

# Alternative sources of data for international migration statistics

*Training Workshop on the Use of Administrative Data for Migration Statistics in Maldives*

*10-12 December 2024, Malé, Maldives*

*Elena De Jesús, UNSD*



**United  
Nations**

**Statistics Division**



# WHAT'S THE ALTERNATIVE?



BPS STATISTICS INDONESIA – MPD since 2017

8000  
enumerators  
for **domestic**  
**tourism survey**



4  
data scientists /  
engineers  
working on MPD



United  
Nations

Statistics Division

# MOBILE PHONE DATA

## Mobile Positioning Data (MPD)

Mobile Positioning Data is defined as any type of mobile network event data that are stored by the mobile network operator (MNO) that includes a subscriber identifier, time attribute and location.



## Call Detail Records (CDR)

- Passively generated when a subscriber:
  - Makes or receives a call
  - Sends or receives an SMS
  - Uses mobile data
- Routinely stored by MNOs for billing purposes

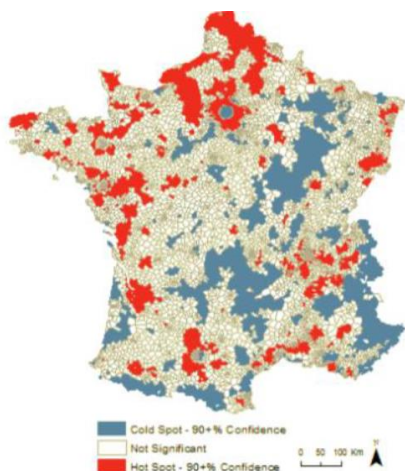
## Passive Signalling Data

- Passively generated when a mobile device connects to the network
- More frequent than CDR data
- Very high volume storage

