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A proposal for building an infrastructure for European geospatial statistics

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What is geospatial statistics?

- The location, extent or spatial relations with other statistical units are the main characteristics.
- Can answer questions from a spatial perspective e.g. What is close? How many within a distance? How many per area?
- Geographical scale should respect the area of interest of users ('What is the situation in my neighbourhood or area of responsibility'?).
- Might be an intermediary result that is further aggregated to regional or national indicators
- Geospatial statistics is far more than maps!

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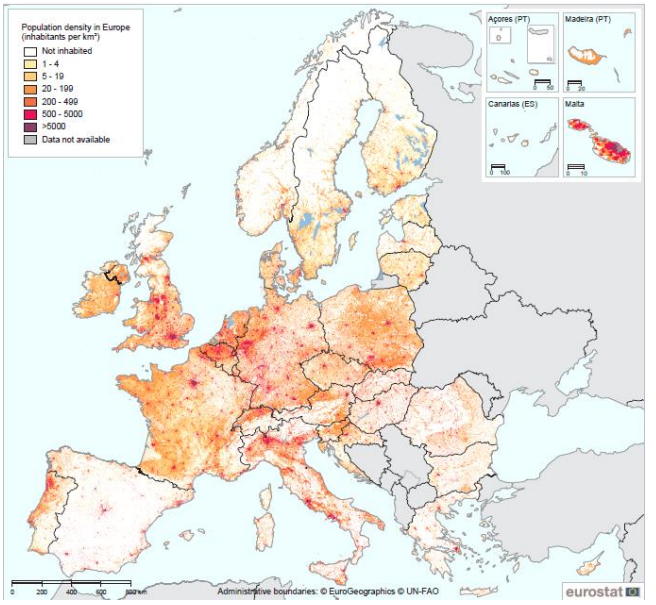

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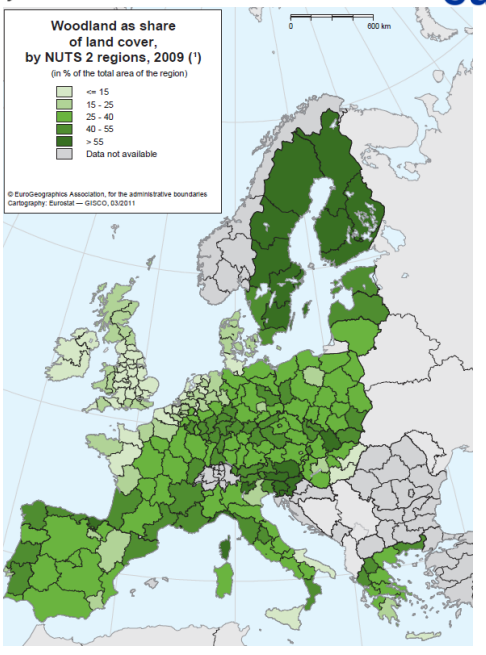

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Person	Sex	Age	Body Mass Index	Distance to Greenspace
1	F	30	19	0.25
2	F	28	32	2.01
3	M	42	27	0.36

Source Australian Bureau for Statistics

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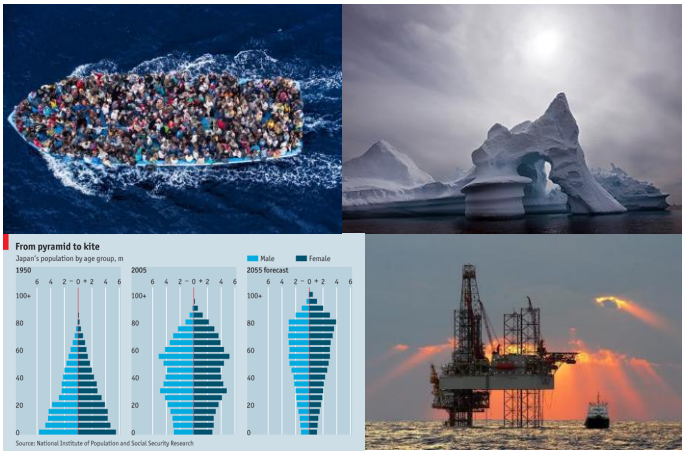
Solvable problems without geospatial statistics?



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Key drivers for more geospatial statistics

- Policy makers and businesses demand more location based information (from censuses, business statistics, socio-economic statistics, environment)
- UN 2030 Agenda for Sustainable Development – geospatial data needed to measure the progress and build indicators (e.g. to disaggregate indicators into urban and rural areas)
- Public authorities are obliged to share information – collect once and use many times (e.g. INSPIRE)

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NSOs and Mapping Authorities are responding

- Census – increased use of smart GIS technology for data collection and geocoding of the data for more detailed products, geocoded administrative data
- ESS Vision 2020 and HLG on Modernisation of Statistics – use of administrative, geospatial and other (Big Data) sources
- INSPIRE directive – more geospatial information, easier access
- UN-GGIM – an arena for cooperation between NSOs and Mapping Authorities

