

Development of a Survey System for ISF

As of 18 May 2015
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Urban Planner and Field Coordinator

Outline

INTRODUCTION

Context and Objectives of Database Development
Why Open Source?
Highlighting Safety and Resilience

UNDERSTANDING THE SYSTEM

Principles, Architecture, Standards, Benefits, Preparations, Iterations

WORKSHOP

Examining the Questions Master List
Installing and Operating ODK
Sample Survey Activity
Software Customization

Part 1 Introduction

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FOR A BETTER URBAN FUTURE

unicef 

Context

Focus on Urban ISF:

Communities at the intersection of economic inequality, crime, violence, disasters, which are all underpinned by conditions on rapid migration, governance, and climate change

Context

Treating Urban ISF areas not just as figures but communities which indicate the level of human development.

Context

Circumstances of ISF before the disaster that were only made worse by the onset of Haiyan.

Context

Decreased access to public services and capacity of LGU to respond.

Need for appropriate technology for improving paper-based local data infrastructure.

Objective 1

To collect key data on safety, resilience with respect to pre- and post-disaster conditions to approximate the dynamics of the community.

Objective 2

To setup a survey and mapping database system using Free and Open-Source Software (FOSS) to fit the current technological status of the LGU.

Objective 3

To share the thinking process behind the database development with the three Region 8 LGUs.

Why Open Source?

It is free, customizable, and easy to learn.

Why Open Source?

Both the source information and the **source code** is free and open.

The basic outputs are both pdf and excel files.

Why Open Source?

Therefore, integrating with existing public planning and investment systems will be easier.

Why Open Source?

Since the system is flexible, the LGU officers will have more space to focus on the **thinking process**, too.

How to Highlight Safety and Resilience

Key indicators of pre- and post-disaster conditions are plotted **geographically.**

How to Highlight Safety and Resilience

Indicators on vulnerability are plotted over layers of hazard to reveal exposure and risk zones.

Part 2 Understanding the System

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Part 1

The case for the data system for the settlement

POINT

Local data infrastructure is integral in managing the development of any city.

Tracking the settlement's development through such data infrastructure helps us to create an urban future that is inclusive, resilient, and sustainable.





MILAN, ITALY

A satellite night photograph of Montreal, Canada. The city is illuminated with a dense network of yellow and orange lights, forming a complex pattern that follows the city's layout and the St. Lawrence River. The surrounding landscape is dark, with some scattered lights indicating other populated areas or infrastructure. The overall scene is a high-contrast view of urban development against the dark night sky.

MONTREAL, CANADA

BRASILIA, BRAZIL



LAS VEGAS, NEVADA



A satellite photograph of London, England, taken at night. The city is illuminated by a dense network of lights, with a bright central core and numerous smaller clusters of lights scattered across the surrounding area. The lights are primarily yellow and orange, creating a stark contrast against the dark background of the night sky. A black rectangular box with white text is positioned in the upper center of the image.

LONDON, ENGLAND



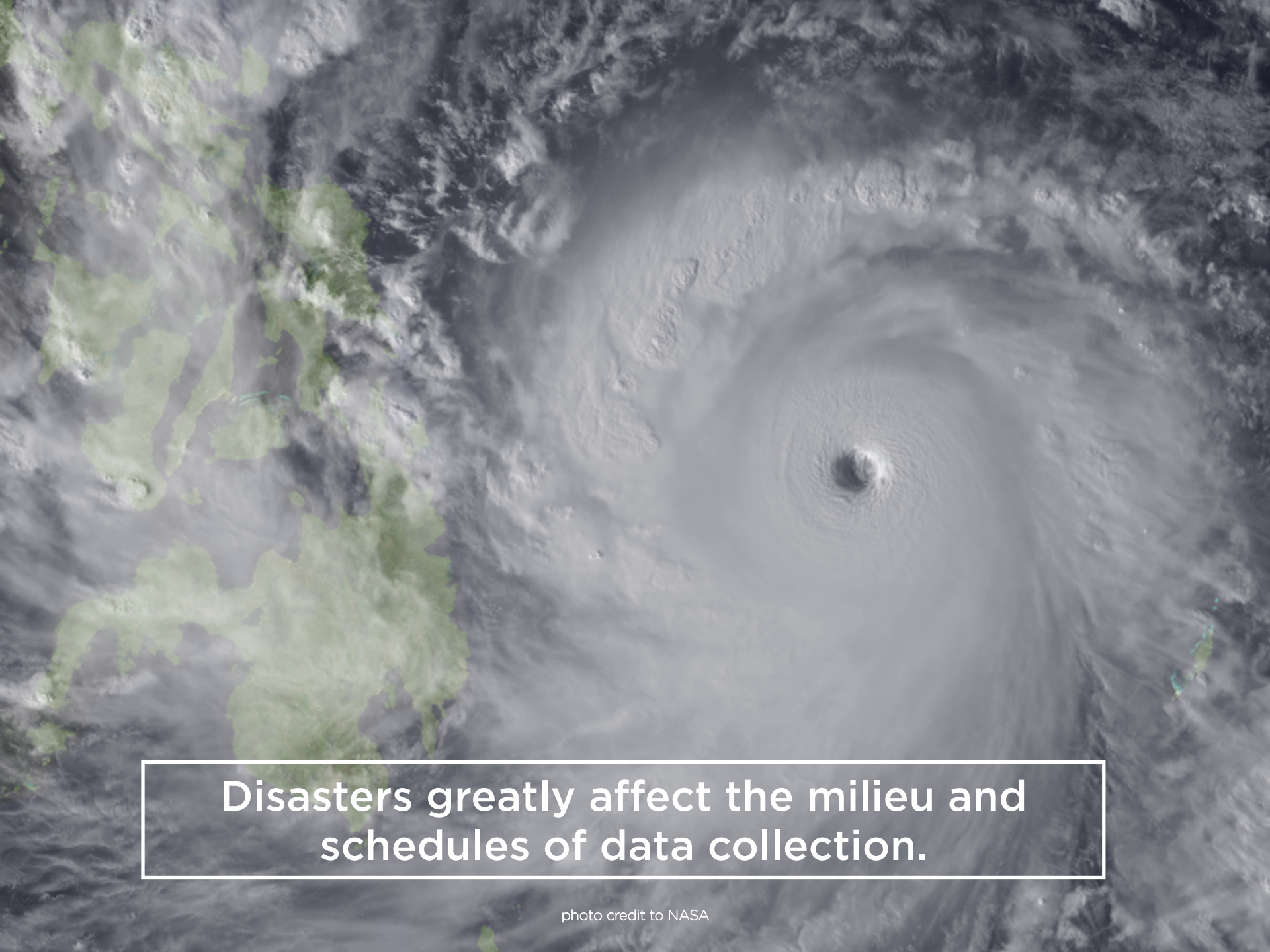
A satellite night view of the National Capital Region (NCR) in the Philippines. The image shows a dense network of lights representing the city's infrastructure, including roads and buildings, set against a dark background of space. The lights are concentrated in the central urban area and spread out along major thoroughfares.

