Experimental statistics using Mobile Network Data

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Research in New Digital Data
Why we do „experimental statistics“

» Term used for statistics, that need further development to reach the standards on quality for our official statistics

» Allow us to explore potential new data sources and methods or to publish ad-hoc analyses on relevant topics

» Results as well as detailed reports on methodology are published on a distinguished section on destatis.de
Publications

» EXSTAT
   » Platform used to publish results and reports on innovative projects

» Dashboard Deutschland
   » Dashboard containing indicators on different topics, feeding from official as well as experimental statistics
Mobile network data in Germany

» Projects with MND at Destatis since 2017

» Areas of research:
  » Population
  » Mobility / Traffic
  » Tourism
  » Labor market
  » Environment

Source: Bundesnetzagentur, based on the number of reported SIM cards

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Market shares per MNO in Germany
3rd Quarter of 2022

- Telekom: 41%
- Vodafone: 31%
- Telefónica: 28%
Project „Pendler Mobil“

» Goal was to explore the potential use of MNO Data to support the official statistics on commuters

» Origin-destination matrices based on MNO data are promising due to their spatial and temporal resolution

» However, the experimental statistics based on MNO data underestimated the absolute number of commuters

» There is a trade-off between the identification of certain population groups in MNO data (e.g. commuters) and the preservation of the information included
Project „VerBindungen“

» Project backed by the Federal Ministry for Digital and Transport

» Consortium consists of government institutions, universities and MND providers

» Goal is the development of methods to improve certain qualitative aspects of MND (e.g. extrapolation, resolution) in the context of transportation planning

GOAL

Further development of MND for transportation policy and planning

Combination of official and private data sources

2020 to 2023
Mobility indicators

» Indicators were developed as a highly available source of data during the early months of the COVID-19 pandemic

» Mobility indicators were combined with different additional data sources, e.g. incidence rates

» Provided insights into the effects of different policy measures, e.g. „lockdowns“
The German „9-Euro-Ticket“

The „9-Euro-Ticket“ was available between June and August 2022 and allowed the usage of all public transport.

Destatis published analyses based on the means of transport identified by the data provider.

MND supported the ad-hoc evaluation of this experimental policy measure.

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A closer look at the „9-Euro-Ticket“

» Combination with official data on tourism and other data sources provided interesting insights

» Data contains several restrictions, e.g. only journeys of 30 kilometers or more are classified

Change in mobility in rail transport, by region and level of tourism, on 2019
Distances of 30 kilometres or more, percent, 7-day average

Note: Regarding the 7-day average only the data available for the 7-day period are used to calculate the average. Data gaps usually occur because of technical problems on the part of the mobile network operators. Sources: own calculation I Sironalics
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Summary

» The data-generating process is a black-box that is slowly being lifted
  » Project „AnigeD“ at Destatis aims at the establishment of a MND production „pipeline“ that is as transparent as possible

» MND is in need of transparent validation methods
  » Follow-up to the project „VerBindungen“ is planned that aims at improving the estimates of commuters, train passengers etc.

» Access to the data requires resources and time
  » Regulated access to MND needs to be established before any implementation into the production of official statistics
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