Mobilizing Big Data and Data Science for the Sustainable Development Goals
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Session 1.4

Information society indicators for the SDGs using **mobile phone big data**

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UN -CEBD Task Team on Mobile phone data – sub-groups

- Composed of around 50 individual members/ 30 entities - international and regional agencies, countries, academia, private agencies/companies.

- Explore the use of mobile phone big data for the different areas of statistics

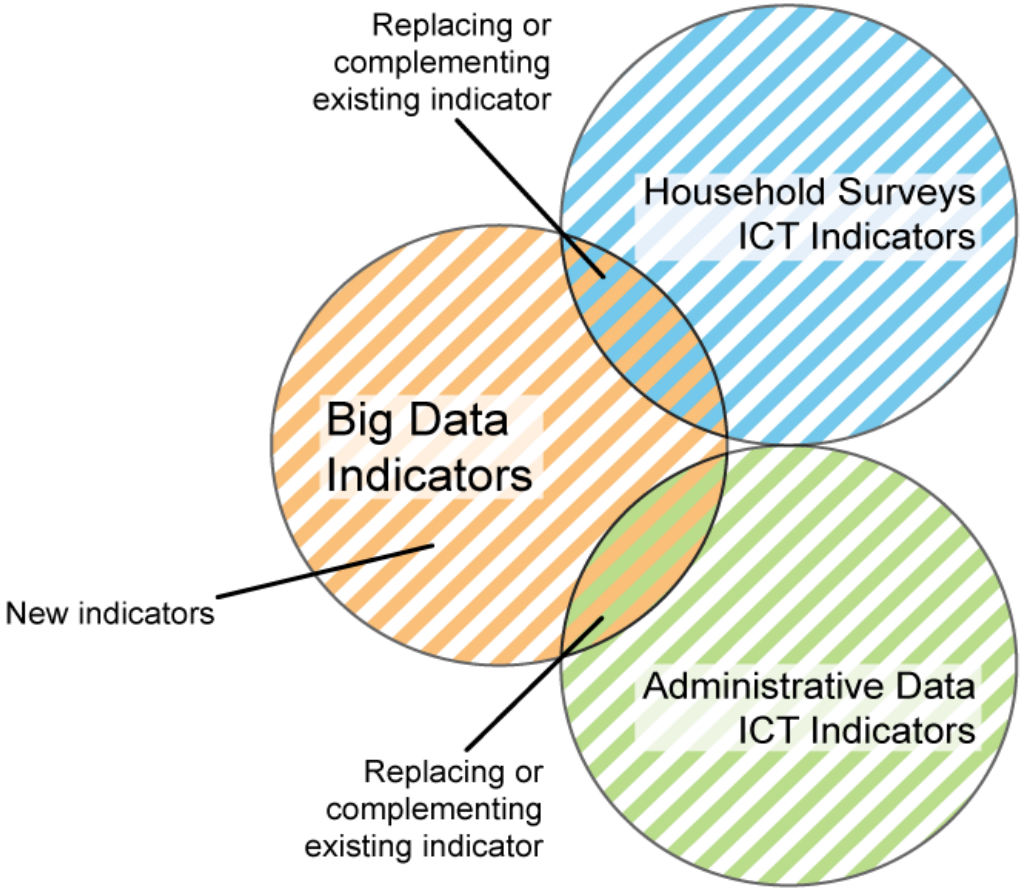
Areas of statistics where mobile phone data are used:

1) Tourism statistics (lead: BPS Indonesia)
2) Migration statistics (Lead: GeoStat, Georgia)
3) Census and dynamic population (lead: Positium)
4) Transport and commuting statistics (lead: World Bank)
5) Information society indicators (lead: ITU)
6) Displacement in disaster context (lead: University of Tokyo)

Information society indicators included in the SDG monitoring framework – collected by ITU

- Target 4.4: Proportion of youth/adults with ICT skills, by type of skills
- Target 5b: Proportion of individuals who own a mobile telephone, by sex
- **Target 9c: Percentage of the population covered by a mobile network, broken down by technology**
- Target 17.6: Fixed Internet broadband subscriptions, broken down by speed
- **Target 17.8: Proportion of individuals using the Internet**

ITU work on using mobile phone data - background



1st pilot: 2016-2018

- ✓ 6 countries (Colombia, Georgia, Kenya, Philippines, Sweden, UAE)
- ✓ 16 ICT indicators (administrative data)

2nd pilot: 2020-2021

- ✓ Brazil, Indonesia
- ✓ 2 SDG ICT indicators
  - ✓ 9.c.1 – Percentage of population covered by mobile network: 2G, 3G and 4G and above (administrative data)
  - ✓ 17.8.1 – Percentage of population using the Internet (household survey data)

