANIFESTO

Traditional Off-the-Shelf CAQDAS

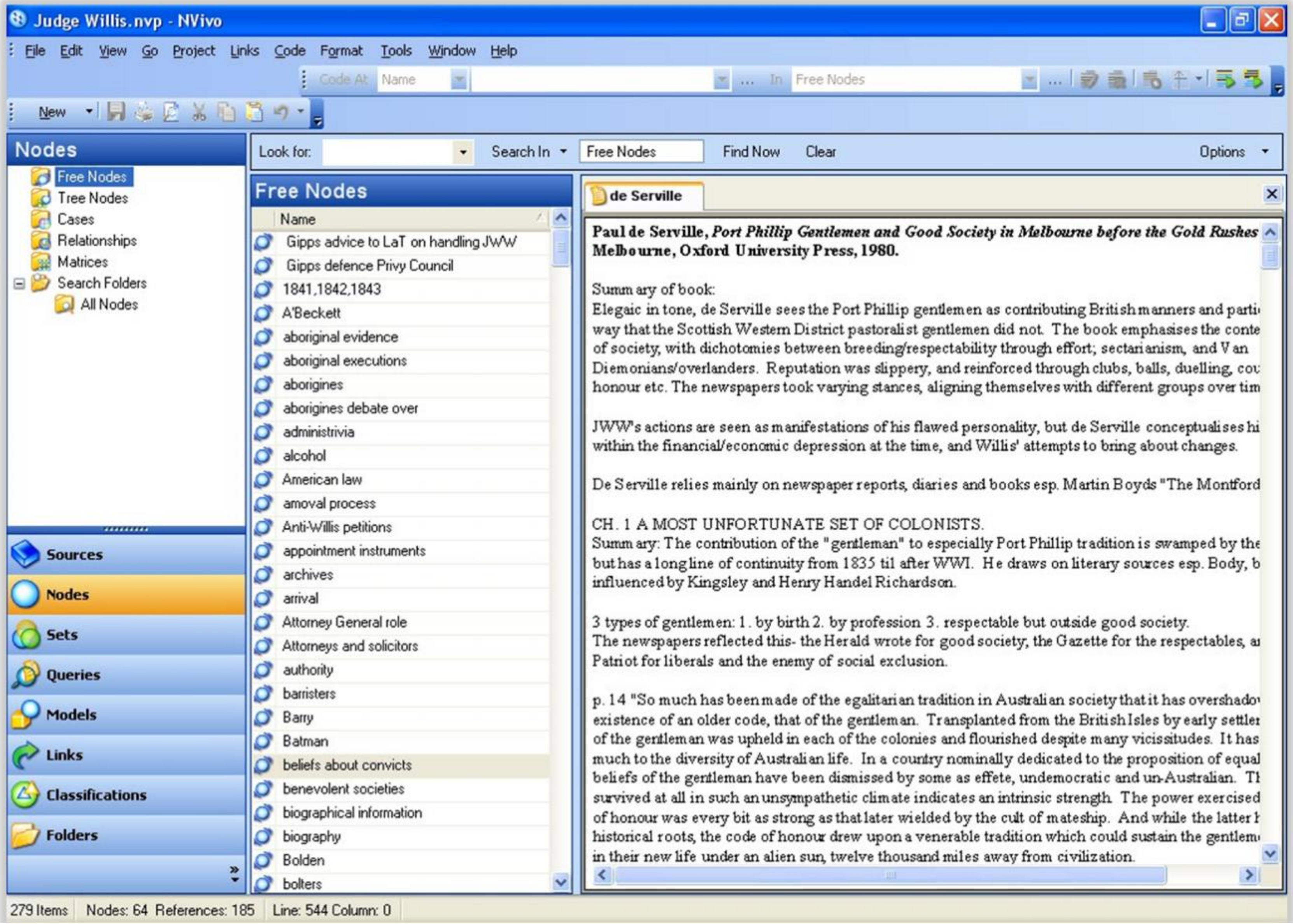
NVIVO

MAXQDA
The Art of Data Analysis

atlas.ti

dedoose
Great Research Made Easy

Nvivo


Judge Willis.nvp - NVivo
File Edit View Go Project Links Code Format Tools Window Help
Code At Name
In Free Nodes
New
Nodes
Free Nodes
Tree Nodes
Cases
Relationships
Matrices
Search Folders
All Nodes
Sources
Nodes
Sets
Queries
Models
Links
Classifications
Folders
Look for:
Search In
Free Nodes
Find Now
Clear
Options
Free Nodes
Name
de Serville
279 Items
Nodes: 64 References: 185
Line: 544 Column: 0

- Gipps advice to LaT on handling JWW
- Gipps defence Privy Council
- 1841,1842,1843
- A'Beckett
- aboriginal evidence
- aboriginal executions
- aborigines
- aborigines debate over
- administrivia
- alcohol
- American law
- amoval process
- Anti-Willis petitions
- appointment instruments
- archives
- arrival
- Attorney General role
- Attorneys and solicitors
- authority
- barristers
- Barry
- Batman
- beliefs about convicts
- benevolent societies
- biographical information
- biography
- Bolden
- bolters

Paul de Serville, *Port Phillip Gentlemen and Good Society in Melbourne before the Gold Rushes*
Melbourne, Oxford University Press, 1980.

Summary of book:
Elegaic in tone, de Serville sees the Port Phillip gentlemen as contributing British manners and parti
way that the Scottish Western District pastoralist gentlemen did not. The book emphasises the conte
of society, with dichotomies between breeding/respectability through effort; sectarianism, and Van
Diemonians/overlanders. Reputation was slippery, and reinforced through clubs, balls, duelling, cou
honour etc. The newspapers took varying stances, aligning themselves with different groups over tim

JWW's actions are seen as manifestations of his flawed personality, but de Serville conceptualises hi
within the financial/economic depression at the time, and Willis' attempts to bring about changes.

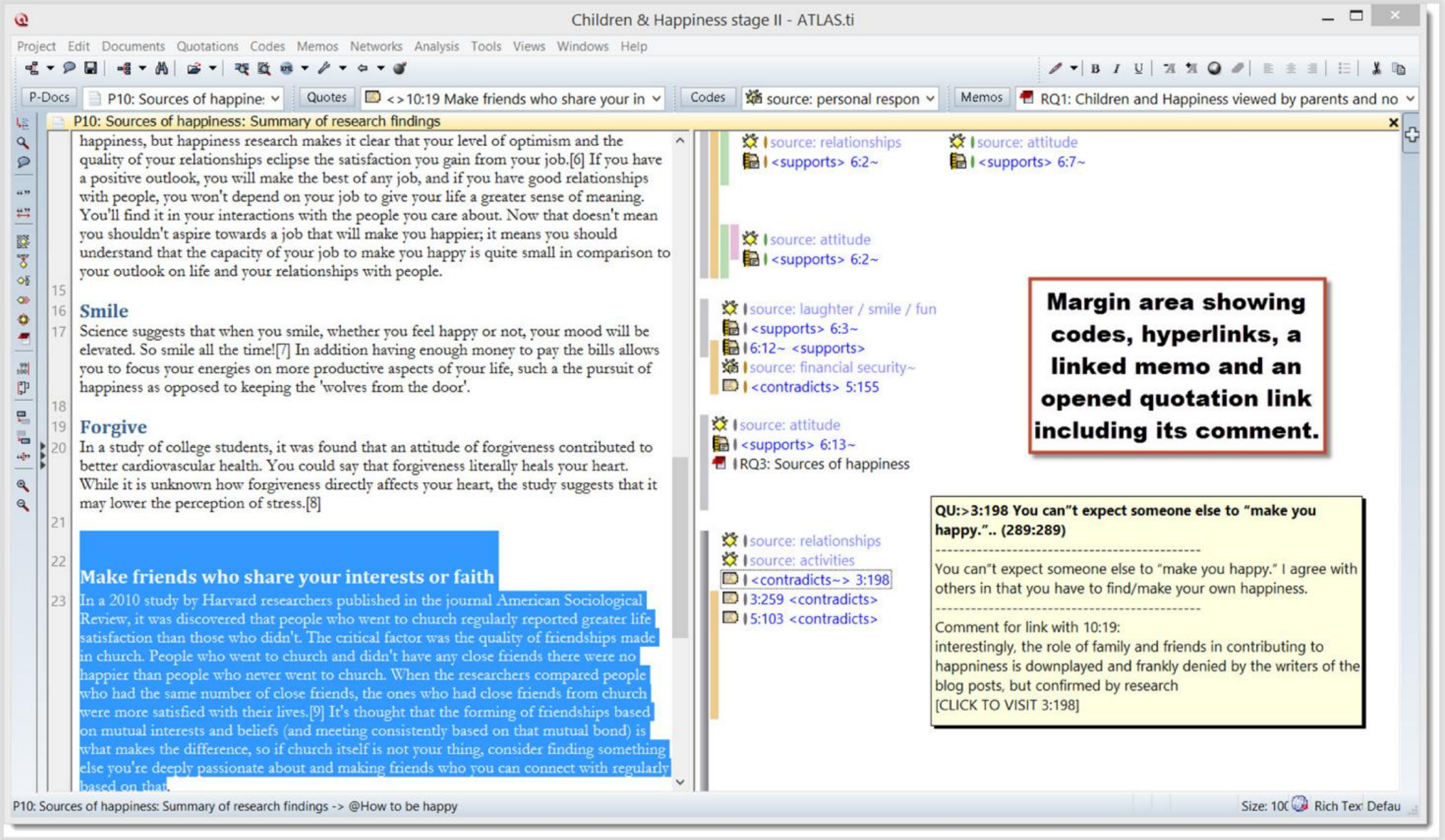
De Serville relies mainly on newspaper reports, diaries and books esp. Martin Boyds "The Montford

CH. 1 A MOST UNFORTUNATE SET OF COLONISTS.
Summary: The contribution of the "gentleman" to especially Port Phillip tradition is swamped by the
but has a long line of continuity from 1835 til after WWI. He draws on literary sources esp. Body, b
influenced by Kingsley and Henry Handel Richardson.

3 types of gentlemen: 1. by birth 2. by profession 3. respectable but outside good society.
The newspapers reflected this- the Herald wrote for good society, the Gazette for the respectables, a
Patriot for liberals and the enemy of social exclusion.

p. 14 "So much has been made of the egalitarian tradition in Australian society that it has overshado
existence of an older code, that of the gentleman. Transplanted from the British Isles by early settle
of the gentleman was upheld in each of the colonies and flourished despite many vicissitudes. It has
much to the diversity of Australian life. In a country nominally dedicated to the proposition of equal
beliefs of the gentleman have been dismissed by some as effete, undemocratic and un-Australian. T
survived at all in such an unsympathetic climate indicates an intrinsic strength. The power exercised
of honour was every bit as strong as that later wielded by the cult of mateship. And while the latter
historical roots, the code of honour drew upon a venerable tradition which could sustain the gentlem
in their new life under an alien sun, twelve thousand miles away from civilization.

Atlas


Children & Happiness stage II - ATLAS.ti
Project
Edit
Documents
Quotations
Codes
Memos
Networks
Analysis
Tools
Views
Windows
Help
P-Docs
P10: Sources of happine:
Quotes
<>10:19 Make friends who share your in
Codes
source: personal respon
Memos
RQ1: Children and Happiness viewed by parents and no
source: relationships
<supports> 6:2~
source: attitude
<supports> 6:7~
source: attitude
<supports> 6:2~
source: laughter / smile / fun
<supports> 6:3~
6:12~ <supports>
source: financial security~
<contradicts> 5:155
source: attitude
<supports> 6:13~
RQ3: Sources of happiness
source: relationships
source: activities
<contradicts~> 3:198
3:259 <contradicts>
5:103 <contradicts>
Size: 10(
Rich Tex
Defau

P10: Sources of happiness: Summary of research findings

happiness, but happiness research makes it clear that your level of optimism and the quality of your relationships eclipse the satisfaction you gain from your job.[6] If you have a positive outlook, you will make the best of any job, and if you have good relationships with people, you won't depend on your job to give your life a greater sense of meaning. You'll find it in your interactions with the people you care about. Now that doesn't mean you shouldn't aspire towards a job that will make you happier; it means you should understand that the capacity of your job to make you happy is quite small in comparison to your outlook on life and your relationships with people.

15

16 **Smile**

17 Science suggests that when you smile, whether you feel happy or not, your mood will be elevated. So smile all the time![7] In addition having enough money to pay the bills allows you to focus your energies on more productive aspects of your life, such a the pursuit of happiness as opposed to keeping the 'wolves from the door'.

18

19 **Forgive**

20 In a study of college students, it was found that an attitude of forgiveness contributed to better cardiovascular health. You could say that forgiveness literally heals your heart. While it is unknown how forgiveness directly affects your heart, the study suggests that it may lower the perception of stress.[8]

21

22 **Make friends who share your interests or faith**

23 In a 2010 study by Harvard researchers published in the journal American Sociological Review, it was discovered that people who went to church regularly reported greater life satisfaction than those who didn't. The critical factor was the quality of friendships made in church. People who went to church and didn't have any close friends there were no happier than people who never went to church. When the researchers compared people who had the same number of close friends, the ones who had close friends from church were more satisfied with their lives.[9] It's thought that the forming of friendships based on mutual interests and beliefs (and meeting consistently based on that mutual bond) is what makes the difference, so if church itself is not your thing, consider finding something else you're deeply passionate about and making friends who you can connect with regularly based on that.

Margin area showing codes, hyperlinks, a linked memo and an opened quotation link including its comment.

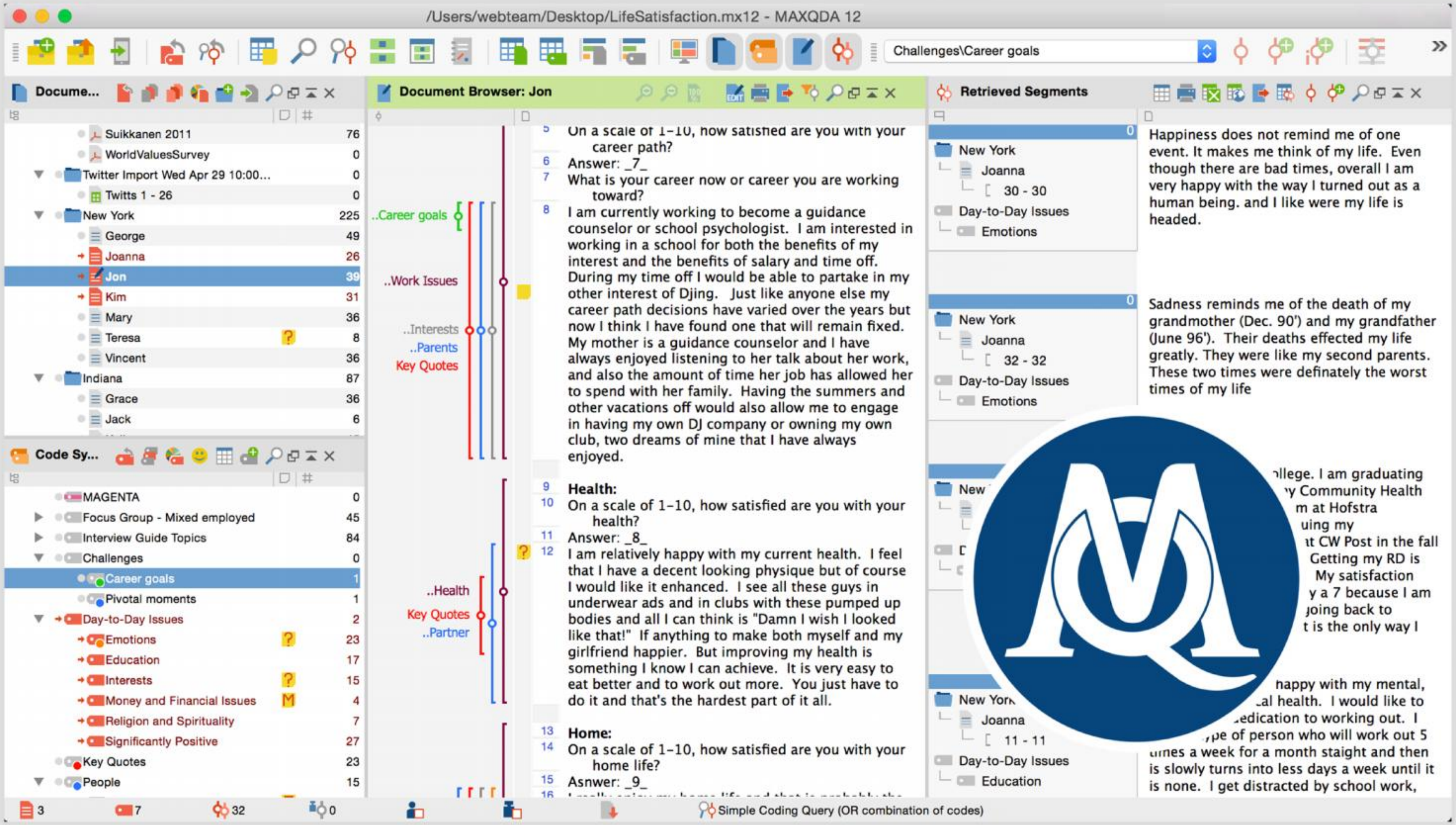
QU:>3:198 You can"t expect someone else to "make you happy.".. (289:289)

You can"t expect someone else to "make you happy." I agree with others in that you have to find/make your own happiness.

Comment for link with 10:19:
interestingly, the role of family and friends in contributing to happniness is downplayed and frankly denied by the writers of the blog posts, but confirmed by research
[CLICK TO VISIT 3:198]

P10: Sources of happiness: Summary of research findings -> @How to be happy

MaxQDA


/Users/webteam/Desktop/LifeSatisfaction.mx12 - MAXQDA 12
Challenges\Career goals
Docume...
Document Browser: Jon
Retrieved Segments
Suikkanen 2011 76
WorldValuesSurvey 0
Twitter Import Wed Apr 29 10:00... 0
Twitts 1 - 26 0
New York 225
George 49
Joanna 26
Jon 39
Kim 31
Mary 36
Teresa 8
Vincent 36
Indiana 87
Grace 36
Jack 6
Code Sy...
MAGENTA 0
Focus Group - Mixed employed 45
Interview Guide Topics 84
Challenges 0
Career goals 1
Pivotal moments 1
Day-to-Day Issues 2
Emotions 23
Education 17
Interests 15
Money and Financial Issues 4
Religion and Spirituality 7
Significantly Positive 27
Key Quotes 23
People 15
..Career goals
..Work Issues
..Interests
..Parents
Key Quotes
..Health
Key Quotes
..Partner
New York
Joanna
30 - 30
Day-to-Day Issues
Emotions
New York
Joanna
32 - 32
Day-to-Day Issues
Emotions
New York
Joanna
11 - 11
Day-to-Day Issues
Education
3
7
32
0
Simple Coding Query (OR combination of codes)

5 On a scale of 1–10, how satisfied are you with your career path?

6 Answer: _7_

7 What is your career now or career you are working toward?

8 I am currently working to become a guidance counselor or school psychologist. I am interested in working in a school for both the benefits of my interest and the benefits of salary and time off. During my time off I would be able to partake in my other interest of Djing. Just like anyone else my career path decisions have varied over the years but now I think I have found one that will remain fixed. My mother is a guidance counselor and I have always enjoyed listening to her talk about her work, and also the amount of time her job has allowed her to spend with her family. Having the summers and other vacations off would also allow me to engage in having my own DJ company or owning my own club, two dreams of mine that I have always enjoyed.

9 **Health:**

10 On a scale of 1–10, how satisfied are you with your health?

11 Answer: _8_

12 I am relatively happy with my current health. I feel that I have a decent looking physique but of course I would like it enhanced. I see all these guys in underwear ads and in clubs with these pumped up bodies and all I can think is "Damn I wish I looked like that!" If anything to make both myself and my girlfriend happier. But improving my health is something I know I can achieve. It is very easy to eat better and to work out more. You just have to do it and that's the hardest part of it all.

13 **Home:**

14 On a scale of 1–10, how satisfied are you with your home life?

15 Asnwer: _9_

Happiness does not remind me of one event. It makes me think of my life. Even though there are bad times, overall I am very happy with the way I turned out as a human being. and I like were my life is headed.

Sadness reminds me of the death of my grandmother (Dec. 90') and my grandfather (June 96'). Their deaths effected my life greatly. They were like my second parents. These two times were definately the worst times of my life

ollege. I am graduating y Community Health m at Hofstra uing my it CW Post in the fall Getting my RD is My satisfaction y a 7 because I am going back to t is the only way I

happy with my mental, al health. I would like to edication to working out. I pe of person who will work out 5 times a week for a month staight and then is slowly turns into less days a week until it is none. I get distracted by school work,

Text Analytics Packages

QDA MINER

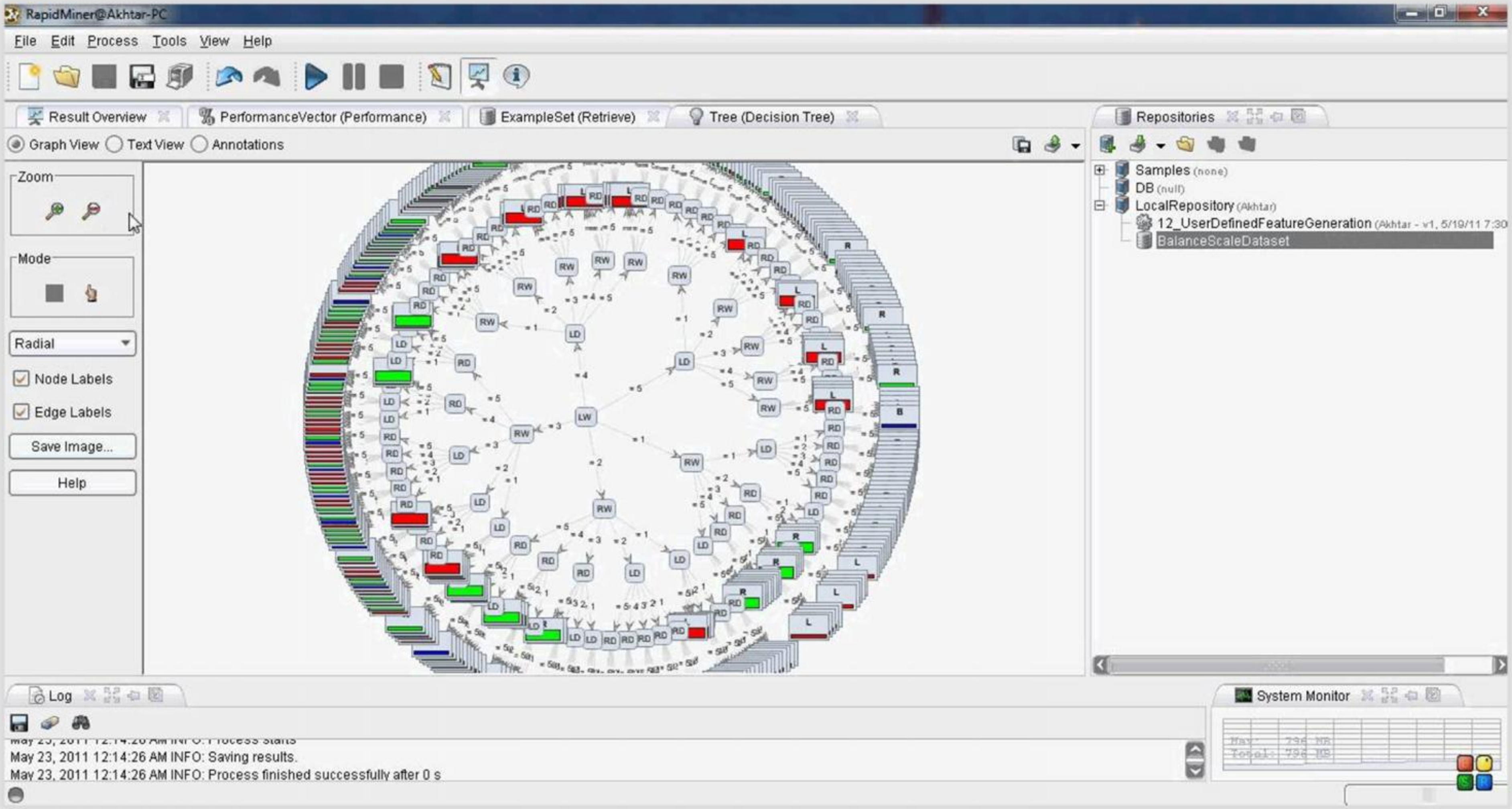
rapidminer

discovertext

CLARABRIDGE

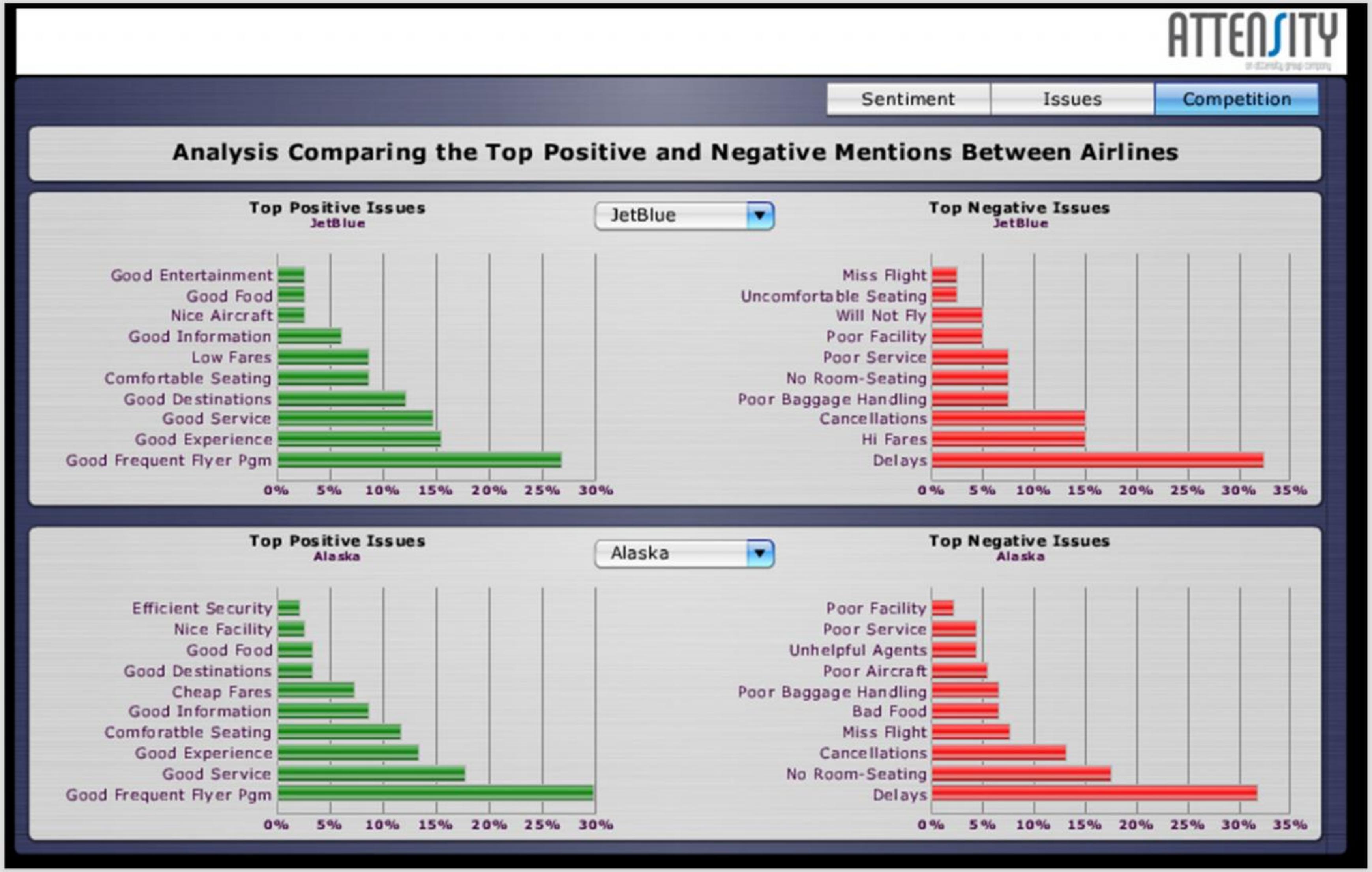
ATTENSITY

RapidMiner


RapidMiner@Akhtar-PC
File Edit Process Tools View Help
Result Overview
PerformanceVector (Performance)
ExampleSet (Retrieve)
Tree (Decision Tree)
Repositories
Graph View
Text View
Annotations
Zoom
Mode
Radial
Node Labels
Edge Labels
Save Image...
Help
Samples (none)
DB (null)
LocalRepository (Akhtar)
12_UserDefinedFeatureGeneration (Akhtar - v1, 5/19/11 7:30
BalanceScaleDataset
Log
System Monitor

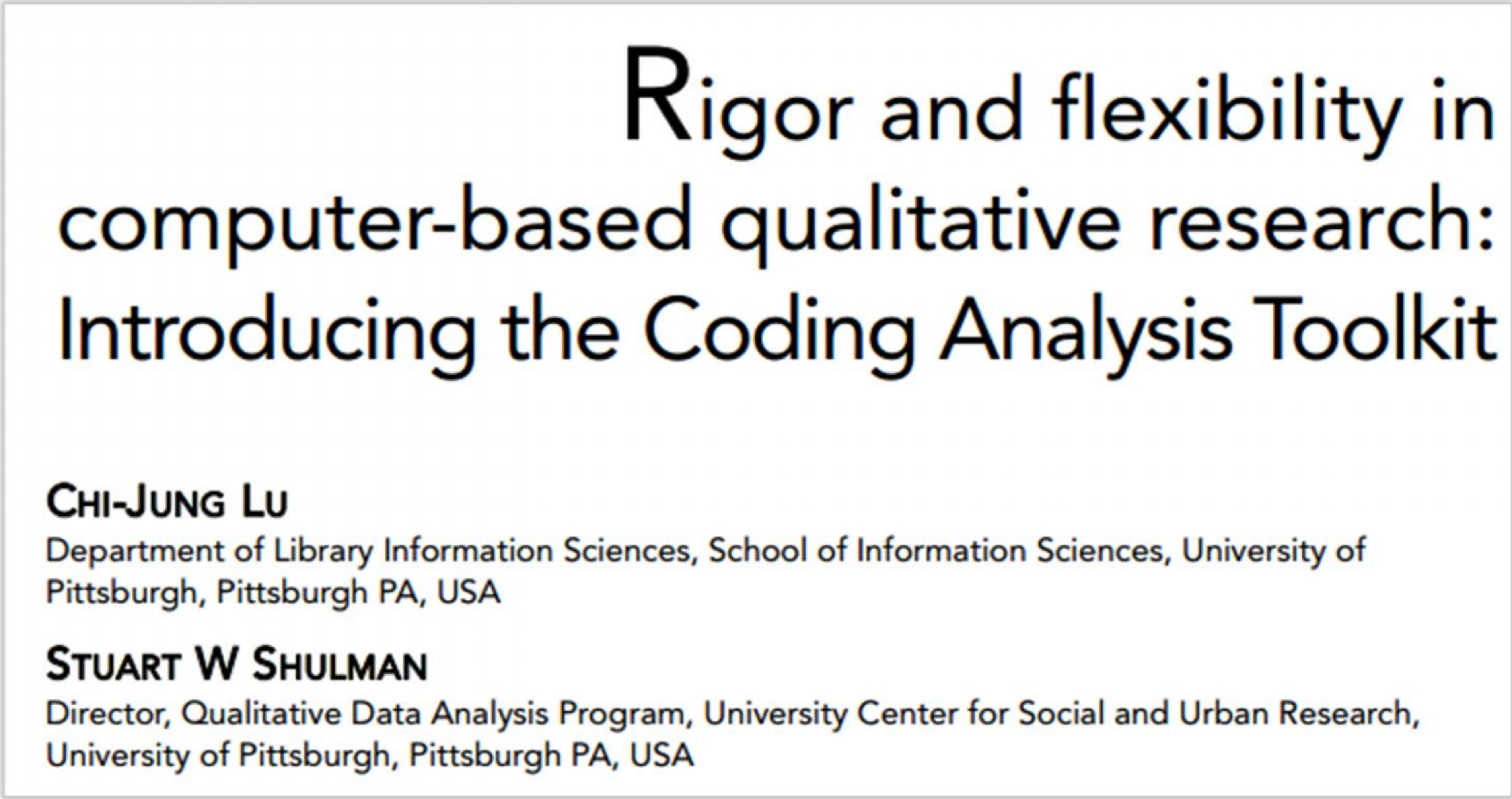
```
May 23, 2011 12:14:26 AM INFO: Saving results.
May 23, 2011 12:14:26 AM INFO: Process finished successfully after 0 s
```

Attensity



Analysis Comparing the Top Positive and Negative Mentions Between Airlines

ATTENSITY
Sentiment
Issues
Competition
Top Positive Issues
JetBlue
JetBlue
Top Negative Issues
JetBlue
Good Entertainment
Good Food
Nice Aircraft
Good Information
Low Fares
Comfortable Seating
Good Destinations
Good Service
Good Experience
Good Frequent Flyer Pgm
0%
5%
10%
15%
20%
25%
30%
Miss Flight
Uncomfortable Seating
Will Not Fly
Poor Facility
Poor Service
No Room-Seating
Poor Baggage Handling
Cancellations
Hi Fares
Delays
0%
5%
10%
15%
20%
25%
30%
35%
Top Positive Issues
Alaska
Alaska
Top Negative Issues
Alaska
Efficient Security
Nice Facility
Good Food
Good Destinations
Cheap Fares
Good Information
Comforatble Seating
Good Experience
Good Service
Good Frequent Flyer Pgm
0%
5%
10%
15%
20%
25%
30%
Poor Facility
Poor Service
Unhelpful Agents
Poor Aircraft
Poor Baggage Handling
Bad Food
Miss Flight
Cancellations
No Room-Seating
Delays
0%
5%
10%
15%
20%
25%
30%
35%



Rigor and flexibility in computer-based qualitative research: Introducing the Coding Analysis Toolkit

Chi-Jung Lu
Department of Library Information Sciences, School of Information Sciences, University of Pittsburgh, Pittsburgh PA, USA

Stuart W Shulman
Director, Qualitative Data Analysis Program, University Center for Social and Urban Research, University of Pittsburgh, Pittsburgh PA, USA

Positive Claims for Using Software

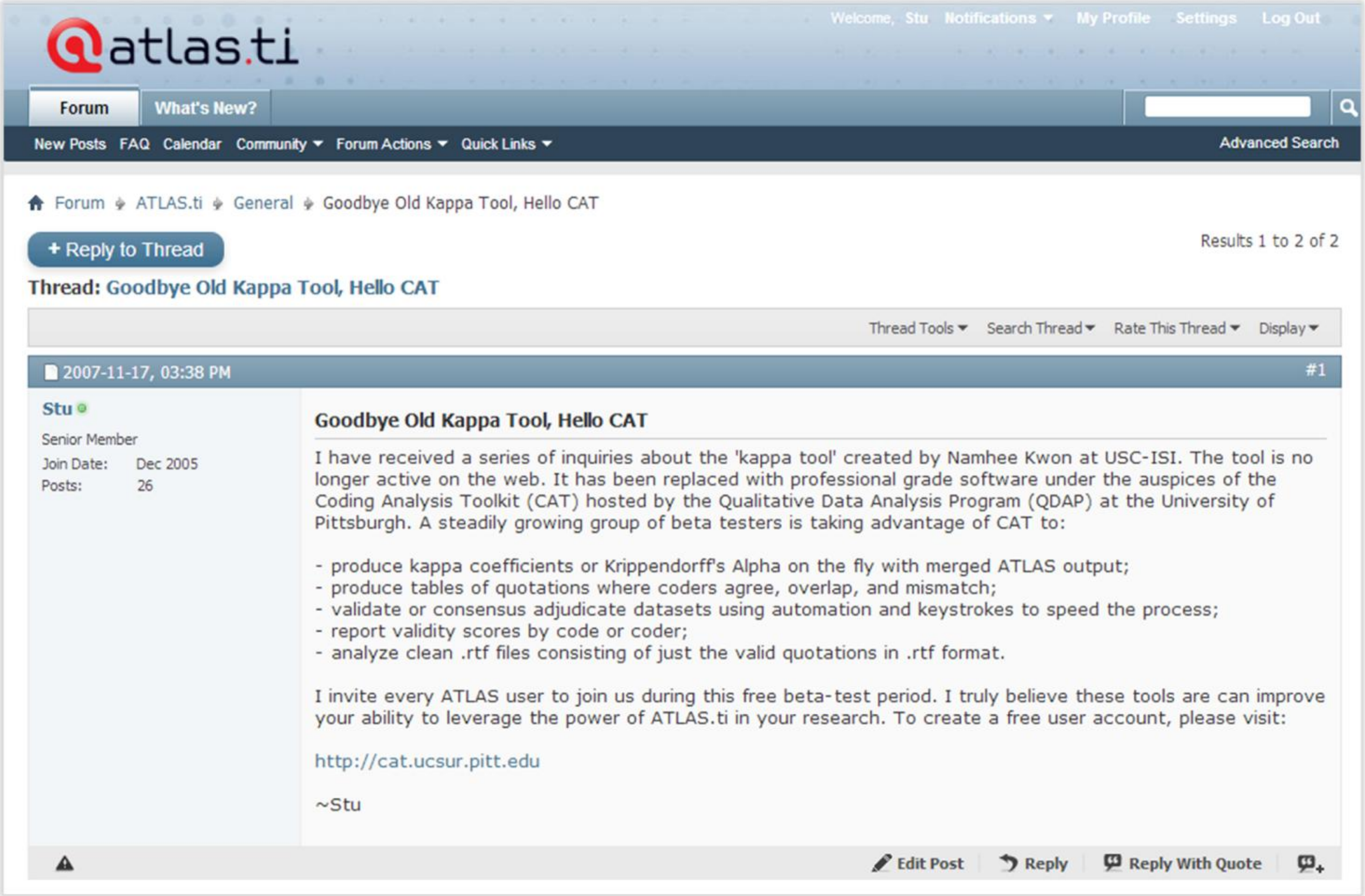
- **Convenience:** Data is accessible & reducible
- **Efficiency:** Computer-assisted tasks like search
- **Organization:** Codes, memos, and teams
- **Patterns:** Co-occurrences, frequencies, etc.
- **Outliers:** Significant and otherwise
- **Scale:** Testing of observable implications
- **Iteration:** A continuous and evolving process
- **Transparency:** Clarify methods & confirmability
- **Legitimacy:** Accuracy, validity, & credibility

Concerns about Using Software

- **Convenience:** Too many tempting short cuts
- **Efficiency:** May undermine meaning making
- **Organization:** Becomes an end itself
- **Patterns:** Can be misleading
- **Outliers:** May be undervalued as noise
- **Scale:** Big data is not better data
- **Iteration:** Bias may be inscribed in features
- **Transparency:** Features that are a black box
- **Legitimacy:** Research design is the actual key

Part Four

COLLABORATION & MEASUREMENT


Welcome, Stu
Notifications
My Profile
Settings
Log Out
Forum
What's New?
New Posts
FAQ
Calendar
Community
Forum Actions
Quick Links
Advanced Search
Forum
ATLAS.ti
General
Goodbye Old Kappa Tool, Hello CAT
+ Reply to Thread
Results 1 to 2 of 2
Thread Tools
Search Thread
Rate This Thread
Display
2007-11-17, 03:38 PM
#1
Stu
Senior Member
Join Date: Dec 2005
Posts: 26
Edit Post
Reply
Reply With Quote

Thread: Goodbye Old Kappa Tool, Hello CAT

Goodbye Old Kappa Tool, Hello CAT

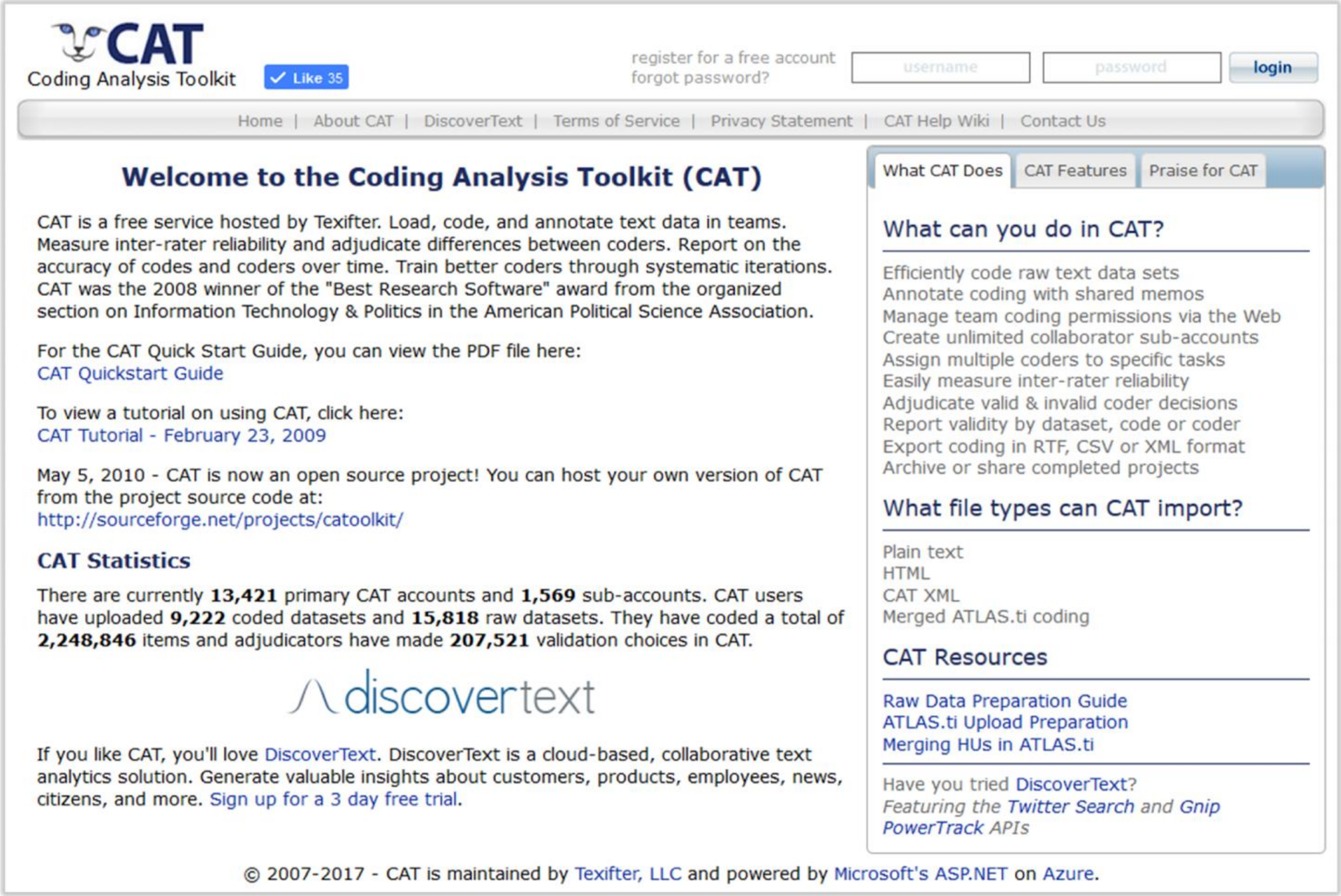
I have received a series of inquiries about the 'kappa tool' created by Namhee Kwon at USC-ISI. The tool is no longer active on the web. It has been replaced with professional grade software under the auspices of the Coding Analysis Toolkit (CAT) hosted by the Qualitative Data Analysis Program (QDAP) at the University of Pittsburgh. A steadily growing group of beta testers is taking advantage of CAT to:

- produce kappa coefficients or Krippendorff's Alpha on the fly with merged ATLAS output;
- produce tables of quotations where coders agree, overlap, and mismatch;
- validate or consensus adjudicate datasets using automation and keystrokes to speed the process;
- report validity scores by code or coder;
- analyze clean .rtf files consisting of just the valid quotations in .rtf format.

