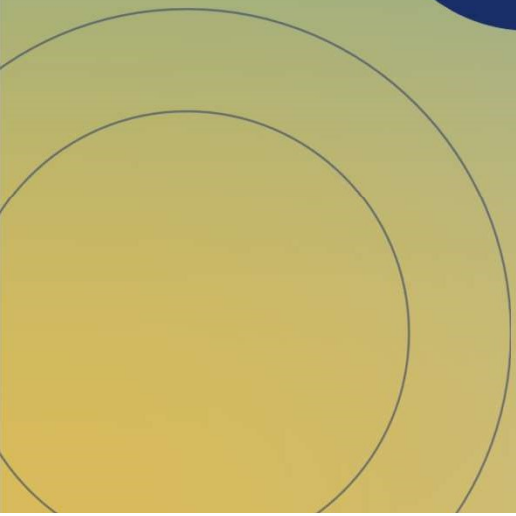
EUROPEAN CONFERENCE ON QUALITY IN OFFICIAL STATISTICS

2024 ESTORIL - PORTUGAL



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AnigeD

Anonymization of Integrated and Georeferenced Data (AnigeD)

Jannek Muehlhan

Federal Statistical Office Germany (Destatis)

05.06.2024

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Agenda

(1) Competency cluster AnigeD

(2) Research priorities

(3) Anonymization methods of georeferenced Data

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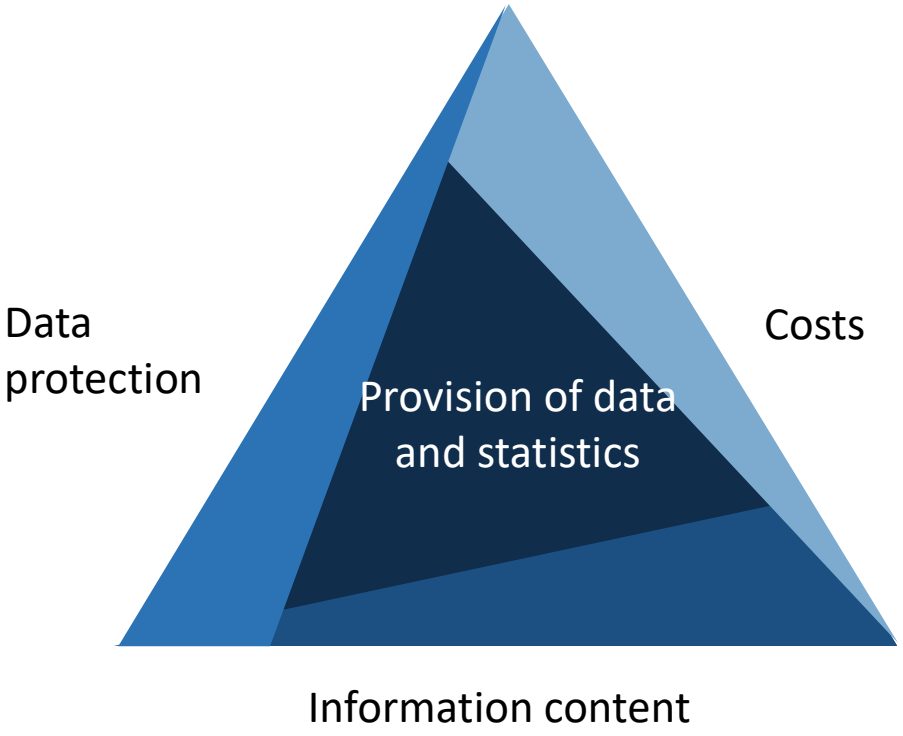
Initial situation



- Federal Ministry of Education and Research (BMBF) initiates nationwide “Anonymization for Secure Data Use” research network
  - Individual research projects and collaborative projects (competency clusters) are funded for three years
  - financed by the European Union – NextGenerationEU