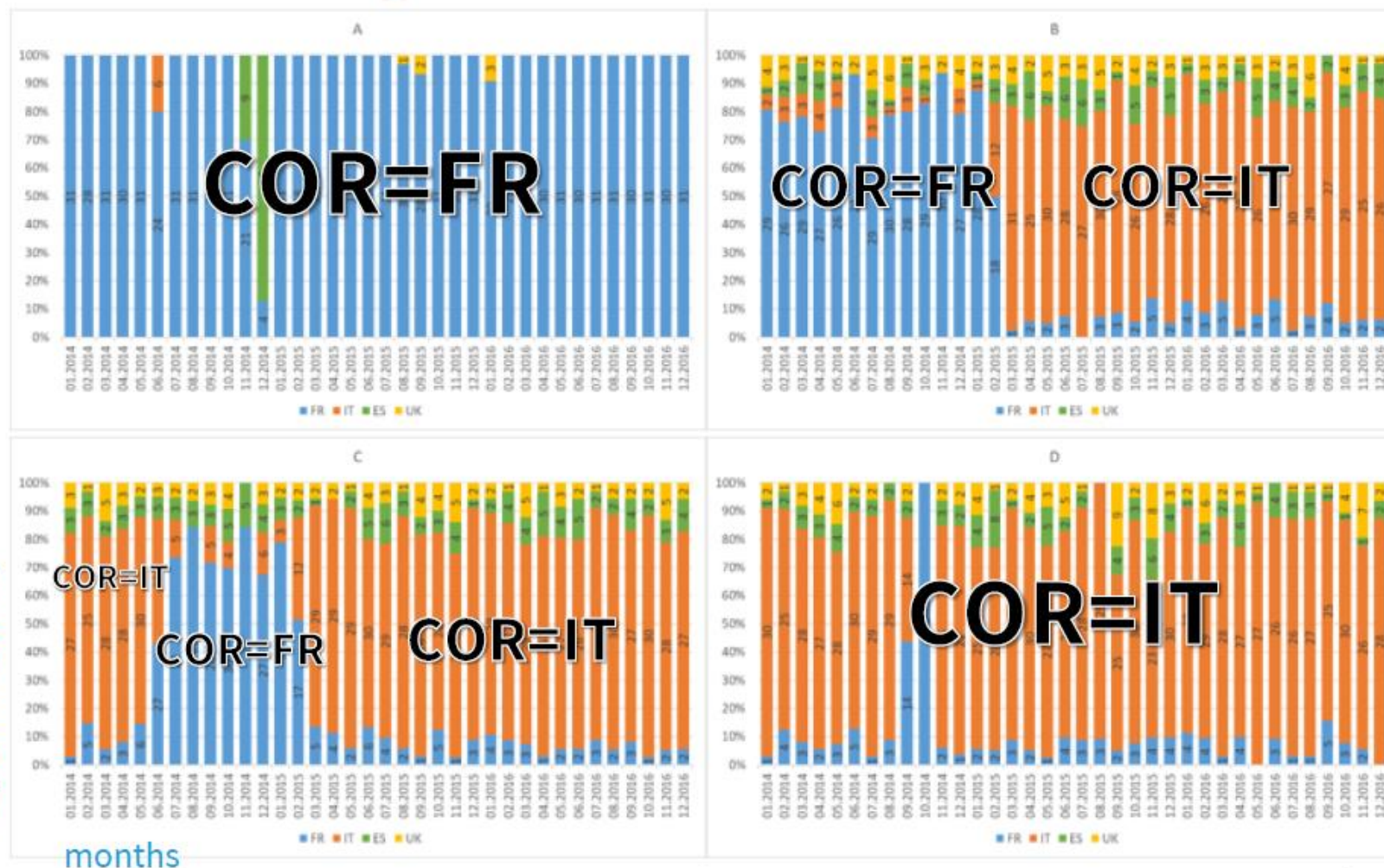


# DETERMINING PLACE OF RESIDENCE

According to official definition, Country of Residence (COR) is the country where the person spends most of their year.

