

THE GERMAN MICRO-CENSUS- ROUTING PROJECT



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**Federal Agency for Cartography and Geodesy, Land Statistical Office of Hesse, Federal
Statistical Office**

Accompanied by: Information und Technik Nordrhein-Westfalen

Helsinki, 18th October 2018

Goal

Integrating geo-referenced information in official statistics allows:

- » **provision of structural information which do not necessarily have to have a small-area reference.**
- » **generation of additional statistical information by creating "additional survey variables" that can be grossed like "normal survey variables".**
- » **performance of additional analyses without placing additional burden on respondents, or reducing the burden on respondents, because no surveys are required.**

Geo-referencing provides more opportunities than just cartographic representations...

... for analysis and dissemination

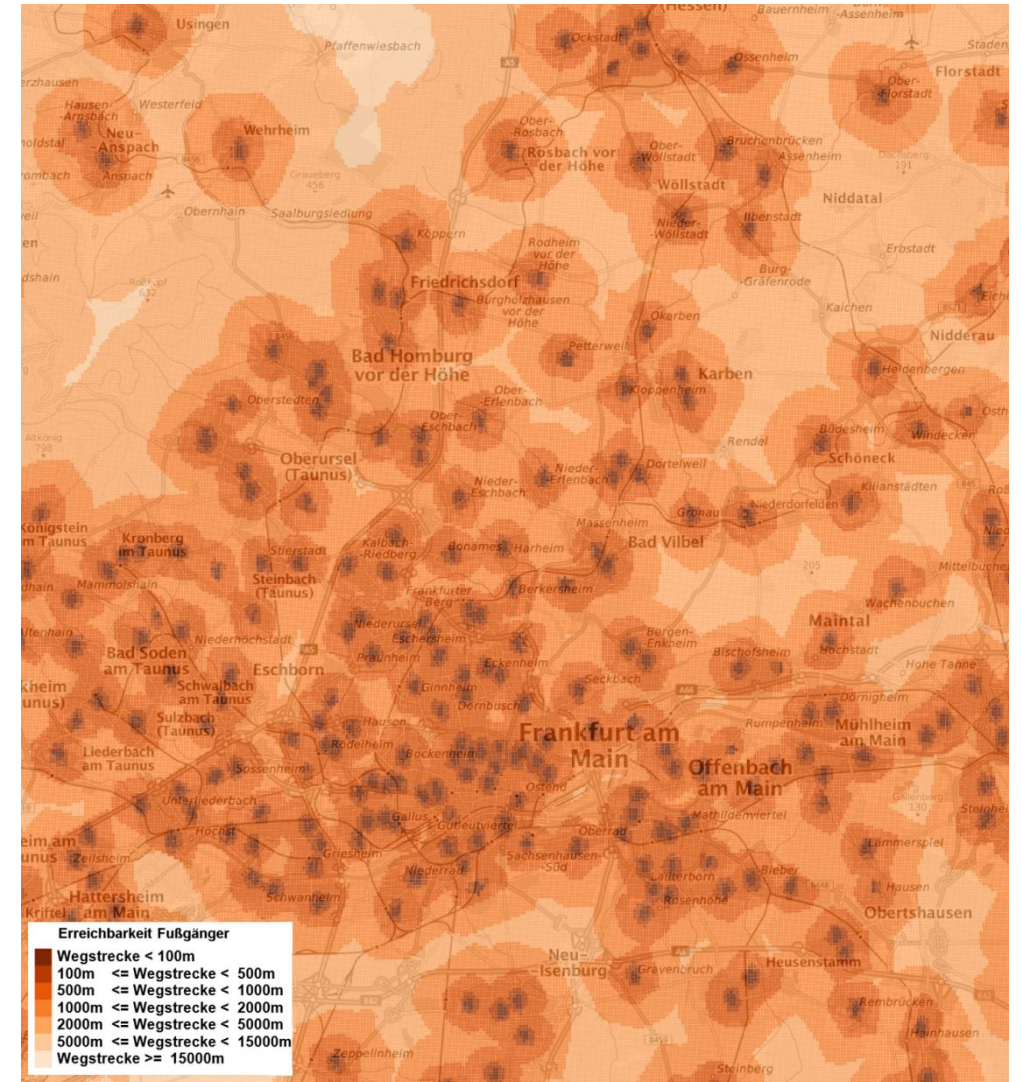
- » **analyses regarding distances / concerns, e.g.**
 - » **flood risk in river regions**
 - » **aircraft noise**
- » **structural aggregate information through data record extension using spatial statistics - also on a sample basis**