I invite every ATLAS user to join us during this free beta-test period. I truly believe these tools are can improve your ability to leverage the power of ATLAS.ti in your research. To create a free user account, please visit:

http://cat.ucsur.pitt.edu

~Stu


CAT
Coding Analysis Toolkit
Like 35
register for a free account
forgot password?
username
password
login
Home | About CAT | DiscoverText | Terms of Service | Privacy Statement | CAT Help Wiki | Contact Us
What CAT Does
CAT Features
Praise for CAT
discovertext

Welcome to the Coding Analysis Toolkit (CAT)

CAT is a free service hosted by Texifter. Load, code, and annotate text data in teams. Measure inter-rater reliability and adjudicate differences between coders. Report on the accuracy of codes and coders over time. Train better coders through systematic iterations. CAT was the 2008 winner of the "Best Research Software" award from the organized section on Information Technology & Politics in the American Political Science Association.

For the CAT Quick Start Guide, you can view the PDF file here:
CAT Quickstart Guide

To view a tutorial on using CAT, click here:
CAT Tutorial - February 23, 2009

May 5, 2010 - CAT is now an open source project! You can host your own version of CAT from the project source code at:
http://sourceforge.net/projects/catoolkit/

CAT Statistics

There are currently **13,421** primary CAT accounts and **1,569** sub-accounts. CAT users have uploaded **9,222** coded datasets and **15,818** raw datasets. They have coded a total of **2,248,846** items and adjudicators have made **207,521** validation choices in CAT.

If you like CAT, you'll love DiscoverText. DiscoverText is a cloud-based, collaborative text analytics solution. Generate valuable insights about customers, products, employees, news, citizens, and more. Sign up for a 3 day free trial.

What can you do in CAT?

Efficiently code raw text data sets
Annotate coding with shared memos
Manage team coding permissions via the Web
Create unlimited collaborator sub-accounts
Assign multiple coders to specific tasks
Easily measure inter-rater reliability
Adjudicate valid & invalid coder decisions
Report validity by dataset, code or coder
Export coding in RTF, CSV or XML format
Archive or share completed projects

What file types can CAT import?

Plain text
HTML
CAT XML
Merged ATLAS.ti coding

CAT Resources

Raw Data Preparation Guide
ATLAS.ti Upload Preparation
Merging HUs in ATLAS.ti

Have you tried DiscoverText?
Featuring the Twitter Search and Gnip PowerTrack APIs

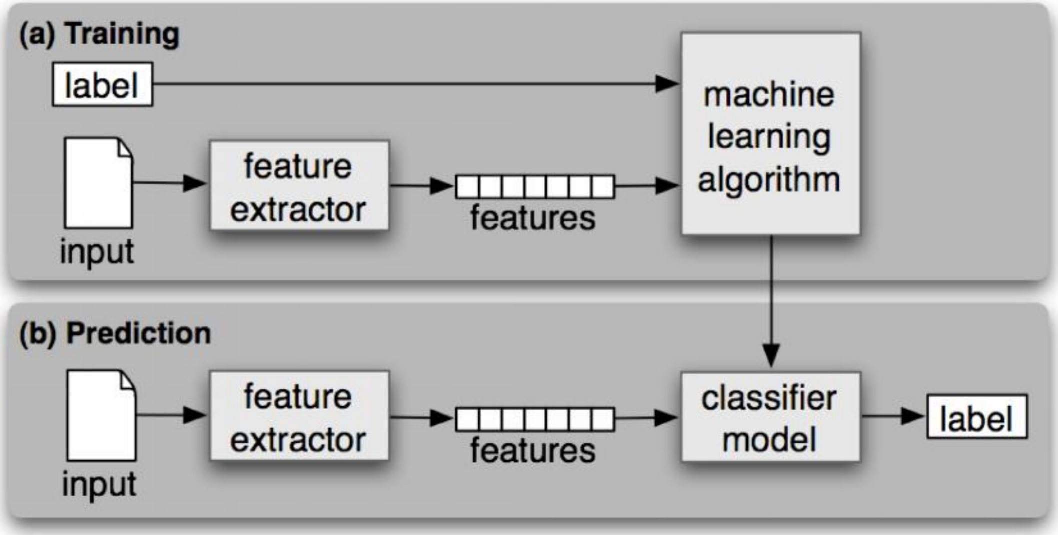
© 2007-2017 - CAT is maintained by Texifter, LLC and powered by Microsoft's ASP.NET on Azure.

Text Classification

A 2500 year-old problem

Plato argued it would be frustrating; it still is

Software cannot remove the problem
It can expose it more quickly



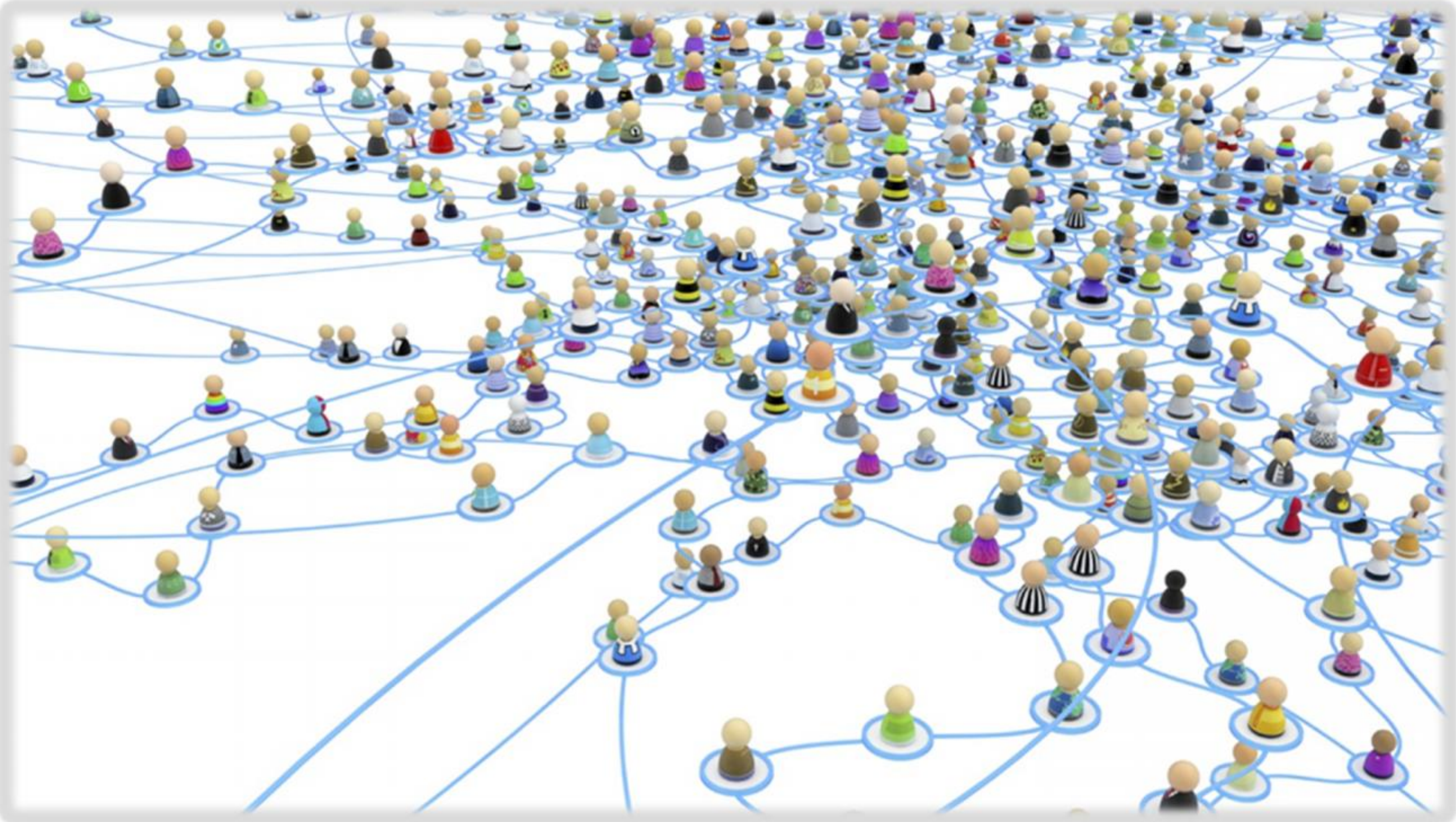
(a) Training
label
machine learning algorithm
feature extractor
features
input
(b) Prediction
feature extractor
features
classifier model
label
input

Grimmer & Stewart “Text as Data” Political Analysis (2013)

Volume is a problem for scholars
Coders are expensive
Groups struggle to accurately label text at scale
Validation of both humans and machines is “essential”
Some models are easier to validate than others
All models are wrong
Automated models enhance/amplify, but don’t replace humans
There is no one right way to do this
“Validate, validate, validate”

“What should be avoided then, is the blind use of any method without a validation step.”

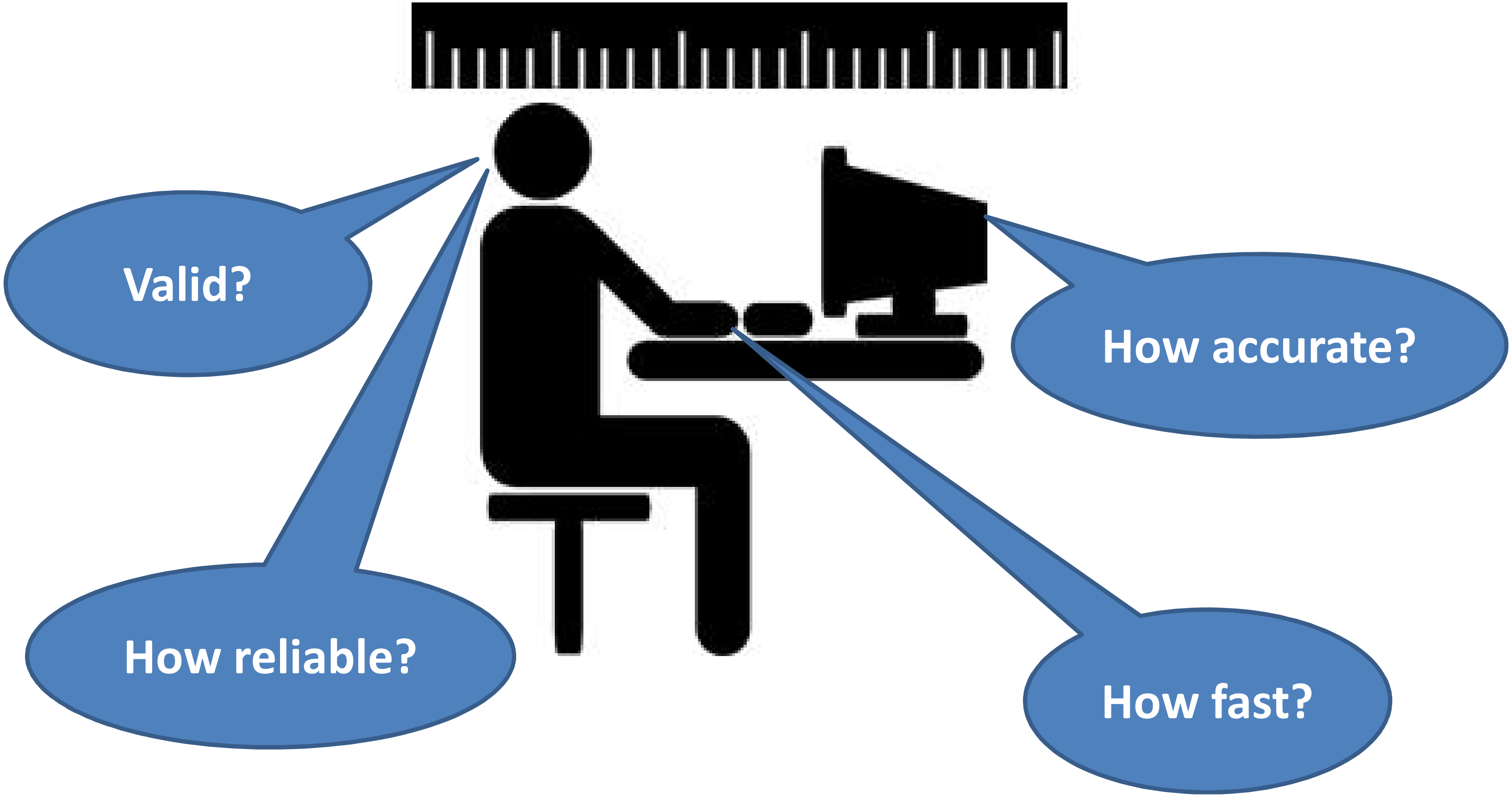
Crowdsourcing brings widely distributed wisdom to process of text analysis



“This is really the biggest paradigm shift in innovation since the Industrial Revolution”

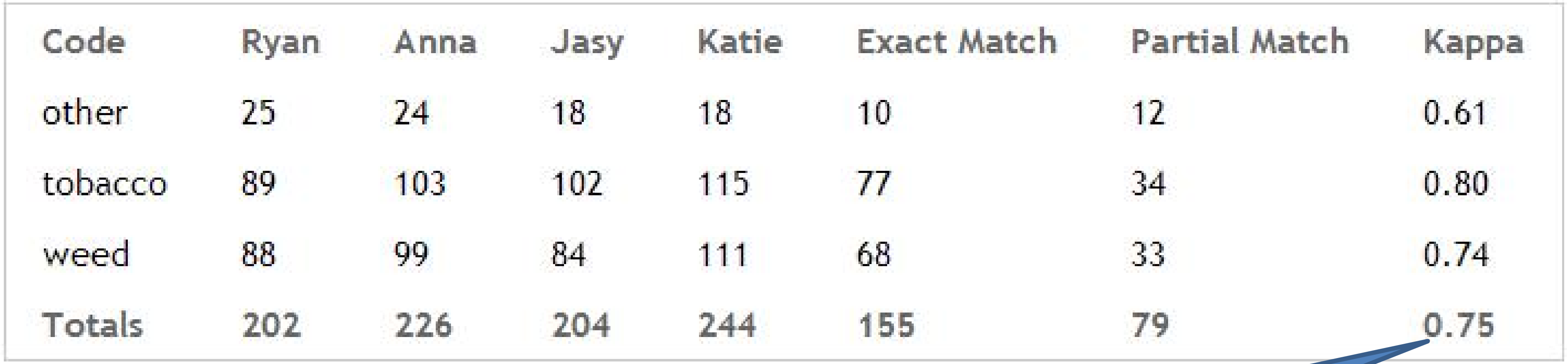
- MIT professor Eric von Hippel, specialist in innovation management

Computer Science & NSF Influence: Measure Everything!


Valid?
How accurate?
How reliable?
How fast?

Inter-Rater Reliability is Key

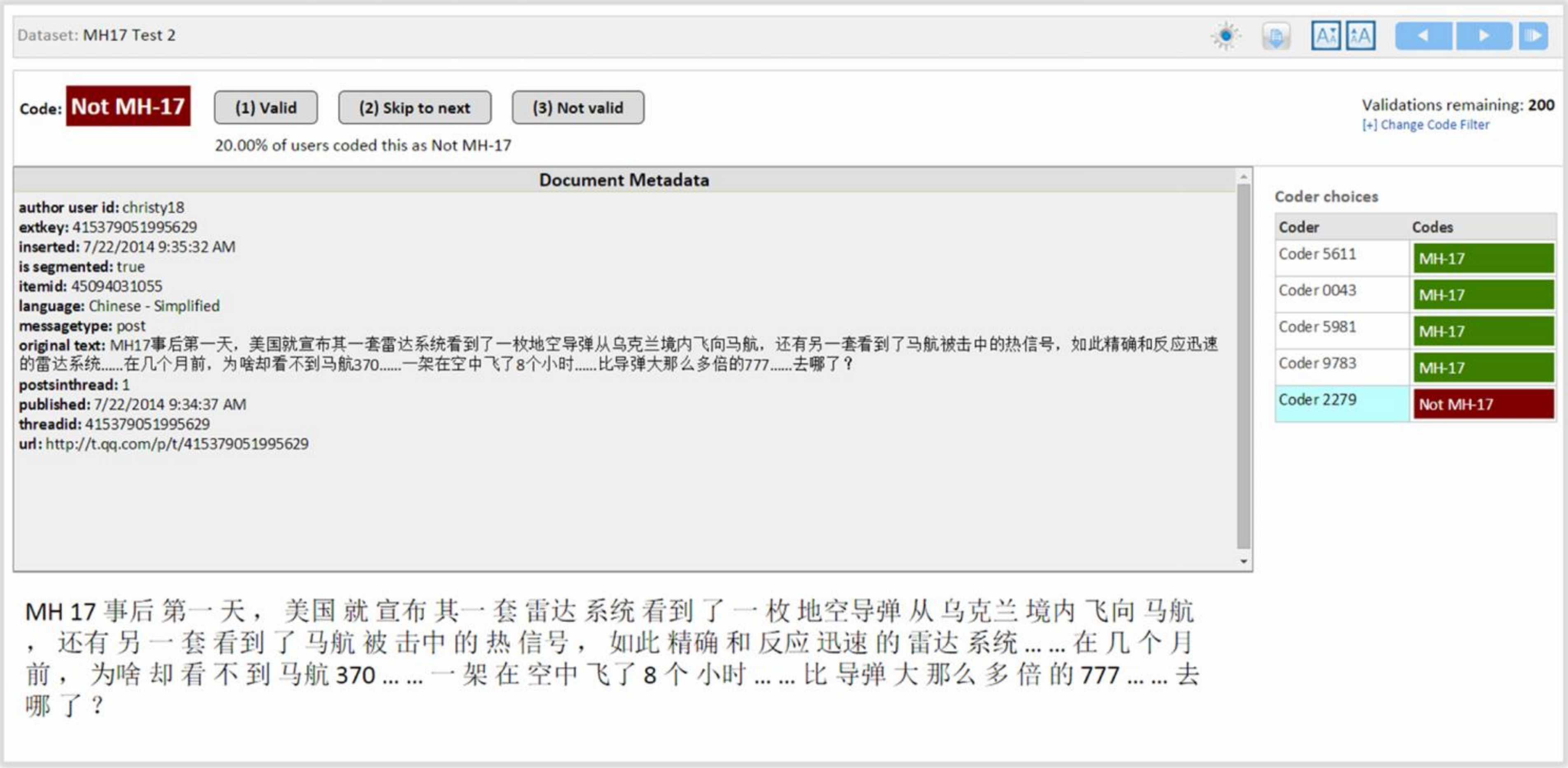
Understanding **the landscape of human interpretation** better prepares us to face the **challenge of machine classification**.



Code	Ryan	Anna	Jasy	Katie	Exact Match	Partial Match	Kappa
other	25	24	18	18	10	12	0.61
tobacco	89	103	102	115	77	34	0.80
weed	88	99	84	111	68	33	0.74
Totals	202	226	204	244	155	79	0.75

Fleiss' Kappa: The Level of Agreement Beyond Chance

Adjudicate Boundary Cases



Dataset: MH17 Test 2

Code: Not MH-17

20.00% of users coded this as Not MH-17

Validations remaining: **200**

Document Metadata

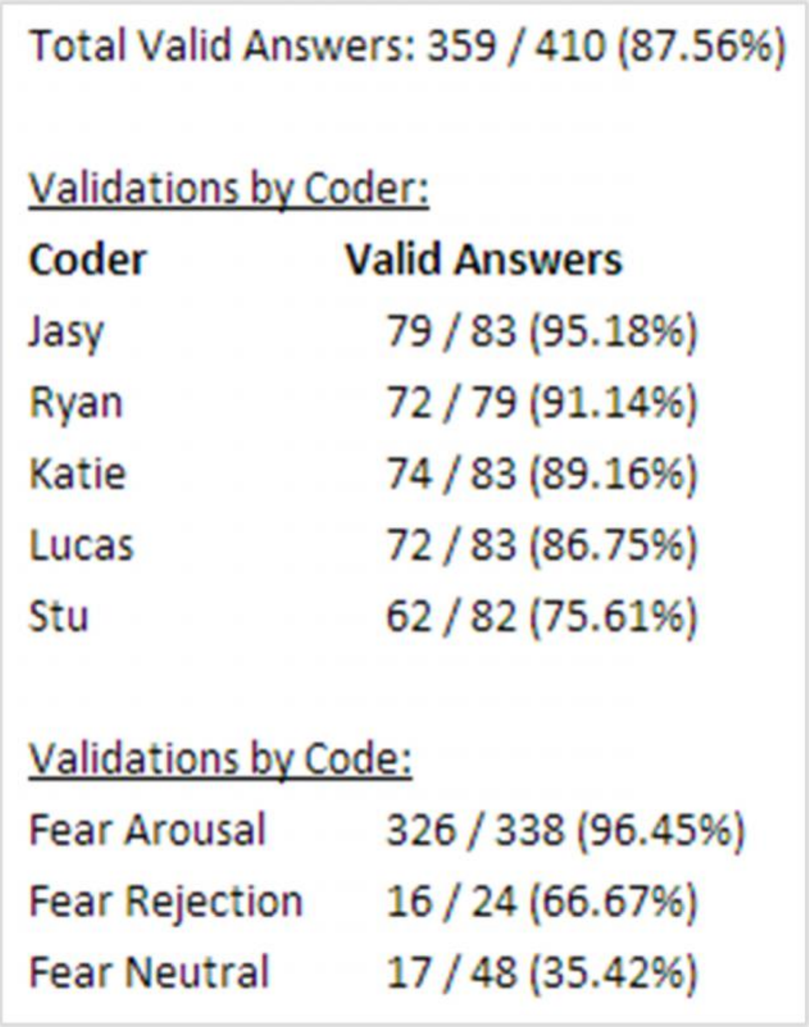
author user id: christy18
extkey: 415379051995629
inserted: 7/22/2014 9:35:32 AM
is segmented: true
itemid: 45094031055
language: Chinese - Simplified
messagetype: post
original text: MH17事后第一天，美国就宣布其一套雷达系统看到了一枚地空导弹从乌克兰境内飞向马航，还有另一套看到了马航被击中的热信号，如此精确和反应迅速的雷达系统……在几个月前，为啥却看不到马航370……一架在空中飞了8个小时……比导弹大那么多倍的777……去哪了？
postsinthread: 1
published: 7/22/2014 9:34:37 AM
threadid: 415379051995629
url: http://t.qq.com/p/t/415379051995629

Coder choices

Coder	Codes
Coder 5611	MH-17
Coder 0043	MH-17
Coder 5981	MH-17
Coder 9783	MH-17
Coder 2279	Not MH-17

MH 17 事后 第一 天， 美国 就 宣布 其一 套 雷达 系统 看到 了 一 枚 地空导弹 从 乌克兰 境内 飞向 马航 ， 还有 另 一 套 看到 了 马航 被 击中 的 热 信号， 如此 精确 和 反应 迅速 的 雷达 系统 …… 在 几 个 月 前， 为啥 却 看 不 到 马航 370 …… 一 架 在 空中 飞了 8 个 小时 …… 比 导弹 大 那么 多 倍 的 777 …… 去 哪 了 ？

“CoderRank for Enhanced Machine Learning”



Total Valid Answers: 359 / 410 (87.56%)

Validations by Coder:

Coder	Valid Answers
Jasy	79 / 83 (95.18%)
Ryan	72 / 79 (91.14%)
Katie	74 / 83 (89.16%)
Lucas	72 / 83 (86.75%)
Stu	62 / 82 (75.61%)

Validations by Code:

Fear Arousal	326 / 338 (96.45%)
Fear Rejection	16 / 24 (66.67%)
Fear Neutral	17 / 48 (35.42%)

coderrank

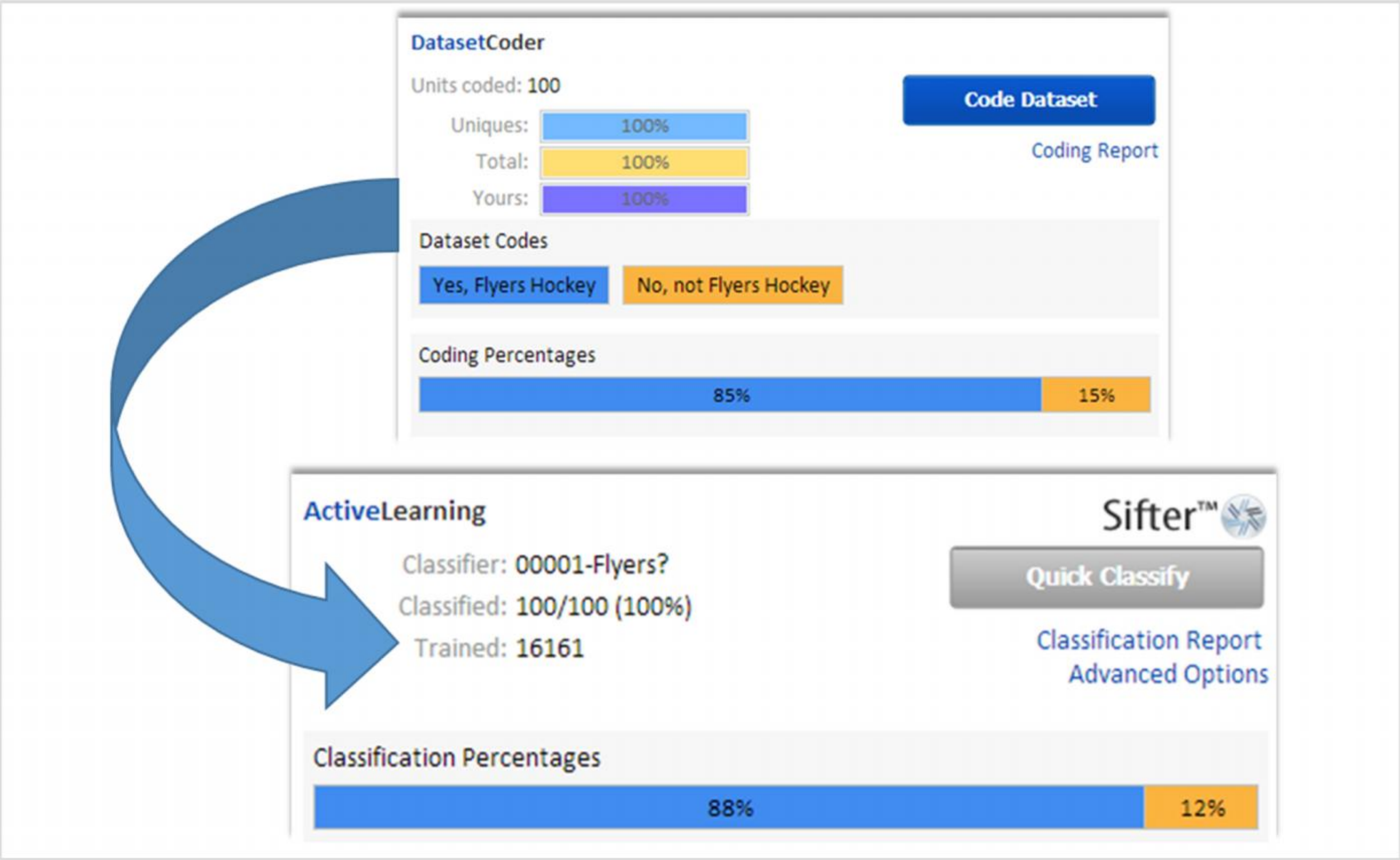
“CoderRank is to text analytics what PageRank was to search. Just as Google said not all web pages are created equal, **Texifter argues that not all humans are created equal**. When training machines, it is best to rely most on the humans most likely to create a valid observation. We proposed a **unique way to rank humans on trust and knowledge vectors**.”

Part Five

HUMAN & MACHINE LEARNING

Labeling, Tagging, or Annotation Improves Machine Learning Over Time

Iterate Human Coding & Machine Learning


DatasetCoder
Code Dataset
Coding Report
Dataset Codes
Yes, Flyers Hockey
No, not Flyers Hockey
Coding Percentages
85%
15%
ActiveLearning
Sifter™
Quick Classify
Classification Report
Advanced Options
Classification Percentages
88%
12%

Units coded: 100

Uniques: 100%

Total: 100%

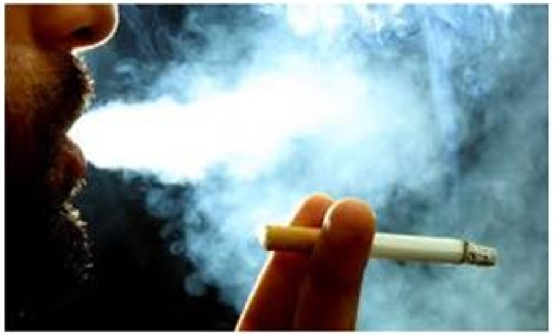
Yours: 100%

Classifier: 00001-Flyers?

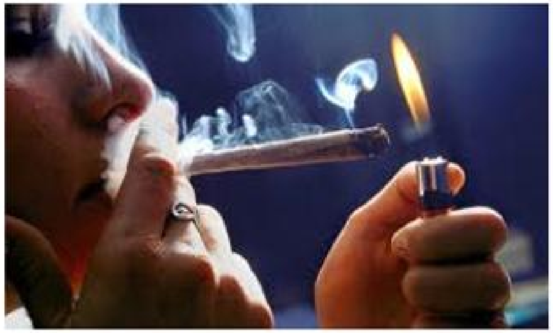
Classified: 100/100 (100%)

Trained: 16161

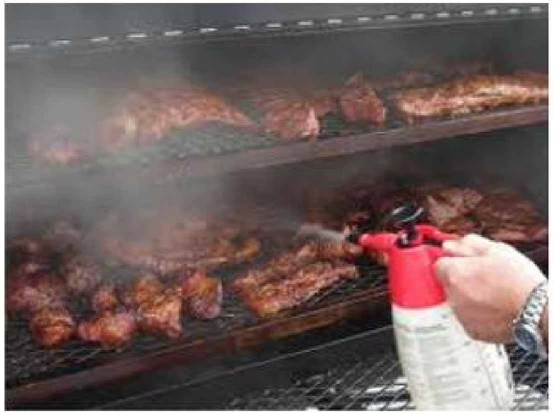
Word Sense Disambiguation (Relevance)



Yes



No

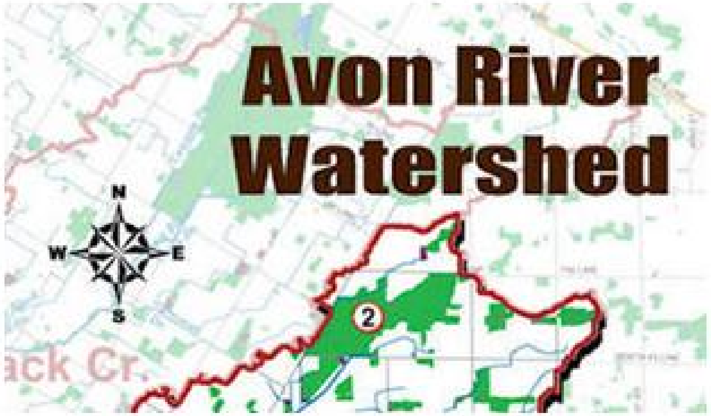


No

AVON

the company for women

Yes

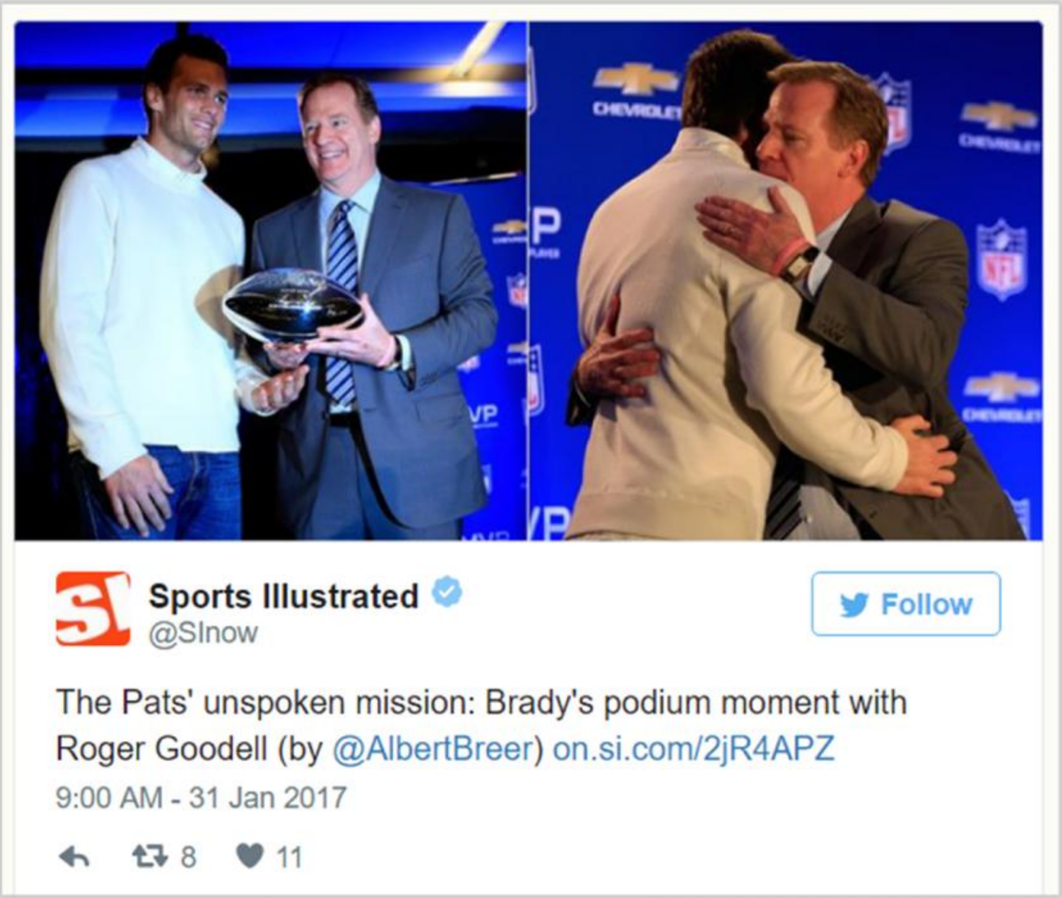

Avon River Watershed
N
W
E
S
2
ack Cr.

