

Introducing 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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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)

Statistics introduced in this guide

Populations affected by disasters

What are
displacement and
disaster statistics?

Statistical frameworks in disaster contexts

- Statistics on people affected by disasters can be direct deaths, injured, and disaster affected.
- It one of the most challenging to define and measure (PreventionWeb 2015).
- International communities are working on the establishment of a formal mechanism to advance a statistical framework on disaster-related statistics (UN 2021).

Increasing demands for disaster statistics

- There are increasing policy interests in measuring hazardous events and affected populations (UN Global Pulse 2014)
- Timely quality information is crucial for disaster risk reduction (UN Global Pulse 2014).
- National Statistical Offices play crucial roles in responding to the data demand (UN 2015).

High-level policy frameworks for addressing the demand

- Sendai Framework for Disaster Risk Reduction 2015–2030 (UNDRR 2015)
- 2030 Agenda for Sustainable Development (United Nations 2015a)
- Paris Agreement (United Nations 2015b)

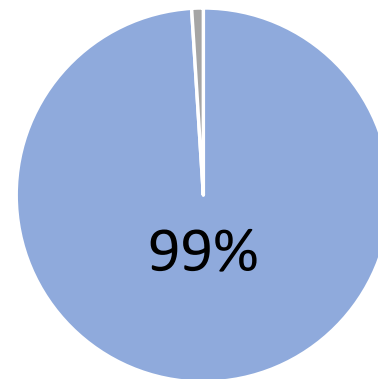


Closely related to Sustainable Development Goals (SDGs) 3 and 11.

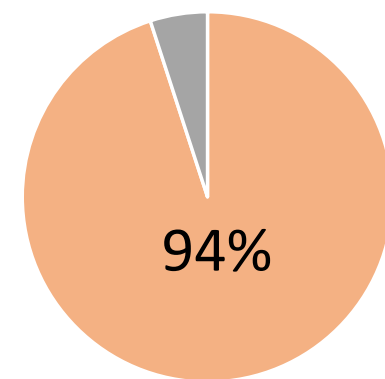
Advantages of MPD in disaster contexts

- Can trace large populations at the various scales of time and space.
- Can capture quickly-evolving situation in timely manner.
- Less logistical constraints for data collection if data access is granted.

Population coverage by 3G network, 2021



Developed

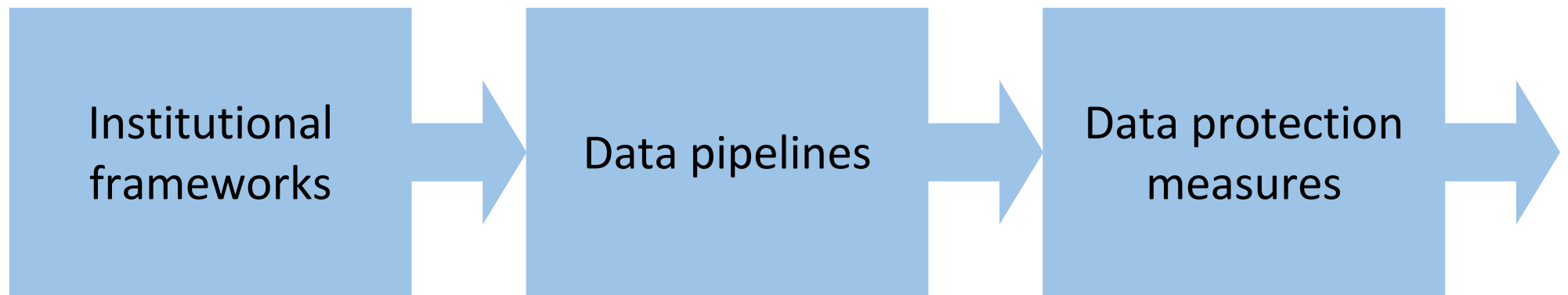


Developing

(ITU 2021)

Overview of the guide

Steps for responding the data demand through use cases.