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Research Network

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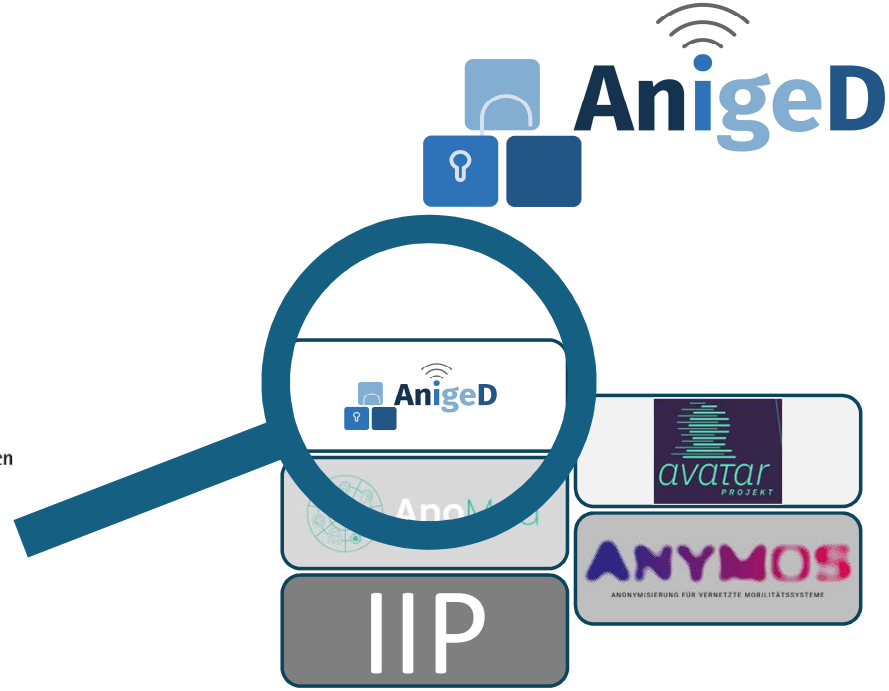
AnigeD Cluster



Technology
Arts Sciences
TH Köln

DESTATIS
Statistisches Bundesamt

Deutsche Universität für
Verwaltungswissenschaften
Speyer

IAB INSTITUT FÜR ARBEITSMARKT- UND BERUFSFORSCHUNG
Die Forschungseinrichtung der Bundesagentur für Arbeit

AnigeD

Freie Universität Berlin

MAX PLANCK INSTITUTE
FOR SOFTWARE SYSTEMS

UNIVERSITÄT
DUISBURG
ESSEN

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Research priorities AnigeD

- Evaluation of anonymization methods using legal criteria
- Potential of anonymization by synthetic data
- Anonymization of georeferenced data
- Testing of software tools for the efficient analysis and provision of anonymized, georeferenced data

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Evaluation of anonymization methods using legal criteria

- **Procedure:**
  - Analysis and deconstruction of existing approaches towards the assessment, as outlined by the regulations, regarding the ability to identify the natural or legal person behind the data
  - (Re)construction of an identifiability assessment based on the idea that there is a permanent general risk of a third person already having some knowledge about the person concerned
  - Taking into account the scientific and technical state-of-the-art in other disciplines such as information science and statistics

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Potential of anonymization by synthetic data

- **Procedure:**
  - Comparison of procedures from statistics and informatics
  - Systematic evaluation of anonymization and quality criteria
  - Analysis and methodological refinement of synthesis procedures
  - Evaluation of synthetic data acceptance by the scientific community

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Anonymization of georeferenced data

- **Procedure:**
  - Design and setup of the testing environment at Telekom and creation of secure interfaces for further work
  - Design and testing of methods for (further) anonymization and processing of mobile network data at the data provider’s
  - Adequate methods to protect individual statistical units while maintaining the highest analysis potential possible
  - Improvement of ways to access data

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Analyzing open software tools

- **Procedure:**
  - Evaluation of the benefits of anonymized georeferenced data and their limitations
  - Development of statistical procedures which account for the anonymization process and also provide for typical ways of processing georeferenced data
  - Improvement of the Open Diffix tools through experiments using actual cases of application