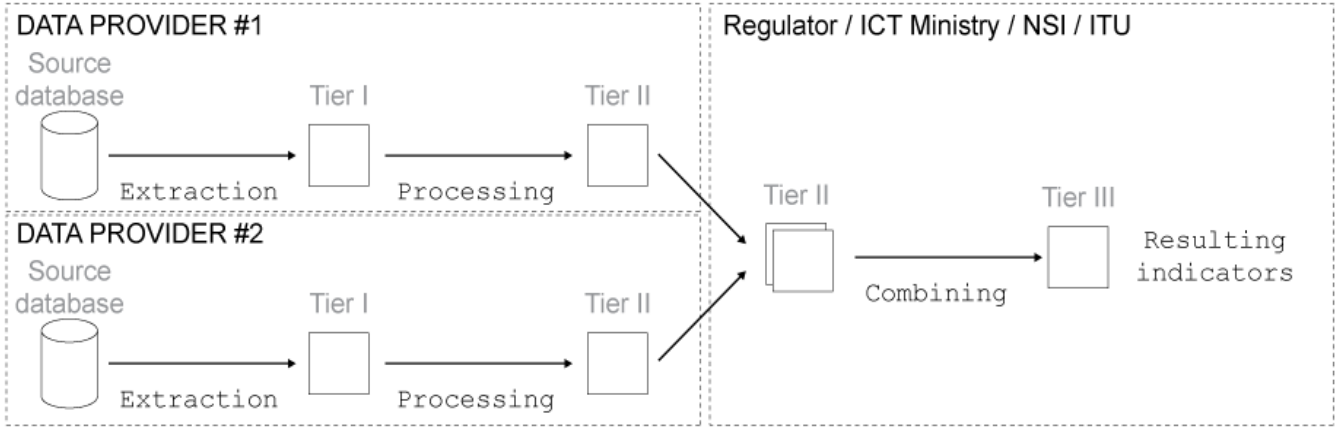
Stakeholders:

- ✓ Telecommunication Regulator / ICT ministry
- ✓ National Statistics Office
- ✓ Mobile Phone Operators
- ✓ Data Protection Authority

Data processing models

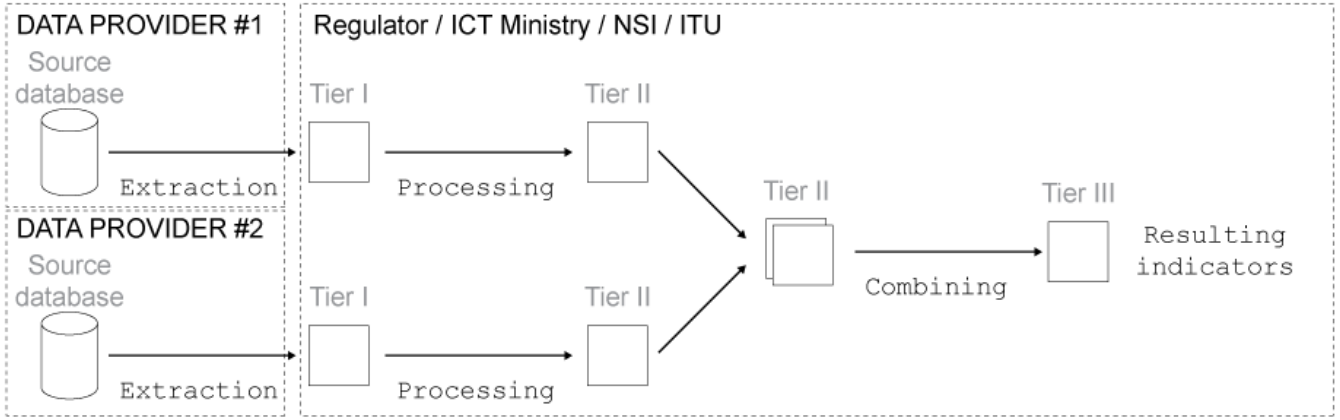
Option 1:

Indicators calculated by mobile operators, then aggregated to resulting indicators



Option 2:

