Methodological Guide:
Displacement and disaster statistics using mobile phone data

UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD)
Mobile Phone Data Task Team

On behalf of the Displacement and Disaster Subgroup

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Displacement & disaster statistics using MPD

By NOAA (unsplash)

- Why are they needed?

- Why are they useful?

- How are they generated and used?

- How can we start/implement a project?

Subgroup members
University of Tokyo (lead), Flowminder, Indian School of Business, IOM, ITU, Positium, Pulse Lab Jakarta, Telenor Research, UNSD, World Bank

Disasters

"*A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources*"
 (Relief Web, 2008)

This guide focuses on…

Statistics on populations who are affected by disasters

What are displacement and disaster statistics?
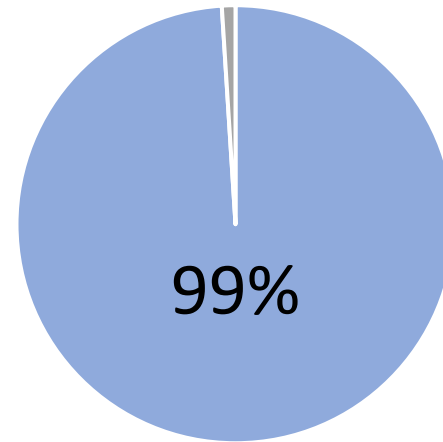
Why needed?

- There are <u>increasing policy interests</u> in measuring hazardous events and affected populations (UN Global Pulse 2014)

- <u>Timely quality information is crucial</u> for disaster risk reduction (UN Global Pulse 2014).

- <u>National Statistical Offices play crucial roles</u> in responding to the data demand (UN 2015).
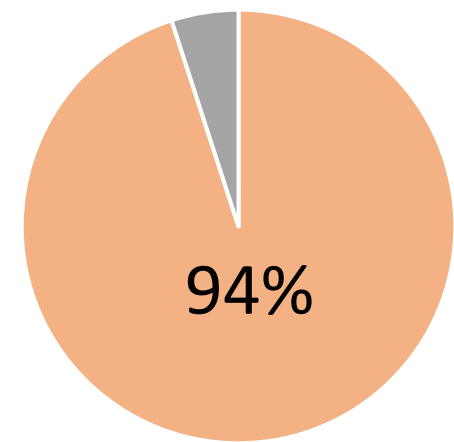
Why useful?

- High population coverage

- Frequent and granular

- Less logistical constrains for data collection if data access is granted.
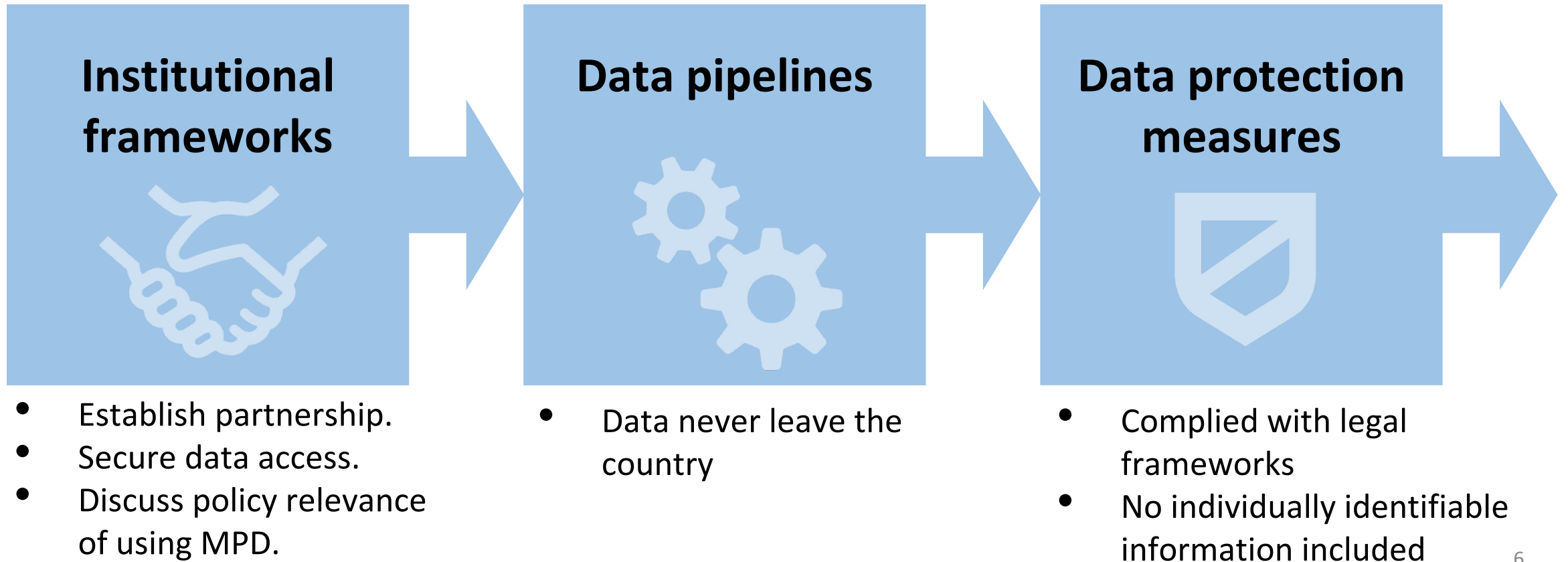
Population coverage by 3G network, 2021

