

# Assessment and Economic Valuation of Coastal Protection Services Provided by Mangroves in Jamaica



Mobile Data Collection
Capacity Building Workshop

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#### Overview

- Introduction to Mobile Data Collection
- Overview of Open Data Kit
- Setting up your device for data collection
- Field-based data collection
- Data processing and visualisation

- The best technology is often the one you already have, know how to use, can maintain and can afford.
- Mobile data collection saves time, money and trees.

• By digitally recording information at the source of its origin, you don't have to waste time typing data into a spreadsheet or worry about not being able to read crab toe after the fact.

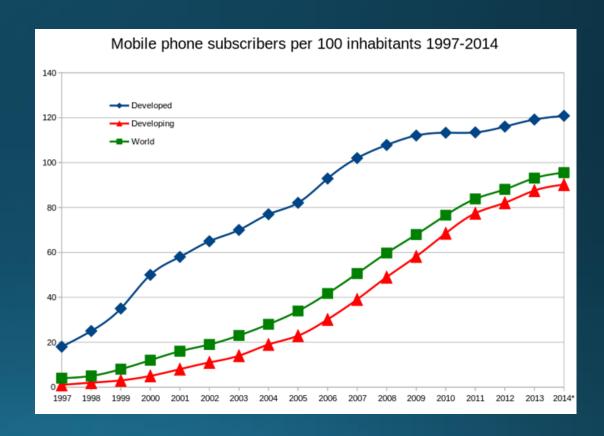
 Mobile data collection is the method of gathering any type of information using a mobile device such as a smartphone or tablet.

 Facilitated by the growth in popularity of mobile devices and the flexible operating systems which extend the capabilities of these devices

 As of late 2013, rates of mobile phone penetration stood at 96% globally.

• 128% in developed countries

89% in developing countries



#### Advantages

- Speed:
- Network availability allows for near-instantaneous transmission of data to a central coordinating group, the reduced amount of time that elapses between local data collection and delivery can save weeks or even months of time in the overall data collection process.
- In addition, an early warning system of sorts can be established, allowing survey coordinators to quickly identify potential problems with data collection efforts and (potentially) correct them in almost real time.

#### Accuracy:

 Digital data capture at the source can greatly reduce transcription errors, and data transmission over mobile networks may ensure that no data are lost 'in transit'

#### Ubiquity, familiarity and convenience:

• Data collectors and survey participants may, at a general level, already be quite comfortable using a mobile phone (and indeed may be using their own personal device), even if they have not used it specifically as part of data collection efforts.

#### Flexibility of functions:

 Various types of data (GPS, photos, text) can be collected and this reduces the need for multiple devices.

Offline data collection and storage

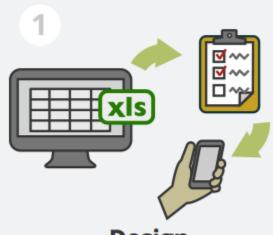
# Overview of Open Data Kit

- Open Data Kit (ODK) is a free and open-source set of tools which help organizations author, field, and manage mobile data collection solutions. ODK provides an out-of-the-box solution for users to:
- <u>Build</u> a data collection form or survey (<u>XLSForm</u> is recommended for more complex forms)
- Collect the data on a mobile device and send it to a server; and
- Aggregate the collected data on a server and extract it in useful formats.

Source: https://opendatakit.org/

#### Software Introduction

#### **How it Works**



Design

Author surveys quickly and easily in Excel and have instant access on your Android phone. No advanced technical degree required.



Collect

Easily distribute your survey on an Android device or on the web. Data connection not needed.



**Analyze** 

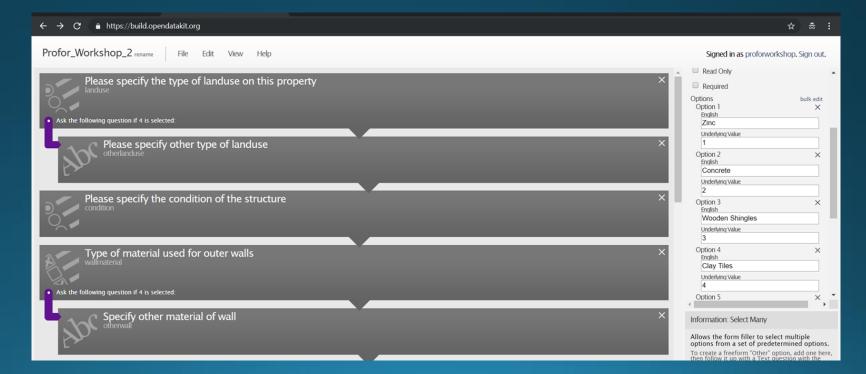
Visualize your data as it is collected, and gain understanding with our powerful insights tools.

#### ODK Build

 ODK Build is a form designer with a drag-and-drop user interface. Build is a web application which works best for designing simple forms.

For more powerful form designers, try XLSForm, Vellum, or Kobo, or

PurcForms.



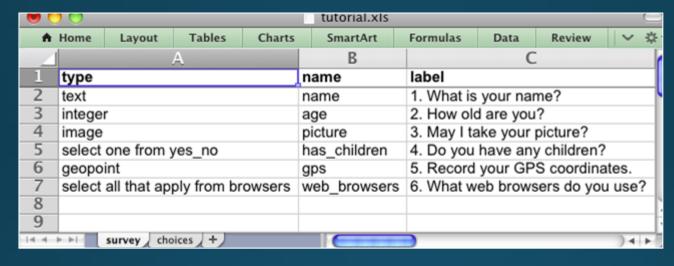
#### **ODK Collect**

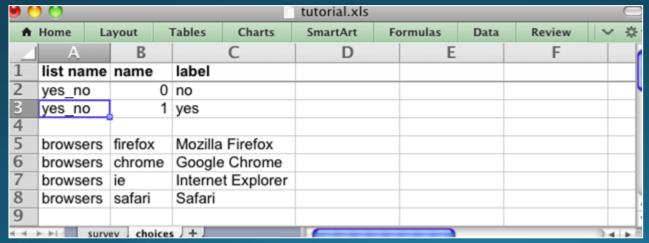
- ODK Collect renders forms into a sequence of input prompts that apply form logic, entry constraints, and repeating sub-structures.
- Users work through the prompts and can save the submission at any point.
- Finalized submissions can be sent to (and new forms downloaded from) a server.
- Currently, ODK Collect uses the Android platform, supports a wide variety of prompts (text, number, location, multimedia, barcodes), and works well without network connectivity.

