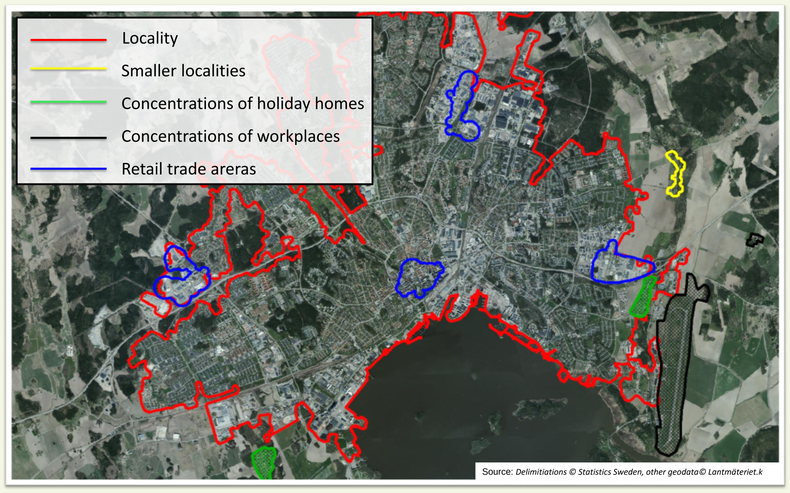
Creating urban geographies using geocoded registers and geospatial data

Statistics Sweden, Department for Regions and Environment

National urban geographies

By using geocoded register data Statistics Sweden creates different types of geographies for densely built up and populated areas. The purpose is to provide statistical geographies for urban statistics on population, employment and land use. The geographies are also used for statistics of green areas, buildings, incomes etc.



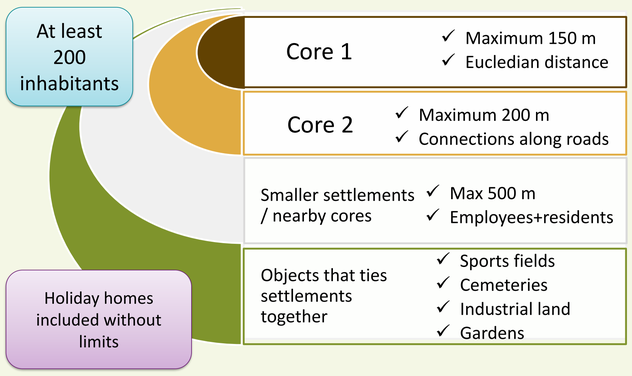
Definition of urban geographies

The most important type of urban geography is called locality or urban area. Each locality has at least 200 inhabitants. Thus, both the largest cities as well as small built-up clusters with just over 200 inhabitants are classified as localities. The definition has been used since 1960, as a common definition for all Nordic countries. However, the details of the definition and the method for creating the areas have changed over time.

Since March 2015, the Swedish localities are created using four stages:

1. A core is created where a maximum of 150 metres between the buildings are allowed.
2. The core is connected to other buildings when the distance is no more than 200 meters between them. The link must be via the road network.
3. If there are a certain number of people living or working in the cores, they may be clustered together into one area, even when the distance is more than 200 metres between the buildings. The maximum length between the cores increases gradually, depending on the total number of inhabitants and employees in the area. The maximum distance is 500 metres.
4. Objects for purposes of public utilities can connect buildings together and be included in the outer regions of the locality. Such objects can be sports fields, cemeteries and allotment gardens with buildings.

There are no limits for how many holiday homes that can be included in the locality.

