Mobile Positioning Data for Tourism Statistics

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Positium
Mobile devices are used constantly

Geographical footprints in databases of Mobile Network Operators (MNOs)

Processing the data produces collective anonymous statistics

People mobility data: collective location & movement flows

Insights about visitors and residents

Mobile Positioning Data (MPD)
Potentially relevant big data sources for tourism statistics

**Communication systems**
- Mobile network operator data
- Smart mobile devices data
- Social media posts

**World Wide Web**
- Web activity
- Dynamic websites
- Static websites

**Business process generated data**
- Flight booking systems
- Stores cashier data
- Financial transactions

**Sensors**
- Traffic loops
- Smart energy meters
- Satellite images

**Crowd sourcing**
- Wikipedia contents
- Picture collections

Source: Eurostat Tourism Statistics Discussion Paper
International Cooperation on Mobile Data
Eurostat: Feasibility Study

Study to fully address most technical, legal and quality-related issues that may surround the use of data stored by mobile network operators for official statistics. Aim to align the definitions and methods to follow statistical principles and Eurostat/UNWTO guidelines for tourism statistics.

Contains:

**Report 2 - Feasibility of access**
Opportunities and obstacles to gain access to passive mobile positioning data from mobile network operators

**Report 3a – Feasibility of use, methodological issues**
Methodological issues linked to the use of mobile positioning data for tourism statistics and, where possible, assesses their impact and discusses solutions.

**Report 3b – Feasibility of use, coherence**
Quantitative coherence/correlation with traditional sources

**Report 4 – Opportunities and benefits**
Assessment of five different perspectives: quality, cost, access to new indicators, synergies, and transmission.

[Link](https://ec.europa.eu/eurostat/web/tourism/methodology-and-studies)
UN: Methodological guide on the use of mobile phone data: Tourism Statistics

Can be used as reference or guidance for countries that want to implement MPD as one data source in Tourism Official Statistics

Contains:

- Methodologies
- Quality Assurance
- Case Studies

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Link: https://unstats.un.org/wiki/display/MPDTS
MPD Use Globally (Positium)
Countries using mobile phone data analytics to support the COVID-19 response

Source: GSMA

## MPD use in Tourism Statistics Globally

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MPD Ecosystem: From Data to Benefits

- Anonymise
- Clean data
- Interpolate
- Methodology
- Quality Assurance
- Aggregate
- API/Dashboards

Output
- Destinations
- Movement
- Time Spent
- Origin

Benefit
- Determine key attractions
- Understand tourist paths
- Understand all origin markets
- Analyse hubs
Benefits of MPD

CENTRAL BANK OF ESTONIA – MPD since 2008

- 4x faster
- 200x sample size
- 12x countries breakdown
- 2.5x more cost-efficient
- 100% less burden on tourists

Compared to surveys
Better Geographical Granularity

Calculate indicators for destination level

Spatial aggregation:
National, LAU-1, LAU-2, adaptive grid

Aggregation from Positium Data Mediator to adaptive grid that depends on the level of activity in the area
New Aggregation Possibilities

Temporal aggregation:
Day, week, month, quarter, year

Data can be output daily and by country for further analysis (e.g. impact of events in the region)

Daily cross-border visitor arrival data by area from Positium Data Mediator running in Indonesia
Sultanate of Oman

Salalah area visitors comparison (tourism census survey and MPD)
21 June 2018 = 100, correlation 96.2%

visitors (survey)

visitors (MPD)
Tourism Flows

Tourism flows from destination to destination are made available in the form of Origin-Destination matrices by country of origin. Further breakdown possible for before/after visit.

“Tourism flows were particularly valuable to us, as we got to know where people come from and where they go.”
– Tourism promoter
German tourists behave differently in different areas of Oman

**German tourists in wilayat Khasab**

Large number of trips, but small number of spent nights. This is caused by cruise ships.

**German tourists in wilayat Salalah**

Large number of trips and spent nights. Stable number of tourists who spend the night.
Cost-Effectiveness

BPS STATISTICS INDONESIA – MPD since 2017

8000 enumerators → 8 data scientists
Summary

1. International community supports MPD adoption
2. MPD has benefits compared to other data sources
3. The opportunities overweight the disadvantages

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