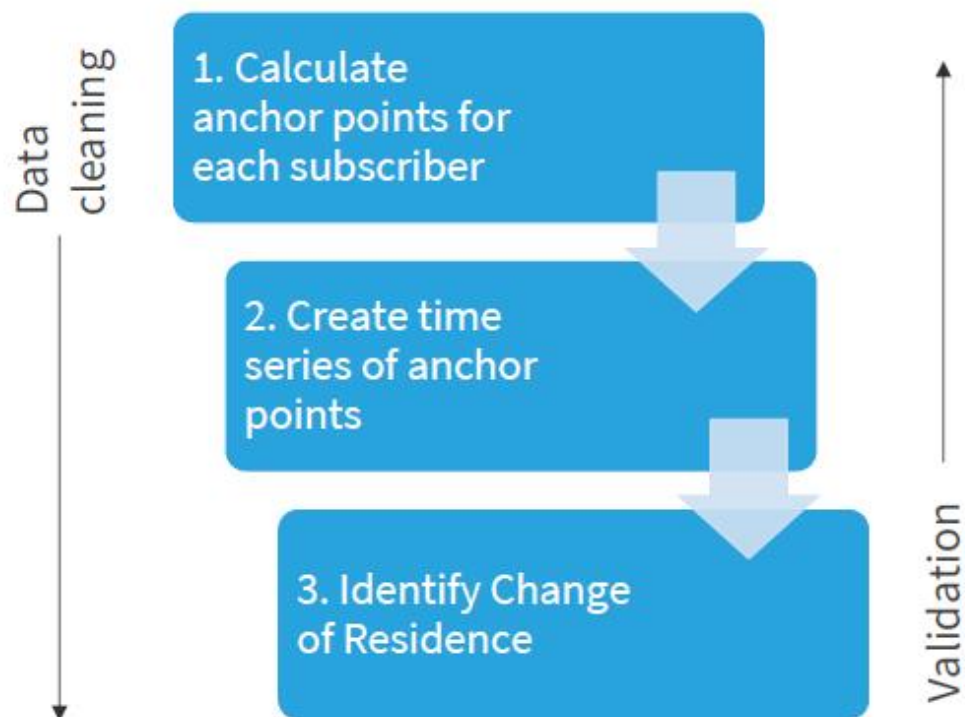


% spent in country



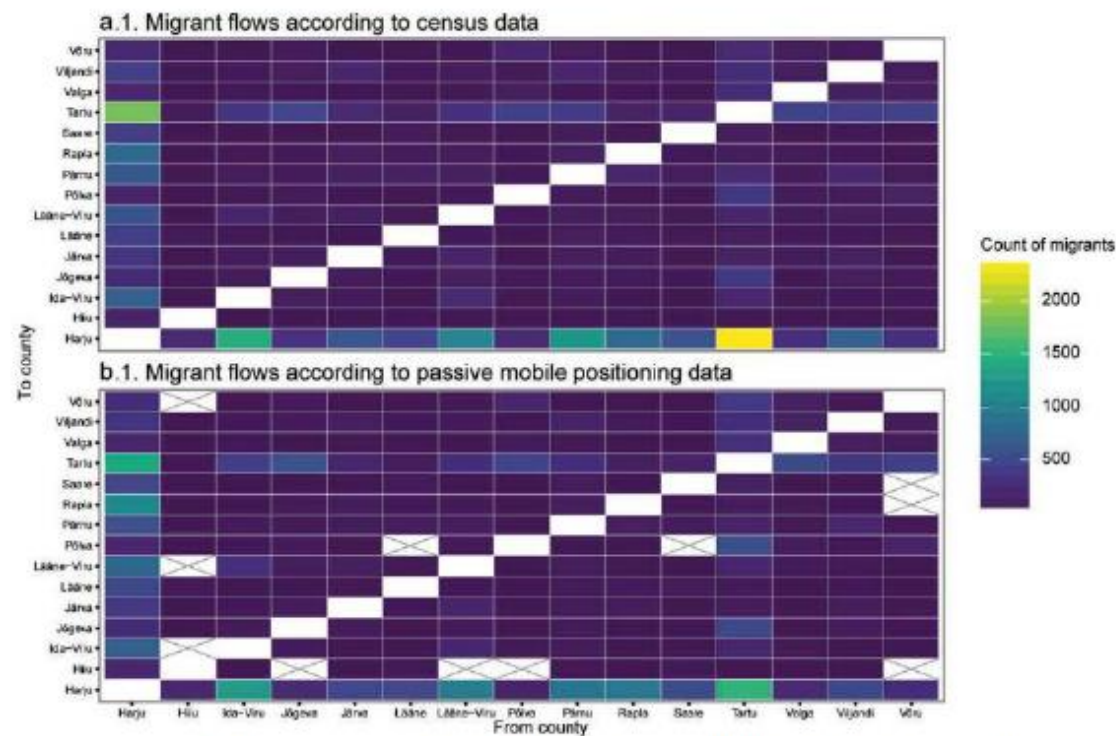
# CASE STUDY: ESTONIA (INTERNAL MIGRATION)

## Process



Kamenjuk et al. (2017) Mapping changes of residence with passive mobile positioning data: the case of Estonia <https://doi.org/10.1080/13658816.2017.1295308>

## Results



Comparison of flows for internal migration between counties in Estonia according to census 2011 and MPD during the period 2010–2011. N= number of migrants between counties (LAU level 1).



United Nations

Statistics Division

# UN COMMITTEE OF EXPERTS ON BIG DATA AND DATA SCIENCE

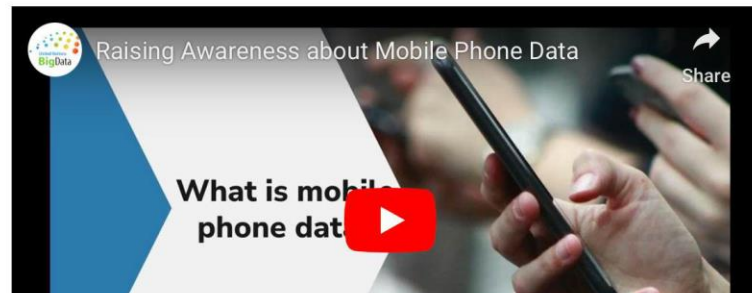
[ABOUT](#) ▾[EVENTS](#)[TASK TEAMS](#) ▾[HUBS](#) ▾[UN GLOBAL PLATFORM](#)