# ODK Aggregate

- ODK Aggregate provides a ready-to-deploy server and data repository to:
  - provide blank forms to ODK Collect (or other OpenRosa clients),
  - accept finalized forms (submissions) from ODK Collect and manage collected data,
  - visualize the collected data using maps and simple graphs,
  - export data (e.g., as CSV files for spreadsheets, or as KML files for Google Earth), and
  - publish data to external systems (e.g., Google Spreadsheets or Google Fusion Tables).

# Survey Design



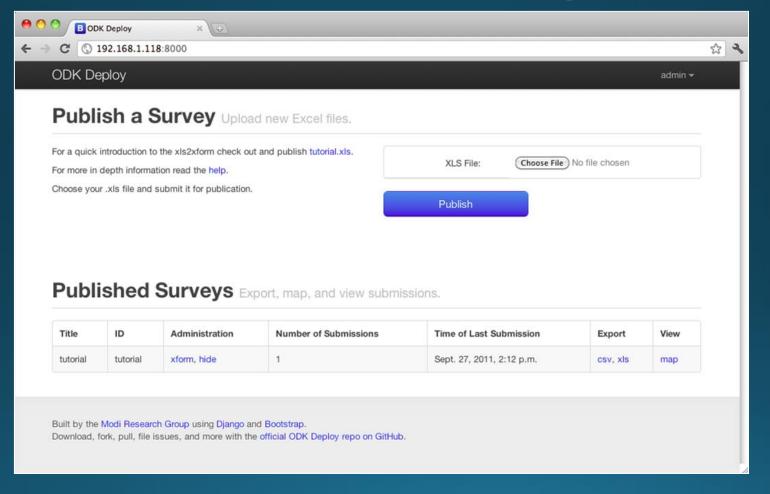


### Data Collection

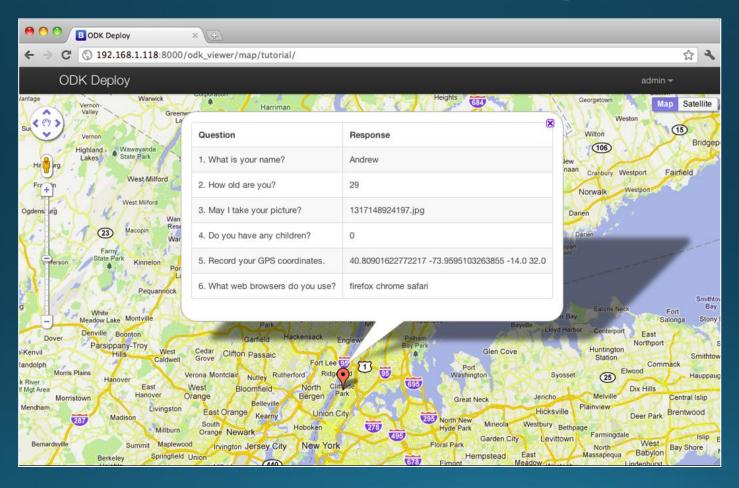


(www.opendatakit.org)

### Upload Results and Analyze



# Upload Results and Analyze



(www.formhub.org)

#### Software Demonstration

- Survey Design
- Form Loading
- Survey Execution
- Survey Upload
- Data Analysis