No

6570
AVON
Town Hall
& Par

No

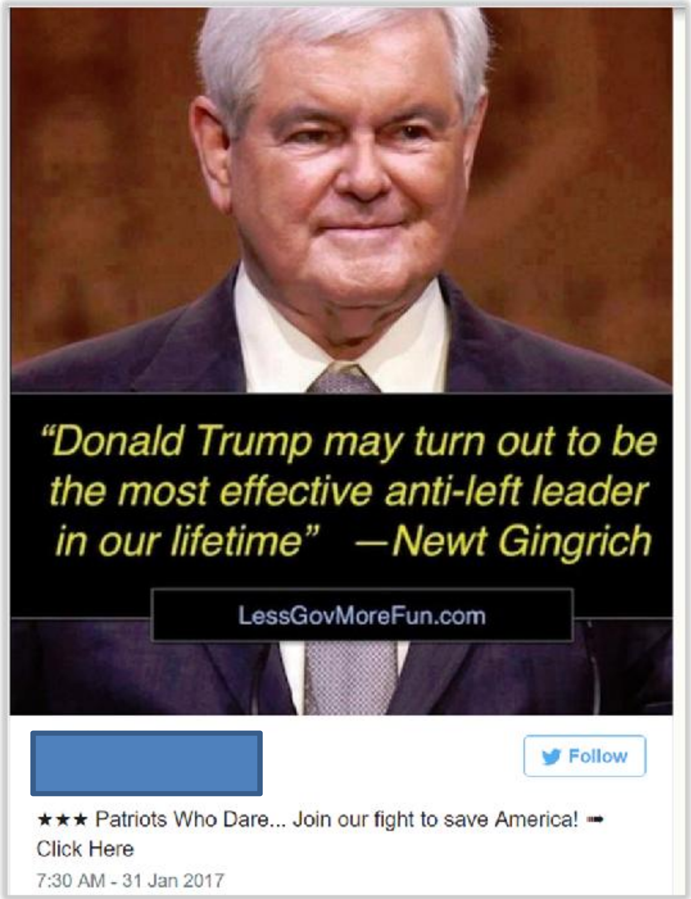
“Patriots” Football Versus Politics



Sports Illustrated
@SInow

The Pats' unspoken mission: Brady's podium moment with Roger Goodell (by @AlbertBreer) on.si.com/2jR4APZ

9:00 AM - 31 Jan 2017



“Donald Trump may turn out to be the most effective anti-left leader in our lifetime” —Newt Gingrich
LessGovMoreFun.com
Follow

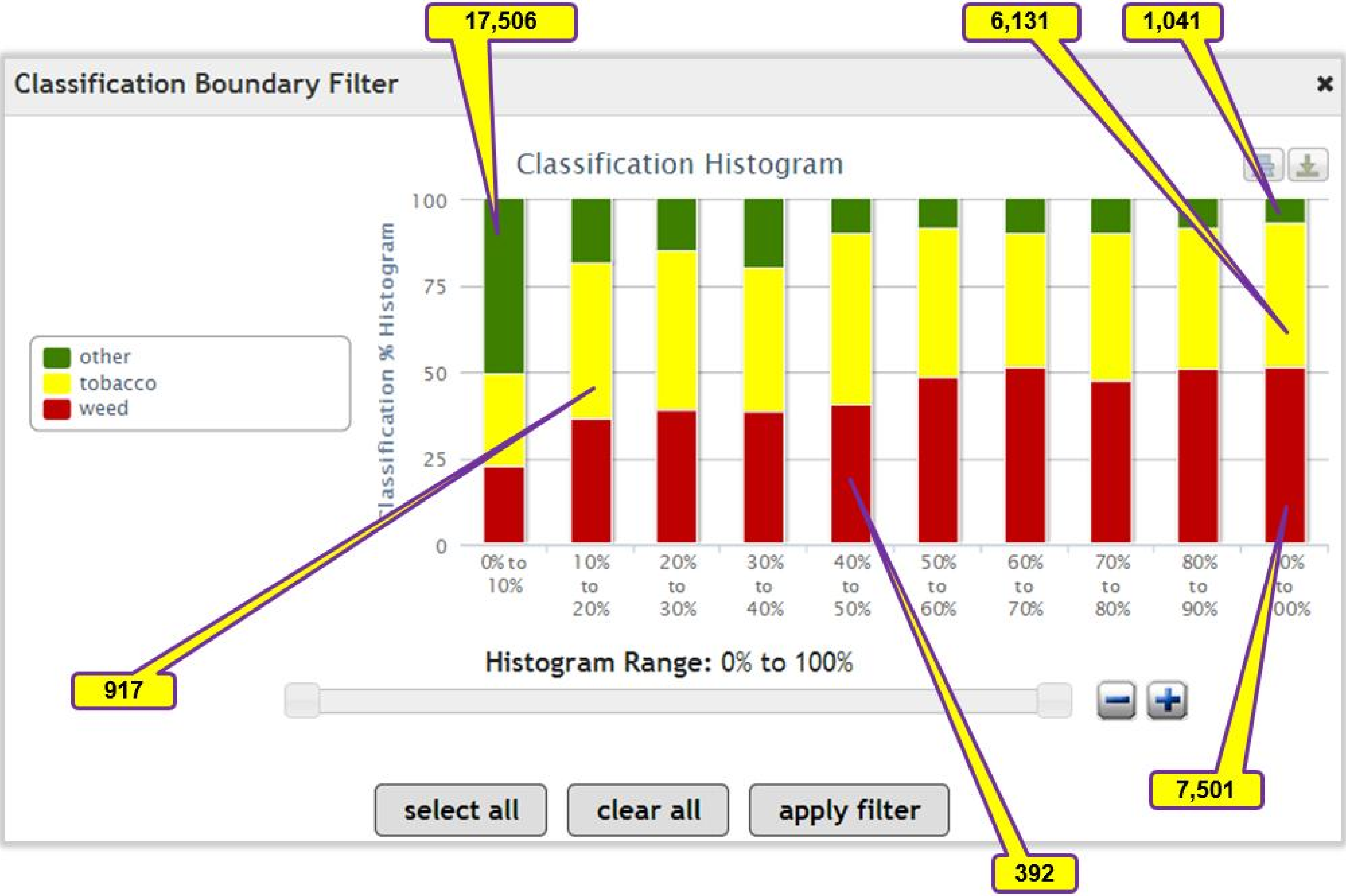
[redacted]

★★★ Patriots Who Dare... Join our fight to save America! ➡ Click Here

7:30 AM - 31 Jan 2017

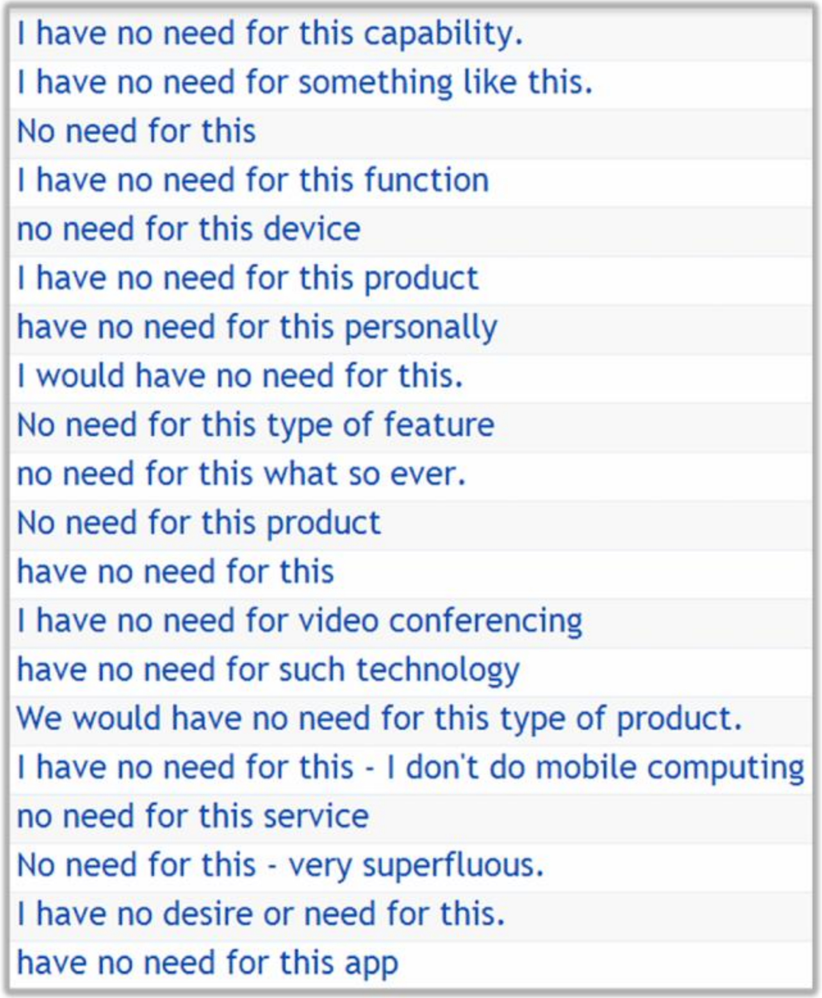
Yes

No

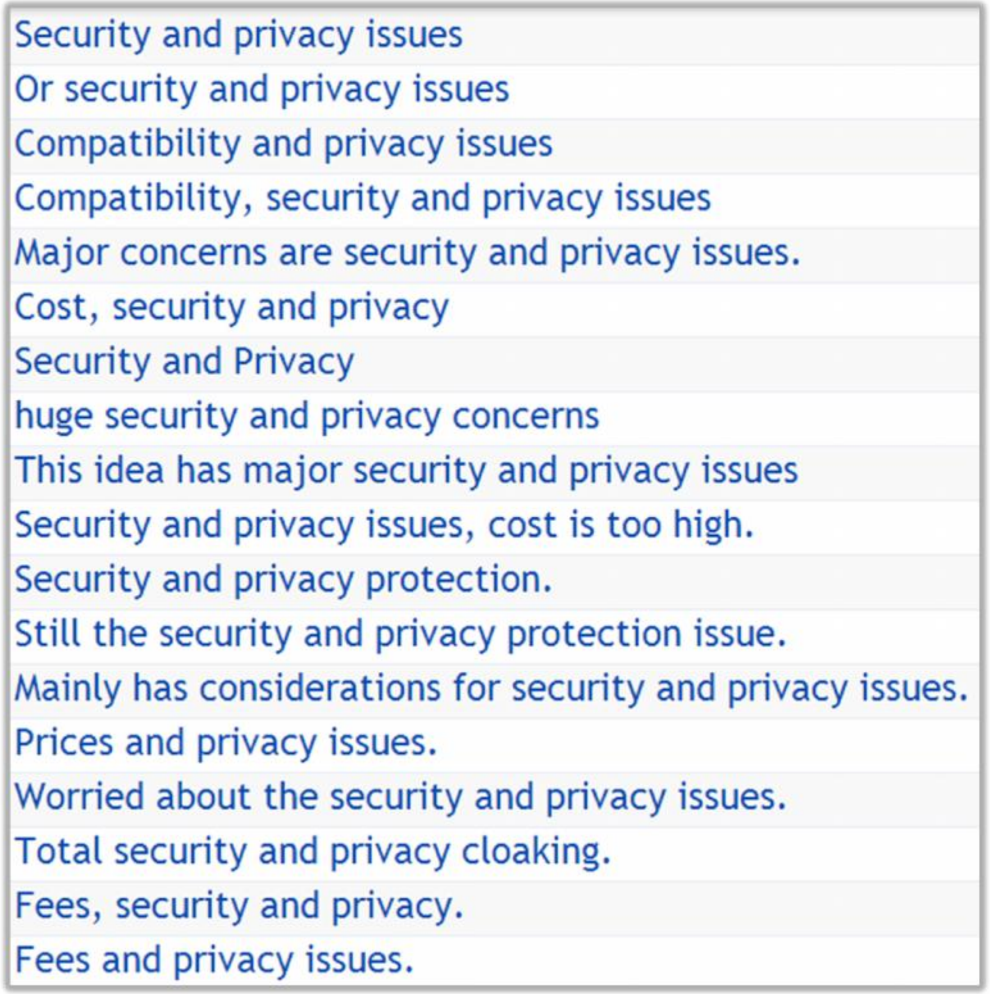

Classification Boundary Filter
×
Classification Histogram
🟩 other
🟨 tobacco
🟥 weed
lassification % Histogram
100
75
50
25
0
0% to 10%
10% to 20%
20% to 30%
30% to 40%
40% to 50%
50% to 60%
60% to 70%
70% to 80%
80% to 90%
0% to 00%
17,506
6,131
1,041
917
392
7,501
−
+
select all
clear all
apply filter

Histogram Range: 0% to 100%

Naturally Occurring Clusters of Free Text Can Be Discovered Automatically



I have no need for this capability.
I have no need for something like this.
No need for this
I have no need for this function
no need for this device
I have no need for this product
have no need for this personally
I would have no need for this.
No need for this type of feature
no need for this what so ever.
No need for this product
have no need for this
I have no need for video conferencing
have no need for such technology
We would have no need for this type of product.
I have no need for this - I don't do mobile computing
no need for this service
No need for this - very superfluous.
I have no desire or need for this.
have no need for this app



Security and privacy issues
Or security and privacy issues
Compatibility and privacy issues
Compatibility, security and privacy issues
Major concerns are security and privacy issues.
Cost, security and privacy
Security and Privacy
huge security and privacy concerns
This idea has major security and privacy issues
Security and privacy issues, cost is too high.
Security and privacy protection.
Still the security and privacy protection issue.
Mainly has considerations for security and privacy issues.
Prices and privacy issues.
Worried about the security and privacy issues.
Total security and privacy cloaking.
Fees, security and privacy.
Fees and privacy issues.

What have CAT & DiscoverText contributed to the field of qualitative methodology?

- **A free and open source** software option
- **Web-based** crowd source collaborative tools
- **Measurement innovation**
- Free & premium real time **Twitter data collection**
- Random **sampling** and **keystroke coding**
- **Advanced search** and **filtering**
- **Deduplication** and **clustering** algorithms
- Custom **machine-learning** classifiers
- Word sense **disambiguation**
- **CoderRank** for enhanced machine learning

Thanks for Listening!

Dr. Stuart W. Shulman
Founder & CEO, Texifter, LLC
Editor Emeritus, *Journal of Information Technology & Politics*

Contact Information
Email: stu@texifter.com
Twitter: @stuartwshulman

Breakout session 10. Analysing stories of change - Engaging beneficiaries to make sense of data

Presenters:
Mr Michael Carbon, Senior Evaluation
Officer, IOE, IFAD
Mr Hamdi Ahmedou, Evaluation Research
Analyst, IOE, IFAD

Analyzing stories of change

Engaging beneficiaries to make sense of data

ICT4Eval International Conference

6 June 2017 – Rome

Independent Office of Evaluation

IFAD

Investing in rural people

Background and objectives

Cameroon Country Strategy and Programme Evaluation

- Two main objectives :
  - i) Assess the results and performance of the IFAD-financed strategy and programme
  - ii) Generate findings and recommendations for the future partnership between IFAD and Cameroon
- Evaluation covers a 10-year period: - 2 IFAD country strategies since 2007

  - 6 ongoing or achieved projects
- Diverse portfolio and development approaches: Community development, Farmer Cooperatives, Value chains, Rural finance, Youth rural entrepreneurship

Background and objectives

CSPE methodology

- **Standard evaluation criteria**
- **“Classic” methods:** desk review (context and project documents), individual and focus group interviews, direct field observation
- **How can we at the same time…**
  - **strengthen the evidence base** under data, budget and time constraints**?**
  - **involve direct beneficiaries** in the evaluation process beyond providing information**?**
- **Sense-making**
  - **People give sense to their experience and meaning to their choices**
  - **Reveals the reality as expressed and experienced by those involved**

Background and objectives

- **Scope of the contribution study**

  Two IFAD-funded value chain interventions in Cameroon:

  - **PNDRT** (Roots and Tubers Market-Driven Development Programme), completed in 2012
  - **PADFA** (Agricultural Value Chain Support Project), due for completion in 2017

- **Research questions**

  - **At the strategic level**

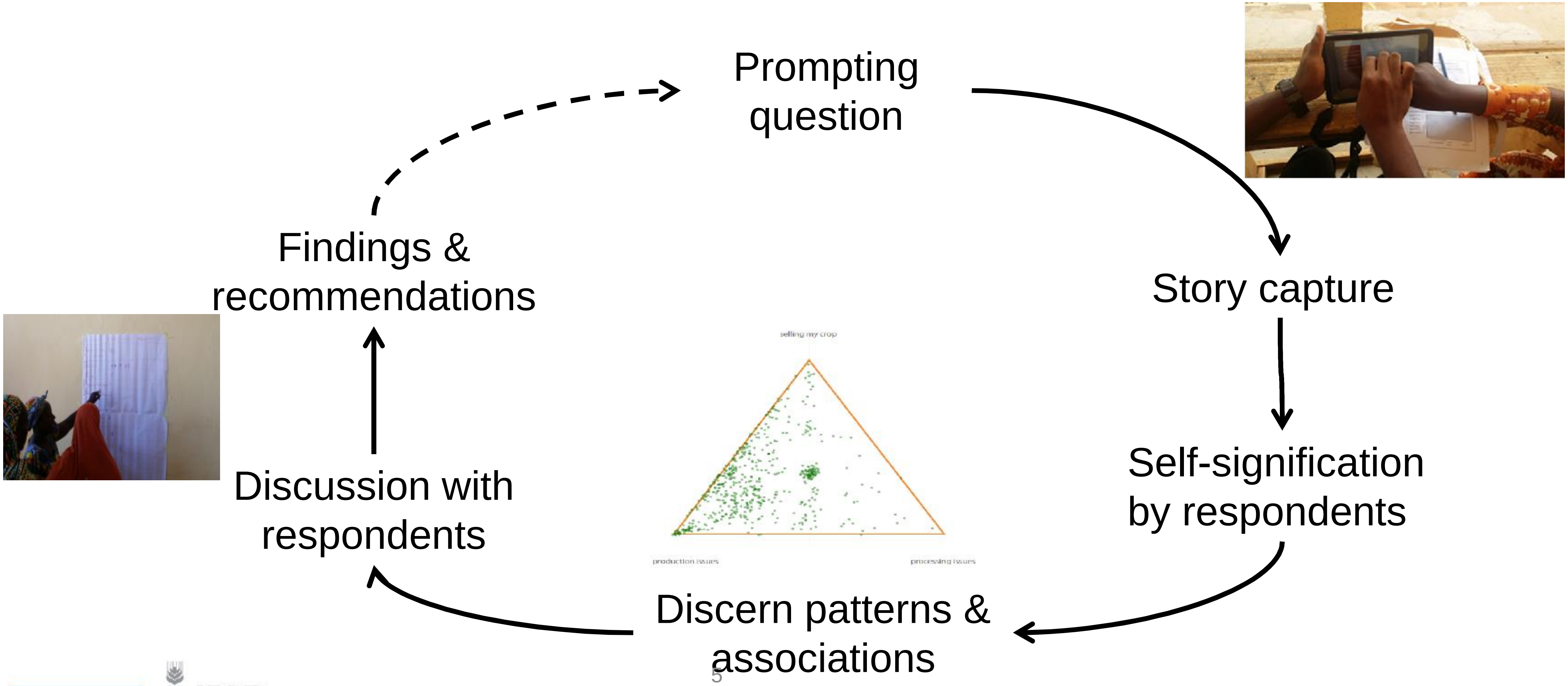
  What kind of support to farmer cooperatives was most effective in boosting agricultural productivity, and improving food security and incomes of the rural poor?

  → validate the **theory of change** of the projects by investigating links along the causal pathways between outputs, outcomes and impacts, and associated assumptions.

  - **At the cooperative level**

  From the beneficiaries point of view, what are the most relevant and effective cooperative services and what are the most notable changes in their livelihoods as a result of those services?

Methodological approach


selling my crop
production issues
processing issues

Prompting question

Story capture

Self-signification by respondents

Discern patterns & associations

Discussion with respondents

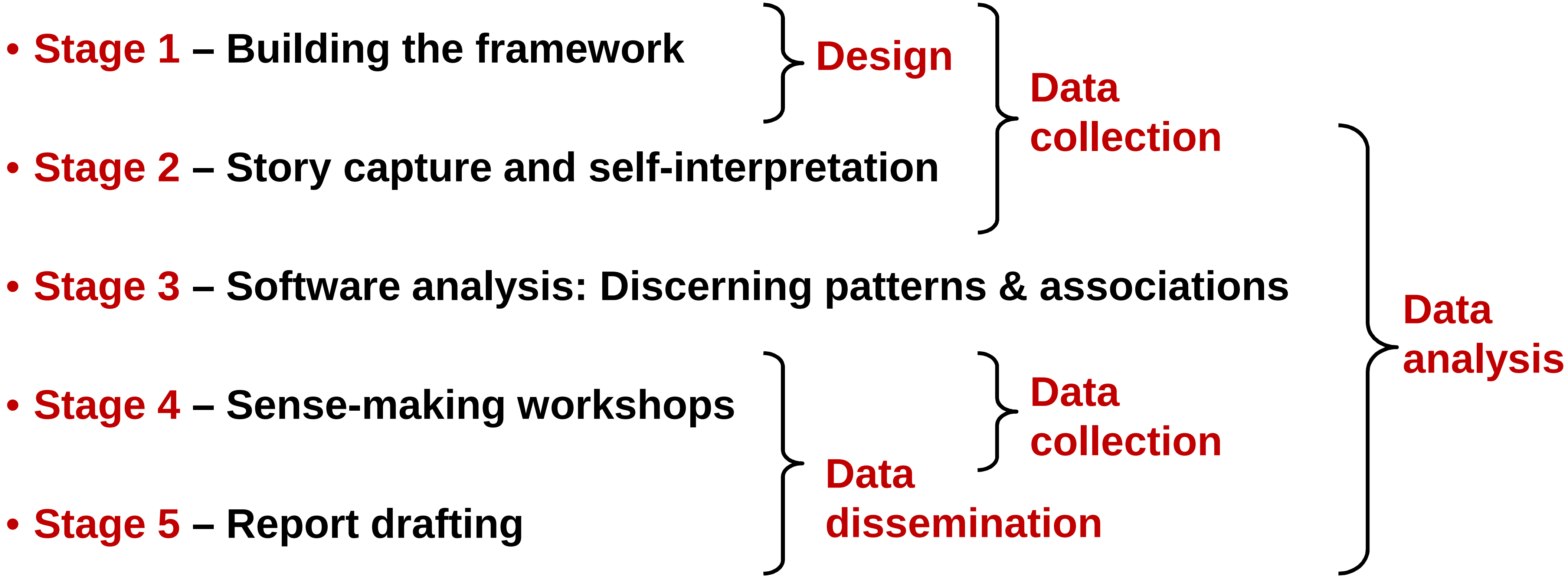
Findings & recommendations

Methodological approach

- **SenseMaker® Suite**
  - Software developed by Cognitive Edge in 2005
  - Helps to show visual/quantifiable patterns that are strong and of potential interest for the study
  - Can be used for various purposes (not an evaluation tool at its origin)
- **Inclusive Business Scan (Powered by SenseMaker®)**
  - Framework built by VECO to get real-time feedback on inclusive business in smallholder supply chains
  - Consultants related to VECO supported the design, data collection and analysis phases of this study

Voices that Count
The Inclusive Business Scan

Sense-making in Cameroon CSPE



- **Stage 1 – Building the framework**
- **Stage 2 – Story capture and self-interpretation**
- **Stage 3 – Software analysis: Discerning patterns & associations**
- **Stage 4 – Sense-making workshops**
- **Stage 5 – Report drafting**

Design
Data collection
Data analysis
Data collection
Data dissemination

Stage 1. Building the framework

Story prompt

Since you have become a member of the cooperative, can you tell us about an important positive or negative change related to the production, processing or selling/marketing of your crop (onion, rice or cassava) and how this has affected you and your family? Please describe what happened.

“I have experienced positive change since I joined the union. I received training on good farming practices as well as improved variety seeds. These have helped me to produce more in greater quantity and quality. This has led to increase in my income which has helped me to sponsor my children in school and to provide for my family’s needs. The union has a big nursery on which we multiply the improved seeds, sell and put the money in an account from which members can borrow money and solve problems or invest in the farms. I also have access to processing machine which enables me to grind my cassava easily. The problem I have is how to sell my produce. The union does not help me in that regard and when I take my goods to the market it is the buyers who determine the price.”

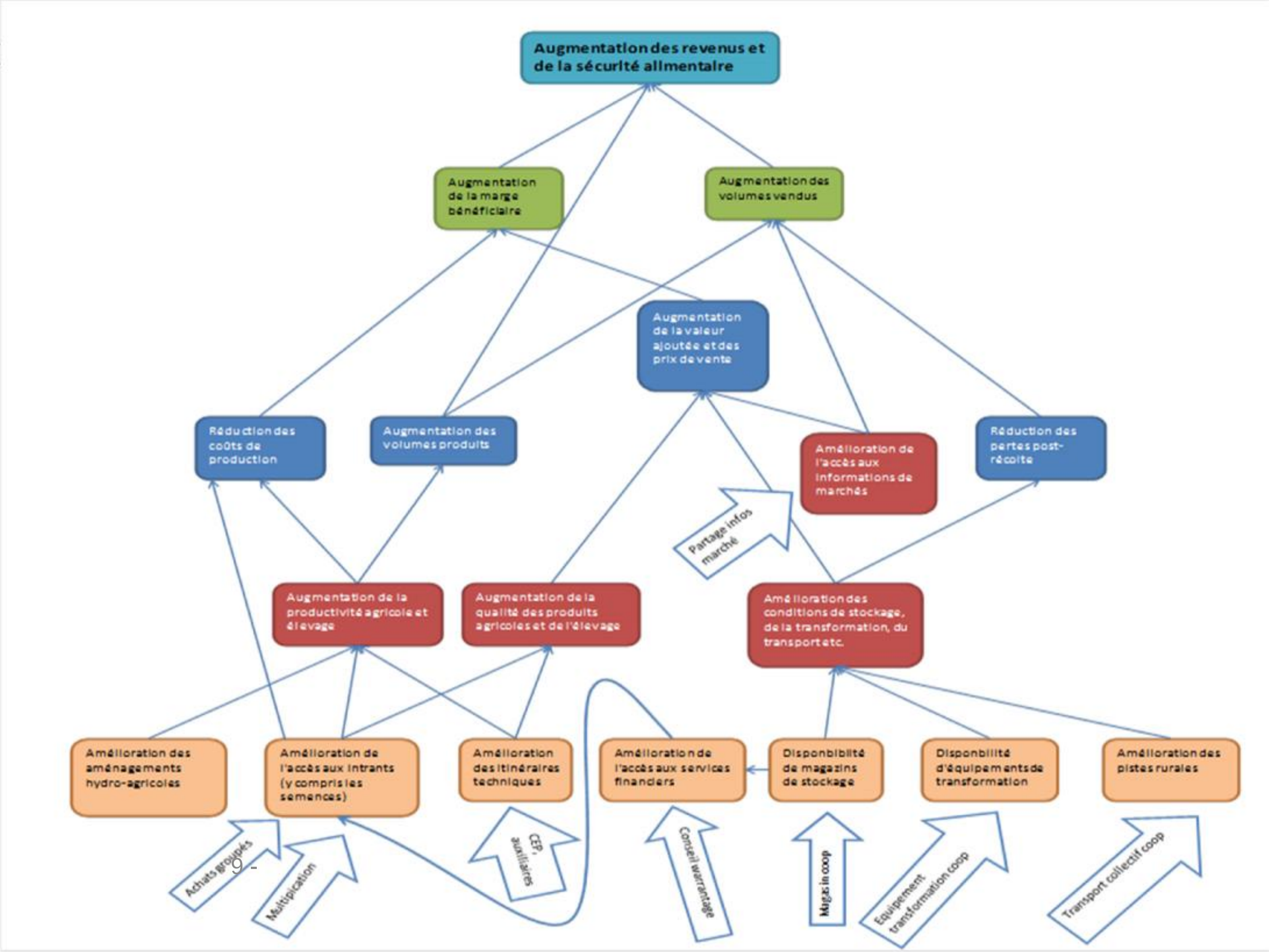
Mbufong Union of Root and Tubers, April 4th 2017

- **No mention of the project**
- **Question as large as possible but sufficiently focussed**
- **Positive or negative change**

Stage 1. Building the framework

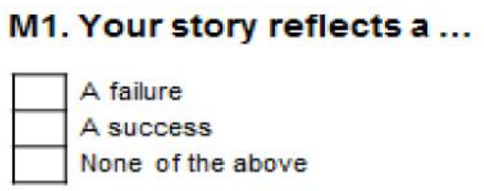
Signification framework

- **Purpose of the signification framework is to involve respondents in the analysis**
- **Add a layer of meaning to the story**
- **Theory of Change used as a basis to build the framework**
- **Framework comprised of a set of signifiers linked to the evaluation questions**
- **Signifiers comprised of MCQs, triads, dyads and stones**
- **Can we add questions not related to the story?**


Augmentation des revenus et de la sécurité alimentaire
Augmentation de la marge bénéficiaire
Augmentation des volumes vendus
Augmentation de la valeur ajoutée et des prix de vente
Réduction des coûts de production
Augmentation des volumes produits
Amélioration de l'accès aux informations de marchés
Réduction des pertes post-récolte
Partage infos marché
Augmentation de la productivité agricole et élevage
Augmentation de la qualité des produits agricoles et de l'élevage
Amélioration des conditions de stockage, de la transformation, du transport etc.
Amélioration des aménagements hydro-agricoles
Amélioration de l'accès aux intrants (y compris les semences)
Amélioration des itinéraires techniques
Amélioration de l'accès aux services financiers
Disponbiblité de magazins de stockage
Disponbilité d'équipements de transformation
Amélioration des pistes rurales
Achats groupés
Multipication
CEP, auxiliaires
Conseil warrantage
Magas in coop
Equipement transformation coop
Transport collectif coop

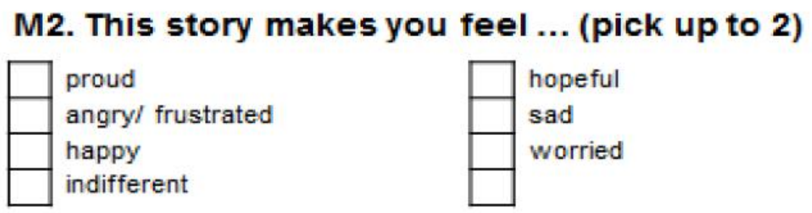
Stage 1. Building the framework

Multi-choice questions



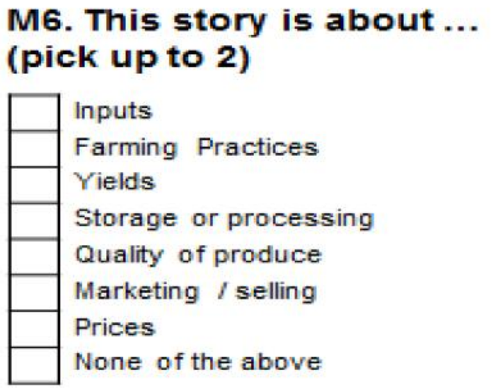
M1. Your story reflects a …

- ☐ A failure
- ☐ A success
- ☐ None of the above



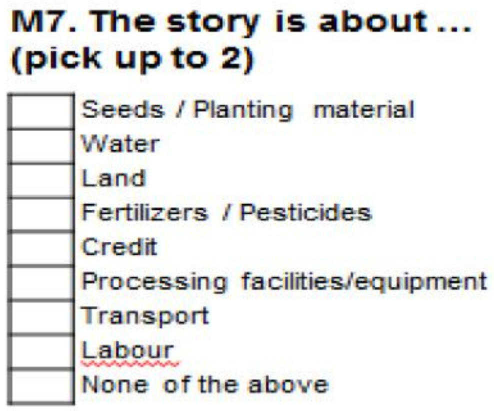
M2. This story makes you feel … (pick up to 2)

- ☐ proud
- ☐ angry/ frustrated
- ☐ happy
- ☐ indifferent
- ☐ hopeful
- ☐ sad
- ☐ worried
- ☐



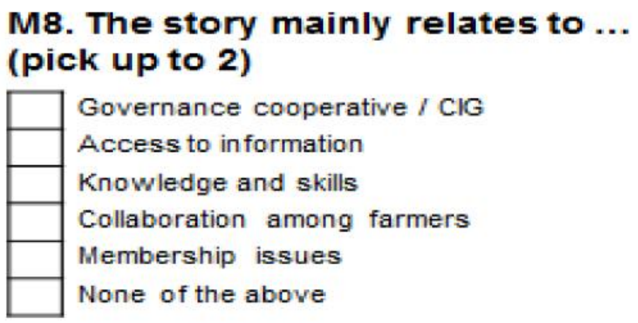
M6. This story is about … (pick up to 2)

- ☐ Inputs
- ☐ Farming Practices
- ☐ Yields
- ☐ Storage or processing
- ☐ Quality of produce
- ☐ Marketing / selling
- ☐ Prices
- ☐ None of the above



M7. The story is about … (pick up to 2)

- ☐ Seeds / Planting material
- ☐ Water
- ☐ Land
- ☐ Fertilizers / Pesticides
- ☐ Credit
- ☐ Processing facilities/equipment
- ☐ Transport
- ☐ Labour
- ☐ None of the above



M8. The story mainly relates to … (pick up to 2)

- ☐ Governance cooperative / CIG
- ☐ Access to information
- ☐ Knowledge and skills
- ☐ Collaboration among farmers
- ☐ Membership issues
- ☐ None of the above

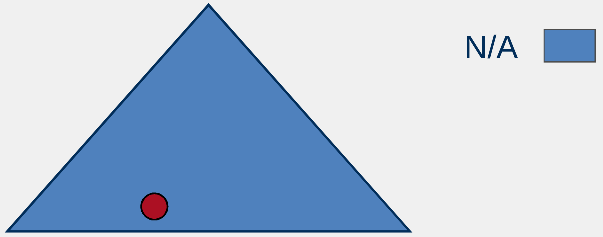
+ demographic questions

- **Used as filters and signifiers**
- **Essential to connect them with triads and dyads**

Stage 1. Building the framework

Triads

T1. In your story, the change is related to…



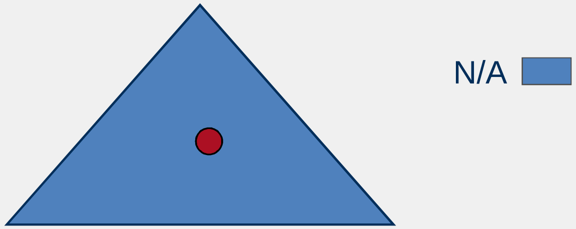
Selling my crop

N/A 🟦

Production issues

Processing issues

T.5. Reflecting on the context of your story, where did you see most progress on production issues in the last period ?



Reducing production cost

N/A 🟦

Increasing the volume of your production

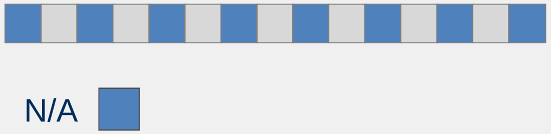
Improving the quality of your production

- **8 Triads (maybe too much…)**
- **Useful to get a nuanced response**
- **Takes time to explain**

Stage 1. Building the framework

Dyads

D1. In your story, the crop production….

