

Collaboration on use of Mobile Phone Data

How to adhere to the fundamental principles of official statistics when compiling data during the Covid-19 pandemic?

Ronald Jansen

Assistant Director

Statistics Division/DESA, United Nations

New York



Guiding principles to maintain public trust in the use of mobile operator data for policy purposes

Ronald Jansen ^{1*} Karoly Kovacs ¹ Siim Esko ² Erki Saluveer ²
Kaja Sõstra ³ Linus Bengtsson ⁴ Tracey Li ⁴ Wole Ademola Adewole ⁴
Jade Nester ⁵ Ayumi Arai ⁶ Esperanza Magpantay ⁷

¹ United Nations Statistics Division

² Positium

³ Statistics Estonia

⁴ Flowminder

⁵ GSMA

⁶ University of Tokyo

⁷ International Telecommunication Union

Background

Emergency situation

- COVID-19 pandemic, early 2020
- Governments imposed lockdown to reduce the spread of the virus

Request to the NSO

- How can we monitor the effectiveness of government interventions?
- We need data, that are
 - Timely
 - Frequent
 - Geospatially detailed

Background

Collaborative Projects in

- ❑ Ghana – MNO (1), NSO and Flowminder
- ❑ The Gambia – MNO (2), Regulator, NSO and University of Tokyo / World Bank
- ❑ Estonia – MNO (3), NSO and Positium

Partners in setting up the mobile phone data projects

Mobile Network Operator

- Vodafone
- Telia, Elisa, Tele2

Government Mobile Network Regulator

- Public Utilities Regulatory Authority (the Gambia)

National Data Protection Authority

- Ghanaian Data Protection Commission

Intermediary Service Provider

- Positium
- Flowminder
- University of Tokyo

National Statistical Office

- Statistics Estonia
- Ghana Statistical Service
- Gambia Bureau of Statistics

Five Principles to ensure trust

Following the Fundamental Principles of Official Statistics



Necessity and proportionality (Fit-for-purpose)



Professional independence



Privacy protection



Commitment to quality



International comparability

Conclusions from the 3 country projects



Necessity and proportionality (Fit-for-purpose)

- Mobile Phone Data are necessary and proportional to the emergency



Professional independence

- NSOs are the gatekeepers on independence, transparency, code of conduct



Privacy protection

- MNOs performed data pre-processing and aggregation / joint testing needed



Commitment to quality

- All known limitations of the data were described / further analysis planned



International comparability

- Methodologies and code are publicly shared

Link with “Big Data for Travel Demand Modelling”



Necessity and proportionality (Fit-for-purpose)

- Defined purposes/minimum required; - Relevance



Professional independence

- Credibility; - Transparency / Accessibility



Privacy protection



Commitment to quality

- Accuracy; - Coherence; - Interpretability



International comparability

- Guidelines; - Handbooks

Privacy Protection

MPD country projects during COVID-19

- Data stayed with the Mobile Network Operator
- “Raw Data” collaboration only on premises of MNO
- Only aggregated and anonymized data released from MNO

Application of Privacy Preserving Techniques

- Data are accessed remotely
- Perform operations on data without “seeing” the data through
 - Differential Privacy
 - Secure Multi-Party Computation
 - Secure enclaves
- Connection via trusted network node (UN)

What we found
(linked to publication)



Partner with Private Sector

Yes: adhere to principles to maintain public trust



Need for socio-demographic data

Use detailed socio-demographic data from NSO

Overlay using geospatial framework

UN Committee of Experts on Big Data and data science for official statistics

- Inter-governmental body with 31 countries and 16 international agencies (under Stat Commission)
- Collaboration of more than 300 experts from all stakeholder communities
- 9 Task Teams, including
 - on use of Mobile Phone Data (Tourism, Migration, Dynamic Population, Displacement, Information Society and Transport)
 - on Rural Access to services





Collaborate with us:

Join a Task Team of UN-CEBD



Mobile Phone data for Transport statistics



Access to private sector data



Privacy Preserving Techniques



Training & Skills

BigData@un.org

[https://unstats.un.org/
bigdata/](https://unstats.un.org/bigdata/)