NCR, PHILIPPINES

**Because settlements are dynamic systems,
we have to rely on dynamic models and
data systems to validate opinion on how
the city is and should be working.**




As urbanization speeds up, the data requirements grow exponentially.

A satellite image of a tropical cyclone, showing a well-defined eye and spiral cloud bands. The image is overlaid with a semi-transparent green map of the Pacific region, highlighting the area of impact. The text is centered at the bottom of the image.

**Disasters greatly affect the milieu and
schedules of data collection.**

photo credit to NASA

A group of five young children, likely from a developing region, are huddled together outdoors. They are all smiling and laughing, creating a warm and joyful atmosphere. The children are dressed in simple, colorful clothing. A white text box is overlaid on the image, containing the text: "It is also important to facilitate the participatory process of governance through open data systems." The background shows a tree trunk and some blurred foliage.

It is also important to facilitate the participatory process of governance through open data systems.

QUESTIONS

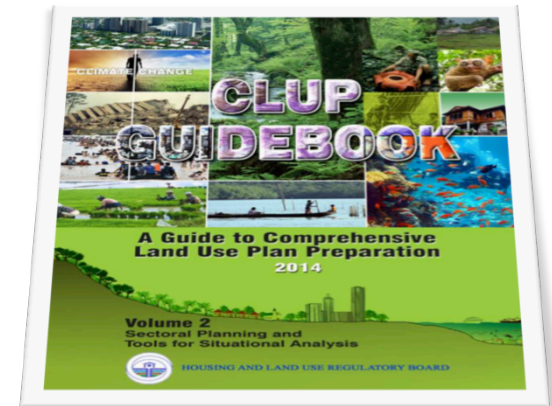
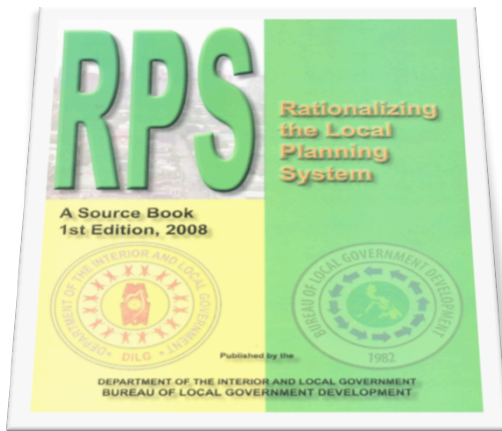
How can we make our city data systems respond to such conditions? How can they be adaptive and open?

Part 2

The architecture for a data system for the settlement

POINT A

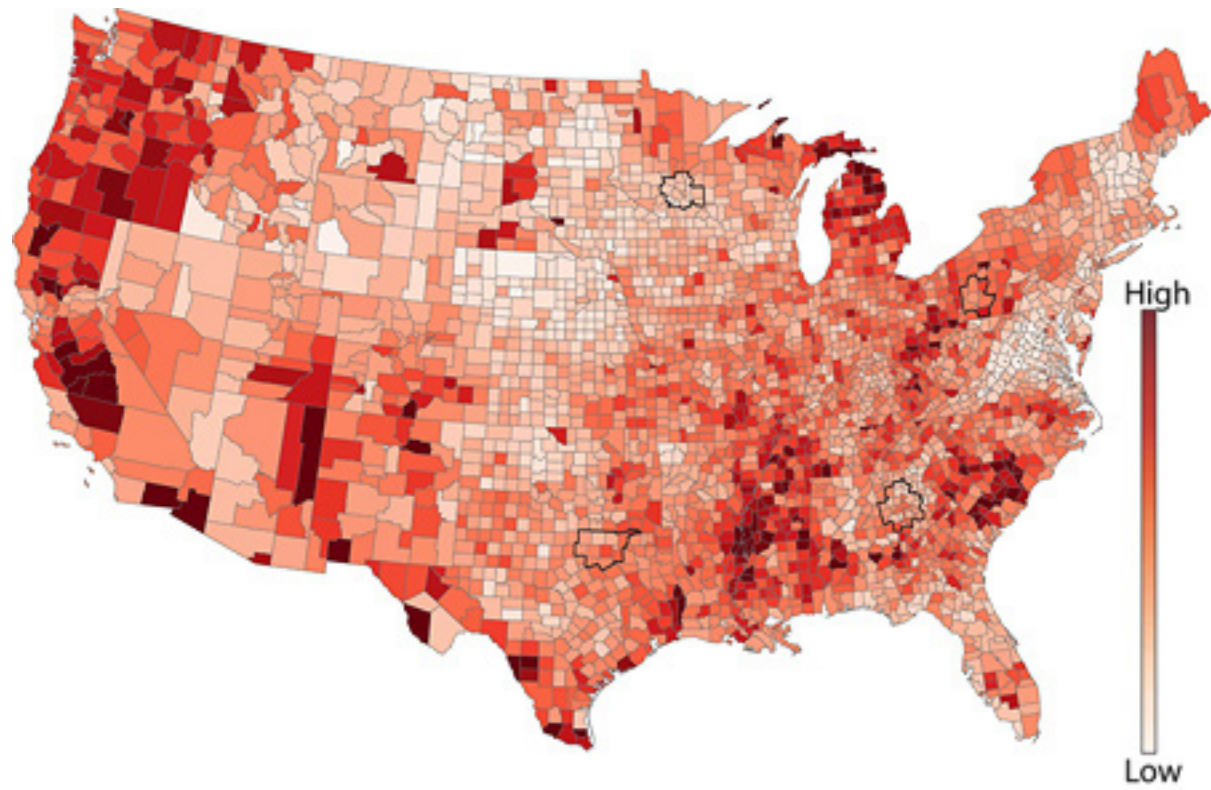
It should conform to existing government data requirements to allow comparability of results.



We used the recommended data sets from current government guidelines such as RPS (DILG), CLUP guidebooks (HLURB), PLPEM (NEDA).

POINT B

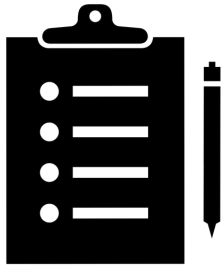
It should highlight the **spatial** character of the data. It should help you answer the **why and how behind the what and where.**



POINT C

It should be fashioned as ready for interface with other information systems.