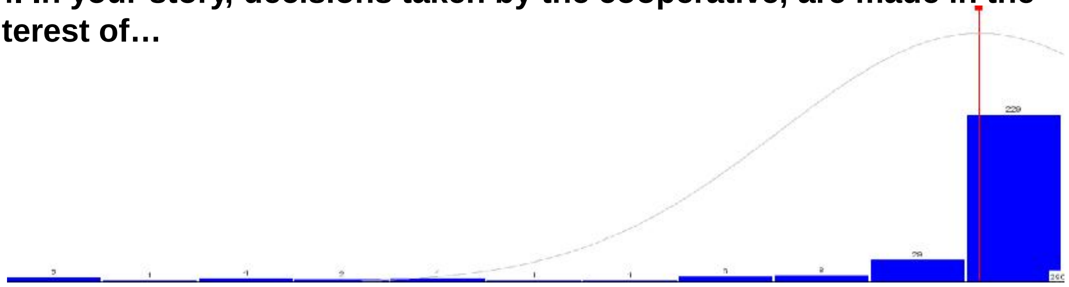


Is highly profitable

Lead to financial loss

N/A

D4. In your story, decisions taken by the cooperative, are made in the interest of…



Only a minority of the members

All the members

- **5 dyads**
- **Ideally, answers should not be opposite to avoid tendency to answer on the extremities**

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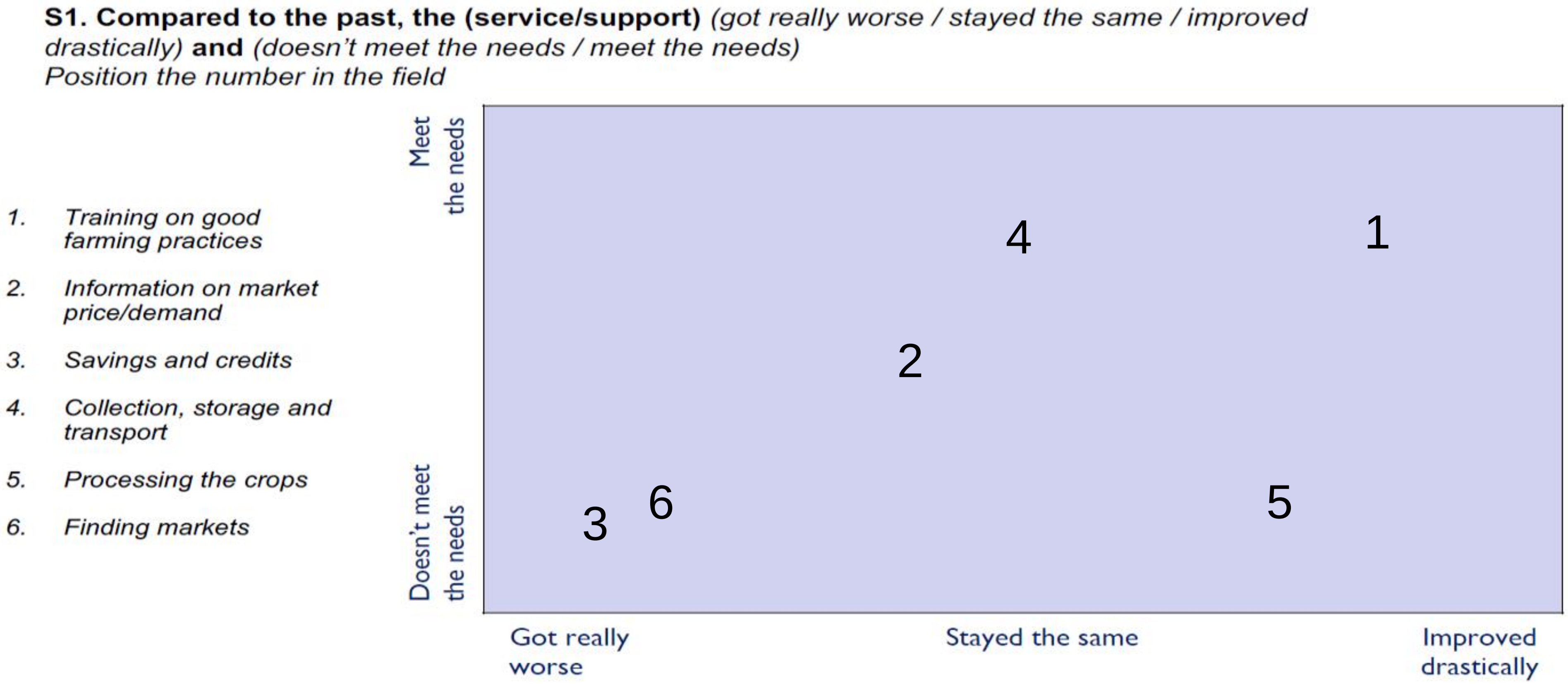
IFAD
Investing in rural people

Stage 1. Building the framework

Stones



S1. Compared to the past, the (service/support) *(got really worse / stayed the same / improved drastically)* **and** *(doesn't meet the needs / meet the needs)*
Position the number in the field

1. *Training on good farming practices*
2. *Information on market price/demand*
3. *Savings and credits*
4. *Collection, storage and transport*
5. *Processing the crops*
6. *Finding markets*

Meet the needs
Doesn't meet the needs
Got really worse
Stayed the same
Improved drastically
4
1
2
3
6
5

- **Combination of two polarities**
- **Used to evaluate services provided by the cooperative**
- **Complex**

Stage 2. Story capture and self interpretation

Sampling

A base sample unit of 50 stories is the minimum size necessary to draw meaningful findings

2 areas / 4 regions: North, Extreme North / West, North-West

3 crops: Cassava, Onion, Rice

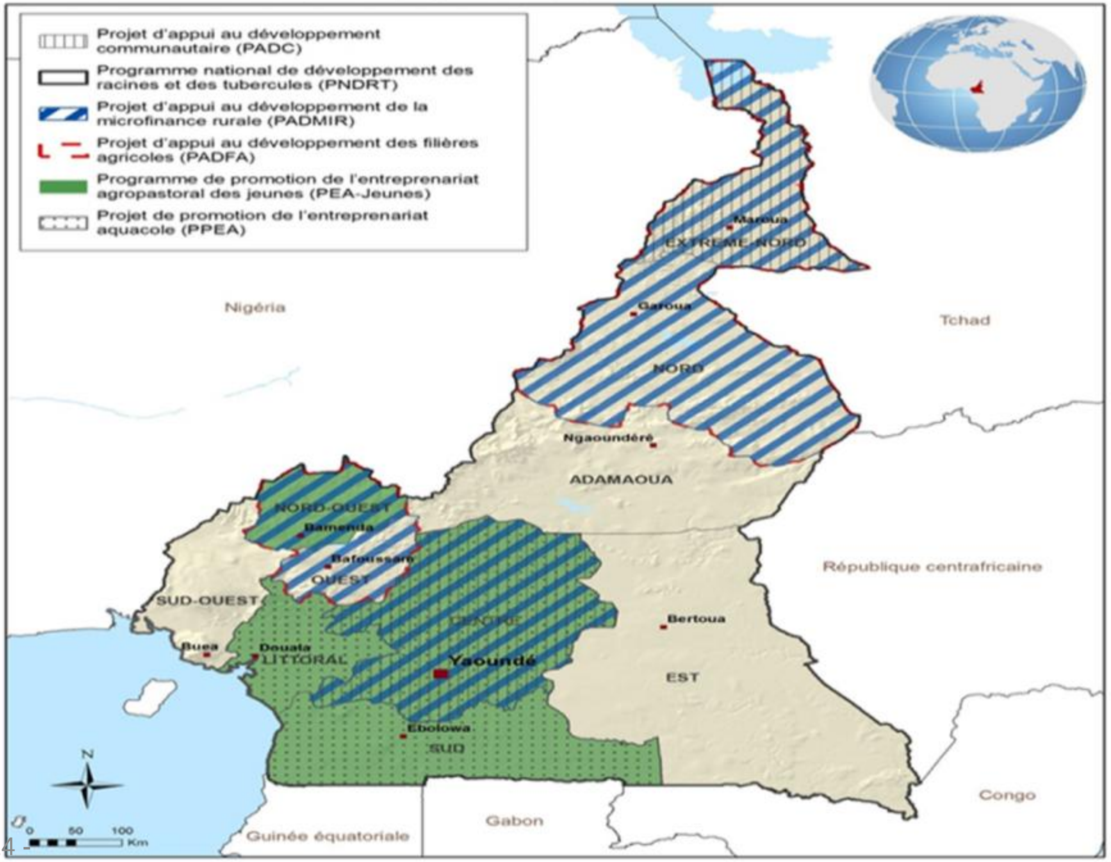
Gender and age: 50% women, 50% youth (<35)

↓

300 stories in the Northern regions
200 stories in the Western regions

République du Cameroun
Activités financées par le FIDA

Évaluation de la stratégie et du programme de pays


Projet d'appui au développement communautaire (PADC)
Programme national de développement des racines et des tubercules (PNDRT)
Projet d'appui au développement de la microfinance rurale (PADMIR)
Projet d'appui au développement des filières agricoles (PADFA)
Programme de promotion de l'entreprenariat agropastoral des jeunes (PEA-Jeunes)
Projet de promotion de l'entreprenariat aquacole (PPEA)
Maroua
EXTREME-NORD
Nigéria
Garoua
Tchad
NORD
Ngaoundéré
ADAMAOUA
NORD-OUEST
Bamenda
Bafoussam
OUEST
République centrafricaine
SUD-OUEST
CENTRE
Bertoua
Buea
Douala
LITTORAL
Yaoundé
EST
Ebolowa
SUD
N
0 50 100 Km
Guinée équatoriale
Gabon
Congo

FIDA

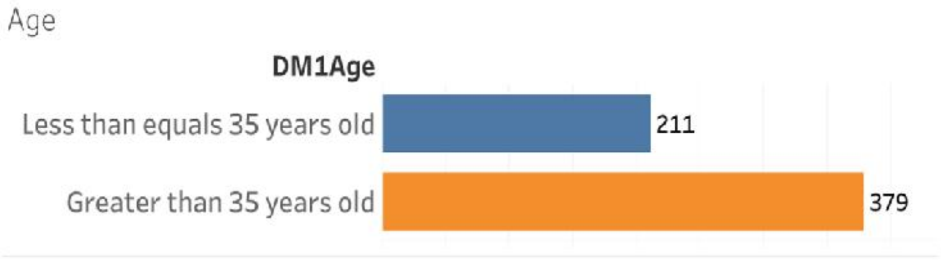
Les appellations figurant sur cette carte et sa représentation graphique ne constituent en aucun cas une prise de position du FIDA quant au tracé des frontières ou limites, ou aux autorités de tutelle des territoires considérés.

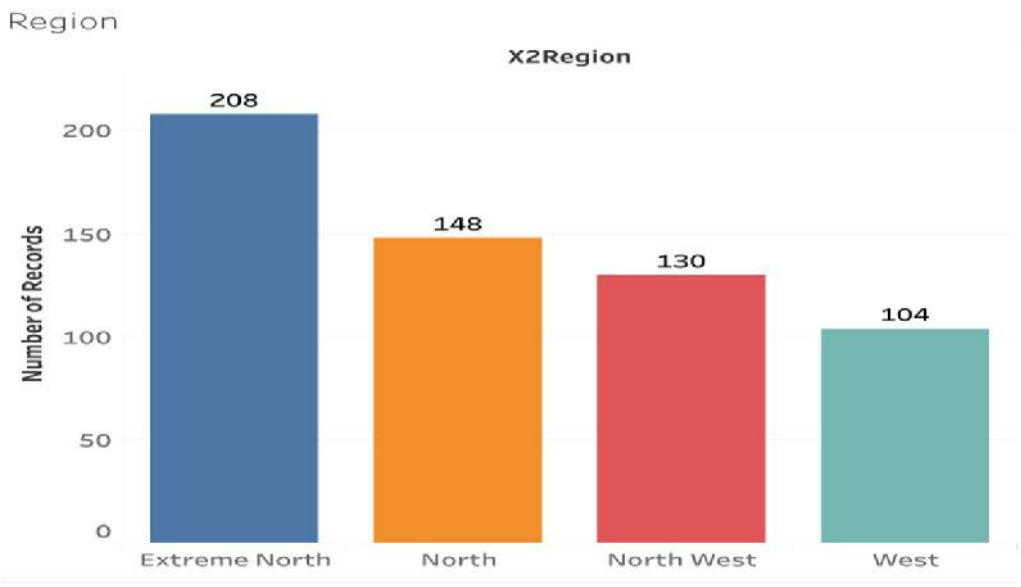
Source: FIDA | 17-02-2017

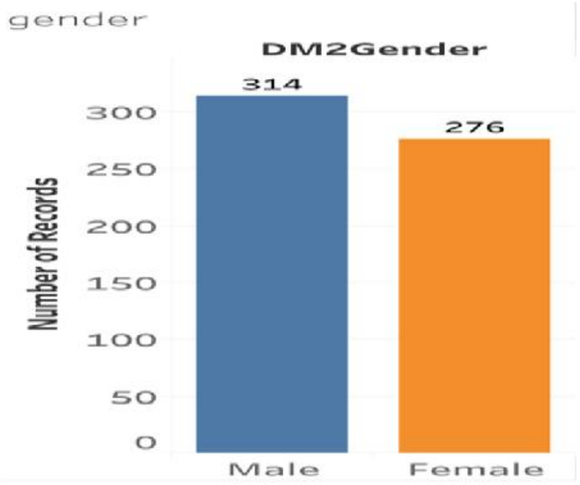
Stage 2. Story capture and self-interpretation

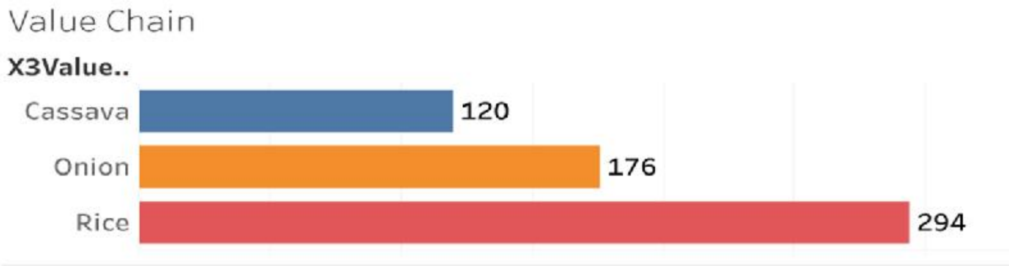
Sampling

- **Sample not representative but inclusive**
- **20 Cooperatives selected on the basis of their level of maturity and project support received**
- **Cooperatives involved in the sampling**









Stage 2. Story capture and self-interpretation

Data collection

- ➢ **Field information mission**
- ➢ **12 enumerators selected**
- ➢ **3 days of training in Yaoundé**
- ➢ **One-day Field testing**

- ➢ **2 regional teams of 6 enumerators**
- ➢ **8 to 12 days of data collection**
- ➢ **Data collection on iPads and paper**

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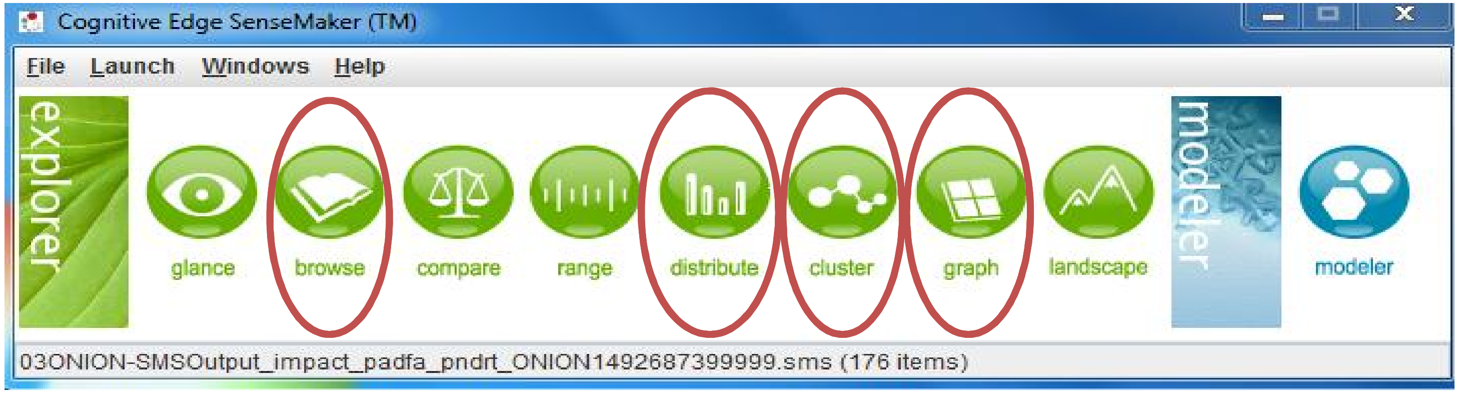
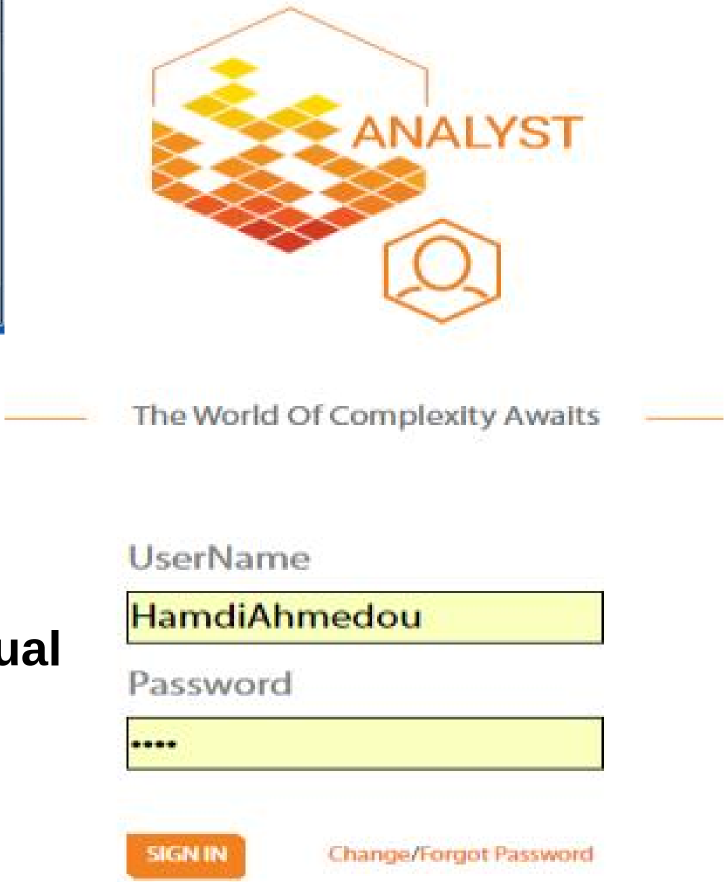
Stage 3. Software analysis: Discerning patterns & associations

Software


Cognitive Edge SenseMaker (TM)
File
Launch
Windows
Help
explorer
glance
browse
compare
range
distribute
cluster
graph
landscape
modeler
modeler

03ONION-SMSOutput_impact_padfa_pndrt_ONION1492687399999.sms (176 items)


ANALYST
The World Of Complexity Awaits
SIGN IN
Change/Forgot Password

UserName

HamdiAhmedou

Password

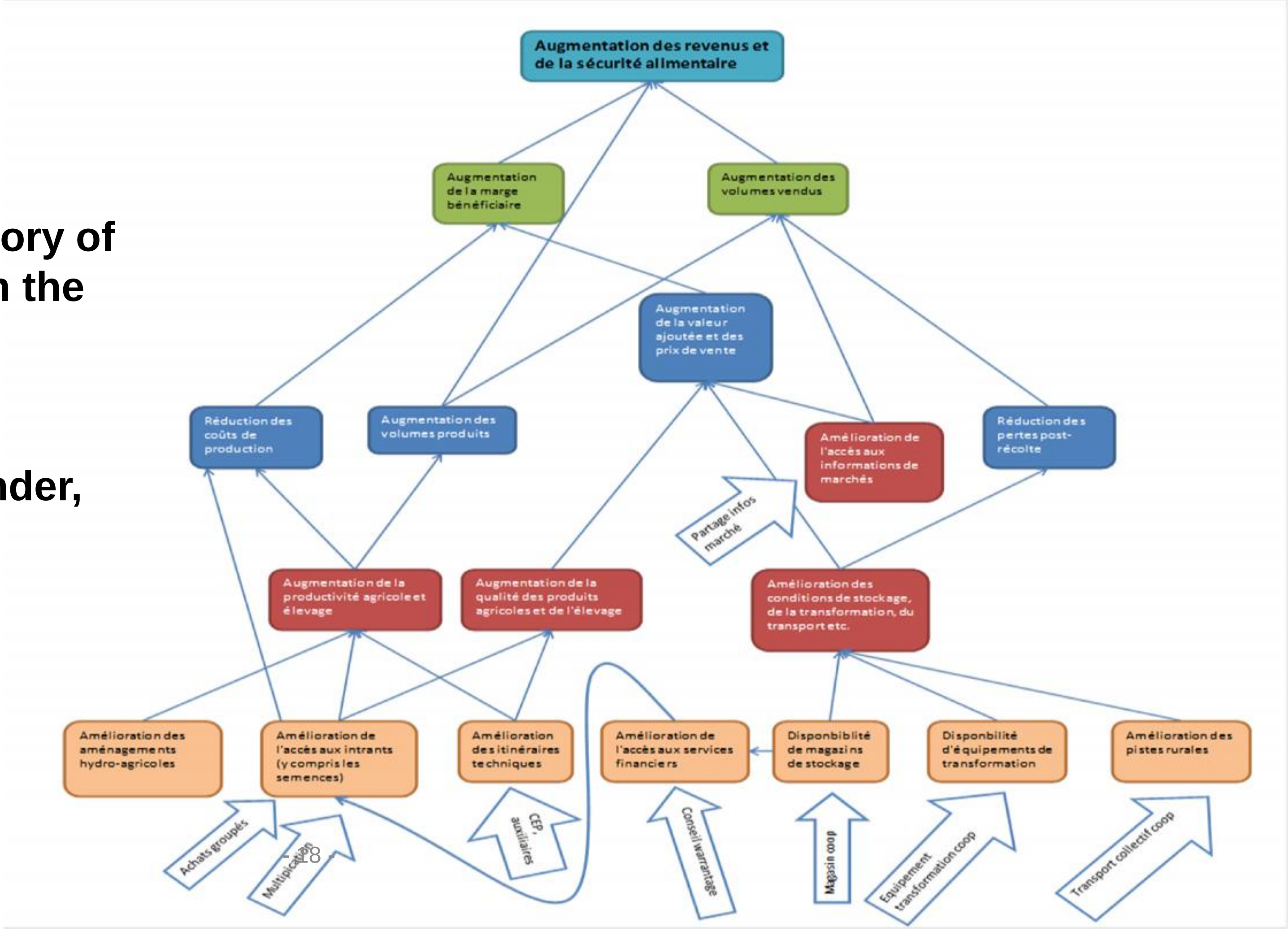
••••

- ➢ **Can be done from SenseMaker Explorer or from web-based Analyst**
- ➢ **Various functions to analyse triads, dyads, stones and correlations**
- ➢ **Overall, easy handling and understanding but still very manual**
- ➢ **Analyst version still under construction**

Stage 3. Software analysis: Discerning patterns & associations

Analysis approach

- **Analysis per crop**
- **Analysis built around the Theory of Change → identify changes in the causal pathways**
- **Use of variables to identify different patterns (region, gender, age, living standard…)**


Augmentation des revenus et de la sécurité alimentaire
Augmentation de la marge bénéficiaire
Augmentation des volumes vendus
Augmentation de la valeur ajoutée et des prix de vente
Réduction des coûts de production
Augmentation des volumes produits
Amélioration de l'accès aux informations de marchés
Réduction des pertes post-récolte
Partage infos marché
Augmentation de la productivité agricole et élevage
Augmentation de la qualité des produits agricoles et de l'élevage
Amélioration des conditions de stockage, de la transformation, du transport etc.
Amélioration des aménagements hydro-agricoles
Amélioration de l'accès aux intrants (y compris les semences)
Amélioration des itinéraires techniques
Amélioration de l'accès aux services financiers
Disponbiblité de magazins de stockage
Disponbilité d'équipements de transformation
Amélioration des pistes rurales
Achats groupés
Multiplication
CEP, auxiliaires
Conseil warrantage
Magasin coop
Equipement transformation coop
Transport collectif coop

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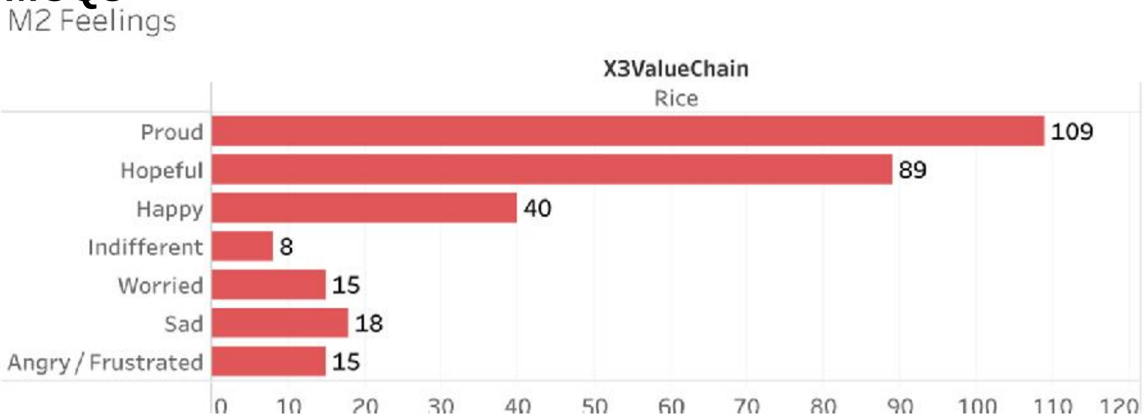
Investing in rural people

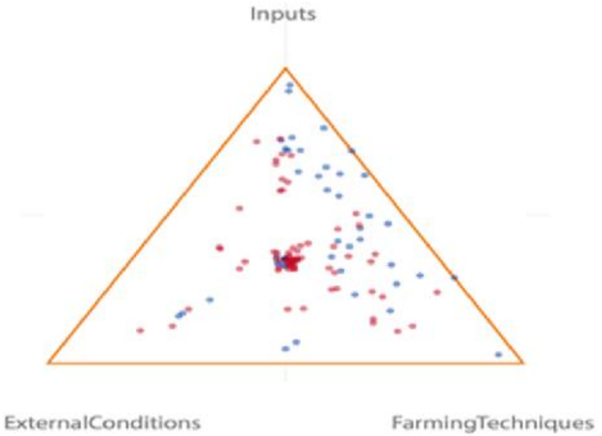
Stage 3. Software analysis: Discerning patterns & associations

Visual combinations of MCQs, triads, dyads, Stones

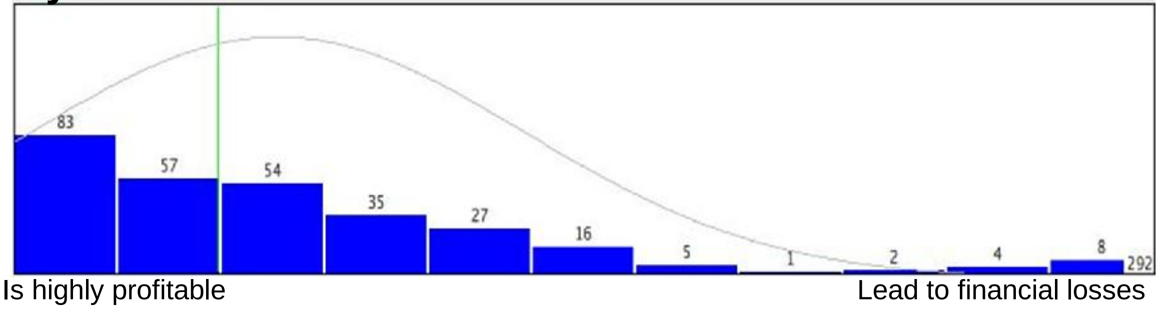
MCQs



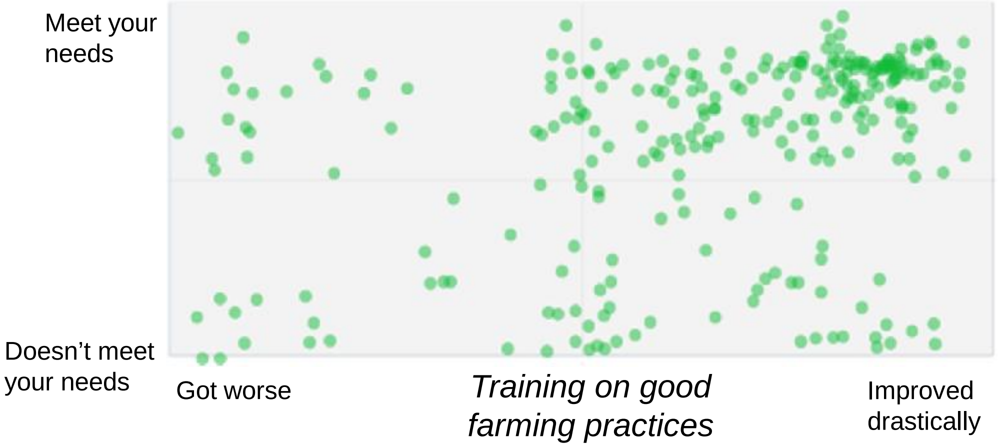
Triads



Dyads



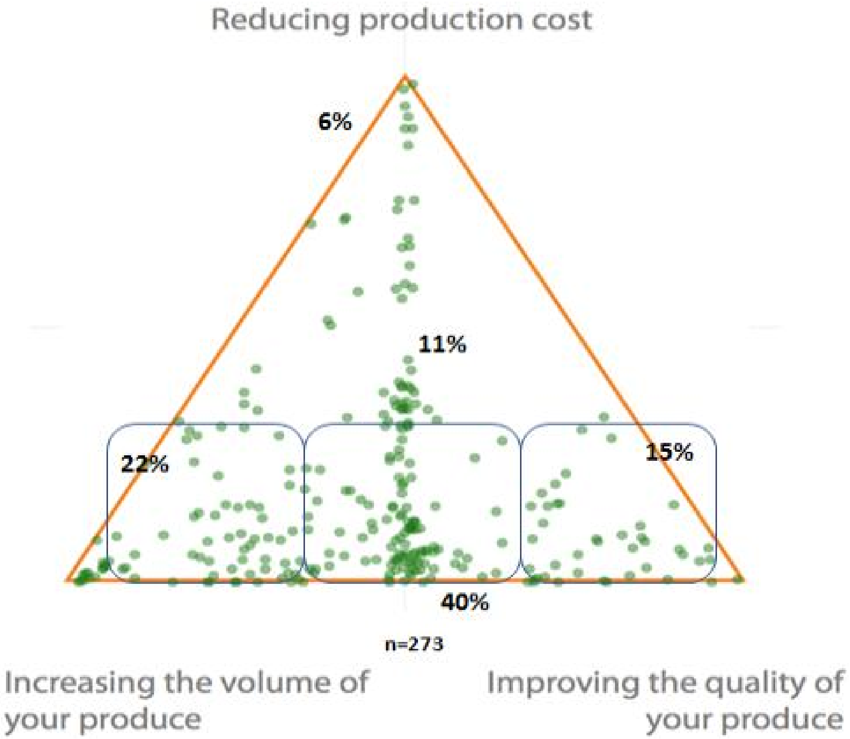
Stones



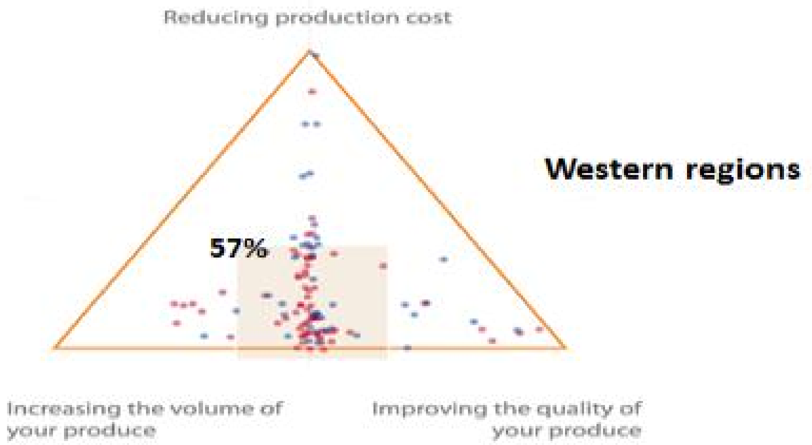
Stage 3. Software analysis: Discerning patterns & associations

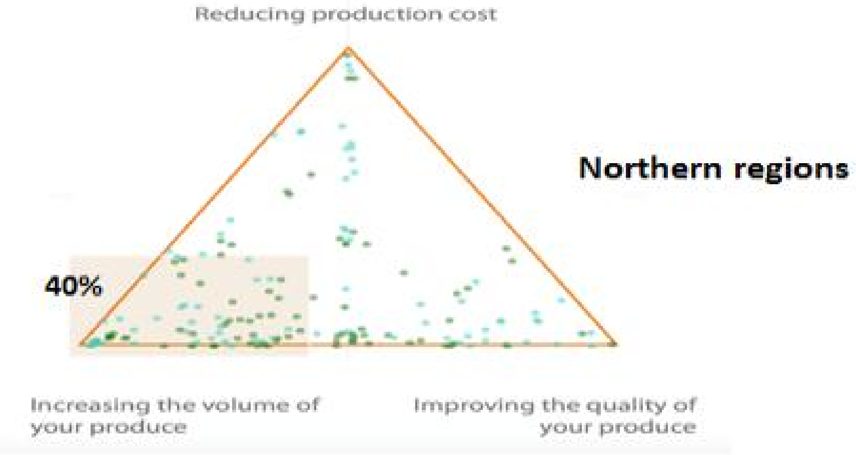
Pattern detection

Reflecting on the context of your story, where did you see most progress on production issues in the last period?



Rice

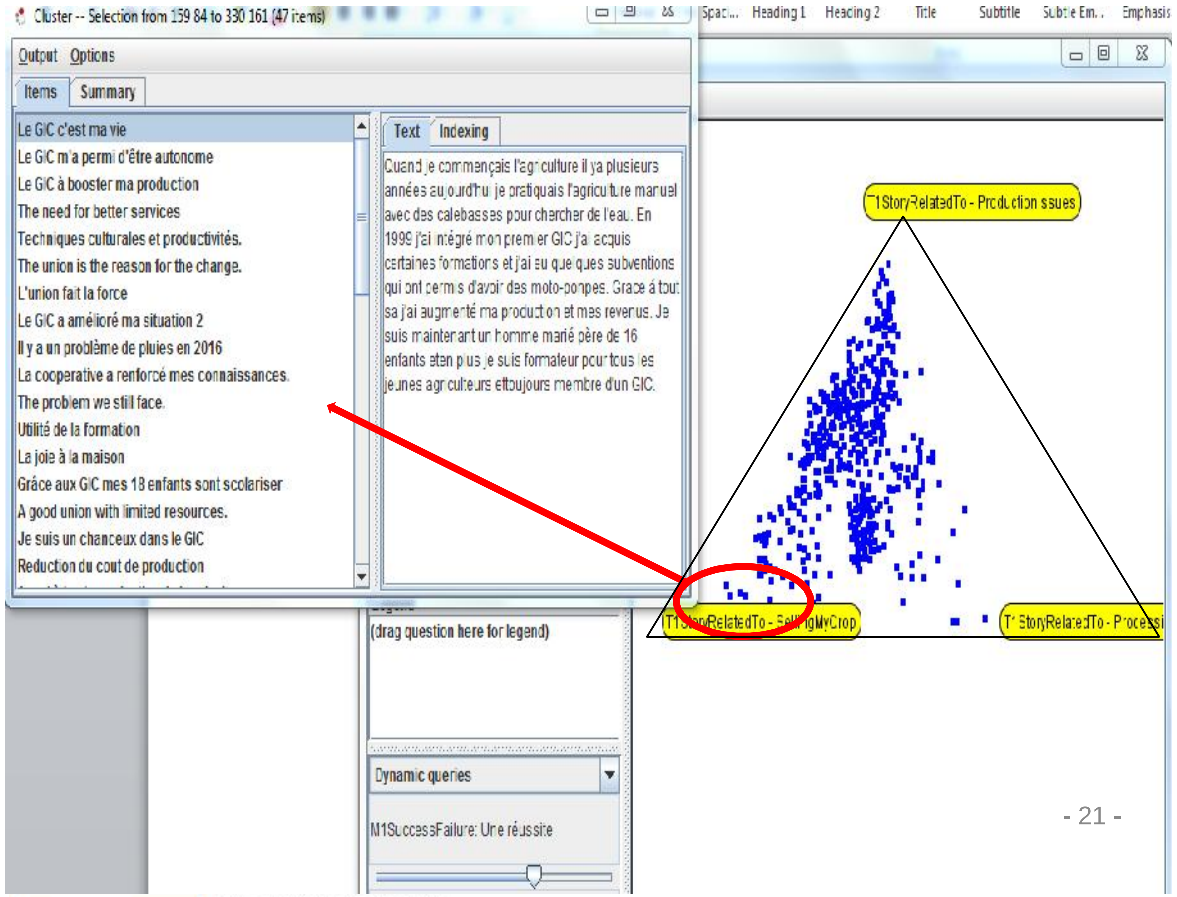




Stage 3. Software analysis: Discerning patterns & associations

Stories

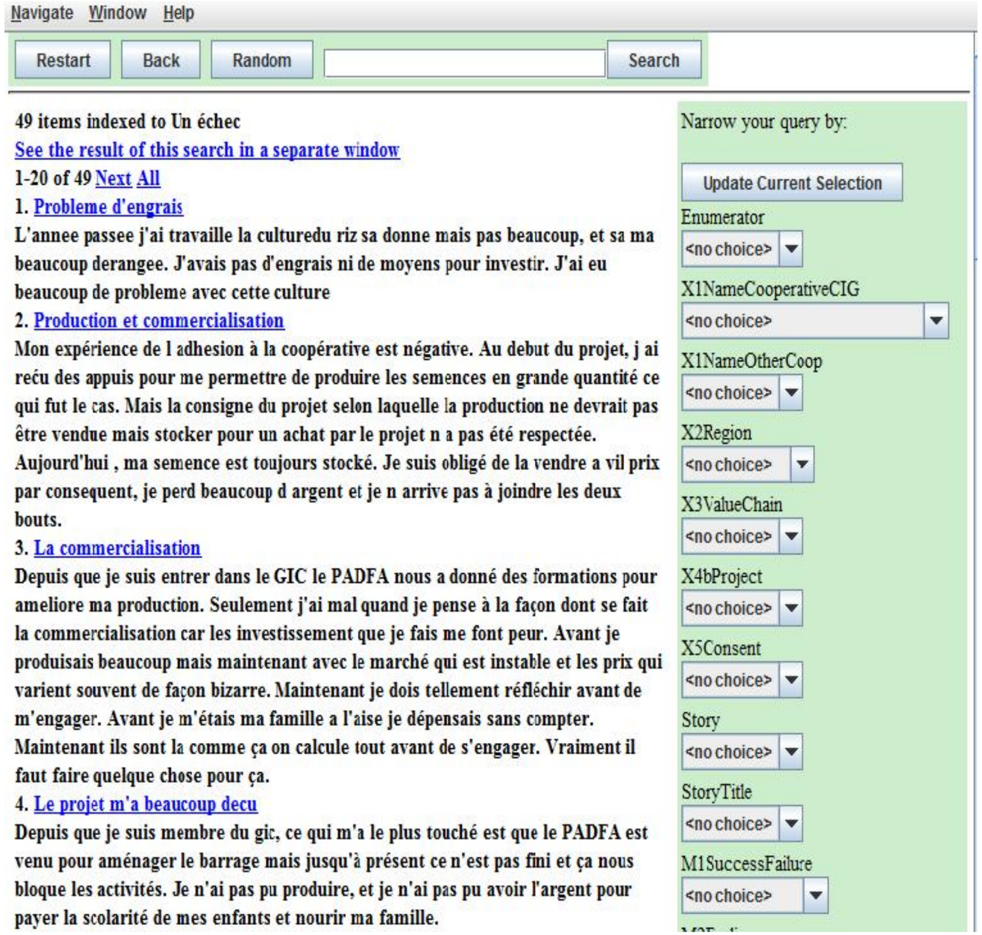
- **Ability to identify story packs**
- **Enables to confirm or nuance patterns**


Cluster -- Selection from 159 84 to 330 161 (47 items)
Output
Options
Items
Summary
Text
Indexing
Spac...
Heading 1
Heading 2
Title
Subtitle
Subtle Em...
Emphasis
T1StoryRelatedTo - Production ssues
T1StoryRelatedTo - SellingMyCrop
T1StoryRelatedTo - Processi
(drag question here for legend)
Dynamic queries
M1SuccessFailure: Une réussite

Le GIC c'est ma vie
Le GIC m'a permi d'être autonome
Le GIC à booster ma production
The need for better services
Techniques culturales et productivités.
The union is the reason for the change.
L'union fait la force
Le GIC a amélioré ma situation 2
Il y a un problème de pluies en 2016
La cooperative a renforcé mes connaissances.
The problem we still face.
Utilité de la formation
La joie à la maison
Gráce aux GIC mes 18 enfants sont scolariser
A good union with limited resources.
Je suis un chanceux dans le GIC
Reduction du cout de production

Quand je commençais l'agriculture il ya plusieurs années aujourd'hui je pratiquais l'agriculture manuel avec des calebasses pour chercher de l'eau. En 1999 j'ai intégré mon premier GIC j'ai acquis certaines formations et j'ai eu quelques subventions qui ont permis d'avoir des moto-ponpes. Grace à tout sa j'ai augmenté ma production et mes revenus. Je suis maintenant un homme marié père de 16 enfants eten plus je suis formateur pour tous les jeunes agriculteurs ettoujours membre d'un GIC.

- **Stories tell real experiences…**


Navigate
Window
Help
Restart
Back
Random
Search
Narrow your query by:
Update Current Selection
Enumerator
<no choice>
X1NameCooperativeCIG
<no choice>
X1NameOtherCoop
<no choice>
X2Region
<no choice>
X3ValueChain
<no choice>
X4bProject
<no choice>
X5Consent
<no choice>
Story
<no choice>
StoryTitle
<no choice>
M1SuccessFailure
<no choice>

49 items indexed to Un échec
See the result of this search in a separate window
1-20 of 49 Next All

1. Probleme d'engrais

L'annee passee j'ai travaille la culturedu riz sa donne mais pas beaucoup, et sa ma beaucoup derangee. J'avais pas d'engrais ni de moyens pour investir. J'ai eu beaucoup de probleme avec cette culture

2. Production et commercialisation

Mon expérience de l adhesion à la coopérative est négative. Au debut du projet, j ai reću des appuis pour me permettre de produire les semences en grande quantité ce qui fut le cas. Mais la consigne du projet selon laquelle la production ne devrait pas être vendue mais stocker pour un achat par le projet n a pas été respectée. Aujourd'hui , ma semence est toujours stocké. Je suis obligé de la vendre a vil prix par consequent, je perd beaucoup d argent et je n arrive pas à joindre les deux bouts.