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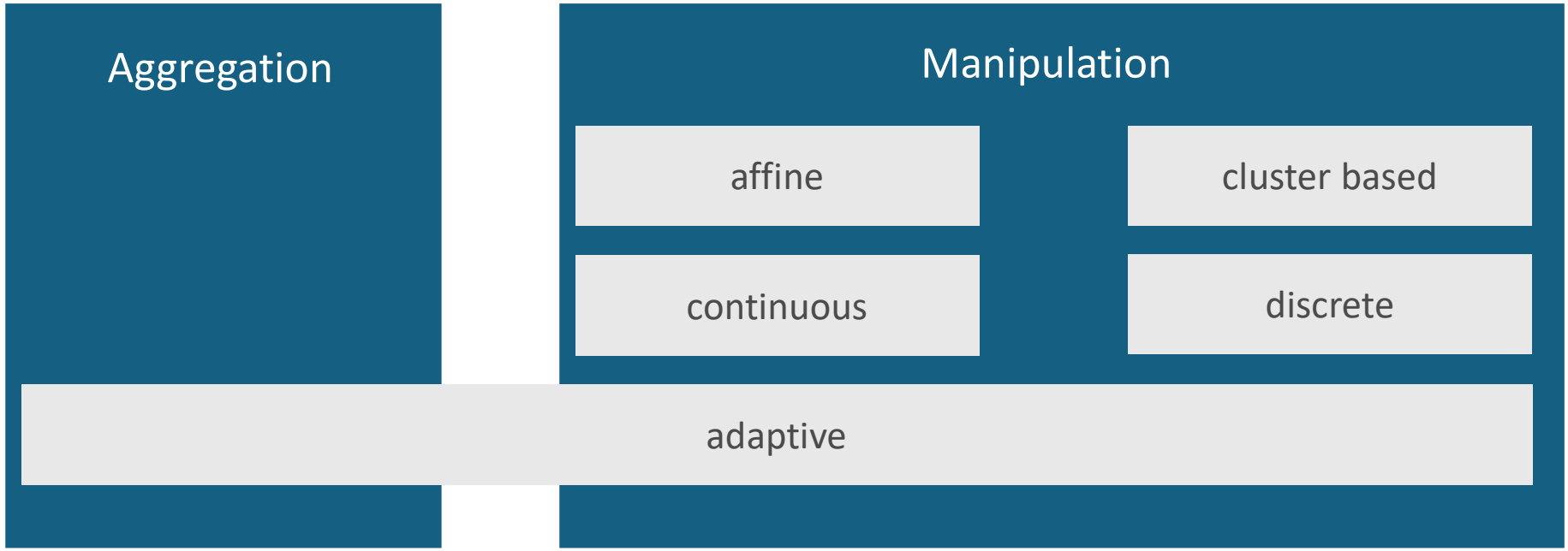
Geomasking



