

Merging statistics and geospatial information, 2013 projects - Germany

Statistics Explained

This article forms part of Eurostat's statistical report on *Merging statistics and geospatial information: 2019 edition*

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Problem

Post geo-coding of information was considered an expensive and a time-consuming exercise that was disjointed insofar as similar tasks were being repeated for individual registers.

Objectives

The KOSIS-Association (municipal statistical information system) is a network formed by 125 German cities (as of the end of 2013) authorised to produce Urban Audit statistics on cities; this data was supplemented by information from national and federal statistical offices, as well as other sources. KOSIS-Association led the project, known as the Merging Project, which sought to develop methods for harmonising information on German cities so that it followed European Union spatial data infrastructure rules (INSPIRE). The project sought to rectify several issues linked to the geo-coding of data, as well as identifying and establishing best practices for the development of administrative registers for small-scale statistics. By doing so, it sought to bridge the gap between municipalities (as providers of addresses) and administrative registers (as users of addresses) through the creation of a central address register that conformed to INSPIRE rules.

The project had the objective to:

- improve the integration of spatial information and geo-references into statistical production processes, particularly for administrative registers at the municipal level;
- establish processes that would allow geo-referenced information to be harmonised and continuously updated;
- illustrate how geo-referenced statistical information and its corresponding metadata could be used to create additional value, for example through web applications to show the spatial distribution of a wide range of socioeconomic statistics.

Method

One of the first tasks undertaken was to compare different methods used to collect information on addresses and spatial statistical units: this was based on contrasting the traditional method of collection used in Germany with that applied in the Netherlands.

Municipalities were found to be the principal source of information for addresses: they were responsible for the

creation and maintenance of house numbers and street names (locators within INSPIRE). In Germany, there were many different administrative registers maintained in isolation by different departments of municipal administrations. By contrast, in the Netherlands all such registers were linked through a central address register which provided updates automatically when new or revised information was encoded.

