Positioning for the future:
Getting statistics and geography together

Marie Haldorson
Director, Statistics Sweden
Outline

• Some basic facts
• Regional and spatial statistics
• The Geodata Co-operation
• New production methods
• Conclusions
Sweden
Sweden Facts

- Democracy with Parliament elected every 4 years
- Prime minister = Fredrik Reinfeldt, Conservatives
- 9.7 million inhabitants, 1.4 million in Stockholm city
- 290 Municipalities
The role of the municipalities

- Responsible for a larger share of public financed services than in most other countries
- Right to levy taxes to finance operations
- To carry out their many tasks they rely on regional and spatial statistics – both on municipality and small area level
Statistics Sweden has three objectives

- Government agency responsible for statistics based on appropriations
- Produce statistics on commission (i.e. on a commercial basis)
- Administrative duties
  mainly responsibility for the Official Statistics of Sweden
Statistics Sweden:

Key figures 2013

- Turnover: $157 million, of which $83 million in appropriations
- 6,800 commissioned assignments
- Staff: 1,367 of which 63% with academic degree
- GIS-Staff: high competence in land use and small area statistics, 10 persons
Regional and Spatial Statistics

Is there a difference?
Statistics Sweden's data storage
Authoritative spatial data

Real property – Addresses - Buildings

Municipalities
- Collect spatial data on:
  - Real properties
  - Buildings
  - Address locations
  - Topographical info
- Upload data to NMA

NMA (Lantmäteriet)
- Create standards and provide technical support for collection
- Receive and maintain data
- Provide data

Statistics Sweden
- Receive data
- Store copies
- Add statistical units to coordinates
- Link with registers
- Georeference statistics

Agreement/regulation
Agreement/regulation
Need for spatial data?

Yes!

- Small area statistics
- Land use statistics

No

- Regional statistics
Geodata and geospatial applications at Statistics Sweden

- Long tradition
- GI integrated in production in two ways:
  - Creation of geospatial products (grids, localities etc)
  - Geospatial processing as part of the official statistics production chain
- Land use statistics most geodata intense
- Some 20 products concerning use of land and water, land ownership, urban green areas, designated areas, coastal and urban development etc
The Geodata Co-operation

Increased access to spatial data
The INSPIRE Directive

- The European INSPIRE Directive entered in force in May 2007 and will be fully implemented by 2020.
- An infrastructure for spatial information in Europe – supports environmental policies and policies or activities which may have an impact on the environment.
- 27 Member States provide search, view and download services

- 34 Spatial data themes – both reference data and thematic data from different authorities
The Swedish Geodata Cooperation Agreement

• INSPIRE requires data sharing between public authorities = a Geodata Cooperation Agreement.

• The parties in the Geodata Cooperation offer each other their spatial data for official use at an annual fee.

• The Swedish Geodata Strategy gives the cooperation a broader scope than INSPIRE: the aim is to include as much spatial information as possible.
Before 2011

and after…..

Joint Agreement on Datasharing

Organisation a
Organisation b
Organisation c
Organisation d
Organisation e
Organisation f
Organisation g
Organisation h
Geodata Cooperation Agreement

- A part signs *One* Agreement
- A part pays *One* annual fee
  (Municipalities $15 000 – 150 000)
  (Public Authorities $7 500 – 980 000)

Gives access to > 400 geodata products from 19 public data providers
- Geoportal
- Product catalogue
New Production Methods

Geography adds a new dimension!

Example: Land use statistics
Focus has been on the Output
Paradigm Shift

- SCB Register System
- Presentation
- Screening (GIS-tools)
- New spatial statistics
- Geographical analysis
- Data collection
- Sampling
- Quality improvements
- New methods
Creating statistics based on spatial data

Spatial data
- Cadastral map
- Farm blocks
- Localities
- National Road database
- Land cover
- Etc

Georef. Register data
- Population register
- Real estate register
- Farm register
- Open pit register
- Etc

Processing

Statistics
Land and water areas

• Cadastral map used for the first time in 2012
• Some 4.2 million real property parcels aggregated to municipalities
• Combined with water bodies
• All data in scale 1:10 000
• **Result:** Land area of Sweden “shrinked” with some 3,000 square kilometres or 0.7 percent
"Vi minskar inte i värde bara i yta"
Av Helagotland.se [Eva HC Nygren]. Publicerad 2012-03-12

"Ny Teknik"
Ny Teknik

"Va, har Sverige krympt?"
Av Jonas Melzer
Publicerad 2013-03-12 16:07
Enligt en ny beräkningamodell är vårt avlånga land nu 3000 kvadratkilometer mindre, visar ny statistik från SCB.

"Statistiska centralbyrån"
Statistics Sweden
Built-up land

- 8 categories of built-up land
- Some categories reduced due to better methodology
Type: Industry  
Owner: Company  
Land area: 200,000 m²  
Built-up land: 200,000 m²?  

Before 2011  

<table>
<thead>
<tr>
<th>Register data</th>
<th>Geospatial data</th>
</tr>
</thead>
</table>
| Type: Industry  
Owner: Company  
Land area: 200,000 m²  
Built-up land: 200,000 m² | X, Y Coordinates |

Improved figure: 122,000 m²

After 2011  

<table>
<thead>
<tr>
<th>Register data</th>
<th>Geospatial data</th>
</tr>
</thead>
</table>
| Type: Industry  
Owner: Company  
Land area: 200,000 m²  
Built-up land: 200,000 m²  
- Forested area: 78,000 m² | Land area: 200,000 m²  
- Forested area: 78,000 m² |

Improved figure: 122,000 m²
Delineation of localities
Identifying new localities
New statistics on functional areas – people living close to the sea

**NÄRA HAVET VILL JAG BO**
Sveriges befolkning efter avstånd till kust, år 2010

<table>
<thead>
<tr>
<th>Avstånd till kust</th>
<th>Antal boende</th>
<th>Andel av befolkningen</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 km</td>
<td>4 625 000</td>
<td>49 %</td>
</tr>
<tr>
<td>20 km</td>
<td>5 435 000</td>
<td>58 %</td>
</tr>
<tr>
<td>30 km</td>
<td>5 904 000</td>
<td>63 %</td>
</tr>
<tr>
<td>50 km</td>
<td>6 660 000</td>
<td>71 %</td>
</tr>
</tbody>
</table>

Inom 10 kilometer från kustlinjen återfinns 49 % av Sveriges befolkning. Större öar räknas in i kustlinjen.
Statistics on how the coast line is affected by buildings
Possibilities

- Combining register information with geodata
- Making use of new spatial data from different INSPIRE themes - develop new methods
- Include spatial data and GIS-tools in the whole production chain: input – throughput – output!
Challenges

- Evaluation of datasets based on the INSPIRE metadata
- Using existing datasets in a new context – testing the quality
- Explaining how a change of data source will affect the statistical results
Conclusions

• Increased need for spatial data in society – NSI’s and NMCA’s need to co-operate!

• Spatial statistics depend on Population Registers and a National Spatial Framework

• NSI’s need GIS-competence and bench-marking!