99%

Developed

94%

Developing   (ITU 2021)

Implementation of the MPD project

Institutional frameworks

- Establish partnership.
- Secure data access.
- Discuss policy relevance of using MPD.

Data pipelines

- Data never leave the country

Data protection measures

- Complied with legal frameworks
- No individually identifiable information included

Implementation of the MPD project (cont.)

Data quality assurance

Statistical data production & analysis

Result dissemination

- Examine the validity of data for the analytical purpose.
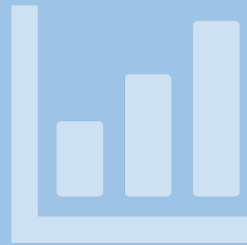
- Produce statistics on displacement/relocation and changes in mobility

- Share statistical outputs with end users.

Country case 1: Haiti earthquake in 2021

A long-standing relationship between Flowminder and Digicel Haiti for 2010 earthquake, Hurricane Matthew in 2016, cholera in 2010, and COVID-19 in 2020.
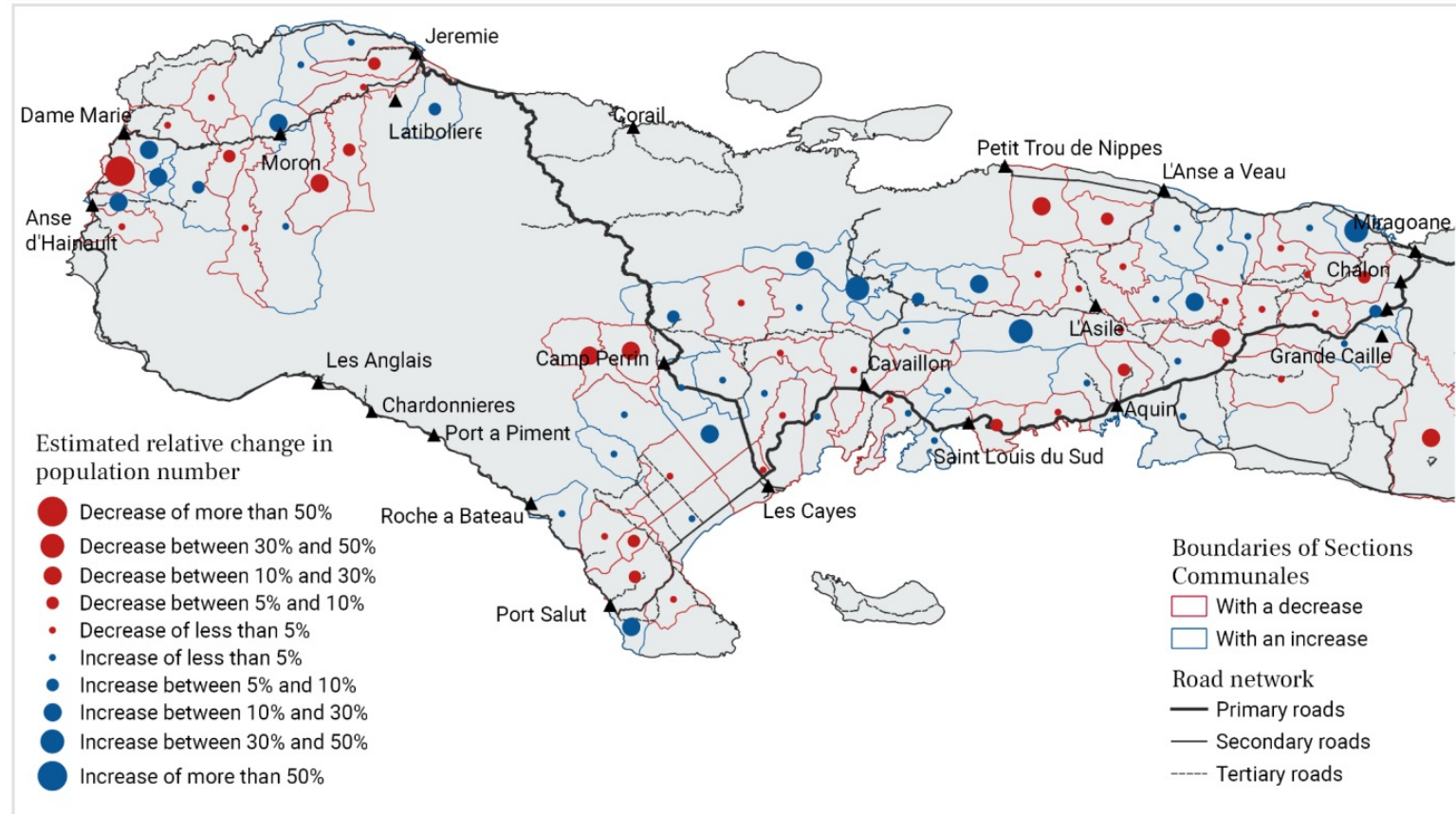
A pre-existing data pipeline, using Flow-kit, was employed to rapidly produce initial mobility aggregates.