Raw data extracted by data providers, indicators calculated by NSO



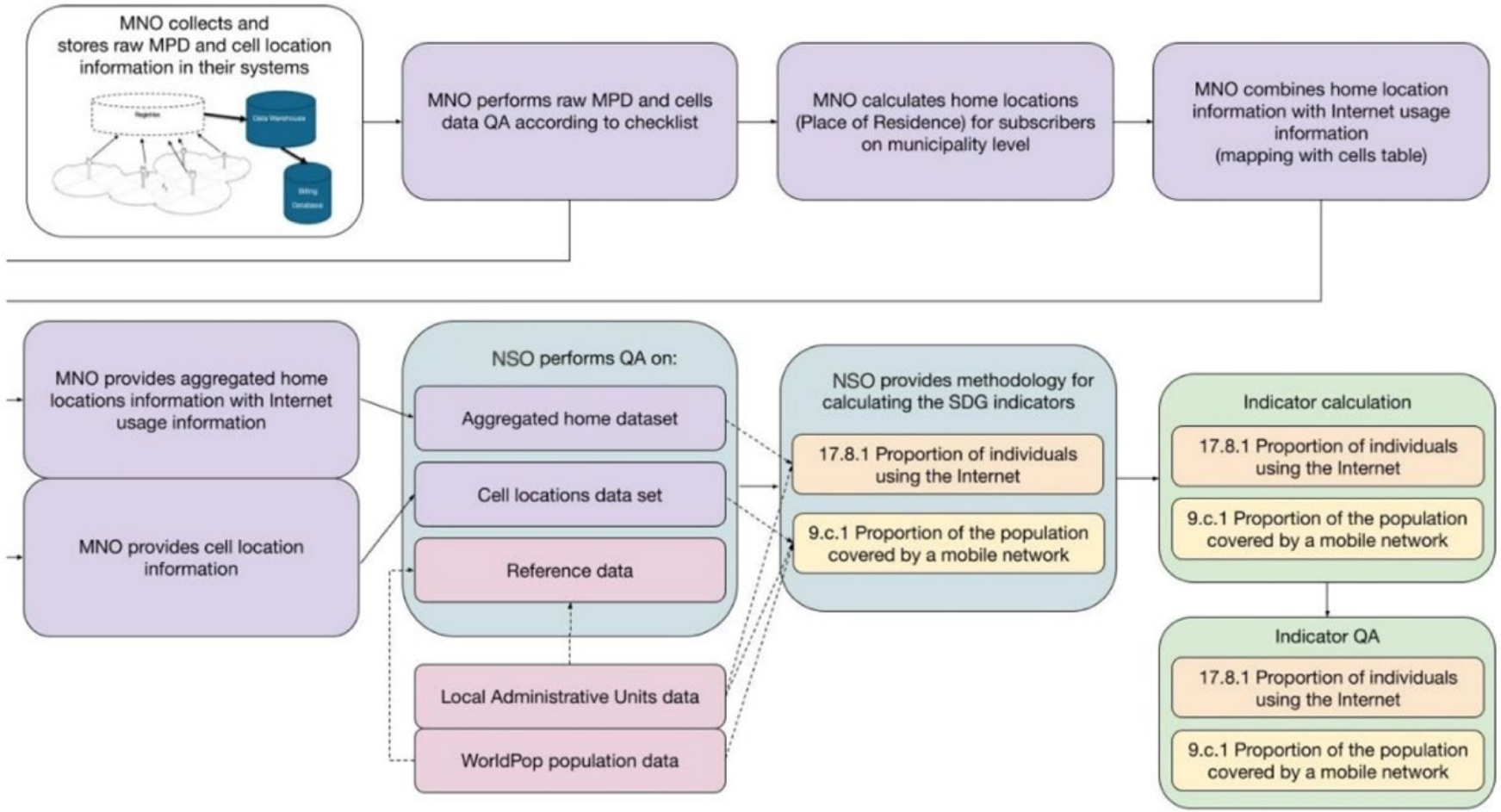
Objectives of the 2nd pilot

1. **Methodological guide** outlining standardized methodologies and processes for the production of the two SDG information society indicators using mobile phone big data, for replication in other countries.
   - SDG indicator 9.c.1 Proportion of population covered by a mobile network
   - SDG indicator 17.8.1 Proportion of individuals using the Internet

2. **Enhance capacities** on the use of big data to produce the information society indicators included in the SDG monitoring framework in the countries selected

3. **Data and reports** from the selected countries to showcase best practices.

Methodology



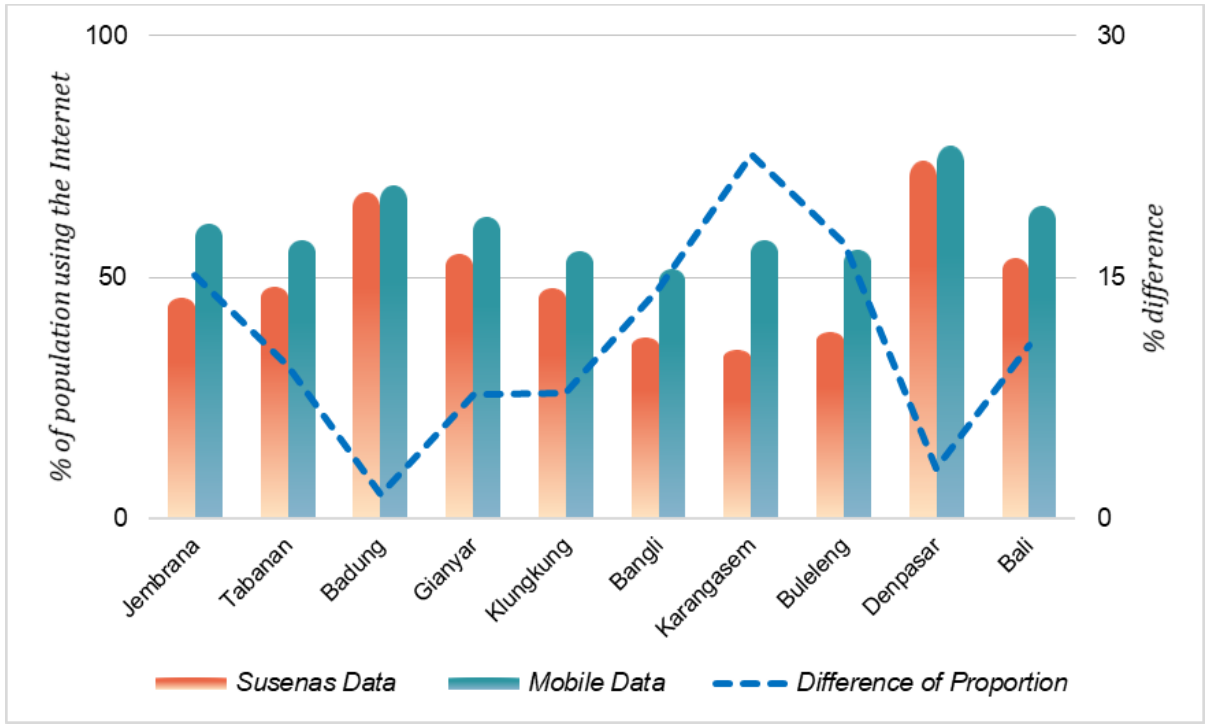
Use cases: Indonesia and Brazil

	Indonesia	Brazil
Interested parties:	National Statistics Office (BPS) Ministry of National Development Planning (Bappenas)	National Statistics Office (IBGE) Centre of Excellence in ICT (CETIC)
Data provider:	1 largest mobile network operator (60% population coverage)	1 large mobile network operator (40% coverage)
Geographical scope:	whole Indonesia	Rio de Janeiro Metropolitan region only
Temporal scope:	1 year	2 months
Contractual scope:	Continuous	Pilot

