Belize Perspective on Geocoding and Common Geographies

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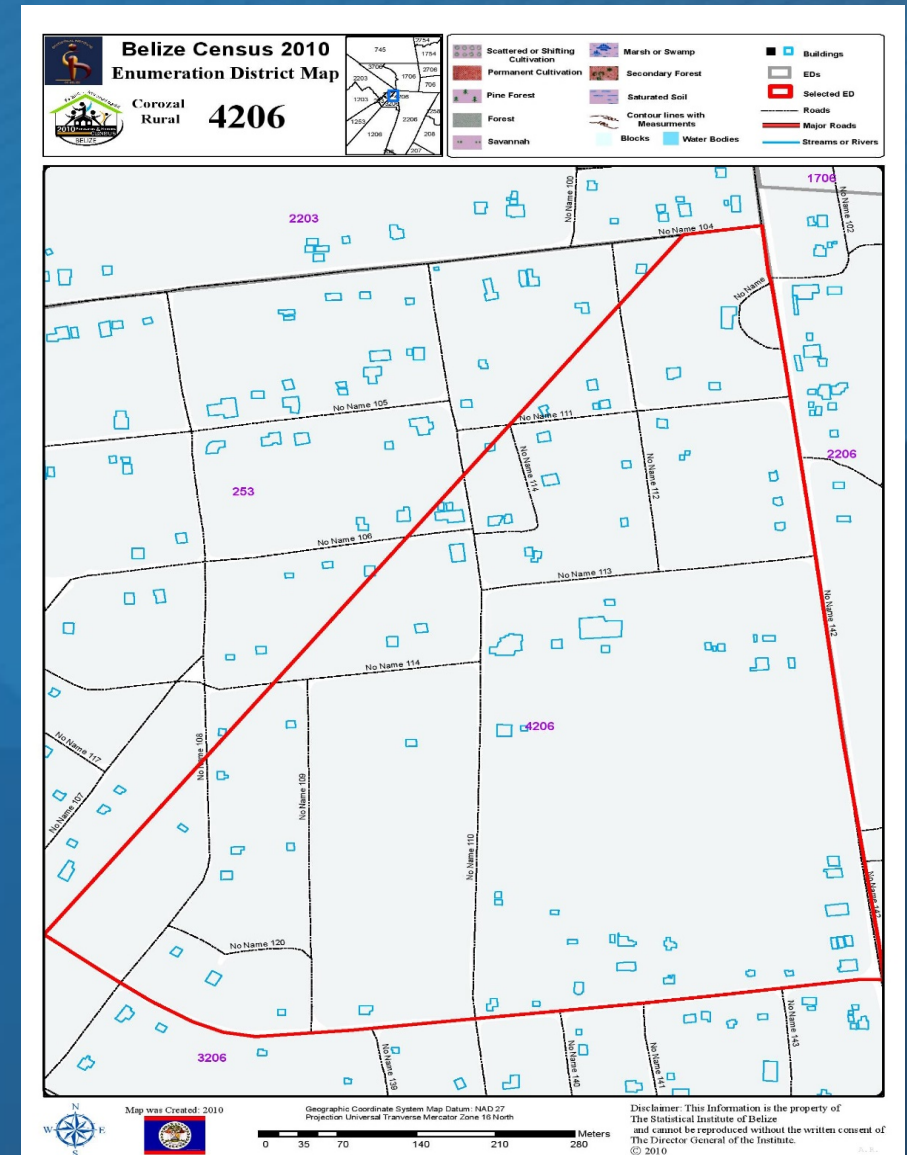
Contents

- Statistical Institute of Belize (SIB) and GIS

- Mapping for Census 2020

- Mapping Method

- GIS Operational Dashboard

- GIS Software and Hardware

- Linking Building Footprints with CAPI app

- Linking of Spatial and Statistical Data

- Challenges Surmounted

- Local Collaboration

SIB and GIS

Census Mapping was introduced in 2010

Satellite Imagery was purchased for priority areas.