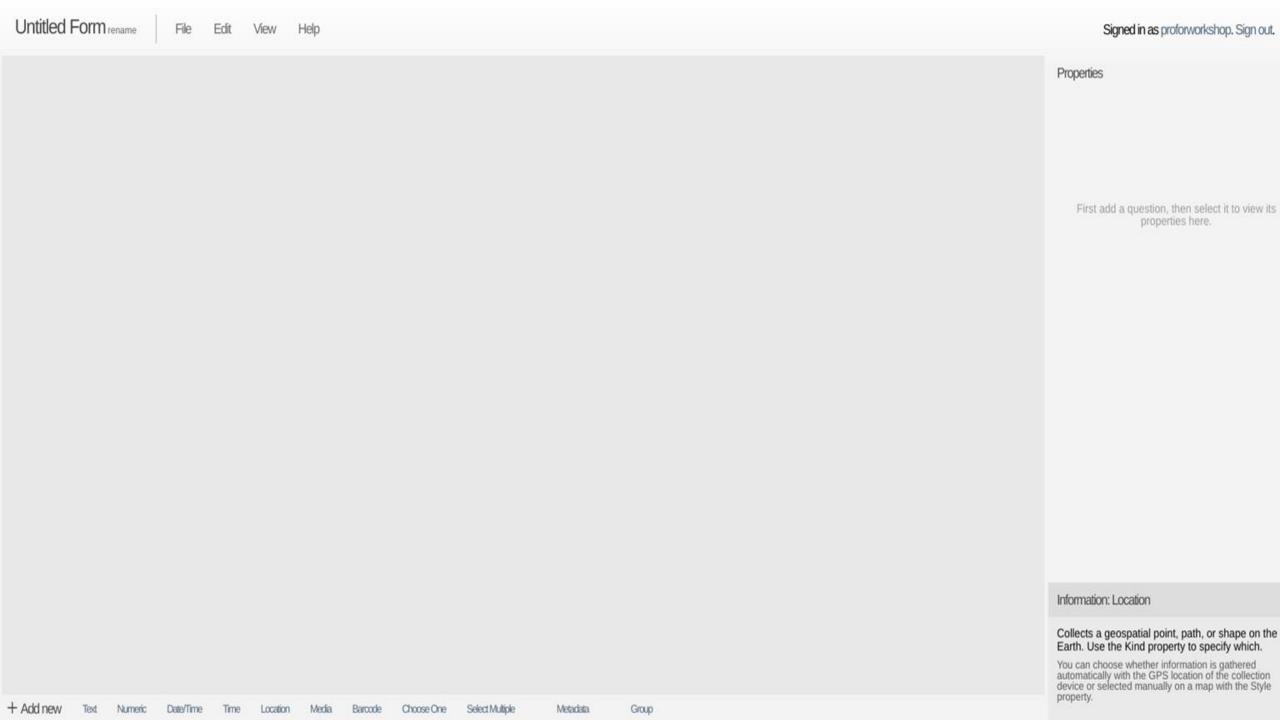
#### Create Account on ODK Build

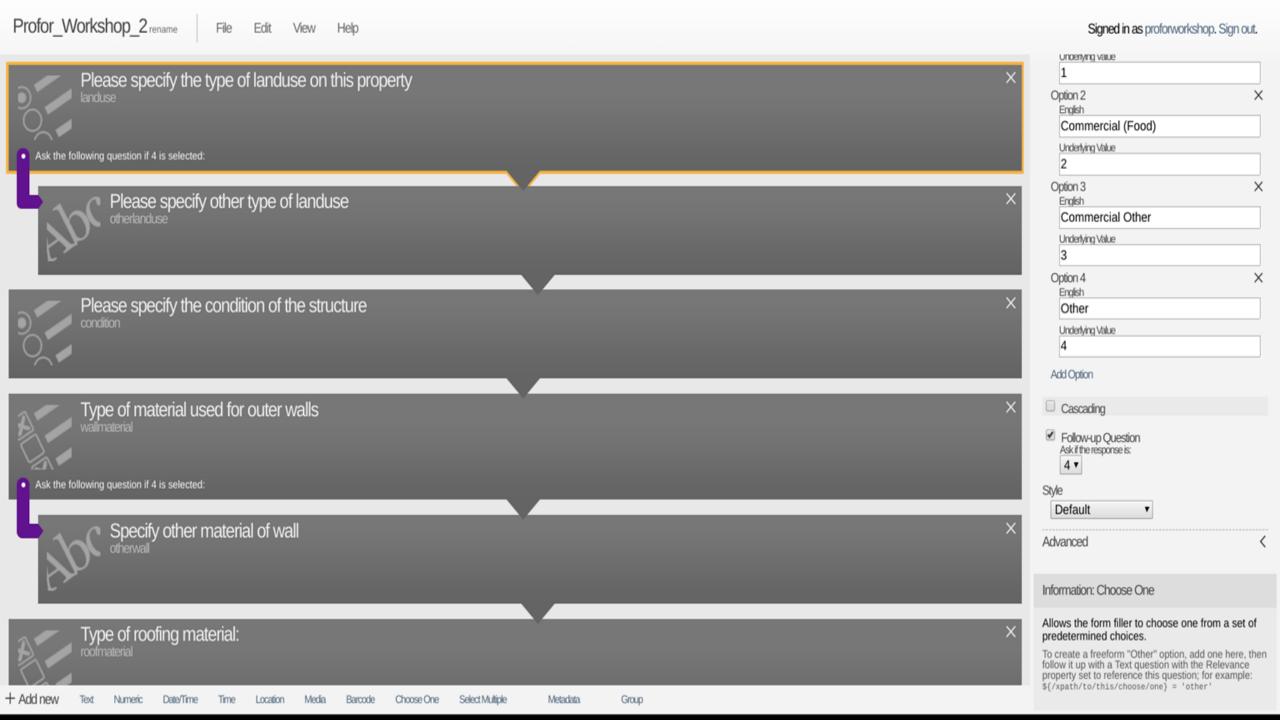
The URL is https://build.opendatakit.org/