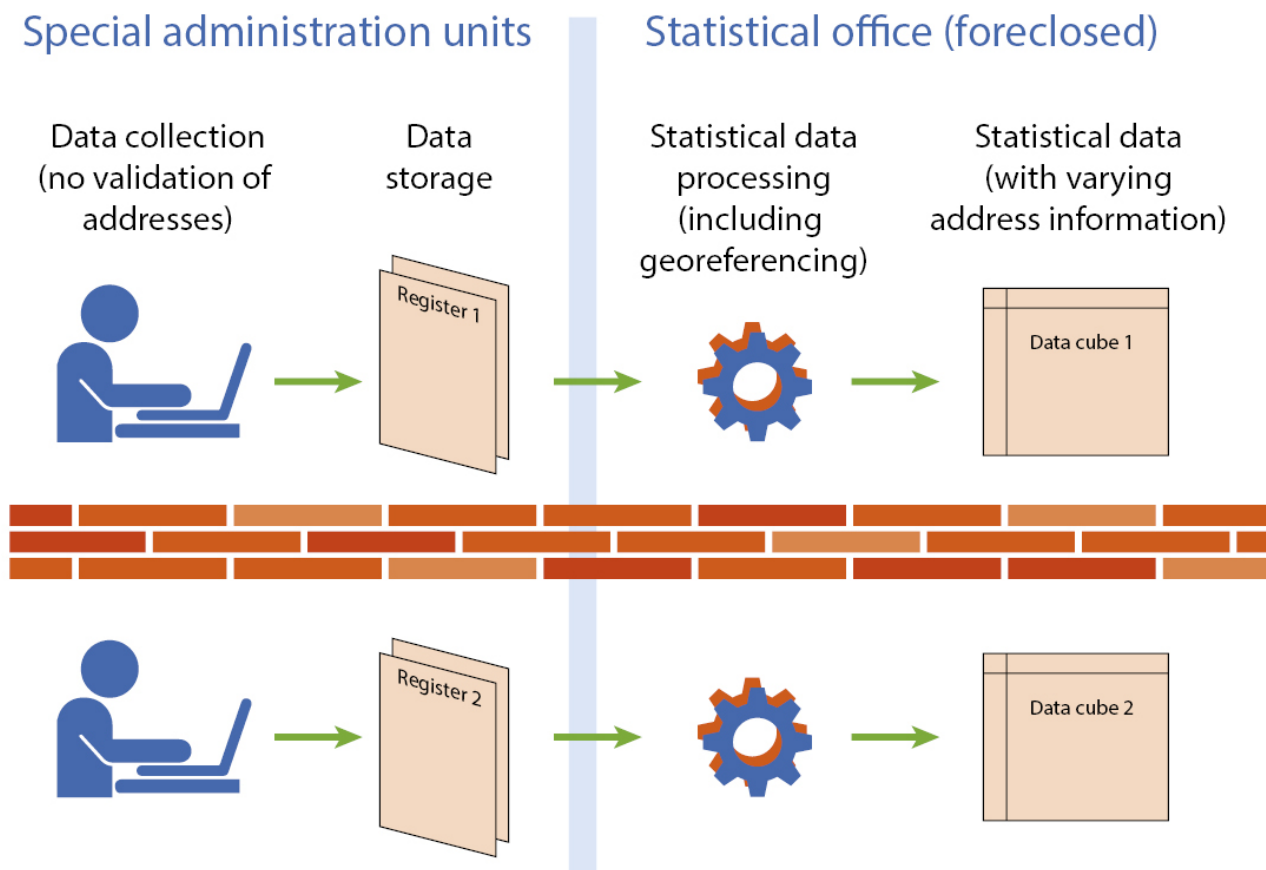


Figure 1: Unrelated registers with no relationships for managing addresses

A simplistic model of the situation in Germany is shown in Figure 1, whereby geo-referencing was conducted in a sequential, unrelated manner. An alternative presentation, based on a simplistic model of the situation in the Netherlands is provided in Figure 2, where geo-referencing was an integral part of the central address register.

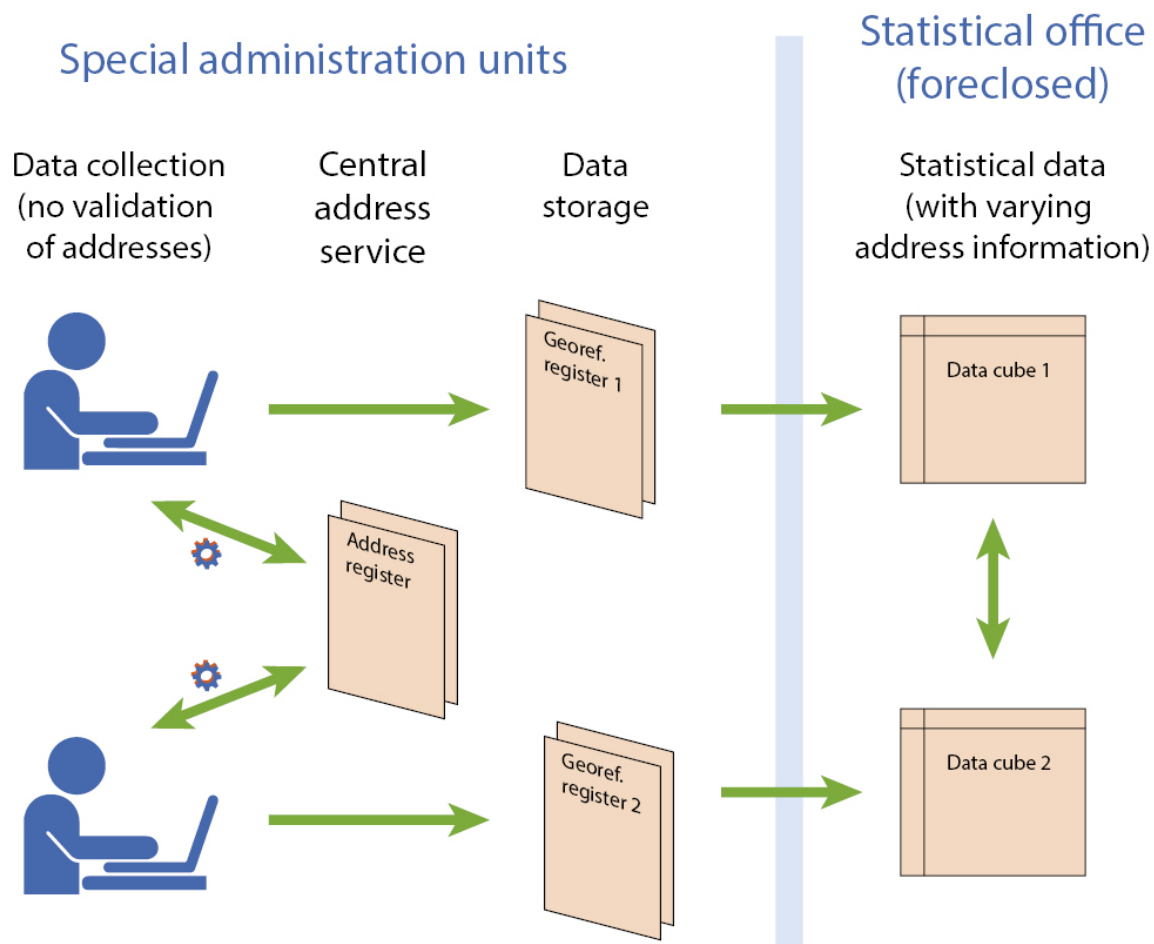


Figure 2: A central address register with in-built geo-referencing

A proposal was made as to how addresses and spatial statistical units could be recorded with descriptions of the required data elements and processes, as well as details of how these could feed into city, state, regional, national and European infrastructures, with particular emphasis on geo-coding data in administrative registers. The review considered the provision of a central address registry as beneficial for improving the quality of geo-coded administrative data, providing an opportunity to:

- assign and store information in a single step;
- determine a unique location for each entity (rather than having the potential for different geo-references across unconnected registers) with its coordinates;
- improve the quality and homogeneity of addresses;
- access up-to-date information for house numbers and street lists;
- provide automatically details of address changes to other registers;
- allow for on-the-fly calculations, such as joining data from different registers or aggregating data to different territorial typologies;
- make considerable efficiency and cost savings.

The next task considered by the project was to develop a proposal for a definition that might be applied for comparable intra-city spatial units. On the basis of discussions, workshops and reports, the approach recommended was for intra-city observations and analyses to be conducted for sub-city units of approximately 5

000 inhabitants (large enough to guarantee data protection, but small enough to allow for meaningful analyses). In those cities which did not have or were not in a position to create such territorial units, grid cells were considered a good alternative as they offered the following advantages: they required little maintenance; they were stable over time; they enabled observations of certain phenomenon across municipal boundaries (for example, if monitoring segregation or gentrification).

The penultimate action for the project was to illustrate how linking geo-information and statistical information and corresponding metadata could provide additional value. This was done through highlighting the role that a DUVA-interface may play, enhancing standardisation through the use of data descriptions for common data sources to facilitate data exchange, while providing a central instrument that may be used to manage metadata (its description, capture, processing and presentation).