... for methodology and survey conduct

- » **sample design**
- » **survey control (e.g. planning the use of interviewers)**
- » **improved quality of results compared with direct interviews**

Approach 1

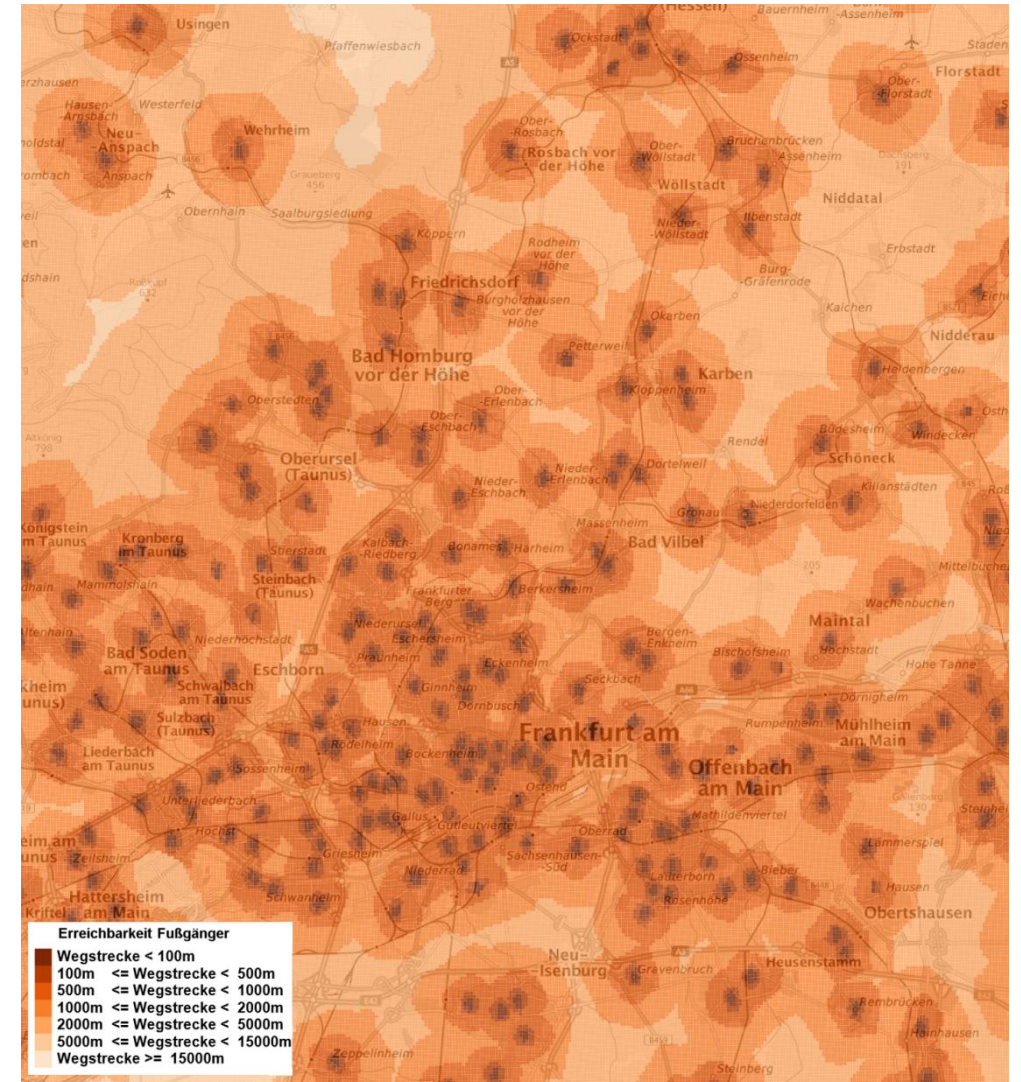
- » **geo-coding of microcensus households in Hesse and aggregation to grid cells**
- » **geo-coding of the 1,271 primary school addresses in Hesse**
- » **calculating accessibility areas of primary schools in Hesse (km and minutes)**