## Mobile Phone Data

Task Team of the UN Committee of Experts on Big Data and Data Science for Official Statistics

[Home](#) > [Task Teams](#) > [Mobile Phone Data](#)

### About Mobile Phone Data



### Methodological Guides on the use of Mobile Phone Data (2022)

- [Displacement and Disaster Statistics](#)
- [Dynamic Population Mapping](#)
- [Measuring the Information Society](#)
- [Migration Statistics](#)
- [Tourism Statistics](#)
- [Transport Statistics](#)



United  
Nations

Statistics Division



# GUIDANCE ON MOBILE PHONE DATA FOR MIGRATION STATISTICS

UN Statistics Wiki

Spaces

Search

Methodological guide on the use of mobile phone data: Migration Statistics

Pages

Blog

PAGE TREE

Box, Tables and Figures

Abbreviations

Introduction

1. Background and context

2. Basic considerations when using MPD

3. Literature Review

4. Data sources and types

5. Methods

6. Quality assurance in using MPD

7. Conclusions

Glossary

References

Space tools

## Methodological guide on the use of mobile phone data: Migration Statistics

Created by Clarence Lio (UNSD), last modified by Francisco Rowe on Oct 20, 2024

The *Handbook on the Use of Mobile Phone Data (MPD) for Migration Statistics* aims to provide practical guidance on how to collect the statistics on internal and international migration using information from Big Data in compliance with the new United Nations (UN) recommendation on migration Statistics. It reviews the MPD as an alternative (non-traditional) source for generating and/or filling the gap in migration statistics. This *Handbook* is part of a series of five (5) handbooks developed by the UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD) Task Team on MPD which are designed to guide countries who plan to use MPD for statistics and indicators in displacement and disaster, information society, dynamic population, migration, and tourism.

The preparation of this handbook was led by the National Statistics Office of Georgia with technical support and guidance from the United Nations Statistics Division and the UN-CEBD Task Team on MPD.

The handbook aims to inform the statistical data users and producers about the opportunities of using Mobile Positioning Data (MPD) to produce migration statistics. This present Handbook represents information on the data sources, MPD quality issues, and other aspects, as well as methods (concepts, definitions, data processing algorithms, and quality assurance), results, and findings.

This Handbook has been prepared by the MPD Task Team Migration Statistics Subgroup led by Francisco Rowe (University of Liverpool), with support from Mariana Jalagonia (NSO Geostat), Siim Esko (Positium), Samantha Watson (Flowminder), Elena De Jesus (UNSD), Ronald Jansen (UNSD), Francesca Grum (UNSD), Marzia Rango (UNOCC) and Michele Vespe (EU-JRC).

The authors express their gratitude to Professor James Raymer and María Isabel Cobos Hernandez

Methodological Guides on the use of mobile phone data

- Displacement and Disaster Statistics
- Dynamic Population Mapping
- Measuring the Information Society
- Migration Statistics
- Tourism Statistics
- Transport and Commuting

Also dynamic population mapping, tourism, transport



United Nations

Statistics Division



# GUIDANCE ON DATA INNOVATION FOR MIGRATION POLICY

Why and how non-traditional data sources can contribute to better understanding migration-related phenomena

- (a) practical and technical aspects of using data innovations in migration statistics
- (b) added value of using new data sources and innovative methodologies to analyze migration phenomena difficult to measure using traditional data sources
- (c) good practices in addressing issues of data access and collaboration with multiple stakeholders, ethical standards, and security and data protection issues



# MOBILE PHONE DATA PROJECTS



<https://cros.ec.europa.eu/landing-page/multi-mno-project>



<https://www.worldbank.org/en/programs/global-data-facility/brief/putting-mobile-phone-data-to-work-for-policy>