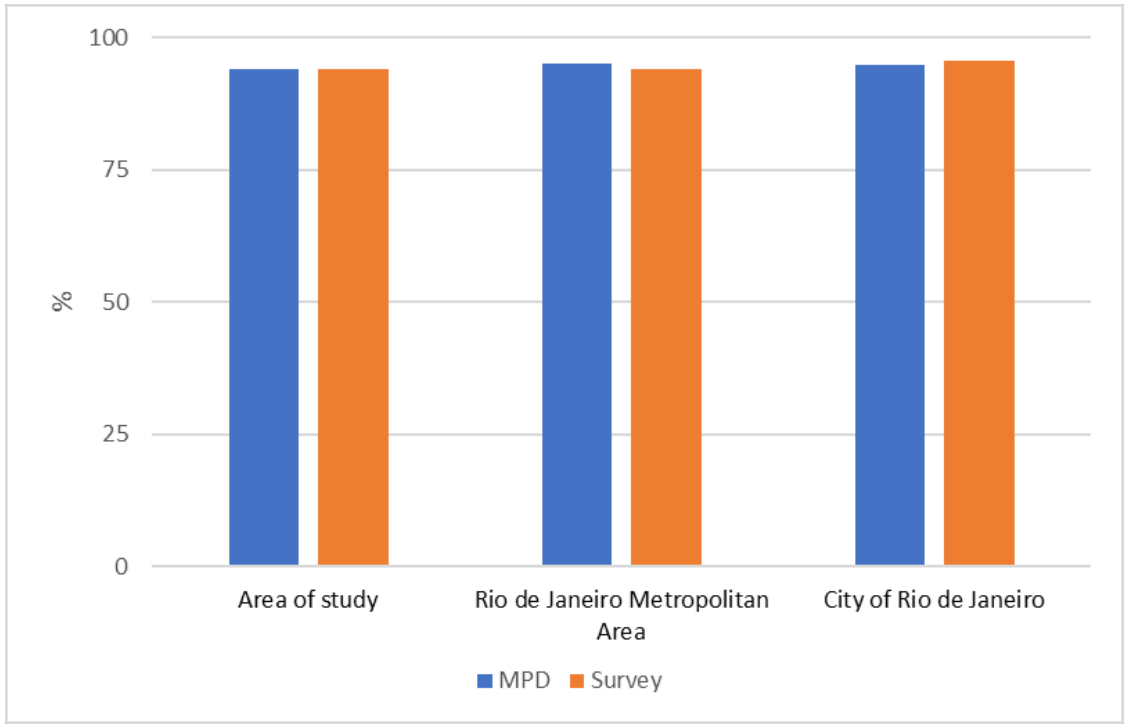
1. Calculate two SDG indicators (population covered and Internet use)
2. How does MPD results compare with household survey results
3. Can this method and data source used to complete/supplement traditional sources

Results: Percentage of population using the Internet (SDG 17.8.1)