System Architecture



SURVEY SYSTEM
e.g. CBMS



MAPPING SYSTEM
e.g. GIS



OTHER SYSTEMS
e.g. investment
programming

Current Data Flow Concept



Open Data Kit

OSS V1.0

**Open Survey
System**

CARTO^{DB}
Geospatial on the cloud

CartoDB

Programming Language



Part 3

Specific purposes of the database system

POINT A

The database is currently and initially purposed for recovery and rehabilitation.







POINT B

To approximate conditions of safety and resilience, we used standard socioeconomic parameters that are tagged **geographically.**

TABLE 1. Sample Sectors and Parameters in the System

SECTOR	PARAMETER
Demography	Population cohorts
Health	Mortality, vaccination
Income	Sources and frequency of income
Security	Crime incidence Perception of safety when using washrooms
DRRM	Hazard exposure
Shelter	Shelter design

Part 4

Components

Open Data Kit



OPEN DATA KIT

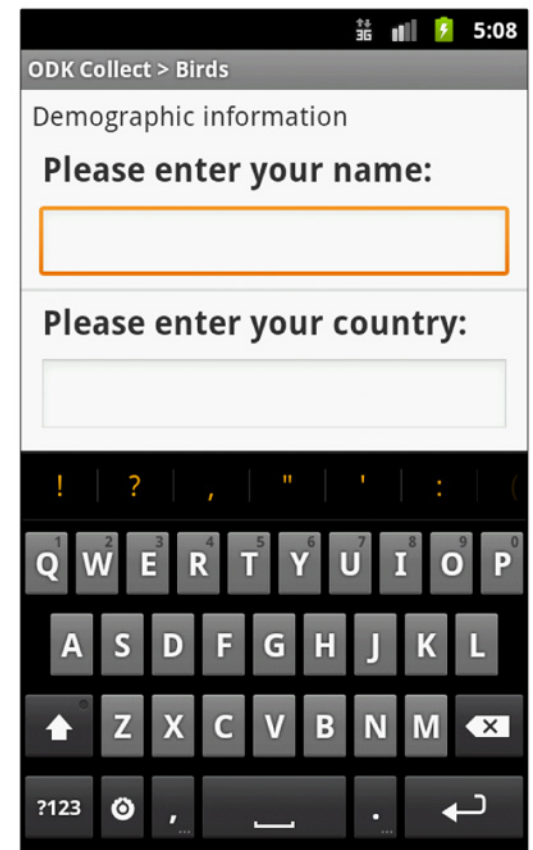
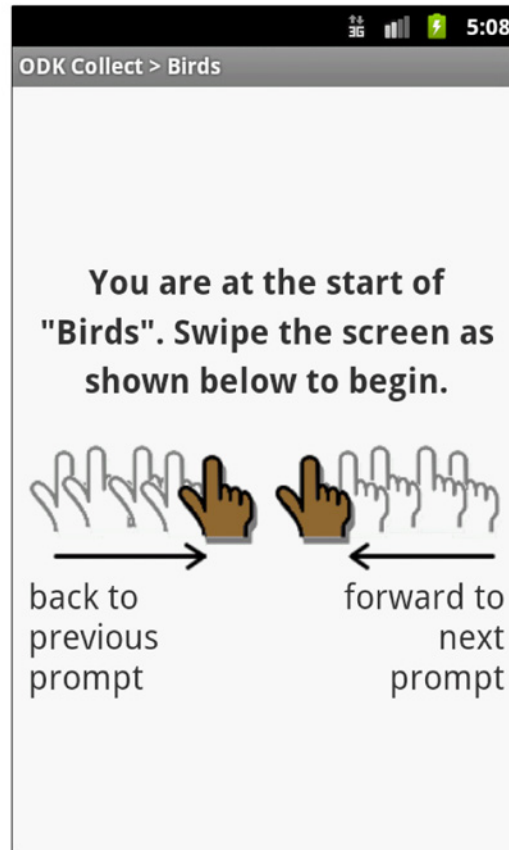
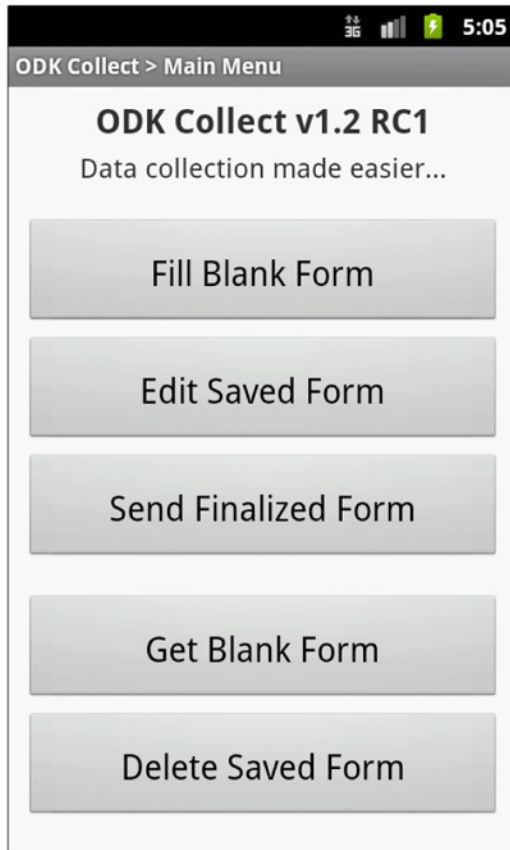
Open Data Kit

Three steps in implementation:
Build, collect, aggregate

<https://www.youtube.com/watch?v=HqqUdfz9Uyc>

Source: opendatakit.org

Open Data Kit



Open Data Kit




Open Survey System

Version 1.0 ✕

Open Survey System

Username:


Password:

 Login

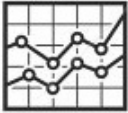
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Open Survey System

Version 1.0 

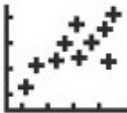
Open Survey System




FREQUENCY TABLES



EXPORT TO WEBMAP



HH & PERSON FINDER



DATA CAPTURE

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Open Survey System

The screenshot displays the 'Open Survey System(Basic Tables)' window. The left pane shows a hierarchical tree view of indicators. The 'Demography' category is expanded, showing a list of tables from B.1 to B.10. A tooltip is visible over 'Table B.4 Number of Household Members by Birthplace, Gender and Age Group'. Below the tree view, a scrollable list of other indicators is visible, including Education, Political, Income, Livelihood Skills, Morbidity, Nutrition, Vulnerable, Health, Crime, Couple, Expenditure, Shelter, WASH, Livestock and Other Animals, Farming and Fishing, Domestic Animals, Household Items, Food Shortage, Shelter Assistance Received, Livelihood Assistance Received, Other Assistance Received, Access to Facilities (Pre-Yolanda), and Access to Facilities (Post-Yolanda). The bottom of the window features the UN HABITAT logo and the tagline 'FOR A BETTER URBAN FUTURE'.