United Nations

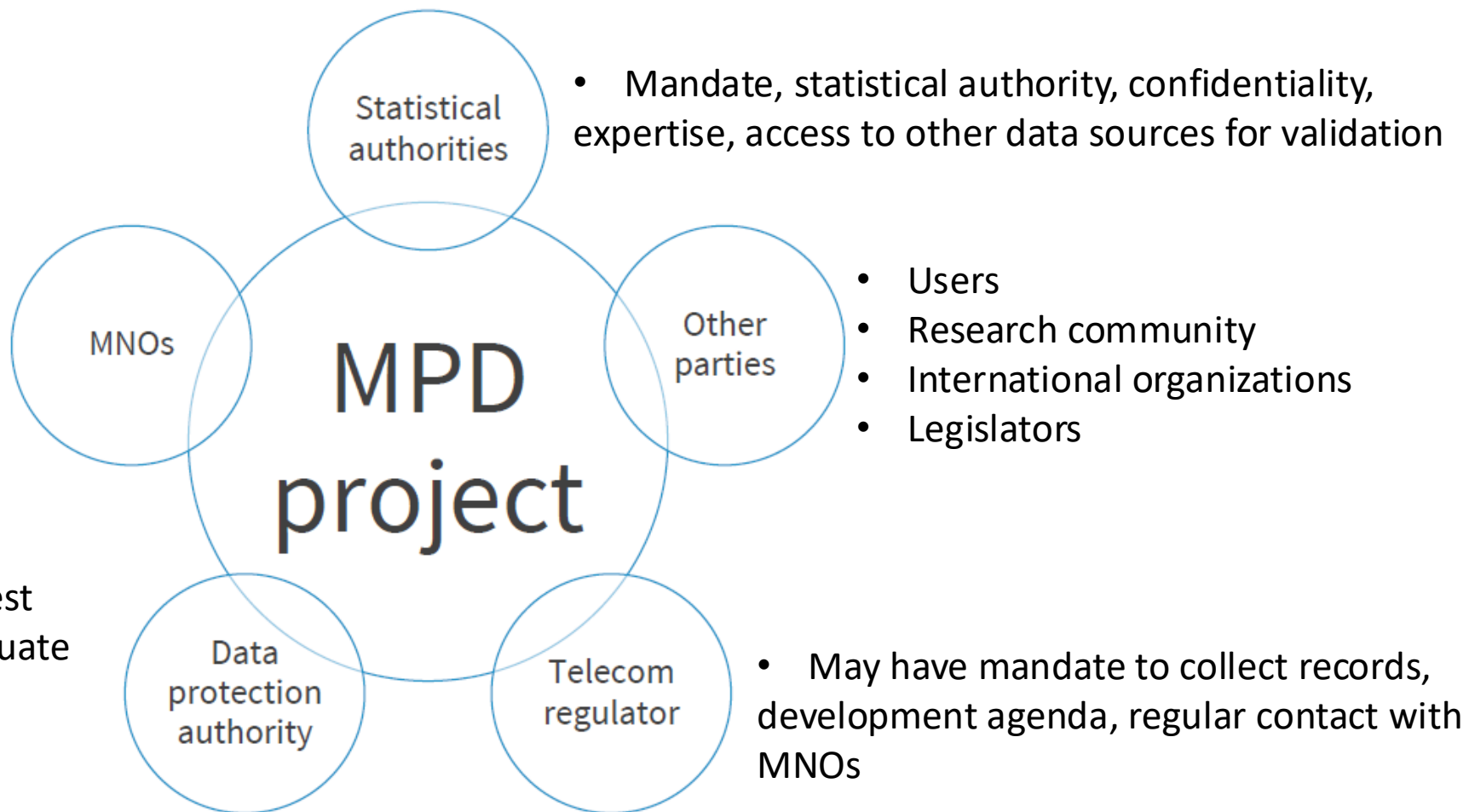
Statistics Division

# EMBARKING ON MOBILE PHONE DATA USE FOR STATISTICS



- Data holder, IT expertise, knowledge of MPD data source, corporate responsibility, image, profits