Anonymized and no personally identifiable information included. Aggregated. Complied with the EU GDPR. Data processed on the Digicel Haiti premise.

Change in population count as percentage of pre-earthquake period

Country case 2: Impact of mobility restrictions due to COVID-19 in The Gambia

A pre-existing partnership between GBoS, PURA, 2 MNOs, World Bank, and University of Tokyo for internal migration analysis.
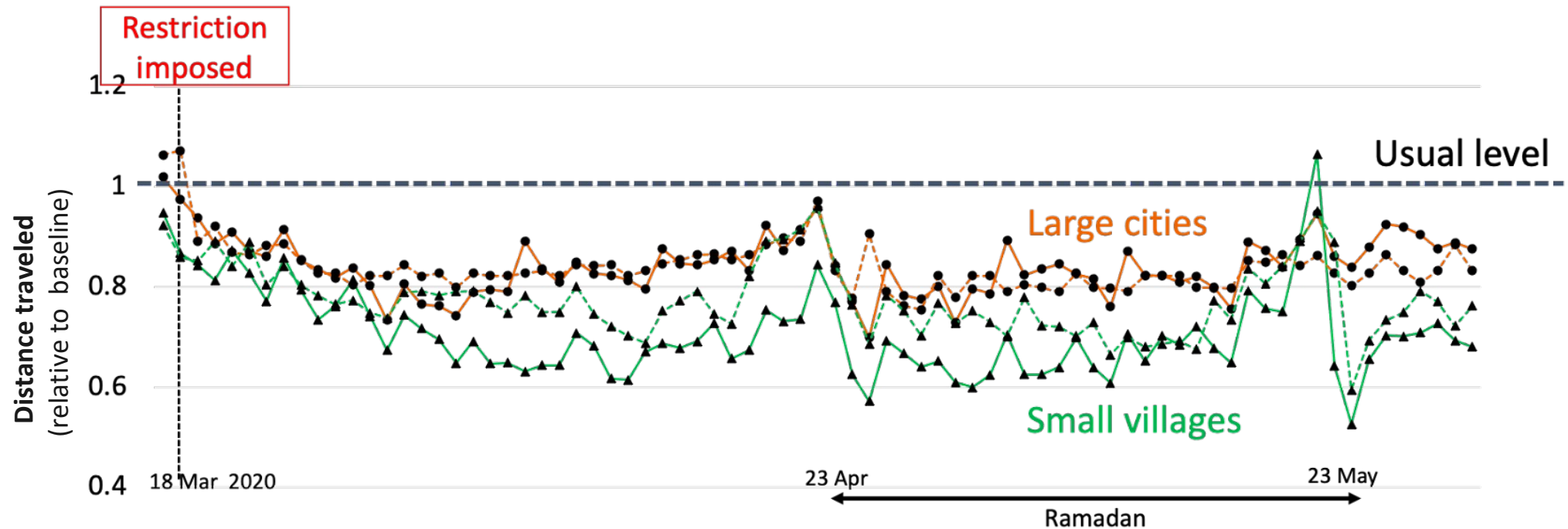
Analytical pipeline was already in place; codes based on World Bank COVID-19 Mobility Indicator were available.

Anonymized and aggregated. Privacy preserving techniques reviewed based on legal frameworks. Data processed on the PURA's premise.

Measuring the impact on activity levels: daily distance traveled by different locality

Median distance traveled relative to the baseline (before COVID-19)

- Beside the methodological frameworks for computing statistics, institutional frameworks and analytical pipelines enhance preparedness and response capacity. Also, accelerate the use of MPD.

- Securing data access remains a challenge. Alternative data sources are made available by the private sector.

- Innovation in analytical methods is still needed to improve the robustness of estimates from sparse MPD.

Discussion