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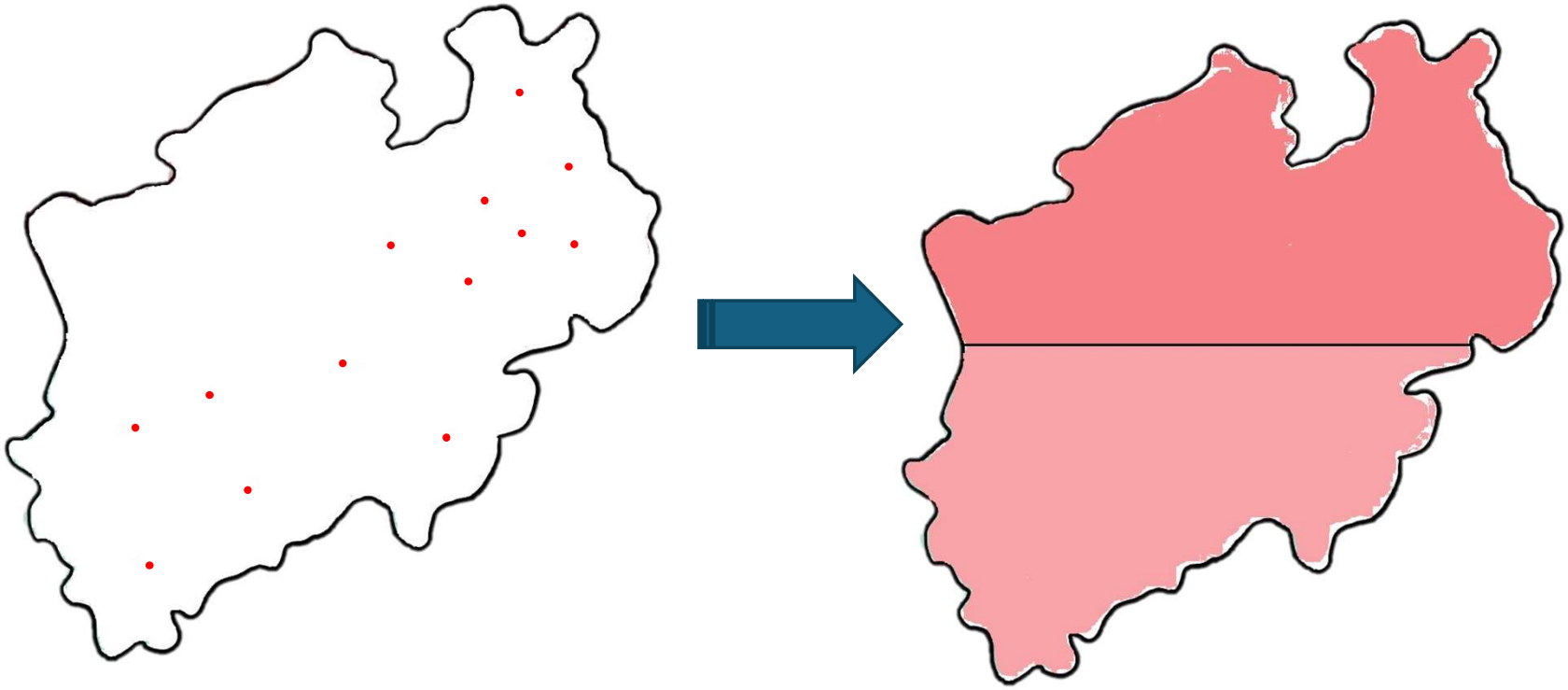
Aggregation



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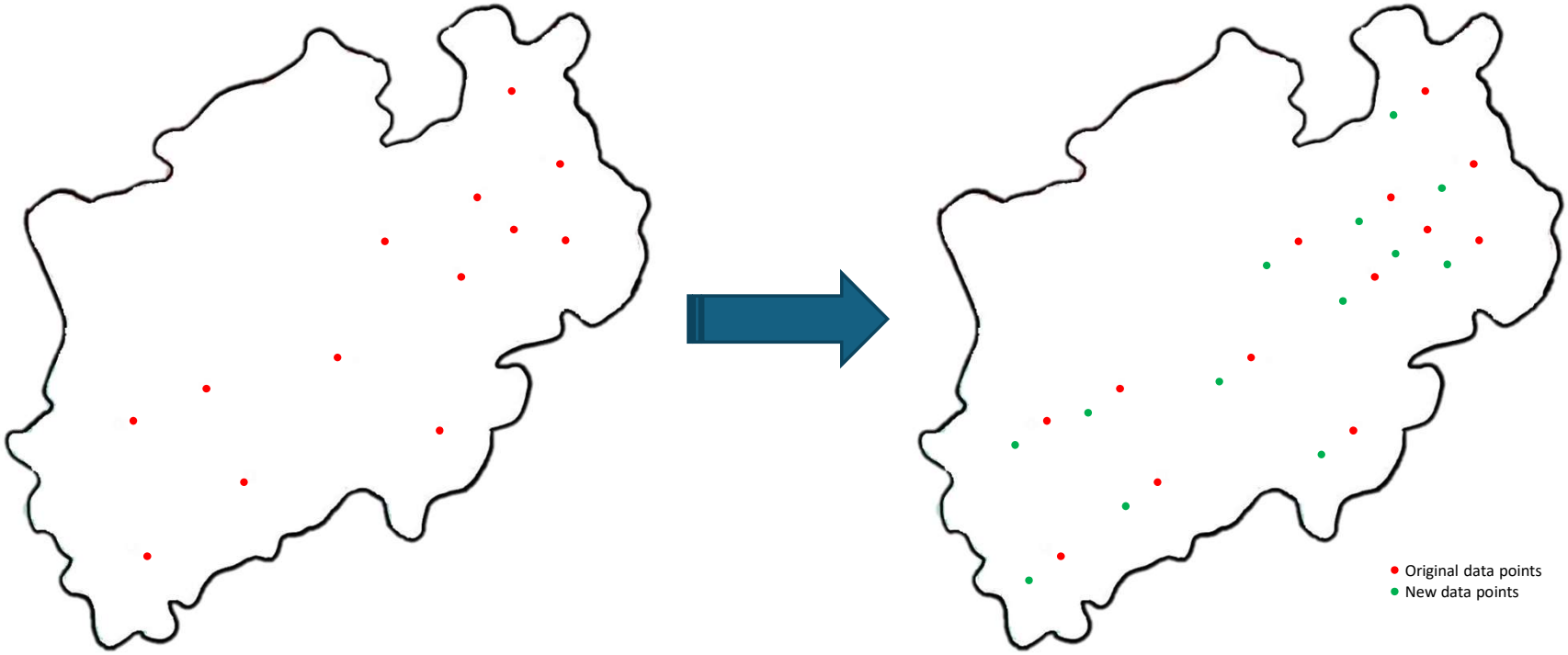
Manipulation: affine