Indonesia

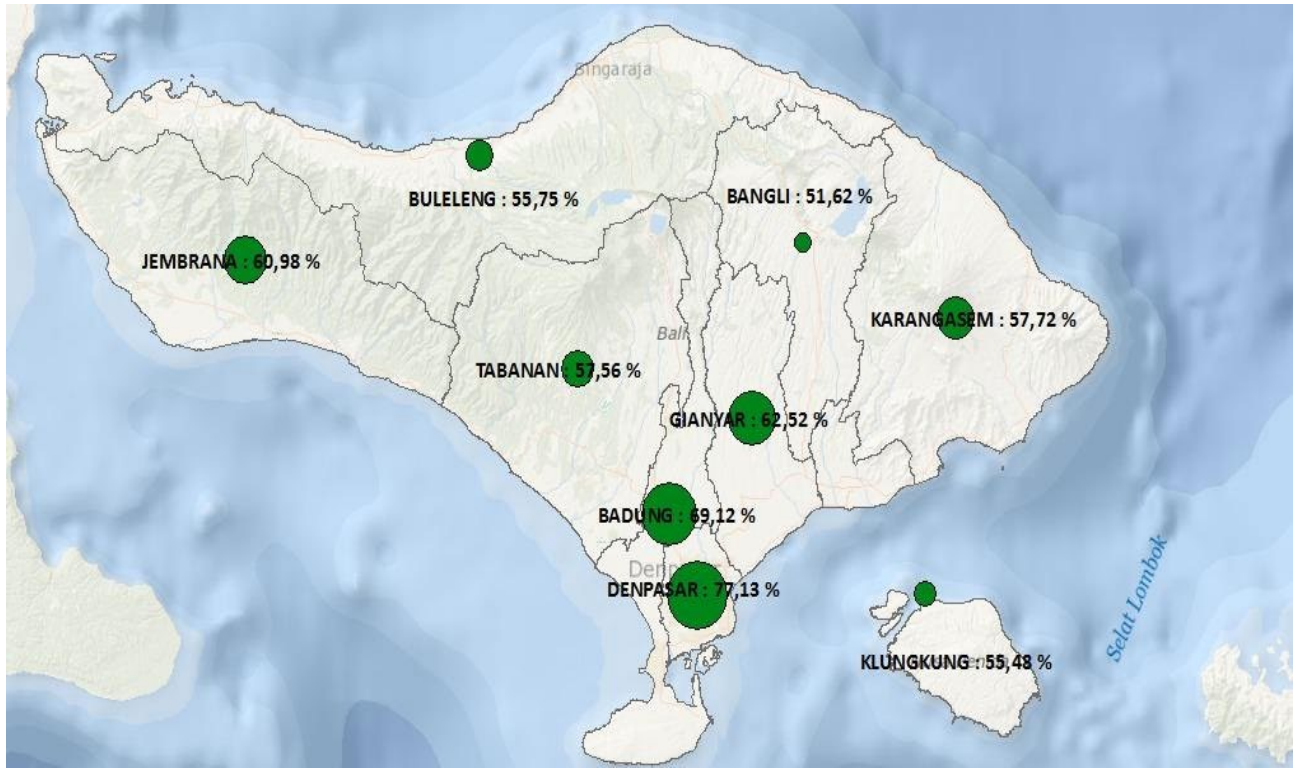


Brazil

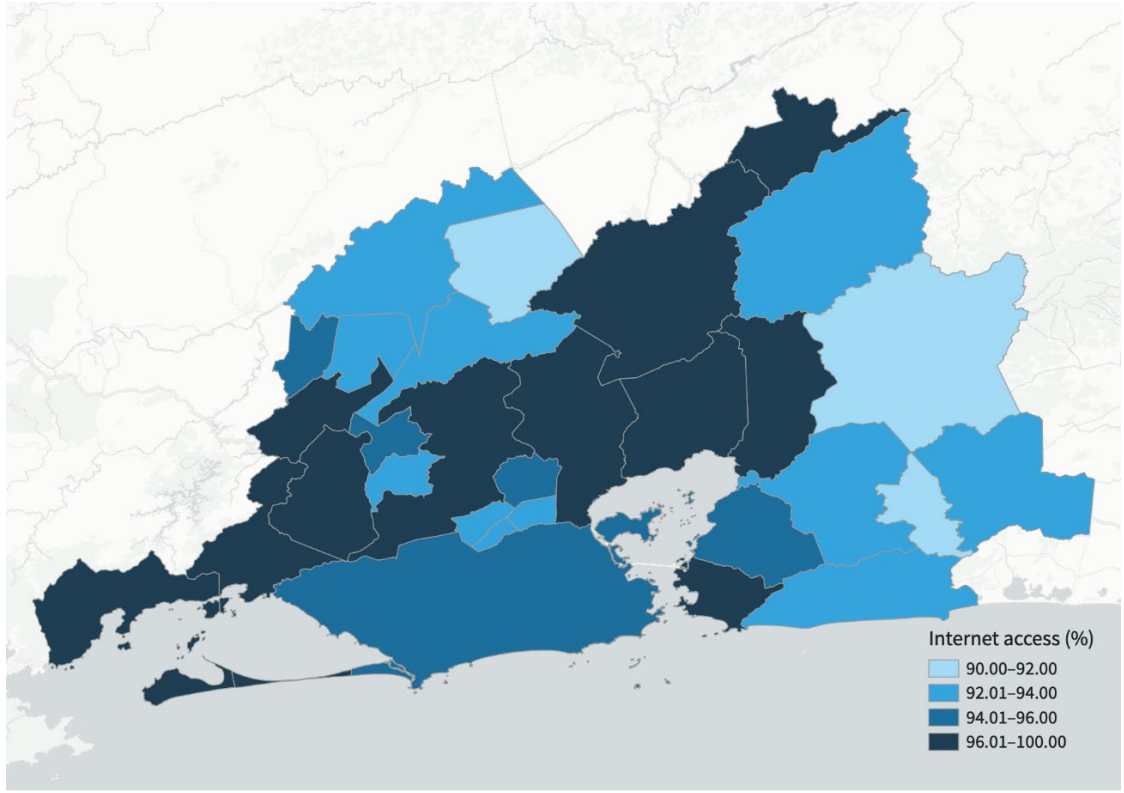


Results: Percentage of population using the Internet (SDG 17.8.1)