Open Survey System(Basic Tables)

- Demography
 - Table B.1 Number of Household, Household Members and Average Hou
 - Table B.2 Number of Household Members by Relationship to the Househ
 - Table B.3 Number of Household Members by Gender and Age Group
 - Table B.4 Number of Household Members by Birthplace, Gender and Age Group
 - Table B.5 Number of Household Members with Birth Registration by Geni
 - Table B.6 Number of Household Members by Civil Status, Gender, and A
 - Table B.7 Number of Household Members by Religious Affiliation and Ge
 - Table B.8 Ethnicity of Household Heads and Spouses by Gender
 - Table B.9 Number of Household Members by Length of Stay in the Curre
 - Table B.10 Reasons for Transferring to the Current Address by Gender
- Education
- Political
- Income
- Livelihood Skills
- Morbidity
- Nutrition
- Vulnerable
- Health
- Crime
- Couple
- Expenditure
- Shelter
- WASH
- Livestock and Other Animals, Farming and Fishing
- Domestic Animals
- Household Items
- Food Shortage
- Shelter Assistance Received
- Livelihood Assistance Received
- Other Assistance Received
- Access to Facilities (Pre-Yolanda)
- Access to Facilities (Post-Yolanda)

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Open Survey System

Table B.2 Number of Household Members by Relationship to the Household Head

Filter By

Barangay

Purok

Graph

Type of Graph

Relationship to the Household Head	No. of Household Members
Head	292
Spouse	219
Son	307
Daughter	283
Son-in-Law	6
Daughter-in-Law	5
Grandchildren	51
Parents	9
Other Relatives	31
Household Help	2
Other Non-relatives	9
Total	1214

Open Survey System

Table B.2 Number of Household Members by Relationship to the Household Head

Filter By

Barangay

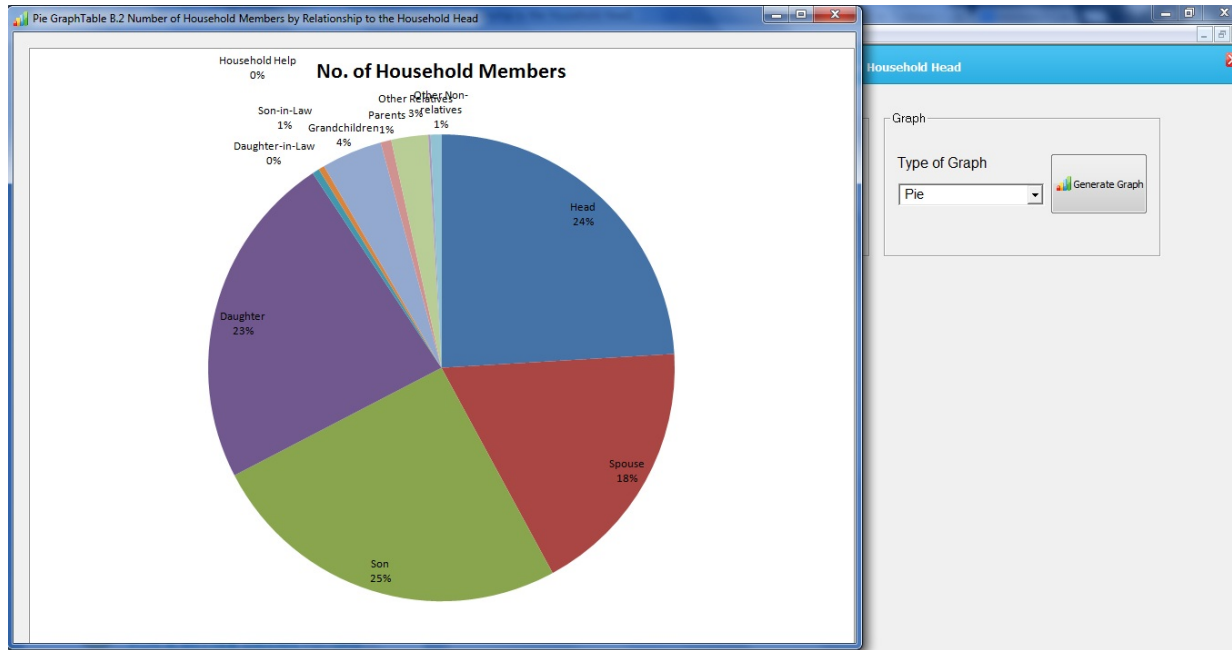
Purok

[Export to Excel](#)

Relationship to the Household Head	No. of Household Members
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	A	B
1	Relationship to the Household	No. of Household Members
2	Head	292
3	Spouse	219
4	Son	307
5	Daughter	283
6	Son-in-Law	6
7	Daughter-in-Law	5
8	Grandchildren	51
9	Parents	9
10	Other Relatives	31
11	Household Help	2
12	Other Non-relatives	9
13	Total	1214
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		

Open Survey System



Open Survey System

Demography (Export to Webmap)

Filter by

All data in Municipality

All data in Baranggay

All data in Purok

Barangay

Purok

Process Data

Export

Clear

Female	Male	No. of Infant (0-5yrs)	No. of Youth (15-24)	No. Senior Citizen	No. PWD	No. Of Pregnant	Latitude	Longitude	Altitude	Accuracy
3	3	0	4	0	0	0	.20352667	125.0257067	-2	5
1	1	0	0	0	0	0	1.20224833	125.0241917	23.6	5.8
3	3	0	0	0	0	1	0.11.198565	125.0250717	50.9	4.9
2	3	1	0	0	0	0	0.19833667	25.024215	-92.2	4.3
6	5	3	3	0	0	0	0.11.20244	125.0243	-11.8	4.6
1	1	0	0	0	0	0	0.20241333	125.0249533	-34.4	5
1	1	0	1	0	0	0	0.11.204835	125.0261	53	4.9
0	1	0	0	0	0	0	0.11.201625	25.023765	0.5	4.8
2	1	0	1	1	0	0	0.11.20159	125.0244717	-106.5	4.6
5	3	0	5	0	0	0	1.11.19155	125.0219417	157.8	4.7
2	4	0	3	0	0	0	0.11.20298	125.0254083	-53.6	5
0	1	0	0	0	0	0	0	0	0	0
2	2	0	0	0	0	0	0.11.202565	125.0243217	-39.7	4.8
4	1	3	1	0	0	0	1.20110333	125.0247167	-57	5
3	3	0	3	1	0	0	0.11.20427	25.025565	18.2	4.8
2	2	2	1	0	0	0	0.11.19706	125.02481	8.7	4.8
1	2	0	2	0	0	0	0.11.204135	125.0258933	31.7	5
4	2	0	5	1	2	0	0.20456667	25.026115	108.4	4.8
4	2	0	4	0	0	0	0.11.202685	125.0255917	25.4	4.4
3	1	0	2	0	0	0	0.11.203485	125.02535	17.5	4.1
3	2	2	0	0	0	0	0.11.19312	125.02307	22	4.9
1	2	0	2	0	0	0	0.11.202075	25.025305	28	4.8
2	2	0	0	0	0	0	0.20444333	25.027005	-368.8	4.9
1	0	0	0	1	0	0	0.19746667	125.02356	21.5	4.6
3	4	2	0	0	0	0	0.11.203045	125.02552	14.6	5
2	3	3	0	0	0	0	0.11.20425	125.02569	-17.9	4.8