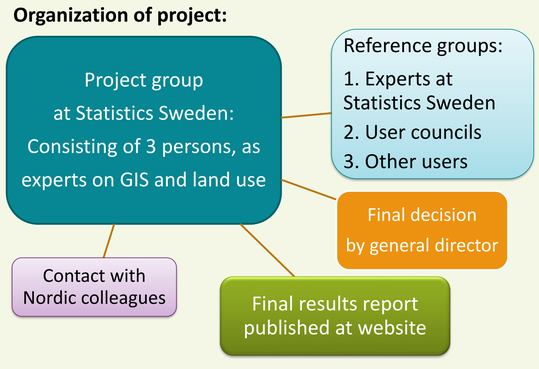


Method for delimitation

The method has to consider a variety of different types of built up areas. Not only by size, but also by regional differences within Sweden.

Before determining the final method and definition, several tests were conducted and analyzed. Statistics Sweden also consulted with users of the statistics and delimitations.

Organization of project:



Delimitation method in brief

Geocoded register used for creating the 2015 version of urban geographies:

- Population by property unit location, December 31 2015
- Employees by workplace location, December 31 2015
- Cadastral map containing information of buildings, roads, boundaries of cadastral parcels, land use, water etc , January 2016

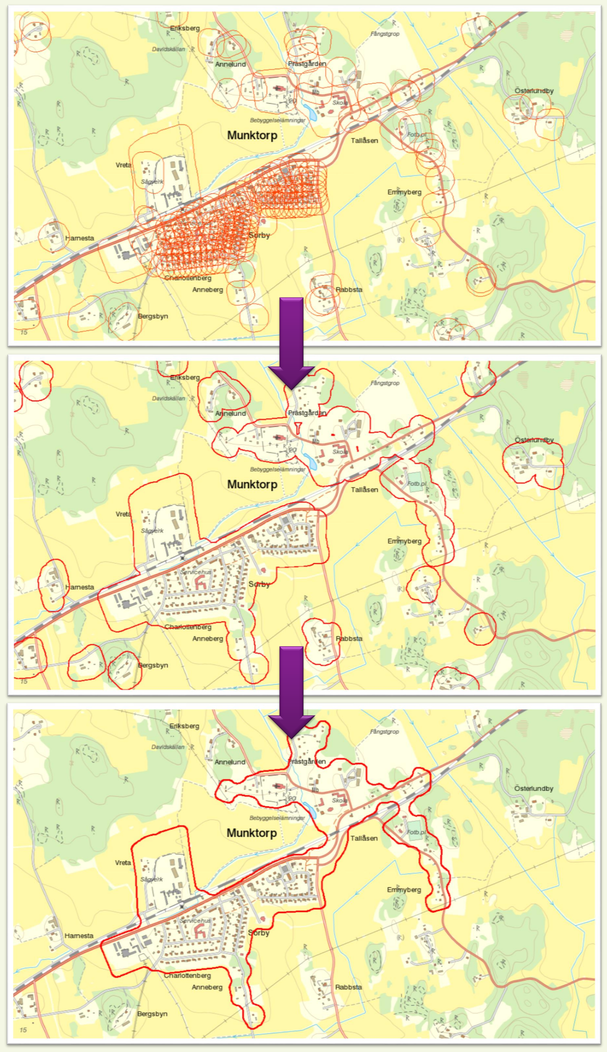
By using FME, objects from the registers were buffered in several steps around buildings and property units. The buffers were clustered and combined to catch the variety of spatial configurations found in densely built up areas.

Manual adjustments were normally not aloud , but in some cases they were accepted because of poor data quality.

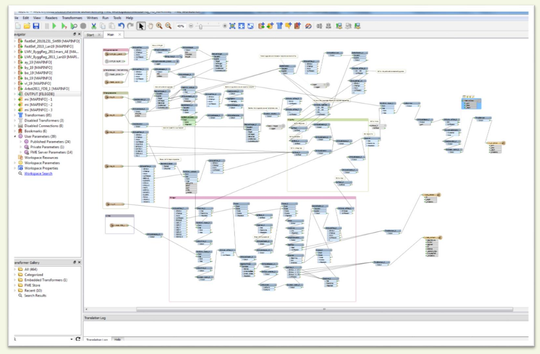
1. Buffers around buildings and property units