Bali, Indonesia

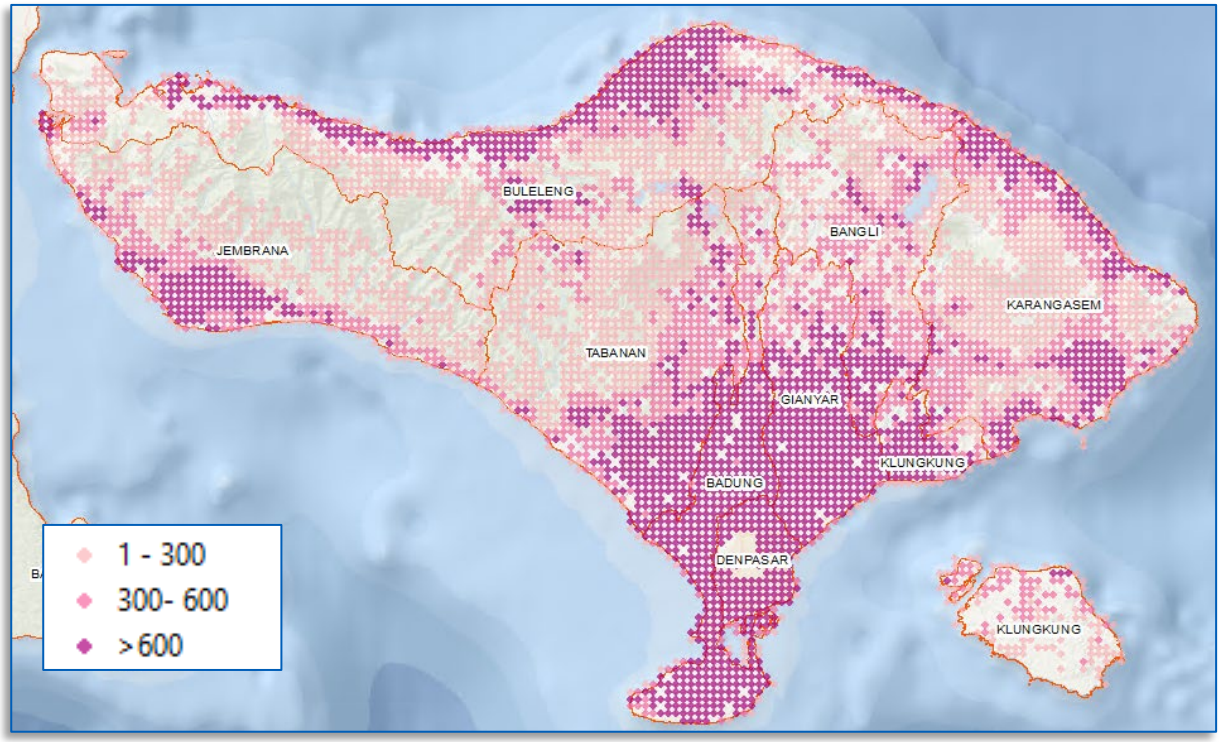


Brazil

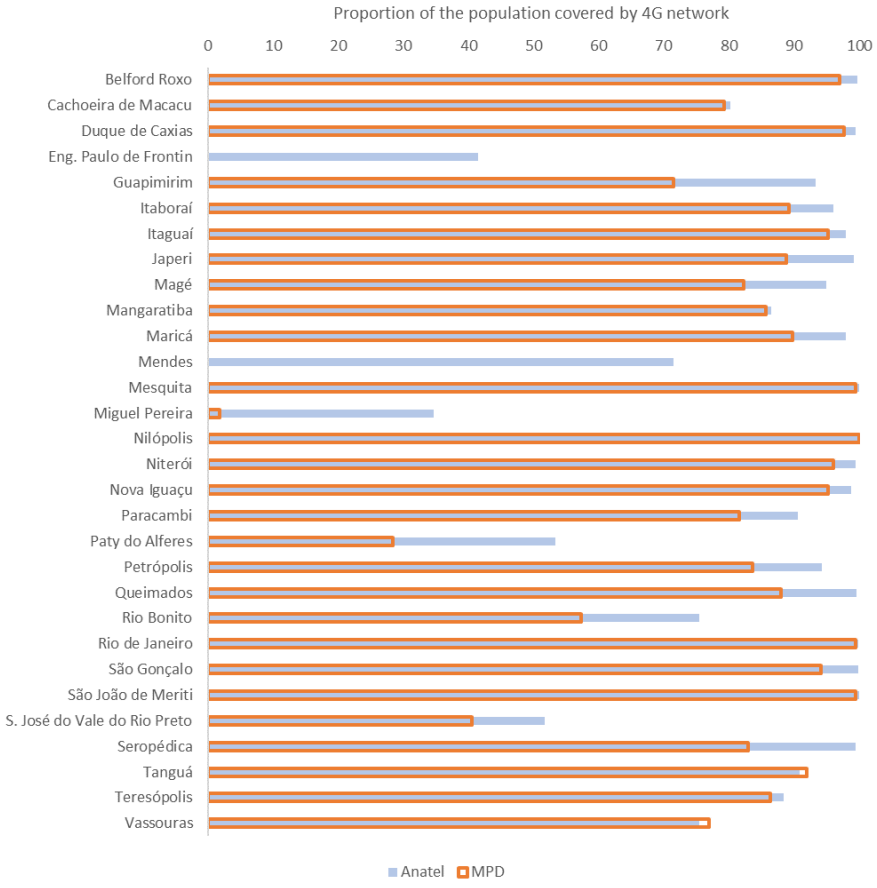


Results: Percentage of population covered by mobile signal (SDG 9.c.1)