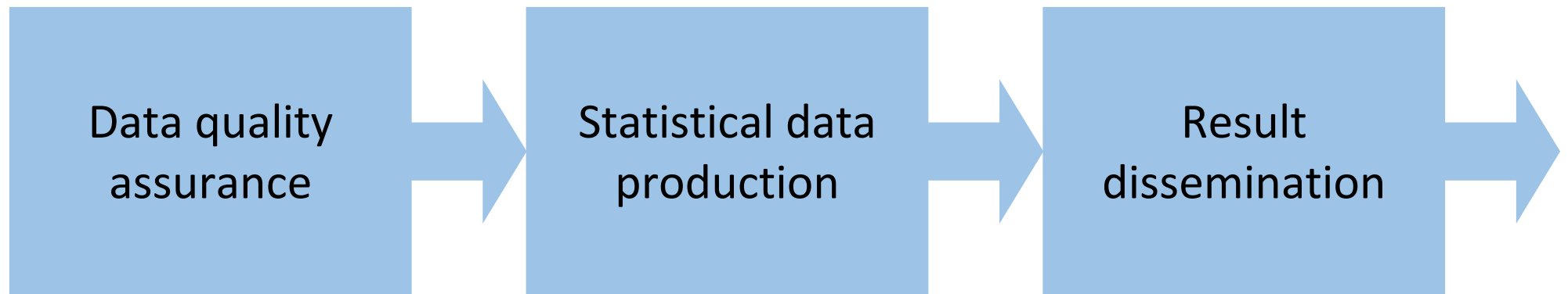


- Establish partnership.
- Secure data access.
- Discuss policy relevance for using MPD.

- Set-up system in the data producer's premise.

- Complied with legal frameworks.
- No individually identifiable information included.

Overview of the guide (cont.)



- 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.