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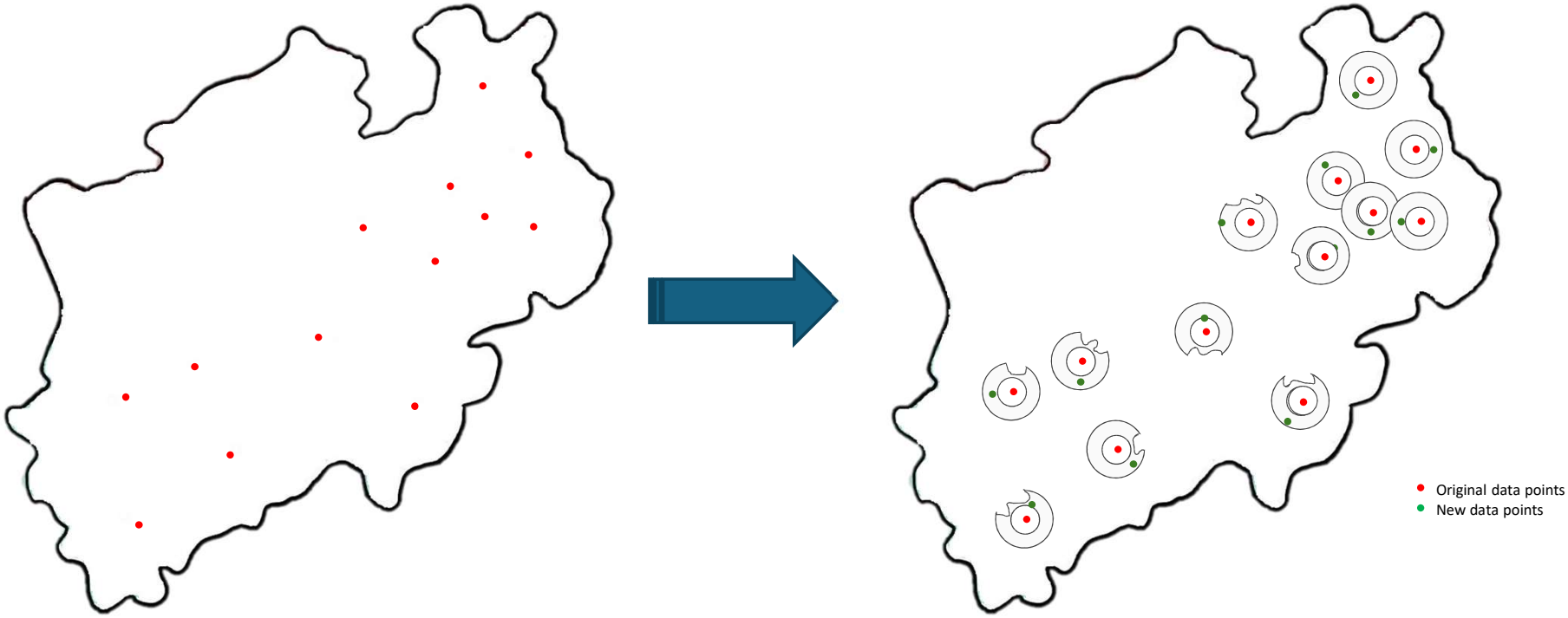
Manipulation: continuous