3. La commercialisation

Depuis que je suis entrer dans le GIC le PADFA nous a donné des formations pour ameliore ma production. Seulement j'ai mal quand je pense à la façon dont se fait la commercialisation car les investissement que je fais me font peur. Avant je produisais beaucoup mais maintenant avec le marché qui est instable et les prix qui varient souvent de façon bizarre. Maintenant je dois tellement réfléchir avant de m'engager. Avant je m'étais ma famille a l'aise je dépensais sans compter. Maintenant ils sont la comme ça on calcule tout avant de s'engager. Vraiment il faut faire quelque chose pour ça.

4. Le projet m'a beaucoup decu

Depuis que je suis membre du gic, ce qui m'a le plus touché est que le PADFA est venu pour aménager le barrage mais jusqu'à présent ce n'est pas fini et ça nous bloque les activités. Je n'ai pas pu produire, et je n'ai pas pu avoir l'argent pour payer la scolarité de mes enfants et nourir ma famille.

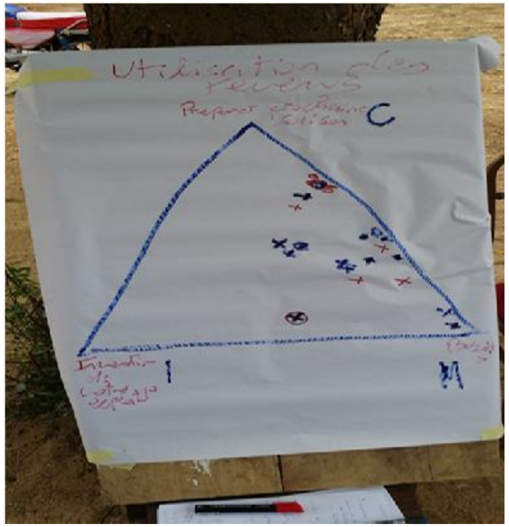
Stage 4 – Sense-making workshops

- 4 workshops with 20 to 30 participants from 2 to 3 cooperatives each
- 2 facilitators per workshop
- Stakeholders help evaluators to understand patterns and trends in the data
- Feedback and mutual learning

Stage 4 – Sensemaking workshops

surface
rendement
Eau

- **Stories and patterns are not enough to draw conclusions**
- **Structured discussions around topics identified by software analysis:** Factors affecting agricultural production, price risk management, cooperative governance, use of income, estimate of added value of different crops…


Utilisation des revenus
C
I
M

Stage 5 – Report drafting

- **Deeper analysis of stories linked to patterns**
- **Exploiting sense-making workshop conclusions**
- **Drafting of contribution study report**
- **Integrate findings in CSPE report**

Conclusion

➢ Advantages

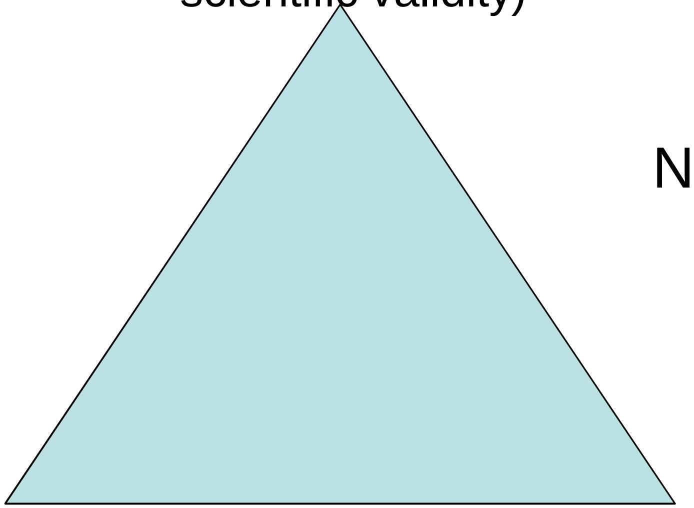
- Quick collection and analysis of qualitative data (cost and time efficient)
- Provides evidence-based “hard” and “soft” data
- Participatory approach involving respondents in data analysis
- Fit in the evaluation process and adapted to a mixed-methods approach

➢ Limitations

- Researcher biases are unavoidable (framework design, TOC, sampling…)
- Issues of representativeness
- Requires technical support at first use
- Requires close supervision of data collection

Conclusion

Where do you put most emphasis in your evaluations?



Credibility
(independence, scientific validity)

N/A 🟦

Relevance
(responding to decision making need, timing)

Legitimacy
(fairness, inclusiveness, transparency)

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Thank you !

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Budget

Cost estimate (Cameroon)

Item	Details	Cost (USD)
Technical expertise	Around 45 days of technical support in each phase of the process	20 000
SenseMaker software license	License fees for the activation of the COLLECTOR site/app and the use of the server for data collection.	2 500
Tablets rental	This includes the cost of renting 10 tablets for a period of two weeks.	500
	Technical support sub-total	23 000
Expenses of the enumerators	In accordance with local fares applicable	6 000
Data collection mission	Flights and per diem for international experts (16 days mission) and logistics	11 000
	TOTAL	**40 000**

THEME 3: DISSEMINATION AND CROSS-CUTTING ISSUES: How can ICT tools contribute to enhance evaluation rigour and what potential do they hold for the future?

Breakout session 11. Enabling community participation and validation of digitally collected data through realtime feedback

Presenters:
Mr Simone Lombardini, lobal Impact
Evaluation Adviser, Oxfam GB
Ms Emily Tomkys, ICT Programme Officer,
Oxfam GB

real TIME FEEDBACK

Enabling community participation and validation of digitally collected data through real time feedback

Emily Tomkys & Simone Lombardini

June 2017

OXFAM

WHO WE ARE

Emily Tomkys

ICT in Programme Officer – PMEAL

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Simone Lombardini

Global Impact Evaluator Adviser

@simonelomb

slombardini@oxfam.org.uk

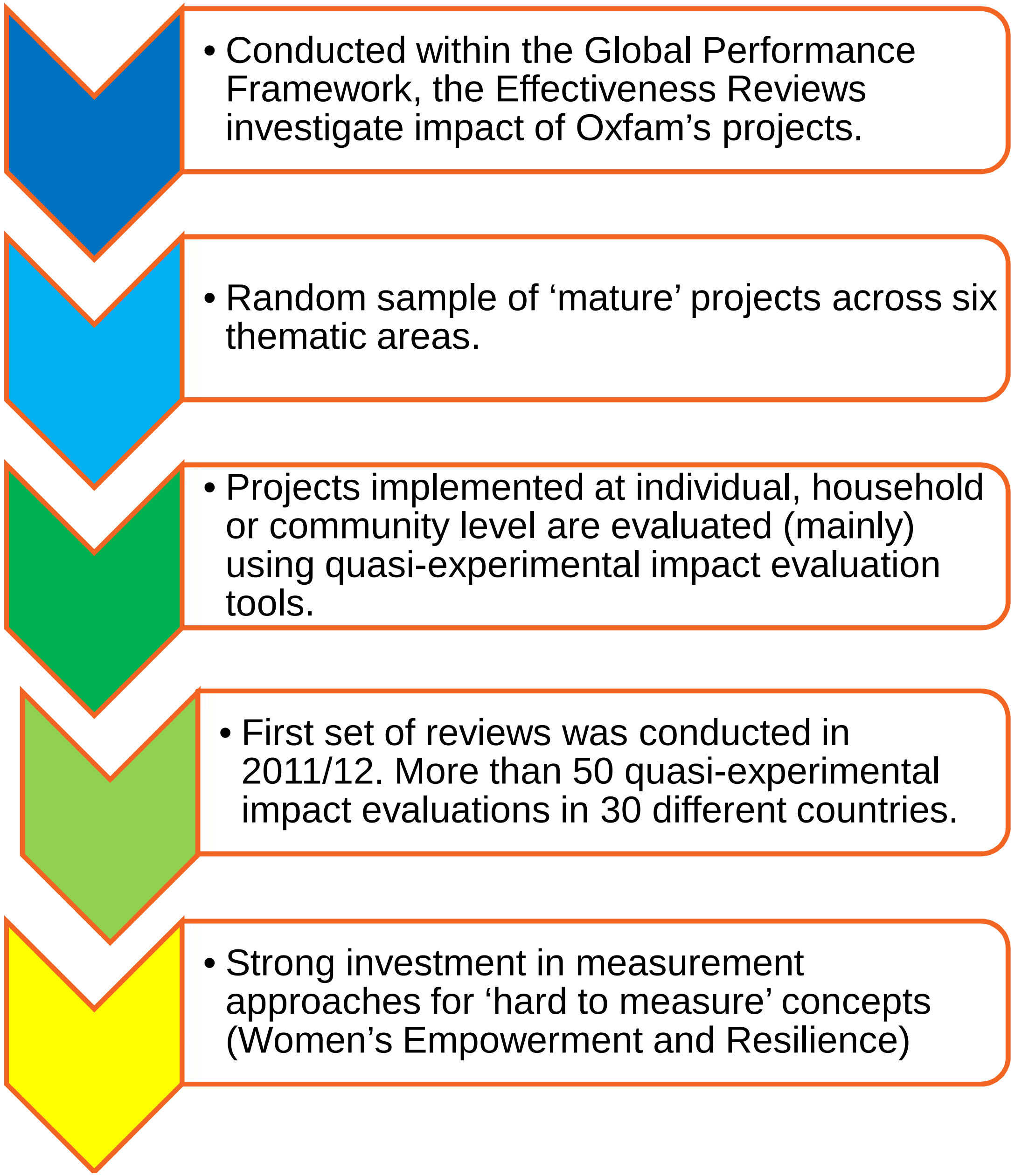
OBJECTIVES

Share our experience and initial considerations in using and sharing survey data collected with digital devices, in order to:

1) Greater engagement with communities:
    - by reducing the feeling of extractive process produced by household surveys;
2) Increase knowledge:
    - Sharing relevant information to local communities;
    - Improve programme understanding by better integrating qualitative and quantitative data and techniques.

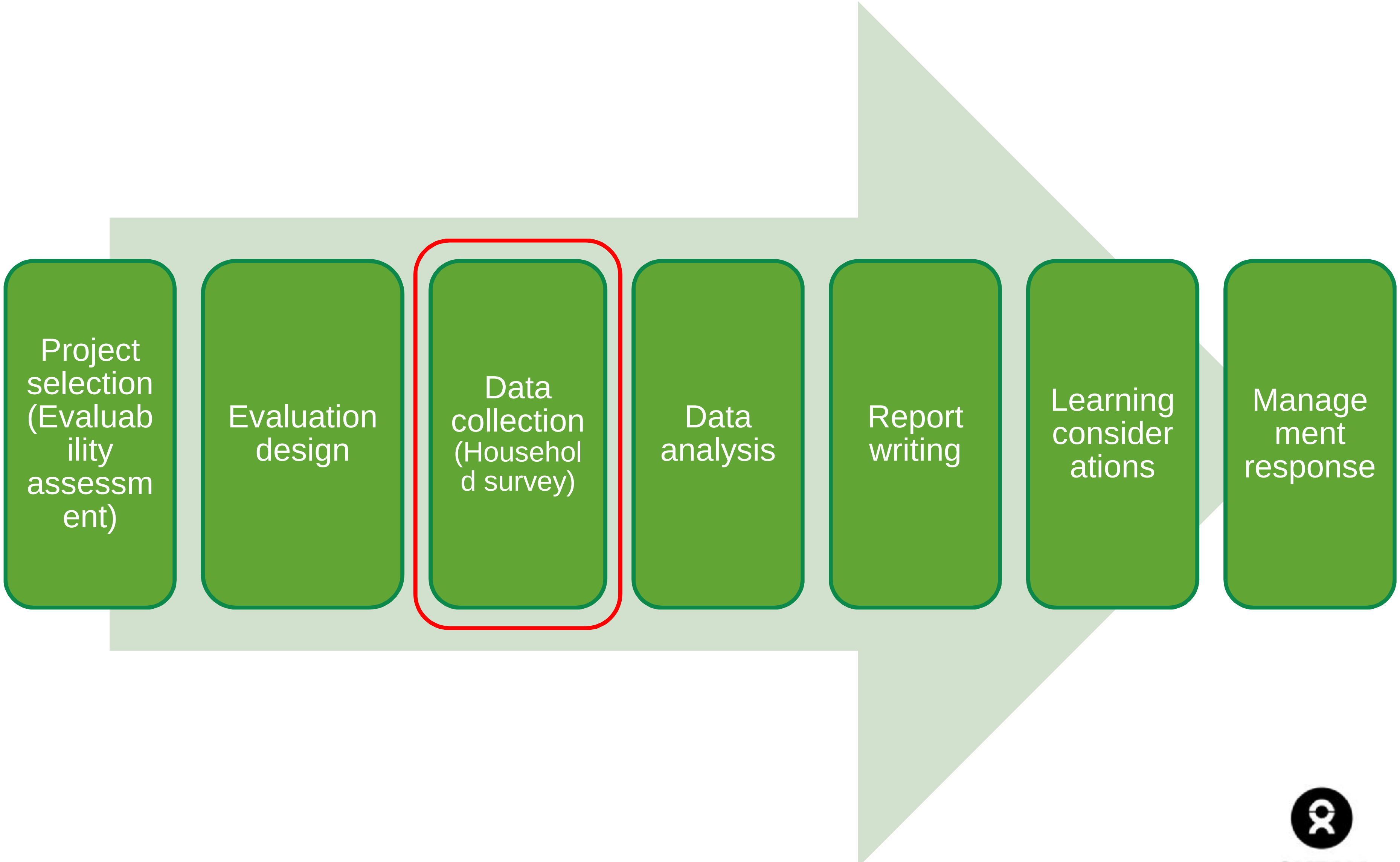
INTRODUCTION & MOTIVATIONS

EFFECTIVENESS REVIEWS



- Conducted within the Global Performance Framework, the Effectiveness Reviews investigate impact of Oxfam's projects.
- Random sample of 'mature' projects across six thematic areas.
- Projects implemented at individual, household or community level are evaluated (mainly) using quasi-experimental impact evaluation tools.
- First set of reviews was conducted in 2011/12. More than 50 quasi-experimental impact evaluations in 30 different countries.
- Strong investment in measurement approaches for 'hard to measure' concepts (Women's Empowerment and Resilience)

EVALUATION PROCESS



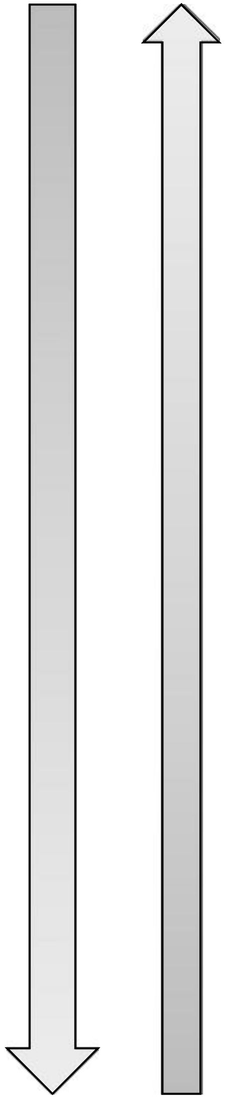
- Project selection (Evaluability assessment)
- Evaluation design
- Data collection (Household survey)
- Data analysis
- Report writing
- Learning considerations
- Management response

OXFAM

VALUE ADD OF ICTs

Time

Cost



Data accuracy

Data security

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PERSISTING LIMITATIONS

1. Recognition that household surveys can be long and tedious.

- Respondents may feel little connection and motivations to take part in the survey.
- Issues with response rate and representativeness of the study

2. Long knowledge-chain.

- Respondents dedicate time to provide detailed information which researchers and evaluators use to answer evaluation/research questions.
  - Are the research/evaluation questions relevant to respondents and communities?
  - Are the results shared back with the original communities?
  - If so, after how long?

VALUE ADD OF ICTs

By sharing and using survey data during data collection can increase:

- Accountability & participation
- Knowledge & understanding

SHOWCASES

Thailand (2014/15)
Armenia (2015/16)
Zambia (2016/17)

THAILAND (2014/15)

- Socialization process with local leaders of agricultural groups
- Shared summary statistics of key indicators:
  - Farming activities
  - Water storage capacity
  - Weather forecast

ARMENIA (2015/16)

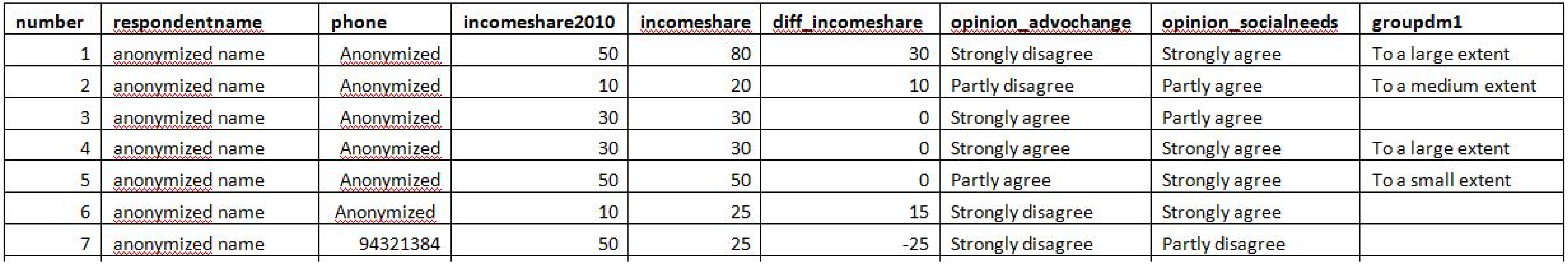
- Attempt to better integrate qualitative and quantitative data
- Use real-time survey data to conduct ‘**think aloud interviews**’ to a random sub-sample of survey respondents.

ARMENIA (2015/16)

1 - CONTRIBUTION TO HOUSEHOLD INCOME

Mrs *[respondentname]*, you indicated to our staff that your contribution to household income has moved from [*incomeshare2010*]% in 2010 to currently [*incomeshare*]%.

Can you explain us why? What has happened to produce this change?



number	respondentname	phone	incomeshare2010	incomeshare	diff_incomeshare	opinion_advochange	opinion_socialneeds	groupdm1
1	anonymized name	Anonymized	50	80	30	Strongly disagree	Strongly agree	To a large extent
2	anonymized name	Anonymized	10	20	10	Partly disagree	Partly agree	To a medium extent
3	anonymized name	Anonymized	30	30	0	Strongly agree	Partly agree	
4	anonymized name	Anonymized	30	30	0	Strongly agree	Strongly agree	To a large extent
5	anonymized name	Anonymized	50	50	0	Partly agree	Strongly agree	To a small extent
6	anonymized name	Anonymized	10	25	15	Strongly disagree	Strongly agree	
7	anonymized name	94321384	50	25	-25	Strongly disagree	Partly disagree	

ZAMBIA (2016/17)

- Presentation to Disaster Management Committee
    - *Water source*
    - *Climate change in harvest*
    - *Agricultural techniques*
    - *Early warning systems*

ZAMBIA (2016/17)

- Socialisation with survey communities
  - Ranging 20-50 participants per group

“it was useful, now we know that in some areas other people are producing better so we can go and learn about that”

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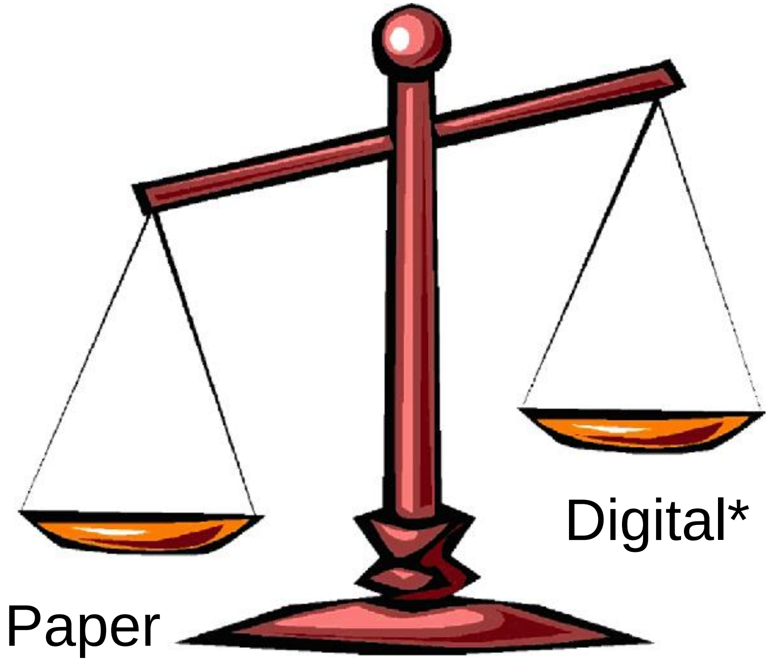
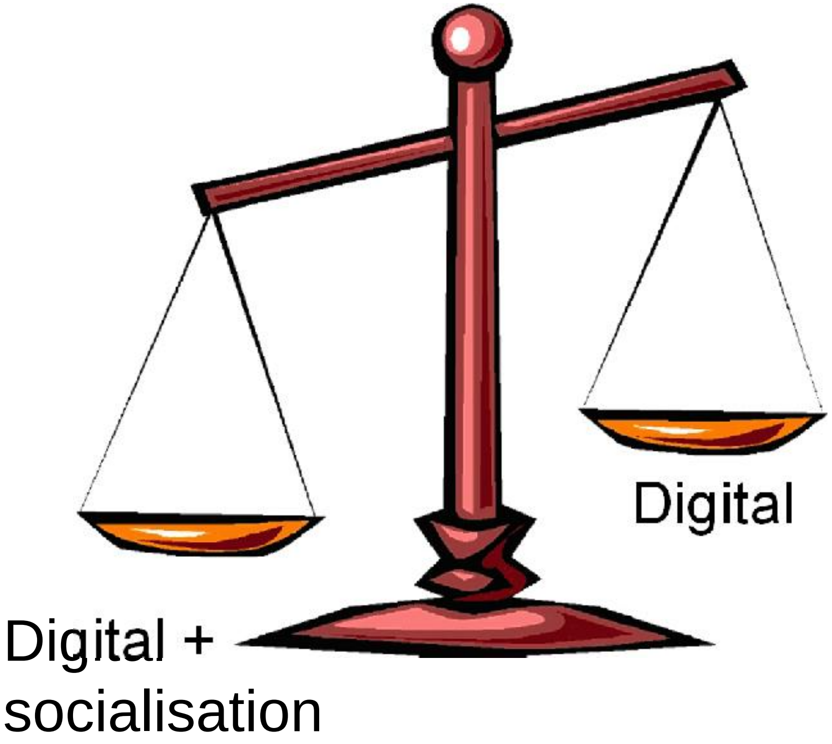
CONSIDERATIONS

COST


Digital*
Paper


Digital
Digital + socialisation

-15%

+10/15%

* Assuming devices are already available

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THE KEY QUESTIONS

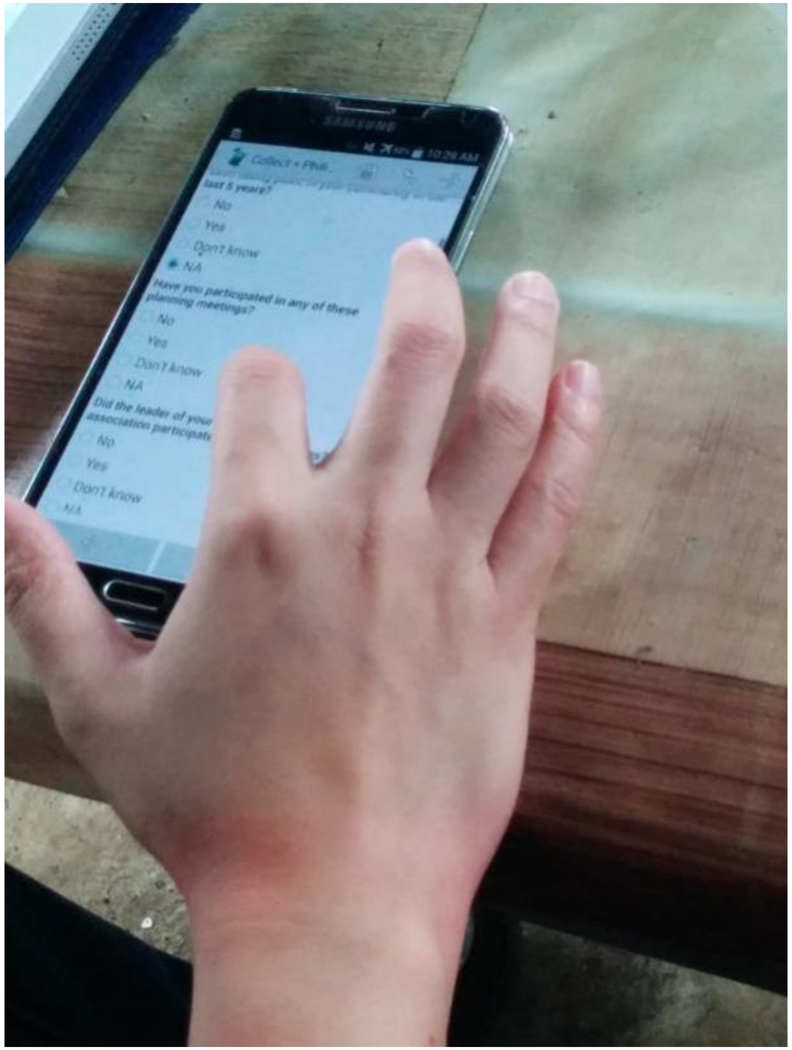
- Who to communicate to?
  - Define the objective of the exercise

- How to communicate?
  - Define target audience, define tools

- What to present?
  - Data protection risks with sharing survey data
    - Aggregate data only if shared in public
    - No sensitive information
  - The information needs to be useful for the audience

CHALLENGES

- Not all household surveys can be conducted with digital devices
- Data protection risk with sharing data
- Inclusivity of feeding back results
- Capacity issue
- Coordination between staff working on different parts of the process



GOING FORWARD

- All household surveys to be done digitally (if suitable)
- Systematise the socialisation process to facilitate its use in future data collection processes

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http://policy-practice.oxfam.org.uk/publications/going-digital-using-digital-technology-to-conduct-oxfams-effectiveness-reviews-578816

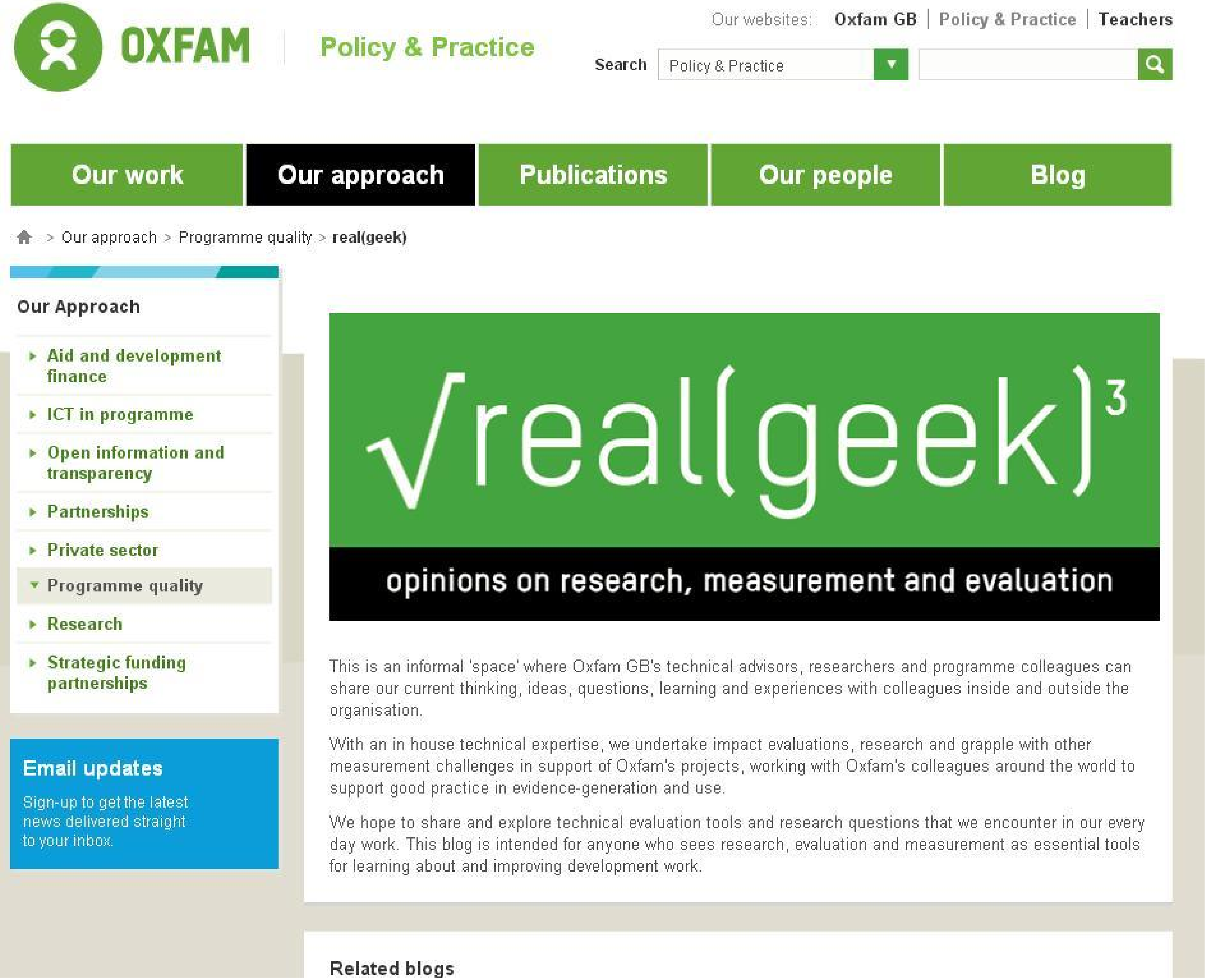
OXFAM CASE STUDY SEPTEMBER 2015

GOING DIGITAL

Using digital technology to conduct Oxfam's Effectiveness Reviews

KALOY
BELLO

http://policy-practice.oxfam.org.uk/our-approach/monitoring-evaluation/real-geek


OXFAM
Policy & Practice
Our websites: Oxfam GB | Policy & Practice | Teachers
Search
Policy & Practice
Our work
Our approach
Publications
Our people
Blog
> Our approach > Programme quality > real(geek)
Our Approach
Aid and development finance
ICT in programme
Open information and transparency
Partnerships
Private sector
Programme quality
Research
Strategic funding partnerships
Email updates
Sign-up to get the latest news delivered straight to your inbox.
√real(geek)³
opinions on research, measurement and evaluation
Related blogs

This is an informal 'space' where Oxfam GB's technical advisors, researchers and programme colleagues can share our current thinking, ideas, questions, learning and experiences with colleagues inside and outside the organisation.

With an in house technical expertise, we undertake impact evaluations, research and grapple with other measurement challenges in support of Oxfam's projects, working with Oxfam's colleagues around the world to support good practice in evidence-generation and use.

We hope to share and explore technical evaluation tools and research questions that we encounter in our every day work. This blog is intended for anyone who sees research, evaluation and measurement as essential tools for learning about and improving development work.

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IN CONCLUSION

We shared our experiences and considerations in using and sharing survey data collected with digital devices, in order to:

1) Greater engagement with communities:
    - by reducing the feeling of extractive process produced by household surveys;
2) Increase knowledge:
    - Sharing relevant information to local communities;
    - Improve programme understanding by better integrating qualitative and quantitative data and techniques.

THANK YOU

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Breakout session 12 – Exploring the soft side: Ethics, protection and inclusion in ICT4Eval

Presenters:
Mr Michael Bamberger, independent consultant and author of UN Global Pulse report on “Integrating Big Data into Monitoring and Evaluation of Development Programmes”
Ms Linda Raftree, independent consultant

Exploring the Soft Side

Ethics, protection and inclusion in ICT4Eval

Michael Bamberger, Independent Evaluator
Linda Raftree, Independent Consultant
ICT4Eval, June 6-7, 2017

Part .1

What are the opportunities that ICT offers for inclusion and participation?

ICT is *potentially* a two-way street

ICT offers access to a wider range of information

There are potential benefits to a project’s target populations

ICT offers potential benefits for vulnerable groups and those with less of a voice

There are some wider benefits of ICT

But…. none of these potential benefits happen automatically!

Part .2

What are some of the challenges and barriers to consider?

Operational : staff, resources, capacity

Methodological : bias, rigor, tech-driven

Ethical:
privacy, security, unintended consequences

Behavioral or organizational: resistance to change

Sectoral :
nuances and contexts

Technical:
build or buy, connectivity, total cost of adoption, interoperability

Links and References ((1

Raftree, L and Bamberger, M (2014) Emerging opportunities: Monitoring and evaluation in a tech-enabled world. Rockefeller Foundation. Available at: http://www.rockefellerfoundation.org/blog/emerging-opportunities-monitoring .
Challenges and opportunities in the utilization of ICT.

Bamberger, M,. Raftree, L,. and Olazabal, V (2016). The role of new information and communication technologies in equity-focused evaluations: Opportunities and challenges. **Evaluation 2016, Vol 22(2) .228-244**
Review of many of the issues discussed in this workshop.

Bamberger, M., Tarsilla, M. and Hesse-Biber "Why so many "rigorous" evaluations fail to identify unintended consequences of development programs: How mixed methods can contribute." **Evaluation and Program Planning 55 (2016) .155-162**
The case study on Zambia illustrates the potential downside of women's access to cell-phones in Zambia when male partners feel threatened and can react violently. Often these outcomes are overlooked. Examines the reasons why the negative outcomes of this and many other development programs are overlooked in the evaluations.

Links and References ((2

Bamberger, M (2017) Integrating big data into the monitoring and evaluation of development programs. **UN Global Pulse and the Rockefeller Foundation**. Available at: http://unglobalpulse.org/sites/default/files/IntegratingBigData_intoMEDP_web_UNGP.pdf . *Review of how big data and ICT are being used in the M&E of international development programs.*

Raftree, L. Wait… What? https://lindaraftree.com/ *Linda blogs regularly on the ethics of using ICTs and technologies in development programming.*

MERL Tech News http://merltech.org/category/news/ *MERL Tech is a conference focused on the use of technology in monitoring, evaluation, research and learning. It currently happens twice a year (in London and Washington, DC) and is expanding to other cities as well. MERL Tech is organized by Linda Raftree and Wayan Vota.*

Links and References ((3

GSMA (2015) Bridging the gender gap: Mobile access and usage in low and middle-income countries. Available at: http://gsma.com/connectedwomen/wp-content/.uploads/2015/02/GSM0001_02252015_GSMAReport_FINAL-WEB-spreads.pdf

ICT Works: 6 recommendations for supporting women and girls power, voice and influence through digital ICTs Available at: http://www.ictworks.org/2017/04/25/6-recommendations-for-supporting-women-and-girls-power-voice-and-influence-through-digital-icts/

Breakout session 13 – How to use social media to positively impact development projects

Presenter:
Alberto Souviron, Digital Media Specialist

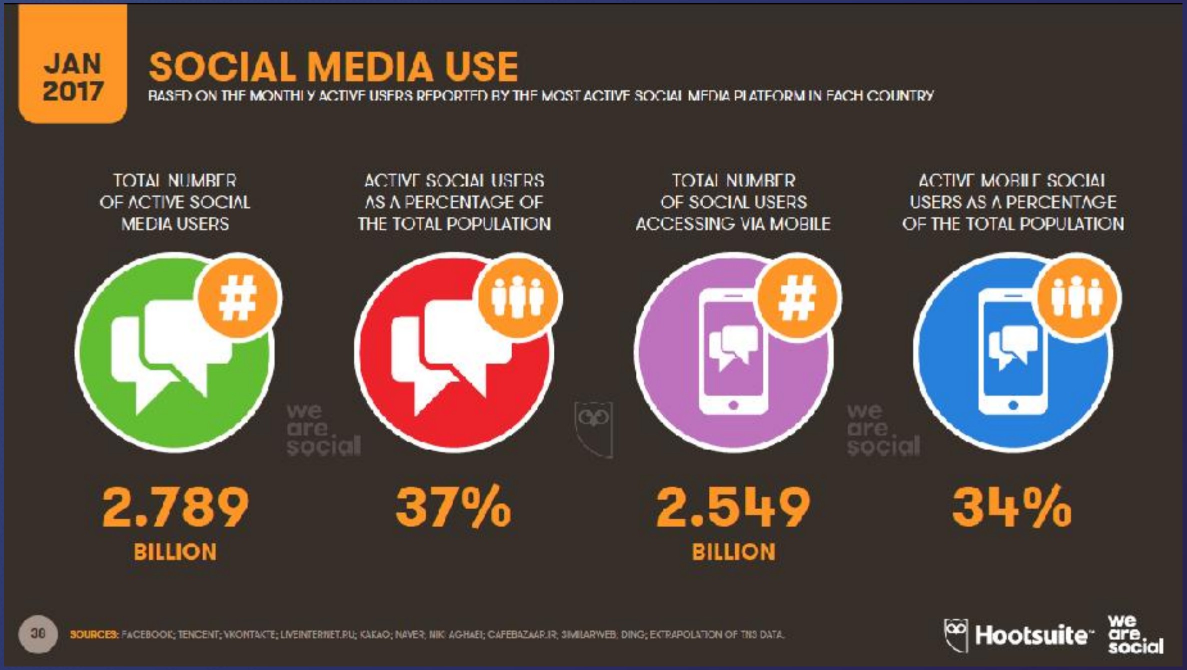
Social Media

How to use it to impact development projects positively

Not anymore a fashion

Socialnomics 2017
IN ONE OF THE MOST TRANSFORMATIONAL TIMES
IN HUMAN HISTORY
DID YOU KNOW ?
talkwalker
2017
Social Media Trends
2017
0:31 / 2:28
YouTube

Social and the world



JAN 2017

SOCIAL MEDIA USE

BASED ON THE MONTHLY ACTIVE USERS REPORTED BY THE MOST ACTIVE SOCIAL MEDIA PLATFORM IN EACH COUNTRY

TOTAL NUMBER OF ACTIVE SOCIAL MEDIA USERS

2.789 BILLION

ACTIVE SOCIAL USERS AS A PERCENTAGE OF THE TOTAL POPULATION

37%

TOTAL NUMBER OF SOCIAL USERS ACCESSING VIA MOBILE

2.549 BILLION

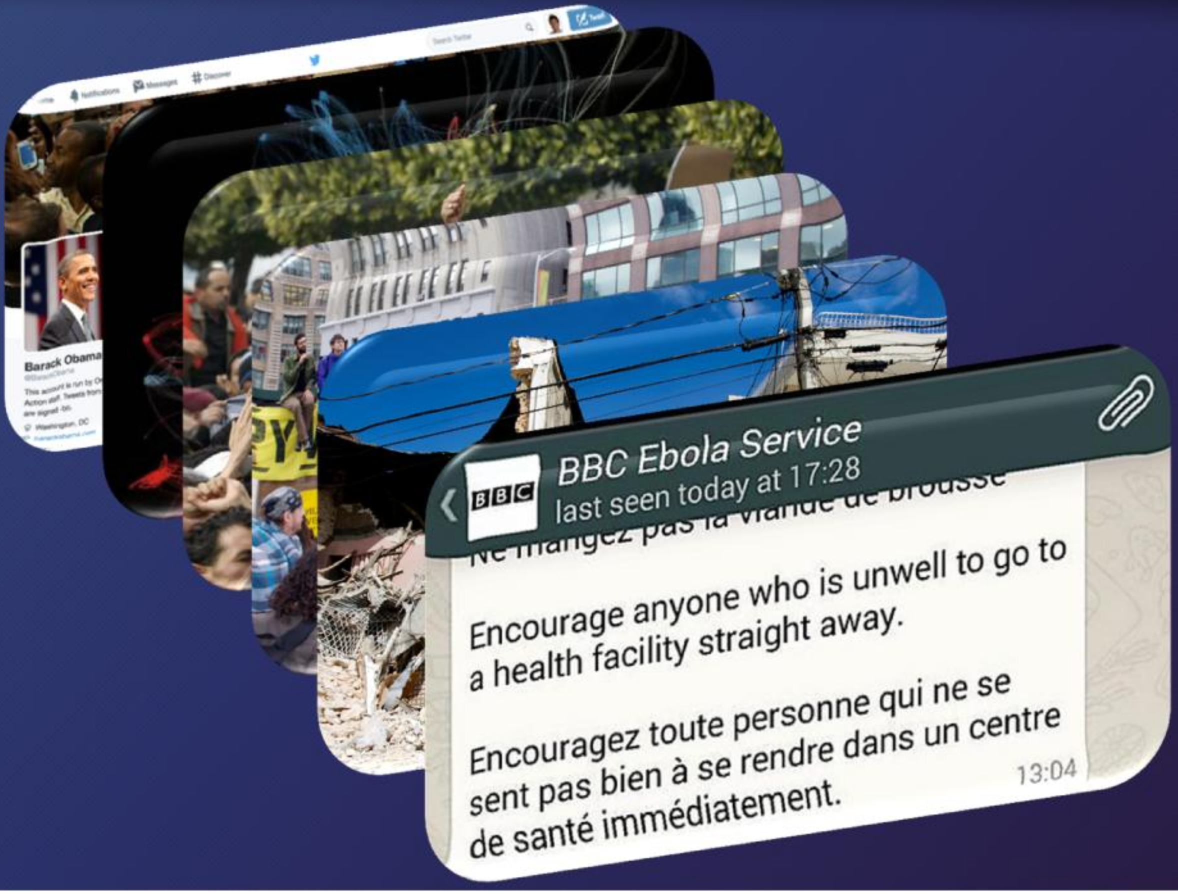
ACTIVE MOBILE SOCIAL USERS AS A PERCENTAGE OF THE TOTAL POPULATION

34%

38

SOURCES: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIK AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF TNS DATA.