#### Create Account on ONA

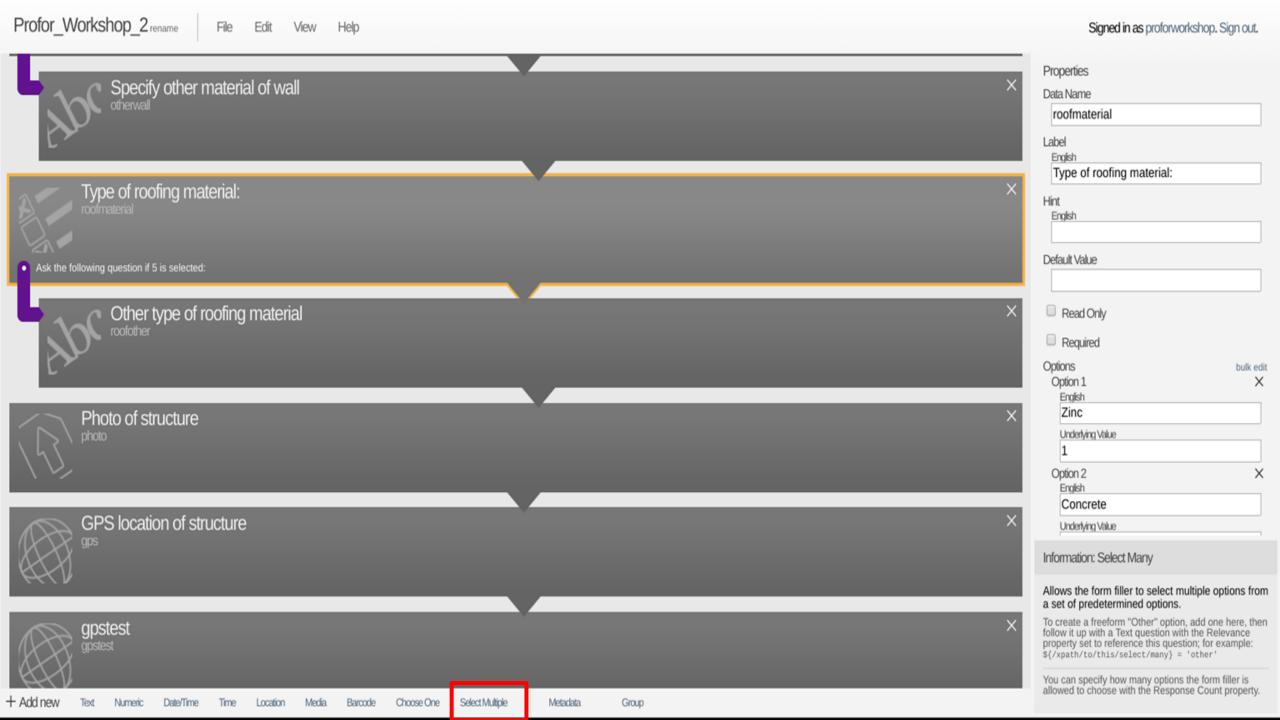
The URL is https://ona.io/

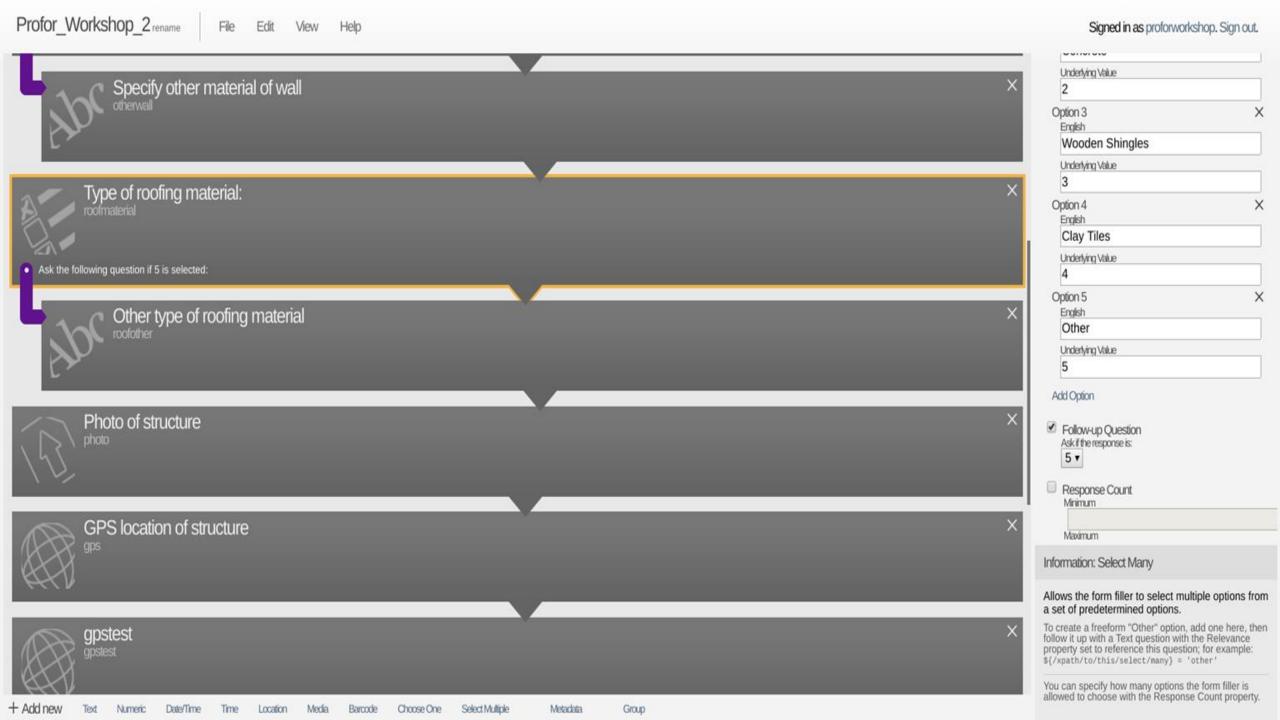
# Form Development using ODK Build

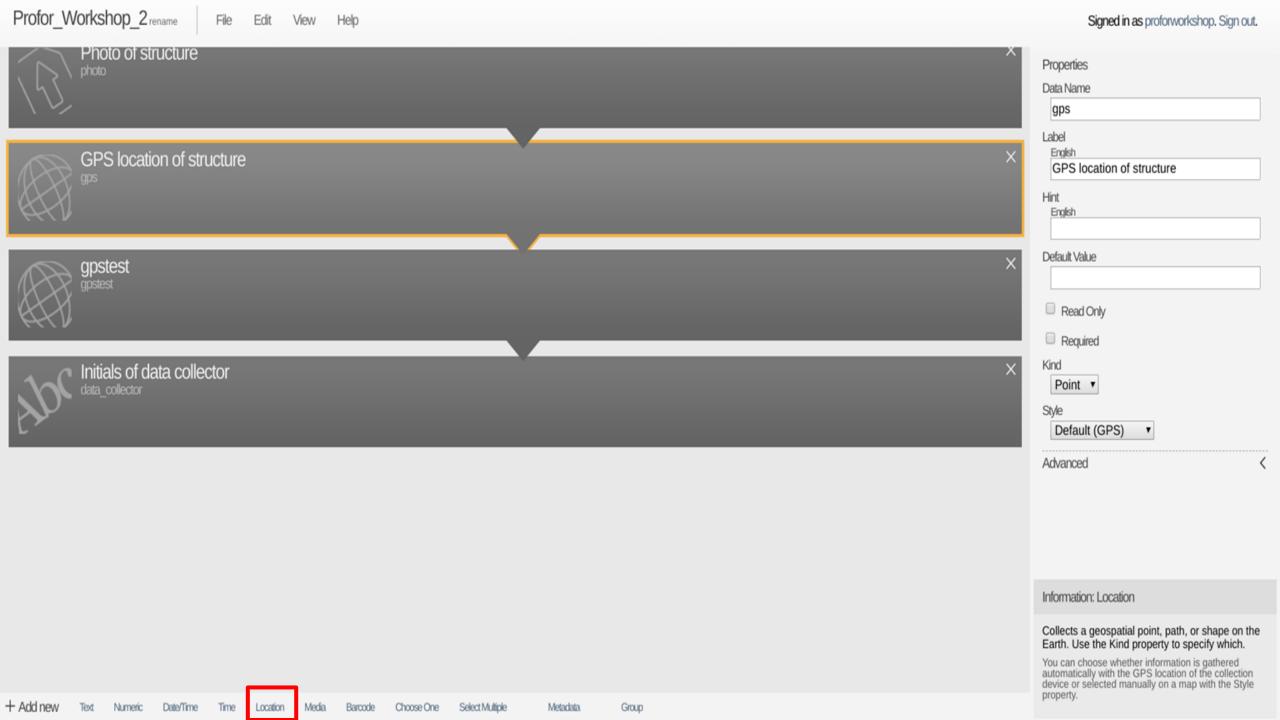












# Form Development using XLSForm

#### Survey Design Options

- ODK Build
- A streamlined service which allows for simple form design online.
  - Once the form has been designed, the coded excel form can be downloaded and pushed on to the tablet
- XLSForm Design
  - Required for more complex survey designs
  - Survey forms are built within Excel using the XLSForm programming language
  - The forms are then uploaded to your dedicated webserver and the pushed on to the tablet