Source: visualisation based on results of the routing service of the Federal Agency for Cartography and Geodesy

Approach 2

- » **linking microcensus data and external special data (accessibility areas) established through the spatial reference using grid cell ID**
- » **grossing of generated variables like survey variables**
- » **result: representative information on larger spatial aggregates**

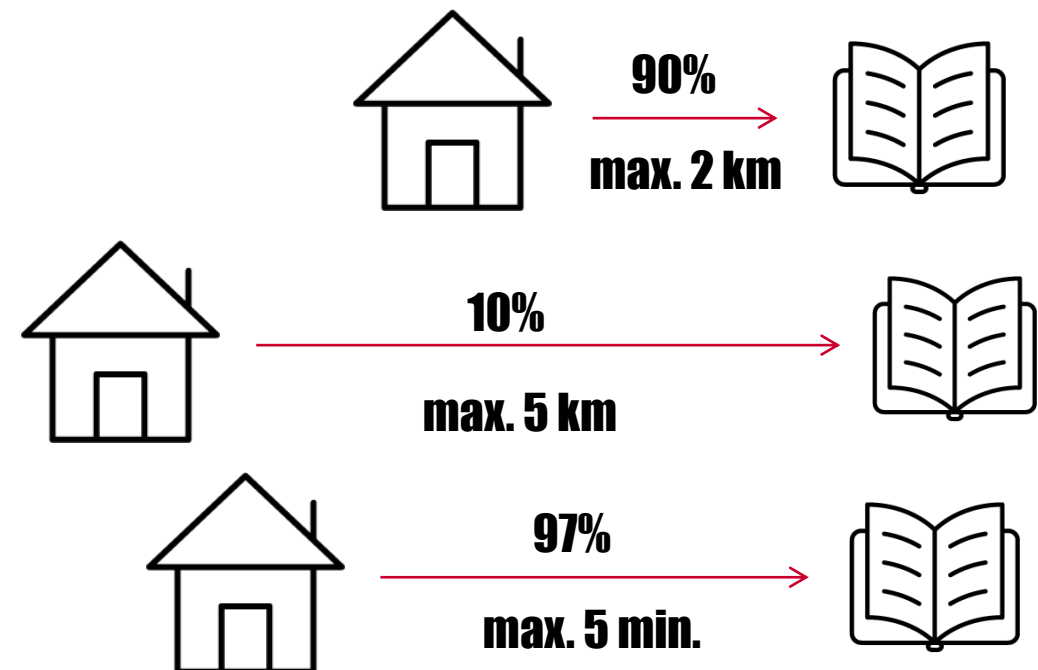


Source: visualisation based on results of the routing service of the Federal Agency for Cartography and Geodesy

Results

To get to the nearest primary school, families in Hesse with at least one child of compulsory primary school age of 6 to 10 years have to...

- » cover a distance of not more than 2 km (90%),
- » cover a distance of not more than 5 km (10%),
- » travel for not more than 5 minutes (97%).



Results - urban / rural regions

The proportion of families in Hesse with at least one child of compulsory primary school age of 6 to 10 years that have to cover a distance of not more than 2 km to get to the nearest primary school is...

- » **about 99% in urban municipalities,**
- » **about 55% in rural municipalities.**

Conclusions

- » **extension of existing data sets by variables generated using geospatial information**
- » **reduction of the burden on citizens, businesses, and the budget**
- » **the routing services of the Federal Agency for Cartography and Geodesy is very well suited**
- » **thematically varying spatial information can be combined with each other by grid cell ID**

Outlook

- » **further developing the "OpenRouteService" (routing service)**
- » **assuring the (address) quality**
- » **using data from the same reference year (microcensus, primary school and routing service)**
- » **small-area evaluations: more information on the location of households is needed, e.g. through residents' registers**
- » **settling the legal framework conditions**

THANK YOU VERY MUCH!

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