Printed map (on the right) was created and used by enumerators only to see Enumeration District (ED) boundaries

Mapping for Census 2020*

The SIB established the GIS Unit within the System Development & Data Processing Department

Function of the GIS unit

- Updating the enumeration district spatial database by conducting mapping exercises

- Assist with the design and implementation of a Master Sample Frame

- Increasing the accuracy and effectiveness of census and survey data collection
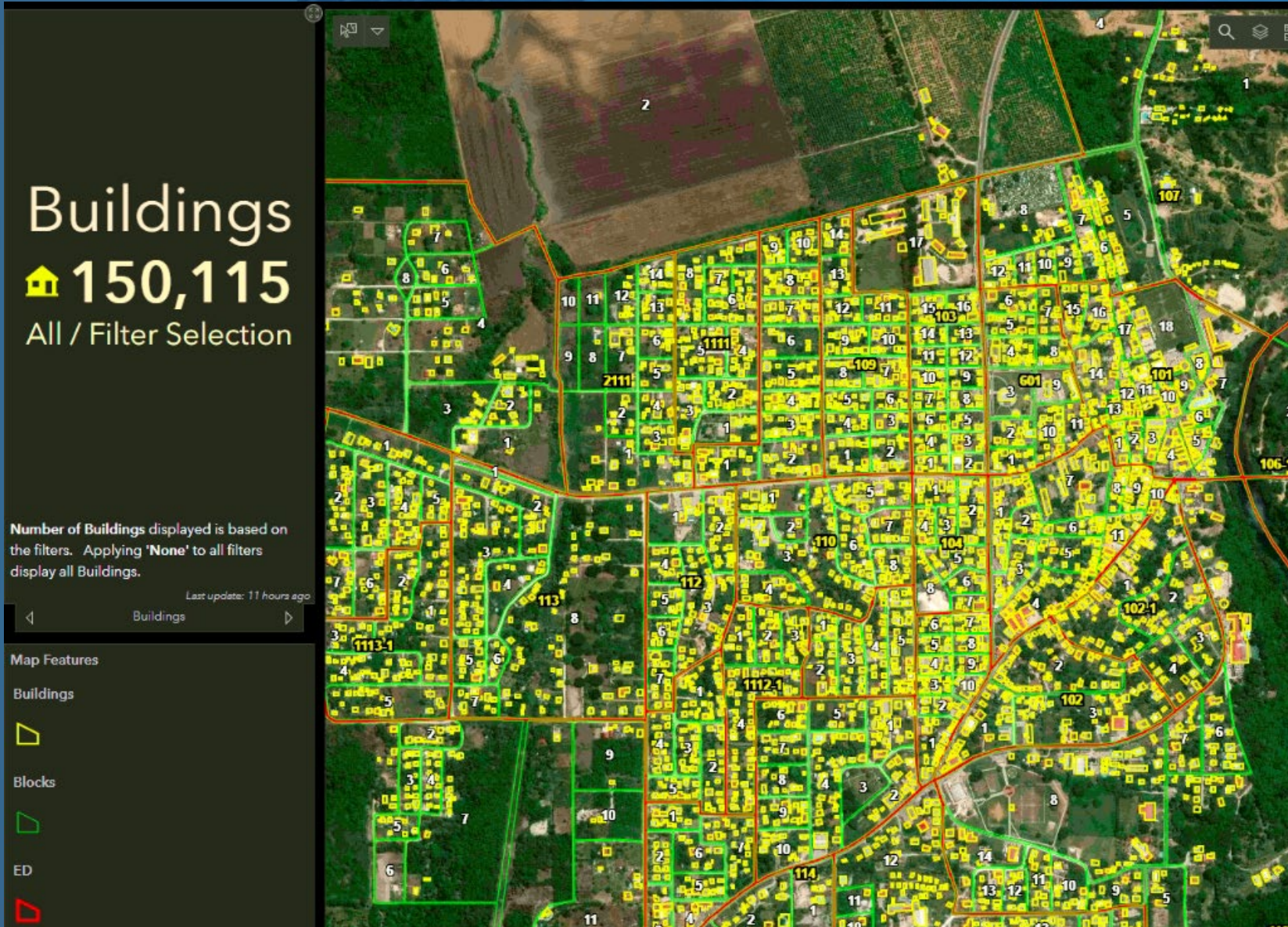
* Census 2020 postponed