2. Clustering buffers

3. Cores merged together. Areas with less than 200 inhabitants are removed.



Model FME

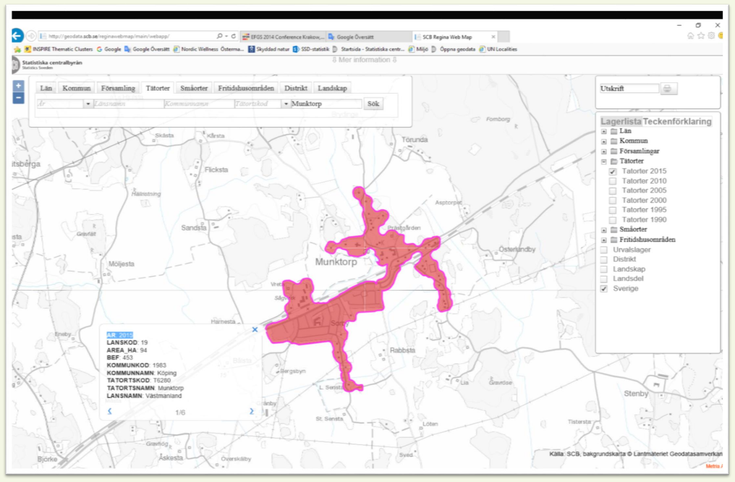


Result as open data

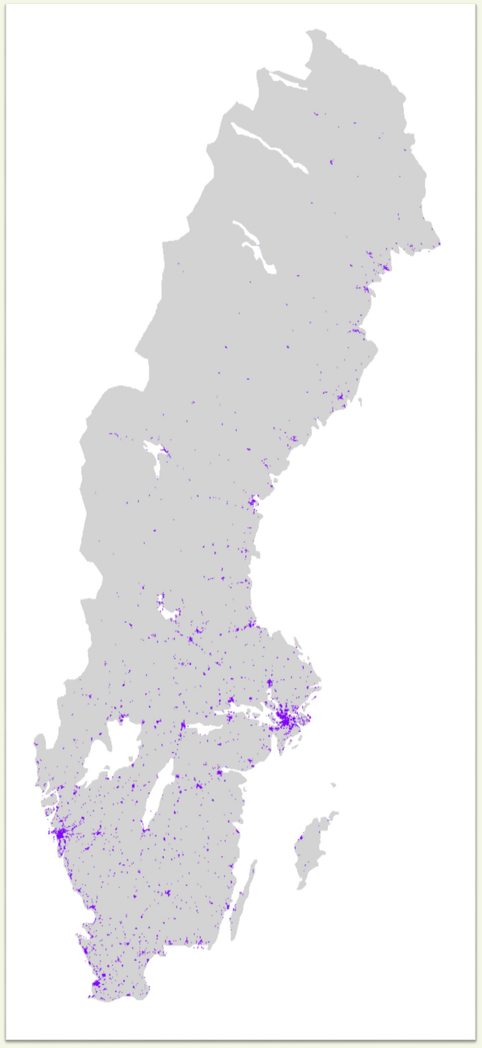
The delimitation work resulted in almost 2 000 localities/urban areas in Sweden. The smallest ones have only 200 inhabitants, while the largest one is the capital Stockholm, with a registered population of 1.5 million people.

Smaller localities, with 50-199 inhabitants were created by using the first stage in the definition of localities.

As the urban geographies are used for a variety of purposes outside of the statistical institute, they are now available as open geospatial data. They are also presented in a new interactive map service, comprising the main administrative and statistical geographies in Sweden, such as counties, municipalities and districts.
http://geodata.scb.se/reginawebmap/main/webapp/



In 2015 there were 1 979 localities in Sweden. 87 percent of Sweden's population lived in one of them, but only 1.5 percent of the country´s surface is classified as urban.



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