Open Survey System

Household Search

Household Head:	Abaloyan, Vitus Darang	Age:	35	Philhealth Member	3	Average Income Pre	18366.00	Willing to transfer in North	No
Address:	Poblacion Ward 8, Purok 1	Gender:	male	Access to financial Capital	No	Average Income Post		Source of Water:	Own use faucet
HH Total Income	0	# of PWD	0	Average Expenditure	600.00	Shelter-Current Type Dwelling Unit	Concrete	Water Treatment	N/A
Job/Occupation		# of SC	1	Lot Tenure	Share	Damage Extent	1 Partially Dam	Option	
# HH Members/Dependents	4	# of Voters	3	Lot Area	30-49 sqm	Type of toilet:	Water-sealed,	<input type="button" value="Search Record"/> <input type="button" value="Advance Search"/> <input type="button" value="Print"/>	
Civil Status	Married	Yrs of Residency	35	Roof material	Mixed but prec	Waster Management	Garbage colle		

Engaged in Livestock raising	No	Shelter Assistance Recieved	Yes	Food Shortage	No
Engaged in Farming	No	Livelihood Assistance Recieved	No	No. of members who die in typhoon	0
Engaged in Fishing	No	Other Assistance Recieved	No	Aware of Disaster Preparedness	Yes

Names (Lastname, Firstname, Suffix, Middlename)	Age	Gender	Civil Status	Relationship	Educational Highest Attainment	Enrolled in School	Literacy	Registered Voter
Abaloyan, Rhea Dela Cruz	29	female	Married	Spouse	Grade School Graduate	No	Yes	Yes
Abaloyan, Haven eve Dela Cruz	9	female	Single	Daughter	Grade 3	Yes	None	None
Abaloyan, LA Rhaine Dela Cruz	6	female	Single	Daughter	Kindergarten/Preparatory	Yes	None	None
Abaloyan, Rosario Darang	76	female	Widowed	Parents	College Graduate	No	Yes	Yes

Open Survey System

HHFINDER

1_MEMBERS

- HOUSEHOLD MEMBER ID
- PROVINCE NUMBER ID
- MUNICIPALITY NUMBER ID
- BARANGAY NUMBER ID
- PUROK
- MEMBER'S SURNAME
- MEMBER'S FIRST NAME
- MEMBER'S MIDDLE NAME
- MEMBER'S SUFFIX
- MEMBER'S RELATION TO HEAD
- MEMBER'S RELATION TO HEAD (OTHER)
- MEMBER'S RELATION TO HEAD (NON-F)
- MEMBER'S GENDER
- MEMBER'S BIRTHDATE
- MEMBER'S AGE
- MEMBER'S AGE IN MONTHS
- BASIC DEMOGRAPHY AGE NOTE
- BASIC DEMOGRAPHY AGE NOTE MONT
- BIRTH REGISTRATION TO LOCAL CIVIL
- BIRTHPLACE
- CIVIL STATUS
- MEMBER'S RELIGION
- MEMBER'S RELIGION (OTHER RELIGION)
- MEMBER'S ETHNICITY
- MEMBER'S ETHNICITY (OTHER ETHNIC)
- MEMBER'S ETHNICITY (OTHER FOREIGN)
- note_migration
- yrsbarside
- LENGTH OF STAY IN CURRENT LOCALITY
- hhmembers_residency_years_note
- LENGTH OF STAY IN CURRENT LOCALITY
- hhmembers_residency_month_note
- PREVIOUS PROVINCIAL LOCATION
- PREVIOUS MUNICIPALITY LOCATION
- PREVIOUS BARANGAY LOCATION

QUERY STATEMENT

SELECT
HOUSEHOLD MEMBER ID,
PROVINCE NUMBER ID,
MUNICIPALITY NUMBER ID,
BARANGAY NUMBER ID,
PUROK,
MEMBER'S FIRST NAME,
MEMBER'S SURNAME,
MEMBER'S MIDDLE NAME,
MEMBER'S RELATION TO HEAD
FROM

CONDITION STATEMENT

Fields:

Operator:

Condition:

ADD CONDITION TO LIST

Double Click to remove condition/s
MEMBER'S RELATION TO HEAD = Head

BARANGAY NUMBER ID	PUROK	MEMBER'S FIRST NAME	MEMBER'S SURNAME	MEMBER'S MIDDLE NAME	MEMBER'S RELATION TO HEAD
82609061	Purok 3	Manuel	AAsosa	Santiago	Head
82609041	Purok 1	Arafat	Abah	I.	Head
82609042	Purok 1	Crispina	Abalayan	D.	Head
82609042	Purok 1	Gina	Abalayan	Ogario	Head
82609042	Purok 1	Vitus	Abalayan	Darang	Head
82609061	Purok 1	Cicanta	Abarquez	Pagad	Head
82609041	Purok 1	Alfredo	Ablay	Anas	Head
82609042	Purok 1	Antonina	Ablay	M.	Head
82609041	Purok 1	Castor	Ablay	Gagaliga	Head
82609041	Purok 1	Juanito	Ablay	Gagaliga	Head
82609041	Purok 1	Linda	Ablay	Balais	Head
82609041	Purok 1	Lorena	Ablay	Macawele	Head
82609041	Purok 1	Rhea	Ablay	Lacaba	Head
82609041	Purok 1	Rose	Ablay	Lacaba	Head
82609041	Purok 1	Vanikano	Ablay	Anias	Head
82609042	Purok 1	Maria Dina	Aboga.a	BaldecAAsas	Head
82609042	Purok 1	Rosalina	Abogadie	A.	Head
82609042	Purok 1	Polly	Abolencia	Cabeiro	Head
82609042	Purok 1	Linda	Abolon	A.	Head
82609041	Purok 1	Wilma	Abor	Quilbio	Head
82609042	Purok 1	Justina	Abrajano	Bsong	Head
82609042	Purok 1	Silvena	Abrajano	Apolana	Head
82609042	Purok 1	Juanita	Abrijo	Azanza	Head

Open Survey System

Update

D. Political Participation

A. Identification

B. Demography

C. Education

Surname

First name

Middle name

Suffix, if any

2. What is (his/her) relationship to Household Head?
Choices:

Other relation (Specify)

Other relation (Specify)

3. Is (name of each member) a Male or Female?
Choices:

4. What is (name of each member's) Birth date? Age:

5. Is (name of each member's) birth date registered to the Local Civil Registrar?
Choices:

5a. Where was (name of each member's) birthplace?