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Key elements of the Infrastructure for Geospatial Statistics

- Goal: Integration of geospatial information into the regular statistical production processes
- Based on the Global Statistical Geospatial Framework (currently under development by the UN-GGIM Expert Group on the Integration of Statistical and Geospatial Information)
- Systematic geocoding of unit record information
- Geospatial data management integrated into the GSBPM (draft proposal by ESS GEOSTAT 2 project)
- Flexible geographical output areas

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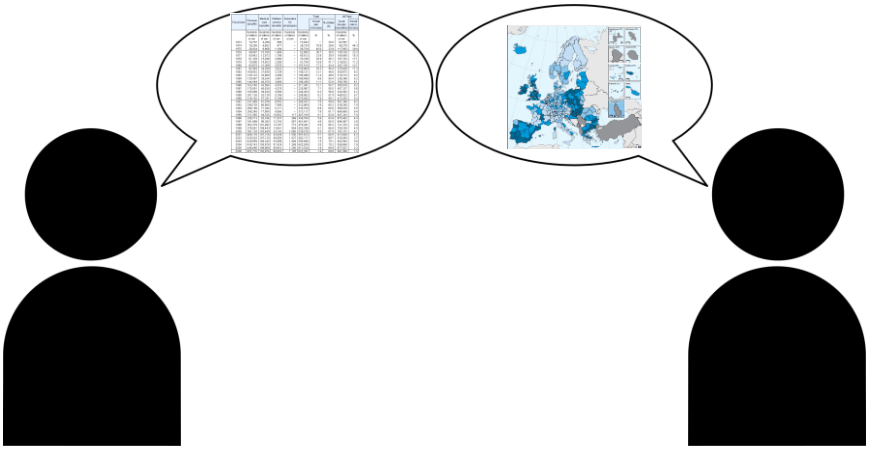
Conditions and challenges for building the infrastructure



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A realistic task

- Technical solutions for most issues around data integration exist
- National best practices demonstrate that an infrastructure for geospatial statistics can be incorporated into the process models of NSOs and into the business models of NMCAs
- The key success factor is a good cooperation between NSOs and Mapping Authorities

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Issue 1 – investments now, pack-back later

- Data integration requires initial investments that will only pay off in the long term
- While investments improving internal procedures are easier to justify, investments for the benefit of third parties are often not rewarded
- Demand for geospatial statistics as a driver for cross-institutional investments from policy makers is only emerging

⇒ No incentives for staff and managers to invest into data integration

⇒ Lack of awareness among managers of the benefits of data integration and cooperation

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Issue 2 – institutional arrangements between NSOs and Mapping Authorities

- Lack of involvement of NSOs in the implementation of geospatial data infrastructures
- Weak international governance of Mapping Authorities
- Currently no one requires NMCAs and NSOs to work together on international statistical projects
- Funding for geospatial statistics projects only available to NSOs
- Legal frameworks regulating the cooperation of NSOs and Mapping Authorities often insufficient

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Issue 3 – difficult access to geospatial data for NSOs

- Access to fundamental geospatial data often with various barriers (fees, legal restrictions, copyrights)
- Hampered access to alternative data sources such as Big Data for public authorities
- Geospatial data models not adapted to statistical needs

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Issue 4 – data protection

- Increased risk of disclosure with higher spatial resolution
- Lack of harmonisation of data protection methods makes cross-border comparison of data difficult

Issue 5 – resources and skills

- Geospatial skills and expertise still restricted to a few members of staff in many NSOs (production and analysis)
- Currently not enough incentives for staff to develop such skills

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How to make progress? – Operational recommendations

- Start implementing together with Mapping Authorities the forthcoming Statistical-Geospatial-Framework (Census and SDG monitoring as first applications)
- Geocode all person and household information to an address point in the Census 2020
- Extend guidelines and legislation on statistical disclosure control to geospatial statistics
- Together with Mapping Authorities align the production of geospatial data with the roadmaps of the census and SDG monitoring
- Involve Mapping Authorities more in the production of official statistics

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Organisational recommendations

- Systematically incorporate geospatial workflows into the GSBPM and the CPSA standards
- Promote the use of geospatial technologies
- Raise awareness among potential users for the benefits of geospatial statistics e.g. for monitoring the Sustainable Development Goals
- Reward staff and managers for innovation and advancing the topic
- Increase the geospatial literacy among NSO staff
- Provide a professional forum for geospatial statistics activities such as the European Forum for Geography and Statistics and ISI

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Recommendations on improving the cooperation between NSOs and Mapping Authorities

- Formalise the cooperation between NSOs and Mapping Authorities (legal arrangements, national data pools, MoUs)
- NSOs and Mapping Authorities could assume shared responsibility for information creation for sustainable development
- UN-GGIM should coordinate geospatial statistics activities
- NSOs should participate more in UN-GGIM
- UN-GGIM should urge Mapping Authorities to increase the number of geospatial datasets meeting statistical requirements

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Thank you