Different uses



BBC Ebola Service
last seen today at 17:28

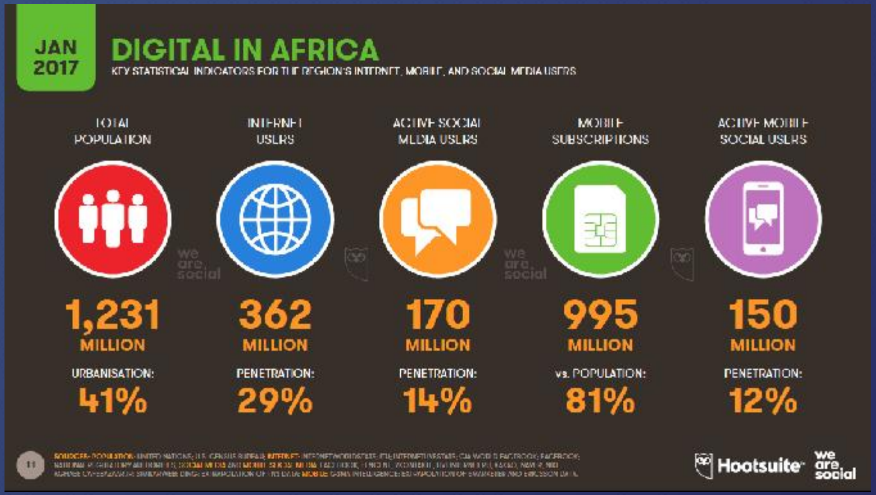
Ne mangez pas la viande de brousse

Encourage anyone who is unwell to go to a health facility straight away.

Encouragez toute personne qui ne se sent pas bien à se rendre dans un centre de santé immédiatement.

13:04

Urban vs. rural



JAN 2017

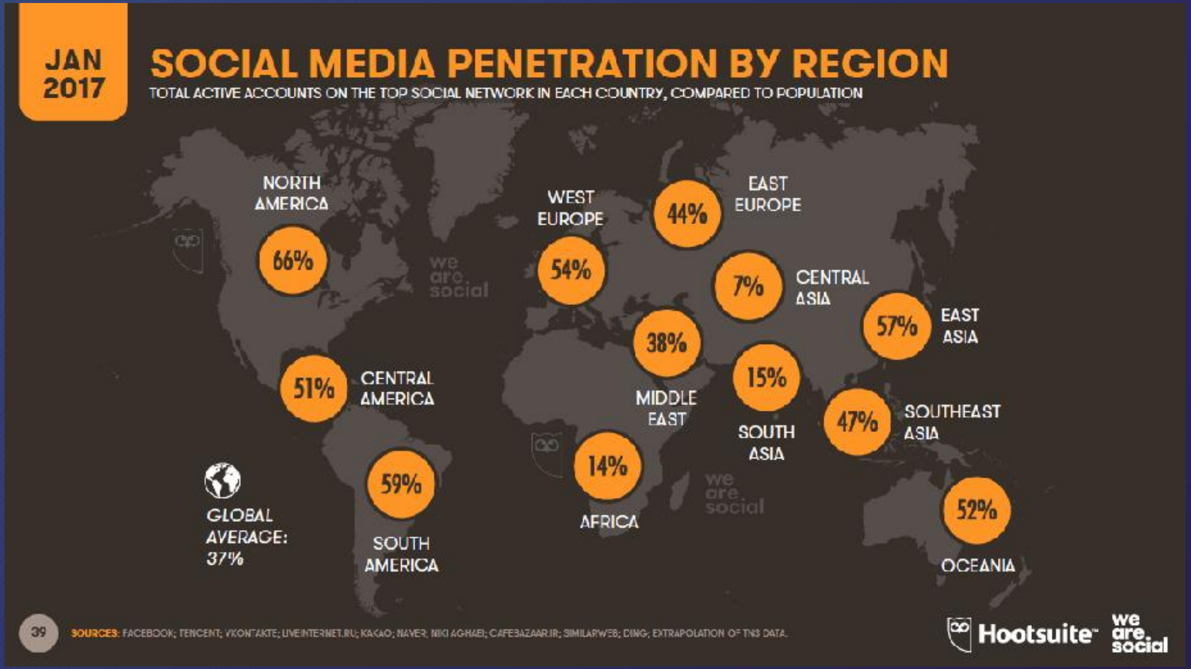
DIGITAL IN AFRICA

KEY STATISTICAL INDICATORS FOR THE REGION'S INTERNET, MOBILE, AND SOCIAL MEDIA USERS

TOTAL POPULATION	INTERNET USERS	ACTIVE SOCIAL MEDIA USERS	MOBILE SUBSCRIPTIONS	ACTIVE MOBILE SOCIAL USERS
1,231 MILLION	362 MILLION	170 MILLION	995 MILLION	150 MILLION
URBANISATION: 41%	PENETRATION: 29%	PENETRATION: 14%	vs. POPULATION: 81%	PENETRATION: 12%

- Low social media penetration in Africa.
- Is it worthy the effort?

Digital gap



JAN 2017

SOCIAL MEDIA PENETRATION BY REGION

TOTAL ACTIVE ACCOUNTS ON THE TOP SOCIAL NETWORK IN EACH COUNTRY, COMPARED TO POPULATION

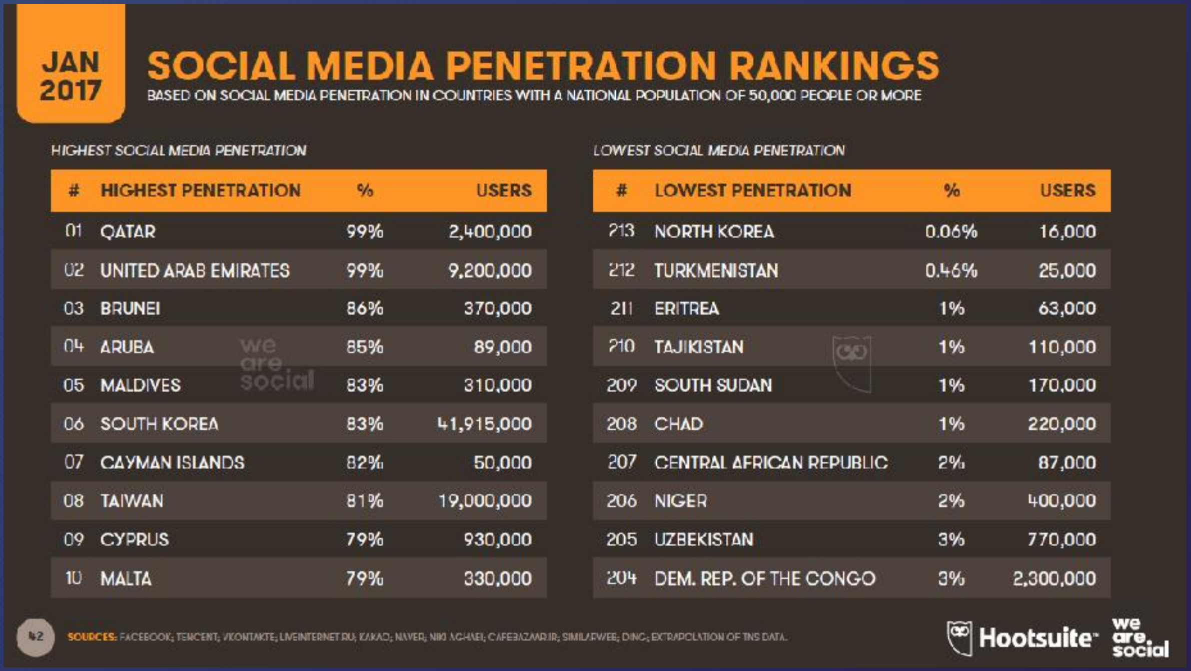
NORTH AMERICA
66%
WEST EUROPE
54%
44%
EAST EUROPE
7%
CENTRAL ASIA
57%
EAST ASIA
38%
MIDDLE EAST
15%
SOUTH ASIA
47%
SOUTHEAST ASIA
51%
CENTRAL AMERICA
59%
SOUTH AMERICA
14%
AFRICA
52%
OCEANIA
GLOBAL AVERAGE: 37%

39

SOURCES: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIKI AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF TNS DATA.

Hootsuite we are social

Digital gap



JAN 2017

SOCIAL MEDIA PENETRATION RANKINGS

BASED ON SOCIAL MEDIA PENETRATION IN COUNTRIES WITH A NATIONAL POPULATION OF 50,000 PEOPLE OR MORE

HIGHEST SOCIAL MEDIA PENETRATION

#	HIGHEST PENETRATION	%	USERS
01	QATAR	99%	2,400,000
02	UNITED ARAB EMIRATES	99%	9,200,000
03	BRUNEI	86%	370,000
04	ARUBA	85%	89,000
05	MALDIVES	83%	310,000
06	SOUTH KOREA	83%	41,915,000
07	CAYMAN ISLANDS	82%	50,000
08	TAIWAN	81%	19,000,000
09	CYPRUS	79%	930,000
10	MALTA	79%	330,000

LOWEST SOCIAL MEDIA PENETRATION

#	LOWEST PENETRATION	%	USERS
213	NORTH KOREA	0.06%	16,000
212	TURKMENISTAN	0.46%	25,000
211	ERITREA	1%	63,000
210	TAJIKISTAN	1%	110,000
209	SOUTH SUDAN	1%	170,000
208	CHAD	1%	220,000
207	CENTRAL AFRICAN REPUBLIC	2%	87,000
206	NIGER	2%	400,000
205	UZBEKISTAN	3%	770,000
204	DEM. REP. OF THE CONGO	3%	2,300,000

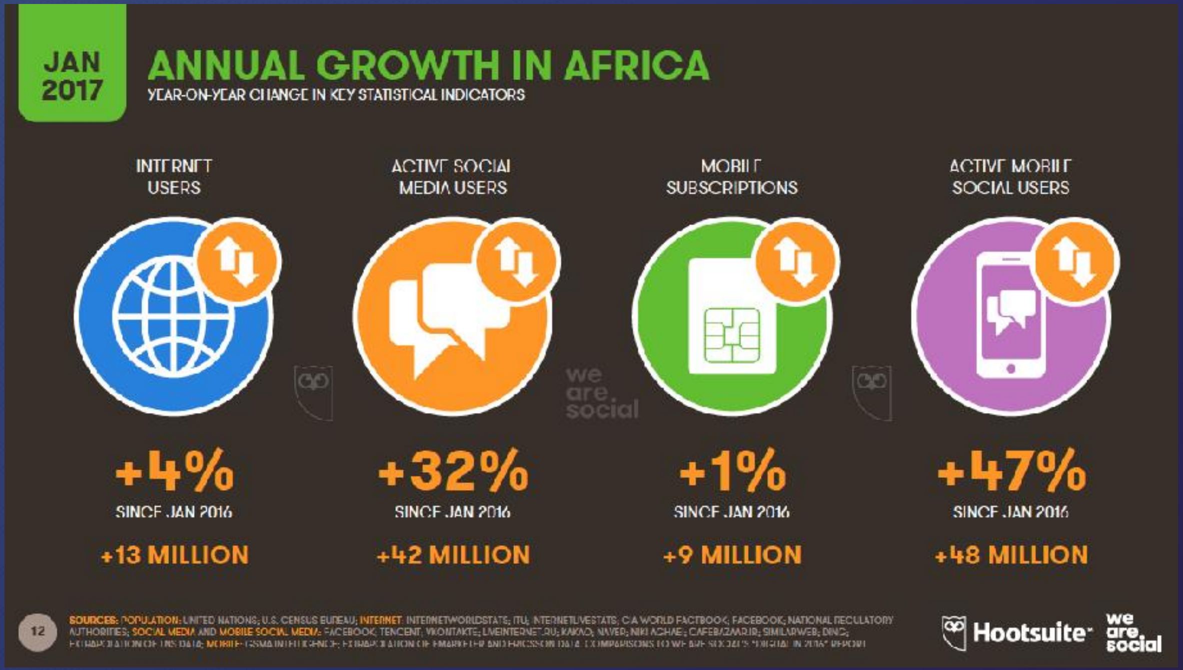
SOURCES: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIKI AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF TNS DATA.

Urban vs. rural – The right debate?

- It’s true that many of our most important audiences in the Global South are yet to gain access to social media. Nonetheless, its role and influence within the information ecosystems we work in will only grow and its ability to support positive development outcomes demands exploration.

Rosie Parkyn, “The role of social media in development”, BBC Media Action, 2017

Urban vs. rural



JAN 2017

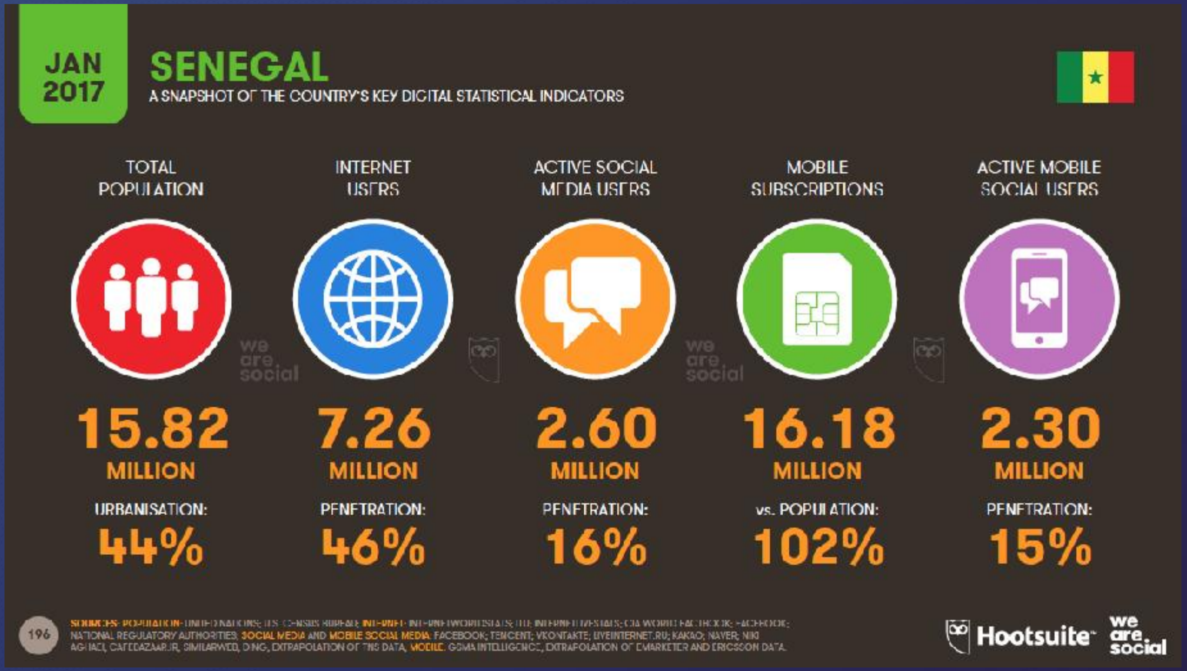
ANNUAL GROWTH IN AFRICA

YEAR-ON-YEAR CHANGE IN KEY STATISTICAL INDICATORS

INTERNET USERS	ACTIVE SOCIAL MEDIA USERS	MOBILE SUBSCRIPTIONS	ACTIVE MOBILE SOCIAL USERS
+4%	+32%	+1%	+47%
SINCE JAN 2016	SINCE JAN 2016	SINCE JAN 2016	SINCE JAN 2016
+13 MILLION	+42 MILLION	+9 MILLION	+48 MILLION

SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU; INTERNET: INTERNETWORLDSTATS; ITU; INTERNETLIVESTATS; CIA WORLD FACTBOOK; FACEBOOK; NATIONAL REGULATORY AUTHORITIES; SOCIAL MEDIA AND MOBILE SOCIAL MEDIA: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIKI AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF THIS DATA; MOBILE: GSMA INTELLIGENCE; EXTRAPOLATION OF EMARKETER AND ERICSSON DATA. COMPARISONS TO WE ARE SOCIAL'S "DIGITAL IN 2016" REPORT

Urban vs. rural



JAN 2017

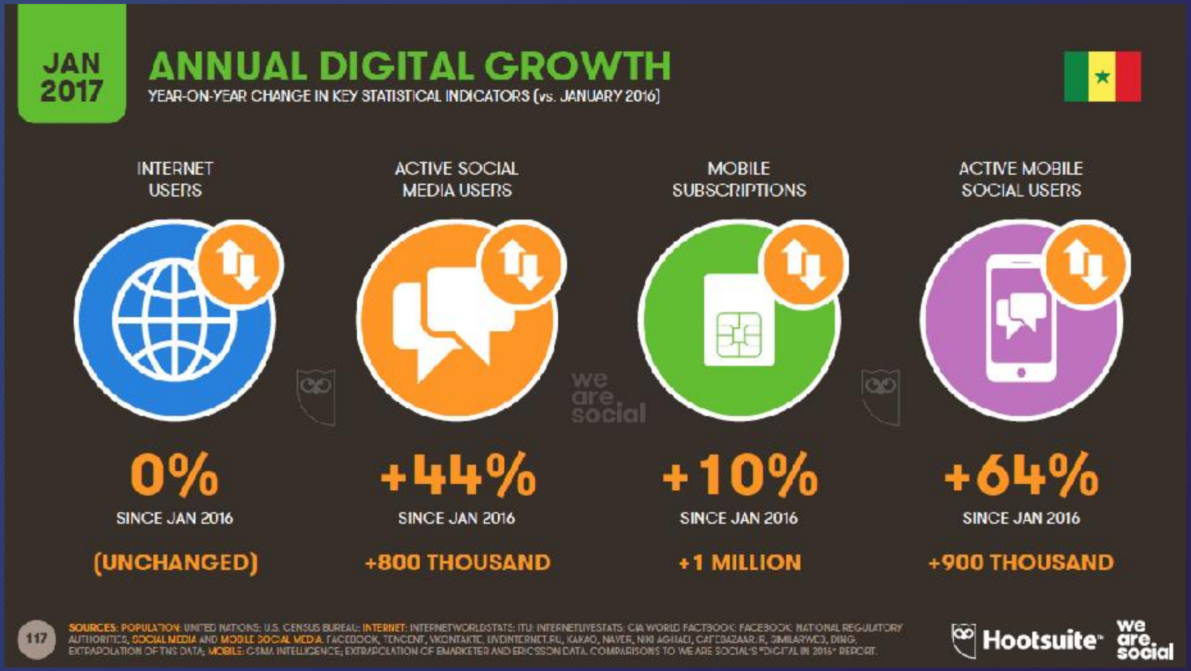
SENEGAL

A SNAPSHOT OF THE COUNTRY'S KEY DIGITAL STATISTICAL INDICATORS

TOTAL POPULATION	INTERNET USERS	ACTIVE SOCIAL MEDIA USERS	MOBILE SUBSCRIPTIONS	ACTIVE MOBILE SOCIAL USERS
15.82 MILLION	7.26 MILLION	2.60 MILLION	16.18 MILLION	2.30 MILLION
URBANISATION:	PENETRATION:	PENETRATION:	vs. POPULATION:	PENETRATION:
44%	46%	16%	102%	15%

196 SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU; INTERNET: INTERNETWORLDSTATS; ITU; INTERNETLIVESTATS; CIA WORLD FACTBOOK; FACEBOOK; NATIONAL REGULATORY AUTHORITIES; SOCIAL MEDIA AND MOBILE SOCIAL MEDIA: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIKI AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF TNS DATA; MOBILE: GSMA INTELLIGENCE; EXTRAPOLATION OF EMARKETER AND ERICSSON DATA.

Urban vs. rural



JAN 2017

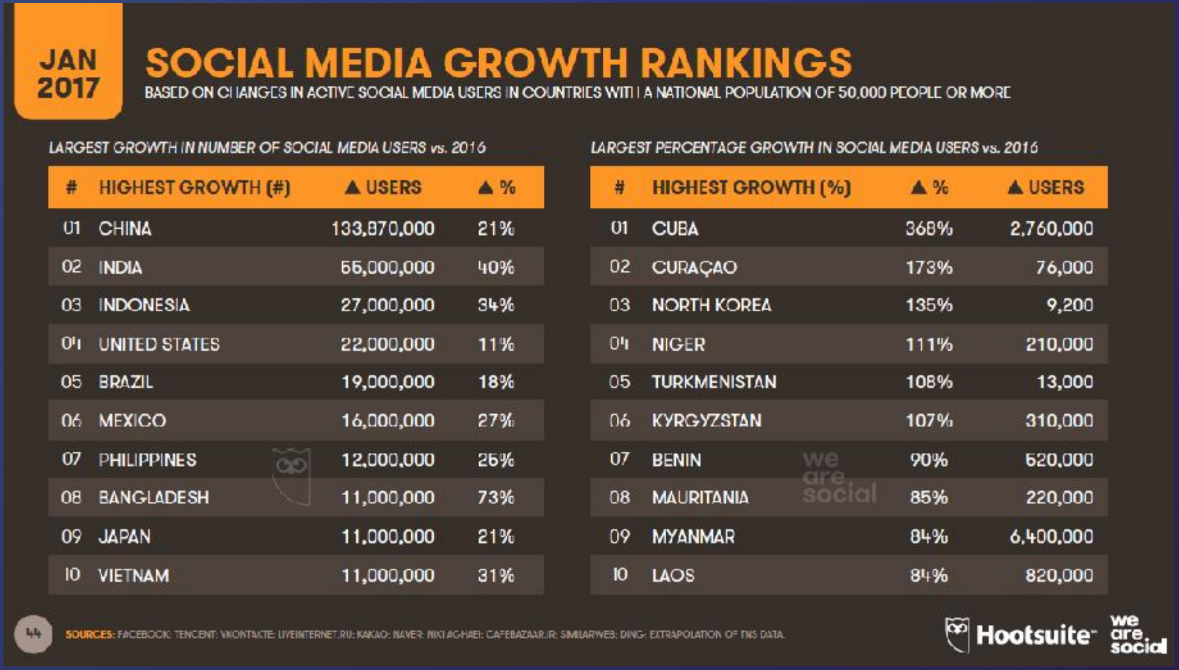
ANNUAL DIGITAL GROWTH

YEAR-ON-YEAR CHANGE IN KEY STATISTICAL INDICATORS (vs. JANUARY 2016)

INTERNET USERS	ACTIVE SOCIAL MEDIA USERS	MOBILE SUBSCRIPTIONS	ACTIVE MOBILE SOCIAL USERS
0%	+44%	+10%	+64%
SINCE JAN 2016	SINCE JAN 2016	SINCE JAN 2016	SINCE JAN 2016
(UNCHANGED)	+800 THOUSAND	+1 MILLION	+900 THOUSAND

SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU; INTERNET: INTERNETWORLDSTATS; ITU; INTERNETLIVESTATS; CIA WORLD FACTBOOK; FACEBOOK; NATIONAL REGULATORY AUTHORITIES; SOCIAL MEDIA AND MOBILE SOCIAL MEDIA: FACEBOOK, TENCENT, VKONTAKTE, LIVEINTERNET.RU, KAKAO, NAVER, NIKI AGHAEI, CAFEBAZAAR.IR, SIMILARWEB, DING; EXTRAPOLATION OF THIS DATA; MOBILE: GSMA INTELLIGENCE; EXTRAPOLATION OF EMARKETER AND ERICSSON DATA. COMPARISONS TO WE ARE SOCIAL'S "DIGITAL IN 2016" REPORT.

Urban vs. rural



JAN 2017

SOCIAL MEDIA GROWTH RANKINGS

BASED ON CHANGES IN ACTIVE SOCIAL MEDIA USERS IN COUNTRIES WITH A NATIONAL POPULATION OF 50,000 PEOPLE OR MORE

LARGEST GROWTH IN NUMBER OF SOCIAL MEDIA USERS vs. 2016

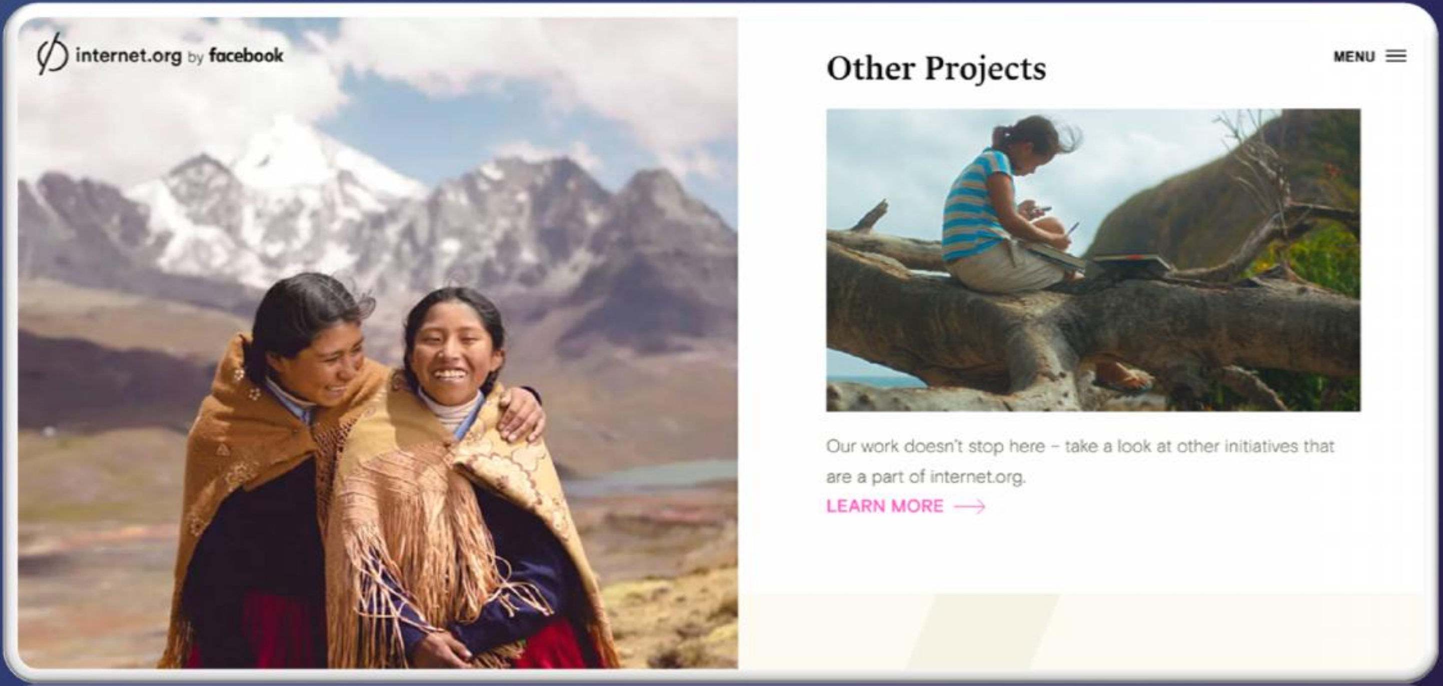
#	HIGHEST GROWTH (#)	▲ USERS	▲ %
01	CHINA	133,870,000	21%
02	INDIA	56,000,000	40%
03	INDONESIA	27,000,000	34%
04	UNITED STATES	22,000,000	11%
05	BRAZIL	19,000,000	18%
06	MEXICO	16,000,000	27%
07	PHILIPPINES	12,000,000	26%
08	BANGLADESH	11,000,000	73%
09	JAPAN	11,000,000	21%
10	VIETNAM	11,000,000	31%

LARGEST PERCENTAGE GROWTH IN SOCIAL MEDIA USERS vs. 2016

#	HIGHEST GROWTH (%)	▲ %	▲ USERS
01	CUBA	368%	2,760,000
02	CURAÇAO	173%	76,000
03	NORTH KOREA	135%	9,200
04	NIGER	111%	210,000
05	TURKMENISTAN	108%	13,000
06	KYRGYZSTAN	107%	310,000
07	BENIN	90%	620,000
08	MAURITANIA	85%	220,000
09	MYANMAR	84%	6,400,000
10	LAOS	84%	820,000

SOURCES: FACEBOOK; TENCENT; VKONTAKTE; LIVEINTERNET.RU; KAKAO; NAVER; NIKI AGHAEI; CAFEBAZAAR.IR; SIMILARWEB; DING; EXTRAPOLATION OF TNS DATA.

Internet.org



internet.org by facebook

Other Projects

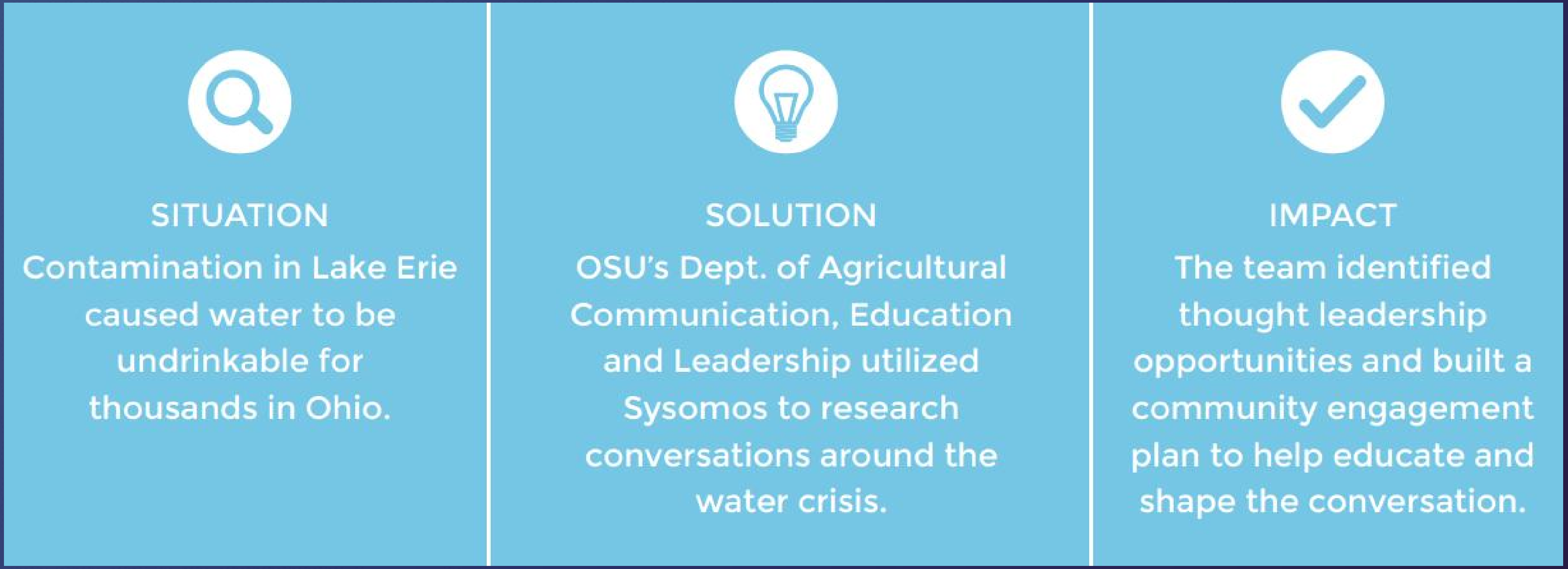
Our work doesn't stop here – take a look at other initiatives that are a part of internet.org.

How can be use for development?

- “Social media can help in collecting data and adding to the usually quantitative elements of surveys, etc.”
- There is a link between (local + global) journalism, evaluation and social media:
    - Reach out to different stakeholders
    - Connect and collect feedback and get out of the silo

Tobias Denskus, Malmo University

Have a plan (Ohio State University)



SITUATION

Contamination in Lake Erie caused water to be undrinkable for thousands in Ohio.

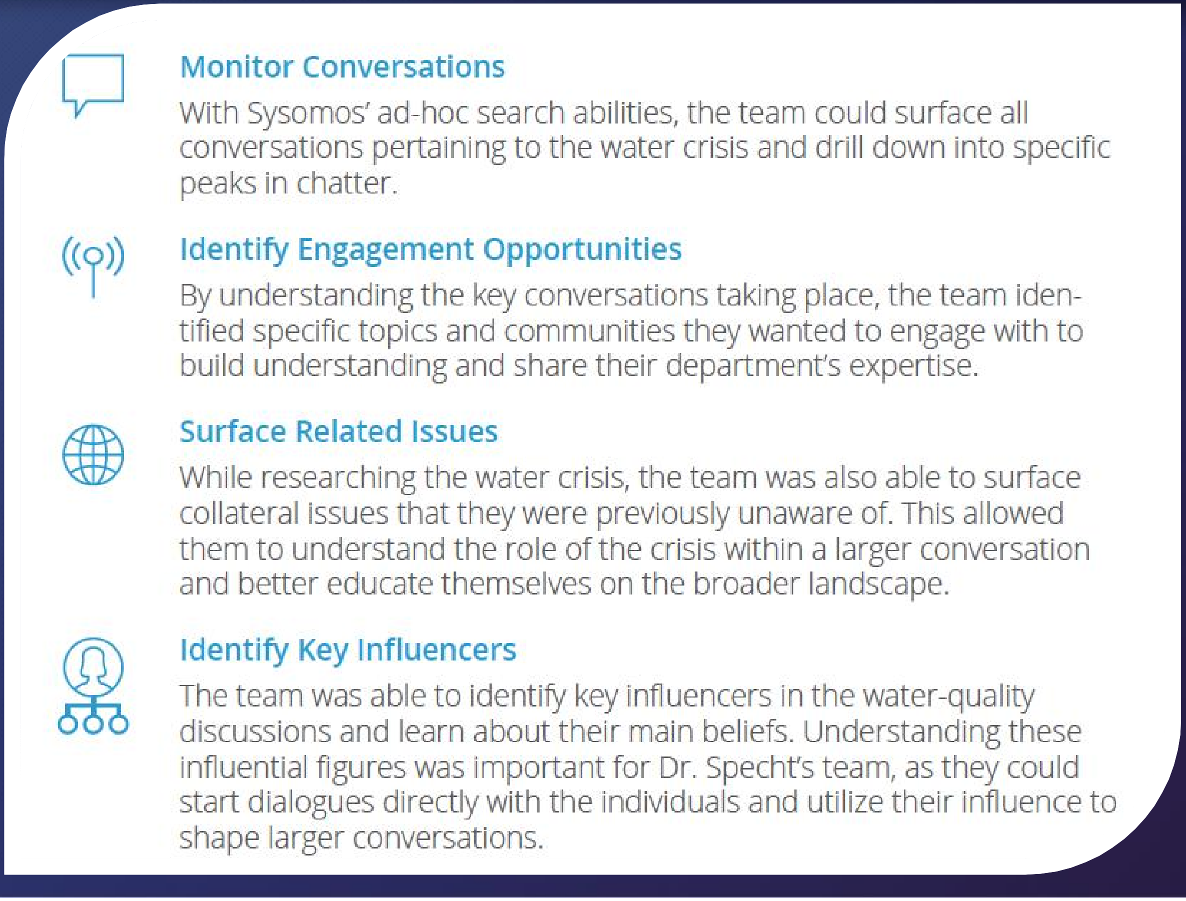
SOLUTION

OSU's Dept. of Agricultural Communication, Education and Leadership utilized Sysomos to research conversations around the water crisis.

IMPACT

The team identified thought leadership opportunities and built a community engagement plan to help educate and shape the conversation.

Have a plan, research, know your audience



Monitor Conversations

With Sysomos' ad-hoc search abilities, the team could surface all conversations pertaining to the water crisis and drill down into specific peaks in chatter.

Identify Engagement Opportunities

By understanding the key conversations taking place, the team identified specific topics and communities they wanted to engage with to build understanding and share their department's expertise.