#### Excel Spreadsheet Design

#### 2 Spreadsheets:

- Survey
  - All questions are designed and labelled in this spreadsheet
  - Each question is given a list name
- Choices
  - All multiple choice questions are designed and labelled in this spreadsheet
  - Each question choice is paired with the questions in the Survey spreadsheet using the same list name

http://xlsform.org/

#### Excel Spreadsheet Design

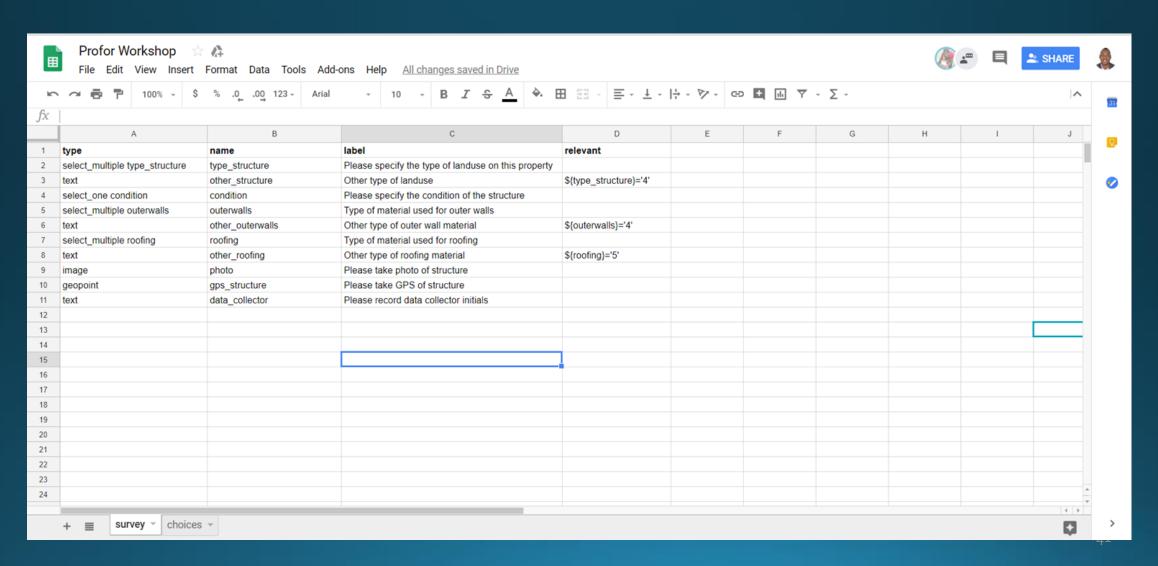
- Three columns are required in each spreadsheet
- Survey

	^		ŭ .	
1	type	name	label	relevant
2	select_multiple type_structure	type_structure	Please specify the type of landuse on this property	
3	text	other_structure	Other type of landuse	\${type_structure}='4'
4	select_one condition	condition	Please specify the condition of the structure	
5	select_multiple outerwalls	outerwalls	Type of material used for outer walls	
6	text	other_outerwalls	Other type of outer wall material	\${outerwalls}='4'
7	select_multiple roofing	roofing	Type of material used for roofing	

#### Choices

1	list name	name	label
2	type_structure	1	Residential
3	type_structure	2	Commercial (Food)
4	type_structure	3	Commercial (Other)
5	type_structure	4	Other

#### Survey Design - Questions



#### Survey Design – Categorical Responses



Question type	Answer input
integer	Integer (i.e., whole number) input.
decimal	Decimal input.
text	Free text response.
select_one [options]	Multiple choice question; only one answer can be selected.
select_multiple [options]	Multiple choice question; multiple answers can be selected.
note	Display a note on the screen, takes no input.
geopoint	Collect a single GPS coordinates.
geotrace	Record a line of two or more GPS coordinates.
geoshape	Record a polygon of multiple GPS coordinates; the last point is the same as the first point.
date	Date input.
time	Time input.
dateTime	Accepts a date and a time input.
image	Take a picture.
audio	Take an audio recording.
video	Take a video recording.
barcode	Scan a barcode, requires the barcode scanner app to be installed.
calculate	Perform a calculation; see the Calculation section below.
acknowledge	Acknowledge prompt that sets value to "OK" if selected.

#### Multiple Choice Questions

survey		
type	name	label
select_one yes_no	likes_pizza	Do you like pizza?
choices		
list name	name	label
yes_no	1	Yes
yes_no	2	No

#### Multiple Choice Questions

survey		
type	name	label
select_multiple favorite_toppings	favorite_toppings	What are your favorite pizza toppings?
choices		
list name	name	label
favorite_toppings	1	Cheese
favorite_toppings	2	Pepperoni
favorite_toppings	3	Sausage

#### Hints

survey			
type	name	label	hint
text			Look on the signboard if the store has a signboard

#### Constraints and Constraint Message

survey				
type	name	label	constraint	constraint message
				Respondent must be 18
		Respondent's		or older to complete
integer	respondent_age	age	.>=18	the survey

### Relevant Questions and Skip Logic

1	type	name	label	relevant
2	select_multiple type_structure	type_structure	Please specify the type of landuse on this property	
3	text	other_structure	Other type of landuse	\${type_structure}='4'
4	select_one condition	condition	Please specify the condition of the structure	
5	select_multiple outerwalls	outerwalls	Type of material used for outer walls	
6	text	other_outerwalls	Other type of outer wall material	\${outerwalls}='4'
		_		

#### This expression is literally interpreted as:

The question on other type of landuse is relevant only if the respondent selected option 4 for the question on type of landuse (type\_structure)

## Required Questions

survey				
type	name	label	constraint	required
integer		How old are you?	. <= 150	yes

## Grouping Questions

survey		
type	name	label
begin group	pizza	Pizza
select_one yes_no	likes_pizza	Do you like pizza?
_ , _	<u>—</u>	,
select_multiple favorite_toppings	favorite_toppings	What are your favorite pizza toppings?
end group	pizza	Pizza

#### Repeating Questions

survey		
type	name	label
begin repeat	child_repeat	
text	name	Child's name
decimal	birthweight	Child's birthweight
select_one male_female	male_female	Child's sex
end repeat	child_repeat	

# Geopoint

survey		
type	name	label
geopoint	geopoint	Collect the GPS coordinates of this store

