Socio-economic indicators in Oslo and Kongsvinger (Norway)

Small area index mapping and analysis

Statistics Norway develops new methods for displaying societal and economic indicators, in cooperation with Institute for Transport and Economics. The mapping technique is based upon micro data georeferenced at address level. Maps show indicators for small neighbourhoods at lower geographical levels without displaying personal information.

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Statistics Norway started the work with developing techniques for displaying indicators for different societal and economic issues. The goal is to be able to display geographical patterns of variance in data material, without revealing information that could be connected to individuals. Maps for indicators related to health issues are produced for use in an action plan against noise. The work is done for the Directorate for Health and Social with the urban parts of Oslo and Kongsvinger municipality as a case.

Method and history of development

The method builds on techniques developed for estimating land use in urban settlements and noise annoyance within the Norwegian population. In all cases the results depend on high quality data; good spatial georeferencing and coverage. In Norway about 99.7 per cent of the population is georeferenced to living address per 1rst of January 2007. All registers using the personal identification number can therefore be georeferenced to this location.

The main idea of the technique is to build upon floating neighbourhoods. A circle here defines a neighbourhood with a fixed radius from each living address. In our pilot case we have used a radius of 75 meter. For each unique pair of coordinates of living addresses we then count up the population and samples. Both population and sample depend on what we are looking for.

It is important to realize that displaying statistics at a low geographical level do not affect the principles behind disclosure criteria's. Techniques based upon different building blocks, be it grid cells, small statistical units or neighbourhoods, all have to follow the same rules for disclosure control.

The difference in choice of geographical levels for displaying lies in the number of occurrences of need of disclosure control. By using floating neighbourhoods one is able to produce quite detailed geographical patterns. These patterns would often else be invisible using another technique or other building blocks.

The neighbourhood method is based on the origins to the dynamic models (blobs) in Statistics Norway from automatic delineations of;

- Urban settlements (1996)
- Land use models for urban settlements (2002)
- Central business districts and leisure home areas (2003)

- Pilot on neighborhood sonoscape – context sensitive noise impact mapping (2004)
- Recent development based on cooperation with Institute for Transport Economics (2005/2006) for indicators income, education, social assistance, sickness absence, living standard etc.
- In 2007 the neighborhood model was used in a new project where the goal has been to develop statistics and maps for three new different socio-economic indicators mainly for Oslo, but it will also include statistics for the whole country

Some key points for using the neighborhood mapping technique are:

- Mapping the invisible for none-statisticians

- Showing inequalities
- Measure of welfare distrubution
- Mapping small communities – not individuals
- Monitoring policy impacts

The 2007 project

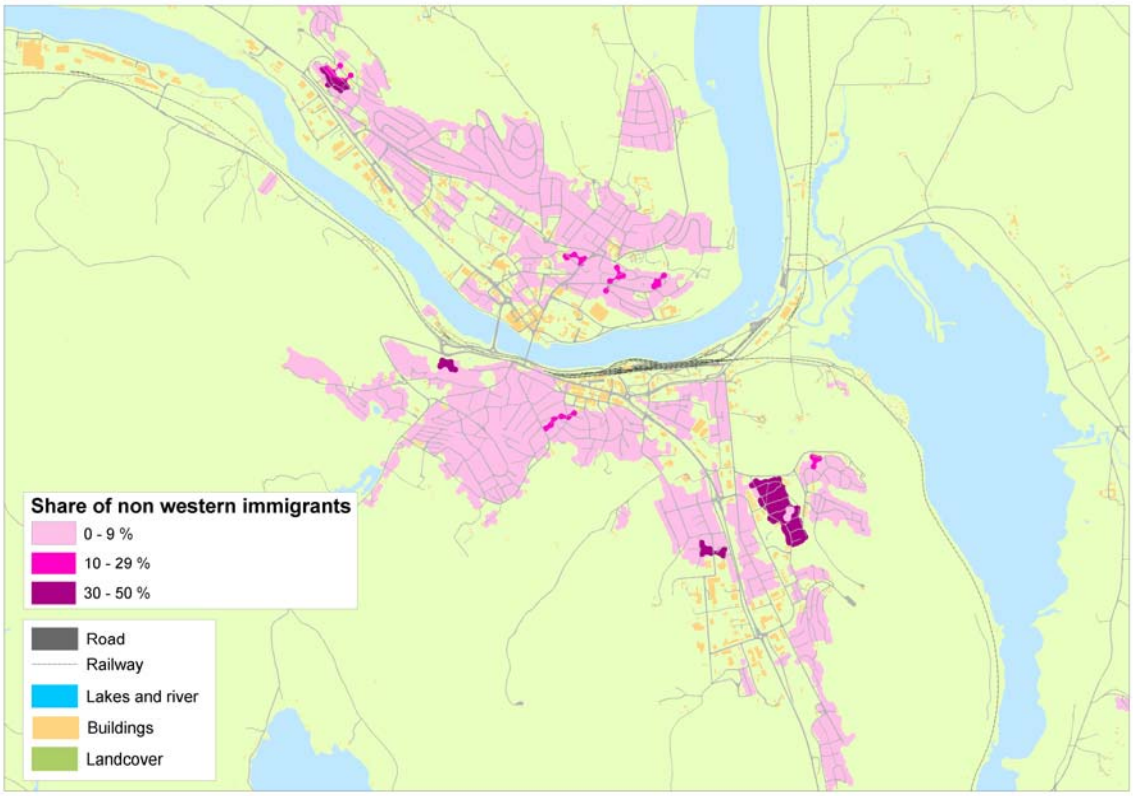
In the 2007 project new indicators where and operationalised preliminary as follows:

- **Indicator for income- related variable**: the register of private vehicles
  Categorise: - Private vehicles registered before or after 1997

- **Indicator for demography- related variable**: the register of movements from addresses by person
  Categorise: Persons moved from addresses

- **Indicator for ethnicity- land background variable**: the register of the population with land background
  Categorise: - Share of inhabitants with non western land background

Fig. 1 Share of immigrants with non western land background in Kongsvinger



Sources: Administrative boundary database, population database and road database.

Figure 1 shows the share of population with non western background in urban areas of Kongsvinger municipality. High concentrations seem to be found in areas with multi-dwelling buildings, and low concentrations in areas with single homes. This might indicate that price of homes is a segregation factor. The map does however not tell whether an area consists of a diversity of non western immigrants.

This neighbourhood method seems to be promising for a range of social, economical and environmental indicators. The method also gives a clearer picture of geographical variance, due to higher geographical accuracy and elimination of "noise" in data.

The neighbourhood method does however need some further investigation before being used as a general method for display and production of statistics. Previous studies have had a foci on the densest populated parts of Oslo, but the method seems to be working in smaller urban areas like Kongsvinger too. Data quality might however differ between variables and quality checks need to be done in cooperation with data "owner" divisions in Statistics Norway. Further development should also be built upon a dialog with user groups.

Literature and links

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