6. What is (name of each member's) civil status? Choices:

7. What is (name of each member's) religion? Choices: Others Specify:

8. What is household head's ethnicity? Choices:

Other Foreign Languages/Ethnicity Other Local Dialects/Ethnicity

9. What is household head's spouse's ethnicity? Choices:

Other Foreign Languages/Ethnicity Other Local Dialects/Ethnicity

10. Since when did (name of each member) reside in the current address?
Select date

10-a. Enter previous address (Province, Municipality, Barangay)

10-b. What is the reason for transferring to the current address (if any)?

Number of Years:
Number of months:

Next

CartoDB

An internet-based platform that provides geospatial tools and web-based cartography for display in web browsers.



CARTÖDB

Geospatial on the cloud

CartoDB

Ormoc City Leyte Edit metadata... DATA VIEW MAP VIEW options - SHARE

cartodb_id - number	the_geom <small>geo</small> geometry	floodsusc - string	objectid - number	shape_area - number	shape_leng - number	created_at - date	updated_at - date
1	Polygon	HF	761	516207742.999	7191753.14992	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
2	Polygon	MF	831	12221.3425429	750.003052943	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
3	Polygon	LF	902	904.07300466	175.997336191	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
4	Polygon	LF	905	62338.9867115	1933.78864633	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
5	Polygon	LF	906	28035.5572496	1007.33024529	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
6	Polygon	LF	907	153535.956954	4230.3619952	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
7	Polygon	LF	908	78860.5912372	1704.78743615	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
8	Polygon	LF	909	50305.3021958	1516.57483195	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
9	Polygon	LF	910	520406.028494	4264.90495445	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
10	Polygon	LF	911	57359.670397	1556.65554973	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
11	Polygon	LF	912	24098.5290432	925.014544159	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
12	Polygon	LF	914	500523.359231	5801.28867277	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z
13	Polygon	LF	915	76087.3672328	1901.23747855	2014-12-17T04:22:36Z	2014-12-17T04:22:36Z