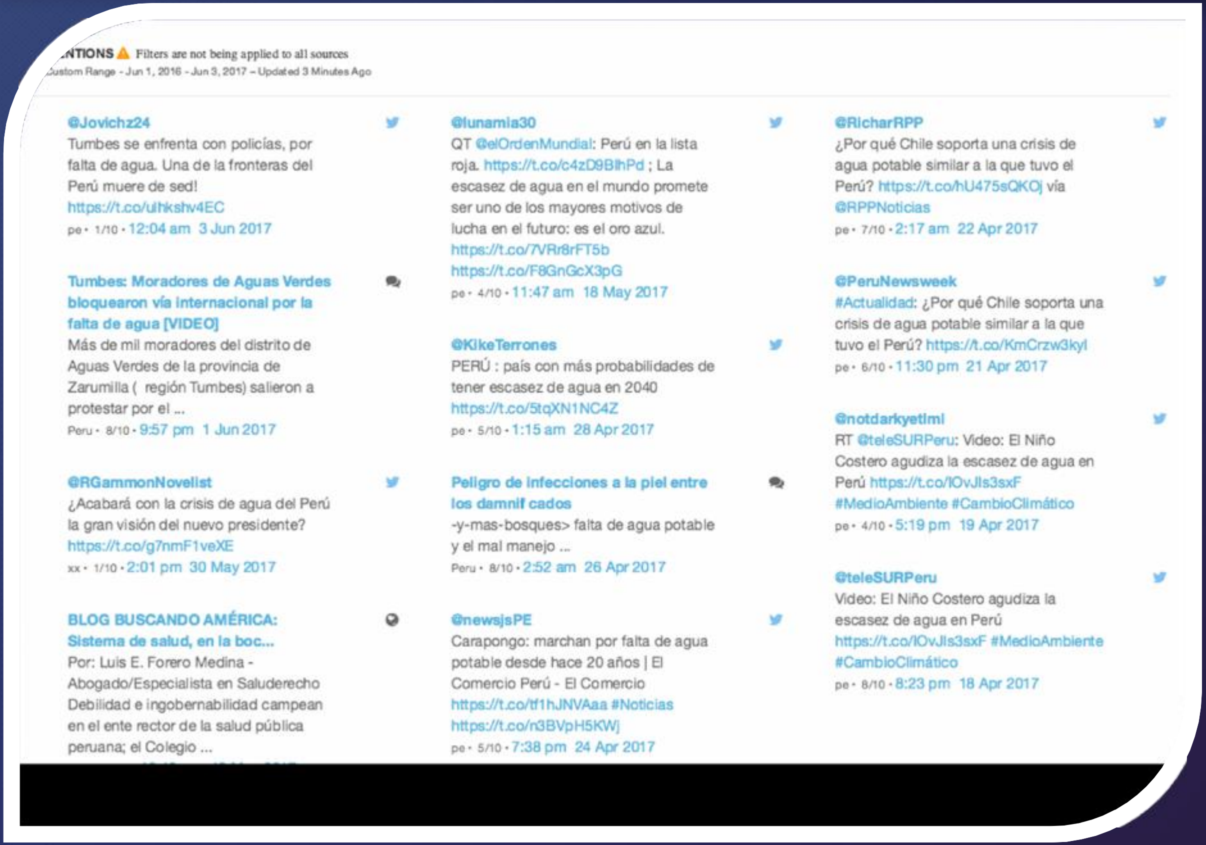
Surface Related Issues

While researching the water crisis, the team was also able to surface collateral issues that they were previously unaware of. This allowed them to understand the role of the crisis within a larger conversation and better educate themselves on the broader landscape.

Identify Key Influencers

The team was able to identify key influencers in the water-quality discussions and learn about their main beliefs. Understanding these influential figures was important for Dr. Specht's team, as they could start dialogues directly with the individuals and utilize their influence to shape larger conversations.

Listen



NTIONS ⚠ Filters are not being applied to all sources
Custom Range - Jun 1, 2016 - Jun 3, 2017 – Updated 3 Minutes Ago

@Jovichz24
Tumbes se enfrenta con policías, por falta de agua. Una de la fronteras del Perú muere de sed!
https://t.co/ulhkshv4EC
pe • 1/10 • 12:04 am 3 Jun 2017

Tumbes: Moradores de Aguas Verdes bloquearon vía internacional por la falta de agua [VIDEO]
Más de mil moradores del distrito de Aguas Verdes de la provincia de Zarumilla (región Tumbes) salieron a protestar por el ...
Peru • 8/10 • 9:57 pm 1 Jun 2017

@RGammonNovelist
¿Acabará con la crisis de agua del Perú la gran visión del nuevo presidente?
https://t.co/g7nmF1veXE
xx • 1/10 • 2:01 pm 30 May 2017

BLOG BUSCANDO AMÉRICA: Sistema de salud, en la boc...
Por: Luis E. Forero Medina - Abogado/Especialista en Saluderecho Debilidad e ingobernabilidad campean en el ente rector de la salud pública peruana; el Colegio ...

@lunamia30
QT @elOrdenMundial: Perú en la lista roja. https://t.co/c4zD9BlhPd ; La escasez de agua en el mundo promete ser uno de los mayores motivos de lucha en el futuro: es el oro azul.
https://t.co/7VRr8rFT5b
https://t.co/F8GnGcX3pG
pe • 4/10 • 11:47 am 18 May 2017

@KikeTerrones
PERÚ : país con más probabilidades de tener escasez de agua en 2040
https://t.co/5tqXN1NC4Z
pe • 5/10 • 1:15 am 28 Apr 2017

Peligro de infecciones a la piel entre los damnif cados
-y-mas-bosques> falta de agua potable y el mal manejo ...
Peru • 8/10 • 2:52 am 26 Apr 2017

@newsjsPE
Carapongo: marchan por falta de agua potable desde hace 20 años | El Comercio Perú - El Comercio
https://t.co/tf1hJNVAaa #Noticias
https://t.co/n3BVpH5KWj
pe • 5/10 • 7:38 pm 24 Apr 2017

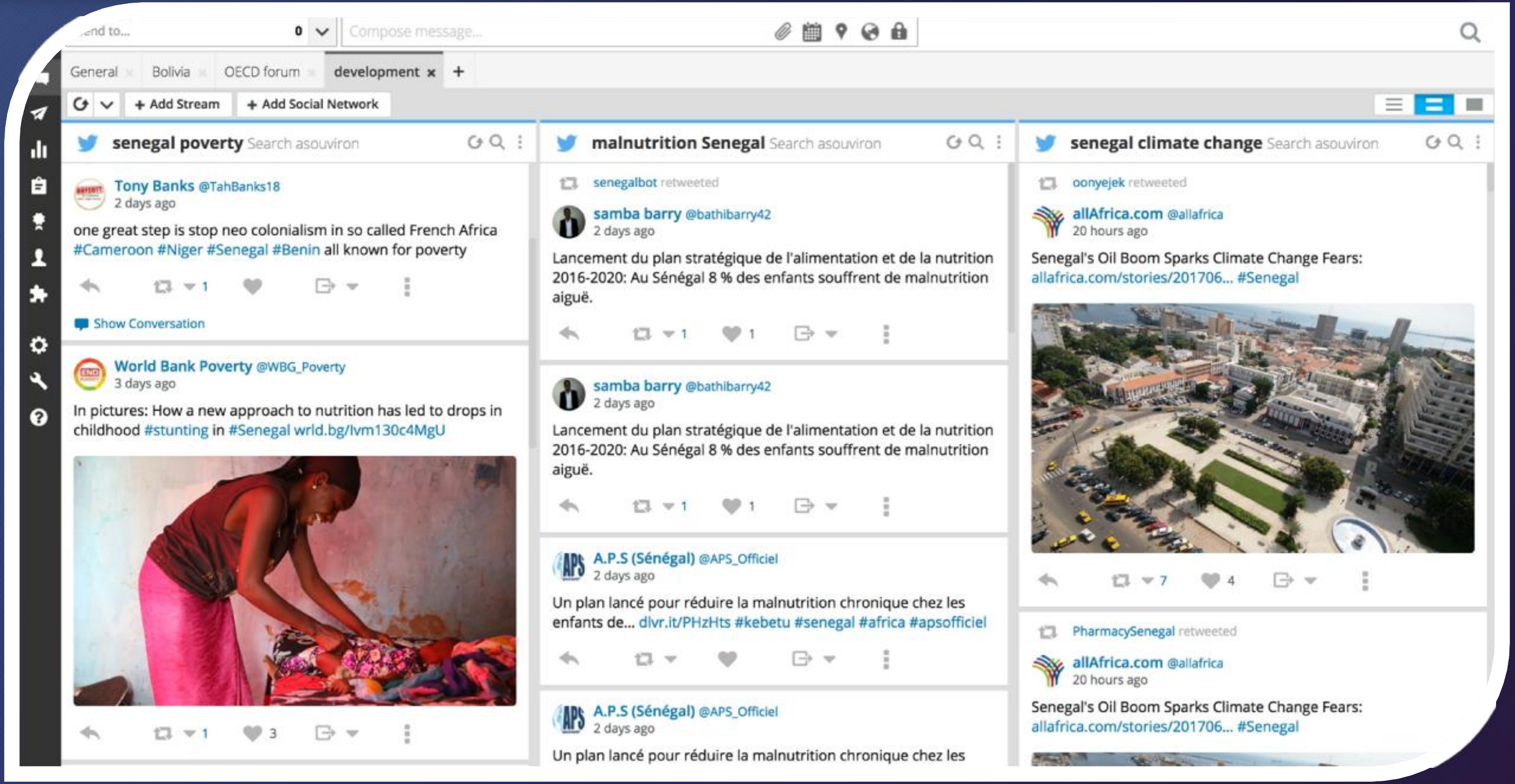
@RicharRPP
¿Por qué Chile soporta una crisis de agua potable similar a la que tuvo el Perú? https://t.co/hU475sQKOj vía @RPPNoticias
pe • 7/10 • 2:17 am 22 Apr 2017

@PeruNewsweek
#Actualidad: ¿Por qué Chile soporta una crisis de agua potable similar a la que tuvo el Perú? https://t.co/KmCrzw3kyl
pe • 6/10 • 11:30 pm 21 Apr 2017

@notdarkyetlml
RT @teleSURPeru: Video: El Niño Costero agudiza la escasez de agua en Perú https://t.co/lOvJls3sxF #MedioAmbiente #CambioClimático
pe • 4/10 • 5:19 pm 19 Apr 2017

@teleSURPeru
Video: El Niño Costero agudiza la escasez de agua en Perú
https://t.co/lOvJls3sxF #MedioAmbiente #CambioClimático
pe • 8/10 • 8:23 pm 18 Apr 2017

Listen


Send to...
0
Compose message...
General
Bolivia
OECD forum
development
+
Add Stream
Add Social Network
senegal poverty Search asouviron
malnutrition Senegal Search asouviron
senegal climate change Search asouviron
Show Conversation

Tony Banks @TahBanks18
2 days ago

one great step is stop neo colonialism in so called French Africa #Cameroon #Niger #Senegal #Benin all known for poverty

1

World Bank Poverty @WBG_Poverty
3 days ago

In pictures: How a new approach to nutrition has led to drops in childhood #stunting in #Senegal wrld.bg/Ivm130c4MgU

1 3

senegalbot retweeted

samba barry @bathibarry42
2 days ago

Lancement du plan stratégique de l'alimentation et de la nutrition 2016-2020: Au Sénégal 8 % des enfants souffrent de malnutrition aiguë.

1 1

samba barry @bathibarry42
2 days ago

Lancement du plan stratégique de l'alimentation et de la nutrition 2016-2020: Au Sénégal 8 % des enfants souffrent de malnutrition aiguë.

1 1

A.P.S (Sénégal) @APS_Officiel
2 days ago

Un plan lancé pour réduire la malnutrition chronique chez les enfants de... dlvr.it/PHzHts #kebetu #senegal #africa #apsofficiel

A.P.S (Sénégal) @APS_Officiel
2 days ago

Un plan lancé pour réduire la malnutrition chronique chez les

oonyejek retweeted

allAfrica.com @allafrica
20 hours ago

Senegal's Oil Boom Sparks Climate Change Fears: allafrica.com/stories/201706... #Senegal

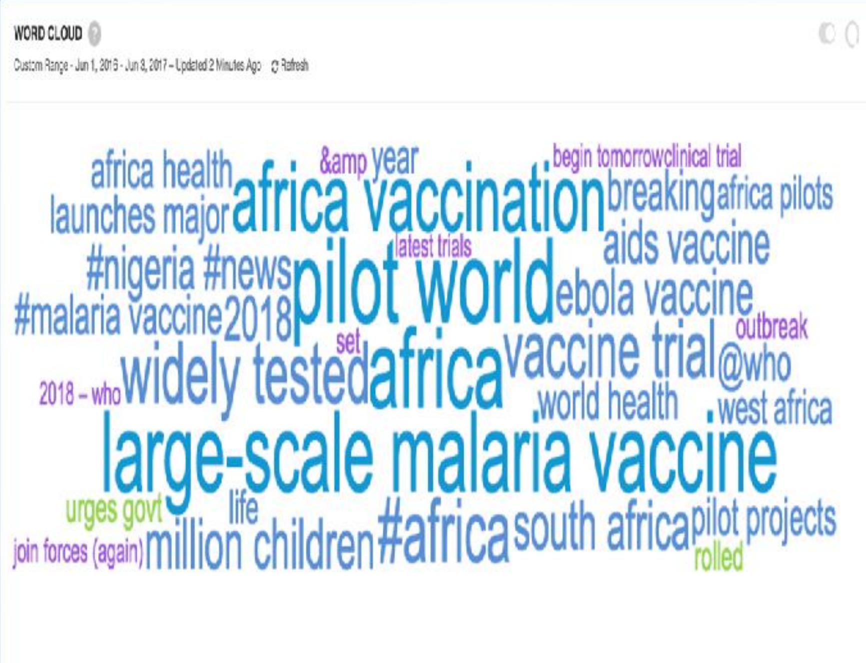
7 4

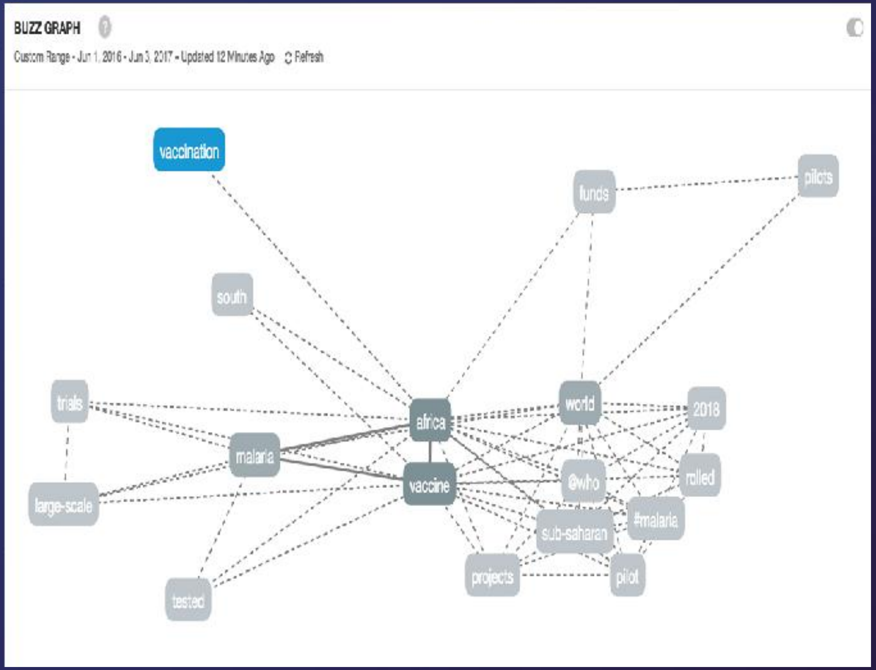
PharmacySenegal retweeted

allAfrica.com @allafrica
20 hours ago

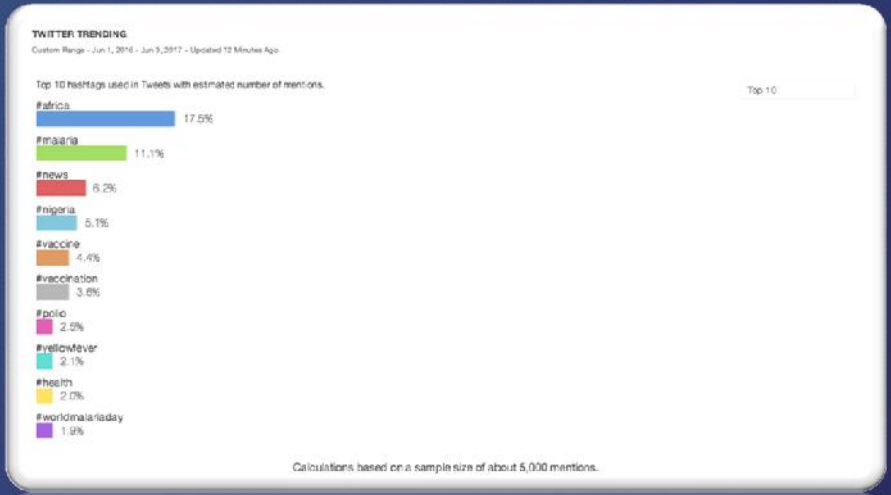
Senegal's Oil Boom Sparks Climate Change Fears: allafrica.com/stories/201706... #Senegal

Analyse


WORD CLOUD
Custom Range - Jun 1, 2016 - Jun 8, 2017 – Updated 2 Minutes Ago
Refresh
africa health
&amp
year
begin tomorrow
clinical trial
launches major
africa vaccination
breaking
africa pilots
latest trials
aids vaccine
#nigeria #news
pilot world
ebola vaccine
#malaria vaccine
2018
outbreak
set
vaccine trial
@who
2018 – who
widely tested
africa
world health
west africa
large-scale malaria vaccine
urges govt
life
join forces (again)
million children
#africa
south africa
pilot projects
rolled


BUZZ GRAPH
Custom Range - Jun 1, 2016 - Jun 3, 2017 – Updated 12 Minutes Ago
Refresh
vaccination
funds
pilots
south
trials
africa
world
2018
malaria
vaccine
@who
rolled
large-scale
sub-saharan
#malaria
projects
pilot
tested

Analyse



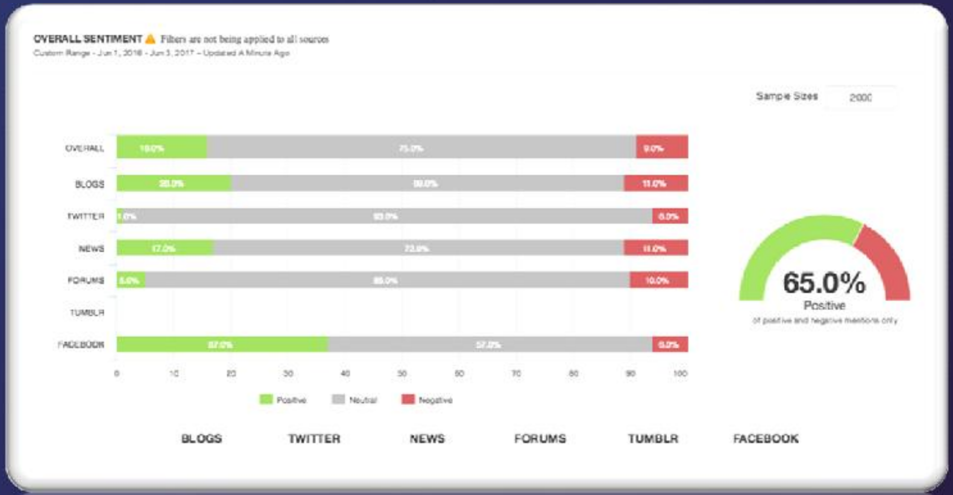
TWITTER TRENDING

Custom Range - Jun 1, 2016 - Jun 3, 2017 - Updated 12 Minutes Ago

Top 10 hashtags used in Tweets with estimated number of mentions.

Top 10
#africa
17.5%
#malaria
11.1%
#news
6.2%
#nigeria
5.1%
#vaccine
4.4%
#vaccination
3.6%
#polio
2.5%
#yellowfever
2.1%
#health
2.0%
#worldmalariaday
1.9%

Calculations based on a sample size of about 5,000 mentions.



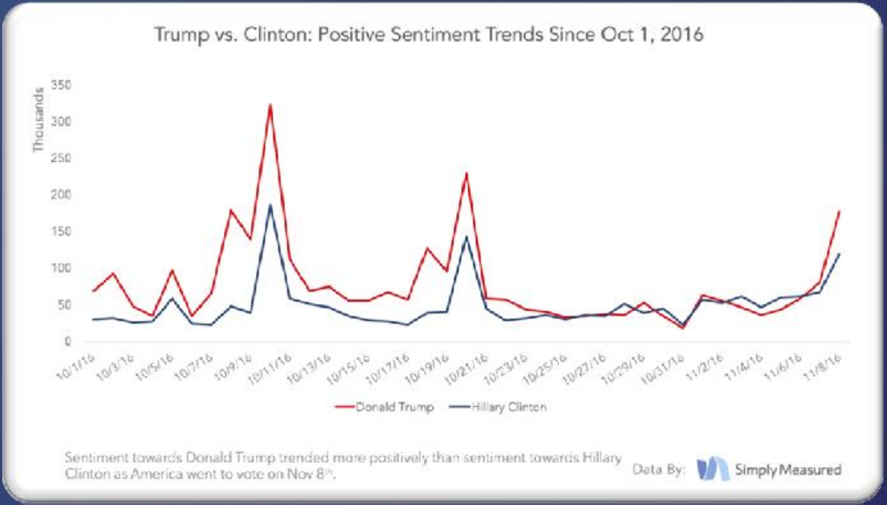
OVERALL SENTIMENT ⚠ Filters are not being applied to all sources

Custom Range - Jun 1, 2016 - Jun 3, 2017 - Updated A Minute Ago

Sample Sizes 2000

OVERALL
16.0%
75.0%
9.0%
BLOGS
20.0%
69.0%
11.0%
TWITTER
1.0%
93.0%
6.0%
NEWS
17.0%
72.0%
11.0%
FORUMS
5.0%
85.0%
10.0%
TUMBLR
FACEBOOK
37.0%
57.0%
6.0%
0
10
20
30
40
50
60
70
80
90
100
Positive
Neutral
Negative
65.0%
Positive
of positive and negative mentions only
BLOGS
TWITTER
NEWS
FORUMS
TUMBLR
FACEBOOK

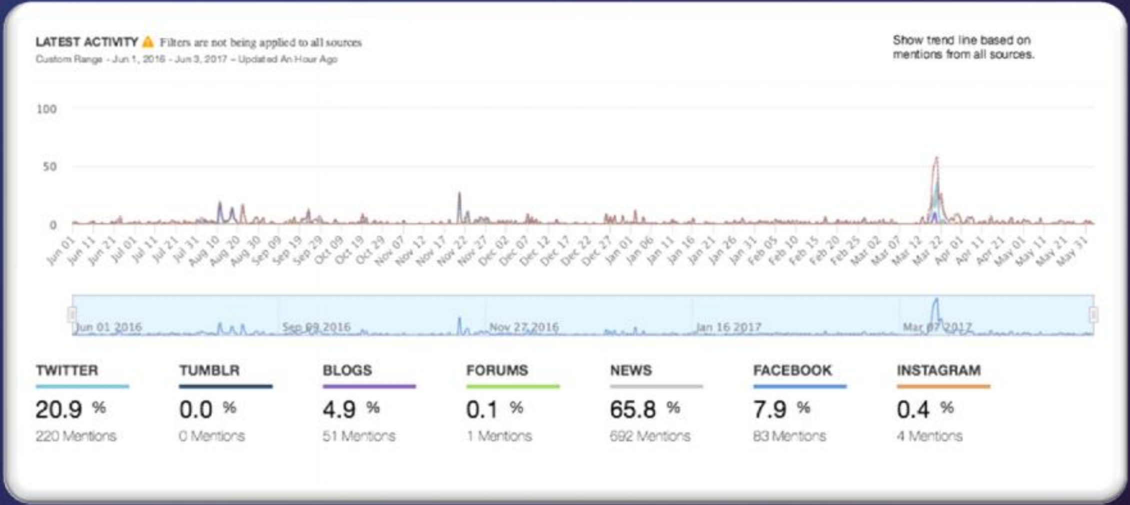
Analyse



Trump vs. Clinton: Positive Sentiment Trends Since Oct 1, 2016

Sentiment towards Donald Trump trended more positively than sentiment towards Hillary Clinton as America went to vote on Nov 8th.

Data By: Simply Measured



LATEST ACTIVITY ⚠ Filters are not being applied to all sources

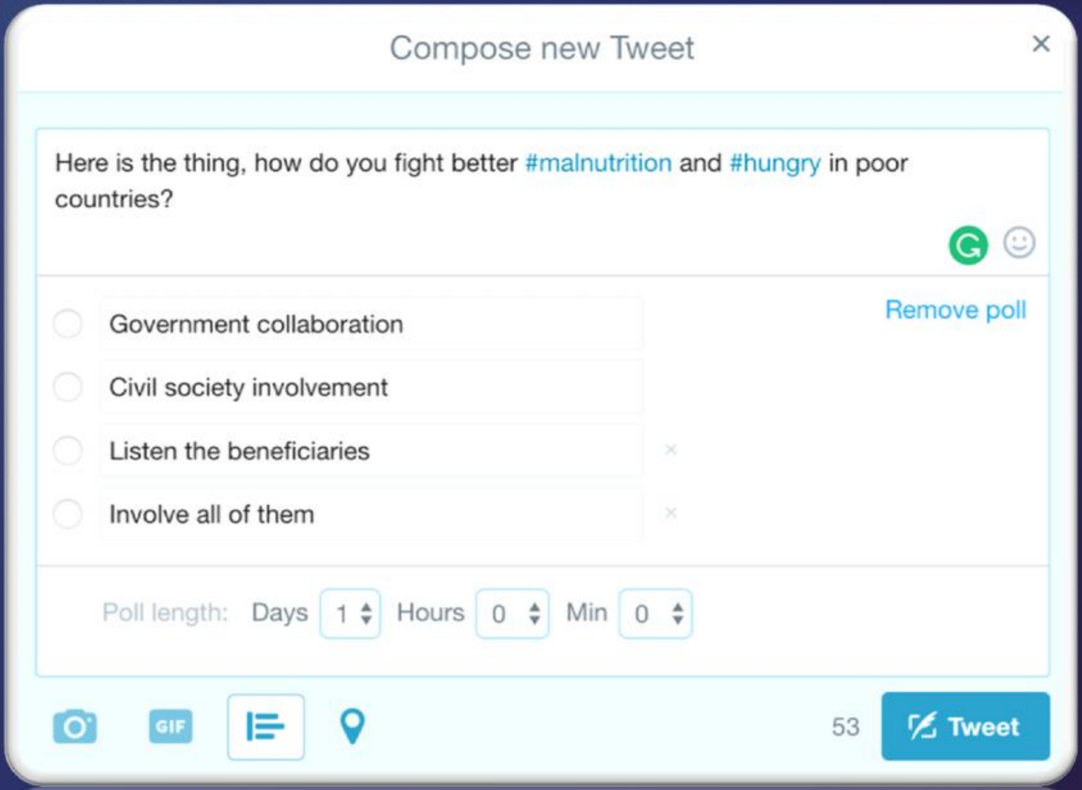
Custom Range - Jun 1, 2016 - Jun 3, 2017 – Updated An Hour Ago

Show trend line based on mentions from all sources.

100
50
0
Jun 01
Jun 11
Jun 21
Jul 01
Jul 11
Jul 21
Jul 31
Aug 10
Aug 20
Aug 30
Sep 09
Sep 19
Sep 29
Oct 09
Oct 19
Oct 29
Nov 07
Nov 12
Nov 17
Nov 22
Nov 27
Dec 02
Dec 07
Dec 12
Dec 17
Dec 22
Dec 27
Jan 01
Jan 06
Jan 11
Jan 16
Jan 21
Jan 26
Jan 31
Feb 05
Feb 10
Feb 15
Feb 20
Feb 25
Mar 02
Mar 07
Mar 12
Mar 22
Apr 01
Apr 11
Apr 21
May 01
May 11
May 21
May 31
Jun 01 2016
Sep 09 2016
Nov 27 2016
Jan 16 2017
Mar 07 2017

TWITTER	TUMBLR	BLOGS	FORUMS	NEWS	FACEBOOK	INSTAGRAM
20.9 %	0.0 %	4.9 %	0.1 %	65.8 %	7.9 %	0.4 %
220 Mentions	0 Mentions	51 Mentions	1 Mentions	692 Mentions	83 Mentions	4 Mentions

Ask


Compose new Tweet
×
Remove poll
GIF
53
Tweet

Here is the thing, how do you fight better #malnutrition and #hungry in poor countries?

○ Government collaboration

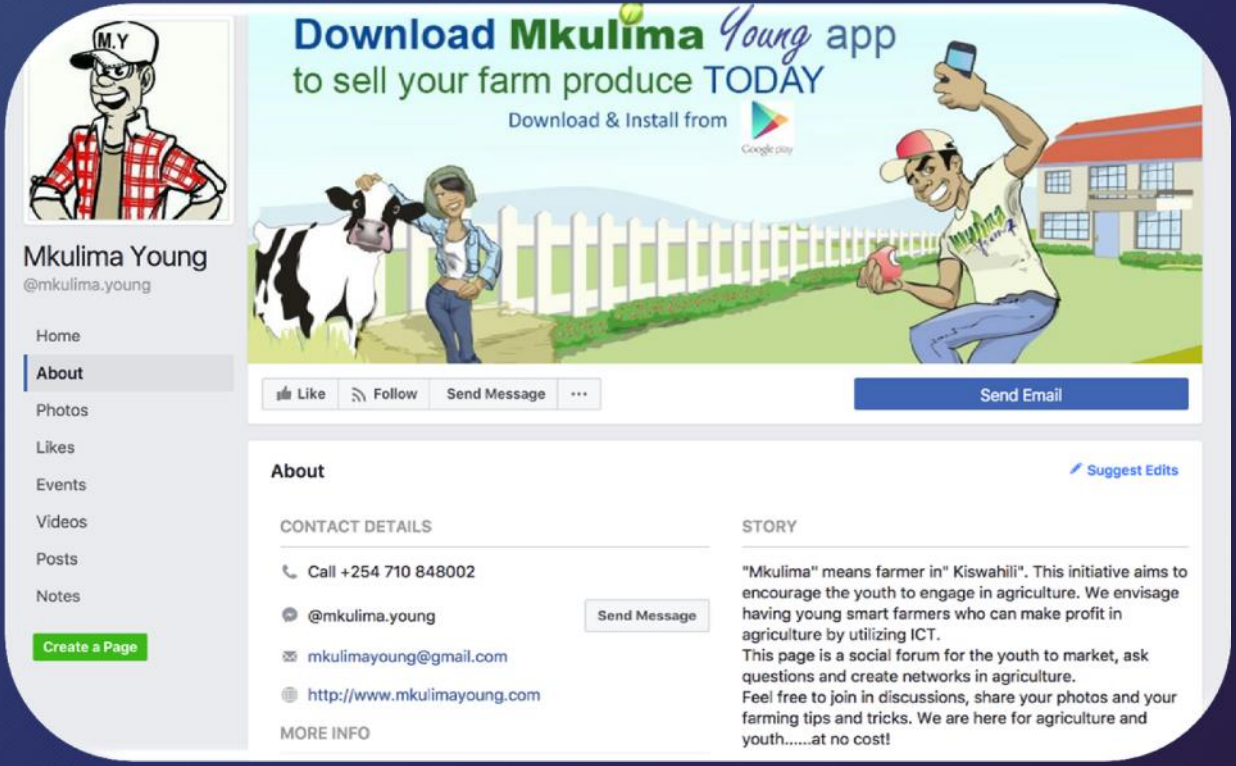
○ Civil society involvement

○ Listen the beneficiaries

○ Involve all of them

Poll length: Days 1 Hours 0 Min 0

Participate and collaborate


M.Y
Download Mkulima Young app
to sell your farm produce TODAY
Download & Install from
Google play
Mkulima Young
@mkulima.young
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Likes
Events
Videos
Posts
Notes
Create a Page
Like
Follow
Send Message
...
Send Email
Suggest Edits
Send Message

About

CONTACT DETAILS

Call +254 710 848002

@mkulima.young

mkulimayoung@gmail.com

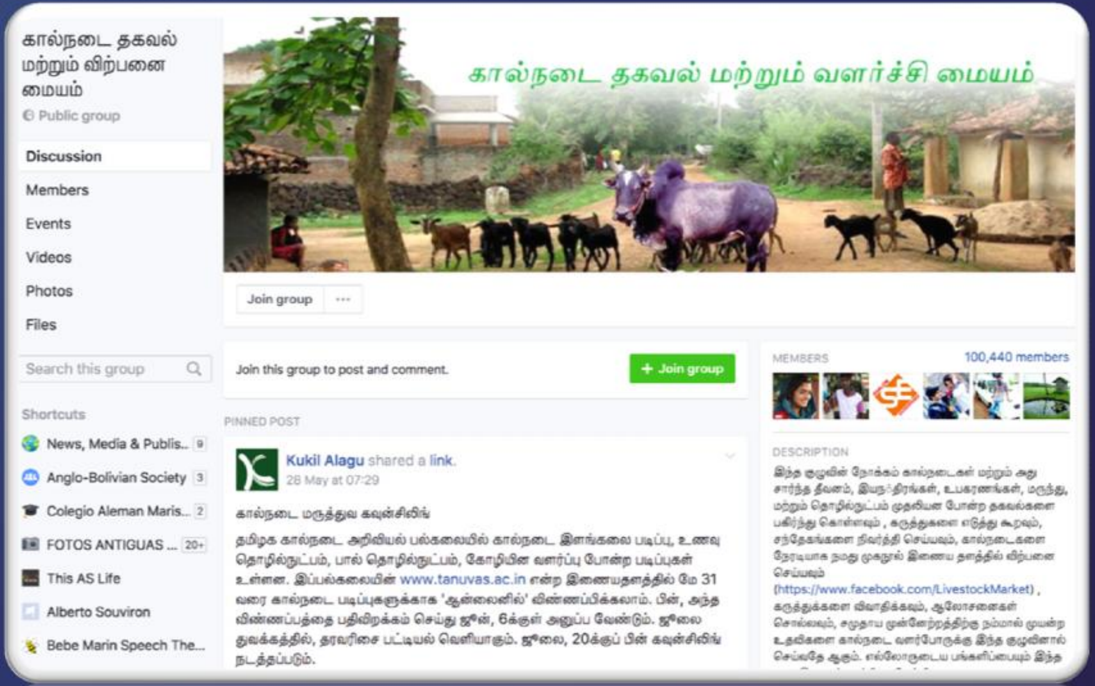
http://www.mkulimayoung.com

MORE INFO

STORY

"Mkulima" means farmer in" Kiswahili". This initiative aims to encourage the youth to engage in agriculture. We envisage having young smart farmers who can make profit in agriculture by utilizing ICT.
This page is a social forum for the youth to market, ask questions and create networks in agriculture.
Feel free to join in discussions, share your photos and your farming tips and tricks. We are here for agriculture and youth......at no cost!

Participate and collaborate


கால்நடை தகவல் மற்றும் வளர்ச்சி மையம்
Discussion
Members
Events
Videos
Photos
Files
Search this group
Shortcuts
News, Media & Publis... 9
Anglo-Bolivian Society 3
Colegio Aleman Maris... 2
FOTOS ANTIGUAS ... 20+
This AS Life
Alberto Souviron
Bebe Marin Speech The...
Join group
···
+ Join group
MEMBERS
100,440 members
DESCRIPTION
PINNED POST

கால்நடை தகவல்
மற்றும் விற்பனை
மையம்
Public group

Join this group to post and comment.

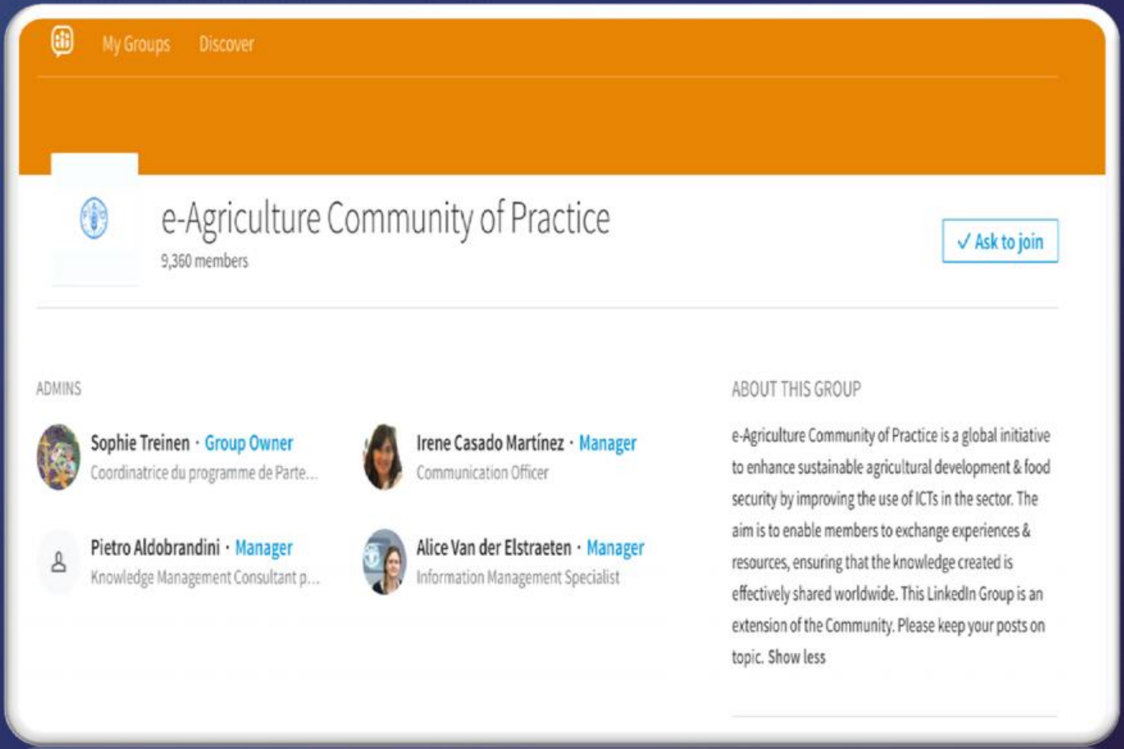
Kukil Alagu shared a link.
28 May at 07:29

கால்நடை மருத்துவ கவுன்சிலிங்

தமிழக கால்நடை அறிவியல் பல்கலையில் கால்நடை இளங்கலை படிப்பு, உணவு தொழில்நுட்பம், பால் தொழில்நுட்பம், கோழியின வளர்ப்பு போன்ற படிப்புகள் உள்ளன. இப்பல்கலையின் www.tanuvas.ac.in என்ற இணையதளத்தில் மே 31 வரை கால்நடை படிப்புகளுக்காக 'ஆன்லைனில்' விண்ணப்பிக்கலாம். பின், அந்த விண்ணப்பத்தை பதிவிறக்கம் செய்து ஜூன், 6க்குள் அனுப்ப வேண்டும். ஜூலை துவக்கத்தில், தரவரிசை பட்டியல் வெளியாகும். ஜூலை, 20க்குப் பின் கவுன்சிலிங் நடத்தப்படும்.

இந்த குழுவின் நோக்கம் கால்நடைகள் மற்றும் அது சார்ந்த தீவனம், இயந்திரங்கள், உபகரணங்கள், மருந்து, மற்றும் தொழில்நுட்பம் முதலியன போன்ற தகவல்களை பகிர்ந்து கொள்ளவும் , கருத்துகளை எடுத்து கூறவும், சந்தேகங்களை நிவர்த்தி செய்யவும், கால்நடைகளை நேரடியாக நமது முகநூல் இணைய தளத்தில் விற்பனை செய்யவும் (https://www.facebook.com/LivestockMarket) , கருத்துக்களை விவாதிக்கவும், ஆலோசனைகள் சொல்லவும், சமுதாய முன்னேற்றத்திற்கு நம்மால் முயன்ற உதவிகளை கால்நடை வளர்போருக்கு இந்த குழுவினால் செய்வதே ஆகும். எல்லோருடைய பங்களிப்பையும் இந்த

Participate and collaborate



e-Agriculture Community of Practice

9,360 members

ADMINS

Sophie Treinen · Group Owner
Coordinatrice du programme de Parte...