#### Metadata

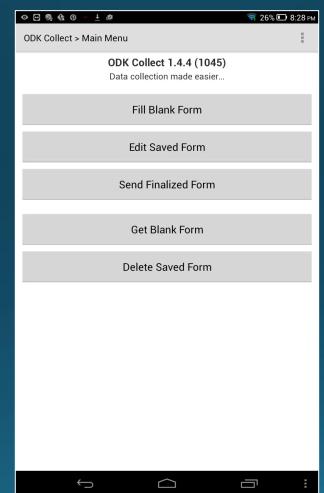
survey		
type	name	label
start	start	
end	end	
today	today	
deviceid	deviceid	
subscriberid	subscriberid	
imei	imei	
phonenumber	phonenumber	

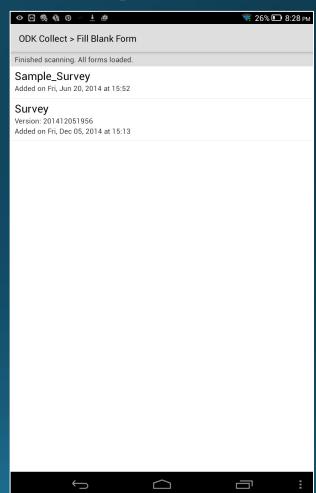
#### Multiple Language Support

survey			
type	name	label::English	label::Portuguese
select_one	consent_yes_or	Are you willing	Você está disposto a
consent_yes_or_no	_no	to participate?	participar?

#### Opening ODK Collect Survey







## Changing the Survey Language

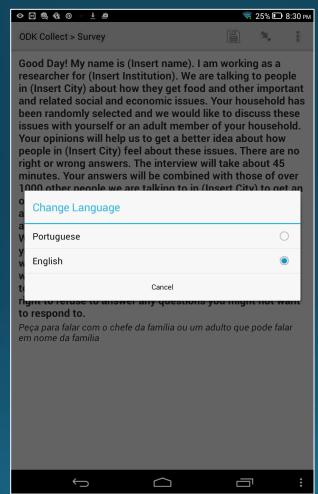
🛜 25% 💷 8:29 рм

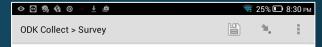
Good Day! My name is (Insert name). I am working as a researcher for (Insert Institution). We are talking to people in (Insert City) about how they get food and other important and related social and economic issues. Your household has been randomly selected and we would like to discuss these issues with yourself or an adult member of your household. Your opinions will help us to get a better idea about how people in (Insert City) feel about these issues. There are no right or wrong answers. The interview will take about 45 minutes. Your answers will be combined with those of over 1000 other people we are talking to in (Insert City) to get an overall picture. Any answers you provide will be kept absolutely confidential, and there is no way anyone will be able to identify you by what you have said in this interview. We are not recording either your address or your name, so you will remain anonymous so please feel free to tell us what you think. The data we collect from these interviews will always be kept in a secure location. You have the right to terminate this interview at any time and you have the right to refuse to answer any questions you might not want to respond to.

ODK Collect > Survey

Peça para falar com o chefe da família ou um adulto que pode falar em nome da família

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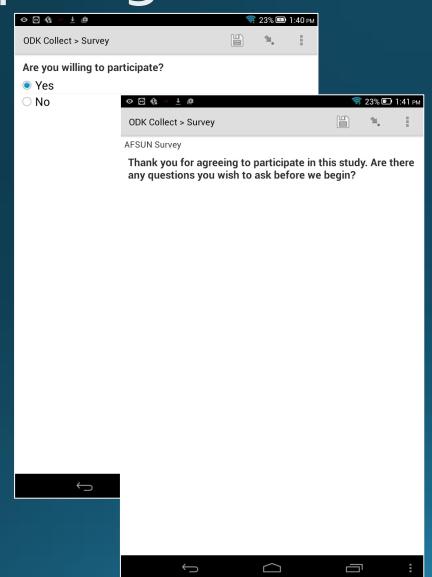


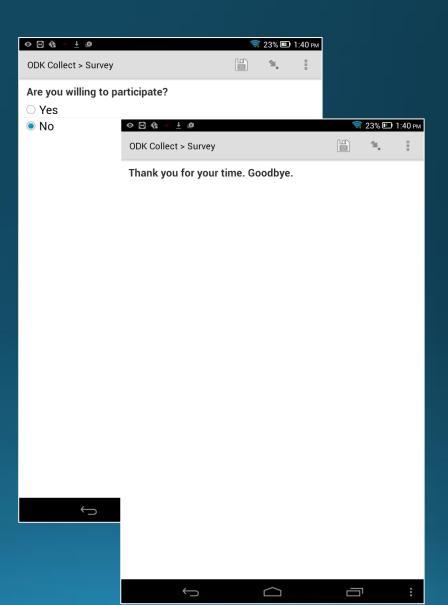


Bom dia! Meu nome é (nome da inserção) . Eu estou trabalhando como pesquisador para (Insert Instituição). Estamos conversando com pessoas em (Insert Cidade) sobre como eles se alimentos e outras questões sociais e econômicas importantes e relacionadas. Sua casa foi selecionada aleatoriamente e nós gostaríamos de discutir essas questões com você ou um membro adulto de sua família. Suas opiniões vão nos ajudar a ter uma idéia melhor sobre como as pessoas em (Insert Cidade) se sente sobre essas questões. Não há respostas certas ou erradas. A entrevista vai demorar cerca de 45 minutos. Suas respostas serão combinadas com as de mais de 1000 outras pessoas que estão a falar em (Insert Cidade) para obter uma imagem geral. Qualquer resposta que você fornecer serão mantidos em sigilo absoluto, e não há nenhuma maneira que gualguer um será capaz de identificá-lo por aquilo que disse nesta entrevista. Nós não estamos gravando o seu endereco ou o seu nome, então você permanecerá anônimo por favor, sinta -se livre para nos dizer o que você pensa. Os dados que coletamos essas entrevistas serão sempre mantidos em um local seguro. Você tem o direito de encerrar esta entrevista a qualquer momento e você tem o direito de se recusar a responder a quaisquer perguntas que você pode não querer

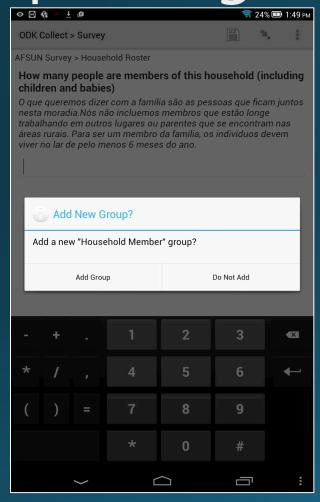
Peça para falar com o chefe da família ou um adulto que pode falar em nome da família