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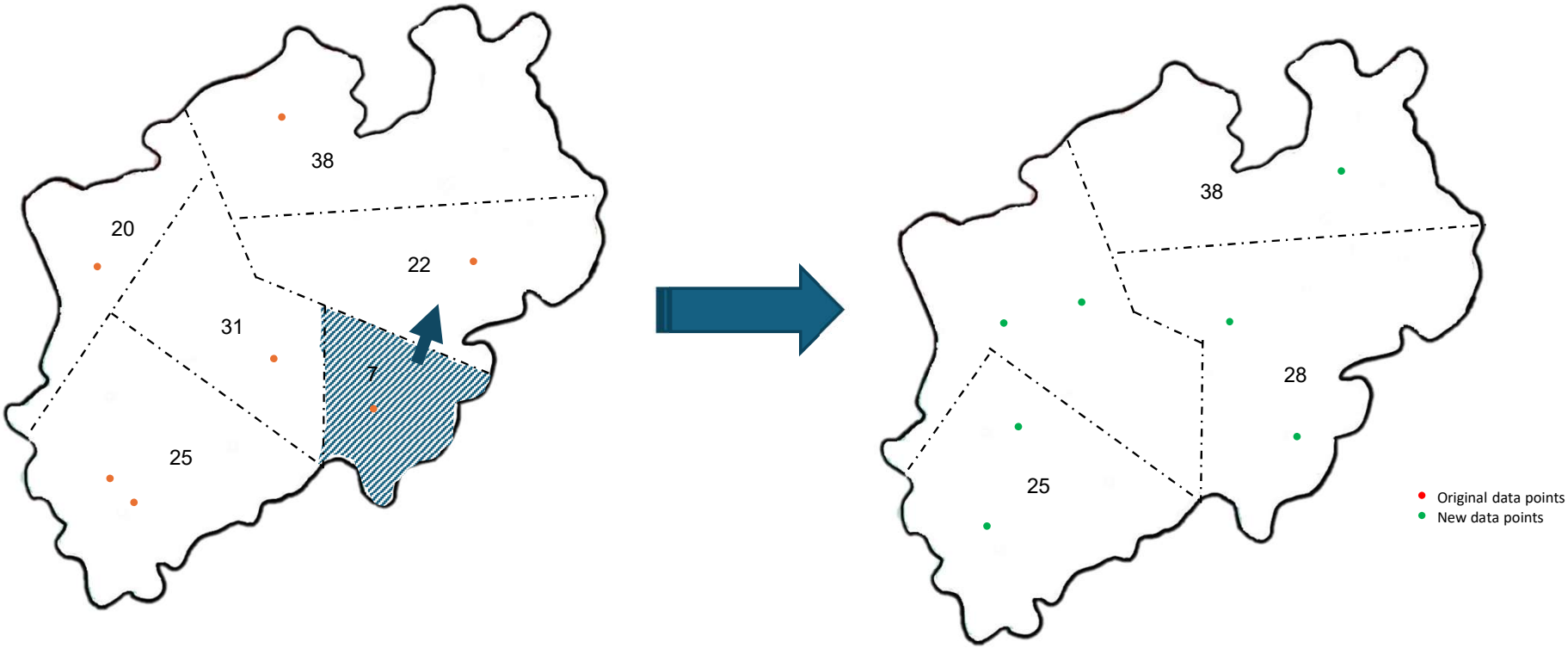
Manipulation: cluster based