Irene Casado Martínez · Manager
Communication Officer

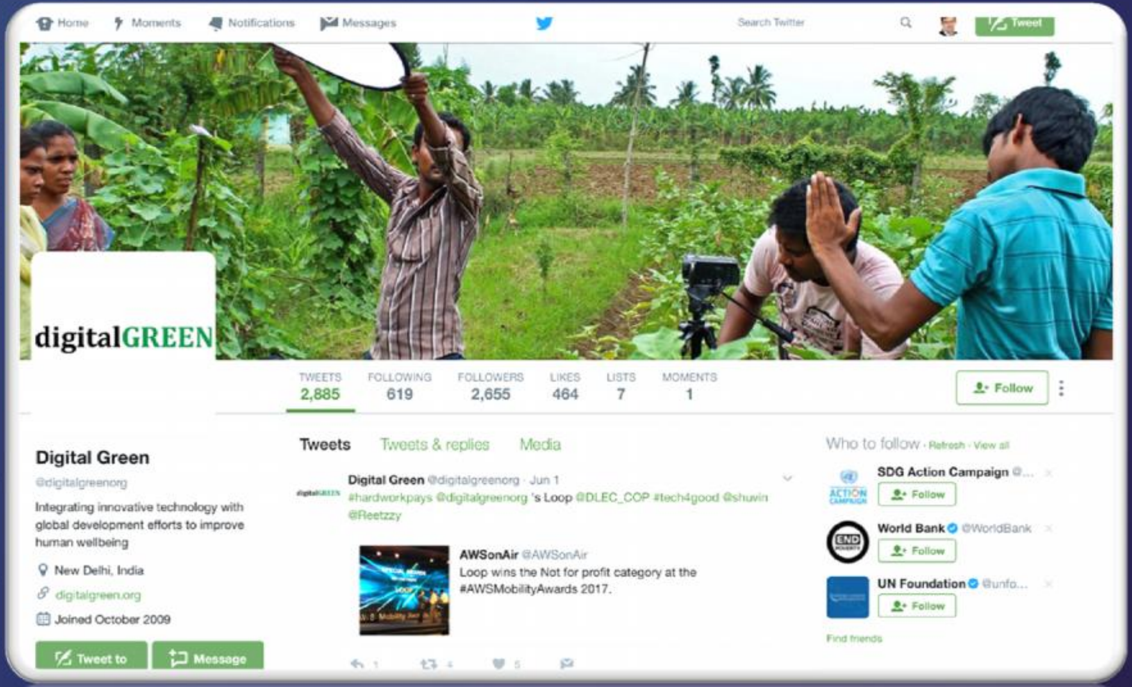
Pietro Aldobrandini · Manager
Knowledge Management Consultant p...

Alice Van der Elstraeten · Manager
Information Management Specialist

ABOUT THIS GROUP

e-Agriculture Community of Practice is a global initiative to enhance sustainable agricultural development & food security by improving the use of ICTs in the sector. The aim is to enable members to exchange experiences & resources, ensuring that the knowledge created is effectively shared worldwide. This LinkedIn Group is an extension of the Community. Please keep your posts on topic. Show less

Participate and collaborate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Moments
Notifications
Messages
Search Twitter
Tweet
digitalGREEN
Follow
Tweets
Tweets & replies
Media
Who to follow · Refresh · View all
Follow
Follow
Follow
Find friends
Tweet to
Message

TWEETS 2,885
FOLLOWING 619
FOLLOWERS 2,655
LIKES 464
LISTS 7
MOMENTS 1

Digital Green
@digitalgreenorg
Integrating innovative technology with global development efforts to improve human wellbeing
New Delhi, India
digitalgreen.org
Joined October 2009

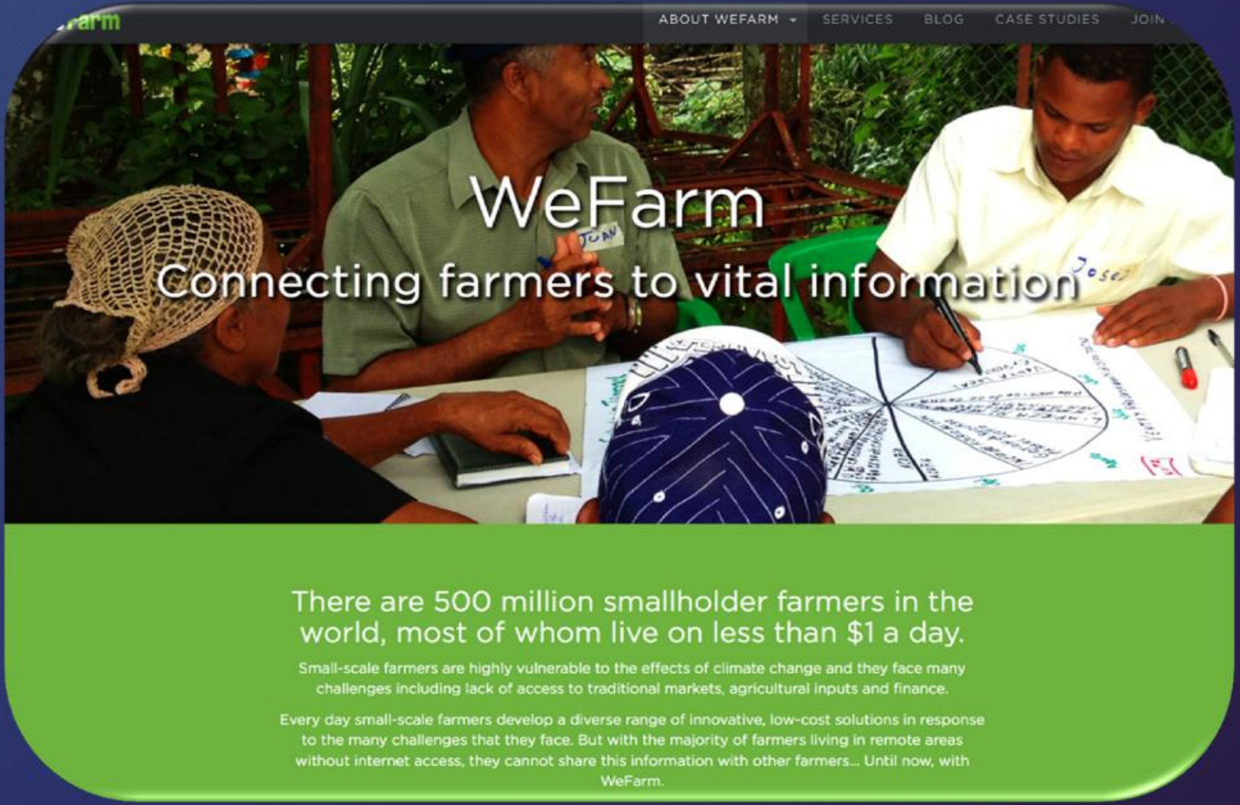
Digital Green @digitalgreenorg · Jun 1
#hardworkpays @digitalgreenorg 's Loop @DLEC_COP #tech4good @shuvin @Reetzzy

AWSonAir @AWSonAir
Loop wins the Not for profit category at the #AWSMobilityAwards 2017.

1 4 5

SDG Action Campaign @...
World Bank @WorldBank
UN Foundation @unfo...

Participate and collaborate – beyond traditional networks



WeFarm

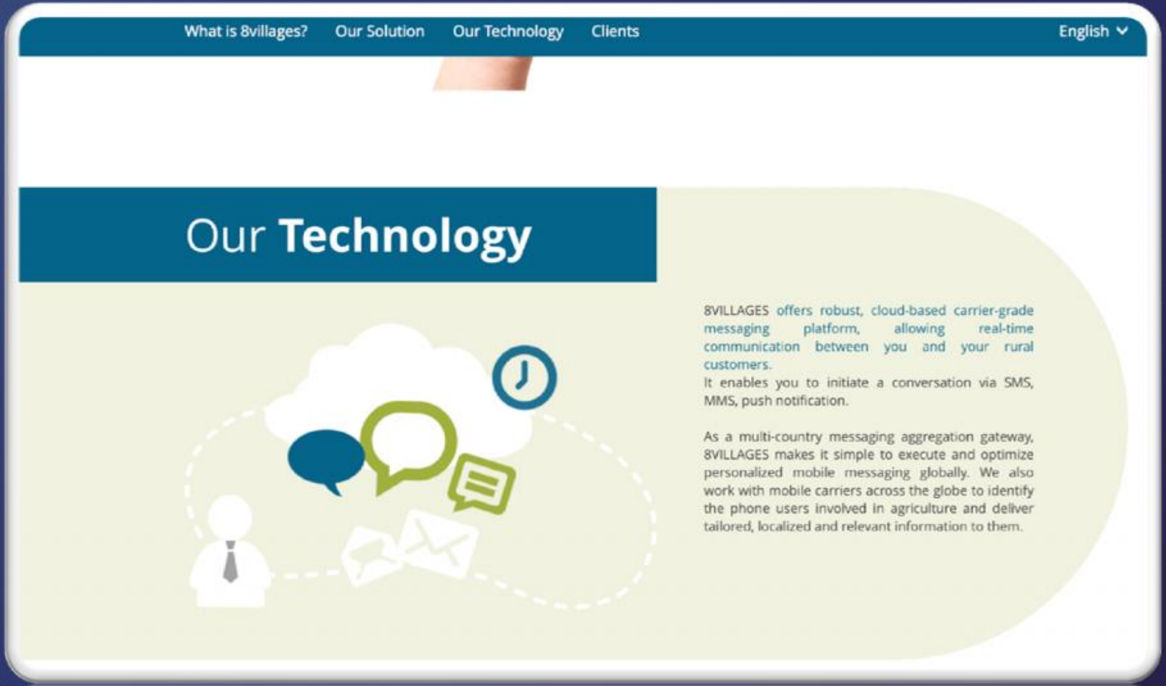
Connecting farmers to vital information

There are 500 million smallholder farmers in the world, most of whom live on less than $1 a day.

Small-scale farmers are highly vulnerable to the effects of climate change and they face many challenges including lack of access to traditional markets, agricultural inputs and finance.

Every day small-scale farmers develop a diverse range of innovative, low-cost solutions in response to the many challenges that they face. But with the majority of farmers living in remote areas without internet access, they cannot share this information with other farmers... Until now, with WeFarm.

Participate and collaborate – beyond traditional networks



Our **Technology**

8VILLAGES offers robust, cloud-based carrier-grade messaging platform, allowing real-time communication between you and your rural customers.
It enables you to initiate a conversation via SMS, MMS, push notification.

As a multi-country messaging aggregation gateway, 8VILLAGES makes it simple to execute and optimize personalized mobile messaging globally. We also work with mobile carriers across the globe to identify the phone users involved in agriculture and deliver tailored, localized and relevant information to them.

Listen, engage, collaborate

A Natural Fit: Social Media & Sustainability

Liz Male Consulting ltd.
clarity
GE Reports
Posts
Video
s/Infograp s/Maps
Tweets
2:45 / 2:45
YouTube

Thank you!

Breakout session 14 – From data to decision: How to collect, analyse and use high quality data to increase impact

Presenters:
Stefan Kraus, Programme Manager, Akvo South East Asia
Charlotte Soedjak, Project Manager, Akvo Foundation
Marijke de Graaf, Food Security Strategy and Policy Advisor, Interchurch Organisation for Development Cooperation (ICCO)

From data to decision

How to collect, analyse and use high quality data to increase impact?

7 June 2017

Stefan Kraus & Charlotte Soedjak
(Akvo)
Marijke de Graaf (ICCO)

COOPERATION ›

akvo.org

From data to decision

How to collect, analyse and use high quality data to increase impact?

- Process: of Capturing, Understanding and Sharing data
- Breaking it down: survey design, data collection, analysis, knowledge sharing

Availability of data

Some developments driving availability of data:

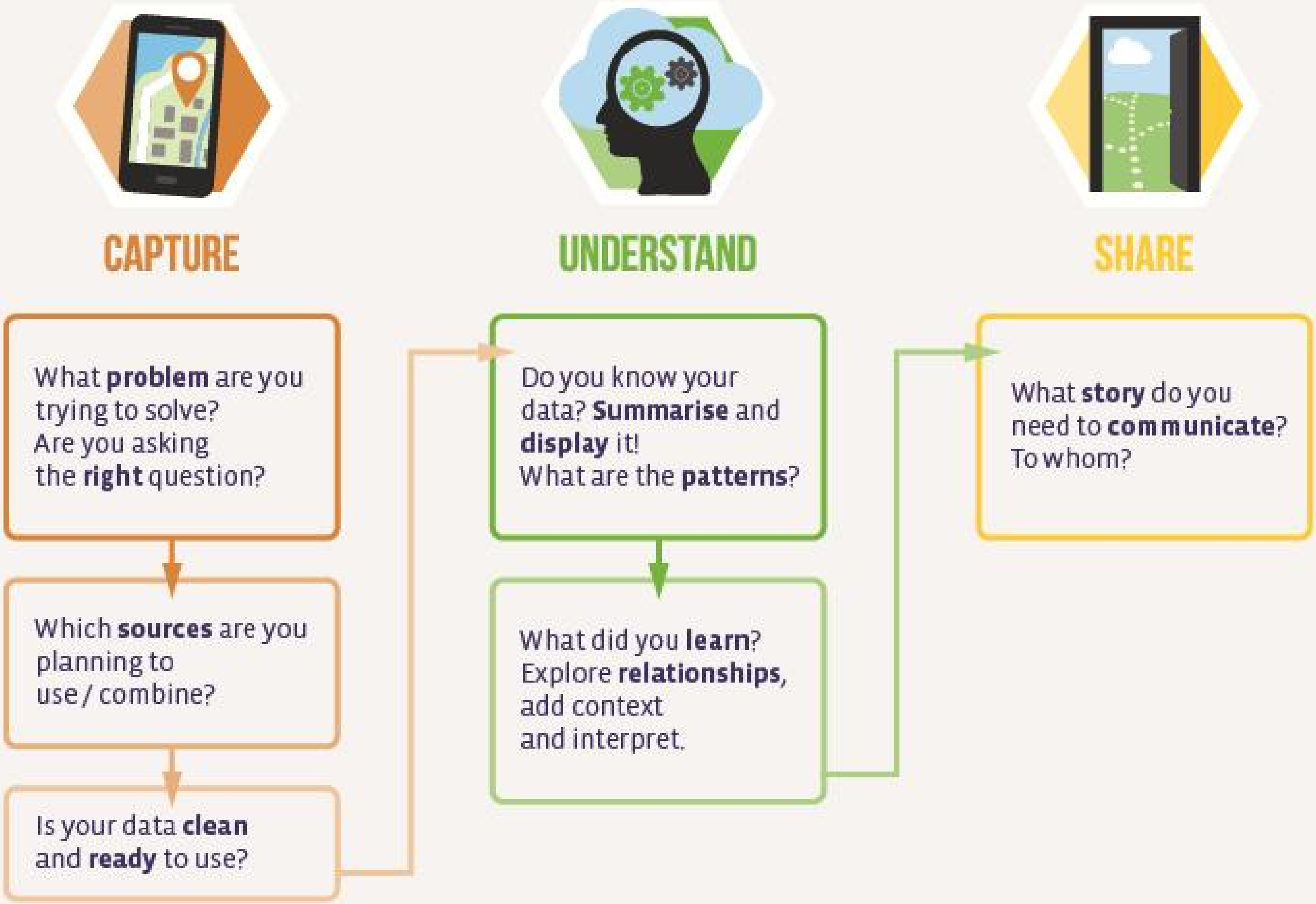
- Technology
- Open data
- Sustainable Development Goals

↓

Results in large amounts of available data

Poses challenges

Data science process



CAPTURE

What **problem** are you trying to solve?
Are you asking the **right** question?

Which **sources** are you planning to use / combine?

Is your data **clean** and **ready** to use?

UNDERSTAND

Do you know your data? **Summarise** and **display** it!
What are the **patterns**?

What did you **learn**?
Explore **relationships**, add context and interpret.

SHARE

What **story** do you need to **communicate**?
To whom?

akvo.org

CAPTURE

akvoflow

Smartphone-based field surveys

akvo caddisfly

Water quality testing, on a smartphone

UNDERSTAND

akvolumen

Make sense of your data

akvorsr

An online communication, reporting and monitoring hub for all your projects

SHARE

akvopedia

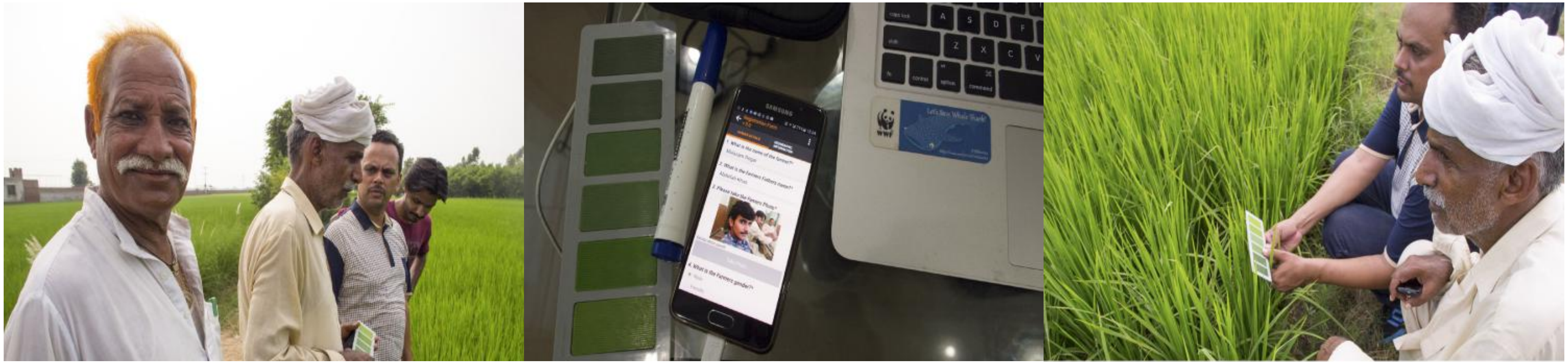
Share and extend your knowledge, online

akvosites

A website designed to help you get the most out of the Akvo systems you use every day.

MARS
food
akvo.org

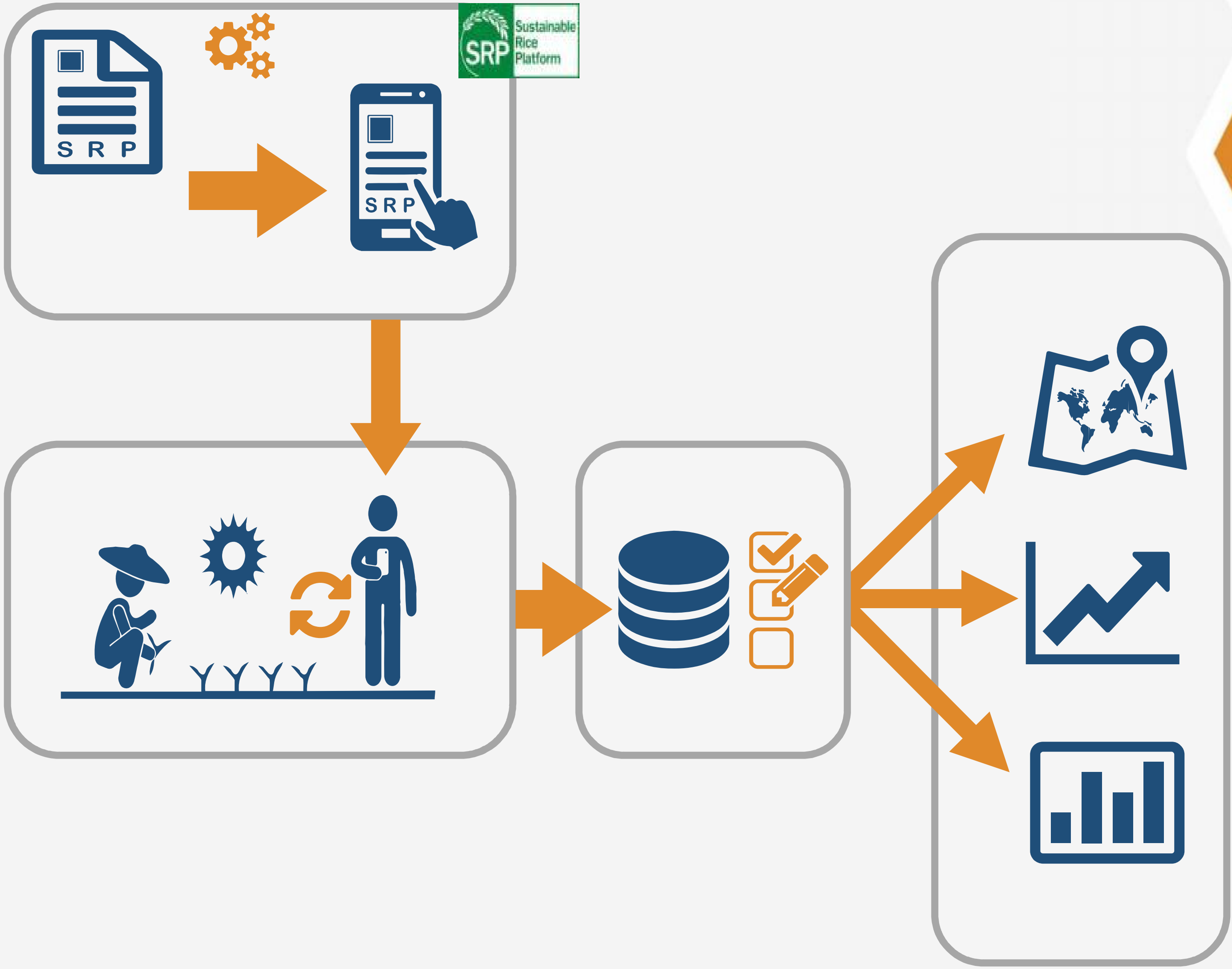
- Survey design (digitisation of Sustainable Rice Platform standard)
- On site training on digital data collection
- Support during data collection and analysis
- Real-time scoring and feedback
- All farmer data collected and analysed in 10 days



MARS food

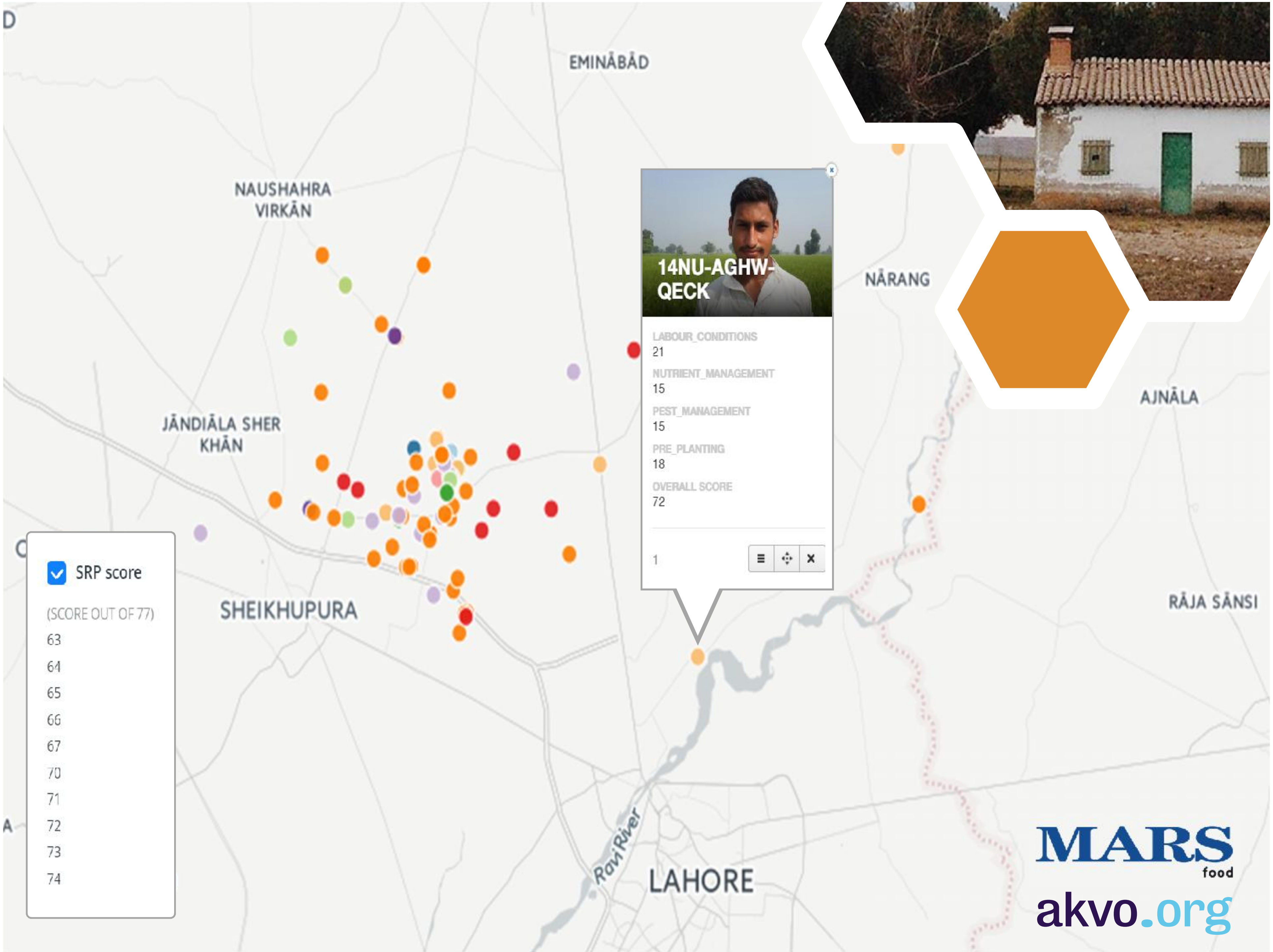
akvo.org

SRP standard digitization


S R P
SRP
SRP Sustainable Rice Platform

MARS food

akvo.org


EMINĀBĀD
NAUSHAHRA VIRKĀN
JĀNDIĀLA SHER KHĀN
SHEIKHUPURA
NĀRANG
AJNĀLA
RĀJA SĀNSI
LAHORE
Ravi River

14NU-AGHW-QECK

LABOUR_CONDITIONS
21

NUTRIENT_MANAGEMENT
15

PEST_MANAGEMENT
15

PRE_PLANTING
18

OVERALL SCORE
72

1

☑ SRP score

(SCORE OUT OF 77)
63
64
65
66
67
70
71
72
73
74

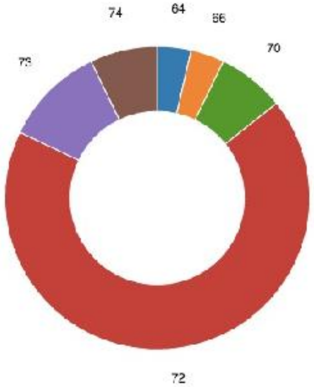
MARS food

akvo.org

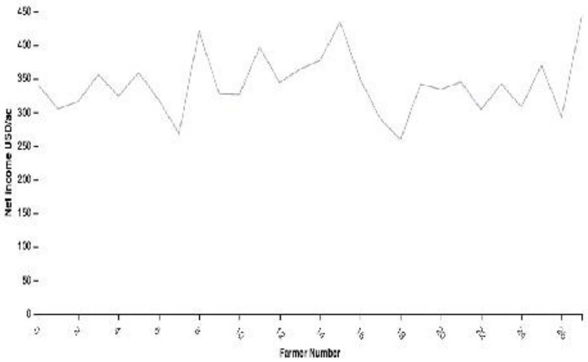
Mars Pakistan Dashboard

pre-harvest

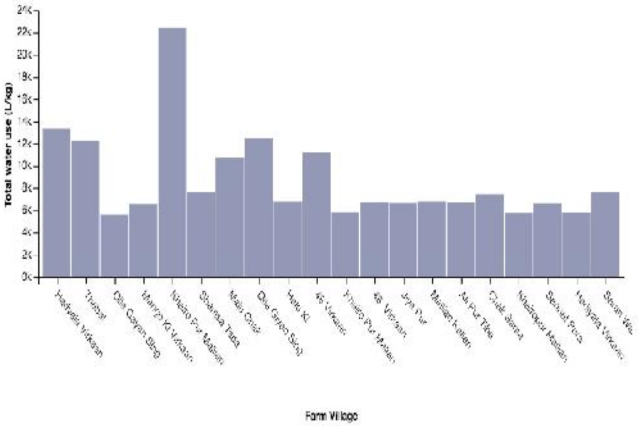
Initial SRP Score



Net Income



Water Use



Key considerations for data to decision

- Data collection is only one piece of the puzzle
- Design with and for end-users
- Important to consider other possible challenges:
    - Importance of training and iteration
    - Survey design and consistency in data collection/understanding
    - Data analysis (who? capacity?)
    - Data ownership and feedback loops
    - Design for data aggregation/integration
    - Other sensitivities (e.g. cultural challenges, land boundaries)

MARS food

akvo.org

Thank you

Stefan Kraus, stefan.kraus@akvo.org

Charlotte Soedjak, charlotte@akvo.org

Breakout session 15 – Open data and dissemination: Has the time come for common reporting standards on evaluations?

Presenter:
Rupert Simons, CEO, Publish What You Fund

Has the time come for a results data standard?

Rupert Simons

7 June 2017

Publish WhatYouFund

The Global Campaign for Aid Transparency

In this presentation I would like to

- Outline a problem we (all) face
- Consider the case for a results data standard
- Consider the case against a new standard
- Suggest how to improve data sharing

Publish WhatYouFund
The Global Campaign for Aid Transparency

Introducing me and Publish What You Fund

We envisage a world where aid and development information is **transparent**, **available** and **used** for effective decision-making, public accountability and lasting change for all citizens.

- We publish the Aid Transparency Index (most recently in 2016)
- We collaborate on the Open Agricultural Funding project with InterAction, Development Gateway, Open Data Services, the Foundation Center and the CGIAR
- I was previously a Governance Advisor in **Ethiopia**, **Liberia** and **Sierra Leone** and a project manager at McKinsey & Company
- Mostly consumers of data, not expert statisticians

Publish What You Fund
The Global Campaign for Aid Transparency

Have you ever wondered . . .

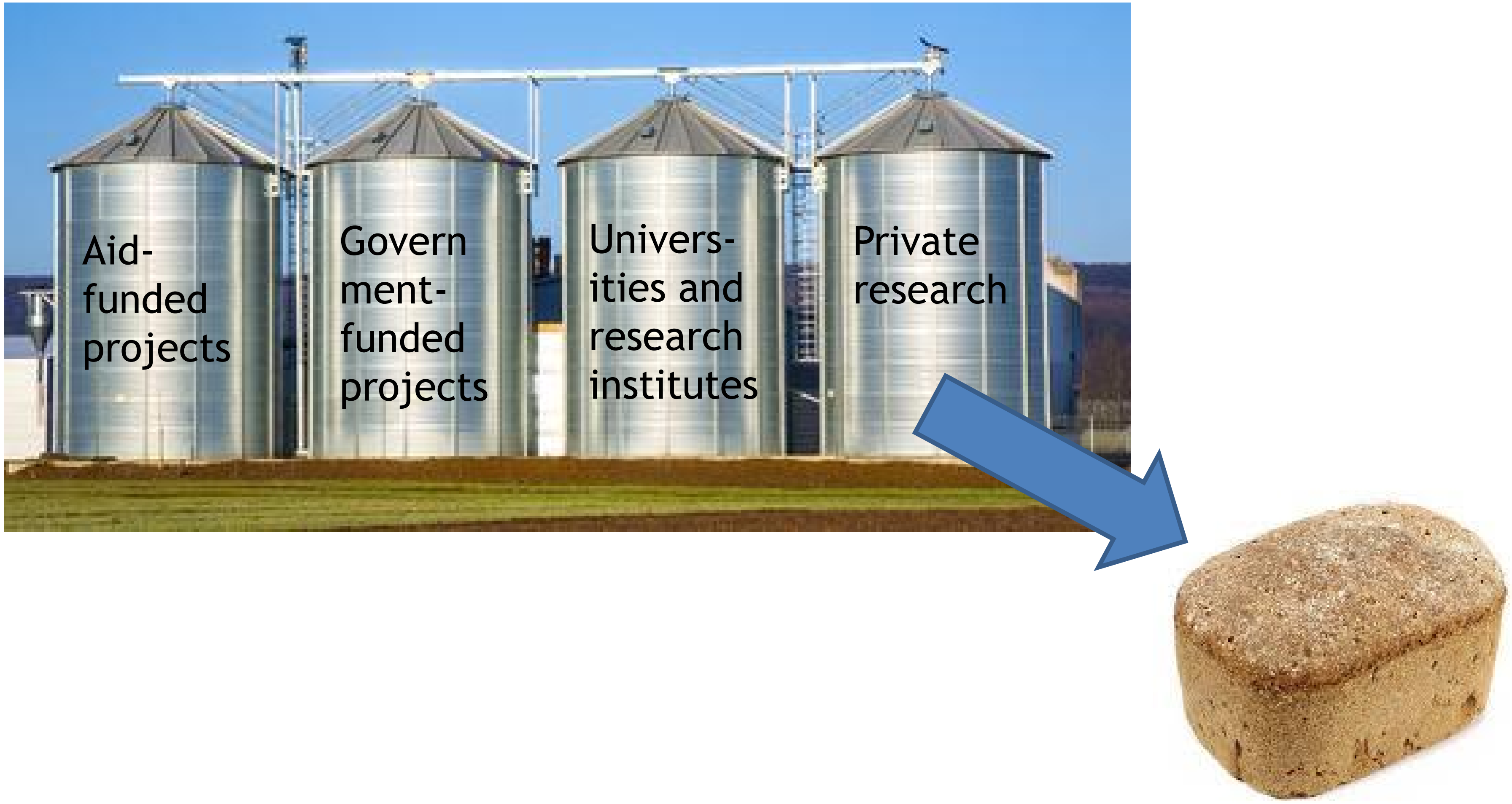
Why a programme was renewed when an evaluation said it was ineffective?

Why donors still fund ‘capacity building’ in spite of decades of evidence against it?

Why donors hire consultants to tell them what everyone else has done and how it worked?

Why nobody seems to have read (or downloaded) your amazing evaluation

We want data on the same thing, but . . .



Aid-funded projects

Government-funded projects

Universities and research institutes

Private research

Photo credit: Shutterstock; Abel and Cole

There are several data standards for aid and international development, but not results

IATI INTERNATIONAL AID TRANSPARENCY INITIATIVE

- Aid and development finance standard used by donors, banks, UN agencies and NGOs
- 550 publishers worldwide
- Results for 35,000 activities

Open Contracting Data Standard

- Public procurement data standard
- Early applications in Nigeria, Slovakia, Ukraine and UK
- No systematic framework for measuring contractual outcomes

sdmx Statistical Data and Metadata eXchange

- ISO standard adopted by UN Stats Commission and Eurostat
- National income accounts and statistics but no results data field

?

A metadata standard for evaluations and results would be useful

Results data

- Programme description
- Theory of change
- Impact appraisal (anticipated results)
- Outputs, outcomes and ultimate impact
- Unanticipated consequences
- Lessons learned

Results metadata

- Study title
- Language(s)
- Funding organisation
- Implementing organisation
- Details of evaluators
- Study methods
- Grading, ranking or ‘traffic light’ schema (though can be counterproductive)

Difficult to standardise as partly subjective and qualitative

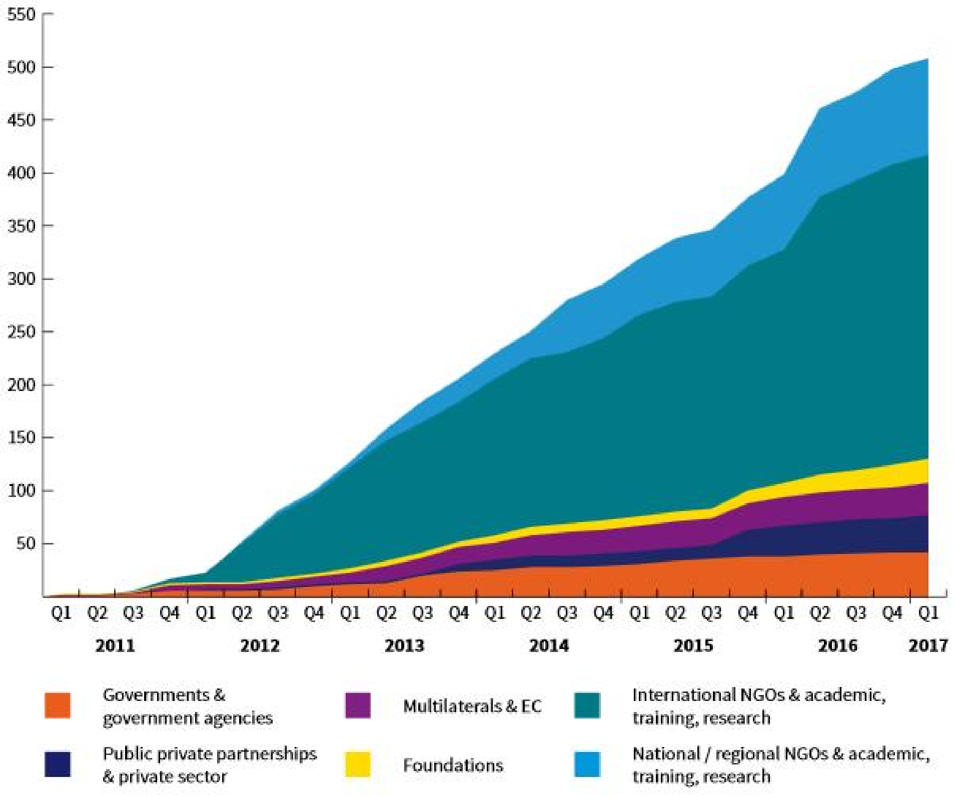
Easier to standardise
Helps find and use data

See also Development Initiatives and Publish What You Fund: ‘Open Metadata Portals’ at http://juds.joinedupdata.org/

Publish WhatYouFund
The Global Campaign for Aid Transparency

However, the experience of IATI cautions against creating another standard

The number of IATI publishers has increased steadily in the past five years



Source: IATI annual report, Development Initiatives

But the data is not being aggregated or used as intended

> “By far the most evident current use case for this data in practice is in information portals set up by donors and development partners”

Report by IATI Secretariat, March 2017

Evidence-based development is at a much smaller scale than evidence-based medicine

3ie International Initiative for Impact Evaluation

- 303 summary reviews
- 4,260 impact evaluations in the database
- All CGIAR centres together have an income of approximately $1 billion per year

Cochrane Library

- 9,832 systematic reviews
- Over 1 million controlled trials on the central register
- US federal budget for 2017 provides $5.4 billion just for cancer research

The supply and demand for results and evaluation data are too small to outweigh the costs of creating a results data standard

Source: 3ie, Cochrane Collaboration

Nevertheless, there are opportunities to improve data on results

Define the use case for publishing results data

Which of these should shape the design?

- Reporting to donors
- Accountability ('follow the money')
- Monitoring and evaluation
- Learning and improvement

Publish metadata in existing standards

- Standards bodies and data users should work together to agree a common metadata schema for evaluations and results in aid and development finance
- These could be incorporated to the next versions of the IATI and Open Contracting data standards due in 2018-19

Publish all data sets in open access formats

- Organisations who fund and commission evaluations should require publication in open, searchable formats, including plain text as well as PDF
- Researchers should publish their data sets and code, including for studies that did not show significant results

Thank you

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