Mapping Method

Pre-Enumeration

1. Digitize Building Footprint (draw polygon) from Open Imagery - Google, OSM, BING, ESRI
2. Digitize Road Network from Imagery
3. Create street Blocks
4. Create Web Maps in SIB Collect Web Dashboard
5. Download web maps to SIB Collect app, installed on tablets
6. Conduct ground verification exercise to validate/update building footprint and road networks
7. Collect attribute information (ISO19110 and videos) of each building footprint
8. From Videos of buildings taken, two pictures extracted and attached to corresponding buildings.
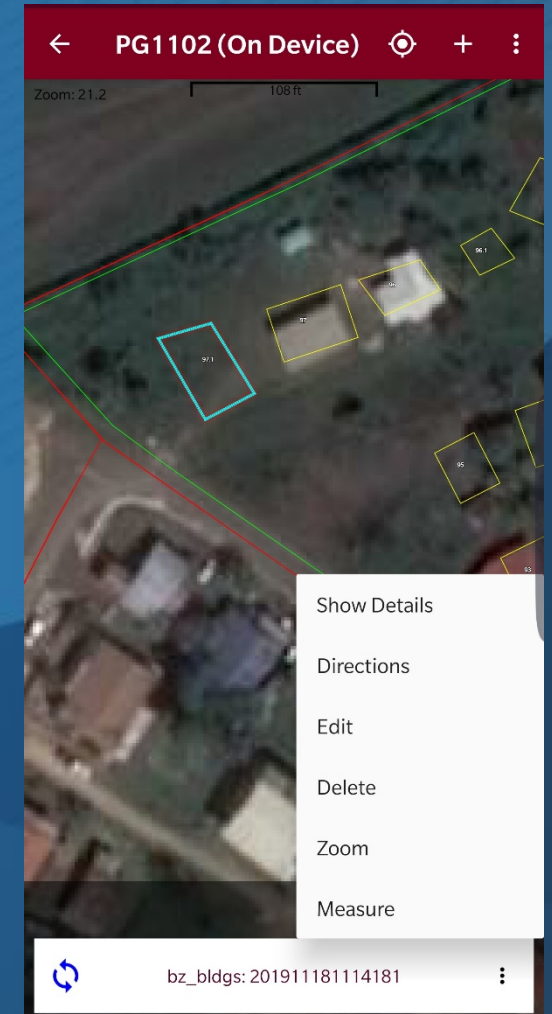
GIS Operations Dashboard

- Filterable

- Colour coded by interview status

- Building footprints clickable to see image and attribute data collected.

- Unique IDs for
  - Buildings
  - Blocks
  - EDs

GIS Software and Hardware

1. SIB Collect: In-house built mobile app for data collection and viewing and web app to create and assign maps

2. GIS Operations Dashboard: In-house built web app for live progress monitoring of Census/Survey

3. Postgres Database with PostGIS module: Spatial data repository

4. ArcGIS Desktop and QGIS: Desktop spatial data editing software

5. GoPro: 2 per vehicle in the field

6. Tablet: For field data collection and viewing

7. Local Server: Hosts SIB Collect web services and Spatial Database

Linking of Building Footprints with CAPI app

1. Enumerator uses SIB Collect to Navigate to Buildings in their assigned Enumeration District.

2. Enumerator is in front of the building, he/she will click on the building footprint in SIB Collect App map which will show a pop-up box with information. The Pop-up box shows:
   - Building Identifier (BID)
   - Land Use (Resident, Business…)
   - Building Pictures …