Population covered by mobile cellular network (3G) in Bali, Indonesia

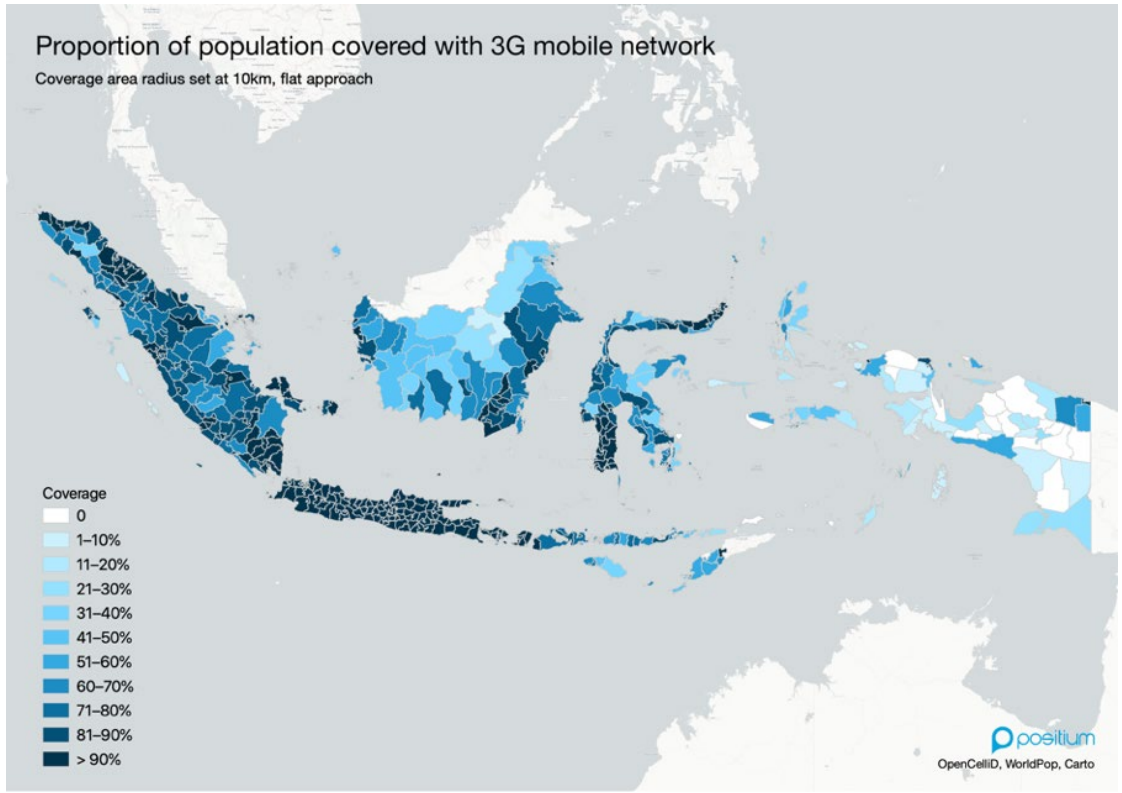


Brazil

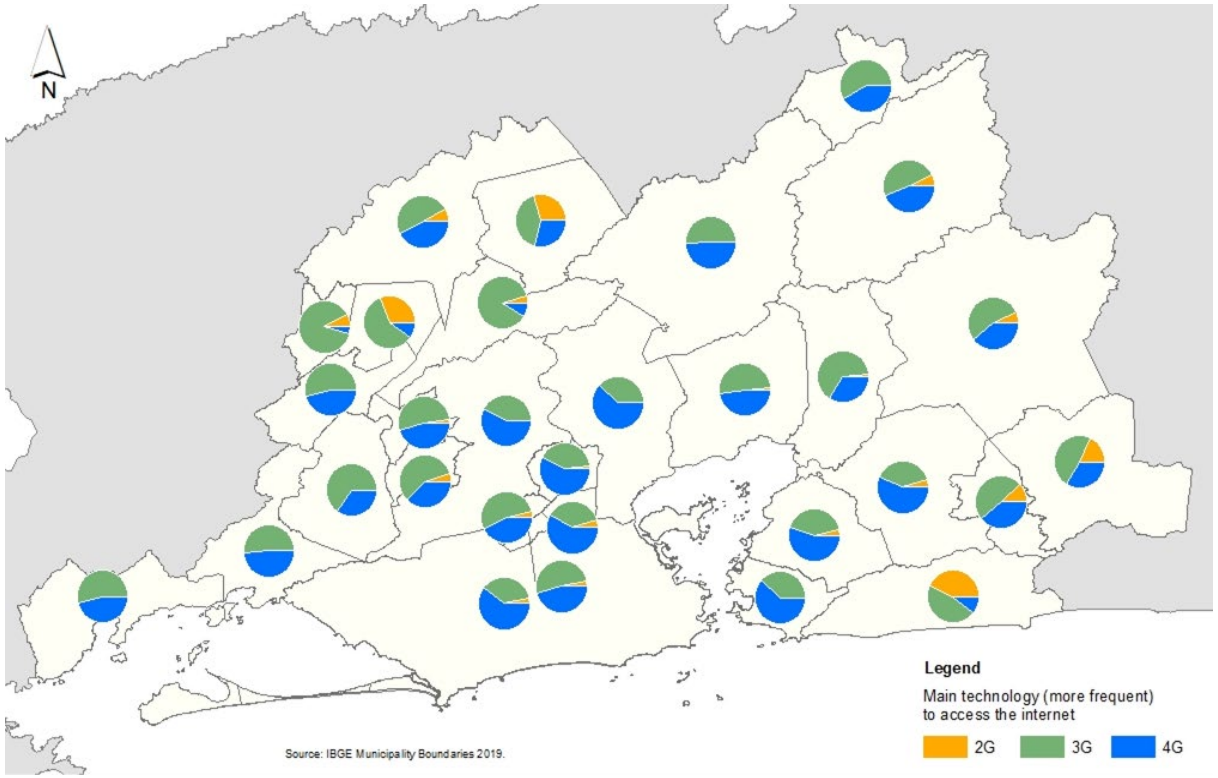


Results: Population covered by mobile network (SDG 17.8.1)