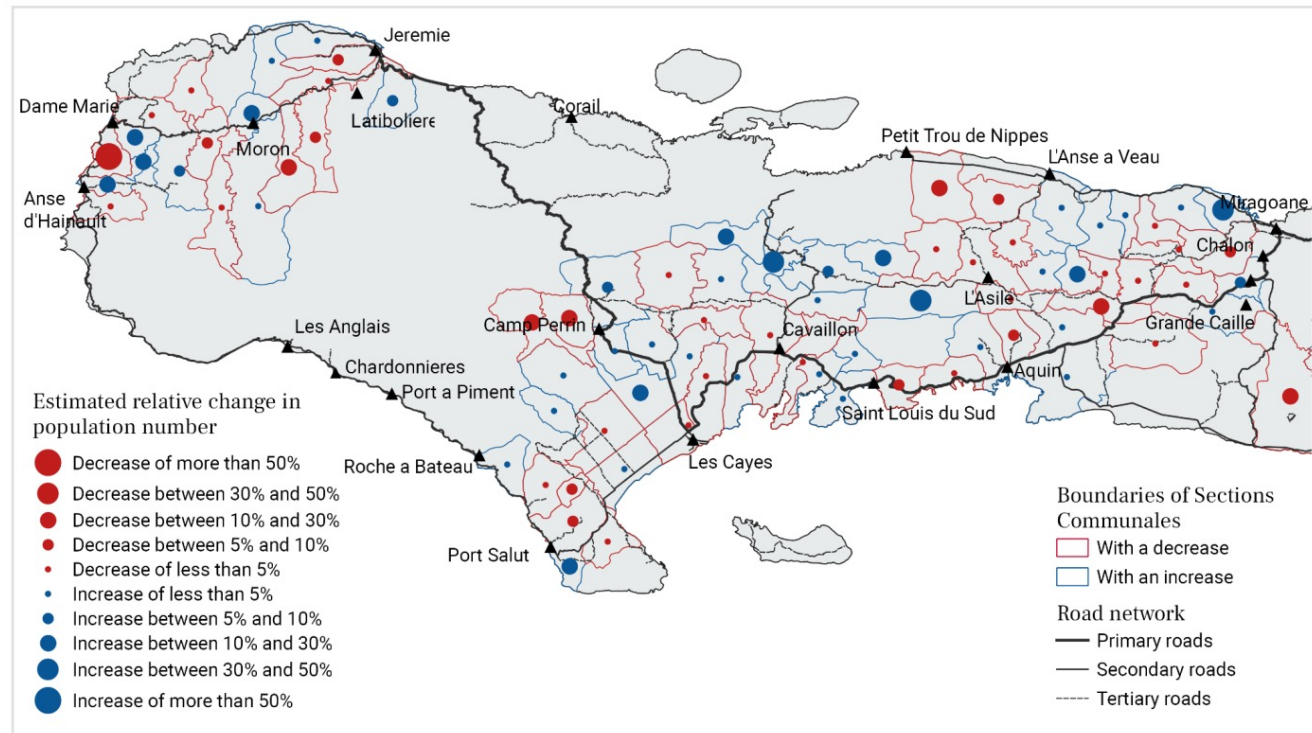


A pre-existing data pipeline, using Flow-kit, was employed to rapidly produce initial mobility aggregates.



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

Displacements: the % of population relocated by community



Change in population count as percentage of pre-earthquake period

Source: Flowminder 2021 Haiti Earthquake Reports 2

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.

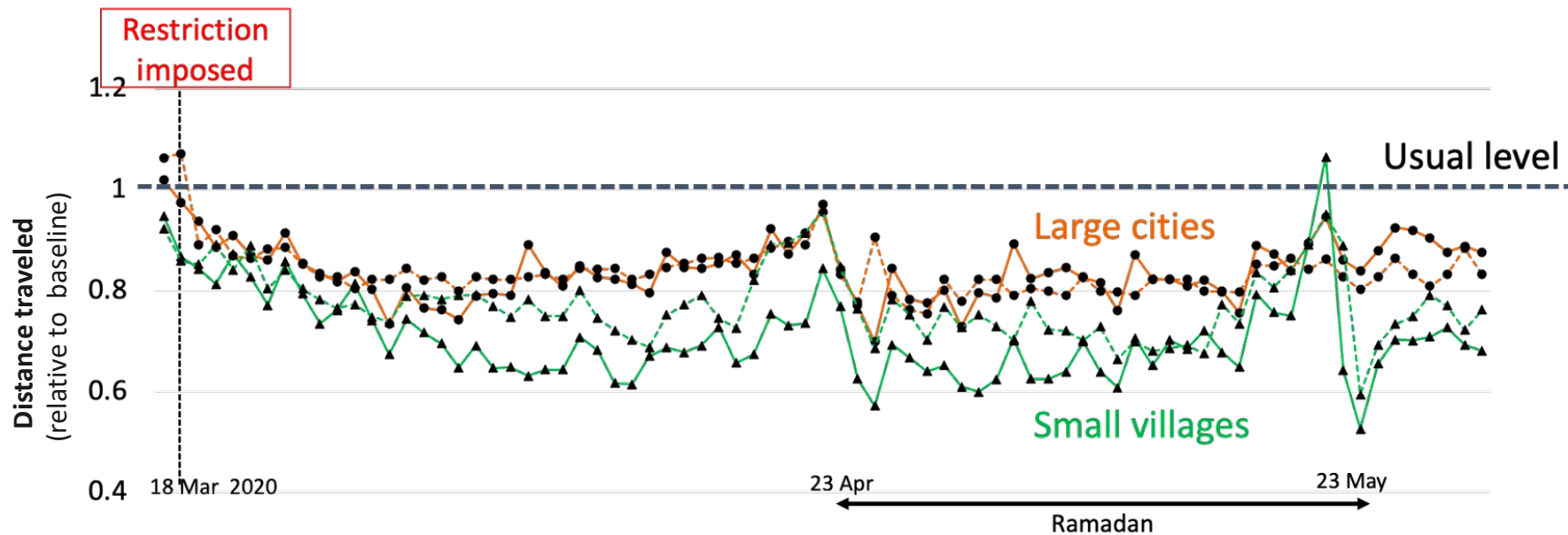


Analytical pipeline was already in place; **codes** based on World Bank COVID-19 Mobility Indicator were available.



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

Effects on people's mobility: daily distance traveled by different locality



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

Source: The hidden potential of call detail records in The Gambia (2021)

- 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