Urban Areas around the world. Data coming from naturalearthdata

natural earth urban polygons edit tags

TABLE

MAP VIEW

share

SQL


Style wizard

CartoCSS



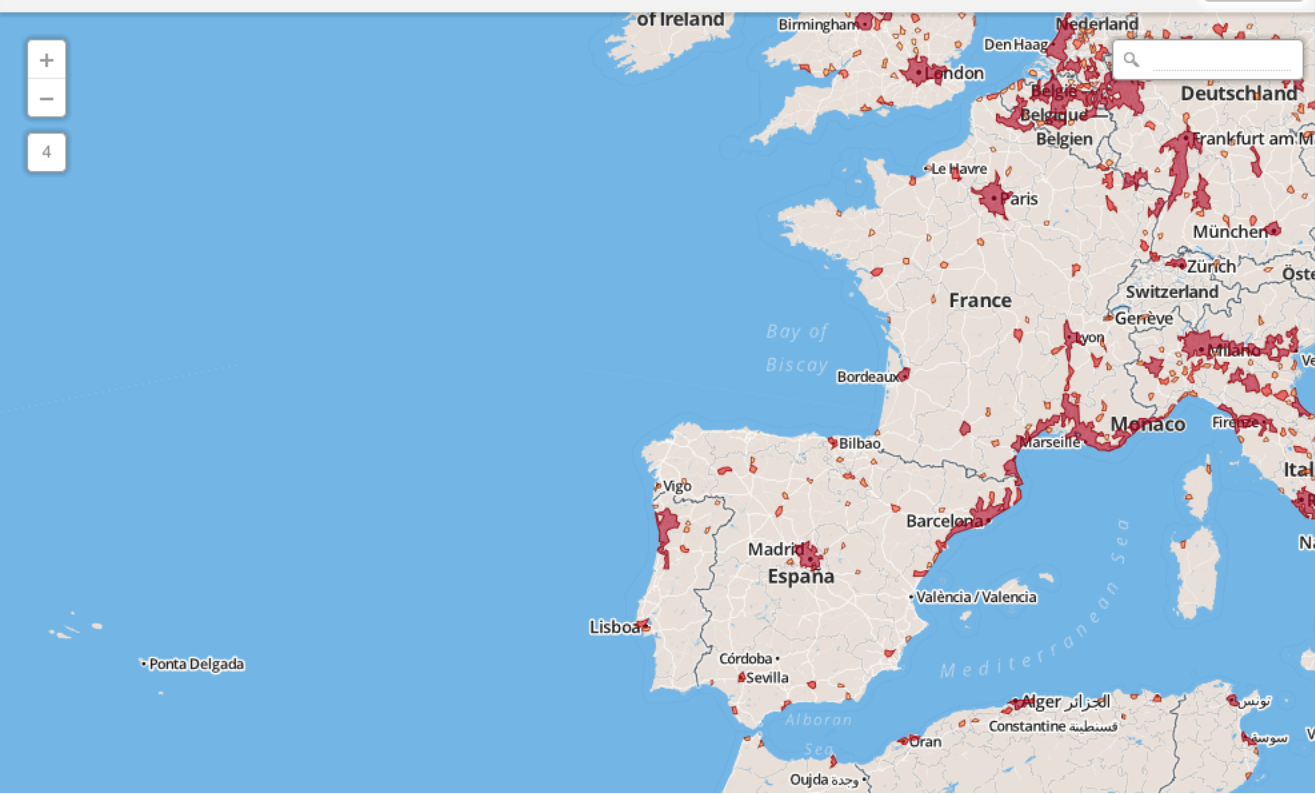
Column

Buckets

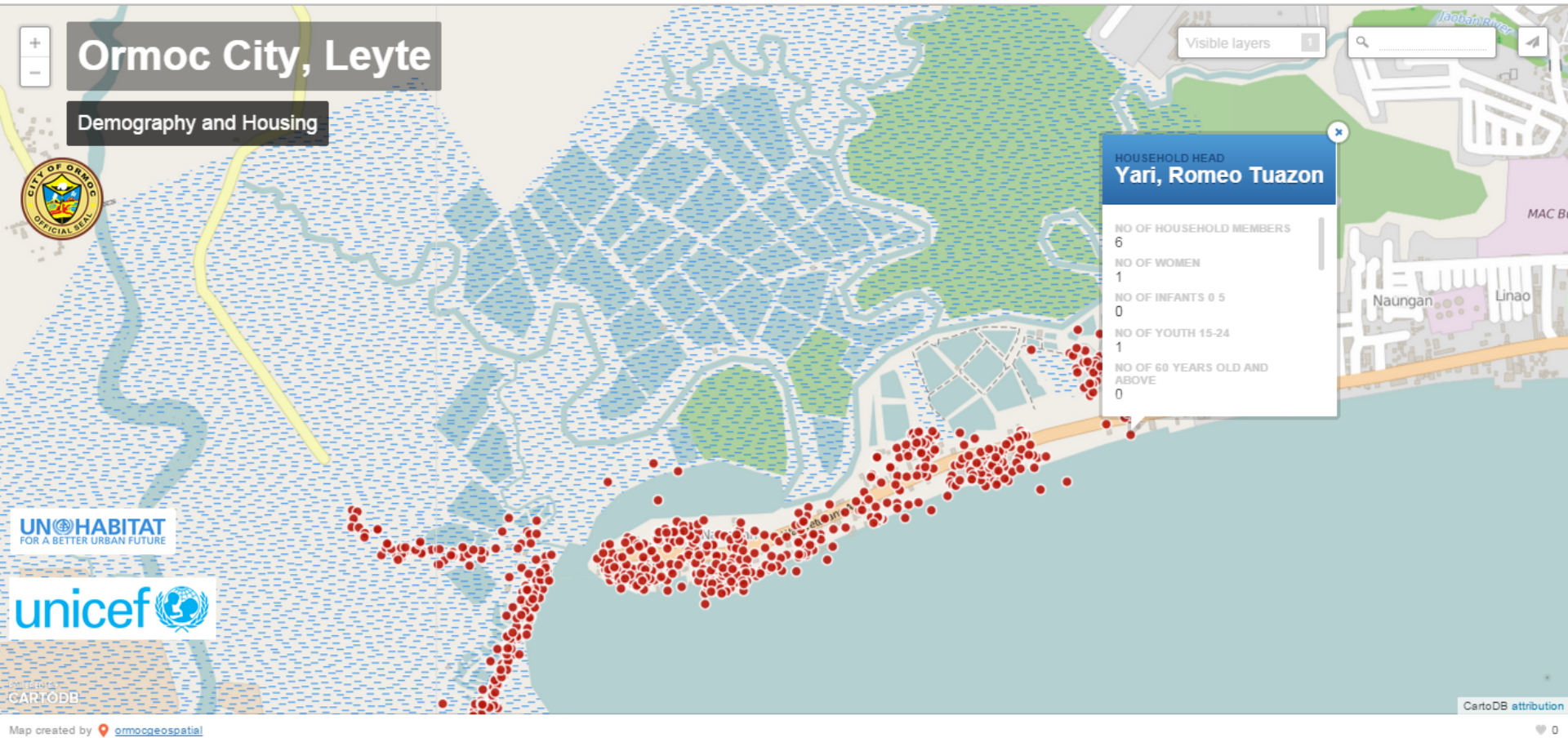
Color Ramp 

Polygon Stroke 

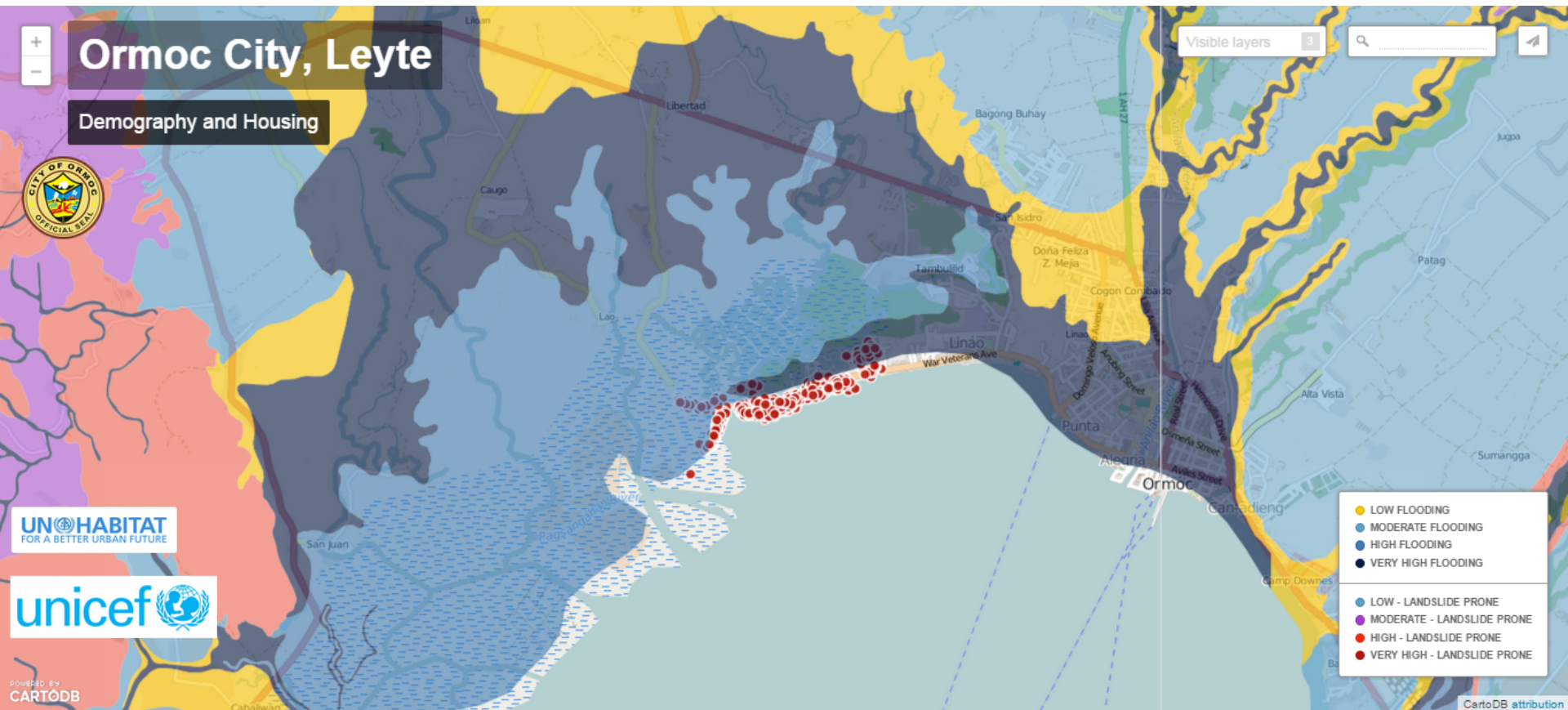
Label Text



CartoDB



CartoDB



Sample Maps: Guiuan

demog <http://cdb.io/1DGqv3Z>

housing <http://cdb.io/1GL1rot>

educ <http://cdb.io/1J0pIL9>

health <http://cdb.io/1uQPqYd>

income <http://cdb.io/13aNMD8>

Sample Map: Ormoc

<http://cdb.io/1sBVWSy>

How to Connect the Systems?