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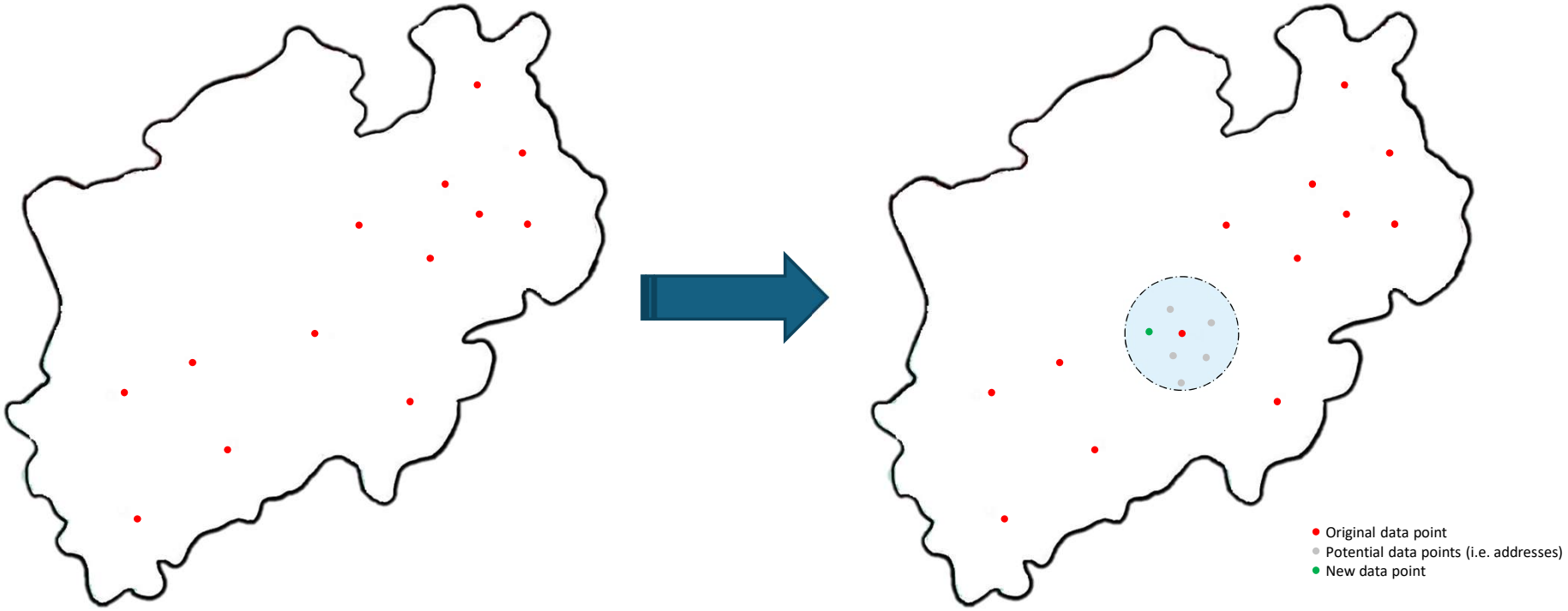
Manipulation: discrete