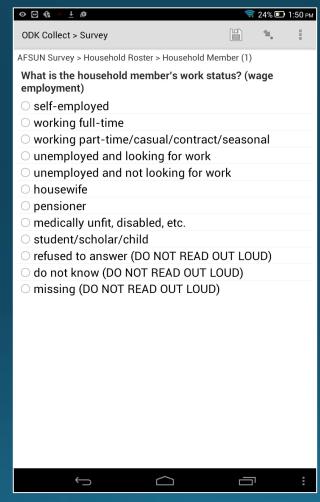
# Skip Logic

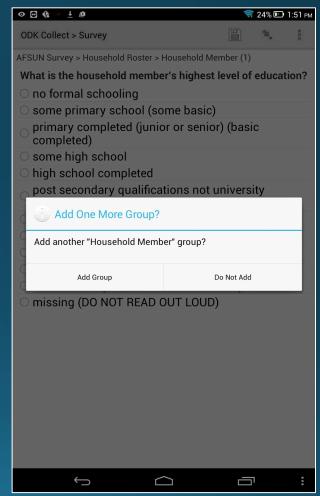




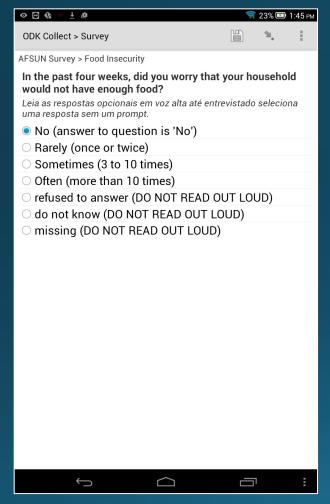
#### Repeating Sets of Questions

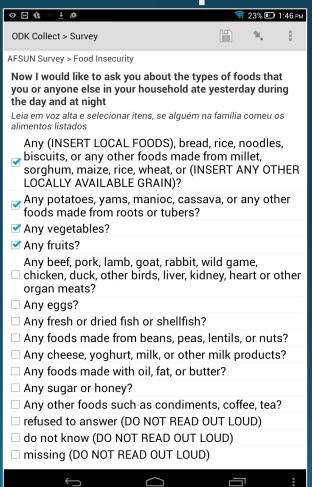






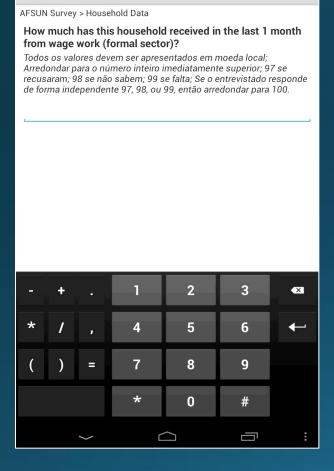
#### Select One or Select Multiple





#### Numeric, Text, and GPS Input

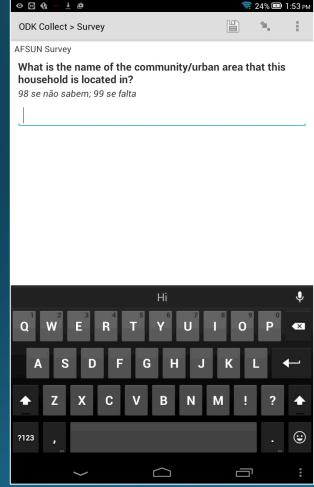
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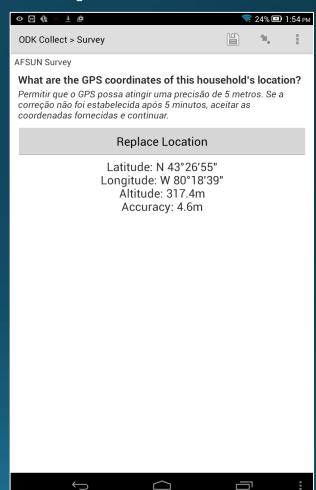


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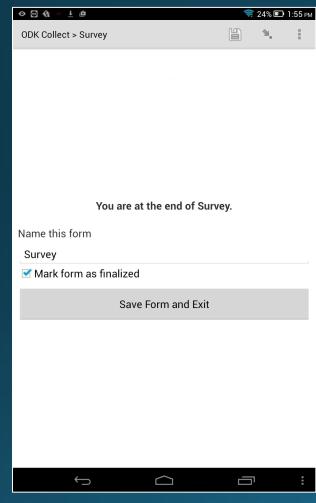
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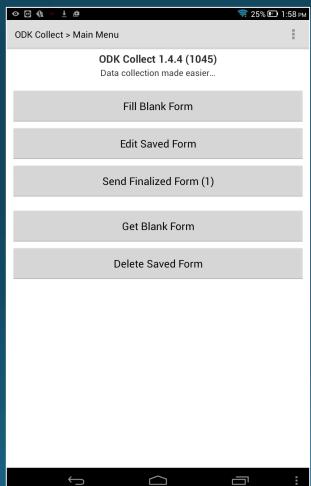
ODK Collect > Survey