Collect GPS locations of household and individual entries. Attach coordinates to table entries. Use GCSWGS84 as coordinate system.

Part 5

Data policy

POINT A

Currently, open government data is increasingly treated as under CC BY 4.0 license.

4.0
©

It's here.

POINT B

This means that “all data is in the public domain unless otherwise stated.”

Part 6

Benefits

POINT A

Since standards on government data collection are also followed, it would be easier for us to craft and monitor policies, plans, programs, and activities.

How to Integrate with Standard Government Information?

Use of standard data classification
systems: **PSGC, PSOC, PSIC, etc.**

POINT B

Because the *source codes*, not just the source data, are open, the LGU can create its own customized system for its own needs.

POINT C

Because the design technology is being actively developed *inside* the LGU, there can be cost savings in the *long run*.

Part 7

The Survey Cycle

Survey Cycle

It is comprised of technical **iterations.**
and social **preparations.**

Survey Cycle

Social Preparations

Involvement of Departments
Involvement of Sanggunian
Involvement of Barangay Officials
IEC Campaign
Community Consultation
Enumerator's Training
Security and Safety during Actual Survey

Survey Cycle

Technical Iterations

Collaborate!

Crafting the Questions Master List

Preparing the Digital Questionnaire

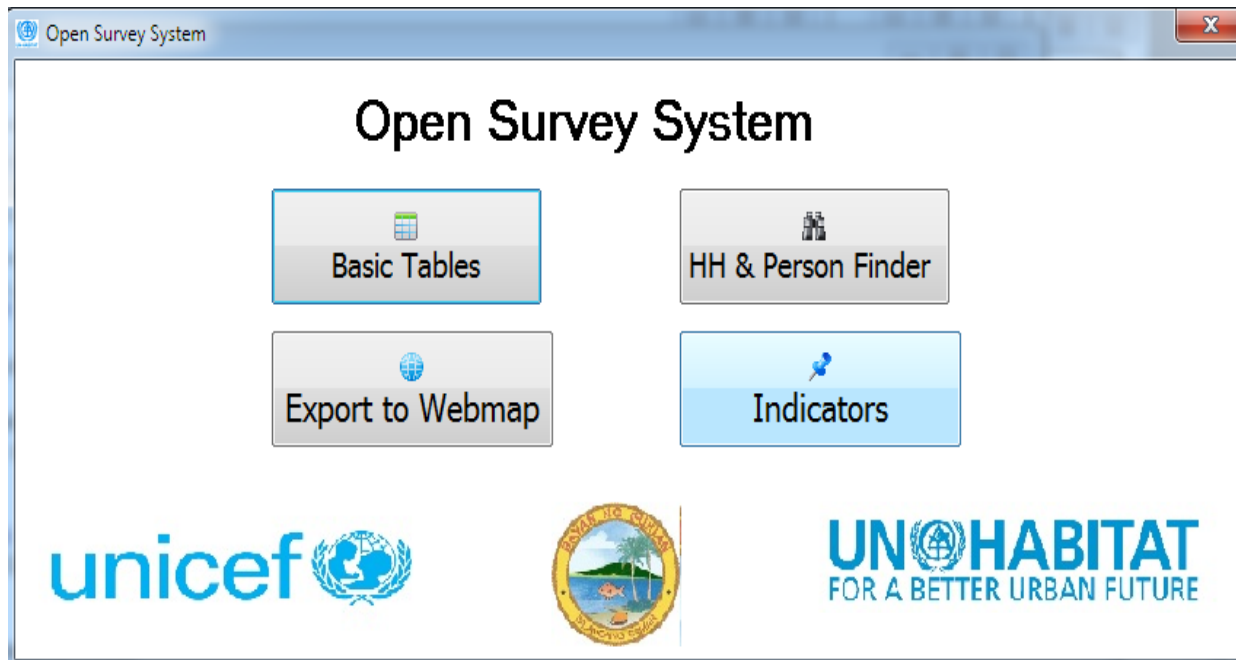
Building the Survey Processing Software

Designing the Interface


Test the System

Iterate!

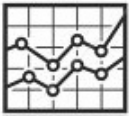
Main Interface




Open Survey System

Version 1.0 

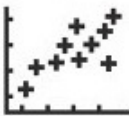
Open Survey System




FREQUENCY TABLES



EXPORT TO WEBMAP



HH & PERSON FINDER



DATA CAPTURE

SUPPORTED BY

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OPEN SURVEY SYSTEM

V 2.0



Frequency
Analysis



Export to
Webmap



Person
Finder



Household
Listing



Data
Capture



Shelter
Snapshot



User
Settings



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Welcomel

Ronald Lucero

About Us

Part 3 Workshop

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Outline

INTRODUCTION

Context and Objectives of Database Development
Why Open Source?
Highlighting Safety and Resilience

UNDERSTANDING THE SYSTEM

Principles, Architecture, Standards, Benefits, Preparations, Iterations

WORKSHOP

Examining the Questions Master List
Installing and Operating ODK
Sample Survey Activity
Software Customization

Step 0

Skills Inventory, Grouping, ODK Installation

Please write the following: name, LGU, department, and related skills and experience (GIS, survey, programming, and experience)

Our Goal

A Customized Survey

System

Examining the Questions Master List

Which changes

Preparing the Digital Questionnaire

Installing and Using ODK
Sample Survey Activity

What's Next

List of Activities

TOMORROW UNTIL WEDNESDAY MORNING

Installing OSS

Using the Functionalities of OSS

Building a Sample Questionnaire

Using the Aggregate Function

Using CartoDB

Technical Sessions: Hacking

Day 3

List of Activities

MORNING SESSION

Using the Build and Aggregate Functions of ODK

AFTERNOON SESSION

Using CartoDB

Morning Session 1 Cartography

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Morning Session 2 Maximizing CartoDB

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Using CartoDB

Step One

Create a free CartoDB account.

Using CartoDB

Step Two

Load the sample matrix/spreadsheet into the web mapping software.

Using CartoDB

Step Three

Organize and relabel the spreadsheet, as needed.

Using CartoDB

Step Four

Symbolize the spreadsheet data.

Using CartoDB

Step Five

Load multiple layers, check/organize the table, and test the symbolization, too.

Using CartoDB

Step Six

Finalize by publishing through a link for sharing.

Afternoon Session **ODK Build & Aggregate**

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Using the ODK Build

Step One

Register your free account.