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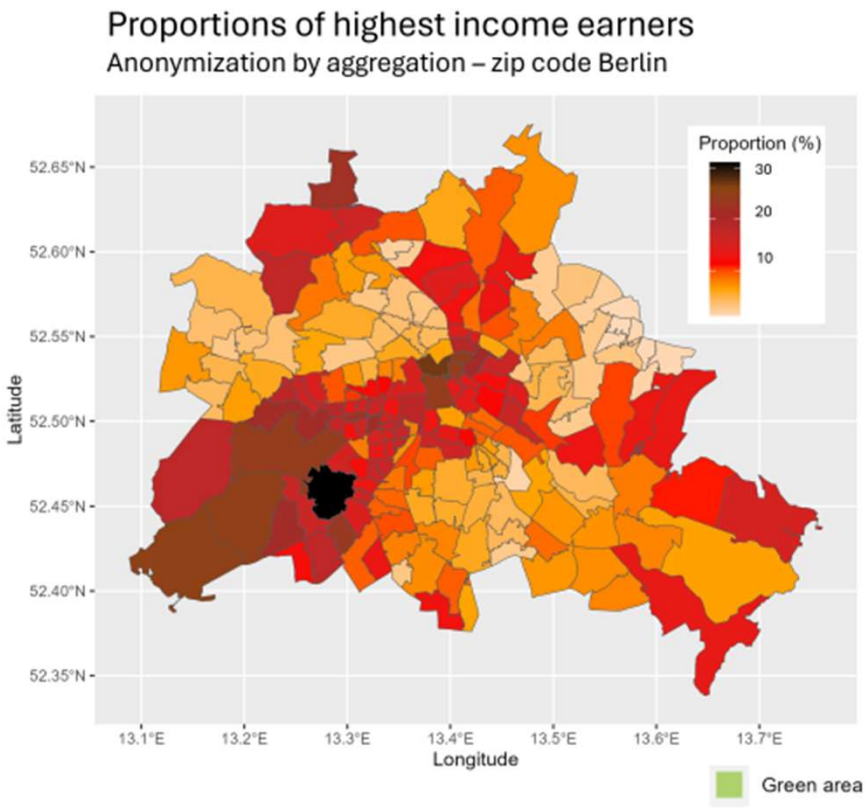
Geomasking: Kernel Heaping



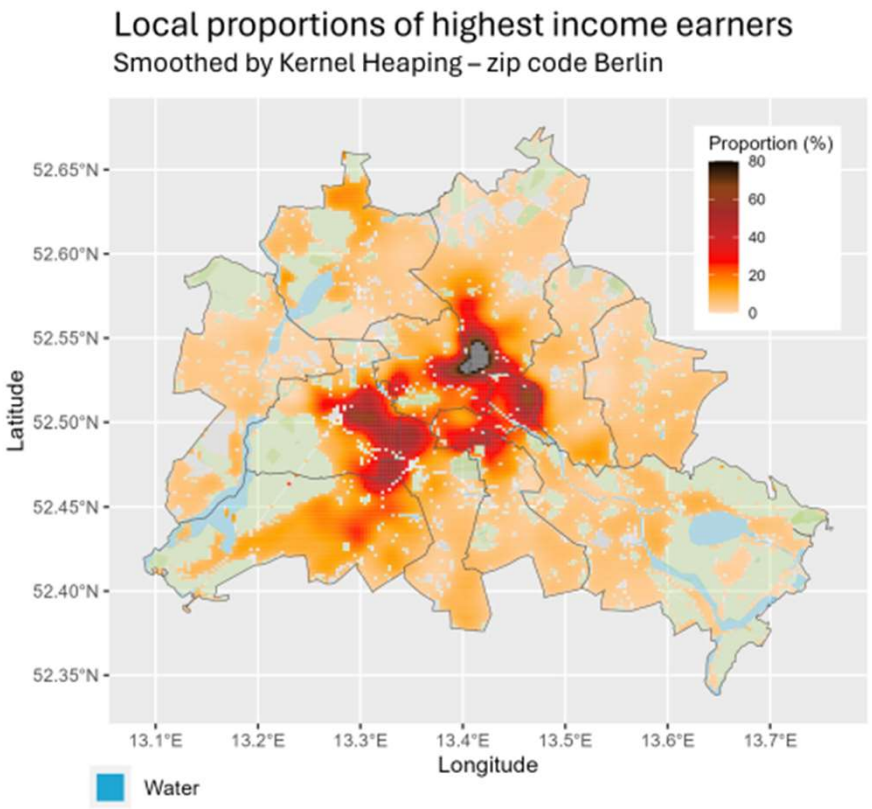


Illustration by Lorena Gril and Ulrich Rendtel (FU Berlin) based on Tax-Payer-Data of Berlin

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Conference on Anonymization of Integrated and Georeferenced Data

AnigeD

- 7 - 8 October, 2024 in Berlin // Spreespeicher and virtual
- Extended submission deadline for Abstracts: 14 June, 2024

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Thank you!

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