- Balance between public interest and privacy preservation, evaluate data protection measures, enhance public trust

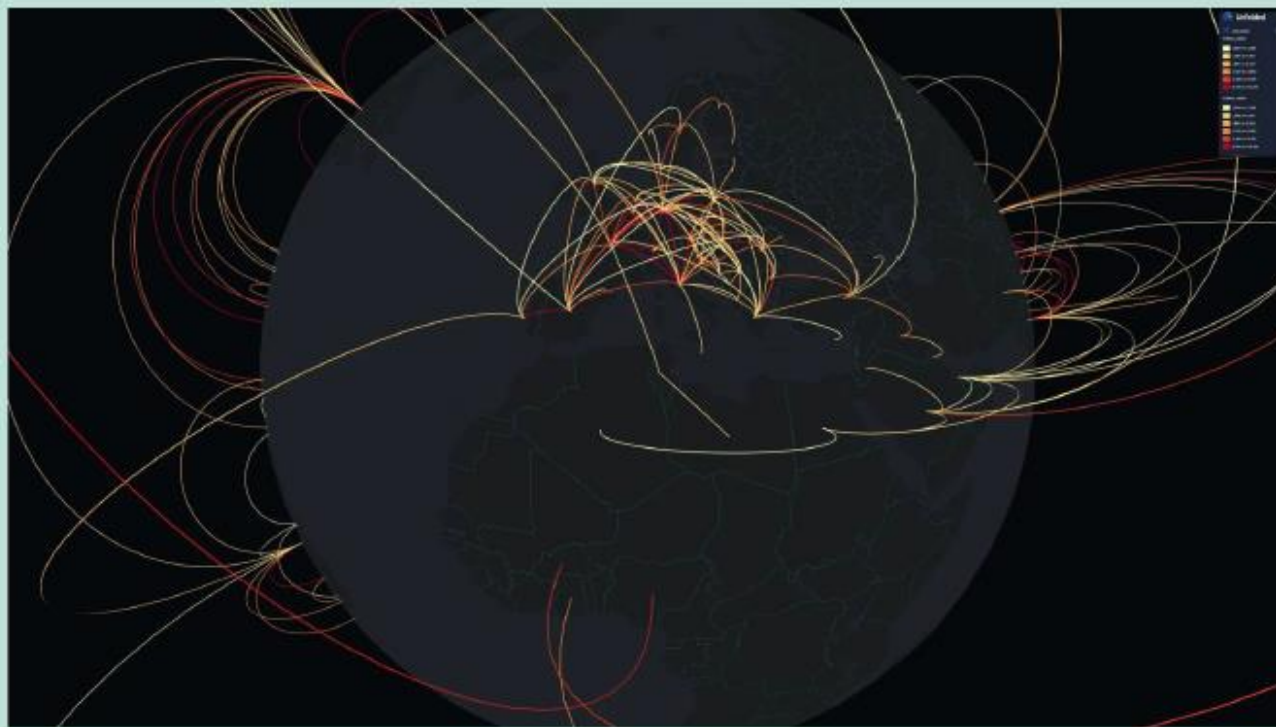




# SOCIAL MEDIA DATA

## Data for Good Visualization

Travel Patterns show comparisons of the number of Facebook location history users moving across long distances, like cross-country air or train travel.



Meta

Data for Good

About

Data

AI Models

Social Capital

Impact

We empower partners with privacy-preserving data that strengthens communities and advances social issues.

Data for Good is helping organizations respond to crises around the world and supporting research that advances economic opportunity.

### Step 1: Pull location data

We use GPS location updates for Facebook mobile app users who have opted into sharing location data.

### Step 2: Aggregate data to country level

We only look at the country in the location data.

### Step 3: Count users who changed country

For each day, we count the number of Facebook users who moved from country A to country B and vice-versa.



United  
Nations

Statistics Division



# THANK YOU!

---