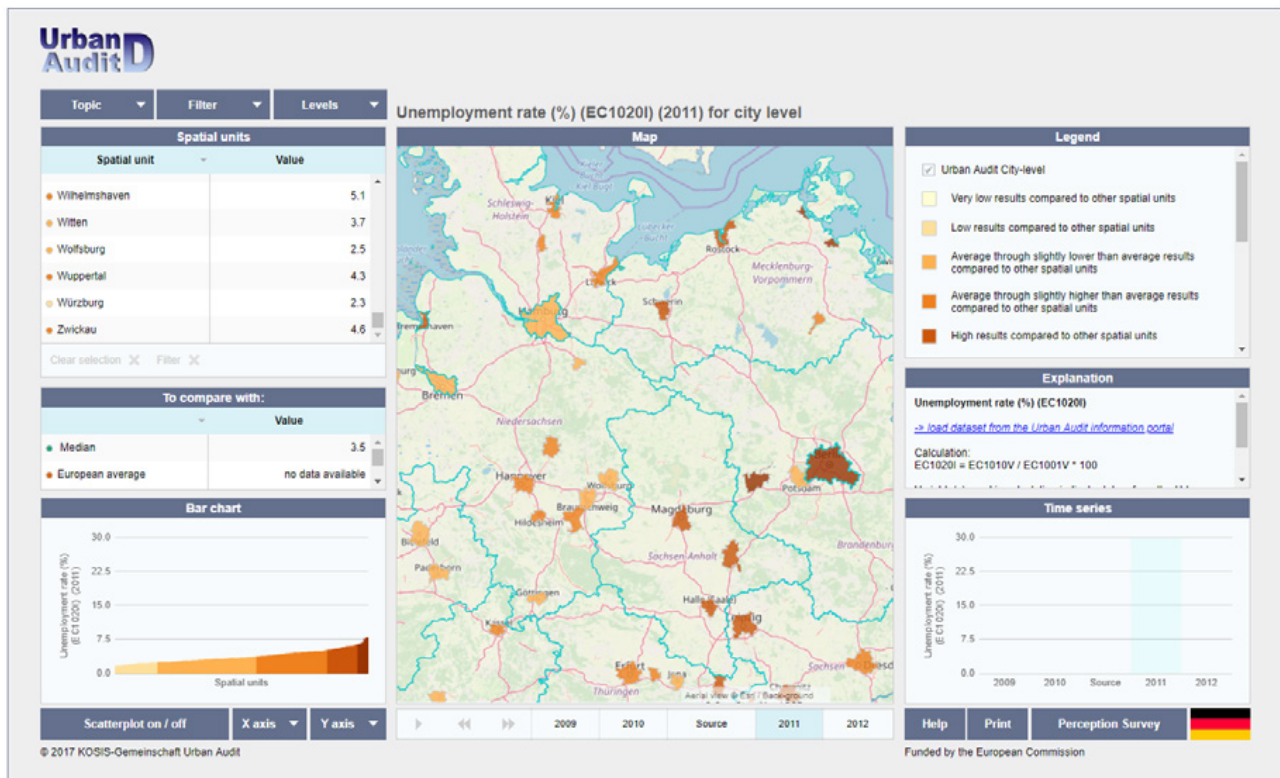


Figure 3: Unemployment rate for German cities

The final action undertaken for this project concerned web applications and web services. More precisely, this concerned developing provisions for Urban Audit data so that they may be used to create tables and thematic maps (interactively generated), while providing opportunities to download data through a web-based information portal. As with some of the previous actions, the work was conducted by performing an analysis of the strengths and weaknesses of selected public information portals. Thereafter, a new information portal for the German Urban Audit was developed (see Figure 3) and information was shared so that individual cities could develop their own city portals: the first two prototypes were developed for Berlin (see Figure 4) and for Freiburg im Breisgau .

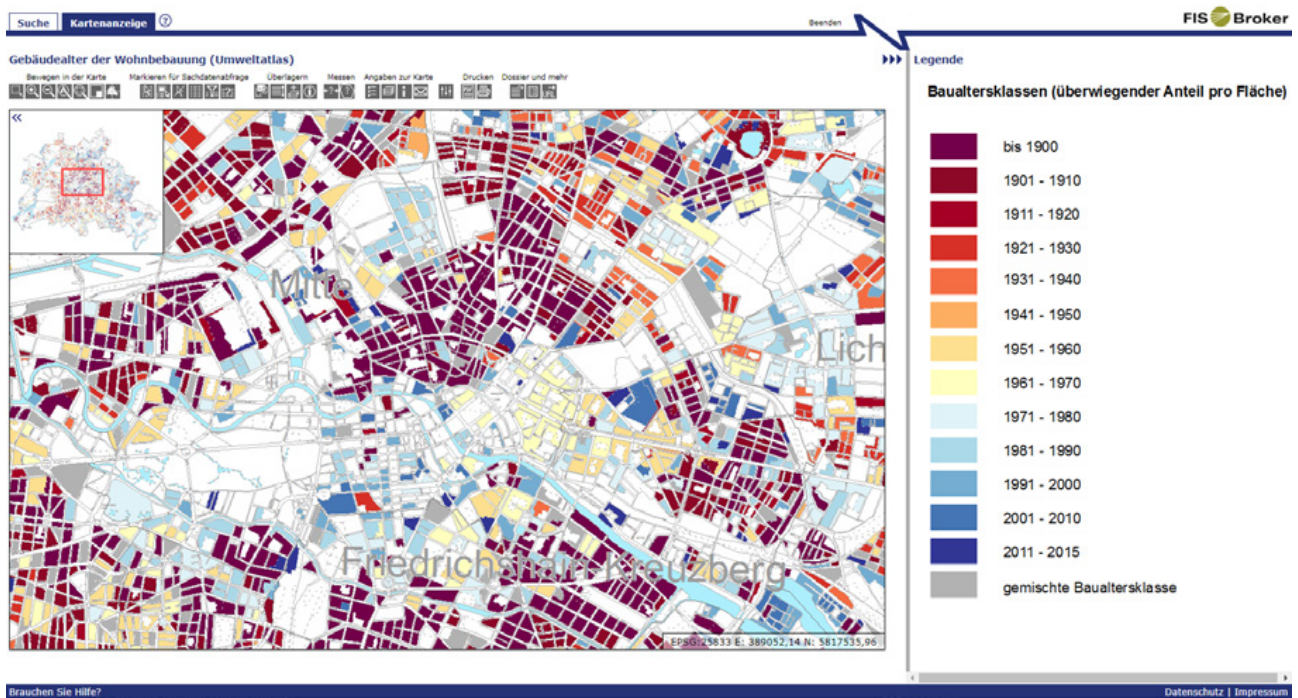


Figure 4: Construction date for dwellings in Berlin

Results

In Germany, cities are an important player within the statistical system: however, federalism and subsidiarity both establish obligations and opportunities to develop competences at a local level. The Merging Project provided a basis for taking further action when developing European infrastructures for geo-referenced data, for example within the realms of geo-coding addresses, harmonising spatial units, or implementing information systems, interfaces and information portals.

Methodology

- [Final report](#)
- [Presentation](#)
- [Mapping portal](#)

External links

- [DESTATIS — Federal Statistical Office](#)