3. The Lister/Enumerator copies the BID and switches to the Survey Solutions CAPI app, opens a survey form and enters the BID, then follows questions regarding Census/Survey.
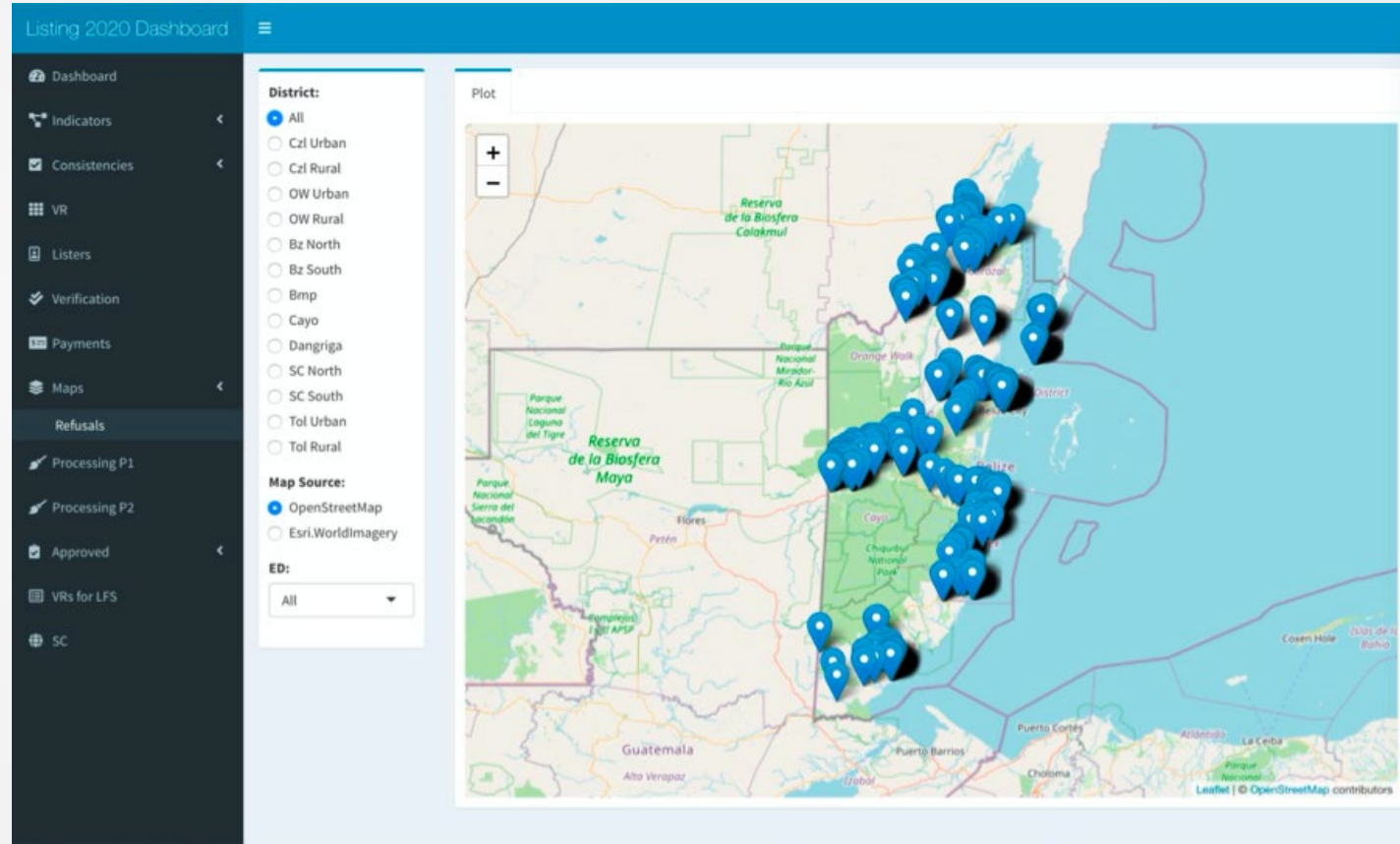
Linking of Spatial and Statistical Data

Questionnaire forms contain a field for the Building ID

Dashboards are created using R (with Shiny) to interactively display

- Maps
- Indicators
- Aggregated reports
- Show live progress of Census/Survey

Challenges Surmounted

Lack of internet connectivity in the field
- Both CAPI and SIB Collect have ability to download questionnaires and maps to tablet
- Enumerator synchronizes data collected when in data/wifi range

Pre-Enumeration/Listing with maps provides greater detail for planning

Navigation with maps
- Shows user where they are
- Graphical progress
- Building images helps lower confusion

Enumerator can add/edit/remove buildings when in the field
- Helps keep the spatial database up to date

Improves analytical reports and dissemination with maps

Local Collaboration

Difficult to get spatial data
- Not up to date
- Available only for their specific purpose (Maps of land property boundaries, telephone polls…)

SIB created users on our portals for local government (Town/City council)
- They can view the data for their area
- Update on the portal
- Updates reflect on our DB for us

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