

HOW TO MEET DEMOGRAPHIC CHANGES

A HANDBOOK FOR INSPIRATION
AND ACTIONS IN NORDIC
MUNICIPALITIES AND REGIONS

2012

Appendix 2:
TECHNICAL NOTES
FOR MAPS AND DATA



NORDREGIO
Nordic Centre for Spatial Development

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demographic changes**

**A handbook for inspiration and actions
in Nordic municipalities and regions**

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**Appendix 2
Technical Notes for Maps and Data**

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Website: www.nordregio.se/handbook

Nordregio Report 2012:1

ISBN 978-91-89332-87-4

ISSN 1403-2503

© Nordregio 2012
Second edition (March 2012)

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Nordic co-operation

takes place among the countries of Denmark, Finland, Iceland, Norway and Sweden, as well as the autonomous territories of the Faroe Islands, Greenland and Åland.

The Nordic Council

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

The Nordic Council of Ministers

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. Founded in 1971.

Nordregio – Nordic Centre for Spatial Development

works in the field of spatial development, which includes physical (spatial) planning and regional policies, in particular with a Nordic and European comparative perspective. Nordregio is active in research, education and knowledge dissemination and provides policy-relevant data and analysis. Nordregio was established in 1997 by the Nordic Council of Ministers. The centre is owned by the five Nordic countries and builds upon more than 40 years of Nordic cooperation in its field.

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Technical Notes for Maps and Data

Part 1 of the Demographic Handbook focuses on status of the Nordic municipalities and regions and to creation on a so called demographic profile of the area. This appendix gives the information of the used data, indicator calculations and mapping methods.

The statistical material used in this report was obtained from the National Statistics Institutions (NSIs) of the Nordic Countries and Autonomous Territories. The raw data is coming from the given sources and all the calculations of indicators, change rates etc. are made by Nordregio team.

The analysis is based on the 'state-of-the-region' population data is as of January 1st, 2011 for Denmark, Norway and Greenland and as of 31st December, 2010 for Finland, Sweden, Iceland and the Faroe Islands. The change data is refereeing to annual data in 2006-2010. In the Nordic countries the change data of five-year averages is provided in order to provide a stable and accurate picture. In the smallest municipalities in particular however annual change rates may vary from year to year and therefore changes occurring within a single year may give an inaccurate impression of the regional state.

Regional Divisions

In the Nordic countries mainly two different administrative divisions has been used, namely municipalities, and regions (NUTS3). The European regional division is based on NUTS (The Nomenclature of Territorial Units for Statistics) nomenclature. Based primarily on the administrative divisions currently in force in the Member States NUTS serves as a reference for collection of comparable regional statistics and for the analyses of the regions. Therefore taking the international comparability between the countries into account the NUTS3 division has been used as a regional level, meaning that for Finland, Norway and Sweden the "national administrative division of regions" have been used whereas in Denmark we have used "*Landsdel*" instead of "*Region*" (that is NUTS2 level).

All the administrative divisions used in this report are 'as of' January 1st, 2012. Changes and merges between municipalities in the last years across the Nordic countries are therefore already incorporated into all maps and analyses in this report. In the case of now merged municipalities we have simply added them together for the previous years. In the case of municipalities that have been divided we have used the ratio of them from the first year after the split (separate ratio for each 'item'), and adjusted this backwards for the previous years. In this way we have been able to add change rates over time i.e. for Denmark where the new regional structure was introduced on January 1st, 2007.

In the West Nordic countries the regional representation varies from the other Nordic countries. In Iceland a regional division with eight regions (*landafraeði*) has been used. In the Faroe Islands the six Faroese regions (*sýsla*) are the base unit for the analysis whenever the regional data is available. The municipal division is not used because of data availability and the small geographical and demographical size of many municipalities. In Greenland a recent municipal reform in January 1st, 2009 has reduced the previous 18 municipalities to a total of 4 units. One of these – the municipal of Sermersooq – includes on one hand the former capital municipality of Nuuk and the two other municipalities on the west coast, and on the other hand the two former East Greenland municipalities, Ittoqqortoormiit and Tasiilaq. The regional differences between the eastern and the western part of Greenland are among the most marked differences in the country – and in the Nordic countries, so it has been advantageous to operate with the eastern and the western part as individual regions in the analysis.

