Improving the quality of official statistics with geographical disaggregation based on dasymetric mapping: Two Eurostat experiments on tourism and population statistics

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Key message

- Geographical granularity as a crucial component of quality
  - Need for statistics defined at relevant spatial levels
  - Go beyond country level data!

- Opportunity of using geospatial data and dasymetric mapping for geographical disaggregation

- 2 experiments:
  - Tourism statistics
  - Population statistics with mobile phone and cadastral data
Problem: Strong regional disparities within European countries are not shown. Possible misleading interpretation of these figures.
Corine Land Cover dataset

Belgium PICC dataset
Statistical data + Geospatial data = !
Geographical disaggregation with dasymetric mapping

See also (Mennis, 2009; Gallego, 2011; Li, 2011; Zandbergen, 2011; Stevens, 2015; Pavía, 2016, Batista, 2018)
And (Tobler, 1979; Kim, 2010; Petrov, 2012)
First experiment: Tourism statistics

- Statistics on "Number of nights spent at tourist accommodation establishments" (Eurostat database tour_occ_nin2).
  - Annual
  - NUTS 2 level
  - By accommodation type
Multinet dataset on POIs around Copenhagen

Point of interest (POI)
- Hotel
- Campsite
- NUTS 3 boundary
First experiment: Tourism statistics

Eurostat data - NUTS 2

Multinet dataset

Eurostat data - NUTS 3

Eurostat data – 10km grid
A new map of European tourism?

NUTS 2

NUTS 3 outcome
2015 – Number of nights spent at hotels
2015 – Number of nights spent at hotels
Second experiment: Population statistics with mobile phone and cadastral data

- Mobile phone data: High potential for population dynamics (Ahas, 2015; Deville, 2014; De Meersman 2016; Kamenjuk, 2017)
- **Input data**: Mobile phone usage counts by reception zones (Proximus, over Belgium).
Total "livable" area by reception zone
Mobile phone usage by building
Result
Result (without building disaggregation)
Comparison with GEOSTAT 2011 population grid

Result

GEOSTAT 2011

Difference
Conclusion

• Geographical granularity can be improved with geospatial data and dasymetric mapping.

• 2 experiments:
  • Tourism statistics
  • Population statistics with mobile phone and cadastral data

• Many improvements are possible

• Source code available on: https://github.com/eurostat/EuroGeoStat
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Thanks!

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References