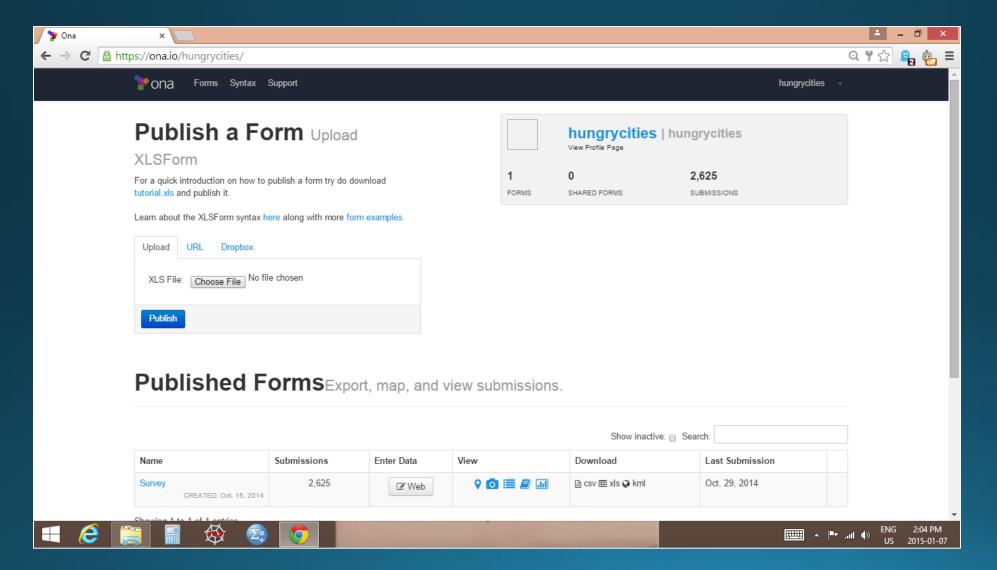
## Saving and Uploading the Survey







#### Online Database



# Tablet Preparation and Server Setup Preparation And Server Setup

#### Mobile Device Preparation

Download ODK Collect from Google Play and adjust the settings in ODK Collect

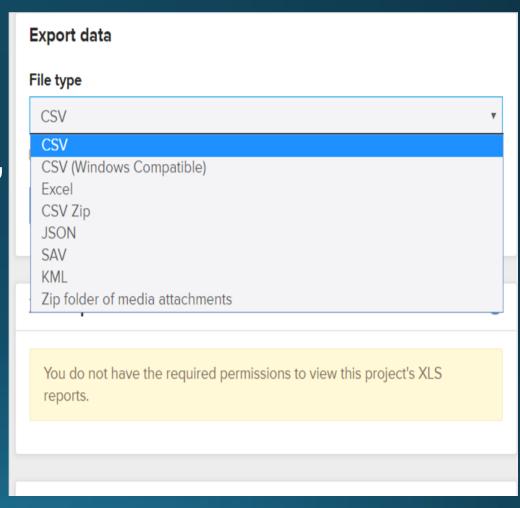
Prepare mobile device to sync with Personal Ona.io Account

#### Practice!

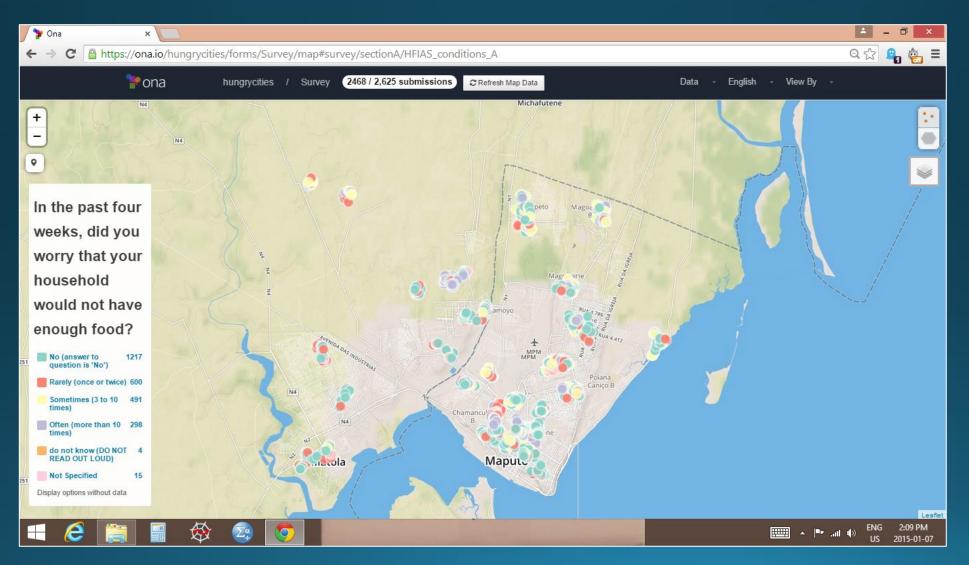
- 1. Once you have finished designing your survey, upload the survey to your personal Ona.io account
- 2. Debug the survey according to the instructions on Ona.io

# Data Downloading and Visualisation

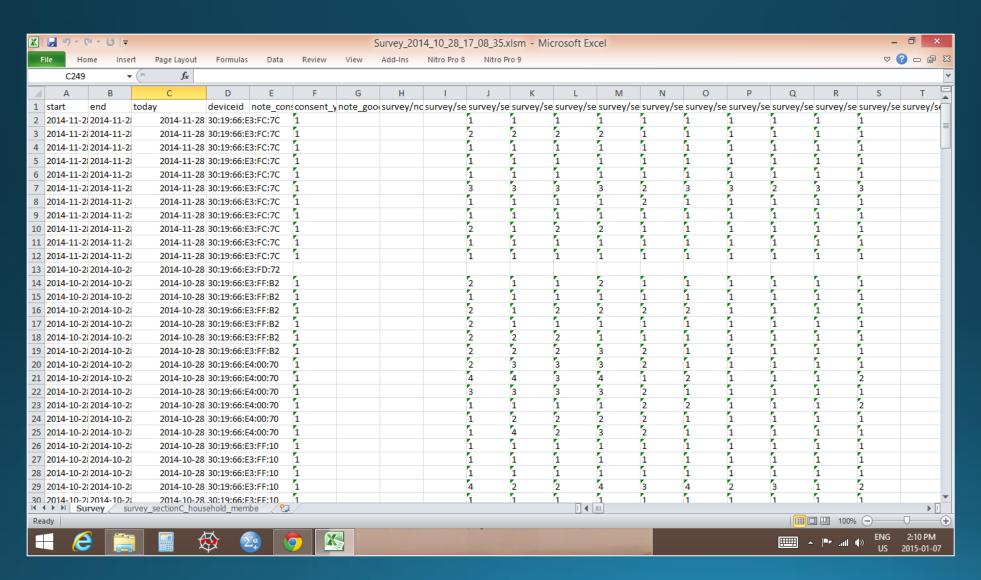
- Aggregate sites offer the option of data download in various formats.
- Files can be opened in Excel, SPSS, GoogleEarth etc.
- Sites vary in the amount of data allowed on free accounts
- Reports may be generated as graphs, charts, tables or maps



#### Preliminary Online GIS Analysis



#### Data Set Download



#### More Resources

- Open Data Kit
  - https://opendatakit.org/
- Formhub University
  - https://formhub.org/formhub\_u/
- Ona Gallery
  - https://ona.io/forms/
- XLS Forms
  - http://xlsform.org/