Demographic Vulnerabilities

The map of demographic vulnerabilities shows the total number of demographic components that are crossing the threshold of vulnerability. For each of the components a threshold, i.e. a limit, has been chosen to identify whether or not the component can be considered at risk. The thresholds for each of the chosen age structure components have been calculated based on the Nordic average values and the potential replacement. For the other components the threshold values have been set to a balanced situation. The level of vulnerability has been calculated simply by adding the number of components at risk together. These ten components with their threshold values and reference times are¹:

Component	Definition	Vulnerability	ref. year
Age group 0-14	Total number of people aged 0-14 years as a % share of total population	Share below 17.5%	2011
Age group 15-24	Total number of people aged 15-24 years as a % share of total population	Share below 12.5%	2011
Deficit of age group 25-54	Total number of people aged 25-54 years as a % share of total population	Share below 37.5%	2011
Surplus of age group 55-64	Total number of people aged 55-64 years as a % share of total population	Share above 14.0%	2011
Surplus of age group 65+	Total number of people aged 65 years and over as a % share of total population	Share above 18.0%	2011
Female < male	Total number of females per 100 males	Under 100	2011
Female < male (age group 15-64)	Total number of females in age group 15-64 years per 100 males in age group 15-64 years	Under 95	2011
Crude birth rate	Total number of life births per 1000 inhabitants	Below 11.0	2009-2010 average
Crude death rate	Total number of deaths per 1000 inhabitants	Above 10.0	2009-2010 average
Net migration	Difference between in- and outmigrated persons as a % share of total population	Below 0.0%	2006-2010 average

Demographic structure by labour force replacement ratio and gender

This map is combining two indicators of demographic labour force replacement ratio and balance between female and male population. Both of the indicators have three values: high/above – moderate – low/below. The cross-combination of these two indicators creates a matrix of nine types of regions.

The demographic labour force replacement ratio has been defined as a population in age group 15-24 years as share of population in age group 55-64 years. This indicator intends to show how many people can be expected to enter or leave the labour force in the coming years. If the proportion of young population is higher than the proportion of elderly labour force aged population the potential labour force in the region is estimated to increase and vice versa. As a remarkable share of younger population aged 15-24 years is participating in various educational

¹ The performance of each single component can be seen in *Demography in the Nordic countries – A synthesis report*. Nordregio Working Paper 2011:9.

activities, the potential share of coming labour force aged people in the smallest municipalities and in some regions with limited education possibilities could be underestimated due to location of education institutions. Therefore we have identified a threshold of 0.8-1.0 as moderate regions where the potential exists if the municipalities and regions are able to attract the young people move back when ready with their studies.

The gender balance indicates the total number of female per 100 male both in age group 15-64 years. We have divided the indicators in three classes of 1) female surplus, 2) moderate balance and 3) male surplus. The threshold value 92 for moderate balance is based on a general long term vulnerability threshold of 95 but with an added tolerance of 3, which allows for minor yearly variations.

Population change by main components

The total population change is a result of two components: the natural change which is defined as the difference between the total number of live births and deaths, and net migration, which represents the difference between inward and outward migration flows. Based on these components we have created a matrix of six different types of population change. The population increase can be a result of in-migration, surplus of births or both of the factors, and on the opposite: the population decrease can be a result of out-migration, surplus of deaths or both of the factors. In a large share of Nordic municipalities and regions the change is related to both of the factors but in some areas the negative natural change or net-migration can be compensated with the good performance of the other factor.

Migration by age clusters

The in- and out-migration dynamics of the Nordic municipalities have been described with seven clusters. The clusters are based on in-and out-migration patterns of people after ten years age groups (0-9, 10-19, 20-29...70+ years). The in- and outflow of people in each age group is related to overall size of that age group in a municipality. And as clustering method the Ward's Minimum Variance Cluster Analysis with eight clusters selected as the target has been applied. In each cluster municipalities with most similar age structures in relation to migration have been clustered, as illustrated below. For the final cluster profiles clusters 7 and 8 where were combined as both of those are showing exceptional migration characteristics, like Eastern Iceland with aluminium smelter building activities, and both of those include only three respect one municipality.

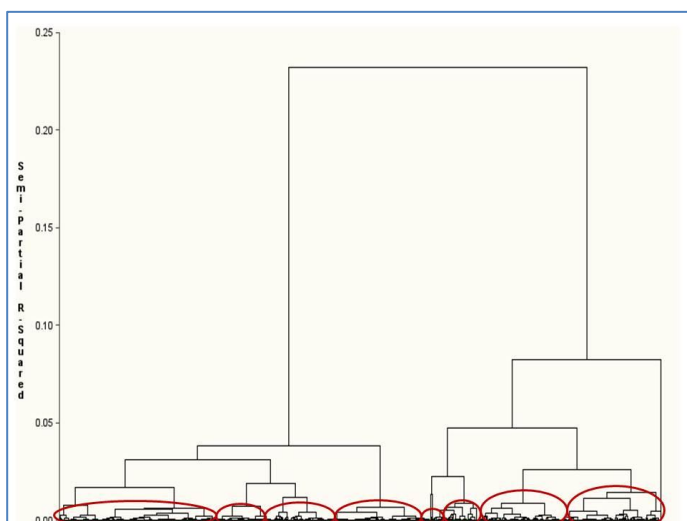


Figure 1: Clustering procedure of the Nordic municipalities in relation to age distributed migration characteristics. The “Cluster Tree” illustrates how the starting point – the 1163 administrative units – step by step are organised in clusters according to their similarity. In order to provide a good overview of the structure 8 clusters have been selected as a combination of overview and relevant detail.

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