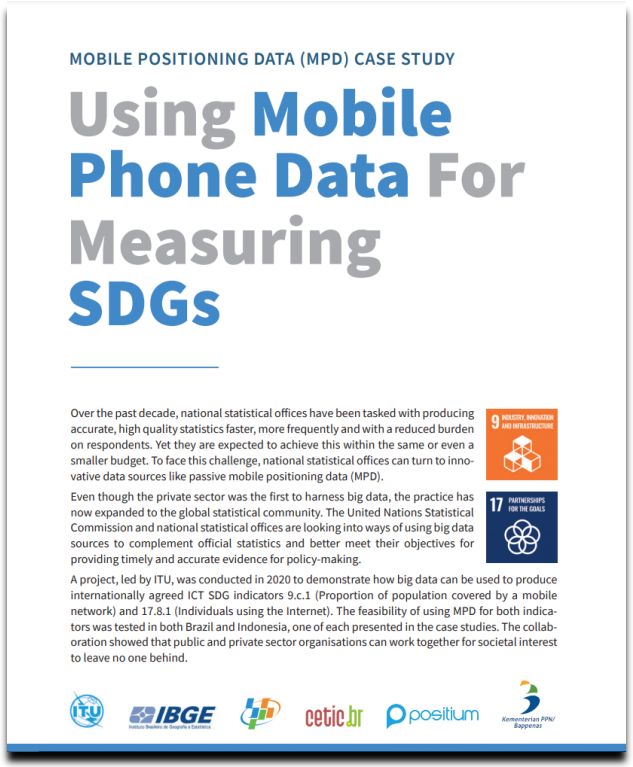
Indonesia



Brazil



Lessons learned:


MOBILE POSITIONING DATA (MPD) CASE STUDY

Using Mobile Phone Data For Measuring SDGs

Over the past decade, national statistical offices have been tasked with producing accurate, high quality statistics faster, more frequently and with a reduced burden on respondents. Yet they are expected to achieve this within the same or even a smaller budget. To face this challenge, national statistical offices can turn to innovative data sources like passive mobile positioning data (MPD).

Even though the private sector was the first to harness big data, the practice has now expanded to the global statistical community. The United Nations Statistical Commission and national statistical offices are looking into ways of using big data sources to complement official statistics and better meet their objectives for providing timely and accurate evidence for policy-making.

A project, led by ITU, was conducted in 2020 to demonstrate how big data can be used to produce internationally agreed ICT SDG indicators 9.c.1 (Proportion of population covered by a mobile network) and 17.8.1 (Individuals using the Internet). The feasibility of using MPD for both indicators was tested in both Brazil and Indonesia, one of each presented in the case studies. The collaboration showed that public and private sector organisations can work together for societal interest to leave no one behind.

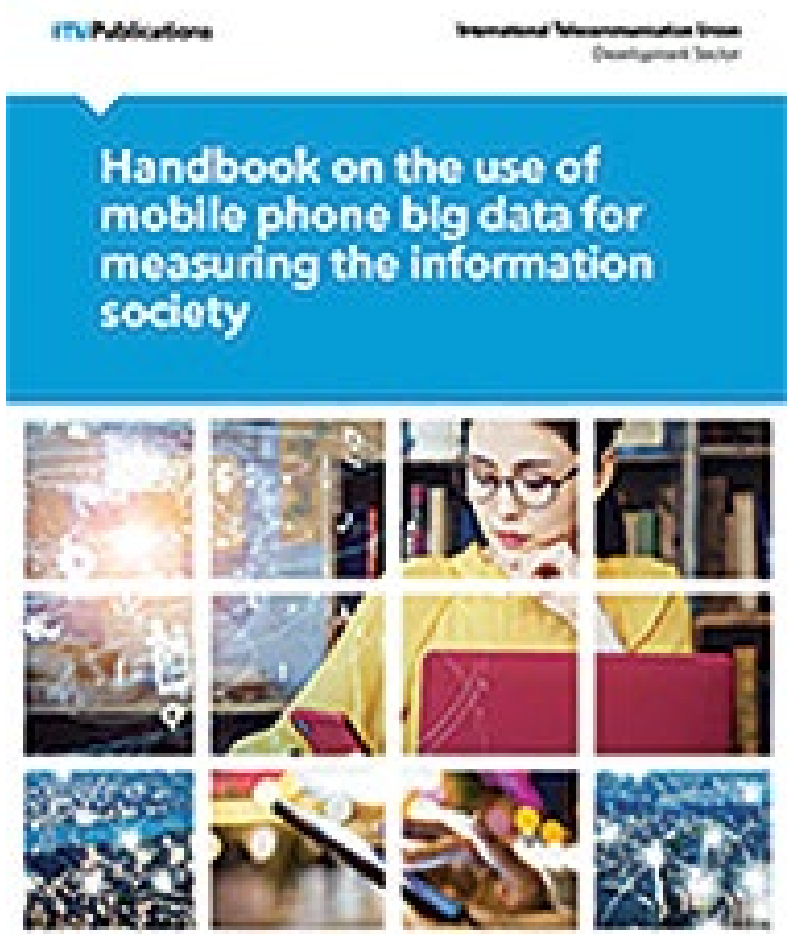
1. National coordination (ministry, regulator, data protection agency, NSO, MNOs)
2. Take advantage of trainings on MPD – ITU Academy and UN-CEBD
3. Share country experiences to improve measurements of MPD-ICT indicators
4. Establish data pipelines that can be used for multiple areas of statistics

https://www.itu.int/en/ITU-D/Statistics/Documents/bigdata/ITU_SDG_case_study.pdf

ITU Handbook on Big Data for measuring the Information society

1. Introduction
2. Background
3. Access and preparations
4. Data sources (description of mobile operator data, quality assurance of raw data)
5. Reference data (local admin units, world population, cell data, digital elevation, household survey data)
6. Data processing (models, data protection guidelines)
7. Calculating the indicators (rationale, definition, indicators calculation, quality assurance)
8. Quality assurance
9. Conclusions

- with experiences and examples from country pilots



Thank you!

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https://www.itu.int/en/ITU-D/Statistics/Pages/bigdata/default.aspx