



EUROPEAN CONFERENCE ON
QUALITY IN OFFICIAL STATISTICS
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Enhancing the Quality of Mobile Network Operator Data - Using Traditional Surveys to Address Biases

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Introduction

- Mobile Network Operator (MNO) Data
 - Increasingly popular for producing statistics on individual mobility and position.
 - High frequency and coverage, valuable for policy making and market analysis.
- Challenges with MNO Data
 - Multiple sources of bias compromise data quality and reliability.
 - Need for improved methodologies to address these biases.



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Current Challenges with MNO Data

- Device-User Mismatch
 - Contract holder not always the primary user.
 - Issues with family plans and business contracts.
- Multiple Devices/SIM Cards
 - Duplication in records, skewed usage statistics.
- Different User Behaviours
- Variations due to age, employment status, lifestyle.



Need for a Dedicated Survey

- Purpose of the Survey
 - Systematically collect data on device usage, user profiles.
 - Identify and correct biases in MNO data.
- Survey Objectives
 - Determine the number of devices/SIM cards per individual.
 - Quantify discrepancies between contract holders and users.
 - Analyse usage patterns across demographics.
 - Collect comprehensive socio-demographic data.



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Survey Design and Implementation



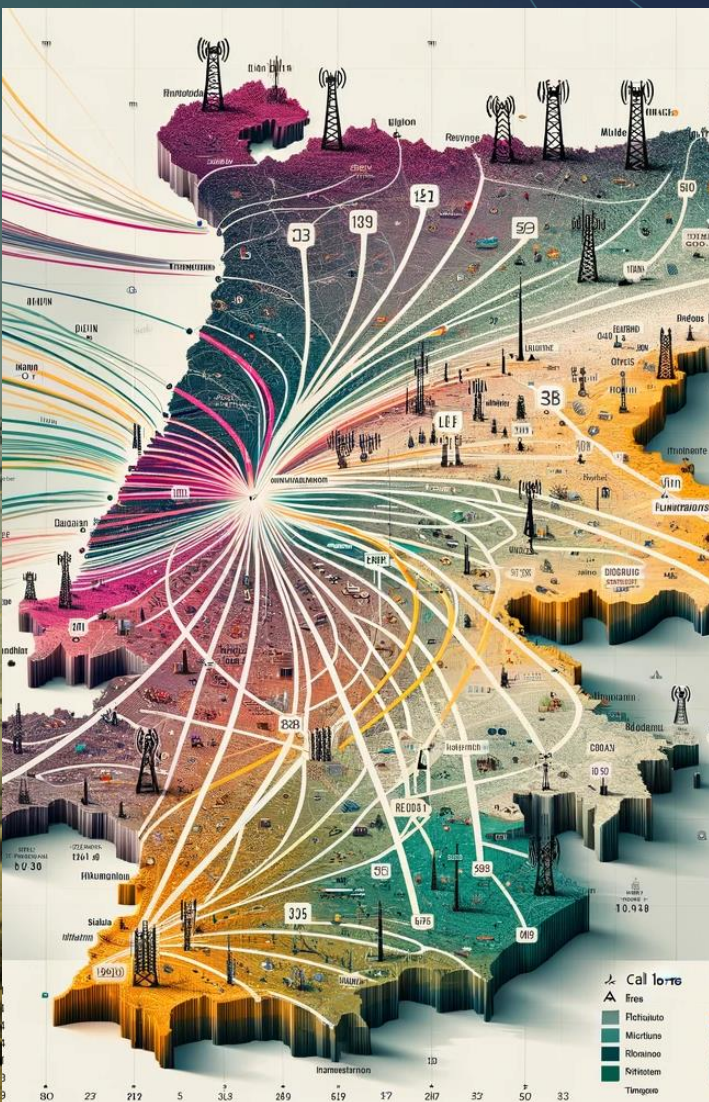
- Questionnaire Design
 - Core module with potential extensions for specific domains.
 - Sections:
 - Device and SIM Card Usage
 - Contractual Relationships
 - User Demographics and Lifestyle
- Sample Design
 - Target individuals of legal age (e.g., 16+ in Austria).
 - Random sampling, with stratification for representativeness.
 - Oversampling to address response behaviour differences.





Expected Outcomes and Implications

- Improved Data Quality
 - Enhanced representativity of MNO data.
 - Accurate assessments of user behaviours and demographics.
- Policy and Decision Making
 - Reliable data for informed policy decisions.
 - Benefits for mobile operators and statistical practices.





Alternative Approaches

- Area Sample Surveys
 - Sampling based on geographical areas (antennae).
 - Consideration of technical and legal challenges.
- Quasi-Randomization
 - General selection model for representativity.
 - Overcomes sample survey limitations (cost, response burden).



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Conclusion

- Survey Necessity
 - Quantifying and reducing biases in MNO data.
 - Aligning user behaviours with statistical models.
- Implementation Across ESS Countries
 - Advocating for widespread adoption.
 - Collaborative effort for improved data quality and reliability.



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Thank you. Just three more things.



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- The 2024 UNECE Expert meeting on Statistical Data Editing will occur in person in Vienna, Austria.
- It will go from **7 to 9 October 2024.**



Word Cloud for Statistical Data Editing



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2. it is confirmed to be used in the production of official statistics by at least one institute or it provides access to official statistics publications.

We prefer packages that are easy to install and use, have at least one stable version, and are actively maintained. [Contributions](#) are welcome.

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An awesome list of statistical software for creating and accessing official statistics

Contributors



Working together

Contributions

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- Add an item to the [issue tracker](#) issue tracker. (you need a GH account)
- Send an e-mail to [mark dot vanderloo at gmail dot com](mailto:mark.vanderloo@gmail.com) or olav dot lenseth at gmail dot com or tweet [@markvdloot](https://twitter.com/markvdloot)

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